



INESCPORTO

INSTITUTO DE ENGENHARIA DE SISTEMAS
E COMPUTADORES DO PORTO
LABORATÓRIO ASSOCIADO

RELATÓRIO DE ATIVIDADES DE 2010

INESCPORTO
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PARTE A – Relatório global de atividades

1 Introdução

O ano de 2010 traduz-se num progresso positivo e em várias frentes do INESC Porto, no prosseguimento da sua missão nacional. A Direção, terminando agora o seu mandato, tem a satisfação de sentir que cumpriu e que entrega aos associados um INESC Porto mais forte, mais robusto, de maior projeção nacional e internacional e com melhores condições de sustentabilidade.

A situação no final de 2010 pode resumir-se nos seguintes indicadores relevantes:

1. Um crescimento recorde no valor dos proveitos resultantes da atividade produtiva em projetos em mais de dois milhões de Euros, num incremento de cerca de 48% relativamente ao ano anterior.
2. Um crescimento recorde nos índices de produtividade científica associados ao reconhecimento internacional da excelência, como seja o de publicações de artigos em revistas, e com notório progresso na produção per capita.
3. Um novo aumento no número de doutorados como investigadores integrados do INESC Porto mas com uma taxa de crescimento claramente abaixo das taxas de crescimento da produção científica, implicando taxas de crescimento da produtividade inequivocamente positivas.
4. Uma materialização de diversidade e equilíbrio nas fontes de proveitos diretos de projetos, com 30% de proveitos resultantes de atividade internacional e com 42% de proveitos resultantes de contratação direta com a indústria de I&D e consultoria avançada, dos quais 1/5 novamente em atividade internacional.
5. Uma materialização da diversidade na internacionalização dos recursos humanos, com cerca de meia centena de bolseiros de pós-graduação e de projeto estrangeiros e, de entre os estudantes de doutoramento, com cerca de 30% de estrangeiros.

O presente relatório, cuja sustentação financeira se encontrará no Relatório e Contas do exercício, tem por objectivo de retratar a atividade desenvolvida pelo INESC Porto durante o ano de 2010 perspetivando os aspetos mais marcantes. Para isso, foi organizado num corpo principal e anexos.

O corpo principal (Parte A) descreve aspectos gerais e de síntese da atividade do INESC Porto em 2010, sublinhando e detalhando os pontos relevantes para uma apreciação global.

A Parte B refere-se à atividade produtiva das diversas Unidades e corresponde na sua forma quase exata ao relatório submetido à FCT pelo INESC Porto Laboratório Associado, enquanto instituição de investigação beneficiária do Programa de Financiamento Plurianual. Por imposição daquela entidade, o Relatório está escrito em inglês para permitir a sua avaliação internacional. A sua inclusão neste relatório para o Conselho Geral permite a este órgão apreciar de que forma é que a atividade do INESC Porto é reportada para avaliação externa independente.

Numa Parte C incluem-se quadros e tabelas complementares de informação sobre a atividade das Unidades, incluindo dados completos que o Formulário da FCT não permitiu adicionar.

Em Anexo apresenta-se a estrutura organizacional do INESC Porto.

2 Análise global da atividade no ano de 2010

2.1 Objetivos do Plano: 10 metas para 2010

No documento do Plano de atividades para 2010, aprovado pelo Conselho geral, constavam os seguintes objectivos globais, subordinados ao lema “10 metas para 2010”:

1. Consolidar a integração no INESC Porto LA de todos os grupos aderentes recentes, com o robustecimento de uma cultura institucional comum.
2. Prosseguir a implementação das recomendações da Comissão de Acompanhamento Científico, nomeadamente no que diz respeito à reestruturação de algumas Unidades e à identificação e desenvolvimento de projetos mobilizadores, que reúnam as competências e recursos de várias Unidades, criando vantagens competitivas únicas da instituição. Nomeadamente, consolidar a existência de atividades científicas transversais e ganhar nova visibilidade e reconhecimento externo dessas competências e investir nos processos de geração de excelência científica.
3. Em função do novo perfil de composição do INESC Porto LA, redefinir o modelo de sustentação económica e financeira.
4. Reforçar a conquista de projetos contratados diretamente por empresas, no cenário nacional e internacional, e construir os mecanismos organizacionais que agilizem essa atividade e apoiem os esforços das unidades grupos e investigadores nesse sentido, de forma a incrementar significativamente a participação dessa atividade na geração de proveitos.
5. Acelerar o processo de presença no Brasil, com a criação nesse país do instrumento legal e institucional adequado para atuação naquele território estrangeiro e a constituição do INESC P&D Brasil. Neste contexto, consolidar a política de alianças com uma rede selecionada de Universidades locais e reforçar as relações com empresas portuguesas atuando nessa área do globo.
6. Fortalecer as parcerias entretanto constituídas no âmbito da aprovação de várias candidaturas dos vários Pólos e Clusters em que o INESC Porto está envolvido.
7. Robustecer o processo de pré-incubação de empresas spin-off.
8. Identificar e implementar as alterações organizacionais necessárias à adaptação do INESC Porto ao novo estatuto de Fundação da Universidade do Porto e ao novo estatuto e novos Departamentos da FEUP.
9. Consolidar a parceria formada com grupos da FEUP para a constituição de uma associação de esforços na área da Energia e desenvolvimento das atividades necessárias à construção do novo edifício dedicado àquele tema.
10. Comemorar de forma adequada, prestigiante e visível o 25º aniversário da presença do INESC no Porto.

2.2 Resultados alcançados vs. metas

As secções seguintes descrevem sucintamente em que medida se avançou na prossecução destes objectivos, durante o exercício de 2010.

2.2.1 Consolidar o Laboratório Associado

No ano de 2010 efetuaram-se as numerosas negociações necessárias que conduziram, no final do ano, à definição final de uma arquitetura do Laboratório Associado (LA), organizado em torno do INESC Porto, a ser proposta à FCT por ocasião da renovação do contrato de LA.

Este processo suportado por análises de impacto e de estimativa de potencial e riscos, com base inicial numa matriz de avaliação que foi sistematicamente aplicada a todas a Unidades pretendentes a uma

associação, culminou com o acordo para adesão ao LA de mais duas Unidades Associadas, para além das três com as quais já tinham sido estabelecidos acordos (LIAAD, CRACS e UGEI). Estas Unidades são o CISTER, sediado no ISEP, e o HASLab, sediado na Universidade do Minho.

O reconhecimento formal desta nova arquitectura e da adesão das Unidades Associadas está plasmado no Despacho do MCTES de 23 de março de 2011, sobre os Laboratórios Associados.

A adesão do HASLAB ficou condicionada, pelo facto de não ser ainda Unidade de I&D reconhecida e avaliada pela FCT, a posterior avaliação com a classificação mínima de Muito bom ou Excelente. Prevê-se que essa avaliação venha a ocorrer antes do final de 2011.

A configuração final constituirá um LA de grande dimensão, com cerca de 200 doutorados e 600 colaboradores, com massas acima da densidade crítica em várias áreas estruturantes e grande complementaridade. Referem-se, como robustecimentos do LA preparados em 2010, a área dos sistemas embebidos de tempo real e a área das ciências da computação, ultrapassando-se finalmente uma debilidade do INESC Porto recorrentemente referida pela Comissão Científica de Acompanhamento (SAB – Scientific Advisory Board).

Esta ação de consolidação externa coincidiu com uma ação de reforço interno, com a aceitação da fusão do Grupos de robótica do INESC Porto e do ISEP (Instituto Superior de Engenharia do Porto) numa única Unidade do INESC Porto, também aqui se ganhando escala a um ponto que permite considerar existir, nesta área, um futuro muito promissor.

A figura seguinte ilustra a composição do "novo" Laboratório Associado, para o qual está proposta a nova designação de INESC S&T, acrónimo inglês para a versão em português de INESC Ciência e Tecnologia.

A par do vector dimensão, foi trabalhado o vector coesão, verificando-se em 2010 um incremento da ocorrência de projetos conjuntos entre Unidades Associadas e Unidades Nucleares do INESC Porto LA e também um aumento da submissão de projetos através do INESC Porto por parte de Unidades Associadas, em particular o LIAAD e o CRACS, contando-se esta atividade de cooperação por 10 projetos e cerca de €110 mil de proveitos.

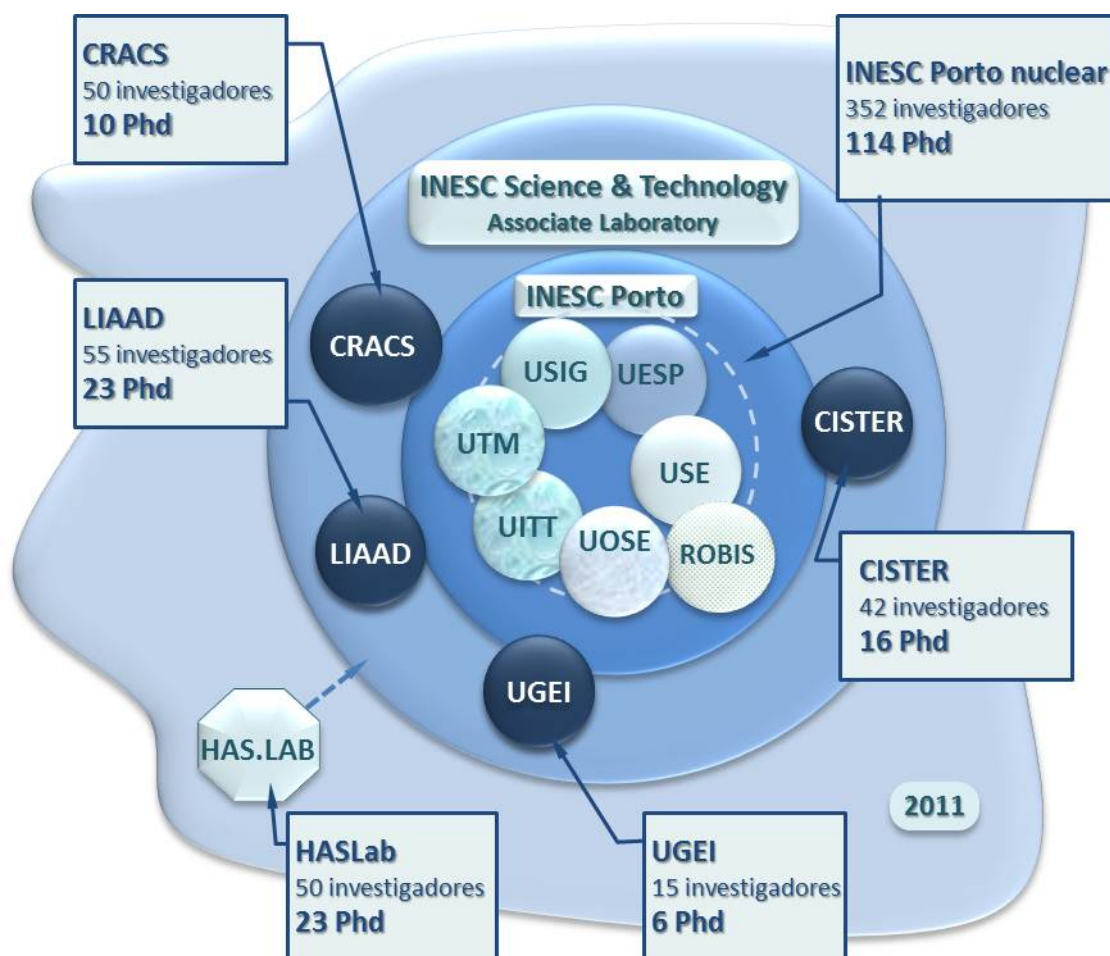


Figura 1 – Arquitetura do Laboratório Associado.

2.2.2 Assegurar o robustecimento científico

Em 2009 foi lançada a ideia de constituição de Linhas de Ação Interunidades (LAI), promovendo uma integração transversal no plano científico, sob sugestão do SAB. Em 2010 entrou em regime de cruzeiro a primeira, no tema da Otimização, e iniciou-se a preparação de uma segunda, no tema *Machine Learning and Signal Processing*. Mas, principalmente, a Direção estabeleceu um modelo claro de financiamento destas ações e delegou a responsabilidade de gestão científica e financeira no Conselho Científico, assegurando as condições para o seu desenvolvimento e estímulo à emergência de novas LAI.

Em paralelo, prosseguiu a ação persuasiva e de estímulo à qualidade científica e à publicação em revistas internacionais. O ano de 2010 permitiu alcançar um novo recorde, tanto em volume global como em publicações per capita, consolidando a imagem de instituição de excelência. A Tabela seguinte mostra a evolução no número de artigos em revista internacional com revisores desde 2002.

2002	2003	2004	2005	2006	2007	2008	2009	2010
12	30	46	61	51	72	79	86	119

Na secção 2.4 encontra-se uma análise mais em detalhe desta vertente.

2.2.3 Redefinir o modelo de sustentação

A análise das contas referentes ao exercício de 2010 demonstra inequivocamente o esforço desenvolvido para fazer evoluir o modelo do INESC Porto num sentido de dupla diversidade – de fontes de financiamento e de origens geográficas de financiamento.

A estrutura de proveitos do INESC Porto mostra uma dependência diversificada das fontes de financiamento. A Figura 2 ilustra o facto de que 30% dos proveitos em projetos terem tido origem em atividade internacional.

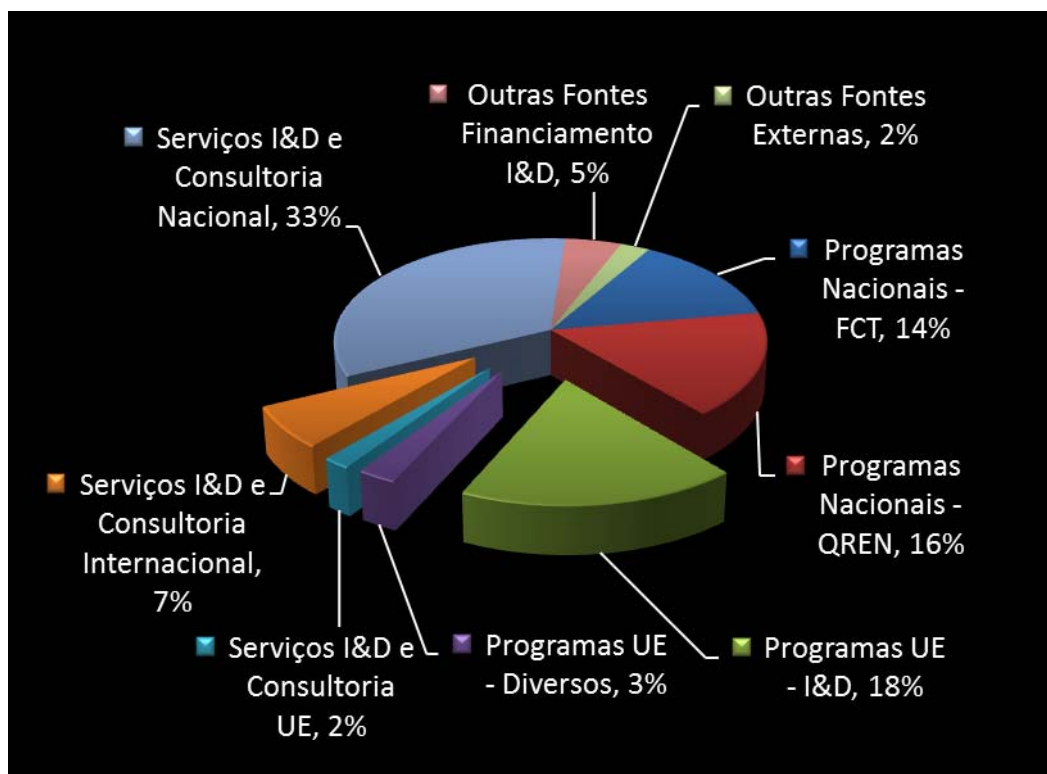


Figura 2 – Repartição dos proveitos de projetos por origem de atividade, evidenciando a fração de 30% de origem internacional.

Da figura pode ainda observar-se que a dependência de atividade em projetos financiados pela FCT é apenas de 14%, o que é de relevar. Por outro lado, a dependência de programas de financiamento nacionais cifra-se em 30% dos proveitos da atividade em projetos.

Esta diversificação constitui uma linha de defesa importante contra sobressaltos de conjuntura, sejam eles de natureza económica, financeira ou política. A ação da Direção do INESC Porto, ao favorecer esta estrutura de proveitos, teve por objetivo fundamental proteger a instituição e conferir-lhe alto grau de imunidade face a ciclos negativos do contexto exterior.

Este modelo deverá ser reforçado e aprofundado no futuro, à medida que se for verificando a efetiva integração das Unidades Associadas externas no Laboratório Associado.

2.2.4 Reforçar a contratação direta

A contratação direta de serviços de I&D e consultoria é a fonte essencial de margens financeiras que permitem financiar autonomamente o INESC Porto e, por isso, a Direção dedicou uma atenção especial a este fator nos últimos anos.

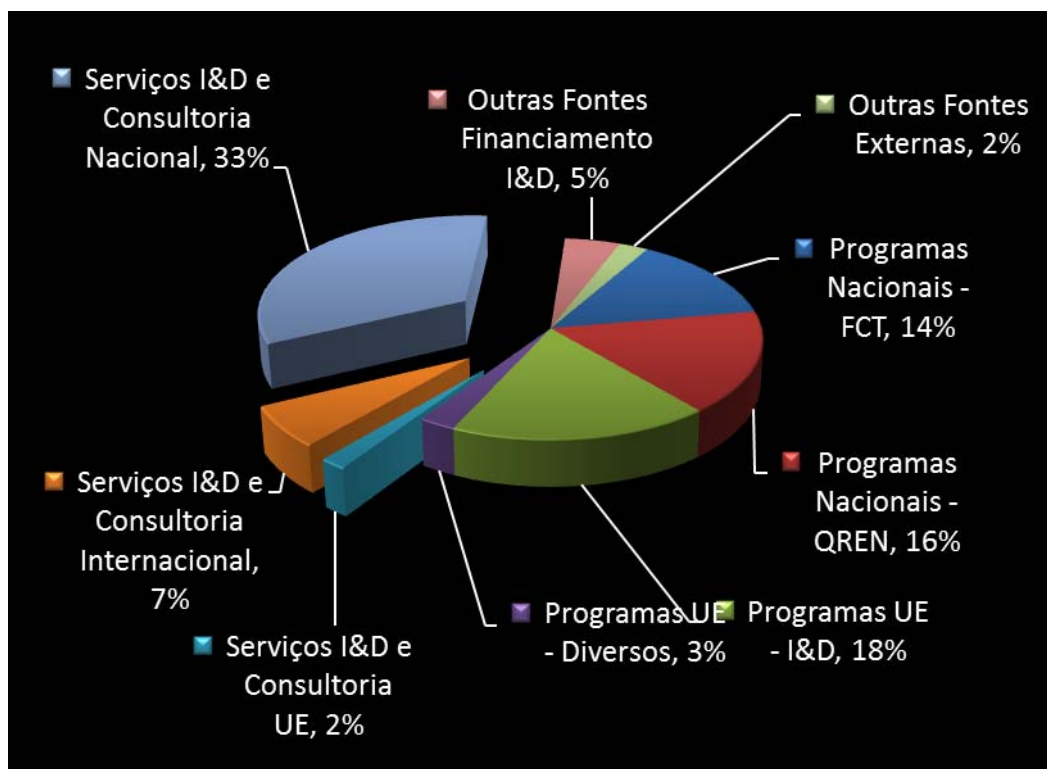


Figura 3 - Repartição dos proveitos de projetos por origem de atividade, evidenciando a fração de 42% associada à contratação direta de I&D.

A Figura 3 ilustra o facto de que, em 2010, 42% dos proveitos em projetos resultaram da contratação direta de serviços de I&D e de consultoria avançada, sendo 9% de atividade de serviços internacional (21% da fração de serviços de I&D, ou seja, da atividade contratada ao INESC Porto sem financiamento direto).

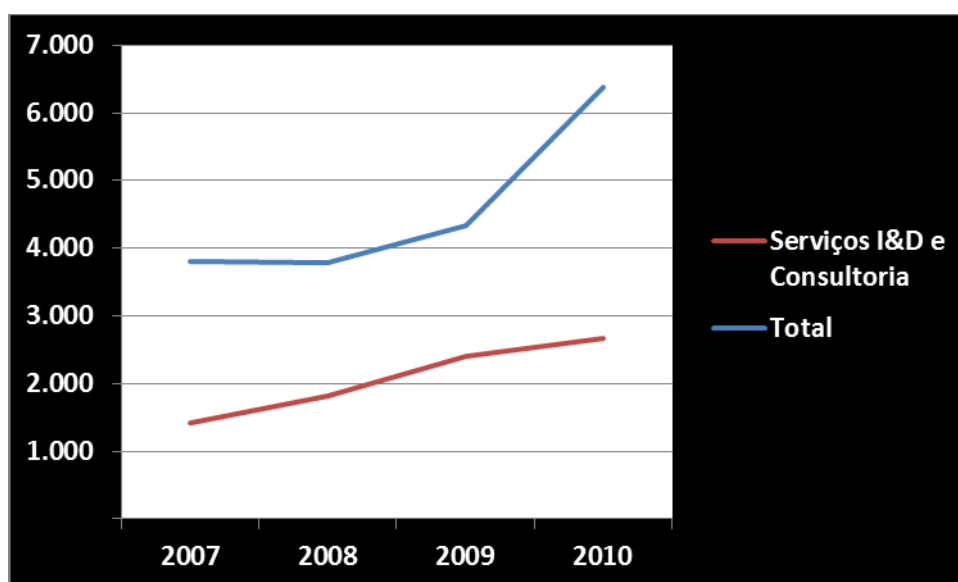


Figura 4 – Variação de proveitos oriundos de contratação direta e de proveitos de projetos totais, nos últimos anos (valores das ordenadas em k€).

Nos últimos 4 anos, assistiu-se a uma progressão sustentada do volume de proveitos derivados da contratação direta de Serviços de I&D e Consultoria Especializada, como se pode apreciar na Figura 4. Os valores registados mostram que, relativamente a 2007, os proveitos de contratação direta tiveram um incremento de 88%, enquanto que o crescimento do total de proveitos foi de 68%. Esta tendência de

crescimento dos proveitos diretos acima do crescimento global, analisada independentemente de oscilações anuais, é um indicador de resultado positivo, conforme ao planeado, da política de gestão implementada.

2.2.5 Constituir o INESC P&D Brasil

O projeto de constituição do INESC P&D Brasil evoluiu a um ritmo muito inferior ao desejado, por causa fundamentalmente de questões burocráticas associadas ao registo do INESC Porto no Brasil como instituição estrangeira sem fins lucrativos.

No entanto, foi possível concitar uma manifestação positiva de interesse por parte da maior parte das Universidades convidadas para se associarem na Rede INESC Brasil, que culminou com a apresentação do projeto ao CNPq em Brasília.

Enquanto se não resolvem as questões burocráticas de registo, a ação da Direção continuou a privilegiar o incremento de projetos de investigação, desenvolvimento e transferência de tecnologia com as Universidades Brasileiras parceiras, estando em curso no final de 2010 vários projetos com financiamento local.

2.2.6 Fortalecer parcerias nos PCT

O INESC Porto participa direta ou indiretamente num número significativo de Pólos e Clusters de Competitividade e Tecnologia, nomeadamente:

- Polo das Tecnologias de Produção - PRODUTECH
- Polo das Tecnologias de Informação, Comunicação e Electrónica – TICE.pt
- Polo da Energia
- Polo da Saúde
- Polo das Indústrias de Base Florestal
- Polo da Moda
- Cluster das Indústrias Criativas
- Cluster do Conhecimento e da Economia do Mar

O ano de 2010 foi o de afirmação dessas iniciativas, uma vez que permitiram estabelecer diversas parcerias que conduziram à submissão e aprovação de diversos projetos mobilizadores no âmbito dos concursos para financiamento do QREN.

Embora aproveitando estas oportunidades de financiamento no curto/médio prazo, espera-se que o efeito de rede que este tipo de iniciativas induz irá perdurar no futuro e permitir uma ainda maior articulação do INESC Porto com o tecido económico e social.

2.2.7 Robustecer a pré-incubação de spin-offs

A atividade na área da pré-incubação de empresas/negócios de base tecnológica, na vertente do apoio ao empreendedorismo, continuou significativa, com base na estrutura designada LET-IN.

Em 2010 foram acompanhados 10 projetos empresariais. O INESC Porto não participa em nenhuma das empresas criadas.

O INESC Porto continua a acompanhar as empresas participadas.

PROJETO-EMPRESA	ATIVIDADE PRINCIPAL
SEGWAY (Projeto)	Turismo e lazer. Desenvolvimento de plataformas de distribuição de conteúdos interactivos
OPOLAB (Empresa)	FABLAB
Tenda na Mala (Empresa)	Indústrias Criativas; Instalações Interactivas aplicadas a artes performativas.

OSTV (Empresa)	Indústrias Criativas; Novo canal de televisão (Opensource TV)
Just Try It (Projeto)	Indústrias Criativas; Digital media :montras e catálogos virtuais
Tools to Change (Empresa)	Indústrias Criativas; Comunicação na área de energia
Riot Films (Empresa)	Indústrias Criativas; Digital media . produção de conteúdos
Red Desert (Empresa)	Indústrias Criativas; Digital media . produção de conteúdos
THOG.com (projeto)	Plataforma para criação de uma rede social associada á industria do golf
Bastidor Público (empresa)	Indústrias Criativas; Utilização de artes performativas a contextos não artísticos. Formação nas áreas de criatividade, liderança, etc. Digital media aplicadas a estratégias de comunicação e distribuição.
Colónia (empresa)	Indústrias Criativas; Plataformas de distribuição.

Foi ainda lançada uma nova *spin-off*, a Prewind, na área da previsão de potência eólica, originada da unidade de Sistemas e Energia e onde o INESC Porto tem uma participação no capital.

2.2.8 Implementar adaptação à nova UP

Neste capítulo não há alterações de substância a assinalar, fundamentalmente porque na Universidade do Porto, no seu novo figurino fundacional, continua ainda a refletir-se sobre o modelo mais apropriado para se relacionar com os institutos de interface.

2.2.9 Consolidar a parceria na Energia

Em 2009, aproveitando o lançamento de medidas de apoio do QREN às Entidades do Sistema Científico e Tecnológico, o INESC Porto apresentou um projeto de constituição de uma Infraestrutura Tecnológica para a Energia Sustentável, implicando a construção de um novo edifício, adjacente à sua sede. Este projeto destina-se a consolidar e desenvolver novas atividades de I&DT a prestar pelo próprio INESC Porto e por quatro unidades de I&D residentes no Campus da FEUP: ISR Porto – Grupo de Electrónica Industrial, CEFT – Centro de Estudos de Fenómenos de Transporte, LEPAE – Laboratório de Engenharia de Processos, Ambiente e Energia e LA LSRE/LCM – Laboratório Associado Laboratório de Processos de Separação e Reação & Laboratório de Catálise e Materiais.

Este projeto mereceu em 2010 a aprovação e atribuição de um financiamento pelo Programa Operacional Regional do Norte (ON2), que ultrapassa os 2,2 milhões de Euros. A este financiamento acrescerá um cofinanciamento do Fundo de Apoio à Inovação do Ministério da Economia, Inovação e Desenvolvimento, aprovado também em 2010, para o Laboratório de Mobilidade Eléctrica a instalar no novo edifício, no valor de 267.000 €.

Na sequência da aprovação do projeto, foram elaborados os projetos de especialidade do novo edifício e foi preparado o concurso público, que acabou por ser lançado já no início de 2011.

Em 2010 e, por iniciativa da nova direcção da FEUP deu-se início à preparação de uma parceria ainda mais alargada a outras unidades de I&D da FEUP, que se pretende assumir a forma de consórcio, com vista à constituição de um Centro de Saber para a Energia Sustentável (CeSES). A criação deste Centro de Saber, terá como semente a Infraestrutura Tecnológica para a Energia Sustentável, pretendendo-se procurar agregar neste Centro, numa lógica de complementaridade, várias competências do domínio da Energia e Sustentabilidade que residem na FEUP em vários Institutos de Interface e Unidades de Investigação.

2.2.10 Comemorar os 25 anos de INESC no Porto

A comemoração dos 25 anos de INESC no Porto revestiu-se de dignidade e teve dois momentos importantes: o workshop/convívio organizado no Luso e a sessão comemorativa final.

O workshop/convívio, mais do que um momento de confraternização e lúdico, permitiu lançar importantes linhas de debate interno sobre o futuro do INESC Porto, envolvendo as gerações mais novas nas discussões em 4 sessões temáticas importantes. Dos grupos moderadores destas sessões emergiu uma comissão que, para além de redigir as conclusões do encontro, se propôs continuar a discussão e produziu documentos importantes que têm sido levados seriamente em consideração pela Direção, na sua reflexão sobre a reforma do modelo organizativo e de gestão da instituição.

A sessão final, graças a um figurino propositadamente concebido, permitiu evidenciar à sociedade e ao poder político aspetos de grande impacto que a atividade do INESC Porto teve em setores da indústria (calçado, geração/distribuição de energia, fabrico de bens de equipamento) e da administração pública, através da voz dos protagonistas-clientes do *know-how* dos cientistas e técnicos do INESC Porto. Mais do que falar em causa própria, foi importante escutar como os parceiros do INESC Porto (APPICAPS, EDP, EFACEC, CCDRN) viram a ação do instituto e como relataram, de forma marcante, a importância e impacto da colaboração de anos.

Os 25 anos do INESC no Porto foram, assim, comemorados reforçando a imagem de que a instituição tem, efetivamente, produzido investigação socialmente relevante, cumprindo portanto a missão que os associados lhe destinaram.

2.3 Outros resultados a relevar

2.3.1 Atividade em projetos sob programas de financiamento

A mostra a evolução, desde 2002, do número de projetos no INESC Porto executados em simultâneo, financiados pelos programas da FCT.

TABELA I – NÚMERO DE PROJETOS FINANCIADOS PELA FCT EM CADA ANO, DESDE 2002

Ano	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
N. projetos	8	12	21	27	22	27	26	30	50	223

Com um número de 50 projetos em 2010, cada projeto representou, em média, um proveito de 18 k€ por doutorado.

A Tabela II mostra, por seu lado, por programa europeu e por programa-quadro (FP), o número e projetos em execução em simultâneo no INESC Porto. Na atividade em projetos europeus observa-se em 2010 a conclusão dos desenvolvidos no âmbito do FP6 e o forte arranque dos já financiados no âmbito do FP7. O INESC Porto continua a ser uma das instituições científicas nacionais com participação em maior número de projetos europeus.

Com um número de 20 projetos em 2010, cada projeto representou, em média, um proveito de 66 k€ por doutorado.

TABELA II – NÚMERO DE PROJETOS EUROPEUS EM EXECUÇÃO SIMULTÂNEA EM CADA ANO, DESDE 2002

Ano		2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
FP5	IST	16	10	5							31
	GROWTH	1	1	1							3
	INNOVATION	1	1	1							3
	NNE	3	2								5
	@LIS		1	1	1	1					4
	RTN	1	1	1							3
FP6	IST		3	7	8	11	11	8	3	1	52
	NMP			2	2	3	2				9
	AEROSPACE			1	1	1	1				4
	INNOVATION			1	1	1	1	1			5
	SME				1	1	1				3
	SUSTEDEV					2	2	3	2	1	10
	MOBILITY			1	1	1	1				4
TEMPUS					1	1	3	3	2	1	11
FP7	NMP							1	5	6	12
	TRANSPORT								1	1	2
	ICT									3	3
	ENERGY									2	2
AAL									1	1	2
SPC. EC INICIATIVE										1	1
CIP	ICT-PSP								1	2	3
Outros							1	4	4	1	10
Total		22	19	21	16	22	23	20	19	20	182

Estes números de proveitos por projeto são apenas indicativos de ordem de escala das atividades nacionais vs. Europeias, pois o número de projetos não se refere a projetos novos, mas sim a projetos em curso e os valores são anuais e não por projeto. Porém, a evidência é clara: cada projeto europeu, com menor *overhead* administrativo, corresponde a um proveito de escala superior a cada projeto nacional.

Os números de projetos em 2010 demonstram, além disso, que o instituto progrediu em volume de atividade e demonstrou manter em bom grau a capacidade de angariação de novos contratos.

2.4 Produtividade científica

Os indicadores de atividade científica refletem o crescimento da atividade na linha da manutenção de um elevado padrão de qualidade. De entre os vários indicadores, toma-se para exemplo o das publicações em revistas internacionais, que registou uma nova aceleração, atingindo um valor superior a uma centena pela primeira vez (119), com uma taxa de crescimento excepcional.

Os gráficos seguintes (Figura 5 e Figura 6) ilustram o crescimento, desde 2002, do número de artigos publicados em revistas internacionais e em conferências, com identificação das Unidades de investigação contribuintes. Os números de 2010, com um acentuado incremento, mantêm todavia um padrão de anos anteriores: a produção de sensivelmente um artigo em revista por cada dois em apresentados em conferência, o que é uma relação apreciada como adequada.

ARTIGOS EM REVISTAS INTERNACIONAIS

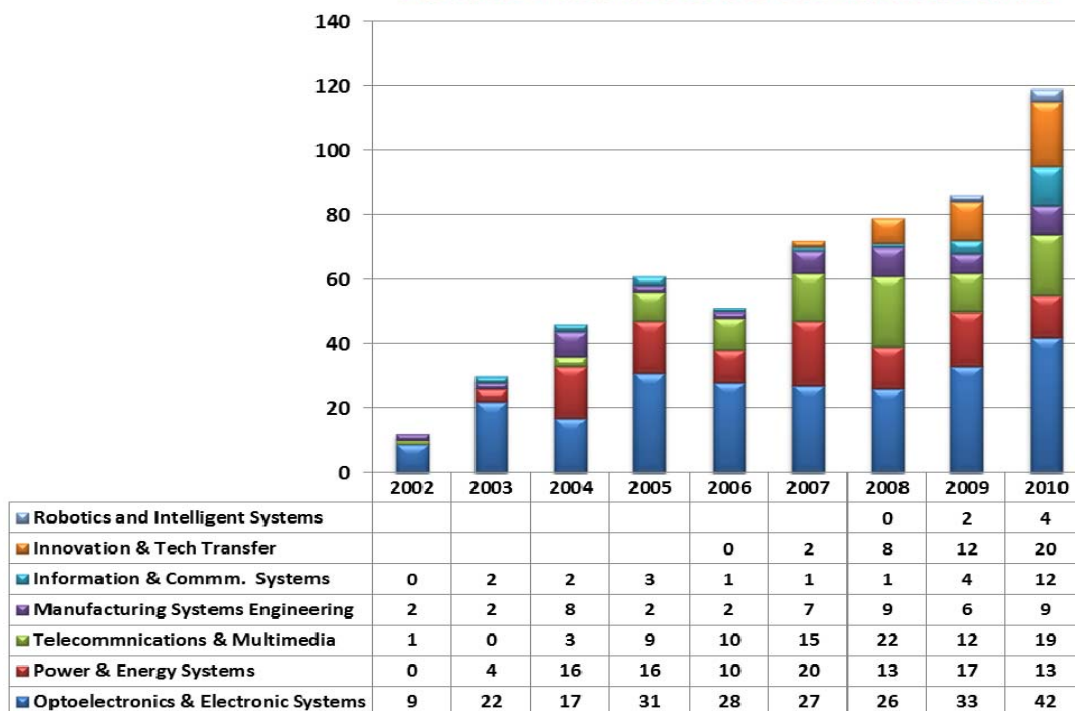


Figura 5 – Evolução do volume de publicação em revistas internacionais desde 2002

ARTIGOS EM CONFERÊNCIAS

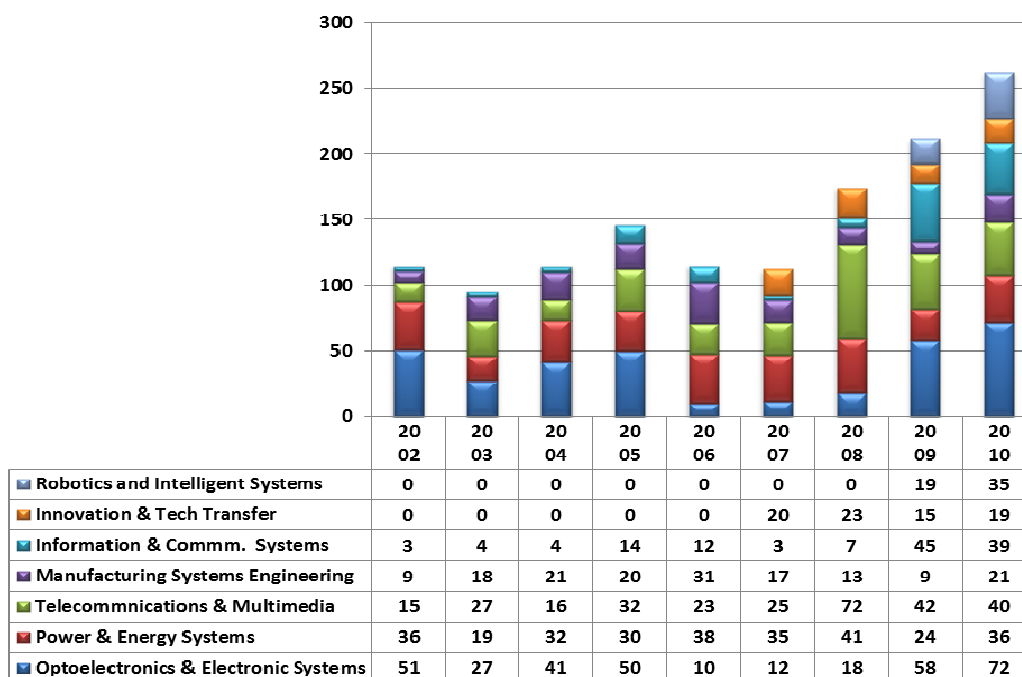


Figura 6 - Evolução do volume de publicação em conferências desde 2002

2.5 Recursos humanos qualificados e produtividade

O crescimento em número de doutorados integrados no INESC Porto manteve a tendência sustentada da década, como demonstra a tabela seguinte.

TABELA III – EVOLUÇÃO DO NÚMERO DE DOUTORADOS INTEGRADOS NO INESC PORTO E PRODUTIVIDADE CIENTÍFICA

Ano	2002	2003	2004	2005	2006	2007	2008	2009	2010
N. doutorados	53	57	61	69	75	82	85	104	111
artigos revistas intern.	12	30	46	61	51	72	79	86	119
per capita bruto	0,23	0,53	0,75	0,88	0,68	0,88	0,93	0,83	1,07
per capita compensado	0,34	0,79	1,13	1,33	1,02	1,32	1,39	1,24	1,61

O INESC Porto, com o apoio do seu SAB (Scientific Advisory Board), tem defendido que o cálculo da produtividade científica tem que ter em conta o perfil da instituição, que desenvolve também uma relevante ação de transferência de tecnologia e valorização de conhecimento – a demonstrá-lo, a percentagem de proveitos da atividade de projetos associada à contratação direta pela indústria, que se cifra em 42% neste exercício. Por isso, tem-se sustentado a construção de um indicador de produção *per capita* compensado, assumindo que cerca de 1/3 do esforço dos doutorados na instituição se reflete em atividades que não são de geração básica de conhecimento, mas sim de investigação aplicada e desenvolvimento tecnológico para empresas.

A Tabela III demonstra que, sob o ponto de vista do índice corrigido, desde 2004 que o INESC Porto ultrapassou a fasquia, internacionalmente relevante em engenharia eletrotécnica e de computadores, de 1 artigo em revista internacional por doutorado por ano. Igualmente se pode apreciar que o indicador *per capita* bruto, pela primeira vez, também ultrapassa esse valor, o que robustece o INESC Porto face às análises inevitáveis associadas a processos de avaliação institucional, nomeadamente as que a FCT regularmente promove.

A Tabela IV, por seu lado, apresenta a evolução da produtividade referida a proveitos de atividade em projetos *per capita*, referida ao número de doutorados integrados na instituição. Verifica-se um aparente progressivo declínio desse índice nos últimos anos, seguido de uma forte inversão em 2010. Na verdade, deverá interpretar-se esta evolução no sentido de começarem a emergir, em 2010, os resultados de uma política sustentada de reforço da capacidade e competência do INESC Porto. O crescimento da qualificação dos investigadores, visível no aumento do número de doutorados, tem agora tradução não apenas no crescimento do valor bruto dos proveitos da atividade direta mas também, em 2010, no da produtividade.

TABELA IV – PRODUTIVIDADE DE PROVEITOS DE PROJETOS REFERIDA AO NÚMERO DE DOUTORADOS

Ano	2007	2008	2009	2010
N. doutorados	82	85	104	111
Proveitos de projetos (k€)	3798	3787	4337	6374
Proveitos <i>per capita</i> (k€/dout.)	46,3	44,6	41,7	57,4

2.6 Pós-graduação e internacionalização

Foi dada continuidade a relações já anteriormente estabelecidas na área do intercâmbio de estudantes de pós-graduação, com diversas instituições estrangeiras. O resultado deste trabalho é visível no número de colaboradores estrangeiros na instituição a 31 de Dezembro de 2010: 67, dos quais 46 são bolseiros.

A diversidade de origem destes bolseiros está patente na Figura 7, à qual não será alheio o êxito de visibilidade do Boletim do INESC Porto – BIP, referida com mais detalhe na secção 2.12.

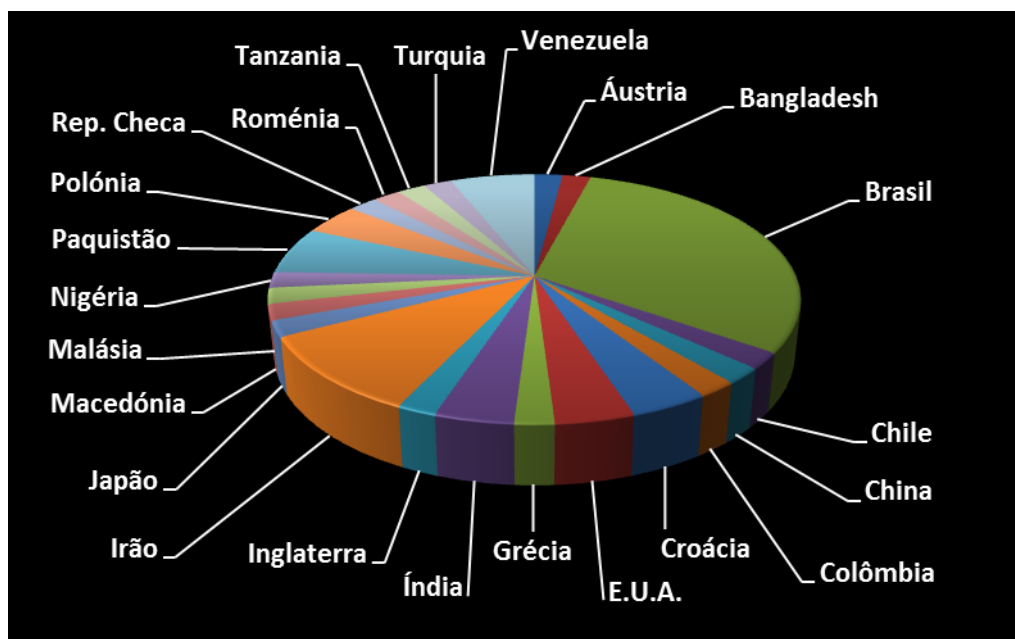


Figura 7 – Origem dos bolsеiros estrangeiros no INESC Porto em 2010

2.7 Novas parcerias estratégicas

No que se refere a parcerias, foram desenvolvidas diversas iniciativas no sentido de fortalecer a rede de contactos nacionais e internacionais do INESC Porto, entre as quais se destacam as seguintes:

- Protocolo com a EEM – Empresa de Electricidade da Madeira, com vista à realização de ações de cooperação ;
- Protocolo com o Município de Santa Maria da Feira e a Fundação Calouste Gulbenkian, com vista à criação e implementação de uma plataforma colaborativa com o objectivo de aumentar e qualificar o acesso às TIC pela população sénior do concelho de Santa Maria da Feira;
- Protocolo de Colaboração com a FEUP, no âmbito da realização de Dissertações de Mestrado (DAE) no INESC Porto;

2.8 Ação da Comissão Científica de Acompanhamento

Em 2010, completou-se um processo esperado desde há alguns anos de avaliação do Laboratório Associado pela FCT, tendo-se concluído pela renovação do reconhecimento do estatuto e respetivo contrato, sem emissão de uma classificação concreta, a qual será atribuída numa próxima ronda de avaliação.

Para o desfecho deste processo, muito contribuiu a Comissão Científica de Acompanhamento (SAB – Scientific Advisory Board), apoiando uma visão positiva da ação do INESC Porto com pareceres oportunos.

2.9 Laboratório Associado: reforço de capacidade científica

Aproximando-se o termo de um período de 3 anos de contratação de doutorados ao abrigo de vários programas, seja contratação a título de Laboratório Associado seja pelo programa Ciência 2008, a Direção do INESC Porto organizou um procedimento de avaliação de desempenho dos mesmos, com base em matrizes de avaliação incidindo no desempenho passado e no potencial para atividade futura.

Deste procedimento resultaram decisões de celebração de contratos sem termo, mas igualmente de não renovação, tendo por motivo a não correspondência entre os desempenhos observados e as expectativas originalmente formadas em cada caso.

Este procedimento é mais um de vários que a Direção promoveu no sentido de manter, no INESC Porto, uma cultura de monitorização de desempenho e de metas de qualidade.

2.10 Laboratório Associado: atividade geral

O INESC Porto participou ainda ativamente nas reuniões do Conselho de Laboratórios Associados (CLA), por manter o entendimento de que esse organismo reforça o necessário diálogo entre instituições portuguesas e permite a emergência de um quadro de ação comum que ultrapassa os interesses particulares.

O INESC Porto continuou a receber, na sua qualidade de Laboratório Associado, solicitações para dar pareceres ou prestar aconselhamento a diversas entidades públicas, em áreas científico-tecnológicas e de organização e gestão, com especial destaque das energias renováveis e no sistema nacional de ciência, tecnologia e inovação.

2.11 Programas de parceria internacional

O INESC Porto manteve a sua presença nos programas de parceria internacional da FCT com o MIT, CMU e Universidade do Texas em Austin, ao nível da gestão operacional, da participação em orientações de doutoramento, em projetos de I&D e em outras iniciativas.

São os seguintes os programas em que os investigadores do INESC Porto têm envolvimento substancial, quer através da FEUP quer através da ligação direta do INESC Porto com as Universidades parceiras:

MIT

- Sustainable Energy Systems - PDSSE (PhD program)
- Leaders for Technological Industries (PhD program)
- Technology Management Enterprise (MSc program)
- Complex Transportation Infrastructure Systems (MSc program)

CMU

- MAP I (Joint PhD program on Informatics: Universidade do Minho, Aveiro e Porto)
- MAP Tele (Joint PhD program on Telecommunications: Universidade do Minho, Aveiro e Porto)
- PDEEC (Programa doutoral em Engenharia electrotécnica e de Computadores)

UT Austin

- Digital Media (PhD, MSc programs and Professional Master)
- University Enterprise Technology Network (Training Workshops, Internships in USA and Science & Technology Commercialization)

2.12 Comunicação, coesão interna e imagem externa

Em 2010 a atividade do Serviço de Comunicação foi marcada por diversas iniciativas que assinalaram a comemoração do 25º aniversário do INESC no Porto, desde logo pela criação de uma imagem gráfica associada reproduzida em variados suportes de comunicação, tais como a brochura dos 25 anos e o merchandising de artigos comemorativos. O maior destaque vai, no entanto, para o workshop/convívio organizado no Luso e para a exposição “INESC Porto - 25 anos de Valorização do Conhecimento e Transferência de Tecnologia” e o workshop “O impacto Económico do Investimento em Ciência”, já anteriormente referidos.

Outra iniciativa relevante da comemoração dos 25 anos foi a exposição “I Am Science”, apresentada no INESC Porto pelos alunos do Mestrado em Design da Imagem da Faculdade de Belas Artes da Universidade do Porto, que produziram sistemas de visualização de conteúdos científicos, entrevistaram nos espaços do laboratório de investigação e constituíram reportórios de imagens documentais.

Graças à ação do Serviço, foi também possível promover uma presença mais constante e direcionada do INESC Porto na comunicação social. Um serviço de monitorização contratado para o efeito contabilizou 349 notícias sobre o INESC Porto nos órgãos dos média principais de Portugal, em 2010.

O Boletim do INESC Porto – BIP, disponível em inglês no website do INESC Porto e divulgado em Faculdades e Universidades de muitos países, bem como o próprio website diariamente atualizado afirmam-se como os instrumentos mais válidos e eficazes de que a instituição dispõe atualmente para comunicar com o exterior, representando assim poderosos veículos de disseminação das atividades do INESC Porto.

Contagens de acessos ao BIP pelo Google Analytics permitem aferir o impacto real que este instrumento de comunicação tem. No período de fevereiro de 2010, o Boletim recebeu 1714 visitas, com acesso de 1283 diferentes pessoas de 45 países. Em fevereiro de 2011, este número foi de 7886 acessos (1394 visitantes de 50 países, sendo os mais frequentes Portugal, Brasil, Roménia, USA, Alemanha, Reino Unido, Holanda, Espanha, República Checa e Canadá).

De referir ainda o novo DVD institucional do INESC Porto, finalizado em maio, que se assumido como um importante instrumento de comunicação das atividades do INESC Porto, projetando uma imagem de prestígio e inovação.

O Serviço de Comunicação assumiu a responsabilidade de organizar a participação do INESC Porto, durante 2010, em eventos que promoveram a sua imagem no exterior, como foi o caso da Mostra Portugal Tecnológico ou da Mostra da Universidade do Porto. De realçar ainda os esforços empreendidos no sentido da divulgação de Ciência ao Público em geral, em estreita colaboração com a Porto Cidade Ciência (Câmara Municipal do Porto), onde se destaca a participação no Roteiro das Novas Tecnologias e no Serão da Bonjóia.

Manteve-se o esforço de organização e acompanhamento de visitas de empresas/instituições e de alunos ao INESC Porto e a colaboração com o Ciência Viva na divulgação da Ciência aos mais jovens, nomeadamente através da receção de alunos num programa de iniciação ao empreendedorismo desenvolvido no âmbito da iniciativa “Ocupação Científica nas Férias – Jovens Ciência Viva nos Laboratórios”, ou do acolhimento de um artista na segunda edição do programa “Rede de Residências”.

Com o objetivo de reforçar a coesão interna, a instituição continuou a promover em 2010 a realização de atividades de grupo, tais como o concurso de fotografia, torneio de futebol, magusto e convívio de Fim de Ano/lanche multicultural.

Finalmente, importa referir o apoio prestado ao nível da tradução e revisão de textos (Português>Inglês e Inglês>Português) nas diferentes áreas de investigação, incluindo documentos relacionados com projetos ou outros trabalhos de índole científica.

2.13 Atividades de valorização de resultados de I&D e de conhecimento e de transferência de tecnologia

A UITT continuou a registar uma interessante procura das suas competências e dos respectivos serviços pelo mercado, quer na vertente de consultoria, quer no âmbito da pré-incubação de empresas.

A intervenção externa do INESC Porto na vertente de formação em transferência e comercialização de tecnologia, já iniciada, manteve-se face ao papel ativo de investigadores e contratados seus no MIET (Mestrado em Inovação e Empreendedorismo Tecnológico), no Cohitec (promovido pela COTEC) e nas ações de formação e treino de âmbito internacional levadas a cabo pela UTEN (University Technology Enterprise Network), programa incluído nas parcerias internacionais da FCT, inicialmente lançado com a Universidade do Texas em Austin e que, em 2008, foi estendido ao MIT, CMU, Instituto Fraunhofer, CERN e Universidade de Cambridge.

3 Dados consolidados do INESC Porto e das suas atividades

3.1 Recursos Humanos

3.1.1 Indicadores de Recursos Humanos em 31 Dezembro 2010

O quadro seguinte mostra a estrutura de recursos humanos afectos ao INESC Porto, com desagregação por estrutura organizativa interna e tipo de ligação.

Estrutura Organizativa Interna			Tipo de Ligação								Total Global
			Recursos Humanos Integrados						Colaboradores e Convidados I&D	Estudantes Formação Inicial	
			I&D				Contratados Estrutura Central e Local	Total Integrados			
			Contratados	Docentes Ensino Superior	Bolseiros e Estagiários	Total I&D					
I&D	Unidades e Grupos INESCP Nuclear	UESP	13	14	25	52	2	54	5	0	59
		UITT	1	6	2	9	1	10	3	0	13
		UOSE	10	11	28	49	3	52	6	8	66
		USE	3	12	35	50	2	52	6	3	61
		USIG	8	12	24	44	1	45	6	0	51
		UTM	3	27	58	88	2	90	13	13	116
		ROBIS	0	10	14	24	0	24	0	0	24
		Sub-Total	38	92	186	316	11	327	39	24	390
	Grupos Associados INESCP LA	CRACS	1	9	9	19	1	20	0	1	21
		LIAAD	0	13	6	19	0	19	3	0	22
		UGEI	0	0	0	0	0	0	0	0	0
		Sub-Total	1	22	15	38	1	39	3	1	43
	Projetos Especiais	DNN	1	0	0	1	0	1	0	0	1
		INESCBR	1	0	0	1	0	1	0	0	1
		UTEN	0	0	0	0	2	2	0	0	2
		Outros	0	0	2	2	0	2	0	0	2
	Sub-Total	2	0	2	4	2	6	0	0	6	
	Total I&D			41	114	203	358	14	372	42	25
Estrutura Central	Direção Alargada		0	0	6	0	6	4	10	0	0
	Serviços de Apoio	DIL	0	0	0	0	17	17	0	0	17
		SCI	0	0	0	0	3	3	0	1	4
		SCOM	0	0	0	0	3	4	0	0	4
		SGI	0	0	0	0	4	4	0	0	4
		SIG	0	0	1	1	2	3	0	0	3
		Sub-Total	0	0	1	1	29	31	0	1	32
	Total Estrutura Central		0	6	1	7	34	41	0	1	42
TOTAL GLOBAL			41	120	204	365	48	413	42	26	481

3.1.2 Evolução Anual de Indicadores de Recursos Humanos

O quadro seguinte evidencia particularmente o crescimento de recursos humanos nos últimos anos, em conformidade com as explicações de evolução da actividade fornecidas noutras secções deste relatório.

Tipo de ligação	Número em Dezembro 2008	Número em Dezembro 2009	Número em Dezembro 2010	Variação (*)
Docentes do Ensino Superior	99	108	120	9
Contratados	73	94	88	17
Bolseiros	104	115	177	11
Outros	63	90	96	31
TOTAL	339	407	481	68

3.2 Atividade Contratual

3.2.1 Projetos com Atividade durante o ano de 2010

*Número de Projetos com Atividade em 2010
(Fonte de Financiamento vs. Tipo de Atividade Dominante)*

Fonte de Financiamento	Tipo de Atividade Dominante									Total
	Investigação Básica	Investigação Aplicada e Desenvolvimento	Consultoria	Transferência Tecnologia	Rede Cooperação	Conferência	Formação Avançada	Incubação	Outro	
Programas Nacionais - FCT	49			1						50
Programas Nacionais - QREN	9	22	1		1					33
Programas UE - I&D	12	1								13
Programas UE - Diversos	3	2					1		1	7
Serviços I&D e Consultoria Nacional		14	62	2	1					79
Serviços I&D e Consultoria União Europeia		1	3							4
Serviços I&D e Consultoria Internacional		6	1							7
Outras Fontes Financiamento I&D	2	3	1		1		2		1	10
Outras Fontes Externas						1	1	1		3
Interno	2	1							3	6
TOTAL	77	50	68	3	3	1	4	1	5	212

*Número de Projetos com Atividade em 2010
(Fonte de Financiamento vs. Unidade)*

Tipologia de Projeto		Unidades e Grupos INESCP								Unidades e Grupos Associados			Projetos Especiais	Total Global
		UESP	UITT	UOSE	USE	USIG	UTM	ROBIS	Total INESCP Nuclear	CRACS	LIAAD	Total Grupos Associados	PE	
Fonte de Financiamento	Programas Nacionais - FCT	6		16	3	3	12	2	42	4	3	7	1	50
	Programas Nacionais - QREN	6	5	3		5	11	2	32		1	1		33
	Programas UE - I&D	6			3	1	3		13					13
	Programas UE - Diversos	1		1	1	4			7					7
	Serviços I&D e Consultoria Nacional	19	9	5	20	14	7		74	1		1	4	79
	Serviços I&D e Consultoria União Europeia	1			3				4					4
	Serviços I&D e Consultoria Internacional			1	3			2	6		1	1		7
	Outras Fontes Financiamento I&D			3	2	2	2		9				1	10
	Outras Fontes Externas		1	1	1				3					3
	Interno		1					1	2				4	6
Tipo de Atividade Dominante	Investigação Básica	15	3	18	6	9	16	2	69	4	3	7	1	77
	Investigação Aplicada e Desenvolvimento	7	2	7	8	7	12	4	47		2	2	1	50
	Consultoria	17	10		20	12	5		64	1		1	3	68
	Transferência Tecnologia			1		1			2				1	3
	Rede Cooperação			1			1		2				1	3
	Conferência			1					1					1
	Formação Avançada				2		1		3				1	4
	Incubação		1						1					1
	Outro			2				1	3				2	5
Estado de Execução	Iniciado	7	5	11	13	10	15	5	66	5	1	6	4	76
	Em curso	14	9	9	12	11	12	2	69		4	4	5	78
	Concluído	18	2	10	11	8	8		57				1	58
Total		39	16	30	36	29	35	7	192	5	5	10	10	212

3.2.2 Indicadores de proveitos Projetos com Atividade durante o ano de 2010

Proveitos de Projetos com Atividade em 2010
 (Fonte de Financiamento vs. Tipo de Atividade Dominante vs Unidade)

Tipologia de Projecto		Unidades e Grupos INESCP									Unidades e Grupos Associados				Projectos Especiais		Total (k€)	Distribuição Global (%)
		UESP	UITT	UOSE	USE	USIG	UTM	ROBIS	Sub-Total (k€)	Distribuição (%)	CRACS	LIAAD	Sub-Total (k€)	Distribuição (%)	PE	Distribuição (%)		
Fonte de Financiamento	Programas Nacionais - FCT	72		116	33	40	133	50	444	7,7%	28	42	70	65%	373	75%	887	14%
	Programas Nacionais - QREN	149	50	93		254	419	72	1.037	18%		15	15	14%			1.052	17%
	Programas UE - I&D	525			327	111	191		1.154	20%							1.154	18%
	Programas UE - Diversos	32		7	5	120			164	2,8%							164	2,6%
	Serviços I&D e Consultoria Nacional	634	169	187	538	348	113		1.989	34%	16		16	15%	123	25%	2.128	33%
	Serviços I&D e Consultoria União Europeia	17			99				116	2,0%							116	1,8%
	Serviços I&D e Consultoria Internacional			66	265			80	411	7,1%		7	7	6%			418	6,6%
	Outras Fontes Financiamento I&D			14	194	21	68		297	5,1%					1	0%	298	4,7%
	Outras Fontes Externas		12	129	16				157	2,7%							157	2,5%
Tipo de Actividade Dominante	Investigação Básica	690	7	145	360	333	433	50	2.018	35%	28	42	70	65%			2.088	33%
	Investigação Aplicada e Desenvolvimento	333	36	317	472	228	388	152	1.926	33%		22	22	20%			1.948	31%
	Consultoria	406	176		624	325	67		1.598	28%	16		16	15%	86	17%	1.700	27%
	Transferência Tecnologia			5		8			13	0,2%					373	75%	386	6,1%
	Rede Cooperação			3			29		32	0,6%					37	7%	69	1,1%
	Conferência			129					129	2,2%							129	2,0%
	Formação Avançada				21		7		28	0,5%					1	0%	29	0,5%
	Incubação		12						12	0,2%							12	0,2%
	Outro			13					13	0,2%							13	0,2%
Estado de Execução	Iniciado	250	102	148	858	325	370	173	2.226	39%	44	20	64	59%	408	82%	2.698	42%
	Em curso	864	106	201	396	449	430	29	2.475	43%		44	44	41%	88	18%	2.607	41%
	Concluído	315	23	263	223	120	124		1.068	19%					1	0%	1.069	17%
Total (k€)		1.429	231	612	1.477	894	924	202	5.769		44	64	108		497		6.374	
Total Unidade-Grupo / Total Global (%)		22%	3,6%	9,6%	23%	14%	14%	3,2%	91%		0,7%	1,0%	1,7%		7,8%		100%	
Total Projectos INESCP		1429	231	578	1477	847	631	144	5.337	93%	44	64	108	100%	497	100%	5.942	93%
Total Projectos IES Associadas (*)				34		47	293	58	432	7,5%				0%		0%	432	6,8%
Total Proj. IES Assoc. / Total Unidade-Grupo (%)		0%	0%	5,6%	0%	5,3%	32%	29%	7,5%		0%	0%	0%		0%		6,8%	
Margem Projectos Total (k€)		723	91	173	1010	302	491	75	2.865		14	9	23		68		2.956	

3.2.3 Evolução anual de indicadores de atividade contratual

Os quadros de número e proveitos de projetos espelham de forma inequívoca o crescimento da actividade de I&D referida ao longo deste Relatório.

Número de Projetos com Atividade em cada Ano

Fonte de Financiamento	Ano				Variação 2009 - 2010
	2007	2008	2009	2010	
Programas Nacionais	49	49	44	83	89%
Programas União Europeia	23	20	19	20	5%
Serviços I&D e Consultoria	47	70	78	90	15%
Outras Fontes Financiamento I&D				10	
Outras Fontes Externas	4	6	9	3	-67%
Interno			1	3	200%
Total	123	145	151	209	38%

Proveitos de Projetos por Ano (k€)

Fonte de Financiamento	Ano				Variação 2009 - 2010
	2007	2008	2009	2010	
Programas Nacionais	862	812	1.028	1.939	89%
Programas União Europeia	1.522	1.146	838	1.318	57%
Serviços I&D e Consultoria	1.414	1.823	2.411	2.662	10%
Outras Fontes Financiamento I&D				298	
Outras Fontes Externas		7	60	157	162%
Total	3.798	3.787	4.337	6.374	47%

Proveitos de Projetos por Ano e Unidade (k€)

Ano	Fonte de Financiamento	Unidades e Grupos INESCP								Unidades e Grupos Associados			Projetos Especiais	Total (k€)
		UESP	UITT	UOSE	USE	USIG	UTM	ROBIS	Sub-Total (k€)	CRACS	LIAAD	Sub-Total (k€)	PE	
2008	Programas Nacionais	261	30	173	62	75	106		706				106	812
	Programas União Europeia	246		52	146	138	558		1.140				6	1.146
	Serviços I&D e Consultoria	286	169	238	596	490	43		1.823					1.823
	Outras Fontes Financiamento I&D													
	Outras Fontes Externas			5		2			7					7
	Total (k€)	793	199	468	804	705	707		3.675				113	3.787
2009	Programas Nacionais	77	28	171	16	242	398		932				96	1.028
	Programas União Europeia	425		25	155	39	178		822				16	838
	Serviços I&D e Consultoria	472	70	194	924	590	105		2.355				57	2.412
	Outras Fontes Financiamento I&D													
	Outras Fontes Externas	2	8		17		33		60					60
	Total (k€)	976	106	390	1.112	871	714		4.169				169	4.338
2010	Programas Nacionais	221	50	209	33	294	552	122	1.481	28	57	85	373	1.939
	Programas União Europeia	557		7	332	231	191		1.318					1.318
	Serviços I&D e Consultoria	651	169	253	902	348	113	80	2.516	16	7	23	123	2.662
	Outras Fontes Financiamento I&D			14	194	21	68		297				1	298
	Outras Fontes Externas		12	129	16				157					157
	Total (k€)	1.429	231	612	1.477	894	924	202	5.769	44	64	108	497	6.374
Variação 2009 - 2010	Programas Nacionais	187%	79%	22%	106%	21%	39%		59%				289%	89%
	Programas União Europeia	31%		-72%	114%	492%	7%		60%				-100%	57%
	Serviços I&D e Consultoria	38%	141%	30%	-2%	-41%	8%		7%				116%	10%
	Outras Fontes Financiamento I&D													
	Outras Fontes Externas	-100%	50%		-6%		-100%		162%					162%
	Total	46%	118%	57%	33%	3%	29%		38%				194%	47%

3.2.4 Lista de Projetos do ano de 2010

Unit / Group	Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
				Source	Programme	Project Typology	Type	Role INESCP	Start	Status 2009-12
UESP	PMCOLNET	António Lucas	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2007-10	FIN
UESP	Crome	José Soeiro Ferreira	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2007-11	FIN
UESP	Cogninet	António Lucas	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-03	START
UESP	Coordinator	Ana Viana	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-06	START
UESP	EaGLEst	António Miguel	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-04	START
UESP	NODES	João Claro	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-04	FIN
UESP	SIBAP	Rui Diogo Rebelo	RES	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-11	CONT
UESP	Agilplan	Rui Diogo Rebelo	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2008-09	FIN
UESP	Dinamic	António Correia	DEV	PROG - EU	INTERREG		EU	PAR	2009-01	CONT
UESP	Minerva	Paula Silva	RES	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-02	CONT
UESP	Fadis-1	Luís Carneiro	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-07	CONT
UESP	Shoe-ID	Rui Diogo Rebelo	RES	PROG - NAT	POR Norte	PROJ CO-PROM	NAT	PAR	2009-10	CONT
UESP	REMobi	Jorge Pinho de Sousa	RES	PROG - NAT	POFC / POR		NAT	PAR	2009-04	CONT
UESP	AC-DC	Jorge Pinho de Sousa	RES	PROG - EU	FP6		EU	PAR	2006-10	FIN
UESP	H-Know	António Lucas	DEV	PROG - EU	FP7		EU	PAR	2009-01	CONT
UESP	Net-Challenge	Luís Carneiro	RES	PROG - EU	FP7		EU	PROP	2009-06	CONT
UESP	VFF	Américo Azevedo	RES	PROG - EU	FP7		EU	PAR	2009-09	CONT
UESP	Fit4U	Rui Diogo Rebelo	RES	PROG - EU	FP7		EU	PAR	2009-07	CONT
UESP	CORENET	Américo Azevedo	RES	PROG - EU	FP7		EU	PAR	2010-06	START
UESP	IzaroGrey	António Correia	DEV	SERV - UE			IND	CONT	2007-01	CONT
UESP	MIBPET-Inovultus	Luís Guardão	DEV	SERV - NAT	POFC / POR	PROJ INDIV	IND	SUB	2009-02	CONT
UESP	ParqueEscolar	Luís Guardão	DEV	SERV - NAT			IND	CONT	2009-11	CONT
UESP	Auto-Ebiz	César Toscano	CONS	SERV - NAT			EU	CONT	2010-01	START
UESP	Lucios	António Correia	CONS	SERV - NAT			IND	CONT	2010-01	START
UESP	Sopsec	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-02	FIN
UESP	Sosoares	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-02	FIN
UESP	Metalfer	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-02	FIN
UESP	Oxisol	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2008-11	FIN
UESP	PHCNorte	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-05	FIN

Unit / Group	Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
				Source	Programme	Project Typology	Type	Role INESCP	Start	Satus 2009-12
UESP	ANARIC2	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-12	FIN
UESP	ConfMirene	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-12	FIN
UESP	3M2P	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-10	FIN
UESP	Waldemar	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-09	FIN
UESP	SantosCamiseiros	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-11	FIN
UESP	P&R-II	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2010-04	FIN
UESP	SCIDT	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2010-04	FIN
UESP	CASTOR-IP	António Correia	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2010-05	FIN
UESP	PadinhoXXI	António Correia	CONS	SERV - NAT	POFC / POR	PROJ INDIV	IND	SUB	2010-11	START
UESP	Consultoria	Luís Carneiro	CONS	SERV - NAT			IND	CONT	2009-01	CONT
UITT	EINutilus-1	Alexandra Xavier	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2008-07	CONT
UITT	Fadis	Alexandra Xavier	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-07	CONT
UITT	Jo-Empreende	Alexandra Xavier	RES	PROG - NAT	POFC / POR		NAT	PAR	2009-05	CONT
UITT	TecEmpreende	Alexandra Xavier	CONS	PROG - NAT	POR Norte		NAT	PAR	2010-09	START
UITT	PINC	Alexandra Xavier	RES	PROG - NAT	POR Norte		NAT	PAR	2010-09	START
UITT	SGIDI-Shortcut	Alexandra Xavier	CONS	SERV - NAT	POFC / POR	NUCLEO I&DT	IND	SUB	2009-10	CONT
UITT	SGIDI-MarKayaks	Alexandra Xavier	CONS	SERV - NAT	POFC / POR	NUCLEO I&DT	IND	SUB	2009-09	CONT
UITT	PIPPAAudolici	Alexandra Xavier	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-12	FIN
UITT	SantosCamiseiros -1	Alexandra Xavier	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-11	FIN
UITT	GAPI2.0	Alexandra Xavier	CONS	SERV - NAT			IND	CONT	2010-04	START
UITT	SIAC-Calçado-Inov	Alexandra Xavier	CONS	SERV - NAT	POFC / POR	PROJ SIAC	IND	SUB	2010-07	START
UITT	Consultoria	Alexandra Xavier	CONS	SERV - NAT			IND	CONT	2008-01	CONT
UITT	FormacaoCOTEC	Alexandra Xavier	CONS	SERV - NAT			IND	CONT	2008-01	CONT
UITT	BolsasBIM2	Alexandra Xavier	CONS	SERV - NAT			IND	CONT	2008-09	CONT
UITT	Let-in	Alexandra Xavier	INC	O			IND	CONT	2008-01	CONT
UITT	OpenInnovation	Alexandra Xavier	RES	INT			INT	PROP	2010-01	START
UOSE	Optic-Algae	José Manuel	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2007-06	FIN
UOSE	Biopelvic	Luís Alberto Ferreira	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2007-07	FIN
UOSE	Nanocrystalline	Paulo Vicente	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2008-01	CONT
UOSE	Oreo2	Paulo Vicente	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PAR	2008-01	FIN
UOSE	Motion	Orlando Frazão	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2007-11	FIN
UOSE	Endurance	Francisco Araújo	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2008-03	FIN

Unit / Group	Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
				Source	Programme	Project Typology	Type	Role INESCP	Start	Satus 2009-12
UOSE	SenRONS	Pedro Jorge	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PAR	2008-01	CONT
UOSE	Bioswim	Miguel Velhote	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PAR	2008-04	CONT
UOSE	Biomotion	Miguel Velhote	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PROP	2008-04	CONT
UOSE	Hybrid	Pedro Jorge	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2010-03	START
UOSE	Microphyte	José Luís Santos	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2010-01	START
UOSE	SmartCoat	Orlando Frazão	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PAR	2010-05	START
UOSE	SensEFil	Orlando Frazão	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PAR	2010-04	START
UOSE	MCP	Nandyala Hussain	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-04	START
UOSE	Multiferroicos	Javier Cruz	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PAR	2010-06	START
UOSE	FIBDOSE	Carla Carmelo	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-06	START
UOSE	CFC	Javier Cruz	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-06	CONT
UOSE	Mobiles-2	Ireneu Dias	RES	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-05	CONT
UOSE	Fibersensing	José Luís Santos	DEV	SERV - NAT			IND	CONT	2009-01	CONT
UOSE	E-Textil	Gerardo Aguilar	DEV	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-05	FIN
UOSE	SensKanoë	Orlando Frazão	DEV	SERV - NAT	POFC / POR	NUCLEO I&DT	IND	SUB	2009-09	CONT
UOSE	SensingVed	Sérgio Mendonça	DEV	SERV - NAT			NAT	CONT	2010-02	FIN
UOSE	WaveTune	Pedro Jorge	TT	SERV - NAT	POFC / POR	PROJ INDIV	IND	SUB	2010-03	START
UOSE	TECCON	Pedro Jorge	DEV	SERV - INT			0	CONT	2010-05	START
UOSE	Coop-Transnacional	José Luís Santos	O	ORD	COOP TRANSN		EU	PROP	2010-01	START
UOSE	ProjPluridiscipl	Paulo Vicente	RES	ORD	PROJ PLURI		NAT	PROP	2010-01	FIN
UOSE	MicroNanoCarolina	Pedro Jorge	NET	ORD	FLAD		INT	PAR	2010-09	START
UOSE	EWOF2010	José Luís Santos	CONF	O			INT	PROP	2009-01	FIN
USE	Plasm	Vladimiro Miranda	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PROP	2007-10	FIN
USE	GreenIsland	Manuel Matos	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PAR	2009-04	CONT
USE	GEMS	Vladimiro Miranda	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PROP	2010-04	START
USE	Jades	Vladimiro Miranda	TRAIN	PROG - EU	TEMPUS IV		UE	PAR	2007-09	FIN
USE	Anemos.plus	João Peças Lopes	INV	PROG - EU	FP6		UE	PAR	2007-01	CONT
USE	MERGE	João Peças Lopes	INV	PROG - EU	FP7		UE	PAR	2010-01	START
USE	TWENTIES	Carlos Moreira	INV	PROG - EU	FP7		UE	PAR	2010-04	START
USE	EFACEC-DMS	João Peças Lopes	DEV	SERV - NAC			IND	CONT	2001-04	CONT
USE	TSO-Reserva	Manuel Matos	CONS	SERV - EU			UE	CONT	2006-12	FIN
USE	REN-RECEP	João Peças Lopes	CONS	SERV - NAC			IND	CONT	2007-10	CONT

Unit / Group	Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
				Source	Programme	Project Typology	Type	Role INESCP	Start	Satus 2009-12
USE	InovGrid	João Peças Lopes	CONS	SERV - NAC			IND	CONT	2008-01	CONT
USE	Enercon-WindStudies	João Peças Lopes	CONS	SERV - NAC			IND	CONT	2007-11	FIN
USE	Eneop2	João Peças Lopes	CONS	SERV - NAC			IND	CONT	2008-02	FIN
USE	Parafuzzy	Jorge Correia	DEV	SERV - INT			IND	CONT	2008-09	CONT
USE	Argos	Vladimiro Miranda	DEV	SERV - INT			IND	CONT	2008-12	CONT
USE	JRC	Manuel Matos	CONS	SERV - EU			IND	CONT	2009-03	FIN
USE	ASIRP	José Nuno Fidalgo	CONS	SERV - NAC			IND	CONT	2009-06	CONT
USE	UPInvest	Cláudio Monteiro	CONS	SERV - NAC			IND	CONT	2009-11	FIN
USE	EEM-Dinamica	Helena Vasconcelo	CONS	SERV - NAC			IND	CONT	2009-12	CONT
USE	EFACEC-OPF	Jorge Correia	DEV	SERV - NAC			NAC	CONT	2006-10	CONT
USE	V.Grande-Ventinv.	João Peças Lopes	CONS	SERV - NAC			NAC	CONT	2010-03	FIN
USE	PerfisMicro	José Nuno Fidalgo	CONS	SERV - NAC			NAC	CONT	2010-03	FIN
USE	EDP-Transf	João Tomé Saraiva	CONS	SERV - NAC			NAC	CONT	2010-07	START
USE	Martifer-CV(GeSto)	João Peças Lopes	CONS	SERV - NAC			NAC	CONT	2010-04	FIN
USE	InovGrid2	João Peças Lopes	CONS	SERV - NAC			NAC	CONT	2010-06	START
USE	PPC	João Tomé Saraiva	CONS	SERV - EU			UE	CONT	2010-04	START
USE	PerfisPerdas2011	José Nuno Fidalgo	CONS	SERV - NAC			NAC	CONT	2010-06	FIN
USE	Ampla	Cláudio Monteiro	CONS	SERV - INT			IND	CONT	2010-09	START
USE	SIAC-EE	José Rui Ferreira	CONS	SERV - NAC	POFC / POR	PROJ SIAC	IND	SUB	2010-06	START
USE	Consultoria-EEM	Helena Vasconcelo	CONS	SERV - NAC			IND	CONT	2010-01	START
USE	DOPF-Efacec	Jorge Correia	DEV	SERV - NAC			IND	CONT	2010-09	START
USE	Vvar-Efacec	Jorge Correia	DEV	SERV - NAC			IND	CONT	2010-09	START
USE	Consultoria	Manuel Matos	CONS	SERV - NAC			IND	CONT	2008-01	CONT
USE	REIVE/ON2	João Peças Lopes	DEV	OID	FAI		NAC	PROP	2010-03	START
USE	REIVE	João Peças Lopes	DEV	OID	FAI		NAC	PROP	2010-03	START
USE	CoordEES-UETP	João Peças Lopes	TRAIN	O			INT	PROP	2007-04	CONT
USIG	DBPreserve	Gabriel David	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PROP	2007-10	FIN
USIG	Urbis	Augusto Sousa	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2008-02	FIN
USIG	3DWikiU	Augusto Sousa	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-04	START
USIG	EINautilus	António Gaspar	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2008-07	CONT
USIG	ADD-ME	Rui Barros	RES	PROG - EU	CIP		EU	PAR	2009-11	CONT
USIG	RAIA	Artur Rocha	RES	PROG - EU	INTERREG		EU	PAR	2009-01	CONT

Unit / Group	Palco3.0 eCAALYX	António Gaspar Ângelo Martins	DEV DEV	PROG - NAT			POFC / POR		PROJ CO-PROM	
				PROG - EU	AAL		EU	PAR	2009-05	CONT
USIG	PortalDouro	António Coelho	DEV	PROG - NAT	POR Norte		NAT	PAR	2009-04	CONT
USIG	Mobiles-1	José Correia	RES	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-05	CONT
USIG	CEMSDI	Rui Barros	RES	PROG - EU	CIP		EU	PAR	2010-06	START
USIG	RobVigil-2	António Coelho	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2010-01	START
USIG	ICT4Depression	Ricardo Henriques	RES	PROG - EU	FP7		EU	PAR	2010-01	START
USIG	SI.VIDA	José Correia	CONS	SERV - NAT			IND	CONT	2007-12	FIN
USIG	WineSlot	António Gaspar	CONS	SERV - NAT			IND	CONT	2007-02	FIN
USIG	CCDRN-TIC	António Gaspar	CONS	SERV - NAT			IND	CONT	2006-12	CONT
USIG	CCDRN-RJUE	Rui Barros	CONS	SERV - NAT			IND	CONT	2008-06	CONT
USIG	Generg	António Gaspar	CONS	SERV - NAT			IND	CONT	2009-02	CONT
USIG	SIGFreg	Rui Barros	TT	SERV - NAT			IND	CONT	2009-06	FIN
USIG	SIGAve	Lígia Silva	DEV	SERV - NAT			IND	CONT	2009-09	FIN
USIG	WebReports	Rui Barros	DEV	SERV - NAT			IND	CONT	2010-07	START
USIG	Escolinhas	António Gaspar	CONS	SERV - NAT			IND	CONT	2009-12	FIN
USIG	Unicer-TI-1	António Gaspar	CONS	SERV - NAT			NAT	CONT	2010-09	START
USIG	MNRF-CA	António Gaspar	CONS	SERV - NAT			NAT	CONT	2010-11	START
USIG	CCDRN-EA	António Gaspar	CONS	SERV - NAT			IND	CONT	2010-10	START
USIG	SIGAP	António Gaspar	CONS	SERV - NAT			IND	CONT	2010-10	START
USIG	Consultoria	António Gaspar	CONS	SERV - NAT			IND	CONT	2008-01	CONT
USIG	ICPG-UP	Alexandre Carvalho	RES	ORD	PROJ PLURI		NAT	PROP	2010-01	FIN
USIG	e-mili	Rui Barros	CONS	ORD	GULBENKIAN		NAT	CONT	2010-08	START
UTM	OMR	Jaime Cardoso	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PROP	2007-10	FIN
UTM	BCCT	Jaime Cardoso	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2007-10	FIN
UTM	DR-Vids	João Canas Ferreira	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2007-11	FIN
UTM	ROFWDM	Henrique Salgado	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2007-10	FIN
UTM	Vector	José Carlos Alves	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2007-11	CONT
UTM	MuMoMgt	José Ruela	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PROP	2009-02	CONT
UTM	KINETIC	Carlos Guedes	RES	PROG - NAT	FCT / POFC	PROJ UTEN	INT	PROP	2009-04	CONT
UTM	SHHC - Safe Home Health	Ricardo Morla	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-05	START
UTM	ProLimb	José Machado	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-04	START
UTM	SELF-PVP	Vitor Grade Tavares	RES	PROG - NAT	FCT / POFC	PROJ CMU	INT	PROP	2010-09	START
UTM	WOWI	Henrique Salgado	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2010-11	START

Unit / Group	Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
				Source	Programme	Project Typology	Type	Role INESCP	Start	Satus 2009-12
UTM	AHRS	Vítor Grade Tavares	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2008-10	FIN
UTM	ReCoop	José Ruela	NET	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-01	CONT
UTM	SemanticPACS	Jaime Cardoso	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-01	CONT
UTM	Palco3.0-1	Fabien Gouyon	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2008-12	CONT
UTM	SITMe	Manuel Ricardo	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-06	CONT
UTM	Mobiles	José Ruela	RES	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-05	CONT
UTM	PortalDouro-1	José Manuel	DEV	PROG - NAT	POR Norte		NAT	PAR	2009-04	CONT
UTM	RobVigil-1	José Ruela	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2010-01	START
UTM	Hotel3.0	Maria Teresa	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2010-01	START
UTM	LUL	Luís Corte Real	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2010-01	START
UTM	P3.net	Ricardo Morla	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2010-02	START
UTM	Daphne	Henrique Salgado	RES	PROG - EU	FP7		EU	PAR	2009-09	CONT
UTM	Alicante	Manuel Ricardo	RES	PROG - EU	FP7		EU	PAR	2010-03	START
UTM	Convergence	Maria Teresa	RES	PROG - EU	FP7		EU	PAR	2010-06	START
UTM	ASP – Redes Domésticas	Manuel Ricardo	DEV	SERV - NAT			IND	CONT	2009-02	FIN
UTM	SWIOP	Manuel Ricardo	DEV	SERV - NAT	POFC / POR	PROJ INDIV	IND	SUB	2009-09	CONT
UTM	N2Y	José Ruela	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-12	FIN
UTM	VI-XV	Manuel Ricardo	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2010-01	FIN
UTM	ContextAware	Maria Teresa	CONS	SERV - NAT			IND	CONT	2010-03	START
UTM	User-Tracking2.0	Ricardo Morla	CONS	SERV - NAT	POFC / POR	PROJ INDIV	IND	SUB	2010-10	START
UTM	Consultoria	José Ruela	CONS	SERV - NAT			IND	CONT	2010-01	START
UTM	FLAD-UCI	Ricardo Morla	TRAIN	ORD	FLAD		INT	PAR	2008-01	CONT
UTM	REIVE-1	José Ruela	DEV	ORD	FAI		NAT	PROP	2010-03	START
LIAAD	MOREWAQ	Luís Torgo	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PROP	2008-05	CONT
LIAAD	ORANKI	Luís Torgo	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PROP	2008-01	CONT
LIAAD	KDUS	João Gama	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PROP	2010-04	START
LIAAD	Palco3.0-2	Alípio Jorge	DES	PROG - NAC	POFC / POR	PROJ CO-PROM	NAC	PAR	2008-12	CONT
LIAAD	Argos-1	João Gama	DES	SERV - INT			IND	CONT	2008-12	CONT
CRACS	Horus	Vítor Santos Costa	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PROP	2010-04	START
CRACS	Ofelia	Manuel Eduardo	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PROP	2010-04	START
CRACS	DIGISCOPE	Inês Dutra	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PAR	2010-02	START
CRACS	Breadcrumbs	Álvaro Figueira	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PROP	2010-09	START

Unit / Group	Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
				Source	Programme	Project Typology	Type	Role INESCP	Start	Status 2009-12
CRACS	Consultoria	Fernando Silva	CONS	SERV - NAC			IND	CONT	2010-01	START
PE	ProjUTEN	José Manuel	TT	PROG - NAC	FCT	PROJ IC&DT	NAC	PROP	2010-03	START
PE	UTEN	José Manuel	REDE	SERV - NAC			IND	CONT	2007-11	CONT
PE	NCP-ICT	Marta Barbas	CONS	SERV - NAC			IND	CONT	2008-09	CONT
PE	PRODUTECH	José Carlos Caldeira	CONS	SERV - NAC			IND	CONT	2010-05	START
PE	Unicer-TI	João Neves	CONS	SERV - NAC			NAC	CONT	2010-09	START
PE	CienciaViva	Joana Ferreira	FORM	OID	CIENCIA VIVA		IND	PROP	2010-06	FIN
PE	uElectronica	Pedro Guedes de	DES	INT			INT	PROP	2009-09	CONT
PE	INESCP&DBrasil	Vladimiro Miranda	O	INT			INT	PROP	2009-01	CONT
PE	DNN	Augustin Olivier	O	INT			INT	PROP	2009-11	CONT
PE	LAI-OIL	Manuel Matos	INV	INT			INT	PROP	2010-05	START

Dominant Activity Type:

RES - Research
 DEV - Development
 CONS - Consulting
 TT - Technology Transfer
 NET - Network
 CONF - Conference
 TRAIN - Advanced Training
 INC - Incubation
 O - Other

Source:

PROG - NAT - National Programmes
 PROG - EU - European Union Programmes
 SERV - NAT - Supply of Services - national
 SERV - EU - Supply of Services - European Union
 SERV - INT - Supply of Services - International
 ORD Other R&D Services
 O - Other External Services
 INT - Internal

Type:

IND - Individual Project
 NAT - National Cooperation
 EU - European Union Cooperation (EU+Associated Countries)
 INT - Internal Cooperation

Role INESCP:

PROP - Proponent
 PAR - Partner
 CONT - Prime Contractor
 SUB - Subcontractor
 MEMB - Membre
 O - Other

3.3 Publicações

Quadro resumo de publicações

Tipo de publicação	Número	Variação (*)
Teses concluídas em 2009 por membros da unidade	123	+38
Livros (Autor)	4	+3
Capítulos/Artigos em Livros	227	-14
Publicações (editor)	4	+1
Artigos em revistas internacionais com revisores	6	-9
Artigos em revistas nacionais com revisores	4	-6
Comunicações em actas de conferências com revisores	68	+38
Outras Publicações (Conf. Nacionais, Revistas Locais, etc.)	38	+13
TOTAL	474	+64

(*) Relativamente ao ano anterior

3.4 Dissertações

Quadro resumo de pós-graduações

Tipo	Iniciadas	Em curso	Concluídas	Total	Variação (*)
Mestrados	51	25	204	280	+27
Doutoramentos	46	117	21	184	+49
TOTAL	97	142	225	464	+76

(*) Relativamente ao ano anterior

3.5 Cooperação e Disseminação

Quadro resumo de ações de cooperação e disseminação

Tipo de ação	Número	Variação (*)
Conferências com o INESC Porto na Organização (no comité de Organização ou Comité Científico)	42	+14
Número de co-autores externos em publicações do INESC Porto	401	+46

(*) Relativamente ao ano anterior



INESCPORTO

INSTITUTO DE ENGENHARIA DE SISTEMAS
E COMPUTADORES DO PORTO
LABORATÓRIO ASSOCIADO

PARTE B

Relatório FCT 2010

INESCPORTO
LABORATÓRIO ASSOCIADO

Campus da FEUP
Rua Dr. Roberto Frias, 378
4200 - 465 Porto - Portugal
T +351 222 094 000
F +351 222 094 050
www.inescporto.pt

PARTE B – Relatório de atividade científica

O documento incluído nesta parte corresponde ao relatório de atividades anual exigido pela FCT e em devido tempo submetido.

Por determinação da FCT, vem este documento redigido em inglês.

Este documento é complementado pela informação constante da Parte C, já que o formulário on-line da FCT impõe limites ao número de caracteres em cada secção e não foi possível reportar a atividade do INESC porto na sua total extensão.

Observar-se-á também que não foi possível incluir explicitamente o ROBIS como um Grupo independente porque o formulário da FCT, este ano, não consentiu qualquer alteração relativamente à estruturas organizativa do ano anterior.

Da mesma forma, não foi possível indicar explicitamente mudanças na coordenação de unidades.

1 Main Page

as in <http://www.fct.mctes.pt/fctsig/>

Relatório Científico 2010 - **Página de Rosto**

Na lista de opções (menu) desta página poderá encontrar um conjunto de links para as diversas páginas do formulário que deve preencher, bem como a página "Lacar" (Lock), a qual, uma vez cumpridos os requisitos mínimos, lhe permitirá dar por concluído esse preenchimento.

2 Objectives and Achievements

This part of the report will allow you to describe the way in which the Unit or the LA is organized and managed, to give the general objectives of the research within the Unit or the LA and finally to give a brief description of the main achievements of the research carried out as a whole during the 2010 period. A maximum number of characters (without spaces) are allowed in each field. If the number of characters exceeds the maximum you will not be able to complete the form and an error message will appear when you try to save your work

2.1 Unit Description (3000 ca.)

Here indicate form of organization and management

IMPORTANT FOREWORD

INESC Porto is forced to report its activities in the rigid format of this online form, which is not adequate to describe the organization. Therefore, the picture that can be perceived from this report is blurred and cannot be understood as an accurate description of activities. INESC Porto strongly objects to this format and the impossibility to report correctly its activities.

The site <http://profile.inescporto.pt/> includes charts, comparisons 2002-2007 and data from 2008 to 2010, some presentations in power point form and other material relevant to the understanding of all the dimensions of activity of the LA, including complementary reports on the activity which are more faithful and adequate.

This FCT report format assumes that the generic organization of an Associate Lab is based on “research groups” per scientific area, with multi-disciplinarity at the “research line” level. This is not the case with INESC Porto, which is organized in multi-disciplinary Units. In a Unit, one may find a blend of several skills or scientific knowledge in distinct areas, as required for technology transfer.

When examining this report, please note that:

- a) The Section Research Groups is used to refer to our Research Units with a scientific multidisciplinary profile
- b) The Section Research Lines is used just to refer to a second tier of interdisciplinary activities.

The official site is <http://www.inescporto.pt>. A monthly news bulletin is <http://bip.inescporto.pt>.

IMPORTANT REMARK

FCT opened a web form for 2011 that did not allow the change (since 2007) of the Principal Investigators of RG or RL - nor the identification of new Research Groups. The correct information has been, therefore, inserted wherever possible.

MANAGEMENT

INESC Porto depends on its GC - General Council, where its Associates take seat: University of Porto (40%), INESC (36%), FEUP (18%), FCUP (4%), IPP (2%)

The GC appoints the BD - Board of Directors (5, one full time) for a 2-year mandate.

In 2010, INESC Porto was organized in 6 research Units plus 1 Group (a proto-Unit), a Dpt. of Information and Logistics (DIL) and 5 Support Services (Communications and Informatics, Media, Informatics for Management, Building Manag., Lab and Workshop Service). Under DIL other services exist (juridical, human resources, accounting and treasury, project manag.). See <http://www2.inescporto.pt/ip-en/about-us/organization>.

The BD meets every other week with the DIL Coordinator. In alternate weeks, the BD meets in the Units Council (UC) with Unit Coordinators, DIL and support services. Decisions are collectively discussed and policies deployed through the UC mechanism. Processes of delegation of responsibility are also in place.

The Units have independent executive management and complete scientific autonomy. The pool of resources is under common management and the solidarity among groups is a rule.

The BD has put in place the necessary set of regulations applying to the different statutes of researchers, working conditions, careers and rewards, and performance evaluation.

The Scientific Council (SC) has representatives of the Units plus 3 members appointed by the BD. The Scientific Advisory Board (SAB) is composed of invited high-profile international scientists. The members of these councils are appointed by the GC.

The enlargement of the LA to External Groups led to the extension of the UC to a LA Coordinating Council. Also the SAB and the SC have been extended. INESC Porto LA provides scientific and strategic consolidation but INESC Porto continues to exist as an independent private entity.

2.2 General Objectives (3000 ca.)

This refers to the current aims of the Unit or LA as a whole

MISSION

INESC Porto was created with the complementary objectives of developing high level scientific research and acting as an effective interface between university and economic agents and/or public administration. In this respect, INESC Porto has championed and has nurtured and evolved a technology transfer model different from other research institutions in Portugal, and which is also uncommon worldwide.

DOUBLE ROLE

INESC Porto is recognized by the Ministry of Science as a Unit of the Science and Technology System of Portugal. At the same time, INESC Porto is also a Technological Infra-structure recognized by the Ministry of Economy and Innovation.

This double character means that its mission is not limited to scientific research but extends to the assistance of economic agents and public administration and institutions in general, through technology transfer and innovation as well as highly specialized consultancy.

INESC Porto also promotes spin-off and spin-out companies, hosting them during an early-stage pre-incubation phase and often participates in their capital.

The profile of its researchers, therefore, reflects the large spectrum of responsibilities incurred in by the Associate Laboratory.

EVOLVING FOOTPRINT

Since 2007, INESC Porto LA has been challenged to integrate research groups that were previously linked to other institutions. Three of these groups underwent an independent evaluation process by FCT and were classified as Very Good. Two of them (LIAAD and CRACS) were mentioned in the 2007 report because their integration process was requested in that year, but their official recognition as part of INESC Porto LA by FCT did not occur until 2011. Since 2007, INESC Porto has not been allowed to change the format of the report and this mention continues to exist.

STRATEGIC CONCEPT

INESC Porto embodies the concept of knowledge production chain: FROM KNOWLEDGE PRODUCTION TO SCIENCE-BASED INNOVATION. The working organization obeys to the concept of smooth integration of knowledge producers (creating science) with developers (producing applications) and of these with appliers

(transferring to industry, generating spin-off companies, etc.). Therefore, the profile of a typical Unit in INESC Porto includes all these components and is a more effective integration than the one achieved with the research lines.

Research projects generate new knowledge and excellence at the international level: post graduate theses and papers are published. Projects in tandem move knowledge along the chain: prototypes are developed and relationship with industry is strengthened. New projects are designed, materializing the value of innovation at the end of the chain: technology transfer, licensing. Eventually, new spin-off companies are incubated and launched.

This is done with a careful blending of scientists from the University with full time contracted researchers and full time contracted professionals – engineers, mathematicians, economists, physicists. And this is supported by a highly qualified staff in project management, juridical, public relations, human resources.

2.3 Main Achievements during the year of 2010 (3000 ca.)

Highlights from past research over the reported period.

INTERNATIONALIZATION/WORLD RECOGNITION

- 1 IEEE Fellow with permanent link, 4 IEEE Fellows with regular collaboration
- Large no. of papers co-authored with researchers from foreign institutions
- Contracts with ESA (EU), DoE/Argonne NL (USA) and other prestigious organizations in Europe and Brazil
- 20 European projects run at simultaneously
- 32% of project activity income derives from international activity
- 30% of PhD students are foreigners
- Projects with top USA Universities: CMU, MIT and UT Austin – CMU sends PhD students to INESC Porto

SUSTAINED GROWTH

- Turnover of 10,5 million Euro in 2010
- R&D advanced services and consulting, in direct contracts with industry at national and international level, represented 42% of the income in project activity
- Record number of 111 researchers holding PhD degree in 2010
- Expectation of growth with the negotiated enlargement to 5 external Units CRACS, LIAAD and UGEI, plus CISTER and HASLab (still waiting to be recognized by FCT).
- An on-going project to build a Center of Knowledge for Sustainable Energy (including investment of about €3.5 M in 2010-2012)

THE SCIENTIFIC PRODUCTIVITY

- New record number of 119 papers published in international journals (86 in 2009) and record total number of 386 publications in journals and international conferences (321 in 2009)
- The number of international journal papers increased 10 times in 2002-2010 and multiplied 2.5 times in the same period, while the number of researchers holding a PhD degree had only a 2-fold increase since 2002
- New record number of 23 PhD theses completed or supervised by INESC Porto researchers.

THE TECHNOLOGY TRANSFER/KNOWLEDGE VALORIZATION

- In 2010, 17 proposals for spin-off business were studied and 9 projects entered a pre-incubation process
- A new spin-off company was launched

IMPROVEMENT IN INSTITUTIONAL MANAGEMENT

- New concept in Unit leadership implemented experimentally
- External impact (national and international) of INESC Porto Bulletin BIP (read in 50 countries on average per month, thousands of hits).

SCIENTIFIC/TECHNICAL ACHIEVEMENT - ONE EXAMPLE PER RESEARCH GROUP

- New models, control solutions and methodologies for wind power safe integration, large scale electric vehicles deployment, micro-generation integration and active load management, under the Smart Grid Paradigm, as well as new advances in wind power forecasting, and industrial demonstration of management tools for operational reserve setting, congestion analysis and storage management in systems with wind power
- Development of medium size autonomous underwater vehicle for Brazil, to be used as a platform to transport underwater inspection and mapping and water quality sensors.
- A real-time monitoring system was developed based on optical fiber sensors for Cyanobacteria detection in water for consumption. The sensor fabrication is based on the synthesis of sol-gel layers and molecular imprinting techniques
- DB Preserve - Demonstrator of a database preservation system, independent of legacy components, such as hardware, operating system and DBMS
- Hybrid approach for evaluating object tracking algorithms combining metrics with and without reference information
- A new concept and several tools to support managing footwear supply networks, taking advantage of the use of RFID technology, and covering the whole value network from the materials supply to the retail shops

3 Activities

This part of the report will allow you to describe general activities of the Unit or the LA that are aimed at integrating the research of various groups of which multidisciplinary and/or trans-disciplinary activities are of particular relevance. The second part is aimed to describe work that the Unit or the LA does to extend beyond the scientific environment and to reach the general public, schools or other forms of engaging the public in the work of the Unit or the LA.

3.1 Integrative/multidisciplinary activities during the year of 2010 (3000 ca.)

Special activities that aim to carry out research across disciplines.

According to the reports of our Scientific Advisory Board, the successes of INESC Porto are centred at its ability to bring "on-demand", to the technology transfer activities, an effective blend of engineering disciplines. This is achieved because its Research Groups are formed and run under the concept of being multi-disciplinary. Therefore, for INESC Porto the need for a special reporting section to declare activities aiming to stimulate and carry out research across disciplines is somewhat redundant.

Furthermore, an important number of projects gather together resources from different groups, as it may be observed in the activity reports of each group.

To enhance cross-communication, several Groups organize a regular (weekly or bi-weekly) series of scientific discussion meetings, which receive the name of "Lab Meetings". The most active are on Telecommunications, Power Systems, Optoelectronics and Technology Transfer.

The Board of Directors (BD) also promotes, with the supervision of the Scientific Council and under the recommendation of the Scientific Advisory Board, a new strain of activities which received the name of LAI (Inter-unit Action Lines).

A LAI is a coherent scientific or technological domain that cuts across INESC Porto organization and promotes scientific discussion, workshops, exchange of experience and ideas in an organized fashion. To support this activity, the BD defined a set of supporting measures including guaranteeing a base budget to each self-organized LAI. The Scientific Council manages the recognition of each LAI proposal and monitors its activity. There are scientific and activity targets that must be met in order to maintain the recognition of a LAI. LAIs in Optimization or Machine Learning and Signal Processing have been launched and others are on the way.

This structuring of scientific coordination cross-groups is built over an increasing number of projects being tackled by 2 or more Groups in consortium. A considerable number of examples can be found in 2010, either in European projects or in direct research contracts with industry, e.g., joining power systems and telecommunications, manufacturing engineering systems with information systems, telecommunications with optoelectronics, power systems with artificial intelligence, manufacturing engineering systems with management and industrial engineering, telecommunications with robotics, etc.

This multidisciplinary integration was extended to the Units that await the recognition of FCT to become integrated in the Associate Laboratory. In 2010, 7 FCT projects included cooperation with LIAAD and CRACS, plus 3 directly contracted by industry, one of them international (from the USA).

The constitution of a new Center of Knowledge for Sustainable Energy, joining external groups in Chemical Engineering (two rated as Excellent by FCT, including another LA) under the coordination of INESC Porto is a new organized effort to support research across disciplines. In 2009 the project has been put up and in 2010 the approval of funding was obtained, for the erection of a new building next to INESC Porto headquarters.

3.2 Outreach activities during the year of 2010 (3000 ca.)

Science and Society/general public/schools, etc.

INESC Porto gives great importance to communication with citizens. In 2010 this activity followed the general trend of recent years:

- The Communication Service includes two specialists graduated in Media and Communication and one in Translation. An external service is also hired to monitor the media and in 2010 it identified 349 news items regarding INESC Porto in the main Portuguese media.
- The Communication Service, among other duties, runs a digital monthly Bulletin (BIP, <http://bip.inescporto.pt/>) in Portuguese, with news on science and projects developed, that reaches a vast community of readers in Portugal and Brazil. A version of BIP in English (<http://bip.inescporto.pt/en>) is also published every 3 months.
- Google Analytics provided a counting of accesses to BIP: in the period of February 1-28, 2011, the Bulletin had 7,886 hits from 1,394 different persons, from 50 countries, the top being Portugal, Brazil, Romania, USA, Germany, UK, Netherlands, Spain, Germany, Czech Republic and Canada. In February 2010 this number amounted to 1714 hits from 1283 visitors in 43 countries.
- INESC Porto developed a consistent action of presence in the civil society with participation in a diversity of events and initiatives. As a consequence, experts from INESC Porto are regularly interviewed by tv and radio stations (beside the press) on the hot topics that the society is debating.
- INESC Porto is one of the partners of the Ciência Viva (CV) association whose aim is to promote science among youth. It has regularly cooperated with the CV initiatives, namely in the annual programs to receive students from secondary schools for short periods of time in its laboratories. Also, a member of the Board of Directors is a member of the Scientific Advisory Board of the Ciência Viva Center of Bragança.
- INESC Porto also participated in national Exhibitions organized by the Ministry of Science and the Ministry of Economy and Industry. Support to the University of Porto annual event, Mostra da Ciência (Science Exhibit), has also been given as well as support to Engineering and Sciences Faculties Open Days, highlighting the LA activities, to the Portugal Technologic Exhibition and to initiatives by the City Hall of Porto.
- The CS also organised diverse external and internal initiatives to commemorate INESC Porto's 25th anniversary. In particular, the Art and Science exhibition "I am Science" can be highlighted, along with the employee activity and debate weekend in Luso (Aveiro). Furthermore, the Workshop and exhibition attended by the Secretary of State from the Ministry of Science, Technology and Higher Education it worth mentioning. This event hosted close to one hundred guests from the most prestigious Portuguese companies as well as Central and Regional Administration Bodies currently or previously linked to INESC Porto.
- Public talks and lectures were given by the senior members of the LA in various locations, in secondary schools and in Civic Associations, beside scientific and technical meetings.

4 Funding

In this section include funding details during the reporting period. In the item LA FCT include the total sum of the Base+Programmatic funding of the Associate Laboratory.

	2006	2007	2008	2009	2010	Total
LA FCT	894.690,00	1.250.000,00	1.447.500,00	1.971.592,05	1.662.516,74	7.226.298,79
Projects FCT	308.790,00	243.958,00	464.320,00	499.951,10	890.350,00	2.407.369,10
Other National	983.733,00	1.343.667,00	998.469,00	381.029,90	1.509.648,00	5.216.546,90
Other International	1.293.840,00	1.417.767,00	1.191.549,00	871.931,86	1.319.043,00	6.094.130,86
National Industry	1.351.126,00	1.409.480,00	1.636.454,00	2.228.402,57	2.126.473,00	8.751.935,57
International Industry	118.670,00	96.110,00	155.477,00	374.263,20	533.351,00	1.277.871,20
Total	4.950.849,00	5.760.982,00	5.893.769,00	6.327.170,68	8.041.381,74	30.974.152,42

5 General Indicators

This section is designed to provide information regarding the researchers and the technical personnel hired, and the total number of completed PhDs thesis during the reported period.

5.1 Composition and Training

In this section indicate the number of researchers that the LA intended to hire during the reporting period based on the original contract with the FCT and those whose contract started in the reporting period. In the Balance indicate the result per year as +1 (in the case that hired one more that expected) or -1 (in the case hired one less that expected) and so on. Include also the researchers hired through the Ciência Programme and the total number of integrated Researchers with PhD and the PhD or Mater thesis completed in the period.

	2006	2007	2008	2009	2010	Total
Nº of Researchers Proposed	2	0	0	0	0	4
Nº Researchers Hired (LA)	4	4	0	1	2	11
Balance	2	4	0	1	2	9
No. of Researchers Hired (Ciência Programme)	0	0	0	9	0	9
No. of Researchers integrated with PhD	2	692	0	102	111	-
Training PhDs (PhD thesis completed)	81	93	0	15	23	212

(*) Number of eligible integrated researchers holding a doctoral degree.

5.2 Researchers hired

In this section indicate the individual researchers hired in the period by introducing the association key (previously named as public key), their starting date and if applicable their finishing date. In case the researchers also hold a part-time position at another institution (teaching at University or Polytechnic) also indicate this in Other Institution.

Warning: Dates must be in the dd-mm-aaaa format.

Nome	Start Date (dd/mm/yyyy)	End Date (dd/mm/yyyy)	Other Institution
Orlando José Dos Reis Frazão	01-01-2010		
Mauro Augusto da Rosa	10-03-2010	09-03-2011	

5.3 Technical Personnel Hired

In this section indicate individual technical personal hired. To do so all personal must be registered at the FCT and have an association key.

Warning: Dates must be in the dd-mm-aaaa format.

Nome	Start Date (dd/mm/yyyy)	End Date (dd/mm/yyyy)	Other Institution
Valeriy Kuchkovskyy	01-12-2010	31-05-2011	

5.4 Additional Comments

In this space you can provide any additional information regarding the section General Indicators

1. The columns in the first table (section 1. Composition and Training) referring to the years before 2009 are meaningless. The on-line form did not allow any correction to values that are obviously wrong - see, for instance, the no. researchers FTE, that oscillates between 2 and almost 700!... The dimension of the LA cannot be of 2 researchers for sure... The correct number for 2009 is either 104 (total number) or 102 (eligible for funding) and in previous years it was below this number. The correct series of eligible researchers with PhD degree is:

2010: 108

2009: 102

2008: 85

2007: 82

2006: 75

2005: 69

2004: 61

2003: 57

2002: 53

2. The meaning of the line referring to "No. of Researchers integrated with PhD" has also changed from 2009 to 2010... In 2009, one was asked to register the number of eligible integrated researchers with PhD degree. In 2010, we have now been asked to register the total number of researchers with PhD degree. The columns cannot be compared.

3. The lines referring to MSc and PhD thesis also had their meaning changed. In past reports, one would report the number of on-going thesis supervisions; this table now changes the meaning to "completed theses" so the numbers are not comparable among years although in the same line and values before 2009 should be disregarded. The columns cannot be compared.

4. The column for 2008 is all in zeros which makes it evident that some kind of transition happened and the first columns must be ignored. By the way, they are all wrong. INESC Porto has asked to correct those numbers but was not allowed to.

In the site <http://profile.inescporto.pt> other information is made available about the LA.

6 Research Groups

In this section of the report you have the names of each Research Group and their Principal Investigators that were indicated in the last report. By following the link in the groups name you will be able to access the individual form of the group.

This list includes the currently active Research Groups as well as the Research Groups reported to be active in the previous year.

Reference	Group Title
RG-Norte-50014-3346	Manufacturing Systems Engineering
RG-Norte-50014-3347	Telecommunications and Multimedia
RG-Norte-50014-3348	Optoelectronics and Electronic Systems
RG-Norte-50014-3349	Power Systems
RG-Norte-50014-3351	Innovation and Technology Transfer
RG-Norte-50014-3406	LIAAD Laboratory of Artificial Intelligence and Decision Support
RG-Norte-50014-3435	Software Engineering and Information Systems
RG-Norte-50014-3507	CRACS Center for Research in Advanced Computing Systems

6.1 Group Description - UESP

Research Group Title

MANUFACTURING SYSTEMS ENGINEERING

Principal Investigator

Jorge Manuel Pinho de Sousa

Research Area

Electrical and Computer Engineering

Home Institution

INESC Porto

6.1.1 Funding

UESP

Fundação para a Ciência e a Tecnologia: 72.451,00 €

European Commission: 557.602,00 €

QREN: 149.313,00

TOTAL: 779.366,00 €

ROBIS

Fundação para a Ciência e a Tecnologia: 50.682,00 €

European Commission: 0,00 €

QREN: 72.097,00

TOTAL: 122.779,00 €

6.2 Objectives & Achievements - UESP

6.2.1 Objectives (4000 ca.)

FOREWORD

Because the FCT computer application did not allow the addition of a new Group, we report here that activities of the Manufacturing Systems Engineering (UESP) Research Group plus the activities of the newly formed (mid 2009) Robotics and Intelligent Systems (ROBIS) Group, which is being organized in connection with UESP since June 2009 by decision of the Board of Directors of INESC Porto.

Because the on-line form does not allow changes in the names of Principal Investigators since 2008, only the name of Prof. Jorge Sousa is indicated. UESP is run by two Co-Coordinators, J. Sousa and L. Carneiro. ROBIS is run by a Coordinator, António Moreira.

UESP

The main goal of the group is to contribute to the performance improvement of industrial enterprises through R&D projects, consulting, technology transfer and training services. Along with a strong application focus, the group is committed to conduct high quality research projects. The group main competences are related to Operations Management and Enterprise Information Systems, applied to industrial companies and enterprise collaborative networks.

The main activity areas include: Enterprise Collaborative Networks, Decision Support Systems; Operations Management and Production Planning, Internal Logistics, Cutting and Packing Problems, Transportation Systems and Logistics, Systems Integration, and Consultancy services.

This activity is grounded in research in the following scientific domains:

- Cooperative Enterprise Networks Management: build-to-order strategies for complexity and variety, dynamic capacity management, early warning management, operations co-ordination in dynamic supply networks, semantic and technical interoperability, collaborative performance management, life-cycle support of self-forming business networks.
- Information Management and Knowledge in Collaborative Networks: socio-technical analysis models, collaborative processes, and information and knowledge management in organizational networks.
- Operations Management and Production Planning: Decision Support Systems; structuring of decision processes; optimization methods; Combinatorial Optimization and meta-heuristics; optimization for planning and scheduling problems; Simulation; vehicle routing and transportation systems; logistics.
- Cutting and Packing Problems: incorporation of real-world constraints and objectives in cutting and packing optimization models; integrated resolution of cutting and packing problems and related tactical and operational problems; use of meta-heuristic techniques, often in their multi-objective versions; hybridization of meta-heuristics and exact methods.

ROBIS

The main goal of the Group ROBIS is the development of innovative robotic solutions and intelligent systems for different application areas where standard platforms are not optimal. Research activities address not only relevant problems in robotics but also application areas where technologies used in robotics play an important role, like control, automation, simulation, modeling, intelligent systems, etc.

The main activity areas include: Mobile Robotics, Marine Robotics, Industrial Manipulators, Control Algorithms, Automation Systems integration, and Consulting Services.

The Group's activity is grounded in research in the following scientific domains:

- Mobile Robotics: Robotic platform architectures; Control of mobile platforms; Smart and Low-Cost AGVs.
- Marine Robotics: Design of surface and underwater autonomous vehicles; underwater positioning and navigation, multiple platform systems, supervision of autonomous platforms, robotic based environment monitoring.
- Cooperative robotics: Warehouses and Logistics applications.
- Industrial Manipulators: Rapid teaching and programming interfaces; Hyper-flexible cells.
- Intelligent sensors: Smart sensors and image processing; Applications in robotics and automation; adaptive sampling strategies in environment monitoring.
- Intelligent control and simulation: control algorithms for complex dynamics systems. Simulation applications for complex dynamic electro/mechanical systems

The ROBIS GROUP is engaged in discovering and developing fundamental scientific principles and practices, such as perception, control and planning, which are applicable to intelligent robot systems and other complex dynamic systems. In addition, it is the goal of this group to facilitate technology transfer of its research results to yield solutions to real world problems for a wide range of application domains, namely, robots that navigate through complex indoor and outdoor spaces and advanced flexible manufacturing support systems.

6.2.2 Main Achievements (4000 ca)

UESP

In total eight European projects were active during 2010. An important critical mass has been achieved in the fields of Enterprise Collaboration Networks and Operations Management.

The very active participation in the Manufacture and Footwear European Technology Platforms allowed the establishment of important partnerships at a European level.

During 2010 the following important achievements can be highlighted:

- In the Net-Challenge European project, a Methodology and Collaborative processes were designed and developed to support SMEs in the creation and management of non-hierarchical business networks. An IT infrastructure and decision support tools for collaborative planning, event management and performance management were designed.
- In the AutogratiOn project (Assisting SMEs to participate in global digital supply chains in the automotive sector in the Single Market) INESC Porto was responsible for the design and development of an infrastructure to facilitate the integration of SMEs in the digital automotive supply chain. This new concept is supported by an efficient, simplified interface with the SME ERPs, facilitating the electronic integration of these companies in the supply network.
- New concepts and approaches for the management of complex supply networks have been developed in the AC/DC European project.
- An innovative methodology has been designed by the European project Fit4U, to support the balancing of production lines for customized fashion products.
- A new concept and several tools to support managing footwear supply networks, taking advantage of the use of RFID technology, have been developed in the scope of the Shoe-ID national project.
- A new and more agile approach to production scheduling for the fashion industry, especially suitable for environments with high levels of uncertainty and lack of information, was designed and developed.

- The multi-objective optimisation “scheduler”, developed by INESC Porto and integrated in the IZARO-GREY system, has been marketed by SOFTI9 and I68 (Spain) with a considerable commercial success. More than 20 licences have already been sold internationally by I68.

In 2010, a PhD was finished, 9 publications in peer review journals and 21 publications in international conference proceedings with referee were published.

ROBIS

In the **RobVigil** project, robots activities are being extended into a new area - surveillance, based on a strategy supported by several innovative principles:

- Self- localization in indoor environments
- Identification and tracking of people in a multi-camera system, both static and mobile cameras
- Secure wireless communications
- Real-time control of mobile units (i.e., robots)
- Fast wireless battery recharge systems (up to a few kW)

In the **SIIRI** project, an intelligent robot is being developed, capable of acquiring, in a fast and intuitive way, the know-how accumulated by specialized technicians and optimized during several years of experience. The innovative characteristics are:

- Programming of robots/machines through demonstration;
- Modular and flexible system for automatic recognition of object geometry;
- Intelligent system capable of auto-adapting to new objects;
- Advanced interface for management and control, supporting both local and remote interaction;
- Architecture and interaction between the modules and components of the system.

In the **Lajeado** project, for dam and reservoir monitoring with an autonomous underwater vehicle, funded by the Brazilian Hydroelectric Power Plant Company CEB Lajeado, INESC Porto is developing a high precision underwater positioning system and algorithms for the processing of underwater video and sonar data.

PERCEPTION-DRIVEN COORDINATED ROBOT MOTION CONTROL – Two novel research subjects:

- Decentralized low-communication estimation methods to provide estimates of the formation full state at all the vehicles, based on non-fully connected networks of inter-vehicle distance measurements and communications.
- Dynamic-goal-driven formation control, to track a moving target cooperatively, by fusing the data measured by all the formation vehicles, which actively re-arrange their relative geometry to reduce the target estimate uncertainty, while possibly balancing this with other objectives.

WWECO – Environmental Assessment and Modeling of Wastewater Discharges using Autonomous Underwater Vehicles Bio-optical Observations. Some of the developments of the project include an adaptive sampling approach for the MARES AUV and an automatic data processing system that will enable a quicker response in case of contamination risk to near-by beaches.

6.3 Productivity - UESP

6.3.1 Publications in peer review Journals (6000 ca.)

Total number of publications: 13

List can be consulted in: <http://profile.inescporto.pt>

UESP (9)

ALMADA LOBO, B., KLABJAN, D., CARRAVILLA, M.A., OLIVEIRA, J.F., "Multiple Machine Continuous Setup Lotsizing with Sequence-dependent Setups" 2010, Computational Optimization and Applications, vol.47, p.529-552.

CLARO, J., PINHO DE SOUSA, J., "A multiobjective metaheuristic for a mean-risk static stochastic knapsack problem ", Computational Optimization and Applications, July 2010, vol. 46, no.3, p. 427-450.

CLARO, J., PINHO DE SOUSA, J., "A multiobjective metaheuristic for a mean-risk multistage capacity investment problem", Journal of Heuristics, February 2010, vol. 16, no. 1, p. 85-115.

CRISPIM, J.A., PINHO DE SOUSA, J., "Partner selection in virtual enterprises", International Journal of Production Research, February 2010, vol. 48, no. 3, p. 683-707.

OLIVEIRA, J.F., "Comments on: Routing problems with loading constraints " 2010, TOP, vol. 18, p.31-33.

PARREÑO, F., ALVAREZ-VALDES, R., OLIVEIRA, J.F., TAMARIT, J., "A hybrid GRASP/VND algorithm for two- and three-dimensional bin packing", Annals of Operations Research 2010, vol. 179, p.203-220.

PARREÑO, F., ALVAREZ-VALDES, R., OLIVEIRA, J.F., TAMARIT, J., "Neighborhood structures for the container loading problem: a VNS implementation", Journal of Heuristics 2010, vol. 16, p.1-22.

PEDROSO, J.P., KUBO, M., "Heuristics and Exact Methods for Number Partitioning", European Journal of Operational Research, April 2010, vol.202, no.1, p.73-81.

SIMÕES, D., FERREIRA, H., SOARES, A.L., "Managing multiple ontologies in a virtual breeding environment context", International Journal of Services and Operations Management, 2010 Vol. 6, No.3 pp. 230 – 256.

ROBIS (4)

B.M. Ferreira , A. Matos , N. Cruz , "Estimation Approach for AUV Navigation Using a Single Acoustic Beacon", Sea Technology, vol.51, no.12, December 2010, pp.54-59.

J. Lima , J.A. Gonçalves , P. Gomes Costa , A.P. Moreira , "Humanoid Low-Level Controller Development Based On A Realistic Simulation", International Journal of Humanoid Robotics, vol.7, no.4, April 2010, pp.587-607.

B. Ferreira , A. Matos , N. Cruz , M. Pinto , "Modeling and Control of the MARES Autonomous Underwater Vehicle", Marine Technology Society Journal, vol.44, no.2, March 2010, pp.19-36.

P. Neto , J.N. Pires , A.P. Moreira , "High-level programming and control for industrial robotics: using a hand-held accelerometer-based input device for gesture and posture recognition ", Industrial Robot: An International Journal, vol.37, no.2 2010, pp.137-147.

6.3.2 Other international publications (6000 ca.)

The list of publications exceeds the space limit. UESP published 21 papers and ROBIS also published 21 papers. In the following, only 10 of each are identified. The complete list may be found in <http://profile.inescporto.pt/>.

UESP (10 out of 21)

AZEVEDO, A., ALMEIDA, A.H., "The development of factory templates for the integrated virtual factory", in proceedings of FAIM 2010 - Flexible Automation and Intelligent Manufacturing, July 2010, East Bay - Oakland, U.S.A.

CARNEIRO, L., ALMEIDA, R.J., AZEVEDO, A., KANKAANPAA, T., SHAMSUZZOHA, A., "An Innovative framework supporting business networks for complex product manufacturing", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on VIRTUAL ENTERPRISES, October 2010, Saint-Etienne, France.

CARNEIRO, L.C., SOUSA, C., SOARES, A.L., "Integration of domain and social ontologies in a CMS based collaborative platform", Proceedings of OnToContent 2010 - The 6th International Workshop on Ontology Content (OnToContent 2010) 2010, Creta, Grécia.

CASTRO, P., OLIVEIRA, J.F., "A New MILP Model for the 2D Strip Packing Problem", in proceedings of 2010 AIChE Annual Meeting, November 2010, Salt Lake City, USA.

GOMES, R.J., PINHO DE SOUSA, J., GALVÃO, T., "A new heuristic approach for demand responsive transportation systems", Proceedings XLII Simpósio Brasileiro de Pesquisa Operacional, September 2010, Bento Gonçalves, RS, Brasil.

KANKAANPAA, T., SHAMSUZZOHA, A., CARNEIRO, L., ALMEIDA, R., HELO, P., FORNASIERO, R., FERREIRA, P.S., CHIODI, A., "Methodology for non-hierarchical collaboration networks for complex products manufacturing", in proceedings ICE 2010 - 16th International Conference on Concurrent Enterprising Lugano, June 2010, Lugano, Switzerland.

OLIVEIRA, J.F., CARRAVILLA, M.A., CARQUEJA, A., "A Tree-search Algorithm for the Two-dimensional Rectangular Strip Packing Problem", in proceedings of ALIO-INFORMS 2010 International Meeting, June 2010, Buenos Aires, Argentina.

PEDROSO, J.P., "Metaheuristics for the asymmetric hamiltonian path problem", Seventh International Conference on Numerical Methods and Applications, August 2010, Borovets, Bulgaria.

PEREIRA, C., SOUSA, C., SOARES, A.L., "Building an informal ontology to support collaborative network operation: a case study", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on Virtual Enterprises, October 2010, Saint-Etienne, France.

PIECADE, F.R., AZEVEDO, A., BASTOS, J., "Managing Performance to Align the Participants of Collaborative Networks: Case Studies Results", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on Virtual Enterprises, October 2010, Saint-Etienne, France.

ROBIS (10 out of 21)

DEL MONEGO, M., RAMOS, P., NEVES, M.V., "Geostatistical Mapping of Outfall Plume Dispersion Data Gathered with an Autonomous Underwater Vehicle", geoENV VII – Geostatistics for Environmental Applications, February 2010, ISBN: 978-90-481-2321-6, vol.16. (book)

RAMOS, P., ABREU, N.M., "Spatial analysis of sea outfall discharges using block kriging", Proceedings of MWWD 2010 MWWD 2010 - 6th International Conference on Marine Waste Water Discharges and Coastal Environment , October 2010, Langkawi , Malasia.

ABREU, N.M., RAMOS, P., "An integrated application for geostatistical analysis of sea outfall discharges based on R software", OCEANS' 10 - OCEANS '10 IEEE Sydney Conference and Exhibition Australia , September 2010, Sidney, Austrália.

NETO, P., MENDES, N., MOURATO, N., MOREIRA, A.P., "Attracting Students to Engineering: Using Intuitive HRIs for Educational Purposes", FIRA2010 - FIRA RoboWorld Congress 2010, September 2010, Bangalore, India, p.250-257.

ABREU, N.M., MATOS, A., RAMOS, P., CRUZ, N., "Automatic Interface for AUV Mission Planning and Supervision", OCEANS' 10 - OCEANS '10 IEEE Sydney Conference and Exhibition Australia , September 2010, Sidney, Austrália.

MENDES, N., NETO, P., PIRES, J.N., MOREIRA, A.P., "Fuzzy-PI Force Control for Industrial Robotics", FIRA2010 - FIRA RoboWorld Congress 2010, September 2010, Bangalore, India, p.322-329.

FERREIRA, B.M., MATOS, A., CRUZ, N., "Single beacon navigation: localization and control of the MARES AUV", OCEANS' 10 - OCEANS '10 IEEE Sydney Conference and Exhibition Australia , September 2010, Sidney, Austrália.

ALMEIDA, R.M., CRUZ, N., MATOS, A., "Synchronized Intelligent Buoy Network for Underwater Positioning ", OCEANS' 10 - OCEANS '10 IEEE Sydney Conference and Exhibition Australia , September 2010, Sidney, Austrália.

NETO, P., MENDES, N., PIRES, J.N., MOREIRA, A.P., "CAD-Based Robot Programming: the role of Fuzzy-PI Force Control in Unstructured Environments", CASE2010 - 6th annual IEEE Conference on Automation Science and Engineering, August 2010, Toronto, Canadá, p.362-367.

NETO, P., PIRES, J., MOREIRA, A.P., "3D CAD-Based Robot Programming for the SME Shop-Floor", in proceedings of FAIM 2010 - Flexible Automation and Intelligent Manufacturing, July 2010, East Bay - Oakland, U.S.A., p.138-145.

UNREPORTED

UESP

AZEVEDO, A., PIEDADE, F.R., BASTOS, J., ALMEIDA, A., "Virtual Factory Framework: An Innovative Approach to Support the Planning and Optimization of the Next Generation Factories", Proceedings of IFAC MCPL 2010 September 8 -10, Coimbra – Portugal, 2010.

BARROSO, I.S.S., CARRAVILLA, M.A., "Beyond classroom boundaries: How Higher Education Institutions Apply Lean.", in proceedings of Simpósio Brasileiro de Ciência de Serviços, 2010, Brasília, Brazil.

OLIVEIRA, C., PINHO DE SOUSA, J., BOK, M., "Strategies for locating charge points for electrical car batteries in urban regions", CITTA 3rd Annual Conference on Planning Research, May 2010, FEUP, Porto, Portugal.

PEDROSO, J.P., SMEERS, Y., "Equilibria on a Game with Discrete Variables", in proceedings of CIE 2010 - Computability in Europe 2010, June 2010, Ponta Delgada, Portugal.

PIEADADE, F.R., BASTOS, J., AZEVEDO, A., "Using the Life-Cycle Paradigm to Support Factory Planning Approaches" Proceedings of BASYS 2010 - 9TH IFIP International Conference On Information Technology For Balanced Automation Systems, July 2010, VALENCIA, SPAIN

ROCHA, L.F., MOREIRA, A.P., AZEVEDO, A., "Flexible Internal Logistics based on AGV systems: A case Study", Proceedings of IFAC MCPL 2010 September 8 -10, Coimbra- Portugal, 2010.

SHAMSUZZOHA, A., KANKAANPAA, T., HELO, P., CARNEIRO, L., ALMEIDA, R.J., FORNASIERO, R., "Non-hierarchical collaboration in dynamic Business Communities", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on Virtual Enterprises, October 2010, Saint-Etienne, France.

PINTO FERREIRA, R., SOARES, A.L., "A collaborative decision support method to design performance evaluation systems in collaborative networks of organizations", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on Virtual Enterprises, October 2010, Saint-Etienne, France.

PRATA, B., PINHO DE SOUSA, J., GALVÃO, T., "Uma nova abordagem para o problema de programação integrada de veículos e motoristas", Proceedings XLII Simpósio Brasileiro de Pesquisa Operacional, September 2010, Bento Gonçalves, RS, Brasil.

SÁ, C.M., PEREIRA, C., SOARES, A.L., "Supporting collaborative conceptualization tasks through a semantic wiki based platform", Proceedings of OnToContent 2010 - The 6th International Workshop on Ontology Content (OnToContent 2010) 2010, Creta, Grécia.

SHAMSUZZOHA, A., KANKAANPÄÄ, T., CARNEIRO, L., T. HELO, P., "Implementation Framework for Collaboration in a Non-Hierarchical Business Network", December 2010, Macau, China.

ROBIS

FERREIRA, M.A., MOREIRA, A.P., MALHEIROS, P.S., PIRES, N., "Highly Flexible Robotized Cells: application to small series painting", in proceedings of FAIM 2010 - Flexible Automation and Intelligent Manufacturing, July 2010, East Bay - Oakland, U.S.A., p.244-251.

FERREIRA, B.M., MALHEIROS, P., MOREIRA, A.P., COSTA, P.J., "Tracking of the Position of a Marker for Use in Industrial Processes", in proceedings of FAIM 2010 - Flexible Automation and Intelligent Manufacturing, July 2010, East Bay - Oakland, U.S.A..

PIRES, P., MOREIRA, A.P., "Robot Path Simulation: a Low Cost Solution Based on CAD", RAM 2010 - 4th IEEE INTERNATIONAL CONFERENCE ON ROBOTICS, AUTOMATION AND MECHATRONICS, June 2010, Singapura, Singapura, p.333-338.

PETRY, M., MOREIRA, A.P., BRAGA, R., REIS, L.P., "Shared Control for Obstacle Avoidance in Intelligent Wheelchairs", RAM 2010 - 4th IEEE International Conference On Robotics, Automation And Mechatronics, June 2010, Singapura, Singapura, p.182-187.

GONÇALVES, J.A., LIMA, J., MALHEIROS, P., COSTA, P.J., "Sensor and actuator stochastic modeling of the Lego Mindstorms NXT educational Kit", March 2010.

PINHO, R., SOUSA, A., RESTIVO, A., "Applying usability principles to the design of a web interface for the 'iLab - Inventory Manager for Electronics Laboratory'", Actas de CISTI'2010 - 5ª Conferência Ibérica de Sistemas e Tecnologias de Informação 2010, Santiago de Compostela, Espanha.

CRUZ, N., ALVES, J.C., "Auto-Heading Controller for an Autonomous Sailboat", OCEANS' 10 - OCEANS '10 IEEE Sydney Conference and Exhibition Australia 2010, Sidney, Austrália.

PEGORARO, E.M., SOUSA, A., "FEUP Fuzzy Tool II - Improved tool for education and embedded control", Actas de CISTI'2010 - 5ª Conferência Ibérica de Sistemas e Tecnologias de Informação 2010, Santiago de Compostela, Espanha.

CRUZ, N., MATOS, A., "Reactive AUV Motion for Thermocline Tracking ", OCEANS' 10 - OCEANS '10 IEEE Sydney Conference and Exhibition Australia 2010, Sidney, Austrália.

LIMA, J., GONÇALVES, J.A., COSTA, P.J., MOREIRA, A.P., "Humanoid Robot Gait Planning Resorting to an Adaptive Simulated Annealing Algorithm", March 2010.

RAMOS, P., ABREU, N.M., "Spatial Analysis of Sea Outfall Discharges", In proceedings of Water Research Confer - The Water Research Conference 2010, Lisboa, Portugal.

6.3.3 Ph.D. thesis completed (3000 ca.)

UESP (1)

PEREIRA, C., "A organização da informação e conhecimento em redes colaborativas como um processo de construção social do significado: uma teoria e um método prático", May 2010, PhD Thesis.

ROBIS (1)

Rodrigo António Marques Braga, Plataforma de Desenvolvimento de Cadeiras de Rodas Inteligentes, Doctoral Program in Informatic Engineering, FEUP. (Co-supervised by Prof. Luís Paulo Reis – Departamento de Engenharia Informática-FEUP). Concluída em 26 de Novembro de 2010.

6.3.4 Patents/prototypes (2000 ca.)

UESP

- **List of Patents**

Name: Distribution and temporary storage system of transport units

Developed under (Project Name): Ciclop

Demo Place: Lirel

Type (National or International): International

Approval Date: 26-05-2010

Name: Modular multi-ring system for flexible supply of workstation

Developed under (Project Name): CEC-Made-Shoe

Demo Place: Kyaia

Type (National or International): National

Approval Date: 15-12-2010

- **List of Prototypes**

Name: A system for reliable exchange of business documents in the automotive industry

Developed under (Project Name): Autogration

Demo Place: INESC Porto

Development Period: 2010

Name: Platform for the creation and management of Business Communities – first version

Developed under (Project Name): Net-Challenge

Demo Place: INESC Porto

Development Period: 2009-2010

Name: Methods and tools for benefit balancing in automotive supply chains

Developed under (Project Name): AC/DC

Demo Place: Continental AG

Development Period: 2008-2009

Name: An agile optimization planning system for footwear producing SMEs – final prototype

Developed under (Project Name): AGILPLAN

Demo Place: Oficina de Soluções

Development Period: 2009-2010

Name: A multi-objective optimization system for production scheduling –updated version enhanced with new functionality

Developed under (Project Name): Izaro Grey

Demo Place: INESC Porto, Softi9

Development Period: 2007-2010

Name: A system for the management of standard technical processes in the construction industry at national level (improved version)

Developed under (Project Name): Parque Escolar

Demo Place: Parque Escolar

Development Period: 2009-2010

Name: Performance management with automated shop floor data collection

Developed under (Project Name): MIB-PET

Demo Place: Inovultus

Development Period: 2009-2010

ROBIS

Prototypes

- PaleteAGV - Autonomous Vehicle for transportation of *Europaletes*.
- CleverRob - Autonomous Robot for advertising and publicity.

6.3.5 Organization of Conferences (2000 ca.)

UESP

Carravilla, Maria Antónia, Organizer of the stream “Teaching OR/MS” at EURO XXIV, 24th European Conference on Operational Research, Lisboa, Portugal, 11-14 July, 2010.

Oliveira, José Fernando, Program Committee Chair, 7th ESICUP Meeting within ALIO/INFORMS 2010 Joint International Meeting, Buenos Aires, Argentina, 6-9 June, 2010.

Oliveira, José Fernando, Program Committee Member, Organizing Committee Member, Area Organizer for the areas of “OR Education, History, Ethics” and “Telecommunication & Networks” and Stream Organizer for the area of Cutting and Packing, EURO XXIV - 24th Conference on Operational Research, Lisboa, Portugal, 11-14 July, 2010.

Sousa, Jorge Pinho, Program Committee Member, BASYS’10 – 9th IFIP International Conference on Information Technology for BALANCED AUTOMATION SYSTEMS in Manufacturing and Services, Valência, Spain, Jul 2010.

Sousa, Jorge Pinho, Program Committee Member, PRO-VE’10 - 11th IFIP Working Conference on Virtual Enterprise, Saint-Etienne, France, Out 2010.

ROBIS

Organizing Committee Members of the IMS10 - 10th IFAC Workshop on Intelligent Manufacturing Systems, Lisboa 1,2 July 2010 (José Gonçalves and José Lima)

6.3.6 Industry contract research (2000 ca.)

The Unit (UESP + ROBIS) has a very strong link with industry, regularly collaborating with technology suppliers for industry, on the design and development of new products they put on the market. For industrial companies the group supplies consulting services on innovation and industrial management. For industrial companies, the group also offers RTD services to meet specific requirements that cannot be answered by available commercial solutions. This section refers only to national contracts.

UESP

National direct RTD contracts: 19

During 2010, the Unit has strengthened its sound links with industry. For industrial companies, the Unit provides consultancy services on industrial management, requirements analysis and selection of technical solutions. For suppliers of technologies for industry, the group offers RTD services on the design and development of new products they put on the market, in fields such as production planning and scheduling optimization, optimization of cutting and packing, automation and logistics, enterprise collaboration and interoperability.

The main industry related research, consultancy and technology transfer projects during 2010 were:

- Under the MIB-PET project a new approach to performance management and shop floor data collection was developed. The process for key performance indicators (KPI) definition and its monitoring and control has been integrated and largely automated.
- Izaro Grey – design, development and implementation of several enhancements of the scheduling optimization engine, according to a plan previously established with our partners.
- Consultancy contracts to support several companies (Lucios; 3M2P - Construção e Reabilitação de Edifícios, Lda; ANARIC; Confeitaria Mirene SA; Metalfer; Oxisol; Padinho; PHC; Digital Partners; SopSec; Waldemar Fernandes da Silva, SA; and YAH) in analyzing their business processes, identifying their IT requirements, supporting the selection and implementation of solutions.
- Technical support to the implementation of internal logistic systems produced by the partner company Lirel.

ROBIS

Contract research with industry referred to in the sections Internationalization and Government/Organization contracts, where projects with industry funded by QREN are listed.

6.3.7 Internationalization (2000 ca.)

(Collaborative publication, Research, Graduate Training Networks or other forms of participation of the Research Group at the international level)

UESP

International projects: 7; International consulting: 1

- AC/DC (Automotive Chassis Development for 5-Days Cars) – large European project with key players in the European automotive industry.
- Net-Challenge (Innovative networks of SMEs for complex products manufacturing) - project in Enterprise Collaboration Networks, launched and coordinated by INESC Porto.

- H-Know (Advanced Infrastructure for Knowledge Based Services for Buildings Restoring).
- VFF (Holistic, extensible, scalable and standard Virtual Factory Framework) – developing a simulation framework for complete factories to support their design and reconfiguration.
- FIT4U (Framework of Integrated Technologies for User Centred Products) – support for the manufacturing of customized consumer goods like garments, footwear and gloves.
- Autogration (Assisting SMEs to participate in global digital supply chains in the automotive sector in the Single Market).
- CORENET (Customer-ORiented and Eco-friendly NETworks for healthy fashionable goods).
- DINAMIC (A new methodology for the promotion and dissemination of Innovation activities in European SMEs).

Involvement in MIT Portugal Programs EDAM (Engineering Design and Advanced Manufacturing) and Transportation Systems.

Participation in EURO, Association of European Operational Research Societies – namely ESICUP (area of Cutting and Packing), whose coordinator is J F Oliveira (UESP), appointed as Vice-President 2 of EURO.

ROBIS

International industry contract research: 1

TRIMARES - Development of medium size autonomous underwater vehicle for the Brazilian Hydro Power Plant Company CEB Lajeado. The vehicle will be used as a platform to transport underwater inspection and mapping and water quality sensors.

Joint Research

I3S, University of Nice, France: Information theory, adaptive sampling

University of Dundee, U.K.: Fluid mechanics

Georgia Institute of Technology, U.S.A.: Hydrodynamic dispersion models

Research project (FCT) with Carnegie Mellon University, U.S.A.: cooperative robotics

Research project (FCT) with Royal Institute of Technology, Stockholm

Co-supervision of PhD and MSc students at

- King's College London, U.K.: Anesthesia control
- Federal University of Bahia, Brasil: Mobile robotics
- Karlsruhe University, Germany: Robotics prosthesis
- Wrocław University of Technology, Poland: Robotics prosthesis

6.3.8 Other national publications (6000 ca.)

UESP (1)

ROCHA, L.F., MOREIRA, A.P., AZEVEDO, A., “Increase of flexibility and production rate by an AGV system: A case study”, Proceedings of Controlo 2010 – 9th Portuguese Conference on Automatic Control, September 2010, Coimbra, Portugal.

ROBIS (14)

SOBREIRA, H.M., MOREIRA, A.P., SENA ESTEVES, J., "Characterization of Position and Orientation Measurement Uncertainties in a Low-Cost Mobile Platform", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal, p.635-640.

ROCHA, L.F., MOREIRA, A.P., AZEVEDO, A., "Flexible Internal Logistics based on AGV systems: A case Study", Papers of MCPL 2010, September 2010, Coimbra, Portugal, p.109-114.

ROCHA, L., MOREIRA, A.P., AZEVEDO, A., "INCREASE OF FLEXIBILITY AND PRODUCTION RATE BY AN AGV SYSTEM: A CASE STUDY", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal, p.109-114.

FERREIRA, M.A., MALHEIROS, P.S., MOREIRA, A.P., PIRES, J., NETO, P., "LOW-COST LASER SCAN FOR FLEXIBLE ROBOTIC CELLS: SPRAY PAINTING APPLICATION", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal, p.69-76.

BRESSAN, N., NUNES, C., AMORIM, P., MOREIRA, A.P., "NEW CONTROL STRATEGY FOR DRUG TARGET CONTROLLED INFUSION SYSTEMS", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal, p.247-251.

FERREIRA, J.R., MOREIRA, A.P., "NON-LINEAR MODEL PREDICTIVE CONTROLLER FOR TRAJECTORY TRACKING OF AN OMNI-DIRECTIONAL ROBOT USING A SIMPLIFIED MODEL", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal.

NASCIMENTO, T.P., MOREIRA, A.P., "OMNIDIRECTIONAL MOBILE ROBOT'S MULTIVARIABLE TRAJECTORY TRACKING CONTROL: A ROBUSTNESS ANALYSIS", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal.

PINTO, M.A., MOREIRA, A.P., COSTA, P.J., FERREIRA, M.A., "ROBUSTNESS ANALYSIS OF A FLEXIBLE MANUFACTURING SYSTEM FOR PICKING PIECES IN A CONVEYOR BELT", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal, p.130-135.

MOREIRA, A.P., SOBREIRA, H.M., FERREIRA, M.A., PINTO, M.A., BRESSAN, N., "TARGET CONTROLLED INFUSION ALGORITHMS FOR ANESTHESIA: OPTIMIZATION FOR MINIMUM TIME DRUG EFFECT", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal, p.438-443.

MALHEIROS, P., FERREIRA, B.M., MOREIRA, A.P., COSTA, P.J., "Tracking the position of an active tool for robotic arm control", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal.

NETO, P., MENDES, N., ARAÚJO, R., PIRES, J., MOREIRA, A.P., "INTUITIVE ROBOT PROGRAMMING BASED ON CAD: DEALING WITH UNSTRUCTURED ENVIRONMENTS", Controlo2010 - Controlo2010, August 2010, Coimbra, Portugal, p.115-123.

PINTO, M.A., MOREIRA, A.P., COSTA, P.J., FERREIRA, M.A., MALHEIROS, P.S., "Robotic Manipulator and Artificial Vision System for Picking Cork Pieces in a Conveyor Belt", ROBÓTICA2010 - 10th Conference on Mobile Robots and Competitions, July 2010, Leiria, Portugal, p.576-583.

SOBREIRA, H., MOREIRA, A.P., ESTEVES, J.S., "Low cost self-localization system with two beacons", ROBÓTICA2010 - 10th Conference on Mobile Robots and Competitions, March 2010, Leiria, Portugal.

FERREIRA, M.A., MALHEIROS, P.S., MOREIRA, A.P., PIRES, N., "Robotized Painting with Automatic Reconfiguration", ROBÓTICA2010 - 10th Conference on Mobile Robots and Competitions, March 2010, Leiria, Portugal.

6.3.9 Government/Organization contract research (2000 ca.)

(Include here work carried out by the group that resulted in a publication or report. Of particular importance are those involved in public policy advice)

UESP

National programs – FCT: 6; QREN: 6

Most relevant:

AGILPLAN - supported by Agência de Inovação. It aims at designing a methodology and support system for production planning optimization in SMEs, taking into account uncertainty and incompleteness of information. This project is led by Oficina de Soluções (a software house) and involves the Footwear Technological Centre (Centro Tecnológico do Calçado) and an industrial company (AS).

SIBAP – designing and developing a balancing system for shoe-making production lines, with small production batches and a large variety of models.

Shoe-ID - a new and integrated concept, and several support tools, were developed for managing complete footwear value chains, taking advantage of the use of RFID technology.

MINERVA aims at designing and developing an innovative Maintenance Management solution for industrial companies. The project leader is Primavera Software, and a consultancy company (MIIT) is also a partner.

FADIS (in partnership with UITT). The project goal is to design innovative decision support tools for the internationalization of technical services. The consortium includes Sistrade (a software house), CATIM (machine tool technological centre) and INESC Porto. This project involves some activity with the “European Collaboration for Service Internationalization” initiative.

ROBIS

National programs – FCT: 2; QREN: 2

WWECO - Mapeamento de Plumas de Emissários Submarinos Baseada em Sensores Ópticos (with Águas do Oeste S.A.) - Development of methods to improve environmental impact assessment and modeling capabilities of wastewater discharges using optical observations. Adaptive sampling approach for the MARES AUV and an automatic data processing system that will enable a quicker response in case of contamination risk to near-by beaches.

PERCEPTION-DRIVEN COORDINATED ROBOT MOTION CONTROL – Motion coordination and cooperative perception of the surrounding environment with multiple and possibly heterogeneous, autonomous vehicles.

RobVigil – QREN project with CLEVER HOUSE – Sistemas Inteligentes, Lda (Project leader), STRONG – Segurança, S.A. and SINEPOWER – Sociedade de Consultadoria e Projectos, Lda.

SIARI – Contract project with FLUPOL – Aplicações Técnicas de Polímeros Fluorados, Lda

Group Description - UTM

Research Group Title

TELECOMMUNICATIONS AND MULTIMEDIA

Principal Investigator

José António Ruela Simões Fernandes

Research Area

Electrical and Computer Engineering

Home Institution

INESC Porto

6.3.10 Funding

Fundação para a Ciência e a Tecnologia: 132.723,00 €

European Commission: 190.585,00 €

QREN: 418.995,00

TOTAL: 742.303,00 €

6.4 Objectives & Achievements - UTM

6.4.1 Objectives (4000 ca.)

FOREWORD

Because the on-line form does not allow changes in the names of Principal Investigators since 2008, only the name of Prof. José Ruela is indicated. The Telecommunications and Multimedia Unit (UTM) of INESC Porto is run by two Co-Coordinators, J. Ruela and A. Olivier.

OBJECTIVES

The Telecommunications and Multimedia Unit carries out research and development, consulting, technology transfer and advanced training in scientific and technological areas that fostered the convergence between the traditional telecom and broadcast worlds, the Internet and multimedia.

It has a multi and interdisciplinary nature and, for this reason, it is internally organized in Areas, for management and scientific purposes. Each Area carries out basic and applied research in related topics, under a common strategy and goals determined by the market sector it covers:

- Multimedia Technologies and Systems has two main focus of research: 1) Information Processing and Pattern Recognition, which includes the topics of Computer Vision, Sound and Music Computing and Network Information Processing; and 2) Digital Media Technologies, which addresses the management and distribution of multimedia content, the creation of context-aware multimedia services, the design of multimedia content recommendation systems and of adaptable mobile multimedia applications. The mission of this Area is to research and innovate in the way multimedia content is used to improve the quality of life in different axes, from entertainment to security, through education and health.
- Wireless Networks addresses the research of innovative architectural solutions and new communications paradigms, covering the following main topics: mobility of networks and terminals in large and multi-technology mesh networks; usage of dynamic radio channel allocation, smart antennas, and cross layer techniques to implement adaptive radio-aware networks; auto-configuration and self-management of networks and terminal; efficient and secure support of new types of traffic (IPTV, peer-to-peer applications, Web-based services) in such networks; managing of communications networks through the application of machine learning techniques.
- Optical and Electronics Technologies has two main research lines: Optical Communications and Microwaves, whose main topics are the design of fibre supported microwave / radio systems, compact multiband antennas, signal processing techniques applied to optical communication systems, and passive optical access networks; and Microelectronics, which is focused on dynamic reconfigurable logic and custom computing hardware, analogue and RF circuits design, and test and design-for-testability of analogue, mixed-signal and RF circuits.

The Unit pursues a high-level of scientific excellence, with international recognition. Most of its activities, both at national and international level, are carried out under contract and in partnership with telecom and network operators, service providers, broadcasters, content producers and providers, equipment manufacturers, software houses, system integrators, universities and research institutions.

At national level the Unit is deeply involved in a large number of research projects funded by FCT programmes as well as R&D projects with industrial partners in the framework of QREN (Quadro de Referência Estratégico Nacional).

The exploitation of results is carried out by means of R&D contracts, technology transfer and consulting and plays an important role in the incubation of start-up companies. In this context it is worth mentioning the current partnerships with companies created by former researchers of INESC Porto, such as MOG Solutions, Nonius Software, Xarevision and Next to You.

6.4.2 Main Achievements (4000 ca)

The main achievements are tightly connected with activities in R&D projects and contracts as well as in PhD work programmes. They are described in scientific papers, project reports and theses.

The number of publications in peer review journals had a considerable increase in comparison with the previous year, which is related to the large number of on-going PhD theses (over forty) supervised by senior members of the Unit.

Members of the Unit kept actively involved in various PhD programmes offered by the University of Porto and its School of Engineering and in FCT funded research programmes with Universities in USA (MIT, Carnegie Mellon University and University of Texas at Austin).

The Unit has also hosted senior researchers from foreigner institutions in the framework of joint research programmes and members of the Unit continued to participate in the organization of international conferences.

The scientific results, summarized below, are in the form of new algorithms, methods, tools and systems; in most cases, prototypes (listed in a separate section) have been developed as a proof of concept.

1. *Multimedia Technologies and Systems*

Music similarity software modules based on integration of music audio content, textual content, and usage content

Beat Tracking algorithm

Ontology of musical tags

Robust algorithms for Optical Music Recognition with handwritten scores

Semi-supervised algorithm for the assessment of spatial segmentations of video

System with frontal and lateral information for the automatic assessment of the aesthetic results of Breast Cancer Treatments

Algorithms for the pectoral muscle detection in mammograms

Framework for the Classification with Reject Option

New algorithms for the Classification of Ordinal Data

Generation of side information for distributed video coding in multi-camera environments with overlapped and non-overlapped views

Distributed video codec for multi-camera video surveillance

Hybrid approach for evaluating object tracking algorithms combining metrics with and without reference information

Automatic detection and tracking of vibrating lines

Content recommendation for IPTV

Video quality evaluation in mobile environments

2. *Wireless Networks*

NS-3 simulation framework for scalable multi-technology mobile wireless mesh networks

Technique for the fast prototyping of wireless communications systems from NS-3 simulation models

Routing protocol for vehicular networks

Algorithm for managing radio resources in scenarios of multi-technology cellular networks

Algorithm for radio planning of multi-channel wireless mesh networks

Protocol for configuring the channel operation of wireless mesh networks

Multicast solution for wireless mesh networks

Scalable Public Key Infrastructure for disruption-tolerant networks

Routing bridge for vehicular networks

Algorithm for the self configuration of wireless personal networks

Traffic model for virtual world client server communication

Two mode probabilistic usage model of 802.11 access points

3. Optical and Electronics Technologies

Performance Evaluation of Zero-Biased VCSEL for High Speed Data Transmission

Reconfigurable dual band monopole array with high isolation for WLAN MIMO applications

Performance assessment of OFDM signals in frequency-interleaved WDM radio-over-fiber links

Performance evaluation of MB-OFDM UWB over GI-POF

Signal processing techniques for transmission impairments compensation in optical systems

Design of compact multiband antennas for WLANs

In-circuit test and correction of non-linearities of adaptive RF transmitters

On-chip measurement of RF true-power

Design of radiation hard analog and mixed-signal ICs

Design, simulation, and electrical characterization of biometric sensors

Tools for runtime generation of partial FPGA configurations for embedded systems

Architecture and design of e-FPGAs

Stereo image processing for real-time depth-map calculation on FPGA

6.5 Productivity - UTM

6.5.1 Publications in peer review Journals (6000 ca.)

Total number of publications: 19 (+5 online)

List can be consulted in: <http://profile.inescporto.pt>

SILVA, S.R., PESSOA, L.M., BARBOSA OLIVEIRA, J., CASTRO, J., SALGADO, H., "Performance Evaluation of Zero-Biased VCSEL for High Speed Data Transmission", Journal of Instrumentation, vol.5, November 2010.

CARVALHO, M.I., FACÃO, M., "Propagation of Airy-related beams", OPTICS EXPRESS, September 2010, vol.18, no.21, p.21938-21949.

GUEDES, C., REBELO, P., "Reflections on music programming for conferences: The case of SMC 2009", Computer Music Journal, September 2010, vol.34, no.3, p.10-19.

VIANA, P., PIMENTA ALVES, A., "A Semantic Management Model to enable the integrated management of media and devices", Multimedia Tools and Applications, Springer, August 2010, vol.49, no.1, p.37-62.

HEIL, J., DAHLKAMP, J., GOLATTA, M., ROM, J., DOMSCHKE, C., CARDOSO, M.J., et al., "Aesthetics in Breast Conserving Therapy: Do Objectively Measured Results Match Patients' Evaluations?", Annals of Surgical Oncology, August 2010.

GOUYON, F., BARBOSA, A., SERRA, X., "Special issue on Sound and Music Computing - Editor's notes", Computer Music Journal, August 2010, vol.34, no.3.

PINTO, A.A., RICARDO, M., "Secure multicast in IPTV services", Computer Networks, July 2010, vol.54, no.10, p.1531-1542.

CIOBANU, L., CORTE-REAL, L., "Successive refinement of side information for multi-view distributed video coding", *Multimedia Tools and Applications*, July 2010, vol.48, no.3, p.411-436.

LOPES CAMPOS, R., RICARDO, M., "An Efficient Mechanism for Establishing IP Connectivity in Next Generation Networks", *International Journal of Communication Systems*, June 2010, vol.23, p.817-840.

LUO, Q., PEREIRA, J.R., SALGADO, H., "Reconfigurable dual-band C-shaped monopole antenna array with high isolation", *IET Electronics Letters*, June 2010, vol.46, no.13, p.888-889.

CASTRO, H.F., PIMENTA ALVES, A., SERRÃO, C., CARAWAY, B., "A New Paradigm for Content Producers", *IEEE Multimedia*, April 2010, vol.17, no.2, p.90-93.

CARRERAS, A., BARBOSA, V., ANDRADE, M.T., DOGAN, S., "A Platform for Context-Aware and Digital Rights Management-Enabled Content Adaptation", *IEEE Multimedia*, April 2010, vol.17, no.2, p.74-89.

LIDY, T., SILLA, C., CORNELIS, O., GOUYON, F., RAUBER, A., KAESTNER, C., KOERICH, A., "On the Suitability of State-of-the-art Music Information Retrieval Methods for Analyzing, Categorizing and Accessing Non-Western and Ethnic Music Collections", *Signal Processing*, April 2010, vol.90, no.4, p.1032-1048.

FACÃO, M., CARVALHO, M.I., PARKER, D., "Soliton self-frequency shift: Self-similar solutions and their stability", *Physical Review E*, April 2010, vol.81, no.4.

CARDOSO, M.J., MACMILLAN, R.D., MERCK, B., MUNHOZ, A.M., RAINSBURY, R., "Training in oncoplastic surgery: An international consensus", *The Breast*, April 2010.

CARVALHO, P.M., SANTOS CARDOSO, J., CORTE REAL, L., "Hybrid framework for evaluating video object tracking algorithms", *ELECTRONICS LETTERS*, March 2010, vol.46, no.6, p.411-412.

REBELO, A.M., CAPELA, G., SANTOS CARDOSO, J., "Optical recognition of music symbols: A comparative study", *International Journal on Document Analysis and Recognition*, March 2010, vol.13, no.1, p.19-31.

RAY, S., GUÉRIN, R., KWONG, K., SOFIA, R., "Always Acyclic Distributed Path Computation", *IEEE/ACM Transactions on Networking*, February 2010, vol.18, no.1, p.307-319.

MOTA, P.M., MACHADO DA SILVA, J., VEIGA, R., "Estimation of RF PA Nonlinearities after Cross-correlating Current and Output Voltage", *Journal of Electronic Testing: Theory and Applications - Special Issue on Mixed-Signal Testing*, February 2010, vol.26, no.1, p.23-35.

(*) GONÇALVES, H., GONÇALVES, J.A., CORTE REAL, L., "HAIRIS: A method for automatic image registration through histogram-based image segmentation", *IEEE Transactions on Image Processing*, September 2010. (*)

(*) CAETANO, E., SILVA, S.R., BATEIRA, J., "A Vision System for Vibration Monitoring of Civil Engineering Structures", *Experimental Techniques*, August 2010. (*)

(*) CIOBANU, L., CORTE REAL, L., "Iterative filtering of SIFT keypoint matches for multi-view registration in Distributed Video Coding", *Multimedia Tools and Applications*, July 2010. (*)

(*) GOMES, R., JÚNIOR, W., CERQUEIRA, E., ABELEM, A., "Using fuzzy link cost and dynamic choice of link quality metrics to achieve QoS and QoE in wireless mesh networks", *Journal of Network and Computer Applications*, July 2010. (*)

(*) CAMPOS, R., DUARTE, R., SOUSA, F., RICARDO, M., RUELA, J., "Network infrastructure extension using 802.1D-based wireless mesh networks", *Wireless Communications and Mobile Computing*, January 2010. (*)

(*) Published on-line

6.5.2 Other international publications (6000 ca.)

Total number of publications: 28

List can be consulted in: <http://profile.inescporto.pt>

COSTA, J., SOUSA, R.J., CARDOSO, J., "An all-at-once Unimodal SVM Approach for Ordinal Classification", *ICMLA 2010 – 9th Int. Conf. on Machine Learning and Applications*, Dec. 2010, Washington, USA.

MAGALHÃES, A.T., OLIVEIRA, H.P., COSTA, S., CARDOSO, J., CARDOSO, M.J., "Value of photographic side-views in the objective evaluation of the aesthetic results of breast cancer conservative treatment", *CTRC-AACR 2010 - 33rd San Antonio Breast Cancer Symposium*, Dec. 2010, San Antonio, USA.

PINTO, T., REBELO, A.M., GERALDI, G., CARDOSO, J., "Content aware music score binarization", *ACCV 2010 – 10th Asian Conf. on Computer Vision*, Nov. 2010, Queenstown, New Zealand.

SANTOS, P.M., FERREIRA, J.C., "FPGA-based Real-Time Disparity Computation and Object Location", *NORCHIP 2010 - 28th Norchip Conf.*, Nov. 2010, Tampere, Finland.

AMARAL, I., COELHO, F.E., PINTO DA COSTA, J., CARDOSO, J., "Hierarchical Medical Image Annotation Using SVM-based Approaches", *ITAB 2010 - 10th IEEE Int. Conf. on Information Technology and Applications in Biomedicine*, Nov. 2010, Corfu, Greece.

OLIVEIRA, H.P., MAGALHÃES, A., CARDOSO, M.J., CARDOSO, J., "Improving the BCCT.core Model With Lateral Information", *ITAB 2010 - 10th IEEE Int. Conf. on Information Technology and Applications in Biomedicine*, Nov. 2010, Corfu, Greece.

MOREIRA, A., SILVA, J.M., ROCHA, L., "Endoleakage Monitoring Using Inductive-Coupling", *DCIS 2010 - Design of Circuits and Integrated Systems*, Nov. 2010, Lanzarote, Spain.

RESENDE, C., FERREIRA, J.C., "Using FPGAs for Real-Time Disparity Map Calculation", *DCIS 2010 - Design of Circuits and Integrated Systems*, Nov. 2010, Lanzarote, Spain.

RODRIGUES, J., FERREIRA, J.C., "FPGA-Based Rectification of Stereo Images", *DASIP 2010 - Design and Architectures for Signal and Image Processing*, Oct. 2010, Edinburgh, Scotland.

OLIVEIRA, J.B., PESSOA, L.M., COELHO, D.V., SALGADO, H., CASTRO, J., "UWB Radio over Perfluorinated GI-POF for Low-Cost In-Building Networks", *MWP 2010 - IEEE Int. Topical Meeting on Microwave Photonics*, Oct. 2010, Montreal, Canada.

OLIVEIRA, H.P., MAGALHÃES, A., CARDOSO, M.J., CARDOSO, J., "An accurate and interpretable model for BCCT.core", *EMBC 2010 - 32nd Int. Conf. of IEEE Engineering in Medicine and Biology Society*, Sept. 2010, Buenos Aires, Argentina.

DOMINGUES, I.C., CARDOSO, J., et al., "Pectoral muscle detection in mammograms based on the shortest path with endpoints learnt by SVMs", *EMBC 2010 - 32nd Int. Conf. of IEEE Engineering in Medicine and Biology Society*, Sept. 2010, Buenos Aires, Argentina.

SILVA, M., FERREIRA, J.C., "Creation of Partial FPGA Configurations at Run-Time", *DSD 2010 - 13th Euromicro Conf. on Digital System Design*, Sept. 2010, Lille, France.

SEPÚLVEDA, A., MOREIRA, A., FACHIN, F., WARDLE, B., SILVA, J.M., et al., "Inductive-coupling system for abdominal aortic aneurysms monitoring based on pressure sensing", *MME 2010 - 21st Micromechanics and Micro Systems Europe Workshop*, Sept. 2010, Enschede, Netherlands.

PEREIRA, M.R., PEREIRA, J.R., SALGADO, H., "Synthesis of Microstrip Filters with Arbitrary Reflective Group Delay Response", *ICEAA 2010 - Int. Conf. on Electromagnetics in Advanced Applications*, Sept. 2010, Sydney, Australia.

OLIVEIRA, J.L., GOUYON, F., MARTINS, L.G., REIS, L., "IBT: A Real-Time Tempo and Beat Tracking System", *ISMIR 2010 – 11th Int. Society for Music Information Retrieval Conf.*, Aug. 2010, Utrecht, Netherlands.
CARDOSO, J., REBELO, A.M., "Robust staffline thickness and distance estimation in binary and gray-level music scores", *ICPR 2010 - Int. Conf. on Pattern Recognition*, Aug. 2010, Istanbul, Turkey.

LOPES, M.A., GOUYON, F., KOERICH, A., OLIVEIRA, L., "Selection of Training Instances for Music Genre Classification", *ICPR 2010 - Int. Conf. on Pattern Recognition*, Aug. 2010, Istanbul, Turkey.

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TIMMERER, C., ANDRADE, M.T., MARTIN, A.L., "End-to-End Management of Heterogeneous Environments Enabling Quality of Experience", *High-quality visual experience*, Springer, July 2010.

BERNARDES, G., GUEDES, C., PENNYCOOK, B., "Style emulation of drum patterns by means of evolutionary methods and statistical analysis", *SMC 2010 - 7th Sound and Music Computing Conf.*, July 2010, Barcelona, Spain.

MARQUES, G., LOPES, M.A., SORDO, M., LANGLOIS, T., GOUYON, F., "Additional evidence that common low-level features of individual audio frames are not representative of music genres", *SMC 2010 - 7th Sound and Music Computing Conf.*, July 2010, Barcelona, Spain.

LUO, Q., SALGADO, H., PEREIRA, J.R., "Printed C-Shaped Monopole Antenna Array with High Isolation for MIMO Applications", *2010 IEEE Int. Symposium on Antennas and Propagation*, July 2010, Toronto, Canada.

BALTAZAR, A., GUEDES, C.A., PENNYCOOK, B., GOUYON, F., "A real-time human body skeletonization algorithm for Max/MSP/Jitter", *ICMC 2010 - Int. Computer Music Conf.*, June 2010, NY, USA.

SALTA, N.G., MORLA, R., RICARDO, M., "Improving P2P Video Streaming in Wireless Mesh Networks", *MED-HOC-NET 2010 - 9th IFIP Mediterranean Ad Hoc Networking Workshop*, June 2010, Juan-Les-Pins, France.

FERREIRA, M., MORLA, R., "Second Life In-World Action Traffic Modeling", *NOSSDAV 2010 - 20th Int. Workshop on Network and Operating Systems Support for Digital Audio and Video*, June 2010, Amsterdam, The Netherlands.

OLIVEIRA, J.B., PESSOA, L.M., SALGADO, H., DARWAZEH, I., "Signal Processing Techniques for Transmission Impairments Compensation in Optical Systems", *ICTON 2010 - 12th Int. Conf. on Transparent Optical Networks*, June 2010, Munich, Germany.

MOTA, P.M., SILVA, J.M., VEIGA, R., "Evaluation OF RF PA Nonlinearities Based on Cross-correlation between current and output voltage", *DTIS 2010 - Design & Technology of Integrated Systems*, March 2010, Hammamet, Tunisia.

6.5.3 PhD thesis completed (3000 ca.)

Authored by members of the Unit

PINTO, A.S., Key Distribution Technique for IPTV Services with Support for Admission Control and User Defined Groups (*)

SILVA, S.R., Interferometric Synthetic Aperture Sonar System Supported By Satellite (*)

DOMINGUES, M.A., Exploiting Multidimensional Data for Web Site Automation

Supervised by members of the Unit

ALMEIDA, F.L., Creation of Value with Open Source Software in the Telecommunications Field

GONÇALVES, H., Automatic registration of satellite images

(*) Also supervised by members of the Unit

6.5.4 Patents/prototypes (2000 ca.)

Prototypes

Updated music recommender

Robotic Gamelan

Dancing Robot

Software for automatic rhythm generation

Application for automatic Blues generation

Beat Tracking software

Workstation for the assessment of spatial segmentations of videos

Computational system for the automatic assessment of the aesthetic results of Breast Cancer Treatments with frontal and lateral information

Workstation for mammogram enhancement and pectoral muscle detection

Workstation for microcalcification and mass detection in mammograms

Platform for the Classification with Reject Option

Framework for distributed video coding applied in multi-camera video surveillance

Framework for the assessment of video object tracking algorithms

Platform for simulating and evaluating compressed video communications in mobile environments

Software for recommending TV programmes in an IPTV environment

Wireless Mesh Network for extending infrastructure networks with multicast support (WiFIX+)

NS-3 simulator for routing in large scale networks

Wireless routing bridge

Service platform to support charging of electrical vehicles

Software for capturing Second-Life traffic

Expectation-Maximization software for learning mixtures of Gaussian and Exponential distributions

3D virtual environment introspection for ambient assisted living

Filter with Linear Group Delay Response

Tuneable Multiband Antenna with an Active Artificial Magnetic Conductor Ground Plane

Printed Fractal Monopole Antenna Array for WLAN

Optical transceiver for radio over fiber applications based on VCSEL

Wide bandwidth optical transceiver for radio over fiber applications

Real-time image rectification for uncalibrated stereo cameras on FPGA

Real-time hand tracking on FPGA

On-board characterization and correction of RF power amplifiers' non-linearities

Radio-Frequency Testable Power Amplifier integrated circuit

Charge amplifier based on switched capacitor techniques, with gain control, in 0.35um CMOS technology

6.5.5 Organization of Conferences (2000 ca.)

DCIS 2010 - XXV Conf. on Design of Circuits and Integrated Systems, Lanzarote, Spain, Nov. 2010 (J.S. Matos – member of Steering Committee; J.M. Silva – member of TPC)

IWRME 2010 - Robots and Musical Expressions Workshop, Taipei, Taiwan, Oct. 2010 (F. Gouyon – Co-organiser)

SMC 2010 – 7th Sound and Music Computing Conf., Barcelona, July 2010 (F. Gouyon, C. Guedes – members of TPC)

WOMRAD 2010 - Workshop on Music Recommendation and Discovery, Barcelona, Sept. 2010 (F. Gouyon – member of TPC)

AdMIRe 2010 - Int. Workshop on Advances in Music Information Research, Singapore, July 2010 (F. Gouyon – member of TPC)

ICAD 2010 - Int. Conf. on Auditory Display, Washington, USA, June 2010 (F. Gouyon – member of TPC)

ICMC 2010 - Int. Computer Music Conf., NY, USA, June 2010 (F. Gouyon, C. Guedes – members of TPC)

ICIAR 2010 - Int. Conf. on Image Analysis and Recognition, Póvoa de Varzim, Portugal, June 2010 (L. Corte-Real, J. Cardoso – members of TPC)

ISMIR 2010 - Int. Society for Music Information Retrieval Conf., Utrecht, Netherlands, Aug. 2010 (J. Cardoso - member of TPC)

FutureTech 2010 - 5th Int. Conf. on Future Information Technology, Busan, Korea, May 2010 (M. T. Andrade – member of TPC)

ICDT 2010 – 5th Int. Conf. on Digital Telecommunications, Athens, Greece, June 2010 (M. T. Andrade – member of TPC)

TEMU 2010 - Int. Conf. on Telecommunications and Multimedia, Chania, Crete, Greece, July 2010 (M. T. Andrade – member of TPC)

ACM Multimedia 2010, Firenze, Italy, Oct. 2010 (M. T. Andrade – member of TPC)

ICT'10 – 17th Int. Conf. on Telecommunications, Doha, Qatar, April 2010 (H. Salgado - member of TPC)

IMS3TW 2010 – IEEE Int. Mixed Signals, Sensors and Systems Testing Workshop, Montpellier, France, June 2010 (J.M. Silva – member of TPC)

DTIS 2010 – Conf. on Design and Technology of Integrated Systems, Hammamet, Tunisia, March 2010 (J.M. Silva - member of TPC)

RAW 2010 - 17th Reconfigurable Architectures Workshop, Atlanta, USA, April 2010 (J.C. Ferreira – member of TPC)

6.5.6 Industry contract research (2000 ca.)

Research contracts with PT Inovação aimed at technology development and transfer and advanced training:

ASP – Authentication, Security and Privacy solutions for Home Networks; ended February 2010

ContextAware – Context-aware and personalized multimedia services; started April 2010

Projects with industrial partners in the framework of QREN (Quadro de Referência Estratégico Nacional), either in partnership or under contract:

AHRS - Attitude-Heading Reference System based on MEMS technology, with Spin.Works; ended April 2010

PALCO 3.0 – Intelligent Web system for supporting the management of music social networks, with Palco Principal

SEMANTIC PACS – Semantic Picture Archiving Communication System, with Emílio Azevedo Campos

RECOOP - Cooperative wireless networks, with NONIUS Software

MOBILES –Sustainable electric mobility (with electric vehicles), with Ndrive, Inteli and CEIIA

RobVigil – Surveillance Robot, with Strong Segurança, Clever House, Sinepower Consultoria; started January 2010

SITME – Metropolitan multi-technology wireless network for public transportation systems, with Xarevision and STCP (public transportation company)

Hotel 3.0 – Personalized multimedia services for the hospitality market, with NONIUS Software; started January 2010

LUL – Living Usability Lab, with MSFT, MICRO I/O, PLUX, IEETA, Univ. Aveiro; started January 2010

P3.Net – On-line daily news platform for young people, with Público (newspaper) and Univ. Porto; started February 2010

Portal Douro – Tourism portal for the Douro region

SWIOP – Intelligent and secure webmail system, with Portugalmail

UserTracking 2.0 – User tracking of Web traffic, with Auditmark; started September 2010

Communications system with redundancy and soft degradation of QoS – advanced consulting to NextToYou

FlexNet (flexible and robust communications system for corporate and digital signage networks) – advanced consulting to Xarevision

6.5.7 Internationalization (2000 ca.)

(Collaborative publication, Research, Graduate Training Networks or other forms of participation of the Research Group at the International level)

The participation in a number of projects funded by research programmes of the European Union (listed below) allowed consolidating the position of the Unit at international level and establishing strategic partnerships with leading R&D institutions in Europe.

In the framework of the research activities carried out on these projects, joint papers with researchers of other institutions were published.

European Projects:

ACEOLE - Data Acquisition, Electronics, and Optoelectronics for LHC Experiments (with CERN) - Marie Curie Initial Training Network programme

DAPHNE – Developing Aircraft PHotonic Networks - FP7 ICT programme, started September 2009

ALICANTE – Media Ecosystem Deployment Through Ubiquitous Content-Aware Network Environments - FP7 ICT programme, started March 2010

CONVERGENCE – Content-centric, publish-subscribe service model for the Internet - FP7 ICT programme, started June 2010

TOETS - Towards One European Test Solution - CATRENE (Cluster for Application and Technology Research in Europe on NanoElectronics) / EUREKA programme

INESC Porto hosted short-term scientific missions via the SID (Sonic Interaction Design) COST Action and the FCT/CAPES convention (involving some Brazilian research institutions)

6.5.8 Other national publications (6000 ca.)

Total number of publications: 12

List can be consulted in: <http://profile.inescporto.pt>

SOUSA DIAS, J., RICARDO, M., "ScalSec: a fully authoritative identity PKI for the future Internet", *CRC 2010 - 10ª Conferência sobre Redes de Computadores*, November 2010, Braga, Portugal.

SILVA, P.M., SOUSA DIAS, J., RICARDO, M., "Securing Webmail using S/MIME and Cryptographic Timestamps", *CRC 2010 - 10ª Conferência sobre Redes de Computadores*, November 2010, Braga, Portugal.

SOUSA, R.J., CARDOSO, J., "An Ordinal Data Method for the Classification with Reject Option", *RECPAD 2010 - 16th Portuguese Conference on Pattern Recognition*, October 2010, Vila Real, Portugal.

OLIVEIRA, H.F., CARDOSO, J., "BCCT.core Model Enhancement With Interpretability and Lateral Information", *RECPAD 2010 - 16th Portuguese Conference on Pattern Recognition*, October 2010, Vila Real, Portugal.

REBELO, A.M., CARDOSO, J., "Content aware music score pre-processing", *RECPAD 2010 - 16th Portuguese Conference on Pattern Recognition*, October 2010, Vila Real, Portugal.

TKACZUK, J., CARDOSO, J., "Microcalcification Detection in Full Field Mammograms", *RECPAD 2010 - 16th Portuguese Conference on Pattern Recognition*, October 2010, Vila Real, Portugal.

DOMINGUES, I.C., CARDOSO, J., "Multi-Source Automatic Breast Cancer Diagnosis", *RECPAD 2010 - 16th Portuguese Conference on Pattern Recognition*, October 2010, Vila Real, Portugal.

MEIXEDO, J., ALVES, J.C., "A distributed cache memory system for custom vector processors", *REC'2010 - VI Jornadas sobre Sistemas Reconfiguráveis*, February 2010, Aveiro, Portugal.

SILVA, M.L., CANAS FERREIRA, J., "Algorithms for run-time placement and routing on Virtex II Pro FPGAs", *REC'2010 - VI Jornadas sobre Sistemas Reconfiguráveis*, February 2010, Aveiro, Portugal.

PINTO, N.M., SALGADO, H., CANAS FERREIRA, J., PESSOA, L.M., "Implementação de algoritmos em FPGA para estimação de sinal em sistemas ópticos coerentes", *REC'2010 - VI Jornadas sobre Sistemas Reconfiguráveis*, February 2010, Aveiro, Portugal.

RESENDE, C., CANAS FERREIRA, J., "Real-Time Stereo Matching on FPGA", *REC'2010 - VI Jornadas sobre Sistemas Reconfiguráveis*, February 2010, Aveiro, Portugal.

REIS, L.M., CARDOSO, M.J., CANAS FERREIRA, J., "The Performance Impact when Optimizing Mapping Algorithms for an FPGA-based Mobile Robot", *REC'2010 - VI Jornadas sobre Sistemas Reconfiguráveis*, February 2010, Aveiro, Portugal.

6.5.9 Government/Organization contract research (2000 ca.)

(Include here work carried out by the group that resulted in a publication or report. Of particular importance are those involved in public policy advice)

Projects funded by FCT:

BCTT – Advanced objective method for the evaluation of the aesthetical result of breast cancer conservative treatment; ended December 2010

OMR - Optical Music Recognition of handwritten musical scores; ended October 2010

ROFWDM - Design and Optimisation of WDM Millimeter-Wave Fibre-Radio Systems; ended July 2010

DR-VidS - Dynamic management of reconfigurable logic resources for real-time foreground/ background video segmentation; ended November 2010

VECTOR - Software compilation and hardware synthesis tools for automatic translation of MATLAB applications into high-performance custom designed vector processors

MuMoMgt – Multicast and mobility management in heterogeneous access networks

KINETIC – Controller driven adaptive and dynamic music composition systems (UTA programme)

SHHC – Safe Home Health Care; started May 2010

OSP-HNLF - Optical Signal Processing Using Highly Nonlinear Fibers; started April 2010

Pro Limb – Electronic sensing for the prophylaxis of lower limb pathologies; started April 2010

SELF-PVP Self-organizing power management for photo-voltaic power plants (CMU programme); started September 2010

ImTV - On-Demand Immersive-TV for Communities of Media Producers and Consumers (UTA programme); started September 2010

WOWI - Wireless-optical-wireless interfaces for picocellular access networks; started November 2010

NeTS - Next Generation Network Operations and Management (CMU programme); started September 2010

SenseCardioHealth - New Technological Solutions for Smart Cardiovascular Medical Devices (MIT programme)

Projects funded by FAI (Fundo de Apoio à Inovação)

REIVE – Smart Vehicle to Grid, with Power Systems Unit (INESC Porto), EDP, EFACEC, REN, LOGICA, GALP Energia, CONTAR, LNEG, CEEETA

6.1 Group Description – UOSE

Research Group Title	OPTOELECTRONICS AND ELECTRONIC SYSTEMS
Principal Investigator	José Luís Campos de Oliveira Santos
Research Area	Physics
Home Institution	INESC Porto

6.1.1 Funding

Fundação para a Ciência e a Tecnologia: 117.916,00 €

European Commission: 6.639,0000 €

QREN: 93.561,00 €

TOTAL: 218.116,00 €

6.2 Objectives & Achievements - UOSE

6.2.1 Objectives (4000 ca.)

FOREWORD

Because the on-line form does not allow changes in the names of Principal Investigators since 2008, the name of Prof. José L. Santos is indicated. However, UOSE is run by its Coordinator Prof. Paulo S. Marques since the end of 2009.

OBJECTIVES

The roots of this Unit (named UOSE) go back to 1985, when INESC Porto was funded in the context of the realization of a large project in optical communications. Along the years the activity was developed along several research areas following its established mission to perform internationally recognized research, development and training in Optoelectronics.

The research objectives embrace modelization, design, process development and Optoelectronics integration. The following areas were addressed in a chain that proceeded from technology to systems and applications:

- Fabrication of thin films, planar optical devices and fibre optics components;
- Interferometric based optical imaging;
- Optical sensing heads and some types of electrical sensing heads based on thin films;
- Fibre lasers for sensing;
- Optical fibre sensing systems; field tests and applications.
- Photovoltaics technologies: thin films for conventional and concentrated systems and organic dyes for BIPV (building integrated photovoltaics) applications
- Harvesting technologies and wireless power transfer for remote and unattended sensors

Specific objectives involved the acquisition of operational competences in those areas, the establishment of attractive post-graduated programmes, and the development of consultancy and technology transfer initiatives.

Broadly, the actual scientific objectives are pretty much the same as the ones defined for the last period but there are substantial changes and advances; for example in the field of optical sensing there has been a lot more research for new type of optical sensors that can detect other parameters than the more traditional strain, temperature, curvature, etc. The Group has been investing in the in-house development of novel competencies in multidisciplinary subjects that allow the development of these biosensors. These include, beyond the already established competencies (mainly in fiber optics & optoelectronics) new perspectives in materials science, chemistry and microfabrication.

In the last couple of years the Group was particularly active in pursuing another important objective which is related to the enhancement of relations with the local industry, following the nature of the institution centered in the interface between academia and industry. Several applications were submitted to the national initiative QREN. From this actions a total of two projects were approved: one in the area of electrodes for wearable textiles and the other in the full life-cycle monitoring of competition kayaks structural health.. The first one was concluded during 2010 and the other is currently being executed. A positive evaluation of these actions has been taken. Another project in the area of photovoltaic cells was approved and began in 2010. A project in the area of wireless sensor networks for a start-up company was executed during 2010. A wide project with Brazilian partners in the area of optical fiber sensors for the electrical power sector began which constitutes the first international R&D contract with industry.

Broadly, for the next three year period, the objectives is to continue to maintain a good balance between research and development; the success is achieved if the Group maintains a good level of participation in

international conferences and a high standard of scientific publications allied to a good number of industrial contracts.

6.2.2 Main Achievements (2000 ca)

The R&D activity resulted in a publication highest level ever of the Unit in this period, with 42 works published in international journals and 72 presentations in international and national conferences.

During 2010, some areas of research registered significant advances or were able to show results for the first time:

- Optical tweezing
- Laser direct writing with femtosecond pulses
- Demonstration of optical coherence tomography in different application areas
- Preparation of key layers of photovoltaic cells through RF sputtering
- Cyanobacteria detection in water for consumption

However, 2010 was essentially a year when a consolidation of previously started areas of research was achieved. Improvements, updated as well as novel configurations were obtained in the following areas:

- Large scale test facility for long-term reliability evaluation of FBG strain sensors embedded in concrete
- Fibre Bragg Gratings as Interrogation Elements for Surface Plasmon Resonance Sensors
- Novel developments of nonlinear effects for optical sensing based on Raman/Rayleigh scattering
- All-fiber hybrid interferometers
- Novel optical fiber geometry designs for sensing purposes (H-shaped, suspended twin core fiber, as examples)
- Use of luminescent carbon dots in sensing applications
- Development of composite luminescent materials for detection of oxidative species
- Development of quantum dot based analytical imaging techniques
- Fabrication of waveguides in pure silica through femtosecond laser writing
- Fabrication of integrated polarizers based on directional couplers fabricated in pure silica plates by direct writing
- Fabrication of refractive index sensors in slotted multimode integrated devices for chemical and biochemical sensing
- Fabrication of sub-micrometer gap coupler refractometric sensor
- Extrinsic and intrinsic fiber optic interferometric sensors for acoustic detection in high-voltage environments
- Laser Direct Writing of integrated Arrayed Waveguide Gratings (AWG) for dense wavelength multiplexing
- Optical fiber sensor for hydrogen and metals
- Manganite multiferroics thin films prepared by chemical solution deposition
- Field-Effect transistor based on hybrid sol-gel material interstate for optic and electronic integration
- Development of glasses doped with rare-earth ions
- Development of glasses for biomedical applications (prosthesis)

6.3 Productivity - UOSE

6.3.1 Publications in peer review Journals (6000 ca.)

Total number of publications: 42

Due to the limited space made available in this form, only 20 papers are listed. The full list of the 42 papers published can be consulted in: <http://profile.inescporto.pt>

MONTALVO, J., MONTERO, D.S., VASQUEZ, C., BAPTISTA, J.M., SANTOS, J.L., "Radio-frequency self-referencing system for monitoring drop fibres in wavelength division multiplexing passive optical networks", IEE Proceedings J (Optoelectronics), December 2010, vol.4, no.6, p.226-234.

REGO, G., "Review Paper: Fibre optic devices produced by arc discharges", Journal of Optics, December 2010, vol.12, no.113002.

CRUZ, J., JOANNI, E., VILARINHO, P., KHOLKIN, A., "Thickness effect on the dielectric, ferroelectric, and piezoelectric properties of ferroelectric lead zirconate titanate thin films", Journal of Applied Physics, December 2010, vol.108, no.11, p.114106-1.

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VIEGAS, D., CARVALHO, J.P., COELHO, L.C., SANTOS, J.L., ARAÚJO, F., FRAZÃO, O., "Long-Period Grating Fiber Sensor With In Situ Optical Source for Remote Sensing", IEEE Photonics Technology Letters, November 2010, vol.22, no.20, p.1533-1535.

ABE, I., OLIVEIRA, J., SIMÕES, E., CALDAS, P., FRAZÃO, O., "Monitoring the quality of frying oils using a nanolayer coated optical fiber refractometer", Talanta, November 2010, vol.83, no.1, p.291-293.

FRAZÃO, O., AMARAL, L., BAPTISTA, J.M., ROY, P., JAMIER, R., FÉVRIER, S., "Strain and Temperature Discrimination using Modal Interferometry in Bragg Fibers", IEEE Photonics Technology Letters, November 2010, vol.22, no.21, p.1616-1618.

LIMA, S.E., FRAZÃO, O., FARIAS, R.G., ARAÚJO, F., FERREIRA, L.A., SANTOS, J.L., MIRANDA, V., "Mandrel-Based Fiber Optic Sensors for Acoustic Detection of Partial Discharges - a proof of concept", IEEE Transactions on Power Delivery, October 2010, vol.25, no.4, p.2526-2534.

AMARAL, L., PEREIRA, D.A., FRAZÃO, O., MARQUES, M.J., LIMA, M.J.N., TEIXEIRA, L.J., "PMD Measurements based on Low-Coherence Interferometry using a Michelson Interferometer", Microwave and Optical Technology Letters, October 2010, vol.52, no.10, p.2310-2312.

FRAZÃO, O., OLIVEIRA SILVA, S., BAPTISTA, J.M., SANTOS, J.L., KOBELKE, J., SCHUSTER, K., "All fiber Mach-Zehnder interferometer based on suspended twin-core fiber", IEEE Photonics Technology Letters, September 2010, vol.22, no.17, p.1300-1302.

UNREPORTED

ANDRÉ, R.M., MARQUES, M.J., ROY, P., FRAZÃO, O., "Fiber loop mirror using a small core microstructured fiber for strain and temperature discrimination", IEEE Photonics Technology Letters, August 2010, vol.22, no.15, p.1120-1122.

FRAZÃO, O., SILVA, R.M., KOBELKE, J., SCHUSTER, K., "Temperature- and Strain-Independent Torsion Sensor using a fiber loop mirror based on a Suspended Twin-core Fibre", OPTICS LETTERS, August 2010, vol.35, no.16, p.2777-2779.

TAFULO, P.A., QUEIRÓS, R.B., MATOS, C., SALES, G., "Control and comparison of the antioxidant capacity of beers", Food Research International - Canadian Institute of Food Science and Technology Journal, July 2010, vol.43, no.6, p.1702-1709.

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AREF, S.H., AMEZCUA-CORREA, R., CARVALHO, J., FRAZÃO, O., SANTOS, J.L., ARAÚJO, F., LATIFI, H., FARAHI, F., FERREIRA, L.A., KNIGHT, J.C., "Spectral Characterization of a Photonic Band-Gap Fiber for Sensing Applications", APPLIED OPTICS, April 2010, vol.10, no.49, p.1870-1875.

CARVALHO, J., MAGALHÃES, F., FRAZÃO, O., SANTOS, J.L., ARAÚJO, F., FERREIRA, L.A., "Splicing and Coupling Losses in Hollow-Core Photonic Crystal Glass Fibers", Solid State Phenomena, April 2010, no.161, p.43-50.

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LEYET, Y., GUERRERO, F., CRUZ, J., "Relaxation dynamics of the conductive processes in BaTiO₃ ceramics at high temperature", Materials Science and Engineering B, March 2010, vol.171, no.1, p.127-132.

MAULE, C., GONÇALVES, H., MENDONÇA, C., SAMPAIO, P., ESTEVES, J., JORGE, P., "Wavelength encoded analytical imaging and fiber optic sensing with pH sensitive CdTe quantum dots", Talanta, March 2010, Talanta, vol.80, no.5, p.1932-1938.

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J. DUARTE, A., ROCHA, C., SILVEIRA, F., AGUILAR, G., JORGE, P., M. M. LEITÃO, J., ALGARRA, M., ESTEVES DA SILVA, J.C.G., "Luminol-doped nanostructured composite materials for chemiluminescent sensing of hydrogen peroxide", Analytical Letters 2010, vol.43, p.2762-2772.

FRIAS, C., FARIA, H., FRAZÃO, O., VIEIRA, P., MARQUES, A.T., "Manufacturing and Testing Composite Overwrapped Pressure Vessels with Embedded Sensors", Materials & Design 2010, vol.31, no.8, p.4016-4022.

PINTO, A.M.R., FRAZÃO, O., SANTOS, J.L., LOPEZ-AMO, M., "Multiwavelength Fiber Laser based on a Photonic Crystal Fiber Loop Mirror with cooperative Rayleigh Scattering", APPLIED PHYSICS B-LASERS AND OPTICS 2010, vol.99, no.3, p.391-395.

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GUERREIRO, A., "On the quantum space-time structure of light", JOURNAL OF PLASMA PHYSICS 2010, vol.76, p.833-843.

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DA SILVA, A.F., GONÇALVES, A.F., FERREIRA, L.A., ARAÚJO, F., MENDES, P.M., CORREIA, J.H., "PVC Smart Sensing Foil for Advanced Strain Measurements", IEEE Sensors Journal 2010, vol.10, no.6, p.1149-1155.

6.3.2 Other international publications (6000 ca.)

Total number of publications: 44

Due to the limited space made available in this form, only 20 papers are listed. The full list of the 44 papers published can be consulted in: <http://profile.inescporto.pt>

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6.3.3 Ph. D. thesis completed (3000 ca.)

VIEGAS, D., "Sensing Devices Based in Micro-Optics Technology ", December 2010.

LEITNER, M., "White light interferometry applications in high resolution sensing and biomedical imaging", July 2010.

KHORDONI, A., "Guided Optics for Astronomical Interferometry ", 2010, PhD.

VIEGAS, J., "Integrated Optical Sensors ", 2010, PhD.

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6.3.4 Patents/prototypes (2000 ca.)

National Provisional Patent Application

Remote interrogation system with optical source coupled to the sensing head, Orlando José dos Reis Frazão, Luís Carlos Costa Coelho, Joel Pedro Peixoto de Carvalho, Diana Catarino das Neves Viegas

Prototypes

- Novel photonic band gap optical fiber structures design and implementation
- Optical tweezing
- Laser direct writing with femtosecond pulses
- Demonstration of optical coherence tomography for non-destructive testing for industrial quality control
- Preparation of key layers of photovoltaic cells through RF sputtering for concentrated photovoltaic systems
- Cyanobacteria detection in water for consumption

6.3.5 Organization of Conferences (2000 ca.)

The Research Group was involved through several of its members in the Committees of SEON 2010 Symposium on Enabling Networks and Sensors, that took place at FEUP, University of Porto. The workshop had the participation of 50 national and international researchers. The program included invited speakers and poster sessions.

The organization of the most important european optical fiber sensors conference, European Workshop on Optical Fiber Sensors (EWOFS 2010), was awarded to this Research Group in recognition of its relevance in the international R&D scene in optical fiber sensors. The event had the participation of 250 researchers from Europe, USA, South Africa and Far East countries with 150 papers and oral presentations from distinguished international researchers from both academia and industry, as well as EC political staff.

6.3.6 Industry contract research (2000 ca.)

The Unit continued the contract with Fibersensing in the framework of its development. Consultancy in monitoring systems for aeronautical applications, namely in-flight structural health monitoring involving a dedicated measurement unit and athermal strain sensors, were the subjects considered.

Other projects are related to contracts within QREN. MEMIMETRIA is focused in the production of an industrial prototype for thin films characterization using interferometric imaging setups. The special requirements are related to the high speed for assembly line monitoring and the necessity to withstand the industrial environment.

SENSKANOE aims at including optical fibers sensors in kayaks to determine the distribution of strain in the structure (the partner company supplies the finest products to more than 80% of the Olympic teams).

The project E-TÊXTEL developed the production of polymeric fibres than can change their resistivity under deformation. These fibres have the correct mechanical characteristics to endure the process installation and operation within smart textiles (patient movement monitoring, for example).

CFC is oriented towards the development of environmental-friendly photovoltaic cells for concentrated applications aiming also a low cost of industrial production.

A perimeter monitoring system based in wireless sensor networks for wide geographical area in the context of stockbreeding management was developed in the SensingVed project involving a start-up company.

WaveTune is a project aimed at the development of Fabry-Perot technology for novel filters to be used in interrogation systems of biochemical optical fiber sensors with FiberSensing.

Mobiles is a consultancy project with industrial partners in the automotive area.

An international R&D contract, TECCON, with Brazilian universities and electrical power companies is the main achievement concerning industry contract research area.

6.3.7 Internationalization (2000 ca.)

(Collaborative publication, Research, Graduate Training Networks or other forms of participation of the Research Group at the International level)

Internationalization is a point where the Unit has been trying to enhance its performance with the ultimate goal of being involved in more international projects. In this context, two main actions were strategically adopted during 2010: active participation in COST actions (with group members in the respective management committees) and in bi-lateral cooperation schemes involving the group and other international research groups, with special focus on European groups. However, it should also be mentioned the strong collaboration with Brazilian groups, which is part of a more general internationalization action of INESC Porto.

As a result several proposals are under evaluation/study and bilateral researchers exchange are common. Beyond that, 21 conference presentations and 19 papers were published as result of this internationalization effort.

LIST OF COST ACTIONS

- MP604, Optical Micro-Manipulation by Nonlinear Nanophotonics
- MPNS 539, Electroceramics from Nanopowders Produced by Innovative Methods
- D 41, Inorganic oxides: surfaces and interfaces
- ICT 0806, Intelligent Monitoring, Control and Security of Critical Infrastructure Systems
- MP0803, Plasmonic Components and Devices
- MP 0702, Action : Towards Functional Sub-Wavelength Photonic Structures
- MP0804, Highly Ionised Pulse Plasma Processes

BI-LATERAL ACTIONS

During 2010 there were eight active integrated actions with other countries (2 with Brazil, 1 with Spain, 2 with France, 1 with Italy, 1 with USA and 1 with Hungary)

Under all the schemes above the Group received 6 researchers. Also, 2 researchers of our group spent some periods abroad.

6.3.8 Other national publications (6000 ca.)

Total number of publications: 28

List can be consulted in: <http://profile.inescporto.pt>

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D. BAPTISTA, F., CALDAS, P., MARQUES, M.J., GOMES, L.A., "Simulação espectral de Redes de Período Longo", Física 2010 - Física 2010, September 2010, Vila Real, Portugal.

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TILLAK, J., JORGE, P., WÓJCIK, I.B., ÁGUAS, H., BARATA, D., OLIVA, A.G., "Evaluation of different strategies for single cell refractometry in microfluidic chips", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.

TAFULO, P.A., FRAZÃO, O., JORGE, P., SANTOS, J.L., ARAÚJO, F., "Fabrication of optical fiber microcavities by chemical etching for sensing applications", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.

QUEIRÓS, R.B., OLIVEIRA SILVA, S., FRAZÃO, O., NORONHA, J.P., MARQUES, P.V., SALES, M.G., "Fibre Optic Fabry-Pérot Biosensor for detection of Microcystin-LR", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.

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TAFULO, P.A., FRAZÃO, O., JORGE, P., ARAÚJO, F., "Modificação de fibras ópticas por ataque químico para aplicações sensoras", Física 2010 - Física 2010 2010, Vila Real, Portugal.

AZEVEDO, J., MESQUITA COELHO, J., HUSSAIN, N., "NIR Lasing transition ($4F3/2 \rightarrow 4I11/2$) at $1.06 \mu\text{m}$ in Nd³⁺-doped Tellurite Glass", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.

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SILVA, R.M., FRAZÃO, O., "Sensor de torção Interferométrico baseado numa fibra com dois núcleos suspensos", Física 2010 - Física 2010 2010, Vila Real, Portugal.

QUEIRÓS, R.B., SILVA, S.O., FRAZÃO, O., NORONHA, J.P., MARQUES, P.V., SALES, M.G., "Sensor em Fibra Óptica para Detecção de Microcystin-LR", Física 2010 - Física 2010 2010, Vila Real, Portugal.

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SILVA, R.M., FRAZÃO, O., KOBELKE, J., SCHUSTER, K., "Temperature Independent Torsion Sensor using a fibre loop mirror based on a Suspended Twin-core Fibre", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.

MARQUES, M.J., "The laser turns fifty: no middle-age crisis", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.

6.3.9 Government/Organization contract research (2000 ca.)

(Include here work carried out by the group that resulted in a publication or report. Of particular importance are those involved in public policy advice)

During 2010 the Unit was involved in 16 R&D national projects. Two of these projects dealt with microfabrication issues, eight were concerned with optical fibre sensors principles and applications, two dealt with monitoring of biomedical signals, other two were dedicated to novel materials, one with medical physics and the other one is an application in the optical fiber communications area. Microfabrication projects developed fundamental technology for sensors and communications devices in optical fiber and integrated optics that will enable further developments in these areas. Namely, add-drop multiplexers for optical communications, piezoelectric films in optical fibers for sensing and actuation and other novel devices were developed. The microfluidics range of devices and the feasibility of manufacturing them in-house are being evaluated. The sensors projects were dedicated to applications in composite materials systems, characterization of optical fiber sensing heads for civil engineering applications, measurement of carbon dioxide in algae cell culture, measurement of dissolved oxygen by fluorescence and biochemical sensors. The biomedical signals projects intend to acquire meaning from physiological signals obtained from image processing and embedded smart textiles sensors. The novel materials projects were related to multiferroics and glasses for prosthesis applications. The medical physics is dedicated to the radiation monitoring in cancer treatments.

FCT projects (name and coordinator):

Optic-Algae José Manuel Baptista

Biopelvic Luís Alberto Ferreira

Nanocrystalline Paulo Vicente Marques

Oreo2 Paulo Vicente Marques

Motion Orlando Frazão

Endurance Francisco Araújo

SenRONS Pedro Jorge

Bioswim Miguel Velhote Correia

Biomotion Miguel Velhote Correia

Hybrid Pedro Jorge

Microphyte José Luís Santos

SmartCoat Orlando Frazão

SenseEFil Orlando Frazão

MCP Nandyala Hussain

Multiferroicos Javier Cruz

FIBDOSE Carla Carmelo Rosa

6.1 Group Description - USE

Research Group Title

POWER SYSTEMS

Principal Investigator

Manuel António Cerqueira Costa Matos

Research Area

Electrical and Computer Engineering

Home Institution

INESC Porto

6.1.1 Funding

Fundação para a Ciência e a Tecnologia: 33.119,00 €

European Commission: 332.353,00 €

QREN: 0,00

TOTAL: 365.472,00 €

6.2 Objectives & Achievements - USE

6.2.1 Objectives (4000 ca.)

The mission of the Power Systems Unit is centered on the development of advanced research in emergent modeling, optimization and control techniques applied to Power Systems characterized by large scale integration of renewable power sources, distributed generation and electric vehicles, under the Smart Grid paradigm, with technology and know-how transfer to utilities and industrial companies and support to the public sector and energy agencies.

In scientific terms, this corresponds to combining the traditional analytical models and tools of power systems with the emergent techniques of operational research and computational intelligence the Unit has been applying and with economic models of the new organization of the power sector, in order to develop multidisciplinary integrated models and tools useful for the relevant agents (system operators, producers, regulators, government) and for global understanding of the complex phenomena under research.

A need also exists of organizing the Unit's know-how in a way that high level consultancy can be provided through specific studies and strategic thinking, supported by the new tools to be developed.

The developments should mainly be driven by the application area, but general-purpose models and tools for optimization, decision and negotiation may also be an objective where the Units' experience suggests further developments of the fundamental tools.

The main application areas are related to the ones defined for the thematic line:

- Algorithms and tools for DMS (Distribution Management Systems) and EMS (Energy Management Systems) for industrial application.
- Variable power sources integration: analysis, control, forecasting, operation optimization, off-shore wind generation.
- Electricity markets: load profiling, regulated remuneration schemes, uncertainty modeling, optimization and decision-aid, adequacy evaluation.
- Microgeneration, microgrids, multi-microgrids and smart metering: conceptualization, models, specification, control, stability analysis, operation procedures, islanding, remuneration.
- Electric vehicles integration: business and technical models, consumption patterns, communications, network impact, ancillary services provision.

6.2.2 Main Achievements (4000 ca)

Main scientific results:

- Algorithms for coordinated and optimized voltage management of distribution networks with multi-microgrids
- Congestion analysis tool for power systems with a large penetration of wind power, based on fuzzy power flow and probabilistic wind power forecasts
- Optimization tool for combining wind power generation and storage, based on probabilistic wind forecasts
- Aggregator-based control solutions for managing Electric Vehicles integration in electric grids
- Algorithm for identifying the technical impacts resulting from large scale integration of Electric Vehicles in distribution grids, based on Monte Carlo simulation
- Enhancement of integrated multi-level smart control solutions for charging batteries of plugged-in electric vehicles to deal with large scale deployment of EV and renewable energy sources

- Development of innovative control solutions to allow EV to participate in the provision of primary and secondary frequency control
- Upgrade of the microgrid simulation platform in order to deal with EV and unbalanced loads
- Optimization algorithm for multi-microgrid operation in stressed operating conditions
- Development of a new control concept for the provision of ancillary services from off-shore wind farms
- Model for long term expansion of generating systems using System Dynamics
- Optimization model to reflect generation cost and demand uncertainties on nodal marginal price calculations, based on Fuzzy Sets
- Advances in wind power point forecasting by using entropy and correntropy based criteria
- Contributions within uncertainty forecasting, exploring the concepts of density forecasting and new models like Nadaraya-Watson or quantile copula
- New clustering based scenario reduction technique for wind forecasting departing from any state of the art scenario generator with Monte Carlo sampling characteristics
- Application of multi-agent system concepts for the control of the islanding operation of active MV distribution grids including the presence of flexible EV loads.

Projects

- Industrial demonstration of the management tools developed in the European project Anemos.Plus, for operational reserve setting, congestion analysis and storage management
- Start and first deliverables of the new European projects MERGE and TWENTIES
- New results of project ARGOS, with Argonne National Laboratory (USA)
- Start of the new project REIVE (Smart electrical grids with electrical vehicles), financed by FAI (Innovation Support Fund) from the Ministry of Economy, Innovation and Development of Portugal
- Conclusion of the INVOGRID project on smart metering and monitoring and control of LV networks, contracted with EDP (the Portuguese DSO)
- Extension of the contract with EDP (the Portuguese distribution system operator) to build load and loss profiles for market use, in the scope of the project CCR.
- New modules for DMS/EMS contracted by EFACEC (global partnership running since 1997)

Publications

- 13 papers in international peer review journals
- 36 papers in international conferences with peer review
- 7 PhD theses (supervised by members of the Unit)

Spin-off

- Launching of a company able to deliver wind park wind power forecasts, starting in November 2010

6.3 Productivity - USE

6.3.1 Publications in peer review Journals (6000 ca.)

Total number of publications: 13 (+3 online)

List can be consulted in: <http://profile.inescporto.pt>

VALDEZ, M.M.T., AGREIRA, C.I.F., FERREIRA, C.M., MACIEL BARBOSA, F., "Aplicação da Aprendizagem Baseada em Projectos num curso de Engenharia", Revista Ibérica de Sistemas e Tecnologias de Informação, December 2010.

MOISÉS, P., MATOS, M., "Capacity credit of microgeneration and microgrids", ENERGY POLICY, October 2010, vol.38, no.10, p.6330-6337.

DE ALMEIDA, S.A.B., PESTANA, R., MACHADO, N., "Operational Risk Assessment Methodology for the Portuguese Transmission System", ELECTRA, October 2010, no.252, p.6-18.

TRAVASSOS VALDEZ, M., AGREIRA, C.I.F., MACHADO FERREIRA, C.M., MACIEL BARBOSA, F., "Teaching, Learning and Exploring the Use of Project-Based Learning", Electronics and Electrical Engineering, October 2010, no.9, p.117-120.

PEÇAS LOPES, J., POLENZ, S., MOREIRA, C., CHERKAQUI, R., "Identification of control and management strategies for LV unbalanced microgrids with plugged-in electric vehicles", Electric Power Systems Research, August 2010, vol.80, no.8, p.898-906.

GOMES, B.A., TOMÉ SARAIVA, J., "Dealing with Load and Generation Cost Uncertainties in Power System Operation Studies: A Fuzzy Approach", July 2010, in Handbook of Power Systems, vol.1, p.209-234.

BOTTERUD, A., WANG, J., MIRANDA, V., BESSA, R.J., "Wind Power Forecasting in U.S. Electricity Markets", The Electricity Journal, April 2010, vol.23, no.3, p.71-82.

MOREIRA, A., OLIVEIRA, F.S., PEREIRA, J., "A Social Welfare Analysis of the Iberian Electricity Market Accounting for Carbon Emission Prices", IET Generation, Transmission & Distribution, February 2010, vol.4, no.2, p.231-243.

PEREIRA, A.J.C., SARAIVA, T., "A decision support system for generation expansion planning in competitive electricity markets", Electric Power Systems Research, January 2010, no.80, p.778-787.

MOREIRA, C., LOPES, P., "Microgrids Operation and Control Under Emergency Conditions", Intelligent Automation and Soft Computing, January 2010, vol.16, no.2, p.252-272.

FARIA, J., NUNES, E., MATOS, M., "Cost and quality of service analysis of production systems based on the cumulative downtime", International Journal of Production Research 2010, vol.48, no.6, p.1653-1684.

LOPES, P., "Innovazione e tecnologia per uno sviluppo sostenibile. Le sfide degli impianti di energia elettrica", I Quaderni di Italianieuropei 2010, no.1, p.189-193.

FARINHA, J.T., SIMÕES, A., COSTA, A., BASTOS, P., FERREIRA, L.A., CARVAS, A., MACIEL BARBOSA, F., "Rerology Beyond Tomorrow", Maintworld & Asset Management 2010, no.1, p.46-50.

(*) BESSA, R. J., MIRANDA, V., BOTTERUD, A. and WANG, J., 'Good' or 'bad' wind power forecasts: a relative concept. Wind Energy, n/a. doi: 10.1002/we.444 (*)

(*) MATOS, M., BESSA, R. J., Setting the Operating Reserve using Probabilistic Wind Power Forecasts, IEEE Transactions on Power Systems, In Press (*)

(*) MATOS, M., BESSA, R. J., Economic and technical management of an aggregation agent for electric vehicles: a literature survey, European Transactions on Electrical Power (*)

(*) Published on-line

6.3.2 Other international publications (6000 ca.)

Total number of publications: 36

Due to the limited space made available in this form, only 20 papers are listed. The full list of the 44 papers published can be consulted in: <http://profile.inescporto.pt>

TOMÉ SARAIVA, J., LEANDRO PEREIRA, M., TORRADO MENDES, V., SOUSA, J.C., "Preventive Generation Maintenance Scheduling - a Simulated Annealing Approach to use in Competitive Markets", *MedPower2010 - 7th Mediterranean Conference and Exhibition on Power Generation, Transmission, Distribution and Energy Conversion*, November 2010, Agia Napa, Cyprus.

COELHO PEREIRA, A.J., TOMÉ SARAIVA, J., "Building Generation Expansion Plans - a Decision Aid Approach to use in Competitive Electricity Markets", *MedPower2010 - 7th Mediterranean Conference and Exhibition on Power Generation, Transmission, Distribution and Energy Conversion*, November 2010, Agia Napa, Cyprus.

SOARES, F.J., ROCHA ALMEIDA, P., PEÇAS LOPES, J., SECA, L., MOREIRA, C., "A Technical Management and Market Operation Framework for Electric Vehicles Integration into Electric Power Systems", *SGM - 2nd European Conference SmartGrids and E-Mobility*, October 2010, Bruxelles, Belgica.

RUA, D.E., ISSICABA, D., SOARES, F.J., ROCHA ALMEIDA, P., REI, R.J., PEÇAS LOPES, J., "Advanced Metering Infrastructure Functionalities for Electric Mobility", *ISGT - IEEE PES Conference on Innovative Smart Grid Technologies Europe*, October 2010, Gothenburg, Sweden.

FIDALGO, J.N., MATOS, M., JORGE, H., "Deriving Loss Profiles for Market Purposes", *MedPower2010 - 7th Mediterranean Conference and Exhibition on Power Generation, Transmission, Distribution and Energy Conversion*, October 2010, Agia Napa, Cyprus, p.91-96.

ISSICABA, D., GIL, N.J., PEÇAS LOPES, J., "Islanding Operation of Active Distribution Grids using an Agent-based Architecture", *ISGT - IEEE PES Conference on Innovative Smart Grid Technologies Europe*, October 2010, Gothenburg, Sweden.

HATZIARGYRIOU, N., PEÇAS LOPES, J., SOARES, F.J., RUA, D.E., ROCHA ALMEIDA, P., DOWNING, N., BOWER, E., STRUNZ, K., FERDOWSI, M., ABBASI, E., "Mobile Energy Resources in Grids of Electricity: the EU MERGE Project", *SGM - 2nd European Conference SmartGrids and E-Mobility*, October 2010, Bruxelles, Belgica.

SOARES, F.J., PEÇAS LOPES, J., ROCHA ALMEIDA, P., "A Monte Carlo Method to Evaluate Electric Vehicles Impacts in Distribution Networks", *ITERES 2010 - 2010 IEEE Conference on Innovative Technologies for an Efficient and Reliable Electricity Supply*, September 2010, Waltham, MA, USA.

TRAVASSOS VALDEZ, M.M., MACHADO FERREIRA, C.M., MACIEL BARBOSA, F., "Cooperative learning to Lighting Design Using Renewal Photovoltaic's Energy", *UPEC 2010 - 45th International Universities' Power Engineering Conference*, September 2010, Cardiff, Wales.

PEREIRA BARBEIRO, P., MOREIRA, C., SOARES, F.J., ROCHA ALMEIDA, P., "Evaluation of the Impact of Large Scale Integration of Micro-generation Units in Low and Medium Voltage Distribution Networks", *ITERES 2010 - 2010 IEEE Conference on Innovative Technologies for an Efficient and Reliable Electricity Supply*, September 2010, Waltham, MA, USA.

REI, R.J., SOARES, F.J., ROCHA ALMEIDA, P.M., PEÇAS LOPES, J.A., "Grid Interactive Charging Control for Plug-in Electric Vehicles", *ITSC 2010 - 13th International IEEE Conference on Intelligent Transportation Systems*, September 2010, Funchal, Madeira, Portugal.

PEREIRA, R.M., MACHADO FERREIRA, C.M., MACIEL BARBOSA, F., "Influence of Load Shedding in the Voltage Stability of an Electric Power System using Trajectory Sensitivity Analysis", *UPEC 2010 - 45th International Universities' Power Engineering Conference*, September 2010, Cardiff, Wales.

BRANDÃO, R.M., CARVALHO, J.B., MACIEL BARBOSA, F., "Monitoring Systems for Wind Generators Maintenance", *UPEC 2010 - 45th International Universities' Power Engineering Conference*, September 2010, Cardiff, Wales.

BRANDÃO, R.M., CARVALHO, J.B., MACIEL BARBOSA, F., "Neural networks for condition monitoring of wind turbines", MEPS'10 - Modern Electric Power Systems, September 2010, Wrocław, Poland.

ROCHA ALMEIDA, P., PEÇAS LOPES, J.A., SOARES, F.J., VASCONCELOS, H., "Automatic Generation Control Operation with Electric Vehicles", IREP 2010 - 2010 IREP Symposium- Bulk Power System Dynamics and Control – VIII, August 2010, Búzios, Rio de Janeiro, Brazil.

NAZARI, M., ILIĆ, M., PEÇAS LOPES, J., "Dynamic Stability and Control Design of Modern Electric Energy Systems with Large Penetration of Distributed Generators ", IREP 2010 - 2010 IREP Symposium- Bulk Power System Dynamics and Control – VIII, August 2010, Búzios, Rio de Janeiro, Brazil.

ALMEIDA, S.A.B., PESTANA, R., MACIEL BARBOSA, F., "Risk Assessment Methodology for Operations applied to the Portuguese Transmission System - the Probabilistic Model", CIGRE 2010 - Conseil International des Grands Réseaux Électrique - Session 2010, August 2010, Paris, France.

SPERTINO, F., SUMAILI, J., ANDREI, H., BOICEA, A., CHICCO, G., "Modeling and Experimental Determination of the Circuit Parameters of Thin Film PV Modules/Arrays", WESC 2010 - 8th World Energy System Conference, July 2010, The Scientific Bulletin of Electrical Engineering Faculty, Valahia University of Targoviste, vol.3, no.14, Targoviste, Romania, p.132-139.

PEREIRA, A.J.C., SARAIVA, T., "Economic Evaluation of Wind Generation Projects in Electricity Markets ", 7th ICEEM - 7th International Conference on the European Energy Market, June 2010, Madrid, Spain.

UNREPORTED

GOMES, B.A., SARAIVA, T., "Evaluation of Transmission Reinforcement Strategies Using Risk Indices in the Presence of Uncertainties", 7th ICEEM - 7th International Conference on the European Energy Market, June 2010, Madrid, Spain.

ALMEIDA, S.A.B., PESTANA, R., MACIEL BARBOSA, F., "Integration of common cause faults in the operational probabilistic approach", PMAPS2010 - 11th International Conference on Probabilistic Methods Applied to Power Systems , June 2010, Singapura, Singapura.

ROSA, M., MIRANDA, V., MAGALHÃES CARVALHO, L., LEITE DA SILVA, A., "Modern Computing Environment for Power System Reliability Assessment. In: 11th International Conference on Probabilistic Methods Applied to Power Systems", PMAPS2010 - 11th International Conference on Probabilistic Methods Applied to Power Systems , June 2010, Singapura, Singapura.

TOMÉ SARAIVA, J., GOMES, M.H., "Provision of Some Ancillary Services by MicroGrid Agents", 7th ICEEM - 7th International Conference on the European Energy Market, June 2010, Madrid, Spain.

VALDEZ, M.M.T., AGREIRA, C.I.F., FERREIRA, C.M.M., MACIEL BARBOSA, F., "Teaching, Learning and Exploring the Use of Project Based Learning", EAEEIE2010 - European Association for Education in Electrical and Information Engineering, June 2010, Palanga, Lithuania.

FAUSTINO AGREIRA, C.I., MACHADO FERREIRA, C.M., MACIEL BARBOSA, F., "The Rought Set Theory Applied to a Set of the New Severity Indices", PMAPS2010 - 11th International Conference on Probabilistic Methods Applied to Power Systems , June 2010, Singapura, Singapura.

FONSECA, I., FARINHA, J.T., FERREIRA, L., SIMÕES, A., BASTOS, P., MACIEL BARBOSA, F., "Building a wind maintenance system with open source software and low cost hardware", Euromaintenance - International Conference & Exhibition, May 2010, Verona, Italy.

FARINHA, J.T., FONSECA, I., MACIEL BARBOSA, F., "Terology, 3D models to help diagnosis and Sustainable Future - A New Perspective for Maintenance", Euromaintenance - International Conference & Exhibition, May 2010, Verona, Italy.

LEITE, H., MORAIS, A., LEMOS, M., VALE, F., "A Survey of Protection, Automation and Control Systems in the Portuguese Distribution Substations", DPSP 2010 - The 10th IET International Conference oDevelopments in Power System Protection , March 2010, vol.3, no.8, Manchester, Reino Unido.

PEÇAS LOPES, J.A., ROCHA ALMEIDA, P., SOARES, F.J., LEAL MOREIRA, C., "Electric Vehicles in Isolated Power Systems: Conceptual Framework and Contributions to Improve the Grid Resilience", CMTEE 2010 - Conference on Control Methodologies and Technology for Energy Efficiency, 2010, March 2010, Vilamoura, Portugal.

LEITE, H., BARROS, J., MIRANDA, V., "The Evolutionary Algorithm EPSO to Coordinate Directional Overcurrent Relays", DPSP 2010 - The 10th IET International Conference on Developments in Power System Protection, March 2010, Manchester, Reino Unido.

GOUVEIA, C., LEITE, H., FERREIRA, I., "Voltage and Current Sensor for State Estimation in Distribution Network with Generation", ICREPQ'10 - INTERNATIONAL CONFERENCE ON RENEWABLE ENERGIES AND POWER QUALITY (ICREPQ'10), March 2010, Granada, Espanha.

BESSA, R.J., MATOS, M., "Comparison of Probabilistic and Deterministic Approaches for Setting Operating Reserve in Systems with High Penetration of Wind Power", MedPower2010 - 7th Mediterranean Conference and Exhibition on Power Generation, Transmission, Distribution and Energy Conversion 2010, Agia Napa, Cyprus.

BESSA, R.J., MATOS, M., "Dealing with Wind Power Forecast Uncertainty", Proceedings of URPDM2010 - Uncertainty and Robustness in Planning and Decision Making (URPDM 2010) 2010, Coimbra, Portugal.

BESSA, R.J., MIRANDA, V., PRÍNCIPE, J.C., BOTTERUD, A., WANG, J., "Information Theoretic Learning applied to Wind Power Modeling", Proceedings of IEEE WCCI 2010 - IEEE World Congress on Computational Intelligence 2010, Barcelona, Spain.

BOTTERUD, A., WANG, J., BESSA, R.J., KEKO, H., MIRANDA, V., "Risk Management and Optimal Bidding for a Wind Power Producer", Proceedings of IEEE PES General Meeting 2010 2010, Minneapolis, USA.

BESSA, R.J., MATOS, M., "The role of an Aggregator Agent for EV in the Electricity Market", MedPower2010 - 7th Mediterranean Conference and Exhibition on Power Generation, Transmission, Distribution and Energy Conversion 2010, Agia Napa, Cyprus.

6.3.3 Ph. D. thesis completed (3000 ca.)

André Madureira, Coordinated and Optimized Voltage Management of Distribution Networks With Multi-Microgrids, PhD Thesis, November, 2010.

Bruno André Gomes, Modelization of Generation Cost and Demand Uncertainties in Power System Optimization Problems and in Nodal Marginal Price Calculations, PhD Thesis, July, 2010.

Mauro Augusto da Rosa, Agent-based Technology Applied to Power Systems Reliability, PhD Thesis, February, 2010.

6.3.4 Patents/prototypes (2000 ca.)

DMS/EMS new modules

Developed under EFACEC-DMS

Demo Place: EFACEC

Development Period: 2009-2010

Reserve evaluation tool (upgrade to include EV)

Developed under MERGE

Demo Place: INESC Porto

Development Period: 2010

Tool for the Evaluation of the Impact of the presence of EV on Network Steady State Operation

Developed under MERGE

Demo Place: INESC Porto

Development Period: 2010

Tool for the Evaluation of the Impact of the Presence of EV on System Dynamic Behavior (Primary and Secondary Frequency Control)

Developed under MERGE

Demo Place: INESC Porto

Development Period: 2010

Grid Interactive Charging Control for Plug-in Electric Vehicles with Multi-Level Electronic Grid Interfaces

Developed under REIVE

Demo Place: INESC Porto

Development Period: 2010

Congestion Analysis tool (fuzzy power flow)

Developed under ANEMOS.PLUS

Demo Place: REN

Development Period: 2009-2010

Storage management tool

Developed under ANEMOS.PLUS

Demo Place: REN

Development Period: 2009-2010

Tool for Wind Power Uncertainty Forecasting with Time-adaptive Nadaraya-Watson Estimator

Developed under ARGOS

Demo place: Argonne National Laboratory

Development period: 2010

Tool for Wind Power Uncertainty Forecasting with Quantile-Copula Estimator

Developed under ARGOS

Demo place: Argonne National Laboratory

Development period: 2010

Wind Power Forecasting Platform for Point Forecast (with database)

Developed under ARGOS

Demo place: Argonne National Laboratory

Development period: 2009-2010

Tool for Wind Power Scenarios Reduction based on Clustering Techniques

Developed under ARGOS

Demo place: INESC Porto

Development period: 2010

6.3.5 Organization of Conferences (2000 ca.)

1st international HVDC Doctoral Colloquium, co-organized with FEUP, Porto, 14-15 June 2010

Final Workshop of the RiskDSam, Risk in Distribution System Asset Management, co-organized with SINTEF Energy Research, Norway, Porto, 22 - 23 October 2010.

6.3.6 Industry contract research (2000 ca.)

Abridged list of the main contracts with industry:

SIAC - Action plan for renewable energies and energy efficiency. APICCAPS (Footwear industrial association), 2010.

MICROGENERATION PROFILES - Determination of typical production profiles of solar and wind microgeneration at LV network. EDP Distribution (Portuguese DSO), 2010

DMS - Development of new modules for the DMS/EMS system of EFACEC, in the framework of a sustained partnership of more than ten years. EFACEC 1997-2010

INOVGRID – Development of advanced telemetering systems able to support the technical and commercial management of distribution networks including micro-generation. EDP Distribution, 2007-2010.

REN-Recep, contracted with REN (Portuguese TSO) to estimate limits for the acceptance of new generation in the system nodes. REN 2007-2010

ASIRP – Analysis and selection of investments to reduce losses in the distribution system. EDP Distribution, 2009-2010

CCR – Characterization of Consumers and Networks. Extension to incorporate new data and update consumer models, EDP Distribution, 2008-10

ENERCON - Consultancy studies regarding wind farms integration in the Portuguese transmission network, ENERCON, 2009-10

MARTIFER CV - Consultancy studies regarding large scale renewable energy sources integration in Cape Verde Islands up to 2020. MARTIFER, 2010-11 [collaboration USIG]

PPC-Tender - Consultancy services for PPC (Public Power Corporation, Greece), for the definition and specification of the architecture of the Islands Operation Department Regarding Generation Scheduling and Dispatch Applications. PPC, 2010 [collaboration USIG]

EDP-Transf –Evaluation of the possibility of rescheduling generation between pairs of balancing areas of the Portuguese power system to deal with deviations from the market dispatch. EDP, 2010-11

EEM-Dynamics – Studies on the dynamic behavior of the power systems of islands of Madeira and Porto Santo resulting from the integration of renewable generation, EEM, 2010.

6.3.7 Internationalization (2000 ca.)

(Collaborative publication, Research, Graduate Training Networks or other forms of participation of the Research Group at the international level)

European projects:

ANEMOS-PLUS - Advanced Tools for the Management of Electricity Grids with Large-Scale Wind Generation, 2007-2010. On- going.

MERGE – Mobile Energy Resources in Grids of Electricity, 2010-2011. Started.

TWENTIES - Transmission system operation with large penetration of Wind and other renewable Electricity sources in Networks by means of innovative Tools and Integrated Energy Solutions, 2010-2012. Started.

International contracts:

ARGOS – Development of a platform of wind power forecasting tools. Contract with Argonne National Laboratory, USA, 2008- 2010. On-going.

PARAFUZZY – Development of fuzzy state estimation functions for online network analysis using paraconsistent logic. UNISANTA, Brazil, 2009-2011.

SIMULESP - System to support the operation of electric power sub-transmission grids in contingency situations, UNISANTA, Brazil, 2010-2012

PPC Tender - Consultancy services for PPC (Public Power Corporation, Greece), for the definition and specification of the architecture of the Islands Operation Department Regarding Generation Scheduling and Dispatch Applications. PPC, 2010

International training:

BiH Training - INESC Porto's Technical Assistance Training in Load Research in Bosnia i Herzegovina, BiH, 2010

EES-UETP - Coordination of the training activities of the European consortium EES-UETP, and a member of the unit chairs the course programme committee.

Participation in the EES-UETP course: Electric Vehicle Integration into Modern Power Networks, 22nd - 24th September 2010, Lyngby (Copenhagen) Denmark

JADES – (TEMPUS programme) Enhancing research capabilities in the area of sustainable energy systems, concluded.

MIT-Portugal programme

Participation in the Scientific Committee and Direction of the PhD program on Sustainable Energy Systems (SES) at FEUP. Co-direction of the MPP SES PhD educational program.

Hosting of several PhD students of the PhD Programme on Sustainable Energy Systems

CMU-Portugal programme

Hosting a PhD student

Participating in project DYMONDS

6.3.8 Other national publications (6000 ca.)

Carlos Moreira, Fernanda Resende, “Desenvolvimento das redes eléctricas inteligentes como plataforma para a integração da produção distribuída, microprodução e veículos eléctricos”, Renováveis Magazine, nº 4, Dezembro 2010.

Fernanda Resende, "Tecnologias de conversão de energia eólica para grandes sistemas ligados à rede", Renováveis Magazine, nº 2, Junho 2010.

João Peças Lopes, "Os Desafios da Mobilidade Eléctrica no Sistema Eléctrico", Revista Informativa da Ordem dos Engenheiros REGIÃO NORTE, no.22, pp.24-2, October, 2010.

6.3.9 Government/Organization contract research (2000 ca.)

Include here work carried out by the group that resulted in a publication or report. Of particular importance are those involved in public policy advice)

Research project funded by FAI (Innovation Support Fund) from the Ministry of Economy, Innovation and Development:

REIVE - Smart electrical grids with electrical vehicles (with LNEG, CEEETA-ECO, EDP, REN, GALPENERGIA, EFACEC, CONTAR, LOGICA), 2010-2012

Research projects funded by FCT:

GREEN ISLANDS - Power demand estimation and power system impacts resulting of fleet penetration of electric/plug-in vehicles, FCT (MIT-Portugal programme), 2009-2012 (coord. J. Peças Lopes)

GEMS – Gross Errors and Missing Signals – New concepts in Power System State Estimation (coord. V Miranda), 2010-2012

DYMONDS - Toward Dynamic Monitoring and Decision-Based Smart Distribution Systems (with IST-UTL and CMU), FCT, 2010-2013 (coord. M. Matos)

Contracted research that led to public policies:

Load, losses and public lighting reference hourly profiles for market use in 2010, published by ERSE (Regulatory Authority for Energy Services), in the sequence of a contract with the Distribution System Operator.

6.1 Group Description - UITT

Research Group Title	INNOVATION AND TECHNOLOGY TRANSFER
Principal Investigator	João Claro
Research Area	Electrical and Computer Engineering
Home Institution	INESC Porto

6.1.1 Funding

Fundação para a Ciência e a Tecnologia: 0,00 €

European Commission: 0,00 €

QREN: 50.591,00

TOTAL: 50.591,00 €

6.2 Objectives & Achievements - UITT

6.2.1 Objectives (4000 ca.)

FOREWORD

Because the on-line form does not allow changes in the names of Principal Investigators since 2008, the name of MSc. Alexandra Xavier is indicated. However, UITT is run by two Co-Coordinators Prof. João Claro and MSc. Alexandra Xavier since 2010.

OBJECTIVES

The unit's broader goal is to take responsibility and leadership in the process of knowledge valorisation at INESC Porto.

In this context, UITT's main objective is to develop and promote innovation management practices, internally and externally, supporting entrepreneurship and technology transfer activities, as well as incubation at an early stage phase.

The unit also plays a role in the creation and the strengthening of knowledge in the scientific area of Innovation Management, Technology Transfer and Entrepreneurship. Thus, advanced training – at an MSc and PhD level – is also a key work area, aiming at creating internal excellence in relevant research areas and to provide the industry with highly qualified professionals, capable of dealing with the challenges of entrepreneurial innovation.

The unit's main Research and Development areas and activities are:

Innovation Management

- Influence directly the internal innovation process and practices, by developing, in collaboration with other R&D Units, processes and tools that enable an efficient management of the results of R&D projects, in order to maximize valorisation opportunities
- Provide consulting services to companies, concerning the implementation of R&D+I management systems according to the Portuguese standard NP 4457:2007. These services follow a proprietary methodology
- Provide training to companies in order to increase awareness and knowledge concerning innovation management systems and methodologies
- Develop research projects in order to increase emergent knowledge that supports internal and external activities.

Enabling the Fuzzy Front End of Innovation

- The innovation process may be divided into three areas: the fuzzy front end (FFE), the new product development (NPD) process, and commercialization. In this research area we will put our effort and focus in the Fuzzy Front End of Innovation, namely in the multidisciplinary methods and tools, that enable the unfolding of the so-called New Concept Development phase. Examples of research topics include & combine (but are not restricted to) issues such as: Network Enabled Organizations; Collaborative Innovation Networks; Enterprise Integration; The role of IT, Supporting Technologies and Interoperability; Roadmapping and Foresight; Negotiation; Cultural Issues; Quantitative and Qualitative Research Methods applied to the FEE (e.g.: Quick Ethnography).

Technology Management

- Technology Management links engineering, science, and management disciplines to plan, develop, and implement technological capabilities to shape and accomplish the strategic and operational objectives of an organization.

- Technology Strategy, and its interaction with Operations Strategy, is currently the key focus area within Technology Management. Research topics include: the joint evolution of technology and operations strategy in high-tech start-ups; the interactions between the complexity of a technology system and the complexity of the adopter's operations.

Entrepreneurship:

- Promote an entrepreneurship culture among academic researchers.
- Create entrepreneurial awareness through the organization of training actions, development of tools, and direct support to promoters in the process of turning ideas into business.
- Provide incubation services through INESC Porto's LET-IN incubator.

6.2.2 Main Achievements (4000 ca)

INNOVATION MANAGEMENT SYSTEMS

In this research area, the unit's team has developed work in the following topics:

Development of Tools:

- Integrated tool to implement Innovation Management Systems, according to NP4457:2007.
- Audit tool, according to NP4457:2007

European Committee:

- During 2010, UITT integrated the group of national experts representing Portugal in CEN/TC389 European Technical Committee CT319 – Innovation Management.
- UITT also integrated two workings groups related to CT319:
 - WG 1 (Collaboration and Creativity Management)
 - WG 6 (Strategic Intelligence Management)

Consulting:

- The unit offers firms, especially SMEs, consulting services that include contents, methodologies, procedures and tools for knowledge and innovation management.
- Two innovation management systems were implemented in two Portuguese SMEs.
- INESC Porto also audited innovation management systems in 4 companies.

Studies:

- INESC Porto develop a study on Innovation for APPICAPS – “ Study on innovation dynamics in the footwear sector”.

Training

- The unit organized 4 seminars on Innovation Management Systems, and participated in the executive education initiative on “Innovation Management Systems”, organized by COTEC.

OPEN INNOVATION

The actions taken in 2009 were continued, in particular a fruitful discussion with Galp, although the point of contracting concrete actions has not yet been reached. This effort will be further pursued in 2011. In 2010 the unit was invited to join the co-development platform established by EDP, which is similar to Galp's.

The unit submitted a proposal for the EU tender on open innovation "Call for tenders 2010/S 169-258189 (O.J. of 01/09/2010) - RTD-NMP-2011 Innovation". The results are expected by June 30, 2011.

ENABLING THE FUZZY FRONT END OF INNOVATION

The innovation process may be divided into three areas: the fuzzy front end (FFE), the new product development (NPD) process, and commercialization. Our Research focuses on the multidisciplinary nature of the FFE and on supporting tools and concepts. The year of 2009 was used to prepare the launching of this new area. We started our activity in January 2010. Since then we would highlight, as main achievements, the involvement 4 PhD students plus two PhD Mobility Students from Brazil (UFRJ and USP). Several publications are under way; the 1st one was published in January 2011.

TECHNOLOGY MANAGEMENT

Two new PhD students joined the unit to work on the topic of interactions between Technology Strategy and Operations Strategy, one of them focusing on complexity and adoption dynamics in healthcare, and the other on the evolution of managerial and operations capabilities in high-tech start-ups.

LAUNCHING AND SUPPORT TO SPIN-OFF COMPANIES

During 2010, 17 projects were studied and 8 projects entered a pre-incubation process.

RESEARCH LEADERSHIP

In the last quarter of 2010, Prof. João Claro joined the unit and became its principal investigator, bringing into the unit his research team and projects.

6.3 Productivity - UITT

6.3.1 Publications in peer review Journals (6000 ca.)

Total number of publications: 20

List can be consulted in: <http://profile.inescporto.pt>

Cruz, Sara, and Aurora Teixeira; The Evolution of the Cluster Literature: shedding light on the Regional Science-Regional Studies debate, *Regional Studies*, 44(9): 1263-1288; 2010.

Pinheiro, Luís, and Aurora Teixeira; Bridging University-Firm and Open Innovation Literature: A Critical Synthesis; *Portuguese Journal of Management Studies*, 15(3): 259-279; 2010.

Teixeira, Aurora, and Mariana Costa; Who Rules the Ruler? On the Misconduct of Journal Editors; *Journal of Academic Ethics*, 8(2): 111-128; 2010.

Teixeira, Aurora, and Todd Davey; Attitudes of Higher Education Students to New Venture Creation: A Preliminary Approach to the Portuguese Case; *Industrial and Higher Education*, 24(5): 323-341; 2010.

Teixeira, Aurora, and Natércia Fortuna; Human Capital, R&D, Trade, and Long-run Productivity. Testing the Technological Absorption Hypothesis for the Portuguese Economy, 1960–2001; *Research Policy*, 39(3): 335-350; 2010.

Teixeira, Aurora, and Maria de Fátima Rocha; Cheating by Economics and Business Undergraduate Students. An Exploratory International Assessment; Higher Education, 59(6): 663-701; 2010.

Teixeira, Aurora, and Maria de Fátima Rocha; Academic Misconduct in Portugal: Results from a Large Scale Survey to University Economics/Business Students; Journal of Academic Ethics, 8(1): 21-41; 2010.

Vieira, Pedro C., and Aurora Teixeira; Are Finance, Management and Marketing Autonomous Fields of Scientific Research? An Analysis Based on Journal Citations; Scientometrics, 85 (3): 627-646; 2010.

Savitskaya Irina, Salmi Pekka and Torkkeli Marko, Barriers to Open Innovation: Case China, Journal of Technology Management & Innovation, (vol 5 no 4 2010)

Kutvonen Antero and Torkkeli Marko, Opening the Fuzzy Front End: A Synthesis of Two Theories, International Journal of Business Excellence, V3 N4 2010, 415-432

Kutvonen Antero, Torkkeli Marko T., and Lin Binshan, (2010) Pre-commercialization Activities in External Exploitation of Technology, International Journal of Innovation and Learning, vol., 8 no. 2, pp.208-230

Länkinen Heli, Ojanen Ville and Torkkeli Marko; Transforming services into products in the Finnish technical engineering and consulting industry, International Journal of Management Science and Engineering Management , 5(2): 119-124, 2010

Olli-Pekka Hilmola, Sandor Ujvari, Marko Torkkeli, Harri Lorentz & Thomas Andersson. From Northern Europe to Russia and Asia, and Vice Versa: Traffic Flow Analysis - Current Situation and Development Trends, International Journal of Logistics Systems Management (Volume 6 - Issue 2 - 2010, pp 205 - 217)

Pekka Salmi, Marko Torkkeli, and Marko Seppänen "Managing non-core technologies with the Research Surplus Portfolio" Innovacii, No 1, vol 141, 2010

Salmi Pekka and Torkkeli Marko; Interorganizational antecedents of absorptive capacity in exploitation vs. exploration alliances: The case of a software company, International Journal of Business Excellence Vol 3 No4 2010, 452-469

Savitskaya Irina and Torkkeli Marko (2010, Markets for Technology in an Emerging Economy: Case of St. Petersburg Russia, Innovacii, No 7, vol 141, 10-14

Seppänen Marko, Mäkinen Saku and Torkkeli Marko, Evaluating non-core technologies: Contrasting external and internal views on corporate research results, Journal of High Technology Management Research, 2010 vol 21 no 2 pp 79-86

Wim Vanhaverbeke, Torkkeli Marko, and Anna Trifilova (2010)" Open Innovation: Scio Me Nihil Scire" Innovacii, No 7, vol 141,

SAVITSKAYA, I., TORKKELI, M., "A Framework for Comparing Regional Open Innovation Systems in Russia", International Journal of Business Innovation and Research 2010, vol.4, no.4.

PODMETINA, D., VÄÄTÄNEN, J., TORKKELI, M., "Do Russian Firms Utilize Open Innovation Paradigm? Study of Technology Commercialization and Acquisition", International Journal of Business Innovation and Research 2010, vol.4, no.4.

6.3.2 Other international publications (6000 ca.)

Total number of publications: 19

List can be consulted in: <http://profile.inescporto.pt>

Almeida, A.; Teixeira, A.A.C.; Santos, C. (2010) Strong Patenting, Weak R&D. When too much "easy" patenting "hurts" R&D, VDM Verlag, ISBN 978-3-639-22954-7, Paperback, 96 pp. (Book)

CARDOSO, A., TORKKELI, M., "Does R&D investment pay-off in traditional industry: case Portuguese footwear", in Proceedings of ISPIM 2010 - The XXI ISPIM Conference - The Dynamics of Innovation , June 2010, Bilbao, Spain.

SAVITSKAYA, I., TORKKELI, M., "Regional Innovation Policies Performance Analysis", in Proceedings of ISPIM 2010 - The XXI ISPIM Conference - The Dynamics of Innovation, June 2010, Bilbao, Spain.

PODMETINA, D., VÄÄTÄNEN, J., SMIRNOVA, M., TORKKELI, M., "The role of regional innovation diversity on competitiveness in Russia", in Proceedings of ISPIM 2010 - The XXI ISPIM Conference - The Dynamics of Innovation, June 2010, Bilbao, Spain.

PODMETINA, D., VÄÄTÄNEN, J., SMIRNOVA, M., TORKKELI, M., "Finding ways from transition towards competitiveness. Linkages between innovativeness, productivity and internationalization", in Proceedings of Odyssey 2010 - 5th International Conference "An Enterprise Odyssey: From Crisis to Prosperity – Challenges for Government and Business", May 2010, Opatija, Croatia.

PODMETINA, D., VÄÄTÄNEN, J., SMIRNOVA, M., TORKKELI, M., "Innovative Business Models. Study of Open Innovations in R&D oriented companies in Russia", in Proceedings of Odyssey 2010 - 5th International Conference "An Enterprise Odyssey: From Crisis to Prosperity – Challenges for Government and Business", May 2010, Opatija, Croatia.

SAVITSKAYA, I., SALMI, P., TORKKELI, M., "Challenges to open innovation in China", in Proceedings of IAMOT2010 - 19th INTERNATIONAL CONFERENCE FOR THE INTERNATIONAL ASSOCIATION OF MANAGEMENT OF TECHNOLOGY - "Technology as the Foundation for Economic Growth", March 2010, Cairo, Egypt.

PODMETINA, D., VÄÄTÄNEN, J., SAVITSKAYA, I., TORKKELI, M., "Innovations in the emerging markets: regional diversity of innovations in Russia", in Proceedings of IAMOT2010 - 19th INTERNATIONAL CONFERENCE FOR THE INTERNATIONAL ASSOCIATION OF MANAGEMENT OF TECHNOLOGY - "Technology as the Foundation for Economic Growth", March 2010, Cairo, Egypt.

PODMETINA, D., VÄÄTÄNEN, J., SMIRNOVA, M., TORKKELI, M., "Towards open innovation in developing countries", in Proceedings of IAMOT2010 - 19th INTERNATIONAL CONFERENCE FOR THE INTERNATIONAL ASSOCIATION OF MANAGEMENT OF TECHNOLOGY - "Technology as the Foundation for Economic Growth", March 2010, Cairo, Egypt.

Väätänen Juha, Podmetina Daria, Smirnova Maria, Torkkeli Marko, Role of R&D cooperation in adopting the open innovation strategies, ISPIM 2010 Symposium, Quebec City, Canada, Dec 12-15, 2010

Savitskaya Irina, Salmi Pekka and Torkkeli Marko, NIS for open innovation: facilitator or impediment, ISPIM 2010 Symposium, Quebec City, Canada, Dec 12-15, 2010

Barradas, L. C. S. and J. J. P. Ferreira (2010). Mashup Enabled Dynamic Capabilities in the Fuzzy Front-End of Innovation. ENTERprise Information Systems (CENTERIS 2010). J. E. Q. Varajao, M. M. Cruz-Cunha, G. D. Putnik and A. Trigo (eds.). Viana do Castelo, Portugal, Springer Verlag. II: 228-237.

Huizingh Eelko, Conn Steffen, Marko Torkkeli, and Bitran Iain, Managing the Art of Innovation: Turning Concepts into Reality, Proceedings of The III ISPIM Annual Symposium, Quebec City, Canada 12-15, December 2010. ISBN 978-952-265-004-7

Huizingh Eelko, Conn Steffen, Marko Torkkeli, and Bitran Iain, Managing the Art of Innovation: Turning Concepts into Reality, The III ISPIM Annual Symposium book of abstracts, Quebec City, Canada 12-15, December 2010. ISBN 978-952-214-005-4

Huizingh Eelko, Conn Steffen, Marko Torkkeli, and Bitran Iain, The Dynamics of Innovation: Proceedings of The XXI ISPIM Annual conference, Bilbao, Spain 6-9, June 2010. ISBN 978-952-265-004-7

Huizingh Eelko, Conn Steffen, Marko Torkkeli, and Bitran Iain, The Dynamics of Innovation: The XXI ISPIM Annual conference book of abstracts, Bilbao, Spain 6-9, June 2010. ISBN 978-952-214-925-1

Manuel Au-Yong Oliveira, João José Pinto Ferreira: "MODELLING CHANGE USING A NOVEL BUSINESS NARRATIVE MODELLING LANGUAGE", EIASM 5TH WORKSHOP ON ORGANISATIONAL CHANGE AND DEVELOPMENT, Vienna, 23-24 September 2010

Susana Nicola, João José Pinto Ferreira: "VALUE MODEL FOR SUPPORTING NEGOTIATION IN COLLABORATIVE NETWORKS", IADIS International Conference e-Society 2010, Porto, Portugal 18 - 21 March 2010

Manuel Au-Yong Oliveira, João José Pinto Ferreira: "INSPIRING DISRUPTIVE CHANGE: A NOVEL APPROACH TO MODELLING THE VALUE CREATION PROCESS", IADIS International Conference e-Society 2010, Porto, Portugal 18 - 21 March 2010

6.3.3 Ph. D. thesis completed (3000 ca.)

(void)

6.3.4 Patents/prototypes (2000 ca.)

(void)

6.3.5 Organization of Conferences (2000 ca.)

(void)

6.3.6 Industry contract research (2000 ca.)

The relationship of the unit with industry has been mainly focused on supporting technology transfer, spin-off company incubation, and on the implementation of Innovation Management Systems.

Support to technology transfer and to spin-off company incubation

- Incubation - Process-net, Next To You.
- Pre- incubation services - Deep Sea Portugal (on-going), OSTV, OPLAB, Riot Films, Red Desert, Tenda na Mala, Bastidor Publico, Colonia
- Feasibility Studies (Technology and Market) – Segway, Just try it, Tools to change, Thog.com, Porto24, Spot, Sw.arK.

Innovation Management Systems

- Implementation – Shortcut, M.A.R. Kayakes
- Audit – Cerealis, Fibersensing, Solindigos, Setdi

Training

- Executive Training on “Innovation Management Systems” organized by Cotec
- 5 Workshops on Innovation Issues

Studies

- Study for the Footwear sector, related to Innovation dynamics: “Innovation dynamics in the footwear sector”; the contractor is APPICAPS.

General activity

- Helping entrepreneurs and R&D Units in the process of evaluation of opportunities and in the development of “Commercial Feasibility Studies” and “Business Plans”.
- Implementing process and tools for an efficient management of R&D projects concerning idea evaluation and Innovation process diagnosis

6.3.7 Internationalization (2000 ca.)

(Collaborative publication, Research, Graduate Training Networks or other forms of participation of the Research Group at the International level)

During 2010 UITT integrated the group of national experts representing Portugal in the CEN/TC389 European Technical Committee on CT319 – Innovation Management.

6.3.8 Other national publications (6000 ca.)

DELGADO, D., "Desenvolvimento de um modelo de internacionalização para PME portuguesas com componentes de serviços" [Development of an internationalization model for Portuguese SME with service components], Master in Innovation and Technological Entrepreneurship, Faculty of Engineering of the University of Porto, 2010.

6.3.9 Government/Organization contract research (2000 ca.)

(Include here work carried out by the group that resulted in a publication or report. Of particular importance are those involved in public policy advice)

(void)

6.1 Group Description - LIAAD

Research Group Title	LIAAD
Principal Investigator	Vladimiro Henrique Barrosa Pinto de Miranda
Research Area	Electrical and Computer Engineering
Home Institution	INESC Porto

6.1.1 Funding

Fundação para a Ciência e a Tecnologia: 42.428,00 €

European Commission: 0,00 €

QREN: 15.177,00 €

TOTAL: 57.605,00 €

This financial amount refers to joint activity of LIAAD with INESC Porto Research Groups. The activity of LIAAD is reported independently.

6.2 Objectives & Achievements - LIAAD

6.2.1 Objectives (6000 ca.)

The reference to this Group was included in the annual report in 2008 only to indicate that the evolution of INESC Porto LA would include associating LIAAD to the LA. Since that date, FCT has not officially recognized this integration and the activity of LIAAD is reported independently.

In the 2008 report one had indicated Prof. Vladimiro Miranda as the PI for lack of a better way to indicate that the relations between the group and INESC Porto, to enlarge the LA, were held under Prof. Miranda's responsibility.

6.2.2 Main Achievements (6000 ca)

The activity of LIAAD is reported independently.

6.1 Group Description - USIG

Research Group Title

SOFTWARE ENGINEERING AND INFORMATION SYSTEMS

Principal Investigator

Mário Jorge Moreira Leitão

Research Area

Electrical and Computer Engineering

Home Institution

INESC Porto

6.1.1 Funding

Fundação para a Ciência e a Tecnologia: 40.106,00 €

European Commission: 231.864,00 €

QREN: 523.958,00

TOTAL: 795.928,00 €

6.2 Objectives & Achievements - USIG

6.2.1 Objectives (4000 ca.)

FOREWORD

Because the on-line form does not allow changes in the names of Research Groups since 2008, the Group is still named in this report as Software Engineering and Information Systems. However, since 2009 it changed its profile and now is recognized by the name USIG – Information Systems and Computer Graphics Unit.

Because the on-line form does not allow changes in the names of Principal Investigators since 2008, the name of Prof. Mário Leitão is indicated. However, USIG is run by two Co-Coordinators Prof. Fernando Silva and MSc. António Gaspar since 2009.

OBJECTIVES

The group's research objectives include the development of fundamental and applied research strongly anchored on industrial partnerships, consultancy and technology transfer in application areas with high social impact, namely in e-Government and e-Health; and, the training of young researchers and professionals. Research activities are centered in three main areas: Information Management and Systems, Software Engineering and Computer Graphics and Virtual Environments.

The research goals include work geared to:

- Improve and innovate on current software development methodologies with particular emphasis on model-driven development with formal methods, agile and collaborative development methodologies, and software quality assurance based on software testing, verification and certification.
- investigate frameworks for information management, retrieval and processing in contexts such as web mining, recommender systems, social web, semantic web, information retrieval, and text mining. This is leading us into the development of innovative systems such as federated libraries of semantically socially-assisted annotated documents, digital cultural heritage portfolios, and e-learning environments and tools.
- devise models, methods and tools for digital preservation, namely in the area of database preservation and scientific data repository management. There is preliminary work on the transformation of databases into preservation-friendly representations along under the framework established by the OAIS, and on the development of descriptions for scientific datasets.
- to develop innovative models, methodologies and architectures for large scale information systems. We focus on systems integration and interoperability, authentication, access authorization, security and auditability mechanisms.
- Investigate innovative methods in computer graphics and virtual environments, especially in application to serious games, immersive and interactive urban planning based on virtual environments, modeling and visualization of large scenes for immersive environments and mobile devices, and image synthesis

Research will be closely matched with application areas in which the group has large experience and established successful partnerships. The main applications areas are: public administration (local, regional and central government), healthcare, telecommunications, transport and industry, commerce and services sectors. It is expected that e-Government and e-Health will be major application areas in the near future.

The group is composed by a heterogeneous team, composed by around 50 collaborators, a combination of researchers, professionals and post-graduate students with skills and competences in diversified topical areas: information systems, information management and retrieval, geographical information systems, spatio-

temporal information representation and visualization, computer graphics, interactive and immersive environments, virtual reality, serious games, image synthesis, simulation, software engineering, software testing, software quality, and collaborative environments.

6.2.2 Main Achievements (4000 ca)

The new group created in 2009, following the restructuring of INESC Porto R&D internal competences in Computer Graphics, Information Systems and Software Engineering, exploited its synergies in 2010 and launched new initiatives, whilst maintaining ongoing activities and a similar funding level.

The group showed in 2010 a substantial increase in its research production compared to 2009 and previous years. It produced 12 journal publications. The group also produced 39 papers in international conferences subject to refereeing of which nearly half are indexed by Springer, or ACM, IEEE or ISI-Proceedings.

There was a significant increase in European funding, almost 500%, thanks to ongoing projects and two new projects: ICT4DEPRESSION - User-friendly ICT Tools to Enhance Self-Management and Effective Treatment of Depression in the EU (7FP) and CEMSDI - Civil-servant Empowerment for Multi Media Service Delivery ICT-enabled (CIP-PSP). Funding from National programs also increased, 21%, with two new projects: 3DWikiU (FCT) – 3D Urban Environments, and RobVigil (QREN).

New collaborations were established with Fundação Gulbenkian (arts and science foundation), Câmara Municipal de S. João da Madeira (local authority), MNRF (construction industry - special electrical installations), MonteAdriano (road construction industry) and TRIEDE TI (software house, specialized in environmental software for port authorities).

New projects, that will impact 2011 were approved: CNG - new generation educational contents (QREN), CompanyDocs - document dematerialization (QREN), D4I - LINUX desktop software (QREN), One.Stop.Transport - usage based car insurance (QREN), RAIA.co - georeferenced oceanic sensor network (INTERREG), AAL4ALL - certification of AAL applications (QREN), ECOPLANNER - ecoefficiency decision support system (QREN), APSAT - satellite and GIS based applications (INTERREG) and ERAS - virtual reconstruction of archaeological sites (FCT).

Prototypes were obtained in several projects: EI-NAUTILUS - Escola Interactiva NAUTILUS, RAIA, DB Preserve, URBIS, ANAFRE, eCAALYX, SIGAVE, Portal Douro and WebReports.

The group continued its involvement in industrial fora, like DANOTEC (association in the area of defense, security, naval and aerospace industries), CEDT (association for the promotion of IT for dematerialization of traditional processes), TICE.PT (ICT national cluster), AIFF (competitiveness and technology center for forest industries) and IDCEN (northern Portugal ocean industries cluster).

6.3 Productivity - USIG

6.3.1 Publications in peer review Journals (6000 ca.)

Total number of publications: 12

List can be consulted in: <http://profile.inescporto.pt>

COSTA, L., PEREIRA, J., FILIPE, V., COUTO, P., MAGALHÃES, L.G., BULAS-CRUZ, J., MAURICIO, A.C., GEUNA, S., VAREJÃO, A., "The Effect of Gait Speed on Three-Dimensional Analysis of Hindlimb Kinematics during Treadmill Locomotion in Rats", *REVIEWS IN THE NEUROSCIENCES* 2010, vol.21, no.6, p.487-497. (ISI, IF=2.60)

LIMA, L., NOVAIS, P., FERNANDES COSTA, R., CRUZ, J.B., NEVES, J., "Group Decision Making and Quality-of-Information in e-Health Systems", *Logic Journal of the IGPL* 2010 (ISI, 0.32).

NOVAIS, P., FERNANDES COSTA, R., CARNEIRO, D., NEVES, J., "Inter-Organization Cooperation for Ambient Assisted Living", Journal of Ambient Intelligence and Smart Environments 2010, vol.2, no.2, p.179-195 (ISI)

REIS, M.G., CABRAL, L., PERES, E., BESSA, M., et al. , "Using IT Based Exercises in Primary Math Teaching of Children with Cerebral Palsy and Mental Retardation: A Case Study", Turkish Online Journal of Educational Technology, July 2010, vol.9, no.3, p.106-118. (ISI)

URBANO, C., MAGALHÃES, L.G., MOURA, J.P., BESSA, M., MARCOS, A., CHALMERS, A., "Tone Mapping Operators on Small Screen Devices: An Evaluation Study", Computer Graphics Forum, December 2010, vol.29, no.8, p.2469-2478.(ISI, IF=1.681)

CRUZ-CUNHA, M.M., REIS, M.G., VARAJÃO, J., BESSA, M., MAGALHÃES, L.G., BARBOSA, L., BARREIRA, J., "Realidade Aumentada e Ubiquidade na Educação", Revista Iberoamericana de Tecnologías del Aprendizaje, November 2010, vol.5, no.4, p.167-174.

FLORES, N., AGUIAR, A., "Understanding Frameworks Collaboratively: Tool Requirements", International Journal on Advances in Software 2010.

MOREIRA DA SILVA, P., CORREIA LOPES, J., SILVA, M.J., "Ubiquitous Computing in Children Education: Framework for Georeferenced Multisensory Information", Educação, Formação & Tecnologias 2010.

PERES, E., LIBERATO, N., BESSA, M., VARAJÃO, J., "Ubiquitous System for Events Promotion", Communications of the IBIMA, February 2010, vol.2010.

RODRIGUES, N., MAGALHÃES, L.G., MOURA, J.P., CHALMERS, A., SANTOS, F., MORGADO, L., "ArchHouseGenerator - A Framework for House Generation", Journal of Virtual Worlds Research, May 2010, vol.2, no.5.

ROMPANTE, C., PERES, E., MORAIS, R., BESSA, M., REIS, M.C., "Contextualized Ubiquity: A New Opportunity for Rendering Business Information and Services", Journal of Theoretical and Applied Electronic Commerce Research, December 2010, vol.5, no.3, p.55-64.

SERENO FERREIRA, H., FIGUEIREDO CORREIA, F., AGUIAR, A., PASCOAL FARIA, J., "Adaptive Object-Models: a Research Roadmap", International Journal on Advances in Software, IARA Journals, vol.3, no.1, p.70-89, 2010.

6.3.2 Other International publications (6000 ca.)

Total number of publications: 39

List can be consulted in: <http://profile.inescporto.pt>

PAPERS IN ISI-PROC, BOOK-CHAPTERS, SPRINGER, ACM AND IEEE PROCEEDINGS:

AMARAL, L., PASCOAL FARIA, J., "A Gap Analysis Methodology for the Team Software Process", QUATIC'2010, IEEE Xplore, p.424-429, 2010.

BRITO E ABREU, F., PASCOAL FARIA, J., J. MACHADO, R., (eds) Proceedings of 7th International Conference on the Quality of Information and Communications Technology - QUATIC'2010, IEEE Xplore, 2010.

CARNEIRO, D., NOVAIS, P., FERNANDES COSTA, R., NEVES, J., "Enhancing the Role of Multi-agent Systems in the Development of Intelligent Environments", 8th PAAMS 10, Springer, Advances in Intelligent and Soft Computing, no.71, p.123-130, 2010.

COSTA, A., NOVAIS, P., FERNANDES COSTA, R., CORCHADO, J., NEVES, J., "Multi-Agent Personal Memory Assistant", 8th PAAMS 10, Advances in Intelligent and Soft Computing, Springer, no.71, p.97-104, 2010.

CRUZ, A., PASCOAL FARIA, J., "A Metamodel-based Approach for Automatic User Interface Generation", 13th MODELS'2010, LNCS 6394 , p.256-270. (ISI-P)

CUNHA, M., PAIVA, A.C.R., SERENO FERREIRA, H., ABREU, R., "PETTool: A Pattern-Based GUI testing Toll", 2nd ICSTE'2010, IEEE Xplore, 2010.

FERNANDES COSTA, R., NOVAIS, P., COSTA, A., LIMA, L., NEVES, J., "User Recognition in AAL Environments, in Ambient Intelligence, Future Trends ", ISAmI'2010, Springer, Series Advances in Intelligent and Soft Computing, vol.72, p.177-184, 2010.

FERREIRA, P.M.T., ROSSETTI, R.J., COELHO, A., "Information Systems for Public Transport Users", 13th IEEE ITSC 2010.

FERREIRA, R., PASCOAL FARIA, J., PAIVA, A.C., "Test Coverage Analysis of UML Activity Diagrams for Interactive Systems", 7th QUATIC'2010, IEEE Xplore, p.268-273, 2010.

FERREIRA, R., PASCOAL FARIA, J., PAIVA, A.C., "Test Coverage Analysis of UML State Machines", 3rd ICSTW'2010, IEEE Xplore, p.284-289, 2010.

FREITAS, T.R., COELHO, A., ROSSETTI, R.J., "Correcting Routing Information through GPS Data Processing", 13th IEEE ITSC 2010.

FREITAS, M., SOUSA, A., COELHO, A., A visualization paradigm for 3D map-based mobile services, VISIGRAPH'2010, Springer, CCIS series, vol.68, p.89-103, 2010.

LOPES, C.T., RIBEIRO, C., "Context in Health Information Retrieval: What and Where ", 4th HCIR'2010. (ISI-P)

LOPES, C.T., RIBEIRO, C., "Using local precision to compare search engines in consumer health information retrieval", 33rd ACM SIGIR'2010, ACM digital library, 2010.

NUNES, S., RIBEIRO, C., DAVID, G., "Term frequency dynamics in collaborative articles", ACM DocEng2010, Manchester, UK, p.267-270.

RAHMAN, A., DAVID, G., RIBEIRO, C., "Model Migration Approach for Database Preservation", ICADL 2010, Springer, LNCS 6102, p.81-90, 2010.

RODRIGUES, R.M., COELHO, A., REIS, L.P., "Data model for procedural modeling from textual descriptions", IEEE CEC 2010, p.1-8, 2010.

OTHER PAPERS IN INTERNATIONAL CONFERENCES WITH REFEREEING:

BRANDÃO SILVA, P., COELHO, A., "Procedural Modeling for Realistic Virtual Worlds Development", SLACTIONS 2010.

BRANDÃO SILVA, P., COELHO, A., "Procedural Modeling of Urban Environments for Digital Games Development", 7th ACE'2010.

CARNEIRO, D., NOVAIS, P., FERNANDES COSTA, R., NEVES, J., "Developing Intelligent Environments with OSGi and JADE", IFIP AI 2010 – 3rd IFIP International Conference on Artificial Intelligence in Theory and Practice, 2010.

COELHO, F.E., RIBEIRO, C., "Evaluation of Global Descriptors for Multimedia Retrieval in Medical Applications", DEXA 2010 - DEXA Workshops, p.127-131, 2010.

CORREIA, F., CAMACHO, R., CORREIA LOPES, J., "An Architecture for Collaborative Data Mining", 2nd KDIR'2010, p.467-470, 2010.

CRUZ, A., PASCOAL FARIA, J., "Automatic Generation of User Interface Models and Prototypes from Domain and use Case Models User Interfaces", INTECH'2010, p.35-60, 2010.

CRUZ, A., SOUSA, A., COELHO, A., "Using games to promote student integration in universities trough the use of virtual worlds", SLACTIONS 2010.

DEVESAS, J.L., RIBEIRO, C., NUNES, S., "Studying Blog Features over Link Popularity ", SOMA 2010.

DIAS, J., CASTRO, J.M., ROMÃO, X., GONÇALVES, M., CORREIA LOPES, J., "SeIEQ: a web-based Application for the Selection of Earthquake Ground Motions for Structural Analysis", ECEE 2010.

LOPES, C.T., RIBEIRO, C., "Context effect on query formulation and subjective relevance in health searches", IIX 2010.

MAGALHÃES, H., PINTO, A., SOUSA, A., "Plotting and Navigation through Data using Dynamic Charts", 8th SVG Open, 2010.

MARTINS, A., COSTA, A., "Mass Customization in Engineering Programs: A Framework for Program Management ", 6th International CDIO Conference, 2010.

MARTINS, J., SILVA, J.A., SOUSA, A., "Façade Tracking System for Outdoor Augmented Reality", WSCG 2010.

MIRANDA, J.C., BLANCO, X.A., SOUSA, A., GUTIERREZ, D., ORVALHO, J., ORVALHO, V., "Painting on Canvas: A Facial Sketching Control System", ACM-SCA 2010.

NUNES, S., RIBEIRO, C., DAVID, G., "Blog Track: Temporal Evidence in the Faceted Blog Distillation Task", TREC 2010.

PORTELA, L., CARVALHO, R., VARAJÃO, J., MAGALHÃES, L.G., "A review of Chief Information Officer' main skills", 3rd WSKS 2010.

PASCOAL FARIA, J., VIDAL, R., PAIVA, A.C., "A Roadmap Toward Software Quality at FEUP", SEPG EUROPE 2010.

REIS, M.G., PEREIRA, L.C., PERES, E., BESSA, M., et al. , "Using Digital Exercises to Help Children with Cerebral Palsy in Primary Math Teaching: A Case Study", 10th Int. Educational Technology Conference, vol.3, p.1664-1670, 2010.

ROCHA, A., MARTINS, A., HENRIQUES, R., VAN DE VEN, P., NELSON, J., "CAALYX: Using Wireless Sensor Networks to Support e-Health Monitoring", EWSN'2010.

RODRIGUES, R.M., COELHO, A., REIS, L.P., "Procedural Modeling of Monumental Buildings from Textual Descriptions", 5th Int. Conf. in Computer Graphics Theory and Applications, p.130-133, 2010.

SERENO FERREIRA, H., FIGUEIREDO CORREIA, F., AGUIAR, A., YODER, J., "Core Patterns of Object-Oriented Meta-Architectures", PLOP'2010.

SILVA, M.J., CORREIA LOPES, J., MOREIRA DA SILVA, P., MARCELINO, M.J., "Sensing the Schoolyard: Using Senses and Sensors to Assess Georeferenced Environmental Dimensions ", 1st COM.Geo 2010.

6.3.3 Ph. D. thesis completed (3000 ca.)

NUNES, S., "Information Retrieval on Time-Dependent Collections", Doctoral Program in Informatics Engineering, December 2010, (Cristina Ribeiro, supervisor; Gabriel David, co-supervisor)

6.3.4 Patents/prototypes (2000 ca.)

Several prototypes were developed in 2010:

EI-Nautilus - Escola Interactiva NAUTILUS – New version of NET_SCHOOL, now UNI_NET Classroom, a classroom control software, compatible with several OS (Windows, MAC OS and Linux), for the integrated control of student PCs and interactive boards in the classroom, integrating student's and classroom's information management. This project was developed for NAUTILUS, a producer of classroom material (with integrated PCs) and retailer of interactive classroom boards.

RAIA - First version of a web based oceanographic georeferenced sensor network (sensor observation service and catalog service).

DB Preserve - Demonstrator of a database preservation system, independent of legacy components, such as hardware, operating system and DBMS.

URBIS – Spatio-temporal database management system (ACTION !). Spatio-temporal information, visualization system for urban data.

ANAFRE - First version of a collaborative management system for Small Local Authorities (SLA). First version of a rapid web platform deployment system. First version of a SLA dashboard application. ANAFRE is a national association of Small Local Authorities (Parishes).

eCAALYX - First version of a body area sensor network, interconnecting several medical sensors, upgrading CAALYX interface to match the new eCAALYX platform.

SIGAVE - Open source webmapping GIS application using OGC (Open Geospatial Consortium) standards and implementing INSPIRE EC Directive for AMAVE (regional association of local authorities) to be integrated into several regional web portals.

Portal Douro - First version of a web regional portal for the touristic promotion of the Douro Region, incorporating advanced location based content features.

WebReports - A reporting application for a web based ERP for Local Authorities.

6.3.5 Organization of Conferences (2000 ca.)

ADM 2010 – Brasil, Luís Magalhães – PC member

AGILE Portugal 2010, Portugal, Ademar Aguiar (Chair), Hugo Ferreira (Co-chair)

CAPSI 2010 – Portugal, Gabriel David – PC member

CEIG'2010 – Spain, A. Augusto de Sousa – PC member

CISTI2010 – Spain, João Correia Lopes – PC member

CLOUDVIEWS.ORG – Portugal, Miguel Leitão, Ricardo Costa – PC member

DSAI 2010 - UK, António Coelho – PC member

DSIE'10 – Portugal, João Pascoal Faria – PC member

EISCO 2010 – Spain, Rui Barros – PC member

EuroPLOP'2010 – Germany, Ademar Aguiar – PC member

GRAPP 2010 – France, A. Augusto de Sousa, Miguel Leitão, António Coelho – PC member

ICEIS2010 – Portugal, João Correia Lopes, João Pascoal Faria – PC member

IEEE WCCI 2010 – Spain, A. Augusto de Sousa - Co-chair of a special session on Computer Graphics

IEEE IWEA 2010 – Japan, Ricardo Costa – PC member

INFORUM 2010 – Portugal, A. Coelho, L. Magalhães, A. Augusto Sousa, J. Pascoal Faria, A. Ademar – PC member

INTERACÇÃO 2010, Portugal, A. Augusto Sousa – PC Member

IsAml 2010, Portugal, Ricardo Costa – PC member

ITSC 2010 – Portugal, António Coelho – PC member

PLOP'2010 – USA, Ademar Aguiar – PC member

QUATIC 2010 - Portugal, Hugo Ferreira – Track Co-Organizing Chair, João Pascoal Faria – Organizing Chair

SASIG3 2010 – Portugal, A. Augusto de Sousa – PC member

SLACTIONS 2010 – Portugal, António Coelho - Co-Chair

SEPG Europe 2010 – Portugal, João Pascoal Faria – PC member

WikiSym 2010 – Poland, Ademar Aguiar – PC member

WSCAD - SCC 2010 – Brasil, A. Augusto de Sousa – PC member

VECPAR2010 - USA, João Correia Lopes – Web-chair, A. Augusto de Sousa – PC member

Videojogos 2010 – Portugal, António Coelho, A. Augusto de Sousa – PC member

XATA 2010 - Portugal, João Correia Lopes, Gabriel David, Cristina Ribeiro – PC and Steering committee

6.3.6 Industry contract research (2000 ca.)

EI-NAUTILUS - The EI-NAUTILUS is a QREN funded project, developed in co-promotion with NAUTILUS, which aims to create a set of applications, NET_SCHOOL, which will allow integrated management of electronic equipment in classrooms.

Escolinhas - Consulting and development services for an educational collaborative and social platform for Tecla Colorida, an INESC Porto/FEUP spin-off involved in educational software for the K12 market.

GENERG - Consulting services for GENERG, a renewable energy power producer, addressing their telecommunications network, mainly their wireless part.

Mobiles - The development of electric mobility creates new logistic needs. This is particularly true if electric batteries are changed instead of charged. This QREN funded project addresses the IT needs of this business model and will prototype several solutions.

NIDT FORUM - Consulting services for Forum Sistemas de Informação, a small software house, in the area of healthcare information systems.

NIDT PROCESSNET - Consulting services for Process.Net, a small software house, in the area of location based dispatch systems.

Palco Principal - This QREN project aims to develop the base platform of an already existing music content portal (<http://palcoprincipal.com/>), by innovating in several processes, such as content identification, automatic classification, selective research, organization, sharing, recommendation and intelligent treatment of all types of data involved (music, preferences, texts, photographs, posts, among others).

WebReports – Tools for the rapid generation of web-based reports, using and adapting existing frameworks, for a Local Authorities' ERP.

RobVigil – Management and dispatch console for a surveillance robot

MNRF – Specialized technical consulting to develop a product for Access Control

6.3.7 Internationalization (2000 ca.)

(Collaborative publication, Research, Graduate Training Networks or other forms of participation of the Research Group at the International level)

The internationalization of the group has been accomplished mainly through European projects and collaborative initiatives.

ADDME - Activating Drivers for Digital eMpowerment in Europe, an Thematic ICT PSP project, aiming to fight the digital divide.

eCAALYX - Enhanced Complete Ambient Assisting Living Experiment - An AAL Initiative project that builds on the strengths of the infrastructure and functionality already developed in the original CAALYX project, development new features.

ELANET - European Local Authorities' Telematic Network, an association promoted by CEMR, with the goal to develop the Information Society at local and regional level. One collaborator is member of the Steering Committee.

HILLSIDE Group - Is a private non-profit devoted to the advance of software patterns. It organizes several PLoP conferences. One collaborator is member.

Initiatives with US Universities - Partnerships are being initiated with US Universities which could generate joint R&D projects. Examples are the UT Austin Portugal (in the area of e-Gov) and CMU Portugal (with the Software Engineering Institute, in the area of Software Quality).

RAIA - Oceanic Observatory of the Iberian Coast - This project aims to improve the real time knowledge of ocean conditions, thanks to data services using an extensive maritime sensor network.

ICT4DEPRESSION - First e-Health project applied to mental health. It integrates technologies like: devices for non-intrusive and continuous monitoring of activities and biosignals; treatments and patient automatic assessment using mobile phone and web based communication; computational methods for reasoning about the state of patients and progress of therapies and, finally, a flexible system architecture for monitoring and supporting people using continuous observations and feedback via mobile phone and web.

CEMSDI - Civil-servants Empowerment for Multi-media Service Delivery ICT-enabled. This is a European project that is part of the ICT Policy Support Programme (ICT PSP), on the "ICT for Government and Governance" topic. CEMSDI addresses the theme "Inclusive e-Governance: flexible, personalized and multichannel based service delivery targeting the socially disadvantaged", through a Type-B Pilot.

ENISA – European Network and Information Security Agency – Participation in the study "Security and Resilience in Governmental Clouds".

6.3.8 Other national publications (6000 ca.)

PAPERS IN PORTUGUESE CONFERENCES/WORKSHOPS, ETC.:

DIAS, L.J., COELHO, A., "Novos Serviços Turísticos para Mobile Advertising", INFORUM 2010 - INFORUM-Simpósio de Informática 2010, Braga, Portugal, p.415-426.

GRILLO, A., PAIVA, A.C., PASCOAL FARIA, J., "Reverse Engineering of GUI Models for Testing", Actas de CISTI'2010 - 5ª Conferência Ibérica de Sistemas e Tecnologias de Informação 2010, ISI Web of Knowledge, Santiago de Compostela, Espanha, p.284-289.

JACOB, J., COELHO, A., "Geo Wars - The Development of a location-based game", Videojogos2010 - Conferencia de Ciências e Artes dos Videojogos 2010, Lisboa, Portugal.

MOREIRA, P.M., REIS, L., SOUSA, A., "i-opt: Intelligent Optimization for Computer Graphics and Visualization", Actas de CISTI'2010 - 5ª Conferência Ibérica de Sistemas e Tecnologias de Informação 2010, Santiago de Compostela, Espanha.

MOREIRA, R., PAIVA, A.C.R., AGUIAR, A., "Testing Aspect-Oriented Programs", Actas de CISTI'2010 - 5ª Conferência Ibérica de Sistemas e Tecnologias de Informação 2010, Santiago de Compostela, Espanha.

ORTEGA, M.D., ALVARADO, L., FEITO, F., COELHO, A., SOUSA, A., "Hacia una ciudad virtual", CEIG 2010 - Congreso Espanol de Informatica Grafica 2010, Valencia, Espanha.

ORVALHO, V., MIRANDA, J., SOUSA, A., "What a feeling: Learning Facial Expressions and Emotions", Videojogos2010 - Conferencia de Ciências e Artes dos Videojogos 2010, Lisboa, Portugal

TEIXEIRA, R., VARAJÃO, J., BESSA, M., MAGALHÃES, L.G., "Agenda Digital Local: um caso português" [Local Digital Agenda: the Portuguese case-study], CAPSI2010 - 10ª conferência da Associação Portuguesa de Sistemas de Informação, October 2010, Viana do Castelo, Portugal.

TEIXEIRA, R., VARAJÃO, J., BESSA, M., PERES, E., "Projectos Digitais: uma reflexão e pontes para o futuro" [Digital Projects: one reflection and bridges to the future.], June 2010, 5ª Conferencia Ibérica de Sistemas y Tecnologías de Información, vol.1, p.185-191.

(BOOK) VELEZ GRILLO, F., CASIMIRO, A., CORREIA LOPES, J., AZEVEDO, J., "Teoria do Sinal e suas aplicações" 2010, Escolar Editora.

6.3.9 Government/Organization contract research (2000 ca.)

(Include here work carried out by the group that resulted in a publication or report. Of particular importance are those involved in public policy advice)

ANAFRE - Development of a collaborative platform and Internet portals for small local authorities.

CCDR-LVT - Collaborative platform for the elaboration and public discussion of the Lisbon regional master plan and participation in the thematic working group ICT.

CCRDN-TIC - Implementation of collaborative platforms for PROT N, Norte em Rede and Atlantic Area INTERREG Programme.

DB Preserve -Data Warehouses for the Long-term Preservation of Institutional Electronic Records and Databases, a FCT project.

IVDP - Consulting in Geographic Information Systems for the Porto and Douro wine industry regulator.

Portal Douro -Consulting and development of a regional Portal for the Douro region.

SAMA2007 - Consulting for CCDR-N in the evaluation of SAMA Call proposals.

SIGAVE - Development of a regional solution for the integration of georeferenced content in AMAVE portal, using geographic web services.

SIVIDA - Specification of an Information System for AIDS data collection and processing, for the Healthcare High Commissioner.

URBIS - Efficient management and visualization of spatiotemporal urban data, a FCT project.

e-mili@ is a partnership between Fundação Calouste Gulbenkian, Câmara Municipal de Santa Maria da Feira e INESC Porto to develop a collaborative platform to support the activities developed in the context of the local social support network and the eInclusion strategy in the region, particularly of the most vulnerable groups, such as the elderly with low scholarship.

6.1 Group Description - CRACS

Research Group Title	CRACS-CENTER FOR RESEARCH IN ADVANCED COMP.
Principal Investigator	Vladimiro Henrique Barrosa Pinto de Miranda
Research Area	Electrical and Computer Engineering
Home Institution	INESC Porto

6.1.1 Funding

Fundação para a Ciência e a Tecnologia: 27.847,00 €

European Commission: 0,00 €

QREN: 0,00 €

TOTAL: 27.847,00 €

This financial amount refers to joint activity of CRACS with INESC Porto Research Groups. The activity of CRACS is reported independently.

6.2 Objectives & Achievements - CRACS

6.2.1 Objectives (4000 ca.)

The reference to this Group was included in the annual report in 2008 only to indicate that the evolution of INESC Porto LA would include associating CRACS to the LA. Since that date, FCT has not officially recognized this integration and the activity of CRACS is reported independently.

In the 2008 report one had indicated Prof. Vladimiro Miranda as the PI for lack of a better way to indicate that the relations between the group and INESC Porto, to enlarge the LA, were held under Prof. Miranda's responsibility.

6.2.2 Main Achievements (4000 ca)

The activity of LIAAD is reported independently.

7 Research Lines

In this section you can see the individual Research Lines reported in the last form as well as the Research Groups involved in each RL. They can be accessed by clicking the Research line's name or its unique identifier.

Reference	Research Line Title
RL-FIS-LA14-96	FIBER OPTIC DEVICES AND NETWORKS FOR MULTI-PARAMETER SENSING
RL-EEI-LA14-97	ENABLING TECHNOLOGIES FOR NETWORKED AUDIOVISUAL SERVICES
RL-EEI-LA14-98	ELECTRIC SECTOR AND INTEGRATED TERRITORIAL PLANNING
RL-EGE-LA14-99	ENTERPRISE COOPERATION NETWORKS

7.1 General Description (RL-FIS-LA14-96)

Research Line Title	FIBER OPTIC DEVICES AND NETWORKS FOR MULTI-PARAMETER SENSING
Principal Investigator	José Luís Campos de Oliveira Santos
Research Area	Physics

7.2 Objectives and Achievements (RL-FIS-LA14-96)

This section allows you to provide the Objectives and Achievements of the Research Line during the reporting period.

7.2.1 General Objectives (1000 ca.)

FOREWORD

Since 2009, the Coordinator of this RL is Prof. Paulo S. Marques. The on-line form imposed by FCT does not allow the necessary correction.

OBJECTIVES

Increasing social awareness of safety issues and more demanding regulatory framework ask for continuous, remote, real time and distributed multiparameter measurements. Present systems have limitations concerning these requirements specially if connected with the need of a new proactive paradigm of environmental and structural health integrity monitoring.

Within this overall context, the RL deals with the acquisition of know-how and competences for implementation of sensing devices and networks based in optical fiber technologies.

Novel sensing heads, robust and reliable interrogation techniques, multiplexing issues and optoelectronic system integration are the operational objectives.

An integrated approach to the creation of a sustainable framework in terms of human and financial resources, addressing R&D progress, partnership and networking consolidation, post-graduation training, and know-how economic valorization, is the underlying objective of the Research Line.

7.2.2 Main Achievements (2000 ca.)

In the framework of this Research Line several achievements were attained:

- Optical tweezing
- Laser direct writing with femtosecond pulses
- Demonstration of optical coherence tomography in different application areas
- Novel long period grating based sensors
- Monitorization of vegetable oils for human consumption based on refractometry
- Modal interferometry based sensors

- Sensors based on twin core fibers and photonic band gap fibers
- Sensors for determination of bacterial concentration in water for human use

One outcome of this R&D activity and related achievements was the publication record in this period, which stands to 42 works published in international journals and 72 presentations in international and national conferences.

7.3 Research Line Output (RL-FIS-LA14-96)

This section allows you to provide the productivity of the Research Line during the reporting period.

7.3.1 Collaborative Publications in peer review Journals (2000 ca.)

Include only if more than one Research Groups of the LA is involved. Give title and full citation in original language

A few examples:

LIMA, S.E., FRAZÃO, O., FARIAS, R.G., ARAÚJO, F., FERREIRA, L.A., SANTOS, J.L., MIRANDA, V., "Mandrel-Based Fiber Optic Sensors for Acoustic Detection of Partial Discharges - a proof of concept", IEEE Transactions on Power Delivery, October 2010, vol.25, no.4, p.2526-2534.

ROCCO GIRALDI, M.T.M., ROCHA, A.M., NETO, B., CORREIA, C., SEGATTO, M.E.V., PONTES, M.J., BARBERO, A.P.L., COSTA, J.C.W., MARTINEZ, M.A.G., FRAZÃO, O., BAPTISTA, J.M., SALGADO, H., MARQUES, M.J., TEIXEIRA, A.L.J., ANDRÉ, P.S., "Rayleigh assisted Brillouin Effects in Distributed Raman Amplifiers under Saturated Conditions at 40 Gb/s", Microwave and Optical Technology Letters, June 2010, vol.6, no.52, p.1331-1335.

LIMA, S.E., FRAZÃO, O., FARIAS, R.G., ARAÚJO, F., FERREIRA, L.A., MIRANDA, V., SANTOS, J.L., "Intrinsic and Extrinsic Fiber Fabry-Perot Sensors for Acoustic Detection in Liquids", Microwave and Optical Technology Letters, May 2010, vol.52, no.5, p.1129-1134.

7.3.2 Collaborative Other Publications (2000 ca.)

Include only if more than one group is involved and only include here Books, chapters or full papers published in conference proceedings. Give title and full citation in original language

A few examples:

LIMA, S.E., FRAZÃO, O., FARIAS, R., ARAÚJO, F., FERREIRA, L.A., MIRANDA, V., SANTOS, J.L., "Acoustic source location of partial discharges in transformers", EWOF2010 - Fourth European Workshop on Optical Fibre Sensors 2010 2010, Porto, Portugal.

LIMA, S.E., FRAZÃO, O., FARIAS, R., ARAÚJO, F., FERREIRA, L.A., MIRANDA, V., SANTOS, J.L., "Fibre laser sensor based on a phase-shifted chirped grating for acoustic sensing of partial discharges in power transformers", EWOF2010 - Fourth European Workshop on Optical Fibre Sensors 2010 2010, Porto, Portugal.

7.3.3 PhD thesis completed (3000 ca.)

Co-supervision or clearly multidisciplinary projects are allowed here

VIEGAS, D., "Sensing Devices Based in Micro-Optics Technology ", December 2010.

LEITNER, M., "White light interferometry applications in high resolution sensing and biomedical imaging", July 2010.

KHORDONI, A., "Guided Optics for Astronomical Interferometry ", 2010, PhD.

VIEGAS, J., "Integrated Optical Sensors ", 2010, PhD.

PEREIRA, D., "Optical Fiber Bragg Grating Technology, Fundamentals and Applications ", 2010, PhD.

7.1 General Description (RL-EEI-LA14-97)

Research Line Title	ENABLING TECHNOLOGIES FOR NETWORKED AUDIOVISUAL SERVICES
Principal Investigator	José António Ruela Simões Fernandes
Research Area	Electrical and Computer Engineering

7.2 Objectives and Achievements (RL-EEI-LA14-97)

This section allows you to provide the Objectives and Achievements of the Research Line during the reporting period.

7.2.1 Objectives (1000 ca.)

A variety of digital technologies and tools is necessary to create advanced audiovisual services and distributed multimedia applications, in particular audio, video and image processing, communication systems and networks, knowledge-based systems, metadata and data models. This research line aims at consolidating and exploiting the existing know-how on these technologies in order to design and develop new systems and advanced services for the citizens. This requires the expertise of different R&D groups as well as addressing new research topics; for instance, developing advanced video-surveillance systems implies not only video processing but also multimodal processing, including joint processing of video, audio and signals of other sensors, supported by high capacity communication systems and networks with good quality of service. The research objectives also include setting up demonstrators and pilot trials, technical advice, strategic consulting and advanced training.

7.2.2 Main Achievements (2000 ca.)

Cooperation between Research Groups (especially UTM and USIG) is required to fulfil the goals of this Research Line. This section focuses on joint efforts and contributions that made possible such collaboration and allowed exploiting complementary skills; a detailed description of specific scientific achievements and associated prototypes can be found on the reports of each group.

A large number of projects with industrial partners funded by QREN were active during 2010, namely Palco3.0 (Intelligent Web system for management of music social networks), Mobiles (Sustainable electric mobility, with electric vehicles), RobVigil (Surveillance robot), Hotel3.0 (Personalized multimedia services for the hospitality market) and Portal Douro (Web portal for promoting the Douro region). Prototypes of these systems are available and being evaluated or under development.

This industry oriented line of action will continue in 2011 with those QREN projects and new ones: One.Stop.Transport (Usage based car insurance), CNG (New generation educational contents) and AAL4ALL (Certification of Ambient Assisted Living applications).

European research programmes also play an important strategic role in this line, which has been strengthened in 2010 with the start of new projects: ALICANTE (Media Ecosystem Deployment Through Ubiquitous Content-Aware Network Environments), CONVERGENCE (Content-centric, publish-subscribe service model for the

Internet), ICT4DEPRESSION (User-friendly ICT Tools to Enhance Self-Management and Effective Treatment of Depression in the EU) and CEMSDI (Civil-servant Empowerment for Multi Media Service Delivery ICT-enabled).

It is also worth mentioning the reinforcement of the Ambient Assisted Living area with the approval of the AAL4ALL project, mentioned above, and the European project CAALYX-MV (Complete Ambient Assisting Living Experiment - Market Validation), which follows former projects (CAALYX and its enhanced successor eCAALYX).

7.3 Research Line Output (RL-EEI-LA14-97)

This section allows you to provide the productivity of the Research Line during the reporting period.

7.3.1 Collaborative Publications in peer review Journals (2000 ca.)

(Include only if more than one Research Groups of the LA is involved. Give title and full citation in original language)

ROMPANTE, C., PERES, E., MORAIS, R., BESSA, M., REIS, M.C., "Contextualized Ubiquity: A New Opportunity for Rendering Business Information and Services", Journal of Theoretical and Applied Electronic Commerce Research, December 2010, vol.5, no.3, p.55-64.

VIANA, P., PIMENTA ALVES, A., "A Semantic Management Model to enable the integrated management of media and devices", Multimedia Tools and Applications, August 2010, vol.49, no.1, p.37-62.

PINTO, A.A., RICARDO, M., "Secure multicast in IPTV services", Computer Networks, July 2010, vol.54, no.10, p.1531-1542.

CIOBANU, L., CORTE-REAL, L., "Successive refinement of side information for multi-view distributed video coding", Multimedia Tools and Applications, July 2010, vol.48, no.3, p.411-436.

CAMPOS, R.L., RICARDO, M., "An Efficient Mechanism for Establishing IP Connectivity in Next Generation Networks", International Journal of Communication Systems, June 2010, vol.23, p.817-840.

CASTRO, H.F., PIMENTA ALVES, A., SERRÃO, C., CARAWAY, B., "A New Paradigm for Content Producers", IEEE Multimedia, April 2010, vol.17, no.2, p.90-93.

CARRERAS, A., BARBOSA, V., ANDRADE, M.T., DOGAN, S., "A Platform for Context-Aware and Digital Rights Management-Enabled Content Adaptation", IEEE Multimedia, April 2010, vol.17, no.2, p.74-89.

CARVALHO, P.M., SANTOS CARDOSO, J.S., CORTE REAL, L., "Hybrid framework for evaluating video object tracking algorithms", ELECTRONICS LETTERS, March 2010, vol.46, no.6, p.411-412.

CAMPOS, R., DUARTE, R., SOUSA, F., RICARDO, M., RUELA, J., "Network infrastructure extension using 802.1D-based wireless mesh networks", Wireless Communications and Mobile Computing, January 2010.

REBELO, A.M., CAPELA, G., SANTOS CARDOSO, J., "Optical recognition of music symbols: A comparative study", International Journal on Document Analysis and Recognition, March 2010, vol.13, no.1, p.19-31.

7.3.2 Collaborative Other Publications (2000 ca.)

Include only if more than one group is involved and only include here Books, chapters or full papers published in conference proceedings. Give title and full citation in original language

SILVA, P.B., COELHO, A., "Procedural Modeling of Urban Environments for Digital Games Development", ACE 2010 – 7th Int. Conf. on Digital Interactive Media in Entertainment and Arts, Taipei, Taiwan, Nov. 2010.

AMARAL, I., COELHO, F.E., COSTA, J.P., CARDOSO, J., "Hierarchical Medical Image Annotation Using SVM-based Approaches", ITAB 2010 - 10th IEEE Int. Conf. on Information Technology and Applications in Biomedicine, Nov. 2010, Corfu, Greece.

OLIVEIRA, J.L., GOUYON, F., MARTINS, L.G., REIS, L., "IBT: A Real-Time Tempo and Beat Tracking System", ISMIR 2010 – 11th Int. Society for Music Information Retrieval Conf., Aug. 2010, Utrecht, Netherlands.

CARDOSO, J., REBELO, A.M., "Robust staffline thickness and distance estimation in binary and gray-level music scores", *ICPR 2010 - Int. Conf. on Pattern Recognition*, Aug. 2010, Istanbul, Turkey.

LOPES, M.A., GOUYON, F., KOERICH, A., OLIVEIRA, L., "Selection of Training Instances for Music Genre Classification", *ICPR 2010 - Int. Conf. on Pattern Recognition*, Aug. 2010, Istanbul, Turkey.

TIMMERER, C., ANDRADE, M.T., MARTIN, A.L., "End-to-End Management of Heterogeneous Environments Enabling Quality of Experience", *High-quality visual experience*, Springer, July 2010.

SALTA, N.G., MORLA, R., RICARDO, M., "Improving P2P Video Streaming in Wireless Mesh Networks", *MED-HOC-NET 2010 - 9th IFIP Mediterranean Ad Hoc Networking Workshop*, June 2010, Juan-Les-Pins, France.

ROCHA, A., MARTINS, A., HENRIQUES, R., VAN DE VEN, P., NELSON, J., "CAALYX: Using Wireless Sensor Networks to Support e-Health Monitoring", *EWSN 2010 – 7th European Conf. on Wireless Sensor Networks*, Coimbra, Portugal, Feb. 2010.

FREITAS, M., SOUSA, A., COELHO, A., "A visualization paradigm for 3D map-based mobile services", *Communications in Computer and Information Science*, Springer, 2010, vol.68, part 2, p.89-103.

7.3.3 PhD thesis completed (3000 ca.)

Co-supervision or clearly multidisciplinary projects are allowed here

PINTO, A.S., Key Distribution Technique for IPTV Services with Support for Admission Control and User Defined Groups

DOMINGUES, M.A., Exploiting Multidimensional Data for Web Site Automation

ALMEIDA, F.L., Creation of Value with Open Source Software in the Telecommunications Field

NUNES, S., Information Retrieval on Time-Dependent Collections

7.1 General Description (RL-EEI-LA14-98)

Research Line Title	ELECTRIC SECTOR AND INTEGRATED TERRITORIAL PLANNING
Principal Investigator	Manuel António Cerqueira Costa Matos
Research Area	Electrical and Computer Engineering

7.2 Objectives and Achievements (RL-EEI-LA14-98)

This section allows you to provide the Objectives and Achievements of the Research Line during the reporting period.

7.2.1 Objectives (1000 ca.)

EU goals. Consultancy to government, agencies and TSO, studies and tools to support the increase of renewable energy in the electric power system, development of new control strategies for distributed generation and forecasting tools for variable energy sources, including large off-shore wind parks.

Iberian Electricity Market. Development of specific simulation tools. Conceptualization of the remuneration of ancillary services by DG. Development of new methodologies for market settlement.

Emerging organization schemes for the electric sector. Microgeneration, microgrids and integration of electric vehicles. Models for components, monitoring and control mechanisms, evaluation tools and market integration models, including remuneration measures.

Urban and regional integrated territorial planning of energy and environment: creating geo-referenced solutions, addressing interoperability problems, collaborative edition of geographical information, information fusion, open software use and adoption of emergent standards.

7.2.2 Main Achievements (2000 ca.)

Electric Sector

- Important collaborative research (power systems/telecommunications) in projects INOVGRID, MERGE and REIVE, regarding the identification of communication requirements and technical solutions for full management and control of active distribution grids
- Collaborative research (power systems/optoelectronics) regarding the use of optic sensors in power systems monitoring
- Industrial demonstration of the management tools developed in the European project ANEMOS.PLUS, for operational reserve setting, congestion analysis and storage management
- Advances and contributions in wind power forecasting by using entropy and correntropy concepts, density forecasting and developing a new clustering based scenario reduction technique for wind forecasting in the international project ARGOS (with Argonne N.L., USA)
- Development of new models, control solutions and methodologies for wind power safe integration, large scale electric vehicles deployment, micro-generation integration and active load management,

under the Smart Grid Paradigm, in the framework of the European projects MERGE (Mobile Energy Resources in Grids of Electricity) and TWENTIES (Transmission system operation with large penetration of Wind and other renewable Electricity sources in Networks by means of innovative Tools and Integrated Energy Solutions), and national project REIVE (Smart electrical grids with electrical vehicles)

Urban and regional integrated territorial planning of energy and environment

- Approval of the three new projects RAIA.co - georeferenced oceanic sensor network (INTERREG), ECOPLANNER - ecoefficiency datawarehousing (QREN), APSAT - satellite and GIS based applications (INTERREG).

7.3 Research Line Output (RL-EEI-LA14-98)

This section allows you to provide the productivity of the Research Line during the reporting period.

7.3.1 Collaborative Publications in peer review Journals (2000 ca.)

(Include only if more than one Research Groups of the LA is involved. Give title and full citation in original language)

Collaborative papers involving researchers of other units or groups

Audun Botterud, Jianhui Wang, Vladimiro Miranda, Ricardo Jorge Bessa "Wind Power Forecasting in U.S. Electricity Markets", The Electricity Journal, vol.23, no.3, April, 2010, pp.71-82.

João Peças Lopes, Silvan Polenz, Carlos Moreira, Rachid Cherkaoui "Identification of control and management strategies for LV unbalanced microgrids with plugged-in electric vehicles", Electric Power Systems Research, vol.80, no.8, pp.898-906, August, 2010. (IF: 1.259)

José Faria, Eusébio Nunes, Manuel Matos "Cost and quality of service analysis of production systems based on the cumulative downtime", International Journal of Production Research, vol.48, no.6, 2010, pp.1653-1684. (IF: 0.803)

Lima, SEU, Frazao, O, Farias, RG, Araujo, FM, Ferreira, LA, Santos, JL, Miranda, V "Mandrel-Based Fiber-Optic Sensors for Acoustic Detection of Partial Discharges - a Proof of Concept", IEEE TRANSACTIONS ON POWER DELIVERY, 25 (4): 2526-2534 OCT 2010 (IF: 1.161)

Lima, SEU, Frazao, O, Farias, RG, Araujo, FM, Ferreira, LA, Miranda, V, Santos, JL "Intrinsic and Extrinsic Fiber Fabry-Perot Sensors for Acoustic Detection in Liquids, MICROWAVE AND OPTICAL TECHNOLOGY LETTERS, 52 (5): 1129-1134 MAY 2010 (IF: 0.682)

7.3.2 Collaborative Other Publications (2000 ca.)

(Include only if more than one group is involved and only include here Books, chapters or full papers published in conference proceedings. Give title and full citation in original language)

Collaborative papers involving researchers of other units or groups

A. Botterud, J. Wang, R. Bessa, H. Keko, V. Miranda, "Risk Management and Optimal Bidding for a Wind Power Producer", Proc. IEEE PES Gen. Meeting, 2010.

C. I. F. Agreira, C. M. M. Ferreira, F. M. Barbosa, "The Rought Set Theory Applied to a Set of the New Severity Indices", PMAFS2010, June, 2010.

Lima, SEU, Frazao, O, Farias, RG, Araujo, FM, Ferreira, LA, Miranda, V, Santos, JL, "Acoustic Source Location of Partial Discharges in Transformers", 4th Eur. Workshop On Optical Fibre Sensors, Proc. SPIE-The Int. Society for Optical Engineering, Sep 08-10, 2010, Porto, PORTUGAL

Lima, SEU, Frazao, O, Farias, RG, Araujo, FM, Ferreira, LA, Miranda, V, Santos, JL, "Fibre laser sensor based on a phase-shifted chirped grating for acoustic sensing of partial discharges in power transformers", 4th Eur. Workshop On Optical Fibre Sensors, Proc. SPIE-The Int. Society for Optical Engineering, SEP 08-10, 2010, Porto, PORTUGAL

M. D. Ortega, L. Alvarado, F. Feito, A. Coelho, A. Sousa, Hacia una ciudad virtual, CEIG 2010 – Cong. Español de Informática Gráfica, Valencia, Espanha, 2010.

M. Nazari, M. Ilić, J. P. Lopes, "Dynamic Stability and Control Design of Modern Electric Energy Systems with Large Penetration of Distributed Generators ", IREP 2010, August, 2010.

N. Hatziaargyriou, J. P. Lopes, F. J. Soares, D. E. Rua, P. R. Almeida, N. Downing, E. Bower, K. Strunz, M. Ferdowsi, E. Abbasi, "Mobile Energy Resources in Grids of Electricity: the EU MERGE Project", SGM, October, 2010.

P. M. T. Ferreira, R. J.F. Rossetti, A. Coelho, Information Systems for Public Transport Users, ITSC 2010 - 13th Int. IEEE Conf. Intel. Transportation Systems, Funchal, Madeira, Portugal, 2010.

R. Castro, R. Araújo, J. Cardoso, D. Freitas, A New Linear Parametrisation for Peak Friction Coefficient Estimation in Real Time, VPPC2010 - IEEE Vehicle Power and Propulsion Conf. 2010, Lille, França, Set. 2010.

S. A. B. Almeida, R. Pestana, F. M. Barbosa, "Risk Assessment Methodology for Operations applied to the Portuguese Transmission System - the Probabilistic Model", CIGRE 2010, Aug. 2010

T. R.M. Freitas, A. Coelho, R.J.F. Rossetti, "Correcting Routing Information through GPS Data Processing", ITSC 2010 - 13th Int. IEEE Conf. on Intelligent Transportation Systems, Funchal, Madeira, Portugal, 2010.

7.3.3 PhD thesis completed (3000 ca.)

(Co-supervision or clearly multidisciplinary projects are allowed here)

Cristina Isabel Ferreira Figueiras Faustino Agreia, Técnicas de Data Mining para o Estudo e Análise da Segurança de Sistemas Eléctricos de Energia [Data Mining Techniques for Security Analysis of Electric Energy Systems], PhD Thesis, September, 2010 (Fernando Pires Maciel Barbosa, Carlos Manuel Borralho Machado Ferreira)

Inácio de Sousa Adelino da Fonseca, Manutenção de Sistemas de Geração de Energia Renovável Eólica através de Redes IP [Maintenance of Wind Power Generating Systems through IP Networks], PhD Thesis, May, 2010 (Fernando Pires Maciel Barbosa, José Manuel Torres Farinha)

Mauro Augusto da Rosa, "Agent-based Technology Applied to Power Systems Reliability", PhD Thesis, February, 2010 (Vladimiro Henrique Barrosa Pinto de Miranda, Armando Martins Leite da Silva)

7.1 General Description (RL-EGE-LA14-99)

Research Line Title	ENTERPRISE COOPERATION NETWORKS
Principal Investigator	Jorge Manuel Pinho de Sousa
Research Area	Economics and Management

7.2 Objectives and Achievements (RL-EGE-LA14-99)

This section allows you to provide the Objectives and Achievements of the Research Line during the reporting period.

7.2.1 General Objectives (1000 ca.)

Collaborative networks of enterprises are becoming an important research area of a strong interdisciplinary nature. This broad domain encompasses Supply Chain Management, Virtual Organizations, Collaborative Networks, and covers both complex design and management problems.

Traditional research in the area has been concentrated on issues such as distributed information technology infra-structures and architectures, or novel organizational structures, with much less attention paid to important issues related to inter-organizational collaboration, to the particular roles of the different actors, or to the use of mathematical models and quantitative methods.

Our research is intended to cover this gap. It is focused on a set of topics in which the group has developed competences and know-how for years: a) models for cooperative networks and business; b) information and knowledge management; c) Decision Support Systems; d) multi-objective heuristic optimization; e) integration in collaborative networked organizations.

7.2.2 Main Achievements (2000 ca.)

During 2010 the following important achievements can be highlighted:

- In the Net-Challenge European project, coordinated by INESC Porto, a Methodology and Collaborative processes were designed and developed to support SMEs in the creation and management of non-hierarchical business networks. An IT infrastructure and decision support tools for collaborative planning, event management and performance management were designed.
- In the Autogratiom project (Assisting SMEs to participate in global digital supply chains in the automotive sector in the Single Market) INESC Porto was responsible for the design and development of an infrastructure to facilitate the integration of SMEs in the digital automotive supply chain. This new concept is supported by an efficient, simplified interface with the SME ERPs, facilitating the electronic integration of these companies in the supply network.
- New concepts and approaches for the management of complex supply networks have been developed in the AC/DC European project, with a particular impact in the responsiveness of the automotive industry, for the fast production of customized cars (the “5 days cars”).
- A new concept and several tools to support managing footwear supply networks, taking advantage of the use of RFID technology, have been developed in the scope of the Shoe-ID national project. This new concept for supply chain management integrates the whole value network from the materials supply to the retail shops and includes aspects such as demand forecasting, planning, logistics, warehousing and innovative customer interaction in the retail shops.
- Research on multi-criteria approaches for partner selection in Virtual Organizations and Collaborative Networks.

- Development of the innovative, advanced concept of SME's knowledge community; new empirical knowledge generated about virtual communities in an SME context and new business/IS architecture for information management in industrial associations.

In 2010, a PhD was concluded on "Information and knowledge sharing in collaborative networks as a process of social construction of meaning: a theory and practical approach" (author: Carla Sofia Pereira) and there were 2 publications in peer review journals, and 9 other publications in conference proceedings.

7.3 Research Line Output (RL-EGE-LA14-99)

This section allows you to provide the productivity of the Research Line during the reporting period.

7.3.1 Collaborative Publications in peer review Journals (2000 ca.)

(Include only if more than one Research Groups of the LA is involved. Give title and full citation in original language)

CRISPIM, J.A., PINHO DE SOUSA, J., "Partner selection in virtual enterprises", International Journal of Production Research, February 2010, vol. 48, no. 3, p. 683-707.

SIMÕES, D., FERREIRA, H., SOARES, A.L., "Managing multiple ontologies in a virtual breeding environment context", International Journal of Services and Operations Management, 2010 Vol. 6, No.3 pp. 230 – 256.

CLARO, J., PINHO DE SOUSA, J., "A multiobjective metaheuristic for a mean-risk multistage capacity investment problem", Journal of Heuristics, February 2010, vol. 16, no. 1, p. 85-115.

7.3.2 Collaborative Other Publications (2000 ca.)

(Include only if more than one group is involved and only include here Books, chapters or full papers published in conference proceedings. Give title and full citation in original language)

AZEVEDO, A., ALMEIDA, A.H., "The development of factory templates for the integrated virtual factory", in proceedings of FAIM 2010 - Flexible Automation and Intelligent Manufacturing, July 2010, East Bay - Oakland, U.S.A..

CARNEIRO, L., ALMEIDA, R.J., AZEVEDO, A., KANKAANPAA, T., SHAMSUZZOHA, A., "An Innovative framework supporting business networks for complex product manufacturing", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on VIRTUAL ENTERPRISES, October 2010, Saint-Etienne, France.

CARNEIRO, L., "Methodology for non-hierarchical collaboration networks for complex products manufacturing", in proceedings ICE 2010 - 16th International Conference on Concurrent Enterprising Lugano , June 2010, Lugano, Switzerland.

CARNEIRO, L.C., SOUSA, C., LUCAS SOARES, A., "Integration of domain and social ontologies in a CMS based collaborative platform", Proceedings of OnToContent 2010 - The 6th International Workshop on Ontology Content (OnToContent 2010) 2010, Creta, Grécia.

PEREIRA, C., SOUSA, C., LUCAS SOARES, A., "Building an informal ontology to support collaborative network operation: a case study", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on VIRTUAL ENTERPRISES, October 2010, Saint-Etienne, France.

PINTO FERREIRA, R., LUCAS SOARES, A., "A collaborative decision support method to design performance evaluation systems in collaborative networks of organizations", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on VIRTUAL ENTERPRISES, October 2010, Saint-Etienne, France.

SÁ, C.M., PEREIRA, C., LUCAS SOARES, A., "Supporting collaborative conceptualization tasks through a semantic wiki based platform", Proceedings of OnToContent 2010 - The 6th International Workshop on Ontology Content (OnToContent 2010) 2010, Creta, Grécia.

SHAMSUZZOHA, A., KANKAANPÄÄ, T., CARNEIRO, L., T. HELO, P., "Implementation Framework for Collaboration in a Non-Hierarchical Business Network", December 2010, Macau, China.

SHAMSUZZOHA, A., KANKAANPÄÄ, T., HELO, P., CARNEIRO, L., ALMEIDA, R.J., FORNASIERO, R., "Non-hierarchical collaboration in dynamic Business Communities", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on VIRTUAL ENTERPRISES, October 2010, Saint-Etienne, France.

7.3.3 PhD thesis completed (3000 ca.)

Co-supervision or clearly multidisciplinary projects are allowed here

Information and knowledge sharing in collaborative networks as a process of social construction of meaning: a theory and practical approach (Carla Sofia Gonçalves Pereira, Doctoral Programme in Informatics Engineering, FEUP).

8 Other Activities

This section is designed so that the LA can report on its efforts to promote activities that include multiple Research Lines and or multiple Research Groups. In this section the LA can also indicate efforts made towards the implementation of services for Researchers Groups within the LA but also for services in collaboration with other Institutions of Research, Higher Education Government or the community in general. This section also contains information regarding the Networking activities of the LA, its involvement in training efforts (PhD programs) and its activities designed to promote communication between Science and Society. The final Section is designed to provide an overview of the original aims of the LA is all these respects and how they compared with their implementation

8.1 Internal Services and Resources (3000 ca).

Indicate here sharing of equipment and other resources both within the LA, between LAs or with other institutions of Higher Education nationally or internationally)

The LA has a deep cooperation with three Departments at FEUP (Fac. Engineering UP): Electrical Engineering; Informatics Engineering; and Management and Industrial Engineering. The same occurs with the Department of Physics at the Faculty of Sciences (FCUP) of the Univ. Porto. The research laboratories created by INESC Porto are shared on a regular basis, especially for post-graduation studies. However, vast support to under-graduation is also real, especially for final year project or thesis work. Also, a diversity of examples of cooperation with other LAs exists.

The LA has built a strong management structure which allows researchers and research units to share many resources. The following services are centrally provided and shared: juridical, human resources, insurance, administrative and financial management of projects, accounting, media and image, translation, information management, communication and computing support, transportation and fleet management, drivers, facilities management, room and equipment reservation, acquisition of equipment/services, event organization, bar, cleaning, library and secretarial assistance. These services are assured by a team of some 20 full-time personnel, a highly efficient and qualified pool of people that help in creating a high quality environment.

Software tools are commonly acquired by the LA and made available to researchers and research units through sharing mechanisms. This process is controlled by SCI (Computer Service).

Resource sharing among internal groups and with external entities is regular. Just a few examples in follow, identical to previous years:

Under the responsibility of the Power systems Unit (USE), sharing of computer facilities and specific simulation software, like PSS/E, used by FEUP students in their assignments and MSc dissertations. Also, sharing of lab facilities, involving the RTDS hardware/software, installed at FEUP. Simulation software like EUROSTAG and PSSE as well as computer resources installed at FEUP.

In the area of UOSE (optoelectronics), sharing the clean room area with the Physics Department of FCUP and IFIMUP, enables pre- and post-graduation training in micro-fabrication technologies. IFIMUP is in an Associate Laboratory with INESC-MN (in Lisbon).

During 2010, by initiative of INESC Porto, the idea of a shared infrastructure, involving the construction of a state of the art clean room (ISO 6/ISO 7) and the purchase of several key equipment, was hammered into a proposal, which was submitted to QREN and approved.

The clean room area is also shared with a set of Brazilian universities that develop theoretical work and come to Porto to manufacture and test devices at INESC Porto.

ITQB and REQUIMTE are other Associate Laboratories with whom INESC Porto LA develops partnerships looking for synergies using complementary competences.

In the area of UTM (telecommunications), sharing with UOSE, and also with FEUP and FCUP of a Photonics and Microwaves laboratory, set-up with funding from FCT.

In the area of software, USIG maintains a software infrastructure sharing costs with other Units, particularly an ORACLE DBMS and associated tools (sharing with UTM and UESP) and ESRI GIS (sharing with USE).

The ROBIS group has several robotic equipments (manipulators, mobile platforms, autonomous vehicles) that are used as test beds shared by students both at pre and post-graduation levels.

8.2 External Services and Resources (3000 ca)

Indicate here scientific or technical services provided both nationally or internationally to Governments/Institutions or the community

In 2010, INESC Porto continued the policy defined in past years of providing assistance to Governmental and other public interest bodies, as a part of its obligations. It must be noted that in many cases this assistance is not liable to be reported. This activity demonstrates the deep involvement of the LA and the sense of mission that presides to its action.

Some examples of mostly of non-paid activities in this context:

- assistance to Government bodies (Ministries, Innovation Agency, QREN management...) in the definition of regulations and tenders for national funding programs in Science and Technology
- advice on technology trends upon request to INOVCAPITAL, the state controlled risk-capital company (since 1999)
- consultancy to the Regional Coordination and Development Commissions of Northern Portugal (CCDR-N) and Lisbon and Tejo Valley (CCDR-LVT) in regional planning
- support to a NCP of the IST Program resident at INESC Porto
- leadership of the Portuguese participation in the European Technology Platform Manufuture, with roles in the High Level and Implementation Support Groups and founding member of the European Factory of the Future Research Association
- membership of the Council of the Associate Laboratories (CLA)
- participation in the European Electricity Grids Initiative (EEGI), representing Portugal, upon request from the General Directorat of Energy and Geology
- participation in several Sectorial Clusters aiming to promote Competitiveness and Innovation through collective actions.
- implementation of e-Inclusion strategy in the Municipality of Santa Maria da Feira, supported by Gulbenkian Foundation.
- development of studies leading to national regulations published by ERSE (Regulatory Authority for Energy Services)

8.3 Networking Actions (2000 ca)

Indicate here both national and international activities)

Examples of actions led by the Board of Directors:

- Participation in 6 national Technology and Competitiveness Poles and 2 Regional Clusters promoted by the Ministry of Economy
- Involvement in the FCT partnership programs with MIT, CMU and UT Austin, with leadership and management in doctoral programs and research projects.
- Center of Knowledge on the Railway (consortium with FEUP and institutes in Mechanical and Civil Engineering) and constitution of the Center of Knowledge on Sustainable Energy (together with other FCT Units including another LA in Chemical Engineering).
- Cooperation network with the major Brazilian Universities

Examples of actions led by Units):

USE

Governing Board of the EES/UETP Euro consortium for adv. training involving universities and companies.

Euro Working Group of Multiple Criteria Decision Aid

UOSE

National network of competence in Sensors and in Optical Fiber Sensors with IT Aveiro and University of Aveiro

Various Management Committees of COST Actions (members of the INESC Porto LA are National Delegates in 6 COST Actions). Various bilateral programs aiming at enhancing internationally collaborations, mainly European, complementary to COST Actions participations.

UTM

Co-promoter of SITEMU – Iberian Society for Music Technology (<http://smcnetwork.org/sitemu>)

COST Action on Sonic Interaction Design (<http://www.cost-sid.org/>) – partner and member of Management Committee

Marie Curie Initial Training Network programme – participation with CERN in ACEOLE (Data Acquisition, Electronics, and Optoelectronics for LHC Experiments)

FCT/CAPES transnational cooperation programme

Thematic Network on Mobile Communications (<http://rtcm.inescporto.pt>)

UESP

Manufature ETP – A highly relevant network of companies and R&D institutions with centers in all Europe and motivated by INESC Porto in Portugal.

SoColnet – Society of Collaborative Networks

ERIMA - European Research in Innovation and Management Alliance

Footwear ETP - Footwear Products and Processes European Technology Platform

ROBIS

UMS (Unmanned Maritime Systems) initiative of the EDA (European Defence Agency)

USIG

ELANET – European Local Authorities Telematic Network

ADDME – Activating Drivers for Digital eMpowerment in Europe (Digital Divide Thematic Network)

DANOTEC – Defence, Armament and New Technologies Association.

IDCEM – Institute for the Development of the Knowledge and the Economy of the Sea.

HILLSIDE GROUP – Participation in the Board (Software Engineering area).

8.4 Training Activities (2000 ca)

Indicate here activities of the LA as a whole

INESC Porto LA provides internal and external training.

Internal training is addressed to all its collaborators. The effort in internal training, in 2010, could not benefit from the support that in the past, before 2009, public financing tools were providing, because of a change of policy that left out advanced training from the supported topics. Specific actions supporting individual requests were supported by the LA.

Externally, INESC Porto LA offered advanced training to academics, industry and services, at national and international level. The training offer was carried by the research Units. Some examples are:

SPECIFIC TRAINING COURSES FOR THE INDUSTRY:

Organization of EES/UETP (University Enterprise Training Partnership) courses and participation in lecturing activities in other EES/UETP courses organized by other institutions (European scope with several companies and universities as partners), especially addressing the industry and the power sector.

BiH Training - Technical Assistance Training in Load Research in Bosnia i Herzegovina for Power Companies and Regulator, BiH, 2010

Advanced training of young researchers in the framework of two research contracts with PTIN (Portugal Telecom Inovação): ASP (Authentication, Security and Privacy solutions for Home Networks) and ContextAware (Context-aware and personalized multimedia services)

HIGHER EDUCATION:

JADES – Joint Advanced Doctoral programme in Energy Systems (Bosnia and Herzegovina, Macedonia, Serbia), EU-TEMPUS, 2008-2010.

Project “ELLEIEEC-Enhancing Lifelong Learning for the Electrical and Information Engineering Community” (2008-2011) 1428-LLP-1-2008-FR-ERASMUS-ENW.

All Units of INESC Porto LA have also been deeply involved in training actions targeting students at pre-graduation, MSc and PhD levels, namely regular collaboration and student framing by the Research groups in the scope of the MIT-Portugal (area of Engineering Design and Advanced Manufacturing - EDAM), CMU-Portugal and UT Austin Programs.

INVOLVEMENT IN TECHNOLOGY TRANSFER AND TECHNOLOGY-BASED ENTREPRENEURSHIP TRAINING PROGRAMS OF ACADEMIC AND ALSO NON-ACADEMIC STAFF:

Support to MIETE, Master in Innovation and Technological Entrepreneurship, of FEUP

8.5 Outreach/Science and Society (4000 ca)

Indicate here activities that the LA as a whole

INESC Porto gives great importance to communication with citizens. In 2010 this activity followed the general trend of recent years and the condensed report that can be made is no different from past reports in its broad lines.

The Communication Service (CS) includes 2 specialists graduated in Media and Communication. An external service was contracted to watch the media and allow news and press releases to flow to newspapers, radio and tv, in order to promote public awareness (and understanding) of science and make informal contributions to science education. In 2010, 349 news pieces were identified in the main Portuguese media.

The CS, among other duties, runs a digital monthly Bulletin (BIP, <http://bip.inescporto.pt/>) in Portuguese, with news on science and projects developed, that reaches a vast community of readers in Portugal and Brazil.

A version of BIP in English (<http://bip.inescporto.pt/en>) is also published every 3 months.

According to Google Analytics, in February 2010 the BIP received 1714 hits from 1283 visitors in 43 countries. In the same month (1st-28th) in 2011 the Bulletin received 7886 hits from 1394 different people in 50 different countries. The top countries include Portugal, Brazil, Romania, the USA, Germany, the UK, the Netherlands, Spain, the Czech Republic and Canada.

INESC Porto developed a consistent action of presence in the civil society with participation in a diversity of events and initiatives. As a consequence, experts from INESC Porto are regularly interviewed by tv and radio stations (beside the press) on hot topics that the society is debating.

INESC Porto is a partner of the Ciência Viva (CV) association whose aim is to promote science among youth. It has regularly cooperated with the CV initiatives, namely in the annual programs to receive students from secondary schools for short periods of time in its laboratories. Also, a member of the Board of Directors is a member of the Scientific Advisory Board of the Ciência Viva Center of Bragança.

Support to the University of Porto annual event, Mostra da Ciência (Science Exhibit), has also been given as well as support to Engineering and Sciences Faculties Open Days, highlighting the LA activities. INESC Porto also participated in national Exhibitions organized by the Innovation Agency and the Ministry of Science to disseminate science and technology accomplishments by Portuguese researchers.

The UOSE Research Group (RG) participated actively in the Physics Summer School of the Physics Department of Faculty of Science of Porto University (<http://e-fisica.fc.up.pt/>) directed to high school students. The RG proposed short scientific projects that are realized by groups of five students with ages between 15 and 18 years old during 5 days. Each group of students works under the supervision of a PhD student from the RG. Some projects are: Gas sensors for environmental monitoring; Implementation of a bar code reader; Temperature measurement by luminescence; Holographic interferometry by double exposure: a light ruler; Temperature sensor using Bragg gratings; Fluorescent nanoparticles for sensors and medical imaging; Optical transmission of audio and video signals by optical fibers; LEGO Mindstorms® sensorized robot; Water-propelled rocket with an accelerometer; Laser scanning system for tridimensional characterization of objects. During the week long period the students also visit the research labs, namely the RG clean room and other microfabrication facilities.

Public talks and lectures were given by the senior members of the LA in various locations, in secondary schools and in Civic Associations, scientific and technical meetings. Some examples (not an exhaustive list) of this participation in the society life collected mostly from the Power Systems area are:

Vladimiro Miranda, "Policies in Science and Technology in the EU", invited plenary speaker at the Fair of Science and Technology, Belém (PA), Brazil, Dec 2010

Manuel Matos, Energy, "Technologies and the future of electric networks" – invited talk, Serões da Bonjóia, Porto, Oct 2010

Rui Araújo, "Electric vehicles: Which way to innovation?", Workshop MOBI-POWER, CEIA-TECMAIA, within the R&D Network for Sustainable Mobility - REMOBI, Nov 2010

André Madureira / J. Peças Lopes, "Renewable Energies and their Integration into the Electrical Network", Seminar "Energia", organized by Eixo Atlântico do Noroeste Peninsular, Viana do Castelo, Portugal, Nov 2010.

Jorge Pinho de Sousa, "Strategic Decision Making, uncertainty and multiple criteria: what may be the role of new optimization techniques?", 2nd Portuguese-Brazilian School on Evolutionary Computing (ELBCE), Guimarães, Portugal (Jul 2010)

Similar examples would be found in the other areas of expertise of INESC Porto, with impact in schools, industry, media and general public.

8.6 Organization of International Events (2000 ca)

Indicate here events that are international in dimension and required the involvement of the LA for their implementation)

INESC Porto LA was involved in the organization of International Events at various levels: from fully organizing the event to having its researchers serve as Chair of Conferences or as members of Technical or Scientific Committees.

The following is a list with a few examples on events with organization or co-organization of INESC Porto.

SEON – Symposium on Enabling Networks and Sensors, with IT-Aveiro, Lisboa, 25th June 2010

EWOFS 2010 – European Workshop on Optical Fiber Sensors, Porto, 8th to 10th September 2010

IMS10 - 10th IFAC Workshop on Intelligent Manufacturing Systems, Lisboa 1,2 July 2010 (José Gonçalves and José Lima) - Organizing Committee Members

IWRME 2010 - Robots and Musical Expressions Workshop, Taipei, Taiwan, October 2010

DCIS 2010 - XXV Conf. on Design of Circuits and Integrated Systems, Lanzarote, Spain, November 2010

1st international HVDC Doctoral Colloquium, co-organized with FEUP, Porto, 14-15 June 2010

Final Workshop of the RiskDSam, Risk in Distribution System Asset Management, co-organized with SINTEF Energy Research, Norway, Porto, 22 - 23 October 2010.

A large number of events in which INESC Porto researchers served as Chair/Vice Chair of the Organization or Members of Program/Technical/Scientific Committees could be listed. Some examples from the USIG RG:

ADM 2010 – Brasil, Luís Magalhães – PC member

DSAI 2010 - UK, António Coelho – PC member

EuroPloP'2010 – Germany, Ademar Aguiar – PC member

GRAPP 2010 – France, A. Augusto de Sousa, Miguel Leitão, António Coelho – PC member

IEEE IWEA 2010 – Japan, Ricardo Costa – PC member

PLOP'2010 – USA, Ademar Aguiar – PC member

WikiSym 2010 – Poland, Ademar Aguiar – PC member

WSCAD - SCC 2010 – Brasil, A. Augusto de Sousa – PC member

VECPAR2010 - USA, João Correia Lopes – Web-chair, A. Augusto de Sousa – PC member

9 Internal Evaluations

In this section you should include a summary of internal evaluations during the report period and the future internal evaluation plans for 2011.

9.1 Summary of internal evaluations during 2010 (3000 ca.)

SCIENTIFIC AND TECHNICAL EVALUATION

Every 3 months all researchers, either grantees or faculty from the University schools and other Higher Education schools are subject to a performance evaluation by their hierarchical superiors. This leads to a classification with reflex on performance prizes and bonuses. This classification is discussed in a meeting of the Council of Research Units.

Annually, a global performance assessment is conducted by the Board of Directors, with the cooperation of the Group and Project leaders. This is a participated evaluation exercise beginning with a self-assessment by each researcher. A workflow tool has been put in place to assist in the evaluation procedures.

Regularly the Scientific Council assesses the value of published material and decides on which journal papers should entitle their authors to bonuses or scientific prizes, given by the Board of Directors.

On a case basis, the Board of Directors assesses the merits of new research line proposals, proposed by the research groups, in special presentation sessions, and approves their plan, budget and reinforcement of human resources.

The Board of Directors also always assesses the global performance of each researcher with a Ph.D. degree, contracted under the LA program, following a report and a special presentation, with consequence to the renewal of contracts.

FINANCIAL AND MANAGEMENT EVALUATION

The activity of INESC Porto is regulated by an annual plan, approved by its General Council.

Every 3 months an evaluation session is conducted, during a meeting of the Council of research Units, to assess the deviation to the plan as well as the financial health of the institution. Corrections are introduced then in the trajectory.

A midterm evaluation session (in July) assesses the scenario of a simulation of the activity for the whole year. Policy measures are then taken to assure that the year closure will not represent a problem.

STRATEGIC EVALUATION

In 2010, the LA awaited for the evaluation from FCT to take place. The first analysis conducted proved to be quite unsatisfactory, because it was based solely in the reports produced by INESC Porto using the mandatory report forms made available on-line by FCT. INESC Porto has always objected to these forms, because they do not allow adequate reporting.

In the following, intense interaction with the SAB (Scientific Advisory Board) led to the production of analysis and new reports providing a better overview of the institution.

Also in 2010, two new Groups requested admission into the LA (CISTER and HASLab). Their requests were object of strategic analysis, in interaction with the SAB, resulting in merger plans that have been submitted to FCT.

9.2 Future internal Evaluations plan for 2011 (3000 ca.)

INESC Porto has always had a policy of interaction with its SAB (Scientific Advisory Board) while respecting its independence.

INESC Porto LA has always dealt with the SAB as a fundamental tool to influence its strategic planning. The discussions of the SAB with the Board of Directors have been extremely useful and fruitful. However, INESC Porto does not see the SAB as a governing body of the institution nor has the perspective that all the recommendations of the SAB should be followed or implemented. They are a means to provide insight and vision, and highly respected for that – but the policy is dictated by the owners of INESC Porto. Therefore, an evaluation process based on assessing if the recommendations of the SAB are followed (and to which extent) or not does not seem productive at all nor does it contribute to the independence of the analysis by the SAB and risks limiting the boldness of suggestions.

In 2011, INESC Porto plans to conduct a full visit of the SAB to all the Units member of the LA, followed by an evaluation process, strategic assessment and action plan to assure the cohesion of the Associate Laboratory.

Also, INESC Porto implements a regular evaluation based on a differential principle, i.e., referring to variations relative to a base date. Several criteria are identified (and sub-criteria) but one does not envisage reaching a global and unique mark as a result of the process. The indices associated to each criterion serve as indicators of performance under a multiple criterion framework.

The regular evaluation procedures that INESC Porto already has in place are:

- Evaluation of individual performance every 3 months
- Complementary evaluation of individual performance on an annual basis
- Evaluation of the performance of the researchers contracted under programs supported by FCT 6 months before contract renewal
- Evaluation of publication performance and other indicators on an annual basis
- Financial and management evaluation every 3 months
- Scientific global evaluation by the SAB on an annual basis.



INESCPORTO

INSTITUTO DE ENGENHARIA DE SISTEMAS
E COMPUTADORES DO PORTO
LABORATÓRIO ASSOCIADO

PARTE C

Tabelas
complementares
Unidades
2010

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POWER SYSTEMS

A) SUMMARY OF PUBLICATIONS

Summary of publications by members of the Unit in 2010

Type of publication	Number
Papers in International Journals with scientific referees	13
Papers in National Journals with scientific referees	3
Conference Proceedings in events with scientific referee and selection	38
Books (author)	
Chapter/paper in books	1
Publications (editor)	
Other publications (National meetings, local journals, etc.)	3
Theses concluded in 2010 by members of the Unit	14
TOTAL	72

Journal	Number
Electric Power Systems Research	3
Electronics and Electrical Energy	1
Energy Policy	1
I Quaderni di Italiaeuropei	1
IET Generation, Transmission & Distribution	1
Intelligent Automation and Soft Computing	1
International Journal of Production Research	1
Maintworld Asset Management	1
Revista Ibérica de Sisemas e Tecnologia de Informação	1
The Electricity Journal	1
ELECTRA	1
TOTAL	13

B) SUMMARY OF PROJECTS

Source of Funding	Year				Variation 2009 - 2010
	2007	2008	2009	2010	
National Programmes	72	62	16	33	106%
European Union Programmes	125	146	155	332	114%
R&D Services and Consulting	562	596	924	902	-2%
Other R&D sources				194	
Other external sources			17	16	-6%
Total	758	804	1.112	1.477	33%

Number of Projects and income derived for Groups or Units in 2010

Project Typology		Number of Projects	Projects Income
Source of Funding	National Programmes - FCT	3	33
	National Programmes - QREN		
	European Union Programmes - I&D	3	327
	European Union Programmes - Diversos	1	5
	R&D Services and Consulting - National	20	538
	R&D Services and Consulting - European Union	3	99
	R&D Services and Consulting - International	3	265
	Other R&D sources	2	194
	Other external sources	1	16
	Internal		
Dominant Activity Type	Basic Research	6	360
	Applied Research and Development	8	472
	Consulting	20	624
	Technology Transfer		
	Network		
	Conference		
	Advanced Training	2	21
	Incubation		
	Other		
Execution Status	Started	13	858
	Continuation	12	396
	Finished	11	223
Total		36	1.477

C) SUMMARY OF POST-GRADUATION ACTIVITIES

Summary of theses supervised by members of the Unit in 2010

Tipo	Starting	On-going	Concluded	Total
Master			66	66
Doctoral	3	15	7	25
TOTAL	3	15	73	91

D) SUMMARY OF ACTIVITIES OF COOPERATION OR DISSEMINATION

Summary of Cooperation and dissemination actions

Type	Number
Conferences with INESC Porto in the organization (in the organizing committee or chairing technical committees)	1
Nº. of External co-authors of Publications of INESC Porto	44

E) LIST OF PUBLICATIONS

E.1. International Journals with scientific referees

1. BESSA, R. J., MATOS, M., Economic and technical management of an aggregation agent for electric vehicles: a literature survey, *European Transactions on Electrical Power* (*)
2. BESSA, R. J., MIRANDA, V., BOTTERUD, A. and WANG, J. , 'Good' or 'bad' wind power forecasts: a relative concept. *Wind Energy*, n/a. doi: 10.1002/we.444 (*)
3. BOTTERUD, A., WANG, J., MIRANDA, V., BESSA, R.J., "Wind Power Forecasting in U.S. Electricity Markets", *The Electricity Journal*, April 2010, vol.23, no.3, p.71-82.
4. DE ALMEIDA, S.A.B., PESTANA, R., MACHADO, N., "Operational Risk Assessment Methodology for the Portuguese Transmission System", *ELECTRA*, October 2010, no.252, p.6-18.
5. FARIA, J., NUNES, E., MATOS, M., "Cost and quality of service analysis of production systems based on the cumulative downtime", *International Journal of Production Research* 2010, vol.48, no.6, p.1653-1684.
6. FARINHA, J.T., SIMÕES, A., COSTA, A., BASTOS, P., FERREIRA, L.A., CARVAS, A., MACIEL BARBOSA, F., "Rerology Beyond Tomorrow", *Maintworld & Asset Management* 2010, no.1, p.46-50.
7. GOMES, M.H., SARAIVA, J.T., "Allocation of Reactive Power Support, Active Loss Balancing and Demand Interruption Ancillary Services in MicroGrids", *Electric Power Systems Research*, vol.80, no.10, pp.1267-1276, October, 2010.
8. LOPES, J.A.P., "Innovazione e tecnologia per uno sviluppo sostenibile. Le sfide degli impianti di energia elettrica ", *I Quaderni di Italianieuropei* 2010, no.1, p.189-193.
9. LOPES, J.A.P., POLENZ, S., MOREIRA, C., CHERKAOU, R., "Identification of control and management strategies for LV unbalanced microgrids with plugged-in electric vehicles", *Electric Power Systems Research*, August 2010, vol.80, no.8, p.898-906.
10. MATOS, M., BESSA, R. J., Setting the Operating Reserve using Probabilistic Wind Power Forecasts , *IEEE Transactions on Power Systems*, In Press (*)
11. MOISÉS, P., MATOS, M., "Capacity credit of microgeneration and microgrids", *ENERGY POLICY*, October 2010, vol.38, no.10, p.6330-6337.
12. MOREIRA, A., OLIVEIRA, F.S., PEREIRA, J., "A Social Welfare Analysis of the Iberian Electricity Market Accounting for Carbon Emission Prices", *IET Generation, Transmission & Distribution*, February 2010, vol.4, no.2, p.231-243.
13. MOREIRA, C., LOPES, J.A.P., "Microgrids Operation and Control Under Emergency Conditions", *Intelligent Automation and Soft Computing*, January 2010, vol.16, no.2, p.252-272.
14. PEREIRA, A.J.C., SARAIVA, J.T., "A decision support system for generation expansion planning in competitive electricity markets ", *Electric Power Systems Research*, January 2010, no.80, p.778-787.
15. VALDEZ, M.M.T., AGREIRA, C.I.F., MACHADO FERREIRA, C.M., MACIEL BARBOSA, F., "Teaching, Learning and Exploring the Use of Project-Based Learning", *Electronics and Electrical Engineering*, October 2010, no.9, p.117-120.
16. VALDEZ, M.M.T., AGREIRA, C.I.F., FERREIRA, C.M., MACIEL BARBOSA, F., "Aplicação da Aprendizagem Baseada em Projectos num curso de Engenharia", *Revista Ibérica de Sistemas e Tecnologias de Informação* , December 2010.

(*) Published on-line

E.2. National Journals with scientific referees

1. Carlos Moreira, Fernanda Resende, "Desenvolvimento das redes eléctricas inteligentes como plataforma para a integração da produção distribuída, microprodução e veículos eléctricos", Renováveis Magazine, nº 4, Dezembro 2010.
2. Fernanda Resende, "Tecnologias de conversão de energia eólica para grandes sistemas ligados à rede", Renováveis Magazine, nº 2, Junho 2010.
3. João Peças Lopes, "Os Desafios da Mobilidade Eléctrica no Sistema Eléctrico", Revista Informativa da Ordem dos Engenheiros REGIÃO NORTE, no.22, pp.24-2, October, 2010.

E.3. Conference Proceedings with scientific referees (international or national)

1. ALMEIDA, S.A.B., PESTANA, R., MACIEL BARBOSA, F., "Integration of common cause faults in the operational probabilistic approach", PMAPS2010 - 11th International Conference on Probabilistic Methods Applied to Power Systems, June 2010, Singapura, Singapura.
2. ALMEIDA, S.A.B., PESTANA, R., MACIEL BARBOSA, F., "Risk Assessment Methodology for Operations applied to the Portuguese Transmission System - the Probabilistic Model", CIGRE 2010 - Conseil International des Grands Réseaux Électrique - Session 2010, August 2010, Paris, France.
3. BESSA, R.J., MATOS, M., "Comparison of Probabilistic and Deterministic Approaches for Setting Operating Reserve in Systems with High Penetration of Wind Power", MedPower2010 - 7th Mediterranean Conference and Exhibition on Power Generation, Transmission, Distribution and Energy Conversion 2010, Agia Napa, Cyprus.
4. BESSA, R.J., MATOS, M., "Dealing with Wind Power Forecast Uncertainty", Proceedings of URPD2010 - Uncertainty and Robustness in Planning and Decision Making (URPD2010) 2010, Coimbra, Portugal.
5. BESSA, R.J., MATOS, M., "The role of an Aggregator Agent for EV in the Electricity Market", MedPower2010 - 7th Mediterranean Conference and Exhibition on Power Generation, Transmission, Distribution and Energy Conversion 2010, Agia Napa, Cyprus.
6. BESSA, R.J., MIRANDA, V., PRÍNCIPE, J.C., BOTTERUD, A., WANG, J., "Information Theoretic Learning applied to Wind Power Modeling", Proceedings of IEEE WCCI 2010 - IEEE World Congress on Computational Intelligence 2010, Barcelona, Spain.
7. BESSA, R.J., MIRANDA, V., BOTTERUD, A., WANG, J., "Good or Bad Wind Power Forecasts: A Relative Concept", WindPower - Windpower 2010 Conference & Exhibition, 2010.
8. BOTTERUD, A., WANG, J., BESSA, R.J., KEKO, H., MIRANDA, V., "Risk Management and Optimal Bidding for a Wind Power Producer", Proceedings of IEEE PES General Meeting 2010 2010, Minneapolis, USA.
9. BRANDÃO, R.M., CARVALHO, J.B., MACIEL BARBOSA, F., "Monitoring Systems for Wind Generators Maintenance", UPEC 2010 - 45th International Universities' Power Engineering Conference, September 2010, Cardiff, Wales.
10. BRANDÃO, R.M., CARVALHO, J.B., MACIEL BARBOSA, F., "Neural networks for condition monitoring of wind turbines", MEPS'10 - Modern Electric Power Systems, September 2010, Wrocław, Poland.
11. COELHO PEREIRA, A.J., TOMÉ SARAIVA, J., "Building Generation Expansion Plans - a Decision Aid Approach to use in Competitive Electricity Markets", MedPower2010 - 7th Mediterranean Conference and Exhibition on Power Generation, Transmission, Distribution and Energy Conversion, November 2010, Agia Napa, Cyprus.

12. FARINHA, J.T., FONSECA, I., MACIEL BARBOSA, F., "Terology, 3D models to help diagnosis and Sustainable Future - A New Perspective for Maintenance", Euromaintenance - International Conference & Exhibition, May 2010, Verona, Italy.
13. FAUSTINO AGREIRA, C.I., MACHADO FERREIRA, C.M., MACIEL BARBOSA, F., "The Rought Set Theory Applied to a Set of the New Severity Indices", PMAPS2010 - 11th International Conference on Probabilistic Methods Applied to Power Systems , June 2010, Singapura, Singapura.
14. FIDALGO, J.N., MATOS, M., JORGE, H., "Deriving Loss Profiles for Market Purposes", MedPower2010 - 7th Mediterranean Conference and Exhibition on Power Generation, Transmission, Distribution and Energy Conversion, October 2010, Agia Napa, Cyprus, p.91-96.
15. FILHO, J. I. DA SILVA, PEREIRA, J., ROCCO, A., MÁRIO, M. C., AZEVEDO, E. F., GARDIMAN, V. G. L., "State Estimation of Power Electric System With Fuzzy and Paraconsistent Annotated Logics", SBSE/2010 - III Simpósio Brasileiro de Sistemas Elétricos, paper SBSE2010-0181, Belém, Pará, Brasil, May 2010.
16. FONSECA, I., FARINHA, J.T., FERREIRA, L., SIMÕES, A., BASTOS, P., MACIEL BARBOSA, F., "Building a wind maintenance system with open source software and low cost hardware", Euromaintenance - International Conference & Exhibition, May 2010, Verona, Italy.
17. GOMES, B.A., SARAIVA, T., "Evaluation of Transmission Reinforcement Strategies Using Risk Indices in the Presence of Uncertainties", 7th ICEEM - 7th International Conference on the European Energy Market, June 2010, Madrid, Spain.
18. GOUVEIA, C., LEITE, H., FERREIRA, I., "Voltage and Current Sensor for State Estimation in Distribution Network with Generation", ICREPQ'10 - INTERNATIONAL CONFERENCE ON RENEWABLE ENERGIES AND POWER QUALITY (ICREPQ'10), March 2010, Granada, Espanha.
19. HATZIARGYRIOU, N., PEÇAS LOPES, J., SOARES, F.J., RUA, D.E., ROCHA ALMEIDA, P., DOWNING, N., BOWER, E., STRUNZ, K., FERDOWSI, M., ABBASI, E., "Mobile Energy Resources in Grids of Electricity: the EU MERGE Project", SGM - 2nd European Conference SmartGrids and E-Mobility, October 2010, Bruxelas, Belgica.
20. ISSICABA, D., GIL, N.J., PEÇAS LOPES, J., "Islanding Operation of Active Distribution Grids using an Agent-based Architecture", ISGT - IEEE PES Conference on Innovative Smart Grid Technologies Europe, October 2010, Gothenburg, Sweden.
21. LEITE, H., BARROS, J., MIRANDA, V., "The Evolutionary Algorithm EPSO to Coordinate Directional Overcurrent Relays", DPSP 2010 - The 10th IET International Conference oDevelopments in Power System Protection , March 2010, Manchester, Reino Unido.
22. LEITE, H., MORAIS, A., LEMOS, M., VALE, F., "A Survey of Protection, Automation and Control Systems in the Portuguese Distribution Substations", DPSP 2010 - The 10th IET International Conference oDevelopments in Power System Protection , March 2010, vol.3, no.8, Manchester, Reino Unido.
23. NAZARI, M., ILIĆ, M., PEÇAS LOPES, J., "Dynamic Stability and Control Design of Modern Electric Energy Systems with Large Penetration of Distributed Generators ", IREP 2010 - 2010 IREP Symposium- Bulk Power System Dynamics and Control – VIII, August 2010, Búzios, Rio de Janeiro, Brazil.
24. PEÇAS LOPES, J.A., ROCHA ALMEIDA, P., SOARES, F.J., LEAL MOREIRA, C., "Electric Vehicles in Isolated Power Systems: Conceptual Framework and Contributions to Improve the Grid Resilience", CMTEE 2010 - Conference on Control Methodologies and Technology for Energy Efficiency, 2010, March 2010, Vilamoura, Portugal.
25. PEREIRA BARBEIRO, P., MOREIRA, C., SOARES, F.J., ROCHA ALMEIDA, P., "Evaluation of the Impact of Large Scale Integration of Micro-generation Units in Low and Medium Voltage Distribution Networks", ITERES 2010 - 2010 IEEE Conference on Innovative Technologies for an Efficient and Reliable Electricity Supply, September 2010, Waltham, MA, USA.

26. PEREIRA, A.J.C., SARAIVA, T., "Economic Evaluation of Wind Generation Projects in Electricity Markets", 7th ICEEM - 7th International Conference on the European Energy Market, June 2010, Madrid, Spain.
27. PEREIRA, R.M., MACHADO FERREIRA, C.M., MACIEL BARBOSA, F., "Influence of Load Shedding in the Voltage Stability of an Electric Power System using Trajectory Sensitivity Analysis", UPEC 2010 - 45th International Universities' Power Engineering Conference, September 2010, Cardiff, Wales.
28. REI, R.J., SOARES, F.J., ROCHA ALMEIDA, P.M., PEÇAS LOPES, J.A., "Grid Interactive Charging Control for Plug-in Electric Vehicles", ITSC 2010 - 13th International IEEE Conference on Intelligent Transportation Systems, September 2010, Funchal, Madeira, Portugal.
29. ROCHA ALMEIDA, P., PEÇAS LOPES, J.A., SOARES, F.J., VASCONCELOS, H., "Automatic Generation Control Operation with Electric Vehicles", IREP 2010 - 2010 IREP Symposium- Bulk Power System Dynamics and Control – VIII, August 2010, Búzios, Rio de Janeiro, Brazil.
30. ROSA, M., MIRANDA, V., MAGALHÃES CARVALHO, L., LEITE DA SILVA, A., "Modern Computing Environment for Power System Reliability Assessment. In: 11th International Conference on Probabilistic Methods Applied to Power Systems", PMAPS2010 - 11th International Conference on Probabilistic Methods Applied to Power Systems, June 2010, Singapore, Singapore.
31. RUA, D.E., ISSICABA, D., SOARES, F.J., ROCHA ALMEIDA, P., REI, R.J., PEÇAS LOPES, J., "Advanced Metering Infrastructure Functionalities for Electric Mobility", ISGT - IEEE PES Conference on Innovative Smart Grid Technologies Europe, October 2010, Gothenburg, Sweden.
32. SOARES, F.J., PEÇAS LOPES, J., ROCHA ALMEIDA, P., "A Monte Carlo Method to Evaluate Electric Vehicles Impacts in Distribution Networks", ITERES 2010 - 2010 IEEE Conference on Innovative Technologies for an Efficient and Reliable Electricity Supply, September 2010, Waltham, MA, USA.
33. SOARES, F.J., ROCHA ALMEIDA, P., PEÇAS LOPES, J., SECA, L., MOREIRA, C., "A Technical Management and Market Operation Framework for Electric Vehicles Integration into Electric Power Systems", SGM - 2nd European Conference SmartGrids and E-Mobility, October 2010, Bruxelles, Belgium.
34. SPERTINO, F., SUMAILI, J., ANDREI, H., BOICEA, A., CHICCO, G., "Modeling and Experimental Determination of the Circuit Parameters of Thin Film PV Modules/Arrays", WESC 2010 - 8th World Energy System Conference, July 2010, The Scientific Bulletin of Electrical Engineering Faculty, Valahia University of Targoviste, vol.3, no.14, Targoviste, Romania, p.132-139.
35. TOMÉ SARAIVA, J., GOMES, M.H., "Provision of Some Ancillary Services by MicroGrid Agents", 7th ICEEM - 7th International Conference on the European Energy Market, June 2010, Madrid, Spain.
36. TOMÉ SARAIVA, J., LEANDRO PEREIRA, M., TORRADO MENDES, V., SOUSA, J.C., "Preventive Generation Maintenance Scheduling - a Simulated Annealing Approach to use in Competitive Markets", MedPower2010 - 7th Mediterranean Conference and Exhibition on Power Generation, Transmission, Distribution and Energy Conversion, November 2010, Agia Napa, Cyprus.
37. TRAVASSOS VALDEZ, M.M., MACHADO FERREIRA, C.M., MACIEL BARBOSA, F., "Cooperative learning to Lighting Design Using Renewal Photovoltaic's Energy", UPEC 2010 - 45th International Universities' Power Engineering Conference, September 2010, Cardiff, Wales.
38. VALDEZ, M.M.T., AGREIRA, C.I.F., FERREIRA, C.M.M., MACIEL BARBOSA, F., "Teaching, Learning and Exploring the Use of Project Based Learning", EAEEIE2010 - European Association for Education in Electrical and Information Engineering, June 2010, Palanga, Lithuania.

E.4. Books (Author)

(void)

E.5. Chapter/paper in Books

1. GOMES, B.A., TOMÉ SARAIVA, J., "Dealing with Load and Generation Cost Uncertainties in Power System Operation Studies: A Fuzzy Approach", July 2010, in Handbook of Power Systems, vol.1, p.209-234.

E.6. Publications (Editor)

(void)

E.7. Other Publications

1. Carlos Moreira, Fernanda Resende, "Desenvolvimento das redes eléctricas inteligentes como plataforma para a integração da produção distribuída, microprodução e veículos eléctricos", Renováveis Magazine, nº 4, Dezembro 2010.
2. Fernanda Resende, "Tecnologias de conversão de energia eólica para grandes sistemas ligados à rede", Renováveis Magazine, nº 2, Junho 2010.
3. João Peças Lopes, "Os Desafios da Mobilidade Eléctrica no Sistema Eléctrico", Revista Informativa da Ordem dos Engenheiros REGIÃO NORTE, no.22, pp.24-2, October, 2010.

E.8. Theses (concluded by members of the Unit)

Phd theses:

1. André Madureira, Coordinated and Optimized Voltage Management of Distribution Networks With Multi-Microgrids, PhD Thesis, November, 2010.
2. Bruno André Gomes, Modelization of Generation Cost and Demand Uncertainties in Power System Optimization Problems and in Nodal Marginal Price Calculations, PhD Thesis, July, 2010.
3. Mauro Augusto da Rosa, Agent-based Technology Applied to Power Systems Reliability, PhD Thesis, February, 2010.

MSc theses:

1. André Moreira Martins, "Mercado Ibérico de Electricidade - Simulação de um Modelo em Concorrência Perfeita", MSc Thesis, February, 2010.
2. Bruno Oliveira Santos, "Previsão de produção de centrais solares a muito curto prazo", e MIEEC Thesis, July, 2010.
3. Ivo Cristiano Costa, "Assessment Of The Availability Of Reserves With The Expected Rising Of The Wind Power In The Danish System", MIEEC Thesis, July, 2010.
4. Jorge Miguel Alves, "Autoencoders: Application to forecasting", MIEEC Thesis, July, 2010.
5. José Luís Meirinhos, "Escalonamento e Pré-Despacho incluindo Produção Eólica", MIEEC Thesis, July, 2010.
6. Justino Miguel Rodrigues, "Análise e Modelação de Dispositivos FACTS Aplicados nas Redes de Transporte e Distribuição de Energia Eléctrica", MIEEC Thesis, July, 2010.
7. Luís Filipe Pereira, "Impacto na fiabilidade de um sistema produtor, devido à introdução de centros produtores com recursos primários finitos e voláteis", MIEEC Thesis, July, 2010.

8. Márcio Lunardelli Ribeiro, "Estratégias de Reposição de serviço em Micro-Redes", MIEEC Thesis, July, 2010.
9. Mário Jorge Teixeira Couto, "Identificação do potencial de redução de perdas em redes de distribuição", MIEEC Thesis, July, 2010.
10. Miguel Delgado Heleno, "Reliability impact on power systems considering high penetration of electric vehicles", MIEEC Thesis, June, 2010.
11. Pedro Nuno Barbeiro, "Avaliação do Impacto Resultante da Integração em Larga Escala de Unidades de Microgeração nas Redes de Distribuição de Média e Baixa Tensão", MIEEC Thesis, February, 2010.

F) LIST OF PROJECTS

Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
			Source	Programme	Project Typology	Type	Role INESCP	Start	Satus 2009-12
Plasm	Vladimiro Miranda	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PROP	2007-10	FIN
GreenIsland	Manuel Matos	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PAR	2009-04	CONT
GEMS	Vladimiro Miranda	INV	PROG - NAC	FCT / POFC	PROJ IC&DT	NAC	PROP	2010-04	START
Jades	Vladimiro Miranda	TRAIN	PROG - EU	TEMPUS IV		UE	PAR	2007-09	FIN
Anemos.plus	João Peças Lopes	INV	PROG - EU	FP6		UE	PAR	2007-01	CONT
MERGE	João Peças Lopes	INV	PROG - EU	FP7		UE	PAR	2010-01	START
TWENTIES	Carlos Moreira	INV	PROG - EU	FP7		UE	PAR	2010-04	START
EFACEC-DMS	João Peças Lopes	DEV	SERV - NAC			IND	CONT	2001-04	CONT
TSO-Reserva	Manuel Matos	CONS	SERV - EU			UE	CONT	2006-12	FIN
REN-RECEP	João Peças Lopes	CONS	SERV - NAC			IND	CONT	2007-10	CONT
InovGrid	João Peças Lopes	CONS	SERV - NAC			IND	CONT	2008-01	CONT
Enercon-WindStudies	João Peças Lopes	CONS	SERV - NAC			IND	CONT	2007-11	FIN
Eneop2	João Peças Lopes	CONS	SERV - NAC			IND	CONT	2008-02	FIN
Parafuzzy	Jorge Correia Pereira	DEV	SERV - INT			IND	CONT	2008-09	CONT
Argos	Vladimiro Miranda	DEV	SERV - INT			IND	CONT	2008-12	CONT
JRC	Manuel Matos	CONS	SERV - EU			IND	CONT	2009-03	FIN
ASIRP	José Nuno Fidalgo	CONS	SERV - NAC			IND	CONT	2009-06	CONT
UPInvest	Cláudio Monteiro	CONS	SERV - NAC			IND	CONT	2009-11	FIN
EEM-Dinamica	Helena Vasconcelos	CONS	SERV - NAC			IND	CONT	2009-12	CONT
EFACEC-OPF	Jorge Correia Pereira	DEV	SERV - NAC			NAC	CONT	2006-10	CONT
V.Grande-Ventinv.	João Peças Lopes	CONS	SERV - NAC			NAC	CONT	2010-03	FIN
PerfisMicro	José Nuno Fidalgo	CONS	SERV - NAC			NAC	CONT	2010-03	FIN
EDP-Transf	João Tomé Saraiva	CONS	SERV - NAC			NAC	CONT	2010-07	START

Short Name	Leader	Dominant Activity Type	Funding			Execution		Cooperation	
			Source	Programme	Project Typology	Type	Role INESCP	Start	Status 2009-12
Martifer-CV(GeSto)	João Peças Lopes	CONS	SERV - NAC			NAC	CONT	2010-04	FIN
InovGrid2	João Peças Lopes	CONS	SERV - NAC			NAC	CONT	2010-06	START
PPC	João Tomé Saraiva	CONS	SERV - EU			UE	CONT	2010-04	START
PerfisPerdas2011	José Nuno Fidalgo	CONS	SERV - NAC			NAC	CONT	2010-06	FIN
Ampla	Cláudio Monteiro	CONS	SERV - INT			IND	CONT	2010-09	START
SIAC-EE	José Rui Ferreira	CONS	SERV - NAC	POFC / POR	PROJ SIAC	IND	SUB	2010-06	START
Consultoria-EEM	Helena Vasconcelos	CONS	SERV - NAC			IND	CONT	2010-01	START
DOPF-Efacec	Jorge Correia Pereira	DEV	SERV - NAC			IND	CONT	2010-09	START
Vvar-Efacec	Jorge Correia Pereira	DEV	SERV - NAC			IND	CONT	2010-09	START
Consultoria	Manuel Matos	CONS	SERV - NAC			IND	CONT	2008-01	CONT
REIVE/ON2	João Peças Lopes	DEV	OID	FAI		NAC	PROP	2010-03	START
REIVE	João Peças Lopes	DEV	OID	FAI		NAC	PROP	2010-03	START
CoordEES-UETP	João Peças Lopes	TRAIN	O			INT	PROP	2007-04	CONT

Dominant Activity Type:

RES – Research
 DEV – Development
 CONS - Consulting
 TT - Technology Transfer
 NET - Network
 CONF - Conference
 TRAIN - Advanced Training
 INC - Incubation
 O - Other

Source:

PROG – NAT – National Programmes
 PROG – EU – European Union Programmes
 SERV - NAT - Supply of Services - national
 SERV - EU - Supply of Services - European Union
 SERV - INT - Supply of Services - International
 ORD Other R&D Services
 O - Other External Services
 INT - Internal

Type:

IND – Individual Project
 NAT - National Cooperation
 EU - European Union Cooperation (EU+Associated Countries)
 INT - Internal Cooperation

Role INESCP:

PROP - Proponent
 PAR - Partner
 CONT - Prime Contractor
 SUB - Subcontractor
 MEMB - Membre
 O - Other

G) LIST OF PATENTS

(void)

H) LIST OF PROTOTYPES

DMS/EMS new modules
 Developed under EFACEC-DMS
 Demo Place: EFACEC
 Development Period: 2009-2010

Developed under MERGE
Demo Place: INESC Porto
Development Period: 2010

Tool for the Evaluation of the Impact of the presence of EV on Network Steady State Operation
Developed under MERGE
Demo Place: INESC Porto
Development Period: 2010

Tool for the Evaluation of the Impact of the Presence of EV on System Dynamic Behavior (Primary and Secondary Frequency Control)
Developed under MERGE
Demo Place: INESC Porto
Development Period: 2010

Grid Interactive Charging Control for Plug-in Electric Vehicles with Multi-Level Electronic Grid Interfaces
Developed under REIVE
Demo Place: INESC Porto
Development Period: 2010

Congestion Analysis tool (fuzzy power flow)
Developed under ANEMOS.PLUS
Demo Place: REN
Development Period: 2009-2010

Storage management tool
Developed under ANEMOS.PLUS
Demo Place: REN
Development Period: 2009-2010

Tool for Wind Power Uncertainty Forecasting with Time-adaptive Nadaraya-Watson Estimator
Developed under ARGOS
Demo place: Argonne National Laboratory
Development period: 2010

Tool for Wind Power Uncertainty Forecasting with Quantile-Copula Estimator
Developed under ARGOS
Demo place: Argonne National Laboratory
Development period: 2010

Wind Power Forecasting Platform for Point Forecast (with database)
Developed under ARGOS
Demo place: Argonne National Laboratory
Development period: 2009-2010

Tool for Wind Power Scenarios Reduction based on Clustering Techniques
Developed under ARGOS
Demo place: INESC Porto
Development period: 2010

I) LIST OF THESES CONCLUDED IN 2010, SUPERVISED BY MEMBERS OF THE UNIT

I.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title
André Madureira	FEUP	João Abel Peças Lopes	INESCP/FEUP	"Coordinated and Optimized Voltage Management of Distribution Networks With Multi-Microgrids"
Adelino Jorge Coelho Pereira	FEUP	João Paulo Tomé Saraiva	INESCP/FEUP	"Planeamento da Expansão do Sistema Electroprodutor em Ambiente de Mercado",
Bruno André Gomes	FEUP	João Paulo Tomé Saraiva	INESCP/FEUP	"Modelization of Generation Cost and Demand Uncertainties in Power System Optimization Problems and in Nodal Marginal Price Calculations"
Cristina Isabel Ferreira Figueiras Faustino Agreira	FEUP	Maciel Barbosa	INESCP/FEUP	"Técnicas de Data Mining para o Estudo e Análise da Segurança de Sistemas Eléctricos de Energia"
Inácio de Sousa Adelino da Fonseca	FEUP	Maciel Barbosa	INESCP/FEUP	"Manutenção de Sistemas de Geração de Energia Renovável Eólica através de Redes IP "
Mauro Rosa	FEUP	Vladimiro Miranda	INESCP/FEUP	"Agent-based Technology Applied to Power Systems Reliability"
Susana Alexandra Barros de Almeida	FEUP	Maciel Barbosa	INESCP/FEUP	"Portuguese Transmission Grid Incidents - Risk Assessment"
1	2	3	4	5

1 – Name of the post-graduation student

2 – Institution where the thesis is submitted; if the host institution for the student is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title of the thesis

I.2. MSC Dissertations

Author	Instit.	Supervisor	Instit.	Title
Anabela Rodrigues Ribeiro	FEUP	Hélder Leite	INESCP/FEUP	Coordenação do Sistemas de Protecção Numa Rede de MT com Elevada Penetração de Geração Distribuída
André Filipe Aleixo Moreira	FEUP	Hélder Leite	INESCP/FEUP	A Coordenação de Isolamento nas Linhas Aéreas de Distribuição e a Melhoria da Qualidade de Serviço
André Moreira Martins	FEUP	Jorge Pereira	INESCP/FEUP	"Mercado Ibérico de Electricidade - Simulação de um Modelo em Concorrência Perfeita"
António José dos Santos Carvalho	FEUP	Carlos Moreira	INESCP/FEUP	Modelo Matemático de um Sistema de Geração Eólico Baseado na Máquina Síncrona de Velocidade Variável
António Pinto Neves Aires de Matos	FEUP	Carlos Moreira	INESCP/FEUP	Controlo da Potência Activa Injectada na Rede por um Sistema de Microgeração do Tipo Eólico
António Sérgio Ribeiro da Silva	FEUP	Cláudio Monteiro	INESCP/FEUP	Estimativa de Produção em Centrais Solares de Concentração
Bruno José Lopes Tavares	FEUP	Carlos Moreira	INESCP/FEUP	Parques Eólicos Offshore: Estudo de Soluções de Interligação do Tipo HVAC e HVDC
Bruno Oliveira Santos	FEUP	Cláudio Monteiro	INESCP/FEUP	Previsão de produção de centrais solares a muito curto prazo
Célia Cristina da Costa Tenente	FEUP	Cláudio Monteiro	INESCP/FEUP	Projecto de Instalações de Sistemas Fotovoltaicos Integrados em Edifícios
Celso Filipe Moreira da Silva	FEUP	Fernando Maciel Barbosa	INESCP/FEUP	Desenvolvimento de um algoritmo de Estimação de Estado com Análises de Observabilidade e Tratamento das Medidas Críticas
Élia Sofia da Conceição Fernandes e Marta	FEUP	José Rui Ferreira	INESCP/FEUP	Elaboração de um Programa de Cálculo das Canalizações Eléctricas Segundo as Novas Regras Técnicas das Instalações Eléctricas de Baixa Tensão

Author	Instit.	Supervisor	Instit.	Title
Daniel Filipe dos Santos Moreira	FEUP	Fernando Maciel Barbosa	INESCP/FEUP	Implementação de Microgeração no Sector Residencial
Diogo Lemos Alves Lopes	FEUP	João Tomé Saraiva	INESCP/FEUP	Impacto das Centrais Eólicas na Fiabilidade do Sistema Produtor
Élia Sofia da Conceição Fernandes e Marta	FEUP	José Rui Ferreira	INESCP/FEUP	Aplicação computacional para cálculo das canalizações eléctricas segundo as RTIEBT
Fábio Marcelo da Silva Robalinho	FEUP	Fernando Maciel Barbosa	INESCP/FEUP	Custo das interrupções de serviço num mercado liberalizado
Filipe José da Cruz Coimbra	FEUP	Carlos Moreira	INESCP/FEUP	Integração de Veículos Eléctricos em Redes Isoladas – O Caso da Ilha das Flores
Filipe Manuel de Almeida Lopes	FEUP	Cláudio Monteiro	INESCP/FEUP	Previsão a Curto e Médio Prazo de Preços em Mercado de Carbono
Francisco Gonçalves Goiana Mesquita	FEUP	Cláudio Monteiro	INESCP/FEUP	Design Optimization of Stand-Alone Hybrid Energy Systems
Fernando Daniel Santos Duarte	FEUP	Carlos Moreira	INESCP/FEUP	Sistema de Terra em Linhas Aéreas - Desenvolvimento de Procedimento Padrão para a Escolha dos Eléctrodos de Terra
Fernando José Moutinho Ribeiro	FEUP	Cláudio Monteiro	INESCP/FEUP	Avaliação de Sustentabilidade Energética em Edifícios com Arquitecturas Polimórficas
Fernando Miguel Carvalho da Costa	FEUP	Cláudio Monteiro	INESCP/FEUP	Optimização da Estratégia de Operação de Mini-Hídricas Integrando Informação de Previsão de Produção
Gilson Cândido Lopes Correia	FEUP	José Rui Ferreira	INESCP/FEUP	Ilha do Fogo Sustentável
Guilherme Almeida Ferreira Gomes	FEUP	Cláudio Monteiro	INESCP/FEUP	Previsão a Longo Prazo de Preços da Electricidade
Gonçalo Amilcar Frias Azinheiro	FEUP	Helena Vasconcelos	INESCP/FEUP	Classificação da Segurança de Sistemas Interligados com Elevada Penetração Eólica com Base em Redes Neurais Artificiais
Hugo Filipe da Silva Alves	FEUP	José Rui Ferreira	INESCP/FEUP	Levantamento do Consumo Energético de Unidade Industrial
Ivo Cristiano Costa	FEUP	João Tomé Saraiva	INESCP/FEUP	Assessment Of The Availability Of Reserves With The Expected Rising Of The Wind Power In The Danish System
Ivo Francisco Machado Vilares	FEUP	Fernando Maciel Barbosa	INESCP/FEUP	Análise comparativa do desempenho de algoritmos de estimação de Estado considerando PMU(s)
Ivo Ricardo Freitas Araújo	FEUP	João Tomé Saraiva	INESCP/FEUP	Estimativa do Custo de Substituição de Centrais Térmicas por Hídricas em Ambiente de Mercado
João Carlos Gonçalves dos Santos Veiga	FEUP	Manuel Matos	INESCP/FEUP	Seleção de Estratégias de Planeamento da Rede de Transporte
João Daniel Gomes de Almeida	FEUP	José Rui Ferreira	INESCP/FEUP	Estudo e Caracterização dos Consumos Energéticos de um Município e Avaliação de Medidas Correctivas
João Manuel Dantas Monteiro Rocha Barbosa	FEUP	Helena Vasconcelos	INESCP/FEUP	Utilização de Árvores de Regressão Lineares para Avaliação de Segurança Dinâmica de Sistemas Interligados com Elevada Integração de Produção Eólica
João Mário Rodrigues Moreira	FEUP	Hélder Leite	INESCP/FEUP	Teste em Tempo Real das Funções de Protecção de uma Saída de Média Tensão com Produção Renovável Eólica

Author	Instit.	Supervisor	Instit.	Title
João Mauro Neves Rocha	FEUP	Cláudio Monteiro	INESCP/FEUP	Optimização de Despacho Económico Integrando Previsão de Variabilidade de Produção Hídrica, Eólica e Solar
João Paulo Gomes Alves	FEUP	José Rui Ferreira	INESCP/FEUP	Identificação dos Requisitos para Certificação de Equipamentos Fotovoltaicos
João Paulo Regalado de Sousa	FEUP	Fernando Maciel Barbosa	INESCP/FEUP	Equipamentos escolares e desportivos CO2 zero
João Vasco Barreira Taveira	FEUP	Manuel Matos	INESCP/FEUP	Despacho Bi-Critério com Restrições de Rede
João Oliveira Bianchi de Aguiar	FEUP	João Peças Lopes	INESCP/FEUP	Simulação do Impacto de Estratégias de DSM na Operação das Redes de Distribuição
Jorge Miguel Alves	FEUP	Vladimiro Miranda	INESCP/FEUP	Autoencoders: Application to forecasting
José Alexandre Lima da Silva Mendes Fernandes	FEUP	José Rui Fererira	INESCP/FEUP	Roadmap Tecnológico das Energias Renováveis
José Luís Meirinhos	FEUP	Manuel Matos	INESCP/FEUP	Escalonamento e Pré-Despacho incluindo Produção Eólica
José Henrique Oliveira Lopes	FEUP	Cláudio Monteiro	INESCP/FEUP	Previsão de Produção Fotovoltaica a Muito Curto Prazo Usando Análise e Modelação de Dinâmica de Sombras
José Miguel Moreira Torres	FEUP	Hélder Leite	INESCP/FEUP	Economical study on the best renewable energy source to implement at UMBC
José Miguel da Silva Mendes	FEUP	Maria Helena Vasconcelos	INESCP/FEUP	Cálculo Expedito das Condições de Operação em Regime Permanente de Pós-Perturbação Definidas pelos Sistemas de Regulação Automática de Frequência e de Potência Activa
José Pedro Lacerda Coimbra	FEUP	Cláudio Monteiro	INESCP/FEUP	Previsão a Curto Prazo de Preços no Mercado de Electricidade.
Justino Miguel Rodrigues	FEUP	Armando Araújo	INESCP/FEUP	Análise e Modelação de Dispositivos FACTS Aplicados nas Redes de Transporte e Distribuição de Energia Eléctrica
Luís Filipe Pereira	FEUP	João Tomé Saraiva	INESCP/FEUP	Impacto na fiabilidade de um sistema produtor, devido à introdução de centros produtores com recursos primários finitos e voláteis
Luís Guilherme Amorim Vigário Silva	FEUP	Cláudio Monteiro	INESCP/FEUP	Estudo de Dependências Espacio-Temporais para Caracterização de Recurso de Produção Eólica
Maria Madalena Correia Gaspar	FEUP	Helena Vasconcelos	INESCP/FEUP	Dimensionamento de Sistemas de Armazenamento de Energia para Melhoria da Estabilidade de Frequência em Redes Isoladas com Elevada Integração de Energias Renováveis
Márcio Lunardelli Ribeiro	FEUP	Carlos Moreira	INESCP/FEUP	Estratégias de Reposição de serviço em Micro-Redes
Mário Jorge Teixeira Couto	FEUP	Nuno Fidalgo	INESCP/FEUP	Identificação do potencial de redução de perdas em redes de distribuição
Miguel Aires Tavares da Silva Oliveira Martins	FEUP	João Peças Lopes	INESCP/FEUP	Estudo de Redes Isoladas com Elevada Penetração de Produção Eólica Utilizando Volantes de Inércia
Miguel João Cruz	FEUP	Cláudio Monteiro	INESCP/FEUP	Sistemas Híbridos Modulares Adaptados para Redes em Expansão
Miguel Delgado Heleno	FEUP	Vladimiro Miranda	INESCP/FEUP	Reliability impact on power systems considering high penetration of electric vehicles
Nelson Miguel Azevedo Cerejo	FEUP	Cláudio Monteiro	INESCP/FEUP	Conceptualização e Análise de um Conjunto Integrado de Projectos para um Parque de Energia
Nuno Miguel Ferreira Gomes Soares	FEUP	Cláudio Monteiro	INESCP/FEUP	Desenvolvimento de Ferramentas de Automatização de Avaliação Económica de Medidas de Eficiência Energética
Nuno Monteiro Gomes da Silva	FEUP	Nuno Fidalgo	INESCP/FEUP	Determinação de perfis para a Microprodução

Author	Instit.	Supervisor	Instit.	Title
Paulo Roberto Moreira Saraiva	FEUP	Cláudio Monteiro	INESCP/FEUP	Estudo de Potencial de Melhoria da Eficiência Energética nos Edifícios da Universidade do Porto
Pedro Miguel Pinhanços Batista	FEUP	João Peças Lopes	INESCP/FEUP	Gestão Integrada de Microgeração e Armazenamento Distribuído em Redes de Distribuição BT
Pedro Miguel Ferreira Cruz	FEUP	Cláudio Monteiro	INESCP/FEUP	Linhas MT-Aspectos Construtivos, Projecto e Manutenção
Pedro Miguel Silva da Costa	FEUP	Manuel Matos	INESCP/FEUP	Risco de Perda de Potência Eólica na Sequência de Curto-Circuitos
Pedro Nuno Barbeiro	FEUP	Carlos Moreira	INESCP/FEUP	Avaliação do Impacto Resultante da Integração em Larga Escala de Unidades de Microgeração nas Redes de Distribuição de Média e Baixa Tensão
Ricardo Jorge Sousa Peixoto Xavier Ferreira	FEUP	José Rui Ferreira	INESCP/FEUP	Análise Comparativa das Tecnologias de Concentração Solar
Ricardo José Fonseca de Oliveira Paulo	FEUP	José Rui Ferreira	INESCP/FEUP	Geração assistida de diagramas esquemáticos de rede eléctrica
Ricardo Nuno Freitas Neves	FEUP	Cláudio Monteiro	INESCP/FEUP	Desenvolvimento de Modelos de Previsão de Produção de Centrais Solares Fotovoltaicas.
Ricardo Miguel Pinto de Faria	FEUP	Cláudio Monteiro	INESCP/FEUP	Telemetria e Comunicação M2M Aplicados a Serviços de Melhoria da Eficiência Energética
Rita Isabel Pimentel Moreira	FEUP	José Rui Ferreira	INESCP/FEUP	Avaliação do Potencial Eólico em Regime de Microgeração
Rui Alexandre Pereira de Almeida Felizes	FEUP	Cláudio Monteiro	INESCP/FEUP	Planos comportamentais para a Melhoria da Eficiência em Edifícios Públicos
Sérgio Daniel Fernandes Oliveira	FEUP	Hélder Leite	INESCP/FEUP	As Implicações dos Arcos Eléctricos das Linhas Aéreas MT nos Sistemas de Protecção
Sérgio Joaquim Correia de Bessa Cerdeira	FEUP	Cláudio Monteiro	INESCP/FEUP	Avaliação Regional do Potencial Mini-Hídrico Através de Sistemas de Informação Geográfica
Sérgio Lima Barroso Pereira	FEUP	Carlos Moreira	INESCP/FEUP	Definição de Limites de Integração de Micro-Geração nas Redes de Baixa Tensão
Susana Sofia Lobo Martins	FEUP	Hélder Leite	INESCP/FEUP	Certificação Energética nos Edifícios: Procedimento Padrão e Avaliação do Impacto Económico da Classificação
Telmo Adriano Rocha Santos	FEUP	Maria Teresa Ponce Leão	INESCP/FEUP	Serviços de Energia Aplicados à Cogeração
Tiago Samuel de Almeida Pereira Ribeiro	FEUP	Maria Teresa Ponce Leão	INESCP/FEUP	Luminotecnia - Métodos de Avaliação
Vitor Daniel Ribeiro da Costa	FEUP	Cláudio Monteiro	INESCP/FEUP	Modelos de Caracterização e Desagregação de Consumos para Utilização em Processos de Certificação de Edifícios
1	2	3	4	5

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title of the thesis

J) LIST OF THESES UNDER SUPERVISION

J.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Ahmad Karmana	FEUP	João Peças Lopes	INESCP/FEUP	Management of Battery Charging of Electric Vehicles and Future Policies for Integration of EVs to the Grid	2014

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Antero Silva	FEUP	João Peças Lopes	INESCP/FEUP	Strategies for Energy Storage and Sustainable Mobility in an Isolated Power System	2011
António Silva	FEUP	João Peças Lopes Manuel Matos	INESCP/FEUP	Defining new control and management solutions for security assessment and preventive	2011
Bernardo Silva	FEUP	Hélder Leite	INESCP/FEUP	Control and protection procedures for ancillary services provision from offshore wind farms using multi-terminal HVDC links	2012
David Rua	FEUP	João Peças Lopes	INESCP/FEUP	Integrated Communication Systems for Large Scale Distributed Energy Resources and V2G1	2011
Diego Issicaba	FEUP	João Peças Lopes	INESCP/FEUP	Multi-Agent System for Self-Healing in Distribution Grids with Large Scale Integration of DERs and PEVs	2012
Filipe Joel Soares	FEUP	João Peças Lopes	INESCP/FEUP	Impact of V2G Systems in Grid Operation and Expansion	2011
Hrvoje Keko	FEUP	Vladimiro Miranda	INESCP/FEUP	Generation Coordination in Complex Systems with Stochastic Reservoirs	2012
José Carlos Vieira de Sousa	FEUP	João Tomé Saraiva	INESCP/FEUP	Generation planning in power systems under competitive environment	2012
Julija Vasiljjevska	FEUP	João Peças Lopes Manuel Matos	INESCP/FEUP	Evaluation of Technical, Economic and Environmental Impacts Resulting From Large Scale Integration of Microgrids, Including Responsive Demand, in Electrical Grids	2011
Leonardo Bremermann	FEUP	Manuel Matos João Peças Lopes	INESCP/FEUP	Impact Evaluation of the Large Scale Integration of Electric Vehicles in the Security of Supply	2013
Leonel Cardoso	FEUP	Vladimiro Miranda	INESCP/FEUP	Optimization of large scale power system problems with new tools	2012
Manuel José Costeira da Rocha	FEUP	João Tomé Saraiva	INESCP/FEUP	Transmission Expansion Planning - A Multiyear Approach Considering Uncertainties	2011
Marco Aurélio Saran	FEUP	Vladimiro Miranda	INESCP/FEUP	State Estimation Based on Information Theoretic Learning	2013
Miguel Heleno	FEUP	Manuel Matos	INESCP/FEUP	Provision of advanced ancillary services through demand side integration	2014
Pedro Almeida	FEUP	João Peças Lopes	INESCP/FEUP	Impact of Vehicle to Grid in the Power System Dynamic Behaviour	2011
Ricardo Bessa	FEUP	Manuel Matos	INESCP/FEUP	Development of methodologies for technical and economic management of aggregation agents of electric vehicles	2013
Shigeaki Leite de Lima	FEUP	Vladimiro Miranda	INESCP/FEUP	Diagnostico de Falhas em Transformadores de Potência utilizando técnicas inteligentes	2012
1	2	3	4	5	6

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title or topic of the thesis

6 – Predicted year of conclusion and delivery – will be taken in account in summary tables

J.2. Other

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date	Type
Alda Cristina Rodrigues de Sousa	FEUP	Helder Leite	INESCP/FEUP	Desenvolvimento de Estimação de Estados em Tempo-Real para a Rede de Distribuição	2011	MSc MIEEC
António Eduardo Leal Rodrigues de Oliveira	FEUP	Helder Leite	INESCP/FEUP	Validação das Funções de Protecção de uma Saída de Média Tensão com Produção Renovável Eólica Usando CAPE Software	2011	MSc MIEEC
António Manuel Vasconcelos Miranda	FEUP	Nuno Fidalgo	INESCP/FEUP	Tecnologias de armazenamento de energia - Identificação do potencial e aplicações	2011	MSc MIEEC
Carlos Filipe Gomes Henriques da Silva	FEUP	João Tomé Saraiva	INESCP/FEUP	Análise estatística dos resultados do MIBEL - mercado diário e serviços de sistema	2011	MSc MIEEC
Carlos Manuel da Silva Oliveira	FEUP	Carlos Moreira	INESCP/FEUP	Integração de Veículos Eléctricos em Redes Isoladas	2011	MSc MIEEC
Carlos Miguel de Sousa Leite	FEUP	José Rui Ferreira	INESCP/FEUP	Compensação de Energia Reactiva na Rede de Distribuição	2011	MSc MIEEC
Filipe Fernandes dos Santos	FEUP	Fernando Maciel Barbosa	INESCP/FEUP	Utilização de Energia Fotovoltaica para a Eficiência Energética de uma Moradia	2011	MSc MIEEC
Filipe Martins da Cunha	FEUP	Manuel Matos	INESCP/FEUP	Optimização do Escalonamento em Sistemas com Elevada Produção Eólica	2011	MSc MIEEC
Hugo Laranjeira	FEUP	Helena Vasconcelos	INESCP/FEUP	Previsão da ponta síncrona EDPD / Ponta SE / Produção PRE Nota: Esta tese foi proposta pela EDP distribuição	2011	MSc MIEEC
Ivan Queli Gomes Pereira	FEUP	Maria Teresa Ponce Leão	INESCP/FEUP	Condições de Viabilidade da Microgeração Eólica em Zonas Urbana	2011	MSc MIEEC
João Oliveira Bianchi de Aguiar	FEUP	João Peças Lopes	INESCP/FEUP	Simulação do Impacto de Estratégias de DSM em Redes de Distribuição	2011	MSc MIEEC
José Aútilio Moreira da Silva	FEUP	Carlos Moreira	INESCP/FEUP	Avaliação do Impacto da Integração de Produção Dispersa de Origem Renovável na Rede Eléctrica de Santiago - Cabo Verde	2011	MSc MIEEC
José Pedro Barreira Iria	FEUP	Manuel Matos	INESCP/FEUP	Trânsito de Potência Difuso DC com Despacho Incorporado	2011	MSc MIEEC
Manuel Clemente de Almeida Costa	FEUP	Fernando Maciel Barbosa	INESCP/FEUP	Criação de uma Agência de Energia em Oliveira de Azeméis	2011	MSc MIEEC
Mariana Costa de Sousa Liquito	FEUP	Mauro Rosa	INESCP	Utilização de Cenários de Previsão Eólica na Programação da Reserva Operacional	2011	MSc MIEEC
Marino Ricardo dos Santos Matos	FEUP	Rui Esteves Araújo	INESCP/FEUP	Estudo e Concepção de um Sistema de Gestão de Energia Embarcada em Veículos Eléctricos	2011	MSc MIEEC
Miguel Aires Tavares da Silva Oliveira Martins	FEUP	João Peças Lopes	INESCP/FEUP	Estudo de Redes Isoladas com Elevada Penetração de Energia Eólica utilizando Volantes de Inércia	2011	MSc MIEEC
Nuno Boaventura Faria da Silva	FEUP	João Tomé Saraiva	INESCP/FEUP	Optimização horária da gestão de recursos hídricos, usando uma Meta Heurística, em ambiente de mercado	2011	MSc MIEEC
Nuno Filipe Barbosa Coelho	FEUP	Helder Leite	INESCP/FEUP	Eléctrodos de Terra	2011	MSc MIEEC
Nuno Joaquim Preto Oliveira Barros	FEUP	Fernando Maciel Barbosa	INESCP/FEUP	Análise do Impacto da Integração de Energias Renováveis em Redes de Distribuição	2011	MSc MIEEC

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date	Type
Paulo André Rodrigues Remelgado	FEUP	Carlos Moreira	INESCP/FEUP	Controlo da Potência Activa Injectada na Rede por um Sistema de Microgeração do Tipo Solar Fotovoltaico	2011	MSc MIEEC
Pedro Miguel Carvalho Pereira	FEUP	João Peças Lopes	INESCP/FEUP	Avaliação de Impacto da Gestão de Cargas Térmicas na Exploração e Reforço de Redes de AT e MT	2011	MSc MIEEC
Pedro Miguel Pinhanços Batista	FEUP	João Peças Lopes	INESCP/FEUP	Gestão integrada de microgeração e armazenamento distribuído em redes de distribuição BT	2011	MSc MIEEC
Pedro Nuno Beleza Oliveira Bernardes	FEUP	Nuno Fidalgo	INESCP/FEUP	Caracterização das perdas na rede de distribuição de Alta Tensão	2011	MSc MIEEC
Ricardo Filipe da Silva Goncalves	FEUP	Carlos Moreira	INESCP/FEUP	Gestão de Potência Reactiva em Parques Eólicos de Grande Dimensão	2011	MSc MIEEC
Ruben Emanuel Alves Teixeira	FEUP	João Tomé Saraiva	INESCP/FEUP	Impacto na fiabilidade de um sistema eléctrico, devido à introdução de centros produtores com recursos primários finitos e voláteis - Centrais Hídricas e Eólicas	2011	MSc MIEEC
Sérgio Miguel Pereira Baptista Santos	FEUP	João Peças Lopes	INESCP/FEUP	Avaliação do Impacto na Estabilidade Transitória de um SEE em Resultado da Presença da Produção Eólica	2011	MSc MIEEC
Victor Marques	FEUP	Helena Vasconcelos	INESCP/FEUP	Ajuste de parâmetros para modelos típicos de sistemas de excitação, recorrendo à resposta em frequência do modelo	2011	MSc MIEEC
1	2	3	4	5	6	7

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title or topic of the work

6 – Predicted year of conclusion and delivery – will be taken in account in summary tables

7 – Type of work (MSc thesis, post-graduation dissertation, etc.)

TELECOMMUNICATIONS SYSTEMS

A) SUMMARY OF PUBLICATIONS

Summary of publications by members of the Unit in 2010

Type of publication	Number
Papers in International Journals with scientific referees	20
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	46
Books (author)	
Chapter/paper in books	2
Publications (editor)	1
Other publications (National meetings, local journals, etc.)	14
Theses concluded in 2010 by members of the Unit	10
TOTAL	97

Journal	Number of papers
Annals of Surgical Oncology	1
Computer Music Journal	2
Computer Networks	1
Experimental Techniques	1
IEEE Multimedia	2
IEEE Transactions on Image Processing	1
IEEE/ACM Transactions on Networking	1
IET Electronics Letters	2
International Journal of Communication Systems	1
International Journal on Document Analysis and Recognition	1
Journal of Electronic Testing: Theory and Applications	1
Journal of Instrumentation	1
Journal of Network and Computer Applications	1
Multimedia Tools and Applications	3
Optics EXPRESS	1
Physical Review E	1
Signal Processing	1
The Breast	1
Wireless Communications and Mobile Computing	1
TOTAL	24

B) SUMMARY OF PROJECTS

Annual income from Unit or Group projects (k€)

Source of Funding	Year				Variation 2009 - 2010
	2007	2008	2009	2010	
National Programmes	65	106	398	552	39%
European Union Programmes	505	558	178	191	7%
R&D Services and Consulting	90	43	105	113	8%
Other R&D sources				68	
Other external sources			33		-100%
Total	660	707	714	924	29%

Number of Projects and income derived for Groups or Units in 2010

Project Typology		Number of Projects	Projects Income
Source of Funding	National Programmes - FCT	12	133
	National Programmes - QREN	11	419
	European Union Programmes - I&D	3	191
	European Union Programmes - Diversos		
	R&D Services and Consulting - National	7	113
	R&D Services and Consulting - European Union		
	R&D Services and Consulting - International		
	Other R&D sources	2	68
	Other external sources		
	Internal		
Dominant Activity Type	Basic Research		
	Applied Research and Development		
	Consulting	5	67
	Technology Transfer		
	Network		
	Conference		
	Advanced Training		
	Incubation		
	Other		
Execution Status	Started	15	370
	Continuation	12	430
	Finished	8	124
Total		5	67

C) SUMMARY OF POST-GRADUATION ACTIVITIES

Summary of theses supervised by members the unit in 2010

Tipo	Starting	On-going	Concluded	Total
Master	9	0	44	53
Doctoral	7	41	4	52
TOTAL	16	41	48	105

D) SUMMARY OF ACTIVITIES OF COOPERATION OR DISSEMINATION

Summary of Cooperation and dissemination actions

Type	Number
Conferences with INESC Porto in the organization (in the organizing committee or chairing technical committees)	4
Nº. of External co-authors of Publications of INESC Porto	65

E) LIST OF PUBLICATIONS

E.1. International Journals with scientific referees

1. SILVA, S.R., PESSOA, L.M., BARBOSA OLIVEIRA, J., CASTRO, J., SALGADO, H., "Performance Evaluation of Zero-Biased VCSEL for High Speed Data Transmission", Journal of Instrumentation, vol.5, November 2010.
2. CARVALHO, M.I., FACÃO, M., "Propagation of Airy-related beams", Optics EXPRESS, September 2010, vol.18, no.21, p.21938-21949.
3. GUEDES, C., REBELO, P., "Reflections on music programming for conferences: The case of SMC 2009", Computer Music Journal, September 2010, vol.34, no.3, p.10-19.
4. VIANA, P., PIMENTA ALVES, A., "A Semantic Management Model to enable the integrated management of media and devices", Multimedia Tools and Applications, Springer, August 2010, vol.49, no.1, p.37-62.
5. HEIL, J., DAHLKAMP, J., GOLATTA, M., ROM, J., DOMSCHKE, C., CARDOSO, M.J., et al., "Aesthetics in Breast Conserving Therapy: Do Objectively Measured Results Match Patients' Evaluations?", Annals of Surgical Oncology, August 2010.
6. GOUYON, F., BARBOSA, A., SERRA, X., "Special issue on Sound and Music Computing - Editor's notes", Computer Music Journal, August 2010, vol.34, no.3.
7. PINTO, A.A., RICARDO, M., "Secure multicast in IPTV services", Computer Networks, July 2010, vol.54, no.10, p.1531-1542.
8. CIOBANU, L., CORTE-REAL, L., "Successive refinement of side information for multi-view distributed video coding", Multimedia Tools and Applications, July 2010, vol.48, no.3, p.411-436.
9. LOPES CAMPOS, R., RICARDO, M., "An Efficient Mechanism for Establishing IP Connectivity in Next Generation Networks", International Journal of Communication Systems, June 2010, vol.23, p.817-840.

10. LUO, Q., PEREIRA, J.R., SALGADO, H., "Reconfigurable dual-band C-shaped monopole antenna array with high isolation", IET Electronics Letters, June 2010, vol.46, no.13, p.888-889.
11. CASTRO, H.F., PIMENTA ALVES, A., SERRÃO, C., CARAWAY, B., "A New Paradigm for Content Producers", IEEE Multimedia, April 2010, vol.17, no.2, p.90-93.
12. CARRERAS, A., BARBOSA, V., ANDRADE, M.T., DOGAN, S., "A Platform for Context-Aware and Digital Rights Management-Enabled Content Adaptation", IEEE Multimedia, April 2010, vol.17, no.2, p.74-89.
13. LIDY, T., SILLA, C., CORNELIS, O., GOUYON, F., RAUBER, A., KAESTNER, C., KOERICH, A., "On the Suitability of State-of-the-art Music Information Retrieval Methods for Analyzing, Categorizing and Accessing Non-Western and Ethnic Music Collections", Signal Processing, April 2010, vol.90, no.4, p.1032-1048.
14. FACÃO, M., CARVALHO, M.I., PARKER, D., "Soliton self-frequency shift: Self-similar solutions and their stability", Physical Review E, April 2010, vol.81, no.4.
15. CARDOSO, M.J., MACMILLAN, R.D., MERCK, B., MUNHOZ, A.M., RAINSBURY, R., "Training in oncological surgery: An international consensus", The Breast, April 2010.
16. CARVALHO, P.M., SANTOS CARDOSO, J., CORTE REAL, L., "Hybrid framework for evaluating video object tracking algorithms", IET Electronics Letters, March 2010, vol.46, no.6, p.411-412.
17. REBELO, A.M., CAPELA, G., SANTOS CARDOSO, J., "Optical recognition of music symbols: A comparative study", International Journal on Document Analysis and Recognition, March 2010, vol.13, no.1, p.19-31.
18. RAY, S., GUÉRIN, R., KWONG, K., SOFIA, R., "Always Acyclic Distributed Path Computation", IEEE/ACM Transactions on Networking, February 2010, vol.18, no.1, p.307-319.
19. MOTA, P.M., MACHADO DA SILVA, J., VEIGA, R., "Estimation of RF PA Nonlinearities after Cross-correlating Current and Output Voltage", Journal of Electronic Testing: Theory and Applications - Special Issue on Mixed-Signal Testing, February 2010, vol.26, no.1, p.23-35.
20. GONÇALVES, H., GONÇALVES, J.A., CORTE REAL, L., "HAIRIS: A method for automatic image registration through histogram-based image segmentation", IEEE Transactions on Image Processing, September 2010. (*)
21. CAETANO, E., SILVA, S.R., BATEIRA, J., "A Vision System for Vibration Monitoring of Civil Engineering Structures", Experimental Techniques, August 2010. (*)
22. CIOBANU, L., CORTE REAL, L., "Iterative filtering of SIFT keypoint matches for multi-view registration in Distributed Video Coding", Multimedia Tools and Applications, July 2010. (*)
23. GOMES, R., JÚNIOR, W., CERQUEIRA, E., ABELEM, A., "Using fuzzy link cost and dynamic choice of link quality metrics to achieve QoS and QoE in wireless mesh networks", Journal of Network and Computer Applications, July 2010. (*)
24. CAMPOS, R., DUARTE, R., SOUSA, F., RICARDO, M., RUELA, J., "Network infrastructure extension using 802.1D-based wireless mesh networks", Wireless Communications and Mobile Computing, January 2010. (*)

(*) Published on-line

E.2. National Journals with scientific referees

(void)

E.3. Conference Proceedings with scientific referees (international or national)

1. PINTO DA COSTA, J., SOUSA, R.J., CARDOSO, J., "An all-at-once Unimodal SVM Approach for Ordinal Classification", ICMLA 2010 - The Ninth International Conference on Machine Learning and Applications, December 2010, Washington, USA.
2. CARDOSO, J., SOUSA, R.J., "Classification Models with Global Constraints for Ordinal Data", ICMLA 2010 - The Ninth International Conference on Machine Learning and Applications, December 2010, Washington, USA.
3. MAGALHÃES, A.T., OLIVEIRA, H.P., COSTA, S., CARDOSO, J., CARDOSO, M.J., "Value of photographic side-views in the objective evaluation of the aesthetic results of breast cancer conservative treatment", CTRC-AACR 2010 - 33rd Annual San Antonio Breast Cancer Symposium, December 2010, San Antonio, USA.
4. PINTO, T., REBELO, A.M., GERALDI, G., CARDOSO, J., "Content aware music score binarization", ACCV 2010 - The Tenth Asian Conference on Computer Vision, November 2010, Queenstown, New Zealand.
5. SANTOS, P.M., CANAS FERREIRA, J., "FPGA-based Real-Time Disparity Computation and Object Location", NORCHIP 2010 - 28th Norchip Conference, November 2010, Tampere, Finland.
6. AMARAL, I., COELHO, F.E., PINTO DA COSTA, J., CARDOSO, J., "Hierarchical Medical Image Annotation Using SVM-based Approaches", ITAB 2010 - The 10th IEEE International Conference on Information Technology and Applications in Biomedicine, November 2010, Corfu, Greece.
7. OLIVEIRA, H.P., MAGALHÃES, A., CARDOSO, M.J., CARDOSO, J., "Improving the BCCT.core Model With Lateral Information", ITAB 2010 - The 10th IEEE International Conference on Information Technology and Applications in Biomedicine, November 2010, Corfu, Greece.
8. MOREIRA, A., MACHADO DA SILVA, J., ROCHA, L., "Endoleakage Monitoring Using Inductive-Coupling", DCIS 2010 - Design of Circuits and Integrated Systems, November 2010, Lanzarote, Spain.
9. SILVA, M., CANAS FERREIRA, J., "Run-time Generation of Partial FPGA Configurations for Subword Operations", DCIS 2010 - Design of Circuits and Integrated Systems, November 2010, Lanzarote, Spain.
10. RESENDE, C., CANAS FERREIRA, J., "Using FPGAs for Real-Time Disparity Map Calculation", DCIS 2010 - Design of Circuits and Integrated Systems, November 2010, Lanzarote, Spain.
11. COSTA, S., SOUSA, R.J., MAGALHAES, A., CARDOSO, J., CARDOSO, M.J., "A Preliminary Model to the Automatic Prediction of Aesthetic Results in Breast Cancer Conservative Treatment", SIS 2010 - 16th SIS World Congress, October 2010, Valencia, Spain.
12. RODRIGUES, J., CANAS FERREIRA, J., "FPGA-Based Rectification of Stereo Images", DASIP 2010 - Design and Architectures for Signal and Image Processing, October 2010, Edinburgh, Scotland.
13. HAQ, I., SALGADO, H., CASTRO, J., "Survey and Challenges for Optical Burst Switching Networks: A High Data Rate Network for Future Internet", ICIIT 2010 - 2010 International Conference on Intelligence and Information Technology, October 2010, Lahore, Pakistan.
14. LOBATO OLIVEIRA, J., NAVEDA, L., GOUYON, F., LEMAN, M., REIS, L., "Synthesis of Dancing Motions Based on a Compact Topological Representation of Dance Style", IROS 2010 - IEEE/RSJ International Conference on Intelligent Robots and Systems, October 2010, Taipei, Taiwan.
15. BARBOSA OLIVEIRA, J., PESSOA, L.M., COELHO, D.V., SALGADO, H., CASTRO, J., "UWB Radio over Perfluorinated GI-POF for Low-Cost In-Building Networks", MWP 2010 - 2010 IEEE International Topical Meeting on Microwave Photonics, October 2010, Montreal, Canada.

16. SORDO, M., GOUYON, F., SARMENTO, L., "A Method for Obtaining Semantic Facets of Music Tags", ACM Conference on Recommender Systems, September 2010, Barcelona, Spain.
17. CASTRO, R., ARAÚJO, R., CARDOSO, J., FREITAS, D., "A New Linear Parametrisation for Peak Friction Coefficient Estimation in Real Time", VPPC2010 - IEEE Vehicle Power and Propulsion Conference 2010, September 2010, Lille, France.
18. OLIVEIRA, H.P., MAGALHÃES, A., CARDOSO, M.J., CARDOSO, J., "An accurate and interpretable model for BCCT.core", EMBC 2010 - 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, September 2010, Buenos Aires, Argentina, p.6158-6161.
19. CARDOSO, J., DOMINGUES, I.C., AMARAL, I., MOREIRA, I., PASSARINHO, P., SANTA COMBA, J., CORREIA, R., CARDOSO, M.J., "Pectoral muscle detection in mammograms based on polar coordinates and the shortest path", EMBC 2010 - 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, September 2010, Buenos Aires, Argentina, p.4781-4784.
20. DOMINGUES, I.C., CARDOSO, J., AMARAL, I., MOREIRA, I., PASSARINHO, P., SANTA COMBA, J., CORREIA, R., CARDOSO, M.J., "Pectoral muscle detection in mammograms based on the shortest path with endpoints learnt by SVMs", EMBC 2010 - 32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, September 2010, Buenos Aires, Argentina, p.3158-3161.
21. SILVA, M., CANAS FERREIRA, J., "Creation of Partial FPGA Configurations at Run-Time", DSD 2010 - The 13th Euromicro Conference on Digital System Design, September 2010, Lille, France.
22. SEPÚLVEDA, A., MOREIRA, A., FACHIN, F., WARDLE, B., MACHADO DA SILVA, J., et al., "Inductive-coupling system for abdominal aortic aneurysms monitoring based on pressure sensing", MME 2010 - 21st Micromechanics and Micro Systems Europe Workshop, September 2010, Enschede, The Netherlands.
23. MASSA, D., MORLA, R., "Modeling 802.11 AP Usage through Daily Keep-alive Event Counts", NBIS 2010 - 13th International Conference on Network-Based Information Systems, September 2010, Takayama, Japan.
24. PEREIRA, M.R., PEREIRA, J.R., SALGADO, H., "Synthesis of Microstrip Filters with Arbitrary Reflective Group Delay Response", ICEAA 2010 - International Conference on Electromagnetics in Advanced Applications, September 2010, Sydney, Australia.
25. LUO, Q., PEREIRA, J.R., SALGADO, H., "Tunable Multiband Antenna with an Active Artificial Magnetic Conductor Ground Plane", EuMW 2010 - European Microwave Week, September 2010, Paris, France.
26. FERREIRA, P., CANAS FERREIRA, J., ALVES, J.C., "Erlang Inspired Hardware", FPL 2010 - 20th International Conference on Field Programmable Logic and Applications, August 2010, Milano, Italy.
27. LOBATO OLIVEIRA, J., GOUYON, F., MARTINS, L.G., REIS, L., "IBT: A Real-Time Tempo and Beat Tracking System", ISMIR 2010 - The Eleventh International Society for Music Information Retrieval Conference, August 2010, Utrecht, The Netherlands.
28. NAVEDA, L., GOUYON, F., LEMAN, M., "Modeling Musical Structure from the Audience: Emergent Rhythmic Models from Spontaneous Vocalizations in Samba Culture", ICMPC2010 - International Conference on Music Perception and Cognition 2010, August 2010, Seattle, USA.
29. CARDOSO, J., REBELO, A.M., "Robust staffline thickness and distance estimation in binary and gray-level music scores", ICPR 2010 - International Conference on Pattern Recognition, August 2010, Istanbul, Turkey, p.1856-1859.
30. SILVA, M., CANAS FERREIRA, J., "Run-time Generation of Partial Configurations for Arithmetic Expressions", MWSCAS 2010 - 53rd IEEE International Midwest Symposium on Circuits and Systems, August 2010, Seattle, USA.

31. LOPES, M.A., GOUYON, F., KOERICH, A., OLIVEIRA, L., "Selection of Training Instances for Music Genre Classification", ICPR 2010 - International Conference on Pattern Recognition, August 2010, Istanbul, Turkey.
32. KANDASAMY, S., LOPES CAMPOS, R., MORLA, R., RICARDO, M., "Using Directional Antennas on Stub Wireless Mesh Networks: Impact on Throughput, Delay and Fairness", WIMAN 2010 - The Fourth IEEE International Workshop on Wireless Mesh and Ad Hoc Networks, August 2010, Zurich, Switzerland.
33. BERNARDES, G., GUEDES, C., PENNYCOOK, B., "Style emulation of drum patterns by means of evolutionary methods and statistical analysis", SMC 2010 - The 7th Sound and Music Computing Conference, July 2010, Barcelona, Spain.
34. MARQUES, G., LOPES, M.A., SORDO, M., LANGLOIS, T., GOUYON, F., "Additional evidence that common low-level features of individual audio frames are not representative of music genres", SMC 2010 - The 7th Sound and Music Computing Conference, July 2010, Barcelona, Spain.
35. HAQ, I., SHAFIQ, A., YAHYA, K., IQBAL, M., "Cell Breathing and Cell Capacity in CDMA: Algorithm & Evaluation", CSNDSP 2010 - International Symposium on COMMUNICATION SYSTEMS, NETWORKS AND DIGITAL SIGNAL PROCESSING, July 2010, Newcastle, UK.
36. LUO, Q., SALGADO, H., PEREIRA, J.R., "Printed C-Shaped Monopole Antenna Array with High Isolation for MIMO Applications", APS/USRI 2010 - IEEE International Symposium on Antennas and Propagation and CNC/USNC/URSI Radio Science Meeting, July 2010, Toronto, Canada.
37. MACHADO DA SILVA, J., MOTA, P.M., "A Comparison Between Voltage and True Power Based Embedded Measurements for RF Testing", IMS3TW'10 - 16th IEEE International Mixed Signals, Sensors and Systems Testing Workshop, June 2010, Montpellier, France.
38. GOMES, R., JÚNIOR, W., CERQUEIRA, E., ABELEM, A., "A QoS and QoE Fuzzy Routing Protocol for Wireless Mesh Networks", FMN 2010 - 3rd International Workshop on FUTURE MULTIMEDIA NETWORKING, June 2010, Krakow, Poland.
39. BALTAZAR, A., GUEDES, C.A., PENNYCOOK, B., GOUYON, F., "A real-time human body skeletonization algorithm for Max/MSP/Jitter", ICMC 2010 - International Computer Music Conference, June 2010, New York, USA.
40. PINHEIRO, B., NASCIMENTO, V., CERQUEIRA, E., JÚNIOR, W., ABELEM, A., "Abare: A Coordinated and Autonomous Framework for Deployment and Management of Wireless Mesh Networks", FMN 2010 - 3rd International Workshop on FUTURE MULTIMEDIA NETWORKING, June 2010, Krakow, Poland.
41. SALTA, N.G., MORLA, R., RICARDO, M., "Improving P2P Video Streaming in Wireless Mesh Networks", MED-HOC-NET 2010 - The 9th IFIP Annual Mediterranean Ad Hoc Networking Workshop, June 2010, Juan-Les-Pins, France.
42. BARBOSA OLIVEIRA, J., SILVA, S.R., PESSOA, L.M., SALGADO, H., "Performance Evaluation of MB-OFDM UWB over GI-POF", NOC-OC&I 2010 - 2010 15th European Conference on Networks and Optical Communications & 5th Conference on Optical Cabling and Infrastructure, June 2010, Faro, Portugal.
43. FERREIRA, M., MORLA, R., "Second Life In-World Action Traffic Modeling", NOSSDAV 2010 - The 20th International Workshop on Network and Operating Systems Support for Digital Audio and Video, June 2010, Amsterdam, The Netherlands.
44. BARBOSA OLIVEIRA, J., PESSOA, L.M., SALGADO, H., DARWAZEH, I., "Signal Processing Techniques for Transmission Impairments Compensation in Optical Systems", ICTON 2010 - 12th International Conference on Transparent Optical Networks, June 2010, Munich, Germany.
45. MOTA, P.M., MACHADO DA SILVA, J., VEIGA, R., "Evaluation OF RF PA Nonlinearities Based on Cross-correlation between current and output voltage", DTIS 2010 - Design & Technology of Integrated Systems, March 2010, Hammamet, Tunisia.

46. LUO, Q., SALGADO, H., PEREIRA, J.R., "Printed Fractal Monopole Antenna Array for WLAN", iWAT 2010 - 2010 International Workshop on Antenna Technology: Small Antennas, Innovative Structures and Materials, March 2010, Lisbon, Portugal.

E.4. Books (Author)

(void)

E.5. Chapter/paper in Books

1. CARDOSO, J., CARDOSO, M.J., "Sistema Médico para a Avaliação Estética da Mama" [Medical System for the Aesthetic Breast Evaluation], December 2010, Sistemas e Tecnologias de Informação na Saúde, Álvaro Rocha (Org).
2. TIMMERER, C., ANDRADE, M.T., MARTIN, A.L., "End-to-End Management of Heterogeneous Environments Enabling Quality of Experience", July 2010, High-quality visual experience, Springer p.457-476.

E.6. Publications (Editor)

1. GOUYON, F., BARBOSA, A., SERRA, X., "Special issue on Sound and Music Computing", Computer Music Journal, August 2010, vol.34, no.3.

E.7. Other Publications

1. SOUSA DIAS, J., RICARDO, M., "ScalSec: a fully authoritative identity PKI for the future Internet", CRC 2010 - 10ª Conferência sobre Redes de Computadores, November 2010, Braga, Portugal.
2. SILVA, P.M., SOUSA DIAS, J., RICARDO, M., "Securing Webmail using S/MIME and Cryptographic Timestamps", CRC 2010 - 10ª Conferência sobre Redes de Computadores, November 2010, Braga, Portugal.
3. BAHUBALINDRUNI, P., DUARTE, C., OLIVEIRA, D., GRADE TAVARES, V., VIDENOVIC-MISIC, M., "A CMOS Energy-Detector for Impulse-Radio UWB Noncoherent Receivers", November 2010, 18th Telecommunications Forum TELFOR 2010, Belgrade, Serbia, vol.1, no.1, p.445-448.
4. SOUSA, R.J., CARDOSO, J., "An Ordinal Data Method for the Classification with Reject Option", RECPAD 2010 - 16th Portuguese Conference on Pattern Recognition, October 2010, Vila Real, Portugal.
5. OLIVEIRA, H.F., CARDOSO, J., "BCCT.core Model Enhancement With Interpretability and Lateral Information", RECPAD 2010 - 16th Portuguese Conference on Pattern Recognition, October 2010, Vila Real, Portugal.
6. REBELO, A.M., CARDOSO, J., "Content aware music score pre-processing", RECPAD 2010 - 16th Portuguese Conference on Pattern Recognition, October 2010, Vila Real, Portugal.
7. TKACZUK, J., CARDOSO, J., "Microcalcification Detection in Full Field Mammograms", RECPAD 2010 - 16th Portuguese Conference on Pattern Recognition, October 2010, Vila Real, Portugal.
8. DOMINGUES, I.C., CARDOSO, J., "Multi-Source Automatic Breast Cancer Diagnosis", RECPAD 2010 - 16th Portuguese Conference on Pattern Recognition, October 2010, Vila Real, Portugal.

9. COELHO, D.V., SALGADO, H., "Fiber Bragg Grating Selection of Frequency Interleaved OFDM Signals in Fiber Supported Microwave Networks", MOMAG 2010 - 14º Simpósio Brasileiro de Microondas e Optoeletrónica e 9º Congresso Brasileiro de Electromagnetismo, August 2010, Vila Velha, Brasil, p.316-320.
10. MEIXEDO, J., ALVES, J.C., "A distributed cache memory system for custom vector processors", REC'2010 - VI Jornadas sobre Sistemas Reconfiguráveis, February 2010, Aveiro, Portugal.
11. SILVA, M.L., CANAS FERREIRA, J., "Algorithms for run-time placement and routing on Virtex II Pro FPGAs", REC'2010 - VI Jornadas sobre Sistemas Reconfiguráveis, February 2010, Aveiro, Portugal.
12. PINTO, N.M., SALGADO, H., CANAS FERREIRA, J., PESSOA, L.M., "Implementação de algoritmos em FPGA para estimação de sinal em sistemas ópticos coerentes", REC'2010 - VI Jornadas sobre Sistemas Reconfiguráveis, February 2010, Aveiro, Portugal.
13. RESENDE, C., CANAS FERREIRA, J., "Real-Time Stereo Matching on FPGA", REC'2010 - VI Jornadas sobre Sistemas Reconfiguráveis, February 2010, Aveiro, Portugal.
14. REIS, L.M., CARDOSO, M.J., CANAS FERREIRA, J., "The Performance Impact when Optimizing Mapping Algorithms for an FPGA-based Mobile Robot", REC'2010 - VI Jornadas sobre Sistemas Reconfiguráveis, February 2010, Aveiro, Portugal.

E.8. Theses (concluded by members of the Unit)

Phd theses:

1. DOMINGUES, M.A., Exploiting Multidimensional Data for Web Site Automation
2. PINTO, A.S., Key Distribution Technique for IPTV Services with Support for Admission Control and User Defined Groups
3. SILVA, S.R., Interferometric Synthetic Aperture Sonar System Supported By Satellite

MSc dissertations:

1. BARROS, V., S/MIME module for a webmail system (P)
2. FONTES, H., Multi-Technology Router for Mobile Networks: Layer 2 Overlay Network over Private and Public Wireless Links
3. LOPES, H., Internal communications system for electric vehicles (P)
4. PEREIRA, J.H., TV recommendation system (P)
5. POLÓNIA, R, User Tracking Through Web Sessions
6. RIBEIRO, B., Simulation of urban computing applications (P)
7. TEIXEIRA, F., Protocol for channel assignment in single-radio mesh networks

(P) In Portuguese

F) LIST OF PROJECTS

Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
			Source	Programme	Project Typology	Type	Role INESCP	Start	Satus 2009-12
OMR	Jaime Cardoso	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PROP	2007-10	FIN
BCCT	Jaime Cardoso	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2007-10	FIN
DR-Vids	João Canas Ferreira	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2007-11	FIN
ROFWDM	Henrique Salgado	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2007-10	FIN
Vector	José Carlos Alves	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2007-11	CONT
MuMoMgt	José Ruela	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PROP	2009-02	CONT
KINETIC	Carlos Guedes	RES	PROG - NAT	FCT / POFC	PROJ UTEN	INT	PROP	2009-04	CONT
SHHC - Safe Home Health Care	Ricardo Morla	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-05	START
ProLimb	José Machado da Silva	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-04	START
SELF-PVP	Vítor Grade Tavares	RES	PROG - NAT	FCT / POFC	PROJ CMU	INT	PROP	2010-09	START
WOWI	Henrique Salgado	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2010-11	START
AHRS	Vítor Grade Tavares	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2008-10	FIN
ReCoop	José Ruela	NET	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-01	CONT
SemanticPACS	Jaime Cardoso	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-01	CONT
Palco3.0-1	Fabien Gouyon	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2008-12	CONT
SITMe	Manuel Ricardo	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-06	CONT
Mobiles	José Ruela	RES	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-05	CONT
PortalDouro-1	José Manuel Oliveira	DEV	PROG - NAT	POR Norte		NAT	PAR	2009-04	CONT
RobVigil-1	José Ruela	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2010-01	START
Hotel3.0	Maria Teresa Andrade	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2010-01	START
LUL	Luís Corte Real	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2010-01	START
P3.net	Ricardo Morla	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2010-02	START
Daphne	Henrique Salgado	RES	PROG - EU	FP7		EU	PAR	2009-09	CONT
Alicante	Manuel Ricardo	RES	PROG - EU	FP7		EU	PAR	2010-03	START
Convergence	Maria Teresa Andrade	RES	PROG - EU	FP7		EU	PAR	2010-06	START
ASP – Redes Domésticas	Manuel Ricardo	DEV	SERV - NAT			IND	CONT	2009-02	FIN
SWIOP	Manuel Ricardo	DEV	SERV - NAT	POFC / POR	PROJ INDIV	IND	SUB	2009-09	CONT
N2Y	José Ruela	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-12	FIN
VI-XV	Manuel Ricardo	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2010-01	FIN

Short Name	Leader	Dominant Activity Type	Funding	Cooperation		Cooperation Cooperation		Execution	
			Source	Programme	Project Typology	Type	Role INESCP	Start	Satus 2010-12
ContextAware	Maria Teresa Andrade	CONS	SERV - NAT			IND	CONT	2010-03	START
User-Tracking2.0	Ricardo Morla	CONS	SERV - NAT	POFC / POR	PROJ INDIV	IND	SUB	2010-10	START
Consultoria	José Ruela	CONS	SERV - NAT			IND	CONT	2010-01	START
FLAD-UCI	Ricardo Morla	TRAIN	ORD	FLAD		INT	PAR	2008-01	CONT
REIVE-1	José Ruela	DEV	ORD	FAI		NAT	PROP	2010-03	START

Dominant Activity Type:

RES – Research
 DEV – Development
 CONS - Consulting
 TT - Technology Transfer
 NET - Network
 CONF - Conference
 TRAIN - Advanced Training
 INC - Incubation
 O - Other

Source:

PROG – NAT – National Programmes
 PROG – EU – European Union Programmes
 SERV - NAT - Supply of Services - national
 SERV - EU - Supply of Services - European Union
 SERV - INT - Supply of Services - International
 ORD Other R&D Services
 O - Other External Services
 INT - Internal

Type:

IND – Individual Project
 NAT - National Cooperation
 EU - European Union Cooperation (EU+Associated Countries)
 INT - Internal Cooperation

Role INESCP:

PROP - Proponent
 PAR - Partner
 CONT - Prime Contractor
 SUB - Subcontractor
 MEMB - Membre
 O - Other

G) LIST OF PATENTS

(void)

H) LIST OF PROTOTYPES

Updated music recommender integrated in the web portal of Palco Principal
<http://www.palcoprincipal.com>)

Robotic Gamelan at Casa da Música

Dancing Robot at University of Porto Exhibition

Software for automatic rhythm generation

Application for automatic Blues generation

Beat Tracking software - classified among the best in the annual international MIREX competition
<http://marsyas.info/docs/manual/marsyas-user/ibt.html>)

Workstation for the assessment of spatial segmentations of videos

Computational system for the automatic assessment of the aesthetic results of Breast Cancer Treatments with frontal and lateral information

Workstation for mammogram enhancement and pectoral muscle detection

Workstation for microcalcification and mass detection in mammograms

Platform for the Classification with Reject Option

Framework for distributed video coding applied in multi-camera video surveillance
 Framework for the assessment of video object tracking algorithms
 Platform for simulating and evaluating compressed video communications in mobile environments
 Software for recommending TV programmes in an IPTV environment
 Wireless Mesh Network for extending infrastructure networks with multicast support (WiFIX+)
 NS-3 simulator for routing in large scale networks
 Wireless routing bridge
 Service platform to support charging of electrical vehicles
 Software for capturing Second-Life traffic
 Expectation-Maximization software for learning mixtures of Gaussian and Exponential distributions
 3D virtual environment introspection for ambient assisted living
 Printed C-Shaped Monopole Antenna Array with High Isolation for MIMO Applications
 Filter with Linear Group Delay Response
 Tuneable Multiband Antenna with an Active Artificial Magnetic Conductor Ground Plane
 Printed Fractal Monopole Antenna Array for WLAN
 Optical transceiver for radio over fiber applications based on VCSEL
 Wide bandwidth optical transceiver for radio over fiber applications
 Real-time image rectification for uncalibrated stereo cameras on FPGA
 Real-time hand tracking on FPGA
 On-board characterization and correction of RF power amplifiers' non-linearities
 Radio-Frequency Testable Power Amplifier integrated circuit
 Charge amplifier based on switched capacitor techniques, with gain control, in 0.35um CMOS technology

I) LIST OF THESES CONCLUDED IN 2010, SUPERVISED BY MEMBERS OF THE UNIT

I.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title
António Alberto Santos Pinto	FEUP	Manuel Ricardo	INESC Porto/FEUP	Key Distribution Technique for IPTV Services with Support for Admission Control and User Defined Groups
Fernando L. Almeida	FEUP	José M. Oliveira José M. Cruz	INESC Porto/FEP FEUP	Creation of Value with Open Source Software in the Telecommunications Field
Hernâni Gonçalves	FCUP	J.A. Gonçalves Luís Corte-Real	FCUP INESC Porto/FEUP	Automatic registration of satellite images
Sérgio Silva	FEUP	Sérgio R. Cunha	INESC Porto/FEUP	Interferometric Synthetic Aperture Sonar System Supported By Satellite
1	2	3	4	5

1 – Name of the post-graduation student

2 – Institution where the thesis is submitted; if the host institution for the student is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title of the thesis

I.2. MSC Dissertations

Author	Instit.	Supervisor	Instit.	Title
Américo Dias	FEUP	V.G. Tavares	INESC Porto/FEUP	RF transmitter for subcutaneous bio-implants
Amílcar Correia	FEUP	V.G. Tavares P.G. Oliveira	INESC Porto/FEUP INESC Porto/FEUP	Notch filter for EEG and ECG applications, based on F&H CMOS techniques
André Raposo	FEUP	J.M. Silva	INESC Porto/FEUP	Wireless Communication Over NFC with a Resource Constrained Device
Andreas Seufert	FEUP	Jaime Cardoso	INESC Porto/FEUP	Research and improvement of algorithms for the recognition of musical symbols
António S. Marques	FEUP	J.C. Ferreira J.C. Alves	INESC Porto/FEUP INESC Porto/FEUP	Electronic device for data acquisition by means of sensors
Armando C. Fernandes	FEUP	A.J. Araújo	INESC Porto/FEUP	Characterization of modular operators implemented in FPGA
Bártolo Maia	FEUP	Aníbal Ferreira	INESC Porto/FEUP	Disguise and human recognition of vocal signature
Bernardo Janson	FEUP	Artur P. Alves	INESC Porto/FEUP	A Comparison of Different Multimedia Streaming Strategies Over Distributed IP-Networks
Bruno Ferreira	FEUP	J. Ruela	INESC Porto/FEUP	Intelligent lighting control system based on wireless sensor networks
Bruno Leite	FEUP	J. Ruela	INESC Porto/FEUP	Management system for charging of electric vehicles
Bruno Ribeiro	FEUP	Ricardo Morla	INESC Porto/FEUP	Simulation of urban computing applications
Carlos G. Oliveira	FEUP	J. Ruela	INESC Porto/FEUP	Efficient diffusion of multicast traffic in 802.11 mesh networks with mobility support
Daniel A. Costa	FEUP	M.T. Andrade	INESC Porto/FEUP	Evaluation of video quality in mobile communications
Décio Macedo	FEUP	Hélio Mendonça	INESC Porto/FEUP	ZigBee-based system for extending IR signals
Diogo Melo	FEUP	V.G. Tavares Luís Rocha	INESC Porto/FEUP U. Minho	Integrated system for a high resolution MEMS accelerometer
Eduardo Magalhães	FEUP	Sérgio R. Cunha	INESC Porto/FEUP	Development of an Argos beacon for the VORSat satellite
Elísio Melo	FEUP	M.J. Leitão	INESC Porto/FEUP	Network and applications in the Information System of Secondary Schools
Ezilda Duarte Almeida	FEUP	Jaime Cardoso	INESC Porto/FEUP	Ordinal classification with reject option
Fernando Lopes	FEUP	M.T. Andrade	INESC Porto/FEUP	Smart Home Device Application
Fernando Romão	FEUP	Manuel Ricardo	INESC Porto/FEUP	Design and implementation of an 802.16 wireless network for the FEUP Campus

Author	Instit.	Supervisor	Instit.	Title
Filipe Meireles	FEUP	A.J. Araújo	INESC Porto/FEUP	Approximation of elementary functions without reduction of argument
Filipe Teixeira	FEUP	Manuel Ricardo	INESC Porto/FEUP	Protocol for channel assignment in single-radio mesh networks
Francisco Fernandes	FEUP	Manuel Ricardo	INESC Porto/FEUP	Performance Evaluation of Directional Antenna on Static Wireless Mesh Networks
Hélder Fontes	FEUP	Manuel Ricardo	INESC Porto/FEUP	Multi-Technology Router for Mobile Networks: Layer 2 Overlay Network over Private and Public Wireless Links
Hugo Lopes	FEUP	J. Ruela	INESC Porto/FEUP	Internal communications system for electric vehicles
Joana Braga	FEUP	J.M. Silva	INESC Porto/FEUP	Auto-test and correction of non-linearities in RF circuits
João F. Castro	FEUP	J.M. Silva	INESC Porto/FEUP	Modelling and design of inductors for medical micro-devices
João Henrique Pereira	FEUP	M.T. Andrade	INESC Porto/FEUP	TV recommendation system
Joaquim M. B. Silva	FEUP	M.J. Leitão	INESC Porto/FEUP	Design of a third generation cellular network – radio interface
José F. P. Santos	FEUP	M.T. Andrade J. Ruela	INESC Porto/FEUP INESC Porto/FEUP	Mobile Streaming – Quality of Experience
José G. A. Ramos	FEUP	Jaime Cardoso	INESC Porto/FEUP	Collaborative algorithms for recommendation systems
Luís F. Malheiro	FEUP	V.G. Tavares	INESC Porto/FEUP	Polyphase filter with parametric tuning
Luís R. Neves	FEUP	Jaime Cardoso	INESC Porto/FEUP	Semi-automatic Web system for collaborative annotation of H.264 media and Flash Video
Miguel A. Pinheiro	FEUP	Luís Corte-Real	INESC Porto/FEUP	Multi-Object Tracking in Video Sequences
Nuno F. Santos	FEUP	J. Ruela	INESC Porto/FEUP	Analysis and comparison of WiFi and HomePlug technologies for the transmission of video streams
Nuno Pássaro	FEUP	Manuel Ricardo	INESC Porto/FEUP	Management of multicast sessions with origin on clients
Paulo A. Moura	FEUP	Aníbal Ferreira	INESC Porto/FEUP	Remote control of presences based on speaker verification technique
Pedro H. Pires	FEUP	E. Carrapatoso J. Ruela	INESC Porto/FEUP INESC Porto/FEUP	Multicast on Mobile IPTV
Pedro Vitoriano	FEUP	Jaime Cardoso	INESC Porto/FEUP	Automatic evaluation of the result of surgeries
Renan A. Ramos	FEUP	J.N. Almeida	INESC Porto/FEUP	Software Architecture for Multiple Smartphones
Ricardo S. Machado	FEUP	Hélio Mendonça	INESC Porto/FEUP	Library of Verilog modules for the interface of FPGAs with I/O peripherals
Telmo Pinto	FEUP	Jaime Cardoso	INESC Porto/FEUP	Music score binarization based on content knowledge
Tiago S. Cardoso	FEUP	Manuel Ricardo	INESC Porto/FEUP	Handover between different access networks in next generation terminal equipment
Vítor Barros	FEUP	Manuel Ricardo	INESC Porto/FEUP	S/MIME module for a webmail system
1	2	3	4	5

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title of the thesis

J) LIST OF THESES UNDER SUPERVISION

J.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Gustavo Carneiro	FEUP	Manuel Ricardo	INESC Porto/FEUP	Qos in Large L2 Vehicular Wireless Networks	2011
Hermes Irineu Del Monego	FEUP	José M. Oliveira Manuel Ricardo	INESC Porto/FEP INESC Porto/FEUP	Radio Resource Management in 4G Networks: A Strategy Based on Mobility Tendency and Packet Length Sensibility	2011
João Manuel Barbosa de Oliveira	FEUP	H. Salgado	INESC Porto/FEUP	Design and Optimisation of DWDM Millimetre-Wave Fibre Radio Systems	2011
Lucian Ciobanu	FEUP	Luís Corte-Real	INESC Porto/FEUP	Video coding with low encoder complexity for systems with multiple cameras	2011
Luís Manuel de Sousa Pessoa	FEUP	H. Salgado	INESC Porto/FEUP	Compensation of Fibre Impairments in Coherent Optical Systems	2011
Luís Miguel Teixeira	FEUP	Artur P. Alves Luís Corte-Real	INESC Porto/FEUP	Joint rate control for H.264 video coding	2011
Manuel Cândido Santos	FEUP	V.G. Tavares	INESC Porto/FEUP	High-Efficiency Linear Transmitters for Mobile Communication Systems	2011
Miguel Magalhães Silva	FEUP	J.C. Ferreira J.C. Alves	INESC Porto/FEUP	Management of dynamically reconfigurable resources in CPU/FPGA systems	2011
Pedro Miguel Carvalho	FEUP	Luís Corte-Real Jaime Cardoso	INESC Porto/FEUP	Data Combination for People Tracking in Video Sequences	2011
Pedro Mota	FEUP	J.M. Silva	INESC Porto/FEUP	In-circuit testing of adaptive RF front-end circuits	2011
Ricardo J. T. Sousa	FEUP	Aníbal Ferreira	INESC Porto/FEUP	Audio signal processing applied to speech rehabilitation	2011
Rui Lopes Campos	FEUP	Manuel Ricardo	INESC Porto/FEUP	Joint Path and Address Auto-configuration: an Approach to Multi-technology Personal Area Networks and 802.11-based Stub Wireless Mesh Networks	2011
António Abel Castro	FEUP	E. Carrapatoso C.V. Carvalho	INESC Porto/FEUP ISEP/IPP	Use of multimedia learning objects with a semantic context for the Health area	2012
Daniel Oancea	FEUP	João C. Lopes Rui Moreira	INESC Porto/FEUP INESC Porto/UPF	An Adaptive Cross-Layer Framework for Multimedia Delivery over Heterogeneous Networks	2012
Hélder Castro	FEUP	Artur P. Alves	INESC Porto/FEUP	P2P Strategies for the Safe Distribution of Rich Media Content	2012
Isabel S. Azevedo	FEUP	E. Carrapatoso C.V. Carvalho	INESC Porto/FEUP ISEP/IPP	Semantic contextualization of educational objects	2012
Jaime Sousa Dias	FEUP	Manuel Ricardo	INESC Porto/FEUP	A Scalable Security Infrastructure for TCP/IP Communications	2012
João Paulo Sousa	UTAD	E. Carrapatoso	INESC Porto/FEUP	Dynamic composition of services	2012
Mário Rui Silveira Pereira	FEUP	H. Salgado	INESC Porto/FEUP	Electromagnetic Bandgap Antennas and Components for Broadband Communications	2012

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Nuno Fonseca	FEUP	Aníbal Ferreira A.P. Rocha	INESC Porto/FEUP FEUP	Reconstruction of melodic vocal phrases using libraries of natural sounds and concepts of Auditory Scene Analysis and Machine Learning	2012
Nuno Salta	FEUP	Manuel Ricardo	INESC Porto/FEUP	Optimizing Network Layer for P2P Video Broadcast over Wireless Mesh Networks	2012
Paulo Alexandre Duarte Ferreira	FEUP	J.C. Alves J.C. Ferreira	INESC Porto/FEUP	Computational systems based on heterogeneous parallel architectures	2012
Qi Luo	FEUP	H. Salgado	INESC Porto/FEUP	Design Synthesis and Optimization of Single and Multiband Electromagnetic Band-Gap Structures for Microwave Circuits and Antenna Applications	2012
Saravanan Kandasamy	FEUP	Manuel Ricardo Ricardo Morla	INESC Porto/FEUP INESC Porto/FEUP	Utilizing Beamforming Antennas for Improving the Performance of Mobile Wireless Mesh Networks	2012
Tânia Calçada	FEUP	Manuel Ricardo	INESC Porto/FEUP	Integration of ad-hoc with infrastructured networks	2012
António Pedro Fortuna Santos	FEUP	Manuel Ricardo	INESC Porto/FEUP	Wireless Metropolitan Vehicular Networks	2013
Bruno G. Marques	FEUP	Manuel Ricardo	INESC Porto/FEUP	Application Driven Wireless Sensor Networks	2013
Paulo Coelho	FEUP	Manuel Ricardo	INESC Porto/FEUP	Management of multicast groups in mobile networks	2013
David Rua	FEUP	J. Peças Lopes J. Ruela	INESC Porto/FEUP INESC Porto/FEUP	Integrated Communication Systems for Large Scale Distributed Energy Resources and V2G	2013
Ana Maria Rebelo	FEUP	Jaime Cardoso	INESC Porto/FEUP	Robust optical recognition of handwritten musical scores based on music rules fusion	2013
Ricardo J. G. Sousa	FEUP	Jaime Cardoso	INESC Porto/FEUP	Multi-criteria Models for Preference Learning on Ordinal Data	2013
João Lobato Oliveira	FEUP	Luís P. Reis Fabien Gouyon	FEUP INESC Porto	Interactive Robot Dancing: An Embodied Entrainment Model Based on Multi-Modal Rhythms	2013
Hélder Oliveira	FEUP	Jaime Cardoso	INESC Porto/FEUP	Advanced 3D Computational Models for the Aesthetic Result Assessment on Breast Cancer Surgeries	2013
Dossa Massa	FEUP	Ricardo Morla	INESC Porto/FEUP	Understanding user behaviour based on their usage patterns from 802.11 logs	2013
Abayomi Otebolaku	FEUP	M.T. Andrade	INESC Porto/FEUP	Context-aware mobile applications	2013
Susy Costa	FMUP	M.J. Cardoso Jaime Cardoso	INESC Porto/FMUP INESC Porto/FEUP	Aesthetic evaluation and prediction of breast cancer conservative treatment	2013
André Baltazar	Univ. Católica	L.G. Martins Jaime Cardos	Univ. Católica INESC Porto/FEUP	Algorithmic music composition based on the analysis of video signals of dance movements	2014
Carlos Jorge Abreu	Univ. Minho	Manuel Ricardo P. Mendes	INESC Porto/FEUP U. Minho	Sensor network for medical applications	2014
Diogo Coelho	FEUP	H. Salgado	INESC Porto/FEUP	Radio over fiber	2014
Fardin Derogarian Miyandoab	FEUP	J.C. Ferreira V.G. Tavares	INESC Porto/FEUP INESC Porto/FEUP	Design of a Body Sensor Network Embedded in Textiles for Biomedical Applications	2014
Fernando J. Pereira	FEUP	Manuel Ricardo	INESC Porto/FEUP	Overlay networks	2014
Filipe J. A. Sousa	FEUP	J.C. Ferreira	INESC Porto/FEUP	Low-power radiation-tolerant digital systems for tracking detectors in LHC experiments	2014
Ihsan Ul Haq	FEUP	H. Salgado	INESC Porto/FEUP	Optical Burst Switching	2014
Inês Domingues	FEUP	Jaime Cardoso	INESC Porto/FEUP	Multi-source automatic breast cancer imaging evaluation	2014
José Pedro Cardoso	FEUP	J.M. Silva	INESC Porto/FEUP	Project and test of micro-electronic systems	2014
Mahmoud Abdellatif	FEUP	Manuel Ricardo José M. Oliveira	INESC Porto/FEUP INESC Porto/FEP	Scalable sensor networks	2014

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Pedro F. C. Pinto	FEUP	Manuel Ricardo	INESC Porto/FEUP	Network security	2014
Pydi Bahubalindrani	FEUP	V.G. Tavares	INESC Porto/FEUP	Post-silicon integrated circuit design	2014
1	2	3	4	5	6

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title or topic of the thesis

6 – Predicted year of conclusion and delivery – will be taken in account in summary tables

J.2. Other

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date	Type
Corsino F. Martins	FEUP	Manuel Ricardo	INESC Porto/FEUP	Wireless networks for shopping centres	2011	MSc
Fábio Daniel Silva	FEUP	J. Ruela	INESC Porto/FEUP	System for management of domestic energy consumption with electric vehicles	2011	MSc
Hélder S. Matos	FEUP	Jaime Cardoso	INESC Porto/FEUP	Biometric recognition based on hand geometry	2011	MSc
João Paulo Monteiro	FEUP	Jaime Cardoso	INESC Porto/FEUP	Computer-Aided Detection in Mammography	2011	MSc
Joel Nogueira Soares	FEUP	J. Ruela	INESC Porto/FEUP	Geographic routing	2011	MSc
Luis Manuel Cardoso	FEUP	Hélio Mendonça	INESC Porto/FEUP	Remote device for VOC monitoring	2011	MSc
Mário Carneiro	FEUP	Fabien Gouyon Eugénio Oliveira	INESC Porto/FEUP FEUP	Machine Learning approach to music data analysis	2011	MSc
Nuno Filipe Cruz	FEUP	Fabien Gouyon M.T. Dias	INESC Porto/FEUP FEUP	Improved visualization and exploration of Web2.0 music network data	2011	MSc
Tânia Zhao Zhu	ISEP	Paula Viana	INESC Porto/ISEP	Detection and tracking of objects under adverse conditions	2011	MSc
1	2	3	4	5	6	7

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title or topic of the work

6 – Predicted year of conclusion and delivery – will be taken in account in summary tables

7 – Type of work (MSc thesis, post-graduation dissertation, etc.)



OPTOELECTRONICS AND ELECTRONICS SYSTEMS

A) SUMMARY OF PUBLICATIONS

Summary of publications by members of the Unit in 2010

Type of publication	Number
Papers in International Journals with scientific referees	42
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	44
Books (author)	
Chapter/paper in books	
Publications (editor)	2
Other publications (National meetings, local journals, etc.)	28
Theses concluded in 2010 by members of the Unit	5
TOTAL	121

Journal	Number of papers
IEEE Photonics Technology Letters	5
Microwave and Optical Technology Letters	3
Measurement Science & Technology	3
SENSORS AND ACTUATORS B-CHEMICAL	3
Solid State Phenomena	3
OPTICS EXPRESS	2
APPLIED OPTICS	2
Talanta	2
Physica B: Condensed Matter	1
Applied Surface Science	1
Materials & Design	1
Analytical Letters	1
FIBER AND INTEGRATED OPTICS	1
IEEE Sensors Journal	1
IEE Proceedings J (Optoelectronics)	1
IEEE Transactions on Power Delivery	1
Materials Science and Engineering B	1
APPLIED PHYSICS B-LASERS AND OPTICS	1
Clean Technologies and Environmental Policy	1
Advanced Engineering Materials	1
OPTICS LETTERS	1
Journal of Optics	1
Food Research International - Canadian Institute of Food Science and Technology Journal	1
JOURNAL OF PLASMA PHYSICS	1
Key Engineering Materials	1
Journal of Applied Physics	1
Journal of Lightwave Technology	1
TOTAL	42

B) SUMMARY OF PROJECTS

Annual income from Unit or Group projects (k€)

Source of Funding	Year				Variation 2009 - 2010
	2007	2008	2009	2010	
National Programmes	119	173	171	209	22%
European Union Programmes	189	52	25	7	-72%
R&D Services and Consulting	93	238	194	253	30%
Other R&D sources				14	
Other external sources		5		129	
Total	401	468	390	612	57%

Number of Projects and income derived for Groups or Units in 2010

Project Typology		Number of Projects	Projects Income
Source of Funding	National Programmes - FCT	16	116
	National Programmes - QREN	3	93
	European Union Programmes - I&D		
	European Union Programmes - Diversos	1	7
	R&D Services and Consulting - National	5	187
	R&D Services and Consulting - European Union		
	R&D Services and Consulting - International	1	66
	Other R&D sources	3	14
	Other external sources	1	129
	Internal		
Dominant Activity Type	Basic Research		
	Applied Research and Development		
	Consulting		
	Technology Transfer	1	5
	Network		
	Conference	1	129
	Advanced Training		
	Incubation		
	Other	2	13
Execution Status	Started	11	148
	Continuation	9	201
	Finished	10	263
Total		4	147

C) SUMMARY OF POST-GRADUATION ACTIVITIES

Summary of theses supervised by members the unit in 2010

Tipo	Starting	On-going	Concluded	Total
Master	2		6	8
Doctoral	8	9	5	22
TOTAL	10	9	11	30

D) SUMMARY OF ACTIVITIES OF COOPERATION OR DISSEMINATION

Summary of Cooperation and dissemination actions

Type	Number
Conferences with INESC Porto in the organization (in the organizing committee or chairing technical committees)	4
Nº. of External co-authors of Publications of INESC Porto	135

E) LIST OF PUBLICATIONS

E.1. International Journal with scientific referees

1. MONTALVO, J., MONTERO, D.S., VASQUEZ, C., BAPTISTA, J.M., SANTOS, J.L., "Radio-frequency self-referencing system for monitoring drop fibres in wavelength division multiplexing passive optical networks", IEE Proceedings J (Optoelectronics), December 2010, vol.4, no.6, p.226-234.
2. REGO, G., "Review Paper: Fibre optic devices produced by arc discharges", Journal of Optics, December 2010, vol.12, no.113002.
3. CRUZ, J., JOANNI, E., VILARINHO, P., KHOLKIN, A., "Thickness effect on the dielectric, ferroelectric, and piezoelectric properties of ferroelectric lead zirconate titanate thin films", Journal of Applied Physics, December 2010, vol.108, no.11, p.114106-1.
4. AZEVEDO, J., MESQUITA COELHO, J., HUNGERFORD, G., HUSSAIN, N., "Lasing transition (4F3/2→4I11/2) at 1.06 µm in neodymium oxide doped lithium boro tellurite glass ", Physica B: Condensed Matter, November 2010, vol.405, no.22, p.4696-4701.
5. VIEGAS, D., CARVALHO, J.P., COELHO, L.C., SANTOS, J.L., ARAÚJO, F., FRAZÃO, O., "Long-Period Grating Fiber Sensor With In Situ Optical Source for Remote Sensing", IEEE Photonics Technology Letters, November 2010, vol.22, no.20, p.1533-1535.
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9. AMARAL, L., PEREIRA, D.A., FRAZÃO, O., MARQUES, M.J., LIMA, M.J.N., TEIXEIRA, L.J., "PMD Measurements based on Low-Coherence Interferometry using a Michelson Interferometer", Microwave and Optical Technology Letters, October 2010, vol.52, no.10, p.2310-2312.
10. FRAZÃO, O., OLIVEIRA SILVA, S., BAPTISTA, J.M., SANTOS, J.L., KOBELKE, J., SCHUSTER, K., "All fiber Mach-Zehnder interferometer based on suspended twin-core fiber", IEEE Photonics Technology Letters, September 2010, vol.22, no.17, p.1300-1302.
11. ANDRÉ, R.M., MARQUES, M.J., ROY, P., FRAZÃO, O., "Fiber loop mirror using a small core microstructured fiber for strain and temperature discrimination", IEEE Photonics Technology Letters, August 2010, vol.22, no.15, p.1120-1122.
12. FRAZÃO, O., SILVA, R.M., KOBELKE, J., SCHUSTER, K., "Temperature- and Strain-Independent Torsion Sensor using a fiber loop mirror based on a Suspended Twin-core Fibre", OPTICS LETTERS, August 2010, vol.35, no.16, p.2777-2779.
13. TAFULO, P.A., QUEIRÓS, R.B., MATOS, C., SALES, G., "Control and comparison of the antioxidant capacity of beers", Food Research International - Canadian Institute of Food Science and Technology Journal, July 2010, vol.43, no.6, p.1702-1709.
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16. LIMA, S.E., FRAZÃO, O., FARIAS, R.G., ARAÚJO, F., FERREIRA, L.A., MIRANDA, V., SANTOS, J.L., "Intrinsic and Extrinsic Fiber Fabry-Perot Sensors for Acoustic Detection in Liquids", Microwave and Optical Technology Letters, May 2010, vol.52, no.5, p.1129-1134.
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22. AREF, S.H., AMEZCUA-CORREA, R., CARVALHO, J., FRAZÃO, O., SANTOS, J.L., ARAÚJO, F., LATIFI, H., FARAH, F., FERREIRA, L.A., KNIGHT, J.C., "Spectral Characterization of a Photonic Band-Gap Fiber for Sensing Applications", APPLIED OPTICS, April 2010, vol.10, no.49, p.1870-1875.

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28. FRAZÃO, O., SILVA, S.O., VIEGAS, J., BAPTISTA, J.M., SANTOS, J.L., ROY, P., "A Hybrid Fabry-Perot/Michelson interferometer sensor using a dual asymmetric core microstructured fiber", *Measurement Science & Technology*, February 2010, vol.21, no.2.
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32. CALDAS, P., REGO, G., IVANOV, O.V., SANTOS, J.L., "Characterization of the response of a dual resonance of an arc-induced long-period grating to various physical parameters", *APPLIED OPTICS* 2010.
33. MONTERO, D.S., VASQUEZ, C., BAPTISTA, J.M., SANTOS, J.L., MONTALVO, J., "Coarse WDM networking of self-referenced fiber-optic intensity sensors with reconfigurable characteristics", *OPTICS EXPRESS* 2010, vol.18, no.5, p.4396-4410.
34. V, R., OLIVEIRA SILVA, S., PEIXOTO, D., FRAZÃO, O., MOREIRA, P., SANTOS, J.L., CASTRO, P., "Fibre Bragg grating sensors for monitoring the metal inert gas and friction stir welding processes", *Measurement Science & Technology* 2010, vol.21, no.8.
35. PINTO, A., FRAZÃO, O., SANTOS, J.L., LOPEZ-AMO, M., KOBELKE, M., SCHUSTER, K., "Interrogation of a Suspended-Core Fabry-Perot Temperature Sensor Through a Dual Wavelength Raman Fiber Laser", *Journal of Lightwave Technology* 2010, vol.21, p.3149-3155.
36. J. DUARTE, A., ROCHA, C., SILVEIRA, F., AGUILAR, G., JORGE, P., M. M. LEITÃO, J., ALGARRA, M., ESTEVES DA SILVA, J.C.G., "Luminol-doped nanostructured composite materials for chemiluminescent sensing of hydrogen peroxide", *Analytical Letters* 2010, vol.43, p.2762-2772.
37. FRIAS, C., FARIA, H., FRAZÃO, O., VIEIRA, P., MARQUES, A.T., "Manufacturing and Testing Composite Overwrapped Pressure Vessels with Embedded Sensors", *Materials & Design* 2010, vol.31, no.8, p.4016-4022.

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39. VIEGAS, D., ABAD, S., SANTOS, J.L., FERREIRA, L.A., ARAÚJO, F., "Non-Terminal Miniature Fiber Bragg Grating Temperature Probe Based in U-Shape Lossless Taper", Measurement Science & Technology 2010, vol.21, no.9.
40. GUERREIRO, A., "On the quantum space-time structure of light", JOURNAL OF PLASMA PHYSICS 2010, vol.76, p.833-843.
41. GHASEMPOUR, A., LEITE, A.M.P., ALEXANDRE, D., REYNAUD, F., MARQUES, P.V., GARCIA, P., MOREIRA, P., "Performance of astronomical beam combiner prototypes fabricated by hybrid sol-gel technology", OPTICS EXPRESS 2010.
42. DA SILVA, A.F., GONÇALVES, A.F., FERREIRA, L.A., ARAÚJO, F., MENDES, P.M., CORREIA, J.H., "PVC Smart Sensing Foil for Advanced Strain Measurements", IEEE Sensors Journal 2010, vol.10, no.6, p.1149-1155.

E.2. National Journals with scientific referees

(void)

E.3. Conference Proceedings with scientific referees (international or national)

1. CARVALHO, J.P., COELHO, L.C., FRAZÃO, O., SANTOS, J.L., "Electrical Dynamic Interrogation System for Long Period Gratings", SENSIG '10 - 3rd WSEAS International Conference on SENSORS and SIGNALS, November 2010, Faro, Portugal.
2. TAFULO, P.A., JORGE, P., FRAZÃO, O., "Estrutura híbrida de cavidades Fabry-Perot em fibra óptica para detecção de índice de refração" [Fabry-Perot cavities in hybrid fiber optic structures for detection of refractive index.], IBERSENSOR 2010 - 7th Ibero-American Congress on Sensors, November 2010, Lisboa, Portugal.
3. JORGE, P., "Fiber optic refractometric configurations for environmental sensing", SENSIG '10 - 3rd WSEAS International Conference on SENSORS and SIGNALS, November 2010, Faro, Portugal.
4. JESUS GOUVEIA, C., MARKOVICS, A., BAPTISTA, J.M., KOVACS, B., JORGE, P., "Measurement of CO₂ using refractometric fiber optic sensors", SENSIG '10 - 3rd WSEAS International Conference on SENSORS and SIGNALS, November 2010, Faro, Portugal.
5. CORREIA GONÇALVES, L., BAPTISTA, J.M., AGUILAR, G., JORGE, P., "Medição diferencial de temperatura através de fibra óptica: uma via promissora para a análise térmica de amostras." [Differential temperature measurement through fiber optics sensor: a promising process for samples thermal analysis.], IBERSENSOR 2010 - 7th Ibero-American Congress on Sensors, November 2010, Lisboa, Portugal.
6. FRIAS, C., FRAZÃO, O., SIMÕES, J.A., MARQUES, A.T., "In-Vitro application of Fibre Bragg grating sensors networks in the structural health monitoring of a hip prosthesis", Biosensors2010 - Biosensors 2010, May 2010, Glasgow, UK.
7. FRAZÃO, O., BAPTISTA, J.M., ROY, P., JAMIER, R., FÉVRIER, S., "Bragg Fibre for Sensing Applications", SPIE-PE10 - SPIE Photonics Europe 2010, April 2010, Brussels, Belgium.
8. FRAZÃO, O., BAPTISTA, J.M., SANTOS, J.L., KOBELKE, J., SCHUSTER, K., "Sagnac interferometer based on a suspended twin-core fibre", SPIE-PE10 - SPIE Photonics Europe 2010, April 2010, Brussels, Belgium.
9. CARVALHO, J., STATKIEWICZ-BARABACH, G., ANUSZKIEWICZ, A., FRAZÃO, O., WOJCIK, J., BAPTISTA, J.M., SANTOS, J.L., URBANCZYK, W., "Sensing characteristics of long period gratings and rocking

filters based on highly birefringent boron doped photonic crystal fiber and fabricated by a CO₂ laser", SPIE-PE10 - SPIE Photonics Europe 2010, April 2010, Brussels, Belgium.

10. GONÇALVES, H., JORGE, P., FERNANDES, J.R., "LUMINESCENT CARBON DOTS OBTAINED BY LASER ABLATION FOR DETECTION OF HG(II)", EUROPT(R)ODE X - X conference on optical chemical sensors and biosensors, March 2010, Prague, Czech Republic.
11. BARCELAY, Y., AGUILAR, G., MOREIRA, J.A., ALMEIDA, A., CHAVÉS, R.M., DE LA CRUZ, J., "Rare-earth manganites thin films prepared by a novel chemical solution method", XVIth Workshop on Mag. - XVIth Workshop on magnetism and Intermetallics, March 2010, Porto, Portugal.
12. DIAZ-HERRERA, N., VIEGAS, D., SANTOS, J.L., GONZALEZ-CANO, A., NAVARRETE, M.C., "SPR fiber sensors operating in the optical communications wavelength region for the range of refractive indices of aqueous media", EUROPT(R)ODE X - X conference on optical chemical sensors and biosensors, March 2010, Prague, Czech Republic.
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23. FERNANDES, L.A., R. GRENIER, J., R. HERMAN, P., S. AITCHISON, J., MARQUES, P., "Femtosecond laser fabrication of birefringent directional couplers in fused silica", Photonics West 2010 - Photonics West 2010 2010, San Francisco, USA.
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36. DÍAZ-HERRERA, N., GONZALEZ-CANO, A., VIEGAS, D., SANTOS, J.L., NAVARRETE, M., ESTEBAN, O., "Moving the wavelength detection range in surface plasmon resonance sensors based on tapered fibers", EWOF2010 - Fourth European Workshop on Optical Fibre Sensors 2010 2010, Porto, Portugal.
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40. FRAZÃO, O., SANTOS, J.L., ROY, P., JAMIER, R., FÉVRIER, S., "Simultaneous Measurement of Strain and Temperature using Modal Interferometry in Bragg Fibers", WSOF2010 - II Workshop on Specialty Optical Fibers and Their Applications 2010, Oaxaca City, México.
41. VIEGAS, D., HAUTAKORPI, M., GUERREIRO, A., SANTOS, J.L., LUDVIGSEN, H., "Surface-Plasmon-Resonance Sensor Based on H-shaped Optical Fibre", EWOF2010 - Fourth European Workshop on Optical Fibre Sensors 2010 2010, Porto, Portugal.
42. PINTO, A.M.R., FRAZÃO, O., SANTOS, J.L., LOPEZ-AMO, M., KOBELKE, J., SCHUSTER, K., "Suspended-core Fabry-Perot Temperature Sensor Interrogation Through a Dual Wavelength Raman Fiber Laser", EWOF2010 - Fourth European Workshop on Optical Fibre Sensors 2010 2010, Porto, Portugal.
43. SILVA, S.O., FRAZÃO, O., FERREIRA, L.A., ARAÚJO, F., MALCATA, F.X., SANTOS, J.L., "Temperature and Strain Independent Curvature Sensor based on Multimode Interference", EWOF2010 - Fourth European Workshop on Optical Fibre Sensors 2010 2010, Porto, Portugal.
44. SILVA, R.M., KOBELKE, J., SCHUSTER, K., FRAZÃO, O., "Temperature and Strain Independent Torsion Sensor using a Sagnac Interferometer based on a Suspended Twin-core Fibre", EWOF2010 - Fourth European Workshop on Optical Fibre Sensors 2010 2010, Porto, Portugal.

E.4. Books (Author)

(void)

E.5. Chapter/paper in Books

(void)

E.6. Publications (Editor)

1. Glass Science and its Applications, Nandyala Sooraj Hussain, Special Issue of SOLID STATE PHENOMENA Series, Print version (ISBN: 978-3-908451-81-5), CD version (ISBN: 978-3-908452-11-9), Trans Tech Publications Inc
2. SENSIG '10/MATERIALS'10 Proceedings of the 3rd WSEAS international conference on Advances in sensors, signals and materials, Orlando Frazão, World Scientific and Engineering Academy and Society (WSEAS), ISBN: 978-960-474-248-6.

E.7. Other Publications

1. T. CARVALHO, T., B. TAVARES, P., FERNANDES, J.R., CRUZ, J., M. PEREIRA, A., AGOSTINHO MOREIRA, J., "DEPOSITION OF (Bi,Lu)(Fe,Mn)O₃ THIN FILMS BY RF SPUTTERING", Física 2010 - Física 2010, September 2010, Vila Real, Portugal.
2. FERNANDES, L.A., R. GRENIER, J., R. HERMAN, P., S. AITCHISON, J., MARQUES, P.V., "ESCRITA DIRECTA PONTO-A-PONTO DE REDES DE BRAGG COM IMPULSOS LASER ULTRACURTOS", Física 2010 - Física 2010, September 2010, Vila Real, Portugal.

3. VIEGAS, D., CARVALHO, J.P., COELHO, L.C., SANTOS, J.L., ARAÚJO, F., FRAZÃO, O., "NOVEL IN SITU OPTICAL SOURCE SCHEME FOR REMOTE SENSING", Física 2010 - Física 2010, September 2010, Vila Real, Portugal.
4. D. BAPTISTA, F., CALDAS, P., MARQUES, M.J., GOMES, L.A., "Simulação espectral de Redes de Período Longo", Física 2010 - Física 2010, September 2010, Vila Real, Portugal.
5. MARQUES, M.J., DARBRAZI, S., CARMELO ROSA, C., "Tomographic optical extinction coefficient
6. ANDRÉ, R.M., FRAZÃO, O., MARQUES, M.J., "High-Birefringent Fibre Loop Mirror for Sensor Applications", IJUP'10 - IJUP'10 - 3rd Meeting of Young Researchers of U. Porto, February 2010, Porto, Portugal.
7. CORREIA GONÇALVES, L., AGUILAR, G., JORGE, P., BAPTISTA, J.M., SANTOS, J.L., "Calorímetro diferencial em fibra óptica para detecção de explosivos", Física 2010 - Física 2010 2010, Vila Real, Portugal.
8. AMARAL, L., PEREIRA, D.A., FRAZÃO, O., MARQUES, M.J., LIMA, M.J.N., TEIXEIRA, A.L.J., "Compensation of Polarization Mode Dispersion with Low-Coherence Interferometry", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.
9. CORREIA GONÇALVES, L., FRAZÃO, O., JORGE, P., BAPTISTA, J.M., SANTOS, J.L., "Differential interferometric sensing system with digital control for high sensitivity measurement of strain and temperature", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.
10. OLIVEIRA, C., VARELA, D., FERNANDES, J.R., "ESTUDO DAS PROPRIEDADES ELÉCTRICAS DE FILMES FINOS DE PZT 50/50 DEPOSITADOS POR ABLAÇÃO LASER", Física 2010 - Física 2010 2010, Vila Real, Portugal.
11. TILLAK, J., JORGE, P., WÓJCIK, I.B., ÁGUAS, H., BARATA, D., OLIVA, A.G., "Evaluation of different strategies for single cell refractometry in microfluidic chips", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.
12. TAFULO, P.A., FRAZÃO, O., JORGE, P., SANTOS, J.L., ARAÚJO, F., "Fabrication of optical fiber microcavities by chemical etching for sensing applications", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.
13. QUEIRÓS, R.B., OLIVEIRA SILVA, S., FRAZÃO, O., NORONHA, J.P., MARQUES, P.V., SALES, M.G., "Fibre Optic Fabry-Pérot Biosensor for detection of Microcystin-LR", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.
14. JESUS GOUVEIA, C., FRAZÃO, O., JORGE, P., BAPTISTA, J.M., "Fibre optics refractometer based in Bragg grating Fabry-Perot cavity", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.
15. RODRIGUES, V., JORGE, P., FERREIRA, J., MARQUES, M.J., GOMES, L., "Instrumentação Virtual para Aplicações de Espectroscopia no Domínio das Frequências", Física 2010 - Física 2010 2010, Vila Real, Portugal.
16. ALEXANDRE, D., FERNANDES, L.A., MARQUES, P., GHASEMPOUR, A., "Laser Direct Writing Unit for Rapid Prototyping of Integrated Optical Micro Devices", RPD2010 - RPD 2010 - 'Industrial Knowledge for Innovation' 2010, Marinha Grande, Portugal.
17. CARVALHO, J.P., COELHO, L.C., FRAZÃO, O., SANTOS, J.L., "Long Period Gratings Dynamic Electrical Interrogation Scheme", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.
18. RIBEIRO, A.R., GOUVEIA, C.A., JORGE, P., "LPG Michelson Fiber Interferometer for Acetic Acid Measurement", Física 2010 - Física 2010 2010, Vila Real, Portugal.
19. TAFULO, P.A., FRAZÃO, O., JORGE, P., ARAÚJO, F., "Modificação de fibras ópticas por ataque químico para aplicações sensoras", Física 2010 - Física 2010 2010, Vila Real, Portugal.

20. AZEVEDO, J., MESQUITA COELHO, J., HUSSAIN, N., "NIR Lasing transition ($4F3/2 \rightarrow 4I11/2$) at 1.06 μm in Nd³⁺-doped Tellurite Glass", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.
21. AZEVEDO, J., MESQUITA COELHO, J., HUNGERFORD, G., HUSSAIN, N., "NIR Luminescence and decay measurements of Er³⁺ doped Tellurite glasses for high gain amplification", Física 2010 - Física 2010 2010, Vila Real, Portugal.
22. OLIVEIRA SILVA, S., FRAZÃO, O., FERREIRA, L.A., ARAÚJO, F., MALCATA, F.X., SANTOS, J.L., "Refractive Index Fiber Optic Sensor Based on Multimode Interference", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.
23. FREITAS, N., FRAZÃO, O., BAPTISTA, J.M., SANTOS, J.L., "Sensor de Pressão com uma Fibra Hetero-core", Física 2010 - Física 2010 2010, Vila Real, Portugal.
24. SILVA, R.M., FRAZÃO, O., "Sensor de torção Interferométrico baseado numa fibra com dois núcleos suspensos", Física 2010 - Física 2010 2010, Vila Real, Portugal.
25. QUEIRÓS, R.B., SILVA, S.O., FRAZÃO, O., NORONHA, J.P., MARQUES, P.V., SALES, M.G., "Sensor em Fibra Óptica para Detecção de Microcystin-LR", Física 2010 - Física 2010 2010, Vila Real, Portugal.
26. AMARAL, L., PEREIRA, D.A., FRAZÃO, O., MARQUES, M.J., LIMA, M.J.N., TEIXEIRA, A.L.J., "Sistema de Detecção e Compensação de PMD Baseado em Interferometria de Baixa Coerência", Física 2010 - Física 2010 2010, Vila Real, Portugal.
27. SILVA, R.M., FRAZÃO, O., KOBELKE, J., SCHUSTER, K., "Temperature Independent Torsion Sensor using a fibre loop mirror based on a Suspended Twin-core Fibre", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.
28. MARQUES, M.J., "The laser turns fifty: no middle-age crisis", SEON 2010 - Symposium on Enabling Optical Networks and Sensors 2010, Porto, Portugal.

E.8. Theses (concluded by members of the Unit)

Phd theses:

1. VIEGAS, D., "Sensing Devices Based in Micro-Optics Technology ", December 2010.
2. LEITNER, M., "White light interferometry applications in high resolution sensing and biomedical imaging", July 2010.
3. KHORDONI, A., "Guided Optics for Astronomical Interferometry ", 2010, PhD.
4. VIEGAS, J., "Integrated Optical Sensors ", 2010, PhD.
5. PEREIRA, D., "Optical Fiber Bragg Grating Technology, Fundamentals and Applications ", 2010, PhD.

F) LIST OF PROJECTS

Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
			Source	Programme	Project Typology	Type	Role INESCP	Start	Satus 2009-12
Optic-Algae	José Manuel Baptista	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2007-06	FIN
Biopelvic	Luís Alberto Ferreira	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2007-07	FIN
Nanocrystalline	Paulo Vicente Marques	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2008-01	CONT
Oreo2	Paulo Vicente Marques	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PAR	2008-01	FIN
Motion	Orlando Frazão	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2007-11	FIN
Endurance	Francisco Araújo	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2008-03	FIN
SenRONS	Pedro Jorge	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PAR	2008-01	CONT
Bioswim	Miguel Velhote Correia	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PAR	2008-04	CONT
Biomotion	Miguel Velhote Correia	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PROP	2008-04	CONT
Hybrid	Pedro Jorge	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2010-03	START
Microphyte	José Luís Santos	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2010-01	START
SmartCoat	Orlando Frazão	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PAR	2010-05	START
SensEFil	Orlando Frazão	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PAR	2010-04	START
MCP	Nandyala Hussain	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-04	START
Multiferroicos	Javier Cruz	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PAR	2010-06	START
FIBDOSE	Carla Carmelo Rosa	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-06	START
CostActions	José Luís Santos	O	PROG - EU	COST		EU	PROP	2008-01	CONT
Memimetria	Carla Carmelo Rosa	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2008-10	FIN
CFC	Javier Cruz	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-06	CONT
Mobiles-2	Ireneu Dias	RES	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-05	CONT
Fibersensing	José Luís Santos	DEV	SERV - NAT			IND	CONT	2009-01	CONT
E-Textil	Gerardo Aguilar	DEV	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-05	FIN
SensKanoë	Orlando Frazão	DEV	SERV - NAT	POFC / POR	NUCLEO I&DT	IND	SUB	2009-09	CONT
SensingVed	Sérgio Mendonça	DEV	SERV - NAT			NAT	CONT	2010-02	FIN
WaveTune	Pedro Jorge	TT	SERV - NAT	POFC / POR	PROJ INDIV	IND	SUB	2010-03	START
TECCON	Pedro Jorge	DEV	SERV - INT			O	CONT	2010-05	START
Coop-Transnacional	José Luís Santos	O	ORD	COOP TRANSN		EU	PROP	2010-01	START
ProjPluridiscipl	Paulo Vicente Marques	RES	ORD	PROJ PLURI		NAT	PROP	2010-01	FIN
MicroNanoCarolina	Pedro Jorge	NET	ORD	FLAD		INT	PAR	2010-09	START
EWOF2010	José Luís Santos	CONF	O			INT	PROP	2009-01	FIN

Dominant Activity Type:

RES – Research
 DEV – Development
 CONS - Consulting
 TT - Technology Transfer
 NET - Network
 CONF - Conference
 TRAIN - Advanced Training
 INC - Incubation
 O - Other

Source:

PROG – NAT – National Programmes
 PROG – EU – European Union Programmes
 SERV - NAT - Supply of Services - national
 SERV - EU - Supply of Services - European Union
 SERV - INT - Supply of Services - International
 ORD Other R&D Services
 O - Other External Services
 INT - Internal

Type:

IND – Individual Project
 NAT - National Cooperation
 EU - European Union Cooperation
 (EU+Associated Countries)
 INT - Internal Cooperation

Role INESC:

PROP - Proponent
 PAR - Partner
 CONT - Prime Contractor
 SUB - Subcontractor
 MEMB - Membre
 O - Other

G) LIST OF PATENTS

National Provisional Patent Application

Remote interrogation system with optical source coupled to the sensing head, Orlando José dos Reis Frazão, Luís Carlos Costa Coelho, Joel Pedro Peixoto de Carvalho, Diana Catarino das Neves Viegas

H) LIST OF PROTOTYPES

- Novel photonic band gap optical fiber structures design and implementation
- Optical tweezing
- Laser direct writing with femtosecond pulses
- Demonstration of optical coherence tomography for non-destructive testing for industrial quality control
- Preparation of key layers of photovoltaic cells through RF sputtering for concentrated photovoltaic systems
- Cyanobacteria detection in water for consumption

I) LIST OF THESES CONCLUDED IN 2010, SUPERVISED BY MEMBERS OF THE UNIT

I.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title
Askari Khordoni	DFA-FCUP	Paulo Marques	INESC Porto/D FA-FCUP	Guided Optics for Astronomical Interferometry
Diana Catarino das Neves Viegas	DFA-FCUP	José Luís Santos	INESC Porto/D FA-FCUP	Sensing Devices Based on Micro-Optic Technology
Dionísio Cerqueira Alves Pereira	DFA-FCUP	Manuel Joaquim B Marques	INESC Porto/D FA-FCUP	Optical Fiber Bragg Grating Technology, Fundamentals and Applications
Jaime Pinto Ribeiro Viegas	DFA-FCUP	Paulo Vicente da Silva Marques	INESC Porto/D FA-FCUP	Integrated Optical Sensors
Michael Leitner	DFA-FCUP	Carla Rosa	INESC Porto/D FA-FCUP	White light interferometry applications in high resolution sensing and biomedical imaging
1	2	3	4	5

- 1 – Name of the post-graduation student
 2 – Institution where the thesis is submitted; if the host institution for the student is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester
 3 – Name of supervisor or supervisors
 4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid
 5 – Title of the thesis

I.2. MSC Dissertations

Author	Instit.	Supervisor	Instit.	Title
Joaquim Pedro Correia Pacheco	(FEUP)	Miguel Velhote Correia	INESC Porto/FEUP	Signal processing and analysis for a swimming suit
Miguel Tiago de Carvalho Cardoso de Meneses	(FEUP)	Miguel Velhote Correia	INESC Porto/FEUP	Smart camera traceability and interface control unit
Pedro Trigueiros de Sousa Pereira	(FEUP)	Miguel Velhote Correia	INESC Porto/FEUP	Analysis and Characterisation of Masonry Walls
Leonardo Correia Gonçalves	Univ. da Madeira	José Manuel Baptista	Univ. da Madeira /INESC Porto	Strain and temperature measurements differential interferometric configuration
Luís Miguel Martins Guerra	DFA-FCUP	Paulo Vicente da Silva Marques	INESC Porto/DFA-FCUP	Dynamic holographic optical tweezers
Mara Alexandra Oliveira Silva	DFA-FCUP	José Luís Santos	INESC Porto/DFA-FCUP	Optical fiber sensor for carbon dioxide monitoring
Miguel Noronha da Canhota	DFA-FCUP	Paulo Vicente da Silva Marques	INESC Porto/DFA-FCUP	Modulators in integrated optics
Nelson Manuel Brito Costa Pereira	DCC-FCUP	Serge Mendonça	INESC Porto/DFA-FCUP	Electric Fence Fault Detection and Location
Norberto Bruno Serrão Freitas	Univ. da Madeira	José Manuel Baptista	Univ. da Madeira /INESC Porto	Optical fiber pressure sensors to the study of water percolation in soils
Catarina Fraga Barcelos Paulus Bruno	(Univ. da Madeira)	José Manuel Baptista	Univ. da Madeira /INESC Porto	Project and design of FTTx networks
1	2	3	4	5

- 1 – Name of the post-graduation student
 2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester
 3 – Name of supervisor or supervisors
 4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid
 5 – Title of the thesis

J) LIST OF THESES UNDER SUPERVISION

J.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Yonny Ramaguera Barcelay	(DFA-FCUP)	Javier	INESC Porto	Multiferroic thin films: Preparation, characterization and technological applications	2011
Carolina Júlia Félix Vila-Chã	(FEUP)	Miguel Velhote Correia	INESC Porto/FEUP	Electrophysiological assessment of neuromuscular adaptations to training	2011
Maria João Medeiros de Vasconcelos	(FEUP)	João Tavares	INEGI/FEUP	Modelling Shape and Motion of Objects in Image Sequences: Applications in Biomechanics of the Human Body	2011
Raquel Ramos Pinho	(FEUP)	João Tavares	INEGI/FEUP	Motion Analysis Using Computer Vision	2011
Cesar David Maule	DFA-FCUP	Carla Rosa	INESC Porto/DFA-FCUP	Development of Optical Platforms for Biosensing With Luminescent Nanoparticles	2011
Clenilson Rodrigues Silveira	U. F. Pará	Pedro Jorge	INESC Porto	Optical fiber sensors	2011
Daniel Moreira Lopes Alexandre	DFA-FCUP	Paulo Vicente da Silva Marques	INESC Porto/DFA-FCUP	Integrated optical devices by direct writing in hybrid sol-gel	2011
Joel Pedro Peixoto de Carvalho	DFA-FCUP	José Luís Santos	INESC Porto/DFA-FCUP	Distributed and multipoint interrogation of optical fiber sensors	2011
Luís André Neves Paiva Fernandes	DFA-FCUP	Paulo Vicente da Silva Marques	INESC Porto/DFA-FCUP	Fabrication of optical devices using ultrafast laser pulses.	2011
Paulo Sérgio de Amorim Caldas	DFA-FCUP	José Luís Santos	INESC Porto/DFA-FCUP	Fiber Optic Sensing by Evanescent Field Interaction	2011
Raquel Barbosa Queirós	DFA-FCUP	Maria Goreti Sales	ISEP-IPP	Chemical detection of bacteria in water	2011
Sanderson Emanuel Uchoa Lima	DFA-FCUP	José Luís Santos	INESC Porto/DFA-FCUP	Detection and Fault Location in Power Transformers Using Optical Fiber Sensors Technology and Advanced Signal Processing	2011
Teresa Trachete Carvalho	(UTAD)	José Ramiro Fernandes	UTAD	Multiferroic materials	2011
Carlos Manuel Barbosa Rodrigues	(FEUP)	Miguel Velhote Correia	INESC Porto/FEUP	Integration of Biometric Signals for Neuromuscular Assessment in Human Lower Limb Locomotion System	2012
Fernando Miguel Dias Oliveira	(FEUP)	Miguel Velhote Correia	INESC Porto/FEUP	Effect of plantar orthoses on walk cycle	2012
António José Salazar Escobar	FEUP	Miguel Velhote Correia	INESC Porto/FEUP	Wireless electronic interface for wearable monitoring system	2012
Filipe Tiago Alves de Magalhães	FEUP	Miguel Velhote Correia	INESC Porto/FEUP	Structured light and digital image processing techniques applied to surface metrology	2012
Mohamad Zibaii	DFA-FCUP	Pedro Jorge	INESC Porto	Electrical current optical fiber sensors	2012
Miguel Melo	(DFA-FCUP)	Paulo Marques	INESC Porto/DFA-FCUP	Nonlinear effects in optical fiber power amplifiers	2012

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Felismina Coelho Moreira	(FCT-UNL)	Gerardo Aguilar	INESC Porto	Biological sensors	2012
Carla Mariana Borges da Silva	(FEUP)	Miguel Velhote Correia	INESC Porto/FEUP	Swimming characterization through wearable monitoring system	2013
Daniel Monteiro Basso	(FEUP)	Miguel Velhote Correia	INESC Porto/FEUP	Recognition of Biological Motion by a Neurons-Mirror System	2013
Hugo Daniel Rodrigues Gonçalves	(FEUP)	Miguel Velhote Correia	INESC Porto/FEUP	Bio-inspired Neuromorphic Systems for Computational Vision	2013
Ana Sofia Matos Silva	FEUP	Miguel Velhote Correia	INESC Porto/FEUP	Wearable sensors systems for human motion analysis	2013
Carlos Jesus Gouveia	DFA-FCUP	José Manuel Baptista	UMadeira/INESC Porto	Fiber Optics Sensors for Environmental Monitoring	2013
Hamed Moayyed	DFA-FCUP	José Luís Santos	INESC Porto/DFA-FCUP	Study of New SPR Fiber Based Sensing Systems	2013
Thiago Nogueira Coelho	U. F. Pará	Ariel Guerreiro	INESC Porto/DFA-FCUP	Optical fiber sensors	2013
Maria Raquel Vaz Martins	DFA-FCUP	Gaspar Rego	INESC Porto/IPVC	Study of optical fiber sensors for high temperature and environmental applications	2014
Susana Oliveira Silva	DFA-FCUP	Pedro Jorge	INESC Porto	Optical Fiber Sensors	2014
1	2	3	4	5	6

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title or topic of the thesis

6 – Predicted year of conclusion and delivery – will be taken in account in summary tables

J.2. Other

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date	Type
Paulo Alcino	(DFA-FCUP)	Ariel Guerreiro	INESC Porto/DFA-FCUP	Quantum properties of electromagnetic field in media with space-time structure	2011	MSc
Hugo Fidalgo Martins	DFA-FCUP	Orlando Frazão	INESC Porto	Study of applications of Rayleigh scattering in cooperation with non-linear effects for applications in optical fiber sensors	2011	MSc
Ivo Maciel Nascimento	Univ. da Madeira	José Manuel Baptista	UMadeira/INESC Porto	Modal interferometers for sensing applications	2011	MSc
José Filipe Caetano Mendonça	(Univ. da Madeira)	José Manuel Baptista	UMadeira/INESC Porto	Control and automation of a metrology process using virtual instrumentation	2011	MSc
Luís Figueira de Ornelas	(Univ. da Madeira)	José Manuel Baptista	UMadeira/INESC Porto	Optical fiber intensity sensors multiplexing using a time domain reflectometer	2011	MSc
1	2	3	4	5	6	7

- 1 – Name of the post-graduation student
- 2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester
- 3 – Name of supervisor or supervisors
- 4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid
- 5 – Title or topic of the work
- 6 – Predicted year of conclusion and delivery – will be taken in account in summary tables
- 7 – Type of work (MSc thesis, post-graduation dissertation, etc.)



MANUFACTURING SYSTEMS ENGINEERING

A) SUMMARY OF PUBLICATIONS

Summary of publications by members of the Unit in 2010

Type of publication	Number
Papers in International Journals with scientific referees	9
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	21
Books (author)	
Chapter/paper in books	1
Publications (editor)	
Other publications (National meetings, local journals, etc.)	1
Theses concluded in 2010 by members of the Unit	6
TOTAL	38

Journal	Number
Computational Optimization and Applications	2
Journal of Heuristics	2
International Journal of Production Research	1
TOP	1
Annals of Operations Research	1
European Journal of Operational Research	1
International Journal of Services and Operations Management	1
TOTAL	9

B) SUMMARY OF PROJECTS

Source of Funding	Year				Variation 2009 - 2010
	2007	2008	2009	2010	
National Programmes	393	261	77	221	187%
European Union Programmes	521	246	425	557	31%
R&D Services and Consulting	270	286	472	651	38%
Other R&D sources					
Other external sources			2		-100%
Total	1.185	793	976	1.429	46%

Number of Projects and income derived for Groups or Units in 2010

Project Typology		Number of Projects	Projects Income
Source of Funding	National Programmes - FCT	6	72
	National Programmes - QREN	6	149
	European Union Programmes - I&D	6	525
	European Union Programmes - Diversos	1	32
	R&D Services and Consulting - National	19	634
	R&D Services and Consulting - European Union	1	17
	R&D Services and Consulting - International		
	Other R&D sources		
	Other external sources		
	Internal		
Dominant Activity Type	Basic Research	15	690
	Applied Research and Development	7	333
	Consulting	17	406
	Technology Transfer		
	Network		
	Conference		
	Advanced Training		
	Incubation		
	Other		
Execution Status	Started	7	250
	Continuation	14	864
	Finished	18	315
Total		17	406

C) SUMMARY OF POST-GRADUATION ACTIVITIES

Summary of theses supervised by members of the Unit in 2010

Tipo	Starting	On-going	Concluded	Total
Master	15		34	49
Doctoral	11	18	1	30
TOTAL	26	18	35	79

D) SUMMARY OF ACTIVITIES OF COOPERATION OR DISSEMINATION

Summary of Cooperation and dissemination actions

Type	Number
Conferences with INESC Porto in the organization (in the organizing committee or chairing technical committees)	5
Nº. of External co-authors of Publications of INESC Porto	20

E) LIST OF PUBLICATIONS

E.1. International Journals with scientific referees

1. ALMADA LOBO, B., KLABJAN, D., CARRAVILLA, M.A., OLIVEIRA, J.F., "Multiple Machine Continuous Setup Lotsizing with Sequence-dependent Setups" 2010, Computational Optimization and Applications, vol.47, p.529-552.
2. CLARO, J., PINHO DE SOUSA, J., "A multiobjective metaheuristic for a mean-risk static stochastic knapsack problem ", Computational Optimization and Applications, July 2010, vol. 46, no.3, p. 427-450.
3. CLARO, J., PINHO DE SOUSA, J., "A multiobjective metaheuristic for a mean-risk multistage capacity investment problem", Journal of Heuristics, February 2010, vol. 16, no. 1, p. 85-115.
4. CRISPIM, J.A., PINHO DE SOUSA, J., "Partner selection in virtual enterprises", International Journal of Production Research, February 2010, vol. 48, no. 3, p. 683-707.
5. OLIVEIRA, J.F., "Comments on: Routing problems with loading constraints " 2010, TOP, vol. 18, p.31-33.
6. PARREÑO, F., ALVAREZ-VALDES, R., OLIVEIRA, J.F., TAMARIT, J., "A hybrid GRASP/VND algorithm for two- and three-dimensional bin packing", Annals of Operations Research 2010, vol. 179, p.203-220.
7. PARREÑO, F., ALVAREZ-VALDES, R., OLIVEIRA, J.F., TAMARIT, J., "Neighborhood structures for the container loading problem: a VNS implementation", Journal of Heuristics 2010, vol. 16, p.1-22.
8. PEDROSO, J.P., KUBO, M., "Heuristics and Exact Methods for Number Partitioning", European Journal of Operational Research, April 2010, vol.202, no.1, p.73-81.
9. SIMÕES, D., FERREIRA, H., SOARES, A.L., "Managing multiple ontologies in a virtual breeding environment context", International Journal of Services and Operations Management, 2010 Vol. 6, No.3 pp. 230 – 256.

E.2. National Journals with scientific referees

(void)

E.3. Conference Proceedings with scientific referees (international or national)

1. AZEVEDO, A., ALMEIDA, A.H., "The development of factory templates for the integrated virtual factory", in proceedings of FAIM 2010 - Flexible Automation and Intelligent Manufacturing, July 2010, East Bay - Oakland, U.S.A.
2. CARNEIRO, L., ALMEIDA, R.J., AZEVEDO, A., KANKANPAA, T., SHAMSUZZOHA, A., "An Innovative framework supporting business networks for complex product manufacturing", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on VIRTUAL ENTERPRISES, October 2010, Saint-Etienne, France.
3. CARNEIRO, L.C., SOUSA, C., SOARES, A.L., "Integration of domain and social ontologies in a CMS based collaborative platform", Proceedings of OnToContent 2010 - The 6th International Workshop on Ontology Content (OnToContent 2010) 2010, Creta, Grécia.
4. CASTRO, P., OLIVEIRA, J.F., "A New MILP Model for the 2D Strip Packing Problem", in proceedings of 2010 AIChE Annual Meeting, November 2010, Salt Lake City, USA.
5. GOMES, R.J., PINHO DE SOUSA, J., GALVÃO, T., "A new heuristic approach for demand responsive transportation systems", Proceedings XLII Simpósio Brasileiro de Pesquisa Operacional, September 2010, Bento Gonçalves, RS, Brasil.

6. KANKAANPAA, T., SHAMSUZZOHA, A., CARNEIRO, L., ALMEIDA, R., HELO, P., FORNASIERO, R., FERREIRA, P.S., CHIODI, A., "Methodology for non-hierarchical collaboration networks for complex products manufacturing", in proceedings ICE 2010 - 16th International Conference on Concurrent Enterprising Lugano, June 2010, Lugano, Switzerland.
7. OLIVEIRA, J.F., CARRAVILLA, M.A., CARQUEJA, A., "A Tree-search Algorithm for the Two-dimensional Rectangular Strip Packing Problem", in proceedings of ALIO-INFORMS 2010 International Meeting, June 2010, Buenos Aires, Argentina.
8. PEDROSO, J.P., "Metaheuristics for the asymmetric hamiltonian path problem", 7th International Conf. on Numerical Methods and Applications, August 2010, Borovets, Bulgaria.
9. PEREIRA, C., SOUSA, C., SOARES, A.L., "Building an informal ontology to support collaborative network operation: a case study", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on Virtual Enterprises, October 2010, Saint-Etienne, France.
10. PIEDADE, F.R., AZEVEDO, A., BASTOS, J., "Managing Performance to Align the Participants of Collaborative Networks: Case Studies Results", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on Virtual Enterprises, October 2010, Saint-Etienne, France.
11. AZEVEDO, A., PIEDADE, F.R., BASTOS, J., ALMEIDA, A., "Virtual Factory Framework: An Innovative Approach to Support the Planning and Optimization of the Next Generation Factories", Proceedings of IFAC MCPL 2010 September 8 -10, Coimbra – Portugal, 2010.
12. BARROSO, I.S.S., CARRAVILLA, M.A., "Beyond classroom boundaries: How Higher Education Institutions Apply Lean.", in proceedings of Simpósio Brasileiro de Ciência de Serviços, 2010, Brasília, Brazil.
13. OLIVEIRA, C., PINHO DE SOUSA, J., BOK, M., "Strategies for locating charge points for electrical car batteries in urban regions", CITTA 3rd Annual Conference on Planning Research, May 2010, FEUP, Porto, Portugal.
14. PEDROSO, J.P., SMEERS, Y., "Equilibria on a Game with Discrete Variables", in proceedings of CIE 2010 - Computability in Europe 2010, June 2010, Ponta Delgada, Portugal.
15. PIEDADE, F.R., BASTOS, J., AZEVEDO, A., "Using the Life-Cycle Paradigm to Support Factory Planning Approaches" Proceedings of BASYS 2010 - 9TH IFIP International Conference On Information Technology For Balanced Automation Systems, July 2010, VALENCIA, SPAIN
16. ROCHA, L.F., MOREIRA, A.P., AZEVEDO, A., "Flexible Internal Logistics based on AGV systems: A case Study", Proceedings of IFAC MCPL 2010 September 8 -10, Coimbra- Portugal, 2010.
17. SHAMSUZZOHA, A., KANKAANPAA, T., HELO, P., CARNEIRO, L., ALMEIDA, R.J., FORNASIERO, R., "Non-hierarchical collaboration in dynamic Business Communities", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on Virtual Enterprises, October 2010, Saint-Etienne, France.
18. PINTO FERREIRA, R., SOARES, A.L., "A collaborative decision support method to design performance evaluation systems in collaborative networks of organizations", Proceedings of PRO-VE'10 - 11th IFIP Working Conference on Virtual Enterprises, October 2010, Saint-Etienne, France.
19. PRATA, B., PINHO DE SOUSA, J., GALVÃO, T., "Uma nova abordagem para o problema de programação integrada de veículos e motoristas", Proceedings XLII Simpósio Brasileiro de Pesquisa Operacional, September 2010, Bento Gonçalves, RS, Brasil.
20. SÁ, C.M., PEREIRA, C., SOARES, A.L., "Supporting collaborative conceptualization tasks through a semantic wiki based platform", Proceedings of OnToContent 2010 - The 6th International Workshop on Ontology Content (OnToContent 2010) 2010, Creta, Grécia.
21. SHAMSUZZOHA, A., KANKAANPÄÄ, T., CARNEIRO, L., HELO, P., "Implementation Framework for Collaboration in a Non-Hierarchical Business Network", December 2010, Macau, China.

E.4. Books (Author)

(void)

E.5. Chapter/paper in Books

1. ALMEIDA, R., AZEVEDO, A., "The Needed Adaptability for ERP Systems" chapter 13 of Enterprise Information Systems Design, Implementation and Management: Organizational Applications, Maria Manuela Cruz-Cunha and Joao Varajao, editors, Business Science Reference (an imprint of IGI Global), pp. 197-210, 2010.

E.6. Publications (Editor)

(void)

E.7. Other Publications

1. ROCHA, L.F., MOREIRA, A.P., AZEVEDO, A., "Increase of flexibility and production rate by an AGV system: A case study", Proceedings of Controlo 2010 – 9th Portuguese Conference on Automatic Control, September 2010, Coimbra, Portugal.

E.8. Theses (concluded by members of the Unit)

Phd theses:

1. PEREIRA, C., "A organização da informação e conhecimento em redes colaborativas como um processo de construção social do significado: uma teoria e um método prático", May 2010, PhD Thesis.

MSc theses:

2. ALMEIDA, A.H., "The Development of Factory Templates for the Integrated Virtual Factory Framework ", July 2010, MSc Thesis.
3. CARNEIRO, L.C., "Semantic integration of Social and Domain Knowledge in a Collaborative Network Platform" 2010, MSc Thesis.
4. RAMALHO, F., "Análise Conceptual do Domínio: Enterprise Content Management" [Conceptual Analysis of the Domain: Enterprise Content Management], July 2010, MSc Thesis.
5. SÁ, C.M., "Collaborative conceptual modelling through a Semantic Wiki" 2010, MSc Thesis.
6. RODRIGUES, J.A., "Organização e Gestão de Materiais em Empresa de Fabrico de Estofos", July 2010, MSc Thesis.

F) LIST OF PROJECTS

Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
			Source	Programme	Project Typology	Type	Role INESCP	Start	Status 2009-12
PMCOLNET	António Lucas Soares	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2007-10	FIN
Crome	José Soeiro Ferreira	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2007-11	FIN
Cogninet	António Lucas Soares	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-03	START
Coordinator	Ana Viana	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-06	START
EaGLEst	António Miguel Gomes	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-04	START
NODES	João Claro	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-04	FIN
SIBAP	Rui Diogo Rebelo	RES	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-11	CONT
Agilplan	Rui Diogo Rebelo	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2008-09	FIN
Dinamic	António Correia Alves	DEV	PROG - EU	INTERREG		EU	PAR	2009-01	CONT
Minerva	Paula Silva	RES	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-02	CONT
Fadis-1	Luís Carneiro	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-07	CONT
Shoe-ID	Rui Diogo Rebelo	RES	PROG - NAT	POR Norte	PROJ CO-PROM	NAT	PAR	2009-10	CONT
REMobi	Jorge Pinho de Sousa	RES	PROG - NAT	POFC / POR		NAT	PAR	2009-04	CONT
AC-DC	Jorge Pinho de Sousa	RES	PROG - EU	FP6		EU	PAR	2006-10	FIN
H-Know	António Lucas Soares	DEV	PROG - EU	FP7		EU	PAR	2009-01	CONT
Net-Challenge	Luís Carneiro	RES	PROG - EU	FP7		EU	PROP	2009-06	CONT
VFF	Américo Azevedo	RES	PROG - EU	FP7		EU	PAR	2009-09	CONT
Fit4U	Rui Diogo Rebelo	RES	PROG - EU	FP7		EU	PAR	2009-07	CONT
CORENET	Américo Azevedo	RES	PROG - EU	FP7		EU	PAR	2010-06	START
IzaroGrey	António Correia Alves	DEV	SERV - UE			IND	CONT	2007-01	CONT
MIBPET-Inovultus	Luís Guardão	DEV	SERV - NAT	POFC / POR	PROJ INDIV	IND	SUB	2009-02	CONT
ParqueEscolar	Luís Guardão	DEV	SERV - NAT			IND	CONT	2009-11	CONT
Auto-Ebiz	César Toscano	CONS	SERV - NAT			EU	CONT	2010-01	START
Lucios	António Correia Alves	CONS	SERV - NAT			IND	CONT	2010-01	START
Sopsec	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-02	FIN
Sosoares	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-02	FIN
Metalfer	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-02	FIN
Oxisol	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2008-11	FIN
PHCNorte	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-05	FIN

Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
			Source	Programme	Project Typology	Type	Role INESCP	Start	Status 2009-12
ANARIC2	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-12	FIN
ConfMirene	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-12	FIN
3M2P	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-10	FIN
Waldemar	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-09	FIN
SantosCamiseiros	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-11	FIN
P&R-II	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2010-04	FIN
SCIDT	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2010-04	FIN
CASTOR-IP	António Correia Alves	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2010-05	FIN
PadinhoXXI	António Correia Alves	CONS	SERV - NAT	POFC / POR	PROJ INDIV	IND	SUB	2010-11	START
Consultoria	Luís Carneiro	CONS	SERV - NAT			IND	CONT	2009-01	CONT

Dominant Activity Type:

RES – Research
 DEV – Development
 CONS - Consulting
 TT - Technology Transfer
 NET - Network
 CONF - Conference
 TRAIN - Advanced Training
 INC - Incubation
 O - Other

Source:

PROG – NAT – National Programmes
 PROG – EU – European Union Programmes
 SERV - NAT - Supply of Services - national
 SERV - EU - Supply of Services - European Union
 SERV - INT - Supply of Services - International
 ORD Other R&D Services
 O - Other External Services
 INT - Internal

Type:

IND – Individual Project
 NAT - National Cooperation
 EU - European Union Cooperation (EU+Associated Countries)
 INT - Internal Cooperation

Role INESCP:

PROP - Proponent
 PAR - Partner
 CONT - Prime Contractor
 SUB - Subcontractor
 MEMB - Membre
 O - Other

G) LIST OF PATENTS
Name: Distribution and temporary storage system of transport units

Developed under (Project Name): Ciclop

Demo Place: Lirel

Type (National or International): International

Approval Date: 26-05-2010

Name: Modular multi-ring system for flexible supply of workstation

Developed under (Project Name): CEC-Made-Shoe

Demo Place: Kyaia

Type (National or International): National

Approval Date: 15-12-2010

H) LIST OF PROTOTYPES

Name: A system for reliable exchange of business documents in the automotive industry

Developed under (Project Name): Autograti9n

Demo Place: INESC Porto

Development Period: 2010

Name: Platform for the creation and management of Business Communities – first version

Developed under (Project Name): Net-Challenge

Demo Place: INESC Porto

Development Period: 2009-2010

Name: Methods and tools for benefit balancing in automotive supply chains

Developed under (Project Name): AC/DC

Demo Place: Continental AG

Development Period: 2008-2009

Name: An agile optimization planning system for footwear producing SMEs – final prototype

Developed under (Project Name): AGILPLAN

Demo Place: Oficina de Soluções

Development Period: 2009-2010

Name: A multi-objective optimization system for production scheduling –updated version enhanced with new functionality

Developed under (Project Name): Izaro Grey

Demo Place: INESC Porto, Softi9

Development Period: 2007-2010

Name: A system for the management of standard technical processes in the construction industry at national level (improved version)

Developed under (Project Name): Parque Escolar

Demo Place: Parque Escolar

Development Period: 2009-2010

Name: Performance management with automated shop floor data collection

Developed under (Project Name): MIB-PET

Demo Place: Inovultus

Development Period: 2009-2010

I) LIST OF THESES CONCLUDED IN 2010, SUPERVISED BY MEMBERS OF THE UNIT

I.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title
Carla Pereira	INESC Porto	António Lucas Soares		A organização da informação e conhecimento em redes colaborativas como um processo de construção social do significado: uma teoria e um método prático
1	2	3	4	5

1 – Name of the post-graduation student

2 – Institution where the thesis is submitted; if the host institution for the student is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title of the thesis

I.2. MSC Dissertations

Author	Instit.	Supervisor	Instit.	Title
Afonso Manuel Silva Antunes Moreira	FEUP	José Fernando Oliveira	INESC Porto/FEUP	Redimensionamento dos sectores de colecta na Leão Ambiental
Ana Isabel Rocha Marques	FEUP	Américo Azevedo	INESC Porto/FEUP	Optimização da Cadeia de Execução de Encomendas - Yves Rocher – Portugal, S.A.
António Henrique Mendes de Almeida	FEUP	Américo Azevedo	INESC Porto/FEUP	The Development of Factory Templates for the Integrated Virtual Factory Framework
Carlos Miguel Viana do Couto	FEUP	António Miguel Gomes	INESC Porto/FEUP	Implementação do Lean Manufacturing na Indústria Metalomecânica
Carlos Sá	FEUP	António Lucas Soares	INESC Porto/FEUP	Collaborative conceptual modelling through a Semantic Wiki
Daniel Valente de Sá França	FEUP	António Miguel Gomes	INESC Porto/FEUP	Optimização do Controlo de Stocks no Sistema de Informação da Bosch Car Multimédia Portugal Lda.
David Bruno dos Santos Besteiro	FEUP	Américo Azevedo	INESC Porto/FEUP	Análise de Modelação de Processos – Aplicação na Especificação de um Sistema de Execução Fabril
Fábio Jorge Fontes Teixeira	FEUP	Américo Azevedo	INESC Porto/FEUP	Redesenho e Optimização de Armazém
Filipa Ramalho	FEUP	António Lucas Soares	INESC Porto/FEUP	Análise conceptual do domínio “Enterprise Content Management”
Inês Dias de Carvalho	FEUP	M Antónia Carravilla	INESC Porto/FEUP	Inventory Ruptures of Continente Online - Sonae MC - Finding the Causes and the Solutions
Ivone de Oliveira Silva	FEUP	António Miguel Gomes	INESC Porto/FEUP	Implementação de software para a gestão da qualidade na GE Power Controls, Portugal
João Alberto da Costa Miranda Rodrigues	FEUP	Américo Azevedo	INESC Porto/FEUP	Organização e Gestão de Materiais em Empresa de Fabrico de Estofos
João Carlos Archer Cunha Alegre	FEUP	Américo Azevedo	INESC Porto/FEUP	Performance Measurement on Automotive Assembly Line
Jorge Albuquerque	FEUP	António Lucas Soares	INESC Porto/FEUP	Estudo da viabilidade de Redes Sociais como prática colaborativa interna no Banco BPI
Jorge Espinoza Landivar	IST, UTL	Jorge Pinho de Sousa	INESC Porto/FEUP	Contributions for BRT network design in cities of developing countries
Luís Alberto Marques Anjos	FEUP	M Antónia Carravilla	INESC Porto/FEUP	A Costs Optimization Analysis on the World Food Programme Mombasa Corridor
Luís André Freitas da Rocha	FEUP	Américo Azevedo	INESC Porto/FEUP	Logística Flexível Baseada em AGVs
Luis Carlos Carneiro	FEUP	António Lucas Soares	INESC Porto/FEUP	Semantic integration of Social and Domain Knowledge in a Collaborative Network Platform
Luís Miguel Maciel da Silva Araújo Barros	FEUP	António Miguel Gomes	INESC Porto/FEUP	Estudo e Implementação de lean manufacturing em PMEs
Manuel Sérgio Pereira da Cunha	FEUP	Américo Azevedo	INESC Porto/FEUP	Balanced Scorecard para organizações de IDI – Investigação, Desenvolvimento e Inovação: o caso do INEGI
Marco Filipe Afonso Guedes	FEUP	Jorge Pinho de Sousa	INESC Porto/FEUP	PixelSeat – a simulação 3D como ferramenta ao suporte do desenvolvimento conceptual e à implementação de um negócio

Author	Instit.	Supervisor	Instit.	Title
Marco Tschan Carvalho	FEUP	Américo Azevedo	INESC Porto/FEUP	Projecto Lean - Amorim Revestimentos
Maria de Fátima Félix Ribeiro	FEUP	Américo Azevedo	INESC Porto/FEUP	Desenvolvimento do Balanced Scorecard para Instituições de I&D
Maria João Miranda Monteiro	FEUP	José Fernando Oliveira	INESC Porto/FEUP	Sistema de recolha de dados de produção e processo na Bial - Portela & Ca, S.A.
Maria Orlanda Fernandes Barbosa de Resende	FEUP	Américo Azevedo	INESC Porto/FEUP	Melhoria de Processos Hospitalares através de ferramentas Lean: Aplicação ao serviço de Imagiologia no Centro Hospitalar Entre Douro e Vouga
Maria Teresa Peixoto Braga Bianchi de Aguiar	FEUP	M Antónia Carravilla	INESC Porto/FEUP	Optimization Algorithms for the Mixed Urban-Rural Solid Waste Collection Problem
Micael de Almeida Chaves Seródio	FEUP	José Fernando Oliveira	INESC Porto/FEUP	Novo modelo logístico - implementação e visão do utilizador - Unidade Local de Saúde de Matosinhos, E.P.E.
Paulo Alexandre Rodrigues Martins	FEUP	Jorge Pinho de Sousa	INESC Porto/FEUP	Gestão da Capacidade nas Aplicações da Direcção de Sistemas de Informação da Sonae
Pedro Casais	FEUP	António Lucas Soares	INESC Porto/FEUP	Estratégias de gestão de conteúdos empresariais na SONAE Indústria.
Pedro Frazão Ferreira F. Pinheiro	FEUP	José Fernando Oliveira	INESC Porto/FEUP	Central de Esterilização HSJ
Pedro Miguel Magalhães Fumega dos Santos	FEUP	António Miguel Gomes	INESC Porto/FEUP	Consultoria Lean Manufacturing na XC Consultores, Lda.
Pedro Miguel Teixeira de Sousa	FEUP	M Antónia Carravilla	INESC Porto/FEUP	Layout de um armazém de stock
Samuel João Teixeira de Sousa	FEUP	António Miguel Gomes	INESC Porto/FEUP	Implementação de Células de Produção
Tiago Cardoso Rocha	FEUP	M Antónia Carravilla	INESC Porto/FEUP	Melhoria da eficiência Operacional da Cadeia de Abastecimento na Parfois
1	2	3	4	5

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title of the thesis

J) LIST OF THESES UNDER SUPERVISION

J.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Ana Cristina Correia Simões	FEUP	Américo Azevedo	INESC Porto/FEUP	Avaliação da criação de valor no modelo de gestão de centro hospitalar – proposta de quadro conceptual para alinhamento multiobjectivo e multi-perspectiva	2013
Ana Maria Rodrigues	FEUP	José Soeiro Ferreira	INESC Porto/FEUP	Combinatorial Optimization with Metaheuristics	2012
António Henrique Mendes de Almeida	FEUP	Américo Azevedo	INESC Porto/FEUP	Multi-perspective performance and risk estimation for complex manufacturing network environments	2013
António José Galvão Ramos	FEUP	Américo Azevedo	INESC Porto/FEUP	Risk Management Framework for Collaborative Business Processes Environments	2013
Bruno Prata	FEUP	Jorge Pinho de Sousa Teresa Galvão	INESC Porto/FEUP FEUP	Metaheurísticas multiobjectivo para o problema de planeamento integrado de horários de viaturas e motoristas	2011
Carla Oliveira	FEUP	Jorge Pinho de Sousa Michiel de Bok	INESC Porto/FEUP FEUP	Strategies for locating charge points for electrical car batteries in urban regions	2012
Cristovão Sousa	FEUP	António Lucas Soares	INESC Porto/FEUP	Semantics in large-scale/complex projects	2013

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Diana Ospina Lopez	FEUP	M. Antónia Carravilla José Fernando Oliveira	INESC Porto/FEUP	Development and application of an integrated supply chain planning methodology for the coffee industry.	2014
Edgar Jimenez	FEUP	Jorge Pinho de Sousa João Claro	INESC Porto/FEUP	Investment flexibility opportunities in airports and airport networks – a real options approach	2013
Fernando Cosme	FEUP	M. Antónia Carravilla Gabriel David	INESC Porto/FEUP	A Business Process Management (BPM) Framework for the Bus Transport Service Operations Process.	2012
João Augusto de Sousa Bastos	FEUP	Américo Azevedo	INESC Porto/FEUP	Dynamic supply networks: Models, Organizational Issues and Supporting Technologies	2012
Lia Oliveira	FEUP	Jorge Pinho de Sousa João Claro	INESC Porto/FEUP	Increasing flexibility and collaboration in the automotive supply chain network	2012
Manuel Fernando Silva	FEUP	Rute Costa António Lucas Soares	UNL INESC Porto/FEUP	Terminology contributions for the development and operation of semantic platforms supporting knowledge communities	2012
Manuela Azevedo	FEUP	Jorge Pinho de Sousa José Almeida Crispim	INESC Porto/FEUP INESC Porto/U Minho	Reconfiguration of facilities and supply networks for higher levels of flexibility	2013
Marisa Oliveira	FEUP	António Miguel Gomes Eduarda Pinto Ferreira	INESC Porto/FEUP INESC Porto/IPP	Positioning and Routing Problems in the design of Integrated Circuits (VLSI e ASICs)	2011
Marta Soares Rocha	FEUP	José Fernando Oliveira M. Antónia Carravilla	INESC Porto/FEUP	Hospitality Management - optimization and heuristic algorithms for human resources management	2012
Michael Donauer	FEUP	Américo Azevedo	INESC Porto/FEUP	Optimization of test and inspection strategies in car tire manufacturing lines by the usage of manufacturing and quality cost models	2012
Nazaré Rego	FEUP	Jorge Pinho de Sousa João Claro	INESC Porto/FEUP	Supporting the definition of strategies in the configuration of health care supply chains	2012
Pedro Rocha	FEUP	António Miguel Gomes	INESC Porto/FEUP	Geometrical Models and Algorithms for Nesting Problems	2013
Reza Fazeli	FEUP	Vítor Leal Jorge Pinho de Sousa	FEUP INESC Porto/FEUP	Design of Pathways for sustainable road transportation accounting for uncertainty	2012
Ricardo Almeida	FEUP	Américo Azevedo	INESC Porto/FEUP	Flexible information technologies for complex and non-hierarchical supply chain networks	2012
Roberto da Piedade Francisco	FEUP	Américo Azevedo	INESC Porto/FEUP	Performance Management and Alignment on Collaborative Networks of SME	2011
Rui Jorge Gomes	FEUP	Jorge Pinho de Sousa Teresa Galvão	INESC Porto/FEUP FEUP	Dynamic Vehicle Routing for Demand Responsive Transportation Services	2012
Rui Rei	FCUP	João Pedro Pedroso	INESC Porto/FEUP	Simulation and Optimization for Production Planning	2013
Samuel Moniz	FEUP	Jorge Pinho de Sousa Ana Paula Póvoa	INESC Porto/FEUP IST, UTL	Optimal Production Planning and Scheduling of Multipurpose Batch Plants	2013
Senay Sadic	FEUP	Jorge Pinho de Sousa José Almeida Crispim	INESC Porto/FEUP INESC Porto/U Minho	Managing Dynamic Supply Networks through SME Collaboration	2013
Teresa Bianchi de Aguiar	FEUP	M. Antónia Carravilla José Fernando Oliveira	INESC Porto/FEUP	Retail Shelf Allocation Problem	2013
Teresa Neto	FCUP	João Pedro Pedroso Miguel Constantino	INESC Porto/FCUP FCUL	Mathematical models and algorithms for forest management	2012

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Vitor Santos	UM	João Álvaro Carvalho e António Lucas Soares	EE-UMinho/INESC Porto	Information and knowledge behaviour in large-scale/complex projects	2012
1	2	3	4	5	6

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title or topic of the thesis

6 – Predicted year of conclusion and delivery – will be taken in account in summary tables

J.2. Other

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date	Type
Ana Catarina do Nascimento Belchior	FEUP	M. Antónia Carravilla	INESC Porto/FEUP	Planeamento Nutricional e da Cadeia Logística Alimentação de Doentes Hemodializados numa Unidade de Cuidados Continuados	2011	MSc thesis
Bruno Miguel Magalhães Azevedo	FEUP	Américo Azevedo	INESC Porto/FEUP	Desenho de Sistema de Produção Lean em unidade de Carpintaria Mecânica	2011	MSc thesis
Daniel Filipe Oliveira	FEUP	José Soeiro Ferreira	INESC Porto/FEUP	Planeamento da produção na construção civil	2011	MSc thesis
David Ricardo Simões Rola	FEUP	Jorge Pinho de Sousa	INESC Porto/FEUP	Solving multiobjective industrial scheduling problems by metaheuristic	2011	MSc thesis
Edgar Ramiro Jiménez Pérez	IST, UTL	Jorge Pinho de Sousa	INESC Porto/FEUP	Investment flexibility opportunities in airports and airport networks – a real options approach	2011	MSc thesis
Ingrid Pinheiro Martins Barroso	FEUP	M Antónia Carravilla	INESC Porto/FEUP	Aplicação do Lean nas Instituições de Ensino Superior – Processo de criação e acompanhamento de novos cursos	2011	MSc thesis
João Ribeirinho Soares	FEUP	Américo Azevedo	INESC Porto/FEUP	Análise e controlo de qualidade de processos	2011	MSc thesis
Manuela Quitéria Oliveira Santos	FEUP	M Antónia Carravilla	INESC Porto/FEUP	Retenção de conhecimentos - Aplicabilidade aos Serviços Financeiros da FEUP	2011	MSc thesis
Maria Luísa Vilar da Silva	FEUP	M Antónia Carravilla	INESC Porto/FEUP	Desenho de um Novo Serviço Centralizado de Esterilização de Instrumentos Cirúrgicos	2011	MSc thesis
Mariana Soares Maciel Machado Magalhães	FEUP	José Soeiro Ferreira	INESC Porto/FEUP	Optimização de Rotas	2011	MSc thesis
Marta Nilza Fonseca	FEUP	José Soeiro Ferreira	INESC Porto/FEUP	Sistema integrado de balanceamento de linhas de produção na indústria do calçado	2011	MSc thesis
Nuno Miguel dos Santos Pereira	FEUP	Américo Azevedo	INESC Porto/FEUP	Medida de desempenho em linha de produção de automóveis	2011	MSc thesis
Paulo André da Silva Vasconcelos	FEUP	José Fernando Oliveira	INESC Porto/FEUP	Control and monitoring systems: benefits that may have to use of communications equipment	2011	MSc thesis
Rui Pedro Rodrigues Sebastião	FEUP	José Soeiro Ferreira	INESC Porto/FEUP	Solving unstructured classification problems with multicriteria decision aiding	2011	MSc thesis
1	2	3	4	5	6	7

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title or topic of the work

6 – Predicted year of conclusion and delivery – will be taken in account in summary tables

7 – Type of work (MSc thesis, post-graduation dissertation, etc.)

ROBOTICS AND INTELLIGENT SYSTEMS

A) SUMMARY OF PUBLICATIONS

Summary of publications by members of the Unit in 2010

Type of publication	Number
Papers in International Journals with scientific referees	4
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	23
Books (author)	
Chapter/paper in books	1
Publications (editor)	
Other publications (National meetings, local journals, etc.)	
Theses concluded in 2010 by members of the Unit	1
TOTAL	29

Journal	Number
Emerald Industrial Robot	1
International Journal of Humanoid Robotics	1
Sea Technology	1
Marine Technology Society Journal	1
TOTAL	4

B) SUMMARY OF PROJECTS

Source of Funding	Year				Variation 2009 - 2010
	2007	2008	2009	2010	
National Programmes				122	
European Union Programmes					
R&D Services and Consulting				80	
Other R&D sources					
Other external sources					
Total				222	

Number of Projects and income derived for Groups or Units in 2010

Project Typology		Number of Projects	Projects Income
Source of Funding	National Programmes - FCT	2	50
	National Programmes - QREN	2	72
	European Union Programmes - I&D		
	European Union Programmes - Diversos		
	R&D Services and Consulting - National		
	R&D Services and Consulting - European Union		
	R&D Services and Consulting - International	2	80
	Other R&D sources		
	Other external sources		
	Internal	1	
Dominant Activity Type	Basic Research		
	Applied Research and Development		
	Consulting		
	Technology Transfer		
	Network		
	Conference		
	Advanced Training		
	Incubation		
	Other	1	
Execution Status	Started	5	173
	Continuation	2	29
	Finished		
Total		1	

C) SUMMARY OF POST-GRADUATION ACTIVITIES

Summary of theses supervised by members of the Unit in 2010

Tipo	Starting	On-going	Concluded	Total
Master	6		11	17
Doctoral	8	8	1	17
TOTAL	14	8	12	34

D) SUMMARY OF ACTIVITIES OF COOPERATION OR DISSEMINATION

Summary of Cooperation and dissemination actions

Type	Number
Conferences with INESC Porto in the organization (in the organizing committee or chairing technical committees)	
Nº. of External co-authors of Publications of INESC Porto	12

E) LIST OF PUBLICATIONS

E.1. International Journals with scientific referees

1. B.M. Ferreira , A. Matos , N. Cruz , "Estimation Approach for AUV Navigation Using a Single Acoustic Beacon", Sea Technology, vol.51, no.12, December 2010, pp.54-59.
2. J. Lima , J.A. Gonçalves , P. Gomes Costa , A.P. Moreira , "Humanoid Low-Level Controller Development Based On A Realistic Simulation", International Journal of Humanoid Robotics, vol.7, no.4, April 2010, pp.587-607.
3. B. Ferreira , A. Matos , N. Cruz , M. Pinto , "Modeling and Control of the MARES Autonomous Underwater Vehicle", Marine Technology Society Journal, vol.44, no.2, March 2010, pp.19-36.
4. P. Neto , J.N. Pires , A.P. Moreira , "High-level programming and control for industrial robotics: using a hand-held accelerometer-based input device for gesture and posture recognition ", Industrial Robot: An International Journal, vol.37, no.2 2010, pp.137-147.

E.2. National Journals with scientific referees

(void)

E.3. Conference proceedings with scientific referees (international or national)

1. RAMOS, P., ABREU, N.M., "Spatial analysis of sea outfall discharges using block kriging", Proceedings of MWWD 2010 MWWD 2010 - 6th International Conference on Marine Waste Water Discharges and Coastal Environment , October 2010, Langkawi , Malasia.
2. ABREU, N.M., RAMOS, P., "An integrated application for geostatistical analysis of sea outfall discharges based on R software", MTS/IEEE OCEANS' 10 Conference, September 2010, Seattle, EUA.
3. NETO, P., MENDES, N., MOURATO, N., MOREIRA, A.P., "Attracting Students to Engineering: Using Intuitive HRIs for Educational Purposes", FIRA2010 - FIRA RoboWorld Congress 2010, September 2010, Bangalore, India, p.250-257.
4. ABREU, N.M., MATOS, A., RAMOS, P., CRUZ, N., "Automatic Interface for AUV Mission Planning and Supervision", MTS/IEEE OCEANS' 10 Conference, September 2010, Seattle, EUA.
5. MENDES, N., NETO, P., PIRES, J.N., MOREIRA, A.P., "Fuzzy-PI Force Control for Industrial Robotics", FIRA2010 - FIRA RoboWorld Congress 2010, September 2010, Bangalore, India, p.322-329.
6. FERREIRA, B.M., MATOS, A., CRUZ, N., "Single beacon navigation: localization and control of the MARES AUV", MTS/IEEE OCEANS' 10 Conference, September 2010, Seattle, EUA.
7. ALMEIDA, R.M., CRUZ, N., MATOS, A., "Synchronized Intelligent Buoy Network for Underwater Positioning ", MTS/IEEE OCEANS' 10 Conference, September 2010, Seattle, EUA.
8. NETO, P., MENDES, N., PIRES, J.N., MOREIRA, A.P., "CAD-Based Robot Programming: the role of Fuzzy-PI Force Control in Unstructured Environments", CASE2010 - 6th annual IEEE Conference on Automation Science and Engineering, August 2010, Toronto, Canadá, p.362-367.
9. NETO, P., PIRES, J., MOREIRA, A.P., "3D CAD-Based Robot Programming for the SME Shop-Floor", in proceedings of FAIM 2010 - Flexible Automation and Intelligent Manufacturing, July 2010, East Bay - Oakland, U.S.A., p.138-145.
10. FERREIRA, M.A., MOREIRA, A.P., MALHEIROS, P.S., PIRES, N., "Highly Flexible Robotized Cells: application to small series painting", in proceedings of FAIM 2010 - Flexible Automation and Intelligent Manufacturing, July 2010, East Bay - Oakland, U.S.A., p.244-251.

11. FERREIRA, B.M., MALHEIROS, P., MOREIRA, A.P., COSTA, P.J., "Tracking of the Position of a Marker for Use in Industrial Processes", in proceedings of FAIM 2010 - Flexible Automation and Intelligent Manufacturing, July 2010, East Bay - Oakland, U.S.A..
12. PIRES, P., MOREIRA, A.P., "Robot Path Simulation: a Low Cost Solution Based on CAD", RAM 2010 - 4th IEEE INTERNATIONAL CONFERENCE ON ROBOTICS, AUTOMATION AND MECHATRONICS, June 2010, Singapura, Singapura, p.333-338.
13. PETRY, M., MOREIRA, A.P., BRAGA, R., REIS, L.P., "Shared Control for Obstacle Avoidance in Intelligent Wheelchairs", RAM 2010 - 4th IEEE International Conference On Robotics, Automation And Mechatronics, June 2010, Singapura, Singapura, p.182-187.
14. GONÇALVES, J.A., LIMA, J., MALHEIROS, P., COSTA, P.J., "Sensor and actuator stochastic modeling of the Lego Mindstorms NXT educational Kit", March 2010.
15. PINHO, R., SOUSA, A., RESTIVO, A., "Applying usability principles to the design of a web interface for the 'iLab - Inventory Manager for Electronics Laboratory'", Actas de CISTI'2010 - 5ª Conferência Ibérica de Sistemas e Tecnologias de Informação 2010, Santiago de Compostela, Espanha.
16. CRUZ, N., ALVES, J.C., "Auto-Heading Controller for an Autonomous Sailboat", OCEANS' 10 - OCEANS '10 IEEE Sydney Conference and Exhibition Australia 2010, Sidney, Austrália.
17. PEGORARO, E.M., SOUSA, A., "FEUP Fuzzy Tool II - Improved tool for education and embedded control", Actas de CISTI'2010 - 5ª Conferência Ibérica de Sistemas e Tecnologias de Informação 2010, Santiago de Compostela, Espanha.
18. CRUZ, N., MATOS, A., "Reactive AUV Motion for Thermocline Tracking ", OCEANS' 10 - OCEANS '10 IEEE Sydney Conference and Exhibition Australia 2010, Sidney, Austrália.
19. LIMA, J., GONÇALVES, J.A., COSTA, P.J., MOREIRA, A.P., "Humanoid Robot Gait Planning Resorting to an Adaptive Simulated Annealing Algorithm", March 2010.
20. RAMOS, P., ABREU, N.M., "Spatial Analysis of Sea Outfall Discharges", In proceedings of Water Research Confer - The Water Research Conference 2010, Lisboa, Portugal.
21. Patrícia Ramos, Nuno Cruz, Aníbal Matos, Sanda Carvalho, MONITORIZAÇÃO AMBIENTAL DO EMISSÁRIO SUBMARINO DA FOZ DO ARELHO USANDO UM VEÍCULO SUBMARINO AUTÓNOMO , 14ª ENASB/SILUBESA - 14º Encontro Nacional de Saneamento Básico e 14º Simpósio Luso-Brasileiro de Engenharia Sanitária e Ambiental, Porto, Portugal, Outubro, 2010.
22. CRUZ, N., MATOS, A., "Adaptive sampling of thermoclines with Autonomous Underwater Vehicles", MTS/IEEE OCEANS' 10 Conference, Seattle, EUA.
23. Catarina Santiago, Armando Sousa, Luís Paulo Reis, Maria Luísa Estriga and Martin Lames "Survey on Team Tracking Techniques Applied to Sports" – International Conference on Autonomous and Intelligent Systems – AIS 2010, June 21-23, 2010, Póvoa de Varzim, Portugal

E.4. Books (Author)

1. DEL MONEGO, M., RAMOS, P., NEVES, M.V., "Geostatistical Mapping of Outfall Plume Dispersion Data Gathered with an Autonomous Underwater Vehicle", geoENV VII – Geostatistics for Environmental Applications, February 2010, ISBN: 978-90-481-2321-6, vol.16.Chapter/paper in Books

E.5. Publications (Editor)

(void)

E.6. Other Publications

1. SOBREIRA, H.M., MOREIRA, A.P., SENA ESTEVES, J., "Characterization of Position and Orientation Measurement Uncertainties in a Low-Cost Mobile Platform", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal, p.635-640.
2. ROCHA, L.F., MOREIRA, A.P., AZEVEDO, A., "Flexible Internal Logistics based on AGV systems: A case Study", Papers of MCPL 2010, September 2010, Coimbra, Portugal, p.109-114.
3. ROCHA, L., MOREIRA, A.P., AZEVEDO, A., "INCREASE OF FLEXIBILITY AND PRODUCTION RATE BY AN AGV SYSTEM: A CASE STUDY", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal, p.109-114.
4. FERREIRA, M.A., MALHEIROS, P.S., MOREIRA, A.P., PIRES, J., NETO, P., "LOW-COST LASER SCAN FOR FLEXIBLE ROBOTIC CELLS: SPRAY PAINTING APPLICATION", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal, p.69-76.
5. BRESSAN, N., NUNES, C., AMORIM, P., MOREIRA, A.P., "NEW CONTROL STRATEGY FOR DRUG TARGET CONTROLLED INFUSION SYSTEMS", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal, p.247-251.
6. FERREIRA, J.R., MOREIRA, A.P., "NON-LINEAR MODEL PREDICTIVE CONTROLLER FOR TRAJECTORY TRACKING OF AN OMNI-DIRECTIONAL ROBOT USING A SIMPLIFIED MODEL", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal.
7. NASCIMENTO, T.P., MOREIRA, A.P., "OMNIDIRECTIONAL MOBILE ROBOT'S MULTIVARIABLE TRAJECTORY TRACKING CONTROL: A ROBUSTNESS ANALYSIS", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal.
8. PINTO, M.A., MOREIRA, A.P., COSTA, P.J., FERREIRA, M.A., "ROBUSTNESS ANALYSIS OF A FLEXIBLE MANUFACTURING SYSTEM FOR PICKING PIECES IN A CONVEYOR BELT", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal, p.130-135.
9. MOREIRA, A.P., SOBREIRA, H.M., FERREIRA, M.A., PINTO, M.A., BRESSAN, N., "TARGET CONTROLLED INFUSION ALGORITHMS FOR ANESTHESIA: OPTIMIZATION FOR MINIMUM TIME DRUG EFFECT", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal, p.438-443.
10. MALHEIROS, P., FERREIRA, B.M., MOREIRA, A.P., COSTA, P.J., "Tracking the position of an active tool for robotic arm control", Controlo2010 - Controlo2010, September 2010, Coimbra, Portugal.
11. NETO, P., MENDES, N., ARAÚJO, R., PIRES, J., MOREIRA, A.P., "INTUITIVE ROBOT PROGRAMMING BASED ON CAD: DEALING WITH UNSTRUCTURED ENVIRONMENTS", Controlo2010 - Controlo2010, August 2010, Coimbra, Portugal, p.115-123.
12. PINTO, M.A., MOREIRA, A.P., COSTA, P.J., FERREIRA, M.A., MALHEIROS, P.S., "Robotic Manipulator and Artificial Vision System for Picking Cork Pieces in a Conveyor Belt", ROBÓTICA2010 - 10th Conference on Mobile Robots and Competitions, July 2010, Leiria, Portugal, p.576-583.
13. SOBREIRA, H., MOREIRA, A.P., ESTEVES, J.S., "Low cost self-localization system with two beacons", ROBÓTICA2010 - 10th Conference on Mobile Robots and Competitions, March 2010, Leiria, Portugal.
14. FERREIRA, M.A., MALHEIROS, P.S., MOREIRA, A.P., PIRES, N., "Robotized Painting with Automatic Reconfiguration", ROBÓTICA2010 - 10th Conference on Mobile Robots and Competitions, March 2010, Leiria, Portugal.

E.7. Theses (concluded by members of the Unit)

Phd theses:

- BRAGA, R, "Plataforma de Desenvolvimento de Cadeiras de Rodas Inteligente / Intelligent Wheelchairs Platforms", PhD Thesis

F) LIST OF PROJECTS

Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
			Source	Programme	Project Typology	Type	Role INESCP	Start	Satus 2009-12
CRO	Paulo Moreira	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PAR	2010-01	START
WWECO	Patrícia Ramos	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2009-11	CONT
RobVigil	Paulo Moreira	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2010-01	START
SIIARI-1	Paulo Moreira	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	O	O	2010-09	START
TRIMARES	Aníbal Matos	DEV	SERV - INT			INT	CONT	2010-08	START
Lajeado	Aníbal Matos	DEV	SERV - INT			IND	CONT	2010-10	START
FutebolRobotico	Paulo Moreira	O	INT			INT	PROP	1998-01	CONT

Dominant Activity Type:

RES – Research
 DEV – Development
 CONS - Consulting
 TT - Technology Transfer
 NET - Network
 CONF - Conference
 TRAIN - Advanced Training
 INC - Incubation
 O - Other

Source:

PROG – NAT – National Programmes
 PROG – EU – European Union Programmes
 SERV - NAT - Supply of Services - national
 SERV - EU - Supply of Services - European Union
 SERV - INT - Supply of Services - International
 ORD Other R&D Services
 O - Other External Services
 INT - Internal

Type:

IND – Individual Project
 NAT - National Cooperation
 EU - European Union Cooperation (EU+Associated Countries)
 INT - Internal Cooperation

Role INESCP:

PROP - Proponent
 PAR - Partner
 CONT - Prime Contractor
 SUB - Subcontractor
 MEMB - Membre
 O - Other

G) LIST OF PATENTS

(void)

H) LIST OF PROTOTYPES

- PaletaAGV – Autonomous Vehicle for transportation of *Europaletes*.
- CleverRob - Autonomous Robot for advertising and publicity.

I) LIST OF THESES CONCLUDED IN 2010, SUPERVISED BY MEMBERS OF THE UNIT

I.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title
Rodrigo António Marques Braga	FEUP	Luís Paulo Reis + António Paulo G.M. Moreira	LIACC/FEUP + INESC Porto/FEUP	Plataforma de Desenvolvimento de Cadeiras de Rodas Inteligente / Intelligent Wheelchairs Platforms
1	2	3	4	5

1 – Name of the post-graduation student

2 – Institution where the thesis is submitted; if the host institution for the student is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title of the thesis

I.2. MSC Dissertations

Author	Instit.	Supervisor	Instit.	Title
Pedro Miguel Amorim Gomes	FEUP	António Paulo G.M. Moreira + Paulo Costa	INESC Porto/FEUP	Condução Autónoma no Festival Nacional de Robótica
Paulo Diogo Gaspar Gouveia	FEUP	António Paulo G.M. Moreira	INESC Porto/FEUP	Ensino por Demonstração de Manipuladores Industriais
Luís André Freitas da Rocha	FEUP	António Paulo G.M. Moreira + Américo Azevedo	INESC Porto/FEUP	Logística Flexível Baseada em AGVs
João Rodrigo Alvelos Ferreira	FEUP	António Paulo G.M. Moreira + Fernando Fontes	INESC Porto/FEUP * ISR/FEUP	Controlo Coordenado de Equipas de Robots Móveis
Luís Filipe Silva	FEUP	António Paulo G.M. Moreira	INESC Porto/FEUP	Utilização de Manipuladores em Ambientes Não Estruturados
David Da Silva Lima	FEUP	Paulo Costa + António Paulo G.M. Moreira	INESC Porto/FEUP	Localização Absoluta de Robôs Móveis em Ambientes Industriais
Andry Maykol Gomes Pinto	FEUP	António Paulo G.M. Moreira + Paulo Costa	INESC Porto/FEUP	Localização e Mapeamento na Robótica Móvel em Ambientes Não-Industriais
Jorge Filipe Peixoto da Silva Luís	FEUP	Andrzej Wolczowski + António Paulo G.M. Moreira	INESC Porto/FEUP	Feedback of Grasping Touch to Prosthesis Hand User
Ana Cristina Carvalho da Ponte	FEUP	António Paulo G.M. Moreira + Luís Almeida	INESC Porto/FEUP + IT	Avaliação do Desempenho de Técnicas de Localização Relativa de Robôs Móveis Baseada no RSS em Ambientes Interiores
Hugo Sérgio Pinto Alves	FEUP	António Paulo G.M. Moreira + Paulo Costa	INESC Porto/FEUP	Navegação e Controlo de um Veículo Móvel
Daniel Francisco Barros Marinho Esteves Pina	FEUP	António Paulo G.M. Moreira	INESC Porto/FEUP	Apparatus for Dynamic Adjustment of the Rotation Axis on a Flexible Fluidic Actuator
Rui Miguel Sousa Almeida	FEUP	Nuno Cruz Aníbal Matos	INESC Porto/FEUP	Sistema Inteligente de posicionamento acústico subaquático
Daniel Filipe Pereira Sequeira	FEUP	Armando Jorge Sousa	INESC Porto/FEUP	Aplicação para controlo de um software de LCA através da sua COM interface
Hugo Norberto Jesus Meira	FEUP	Armando Jorge Sousa	INESC Porto/FEUP	Desenvolvimento de Add-in de ecodeign para software de CAD solidworks e sincronização com base de dados

Author	Instit.	Supervisor	Instit.	Title
Vasco Cardoso Espinheira Rio	FEUP	Armando Jorge Sousa	INESC Porto/FEUP	Simulador de batalhão de limpeza
Jorge Fernando Martins Dias Ramos	FEUP	Armando Jorge Sousa	INESC Porto/FEUP	FEUPowerTool - Ferramenta Pedagógica para Manobras em Subestações
1	2	3	4	5

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title of the thesis

J) LIST OF THESES UNDER SUPERVISION

J.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Nadja Mench Bressan	FEUP	Catarina Sofia Nunes Duarte + António Paulo Moreira	King's College London + FEUP/InescPorto	Software Integrado para Anestesia: Aquisição de Dados, Estratégias de Controle de Infusão e Alarmes Inteligentes	2011
Bruno Miguel Mateus Ferreira	FEUP	Anibal Matos + António Paulo Moreira	FEUP/Inesc Porto	Controlo de equipas de robots sob restrições de comunicação	2013
Miguel Armando Migueis Pinto	FEUP	António Paulo Moreira + Anibal Matos	FEUP/Inesc Porto	Navegação de robots guiada pela interacção entre a incerteza na localização e o tipo de missão a cumprir	2013
Marcos André Magalhães Ferreira	FEUP	António Paulo Moreira + Norberto Pires	FEUP/Inesc Porto + FCTUC	Programação de Alto Nível para Células Robotizadas Industriais	2013
Héber Miguel Plácido Sobreira	FEUP	António Paulo Moreira + Paulo Costa	FEUP/Inesc Porto	Localização de veículos autónomos baseada em balizas	2013
Marcelo Roberto Petry	FEUP	António Paulo Moreira + Luis Paulo Reis	FEUP/Inesc Porto + FEUP/LIACC	Desenvolvimento de um Protótipo e de Metodologias de Controlo de uma Cadeira de Rodas Inteligente	2013
Pedro Mariano Simões Neto	FCTUC	Norberto Pires + António Paulo Moreira	FCTUC + FEUP/Inesc Porto	Programação de robôs industriais usando linguagens naturais: exploração de mecanismos de programação gráfica, por gestos, com fusão visual e de ensino por demonstração	2012
Pedro Luís Cerqueira Gomes da Costa	FEUP	António Paulo Moreira	FEUP/Inesc Porto	Planeamento cooperativo de tarefas e trajectórias de múltiplos robôs	2011

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Jorge Miguel Marques Ribeiro	FEUP	António Paulo Moreira + Gil Lopes	FEUP/ Inesc Porto + Univ. Minho	Algorithms and technologies for an automatic quality control system in inspection places: transferring human knowledge into an automated inspection system, Course: Engineering Design and Advanced Manufacturing	2014
André Bianchi de Aguiar Araújo de Figueiredo	FEUP	Paulo Costa + António Paulo Moreira	FEUP/ Inesc Porto	Localização de veículos autónomos baseada em marcadores / Autonomous vehicles localization based on landmarks	2014
Filipe Baptista Neves Dos Santos	FEUP	Paulo Costa + António Paulo Moreira	FEUP/ Inesc Porto	Localização de robôs Móveis baseada em visão / Vision based mobile robot localization	2014
Hugo Sérgio Pinto Alves	FEUP	António Paulo Moreira + Paulo Costa	FEUP/ Inesc Porto	Cooperação e coordenação de Múltiplos Robots Heterogéneos	2014
Luís André Freitas da Rocha	FEUP	António Paulo Moreira + Paulo Costa	FEUP /Inesc Porto	Programação de Robôs Industriais em Células Robotizadas Flexíveis	2014
Andry Maykol Gomes Pinto	FEUP	António Paulo Moreira + Paulo Costa	FEUP/In escPort o	Navegação de Sistemas Robóticos Móveis em Ambientes Interiores e Sujeitos a Interações Humanas	2014
Tiago Pereira do Nascimento	FEUP	António Paulo Moreira + Abdrés Sclori Conceição	FEUP/ Inesc Porto + Univ. Fed. Bahia	Cooperação e controlo de equipas de robôs móveis / Cooperation and control of teams of mobile robots	2013
Catarina Santiago	FEUP	Armando Sousa + Luís Paulo Reis	FEUP/ Inesc Porto + FEUP/ LIACC	Vision and Knowledge Representation Methodologies for Game Analysis	2014
1	2	3	4	5	6

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title or topic of the thesis

6 – Predicted year of conclusion and delivery – will be taken in account in summary tables

J.2. Other

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date	Type
Eduardo Moreira da Mota	FEUP	António Paulo Moreira + Tiago Nascimento	FEUP/ Inesc Porto	Locomoção de um Humanóide NAO	2011	MSch - Thesis
Roberto José Magalhães da	FEUP	António Paulo Moreira + Miguel Pinto	FEUP/ Inesc Porto	Localização de AGVs Industriais Baseada em Marcadores,	2011	MSch - Thesis
Helder Miguel Tavares Moreira	FEUP	António Paulo Moreira + Marcos Ferreira	FEUP/ Inesc Porto	Programação por demonstração de um manipulador robótico para tarefas de polimento	2011	MSch - Thesis
1	2	3	4	5	6	7

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title or topic of the work

6 – Predicted year of conclusion and delivery – will be taken in account in summary tables

7 – Type of work (MSc thesis, post-graduation dissertation, etc.)



INNOVATION AND TECHNOLOGY TRANSFER

A) SUMMARY OF PUBLICATIONS

Summary of publications by members of the Unit in 2010

Type of publication	Number
Papers in International Journals with scientific referees	20
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	18
Books (author)	3
Chapter/paper in books	
Publications (editor)	
Other publications (National meetings, local journals, etc.)	13
Theses concluded in 2010 by members of the Unit	1
TOTAL	55

Journal	Number
Regional Studies	1
Portuguese Journal of Management Studies	1
Journal of Academic Ethics	2
Industrial and Higher Education,	1
Research Policy	1
Higher Education,	1
Scientometrics	1
Journal of Technology Management & Innovation	1
International Journal of Business Excellence	2
International Journal of Innovation and Learning	1
International Journal of Management Science and Engineering Management	1
International Journal of Logistics Systems Management	1
Innovacii	3
Journal of High Technology Management Research	1
International Journal of Business Innovation and Research	2
TOTAL	20

B) SUMMARY OF PROJECTS

Source of Funding	Year				Variation 2009 - 2010
	2007	2008	2009	2010	
National Programmes	62	30	28	50	79%
European Union Programmes	42				
R&D Services and Consulting	6	169	70	169	141%
Other R&D sources					
Other external sources			8	12	50%
Total	110	199	106	231	118%

Number of Projects and income derived for Groups or Units in 2010

Project Typology		Number of Projects	Projects Income
Source of Funding	National Programmes - FCT		
	National Programmes - QREN	5	50
	European Union Programmes - I&D		
	European Union Programmes - Diversos		
	R&D Services and Consulting - National	9	169
	R&D Services and Consulting - European Union		
	R&D Services and Consulting - International		
	Other R&D sources		
	Other external sources	1	12
	Internal	1	
Dominant Activity Type	Basic Research		
	Applied Research and Development		
	Consulting	10	176
	Technology Transfer		
	Network		
	Conference		
	Advanced Training		
	Incubation	1	12
	Other		
Execution Status	Started	5	102
	Continuation	9	106
	Finished	2	23
Total		11	188

C) SUMMARY OF POST-GRADUATION ACTIVITIES

Summary of theses supervised by members of the Unit in 2010

Tipo	Starting	On-going	Concluded	Total
Master	15		14	29
Doctoral	9	11		20
TOTAL	24	11	12	49

D) SUMMARY OF ACTIVITIES OF COOPERATION OR DISSEMINATION

Summary of Cooperation and dissemination actions

Type	Number
Conferences with INESC Porto in the organization (in the organizing committee or chairing technical committees)	
Nº. of External co-authors of Publications of INESC Porto	49

E) LIST OF PUBLICATIONS

E.1. International Journals with scientific referees

1. Cruz, Sara, and Aurora Teixeira; The Evolution of the Cluster Literature: shedding light on the Regional Science-Regional Studies debate, *Regional Studies*, 44(9): 1263-1288; 2010.
2. Pinheiro, Luís, and Aurora Teixeira; Bridging University-Firm and Open Innovation Literature: A Critical Synthesis; *Portuguese Journal of Management Studies*, 15(3): 259-279; 2010.
3. Teixeira, Aurora, and Mariana Costa; Who Rules the Ruler? On the Misconduct of Journal Editors; *Journal of Academic Ethics*, 8(2): 111-128; 2010.
4. Teixeira, Aurora, and Todd Davey; Attitudes of Higher Education Students to New Venture Creation: A Preliminary Approach to the Portuguese Case; *Industrial and Higher Education*, 24(5): 323-341; 2010.
5. Teixeira, Aurora, and Natércia Fortuna; Human Capital, R&D, Trade, and Long-run Productivity. Testing the Technological Absorption Hypothesis for the Portuguese Economy, 1960–2001; *Research Policy*, 39(3): 335-350; 2010.
6. Teixeira, Aurora, and Maria de Fátima Rocha; Cheating by Economics and Business Undergraduate Students. An Exploratory International Assessment; *Higher Education*, 59(6): 663-701; 2010.
7. Teixeira, Aurora, and Maria de Fátima Rocha; Academic Misconduct in Portugal: Results from a Large Scale Survey to University Economics/Business Students; *Journal of Academic Ethics*, 8(1): 21-41; 2010.
8. Vieira, Pedro C., and Aurora Teixeira; Are Finance, Management and Marketing Autonomous Fields of Scientific Research? An Analysis Based on Journal Citations; *Scientometrics*, 85 (3): 627-646; 2010.
9. Savitskaya Irina, Salmi Pekka and Torkkeli Marko, Barriers to Open Innovation: Case China, *Journal of Technology Management & Innovation*, (vol 5 no 4 2010)

10. Kutvonen Antero and Torkkeli Marko, Opening the Fuzzy Front End: A Synthesis of Two Theories, *International Journal of Business Excellence*, V3 N4 2010, 415-432
11. Kutvonen Antero, Torkkeli Marko T., and Lin Binshan, (2010) Pre-commercialization Activities in External Exploitation of Technology, *International Journal of Innovation and Learning*, vol., 8 no. 2, pp.208-230
12. Länkinen Heli, Ojanen Ville and Torkkeli Marko; Transforming services into products in the Finnish technical engineering and consulting industry, *International Journal of Management Science and Engineering Management*, 5(2): 119-124, 2010
13. Olli-Pekka Hilmola, Sandor Ujvari, Marko Torkkeli, Harri Lorentz & Thomas Andersson. From Northern Europe to Russia and Asia, and Vice Versa: Traffic Flow Analysis - Current Situation and Development Trends, *International Journal of Logistics Systems Management* (Volume 6 - Issue 2 - 2010, pp 205 - 217)
14. Pekka Salmi, Marko Torkkeli, and Marko Seppänen "Managing non-core technologies with the Research Surplus Portfolio" *Innovacii*, No 1, vol 141, 2010
15. Salmi Pekka and Torkkeli Marko; Interorganizational antecedents of absorptive capacity in exploitation vs. exploration alliances: The case of a software company, *International Journal of Business Excellence* Vol 3 No4 2010, 452-469
16. Savitskaya Irina and Torkkeli Marko (2010, Markets for Technology in an Emerging Economy: Case of St. Petersburg Russia, *Innovacii*, No 7, vol 141, 10-14
17. Seppänen Marko, Mäkinen Saku and Torkkeli Marko, Evaluating non-core technologies: Contrasting external and internal views on corporate research results, *Journal of High Technology Management Research*, 2010 vol 21 no 2 pp 79-86
18. Wim Vanhaverbeke, Torkkeli Marko, and Anna Trifilova (2010)" Open Innovation: Scio Me Nihil Scire" *Innovacii*, No 7, vol 141,
19. SAVITSKAYA, I., TORKKELI, M., "A Framework for Comparing Regional Open Innovation Systems in Russia", *International Journal of Business Innovation and Research* 2010, vol.4, no.4.
20. PODMETINA, D., VÄÄTÄNEN, J., TORKKELI, M., "Do Russian Firms Utilize Open Innovation Paradigm? Study of Technology Commercialization and Acquisition", *International Journal of Business Innovation and Research* 2010, vol.4, no.4.

E.2. National Journals with scientific referees

(void)

E.3. Conference proceedings with scientific referees (international or national)

1. CARDOSO, A., TORKKELI, M., "Does R&D investment pay-off in traditional industry: case Portuguese footwear", in *Proceedings of ISPIM 2010 - The XXI ISPIM Conference - The Dynamics of Innovation*, June 2010, Bilbao, Spain.
2. SAVITSKAYA, I., TORKKELI, M., "Regional Innovation Policies Performance Analysis", in *Proceedings of ISPIM 2010 - The XXI ISPIM Conference - The Dynamics of Innovation*, June 2010, Bilbao, Spain.
3. PODMETINA, D., VÄÄTÄNEN, J., SMIRNOVA, M., TORKKELI, M., "The role of regional innovation diversity on competitiveness in Russia", in *Proceedings of ISPIM 2010 - The XXI ISPIM Conference - The Dynamics of Innovation*, June 2010, Bilbao, Spain.
4. PODMETINA, D., VÄÄTÄNEN, J., SMIRNOVA, M., TORKKELI, M., "Finding ways from transition towards competitiveness. Linkages between innovativeness, productivity and internationalization", in *Proceedings of Odyssey 2010 - 5th International Conference "An Enterprise Odyssey: From Crisis to Prosperity – Challenges for Government and Business"*, May 2010, Opatija, Croatia.

5. PODMETINA, D., VÄÄTÄNEN, J., SMIRNOVA, M., TORKKELI, M., "Innovative Business Models. Study of Open Innovations in R&D oriented companies in Russia", in Proceedings of Odyssey 2010 - 5th International Conference "An Enterprise Odyssey: From Crisis to Prosperity – Challenges for Government and Business", May 2010, Opatija, Croatia.
6. SAVITSKAYA, I., SALMI, P., TORKKELI, M., "Challenges to open innovation in China", in Proceedings of IAMOT2010 - 19th INTERNATIONAL CONFERENCE FOR THE INTERNATIONAL ASSOCIATION OF MANAGEMENT OF TECHNOLOGY - "Technology as the Foundation for Economic Growth", March 2010, Cairo, Egypt.
7. PODMETINA, D., VÄÄTÄNEN, J., SAVITSKAYA, I., TORKKELI, M., "Innovations in the emerging markets: regional diversity of innovations in Russia", in Proceedings of IAMOT2010 - 19th INTERNATIONAL CONFERENCE FOR THE INTERNATIONAL ASSOCIATION OF MANAGEMENT OF TECHNOLOGY - "Technology as the Foundation for Economic Growth", March 2010, Cairo, Egypt.
8. PODMETINA, D., VÄÄTÄNEN, J., SMIRNOVA, M., TORKKELI, M., "Towards open innovation in developing countries", in Proceedings of IAMOT2010 - 19th INTERNATIONAL CONFERENCE FOR THE INTERNATIONAL ASSOCIATION OF MANAGEMENT OF TECHNOLOGY - "Technology as the Foundation for Economic Growth", March 2010, Cairo, Egypt.
9. Väättänen Juha, Podmetina Daria, Smirnova Maria, Torkkeli Marko, Role of R&D cooperation in adopting the open innovation strategies, ISPIIM 2010 Symposium, Quebec City, Canada, Dec 12-15, 2010
10. Savitskaya Irina, Salmi Pekka and Torkkeli Marko, NIS for open innovation: facilitator or impediment, ISPIIM 2010 Symposium, Quebec City, Canada, Dec 12-15, 2010
11. Barradas, L. C. S. and J. J. P. Ferreira (2010). Mashup Enabled Dynamic Capabilities in the Fuzzy Front-End of Innovation. ENTERprise Information Systems (CENTERIS 2010). J. E. Q. Varajao, M. M. Cruz-Cunha, G. D. Putnik and A. Trigo (eds.). Viana do Castelo, Portugal, Springer Verlag. II: 228-237.
12. Huizingh Eelko, Conn Steffen, Marko Torkkeli, and Bitran Iain, Managing the Art of Innovation: Turning Concepts into Reality, Proceedings of The III ISPIIM Annual Symposium, Quebec City, Canada 12-15, December 2010. ISBN 978-952-265-004-7
13. Huizingh Eelko, Conn Steffen, Marko Torkkeli, and Bitran Iain, Managing the Art of Innovation: Turning Concepts into Reality, The III ISPIIM Annual Symposium book of abstracts, Quebec City, Canada 12-15, December 2010. ISBN 978-952-214-005-4
14. Huizingh Eelko, Conn Steffen, Marko Torkkeli, and Bitran Iain, The Dynamics of Innovation: Proceedings of The XXI ISPIIM Annual conference, Bilbao, Spain 6-9, June 2010. ISBN 978-952-265-004-7
15. Huizingh Eelko, Conn Steffen, Marko Torkkeli, and Bitran Iain, The Dynamics of Innovation: The XXI ISPIIM Annual conference book of abstracts, Bilbao, Spain 6-9, June 2010. ISBN 978-952-214-925-1
16. Manuel Au-Yong Oliveira, João José Pinto Ferreira: "MODELLING CHANGE USING A NOVEL BUSINESS NARRATIVE MODELLING LANGUAGE", EIASM 5TH WORKSHOP ON ORGANISATIONAL CHANGE AND DEVELOPMENT, Vienna, 23-24 September 2010
17. Susana Nicola, João José Pinto Ferreira: "VALUE MODEL FOR SUPPORTING NEGOTIATION IN COLLABORATIVE NETWORKS", IADIS International Conference e-Society 2010, Porto, Portugal 18 - 21 March 2010
18. Manuel Au-Yong Oliveira, João José Pinto Ferreira: "INSPIRING DISRUPTIVE CHANGE: A NOVEL APPROACH TO MODELLING THE VALUE CREATION PROCESS", IADIS International Conference e-Society 2010, Porto, Portugal 18 - 21 March 2010

E.4. Books (Author)

1. Almeida, A.; Teixeira, A.A.C.; Santos, C. (2010) Strong Patenting, Weak R&D. When too much "easy" patenting "hurts" R&D, VDM Verlag, ISBN 978-3-639-22954-7, Paperback, 96 pp. (Book)
2. Teixeira, A.A.C.; Silva, S.T.; Teixeira, P. (2010) O que sabemos sobre a pobreza em Portugal?, Vida Económica, ISBN: 978-972-788-351-6, Paperback, 208 pp.
3. Teixeira, A.A.C.; Silva, S.T.; Ribeiro, A.P.; Carvalho, V. (2010) Fundamentos Microeconómicos da Macroeconomia. Exercícios Resolvidos e Propostos, Vida Económica, ISBN 978-972-788-341-7, Paperback, 304 pp.

E.5. Chapter/paper in Books

(void)

E.6. Publications (Editor)

(void)

E.7. Other Publications

1. Fernandes, L.; Mendes, A.; Teixeira, A.A.C., "A review essay on child well-being measurement: uncovering the paths for future research", FEP Working Papers Nº 396, December 2010
2. Nascimento, D.; Teixeira, A.A.C., "Recent trends in the economics of innovation literature through the lens of Industrial and Corporate Change", FEP Working Papers Nº 395, December 2010
3. Shu, L.; Teixeira, A.A.C., "The level of human capital in innovative firms located in China. Is foreign capital relevant?", FEP Working Papers Nº 391, November 2010
4. Heyuan, W.; Teixeira, A.A.C., "Is human capital relevant in attracting innovative FDI to China?", FEP Working Papers Nº 388 October 2010
5. Teixeira, A.A.C.; Margarida Catarino, "The importance of Intermediaries organizations in international R&D cooperation: an empirical multivariate study across Europe", FEP Working Papers Nº 385, July 2010
6. Soeiro, M.; Teixeira, A.A.C., "Determinants of higher education students' willingness to pay for violent crime reduction: a contingent valuation study", FEP Working Papers Nº 384, July 2010
7. Oliveira, M.; Teixeira, A.A.C., "The determinants of technology transfer efficiency and the role of innovation policies: a survey", FEP Working Papers Nº 375, May 2010
8. Teixeira, A.A.C.; Costa, M., "Who rules the ruler? On the misconduct of Journal Editors", Working Papers do OBEGEF Nº 005 - April 2010
9. Teixeira, A.A.C.; Pinheiro, L., "The process of emergency, evolution, and sustainability of University-Firm relations in a context of open innovation", FEP Working Papers Nº 366 - March 2010
10. Africano, A.P.; Teixeira, A.A.C.; Caiado, A., "The usefulness of State trade missions for the internationalization of firms: an econometric analysis", FEP Working Papers Nº 361 - February 2010
11. Teixeira, A.A.C. and Silva, J.M. "Emergent and declining themes in the Economics and Management of Innovation scientific area over the past three decades", FEP Working Papers Nº 355 - January 2010
12. Silva, J.M. and Teixeira, A.A.C., "Identifying the intellectual scientific basis of the Economics and Management of Innovation Management area", FEP Working Papers Nº 354 - January 2010

13. Torkkeli Marko (eds.), Frontiers of open innovation, 237 p., ISBN 978-952-214-960-2, research report 225, Lappeenranta 2010.

E.8. Theses (concluded by members of the Unit)

Phd theses:

(void)

F) LIST OF PROJECTS

Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
			Source	Programme	Project Typology	Type	Role INESCOP	Start	Satus 2009-12
EINautilus-1	Alexandra Xavier	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2008-07	CONT
Fadis	Alexandra Xavier	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-07	CONT
Jo-Empreende	Alexandra Xavier	RES	PROG - NAT	POFC / POR		NAT	PAR	2009-05	CONT
TecEmpreende	Alexandra Xavier	CONS	PROG - NAT	POR Norte		NAT	PAR	2010-09	START
PINC	Alexandra Xavier	RES	PROG - NAT	POR Norte		NAT	PAR	2010-09	START
SGIDI-Shortcut	Alexandra Xavier	CONS	SERV - NAT	POFC / POR	NUCLEO I&DT	IND	SUB	2009-10	CONT
SGIDI-MarkKays	Alexandra Xavier	CONS	SERV - NAT	POFC / POR	NUCLEO I&DT	IND	SUB	2009-09	CONT
PIPPAAudolici	Alexandra Xavier	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-12	FIN
SantosCamiseiros-1	Alexandra Xavier	CONS	SERV - NAT	POFC / POR	VALE INOV	IND	SUB	2009-11	FIN
GAPI2.0	Alexandra Xavier	CONS	SERV - NAT			IND	CONT	2010-04	START
SIAC-Calcado-Inov	Alexandra Xavier	CONS	SERV - NAT	POFC / POR	PROJ SIAC	IND	SUB	2010-07	START
Consultoria	Alexandra Xavier	CONS	SERV - NAT			IND	CONT	2008-01	CONT
FormacaoCOTEC	Alexandra Xavier	CONS	SERV - NAT			IND	CONT	2008-01	CONT
BolsasBIM2	Alexandra Xavier	CONS	SERV - NAT			IND	CONT	2008-09	CONT
Let-in	Alexandra Xavier	INC	O			IND	CONT	2008-01	CONT
OpenInnovation	Alexandra Xavier	RES	INT			INT	PROP	2010-01	START

Dominant Activity Type:

RES – Research
 DEV – Development
 CONS - Consulting
 TT - Technology Transfer
 NET - Network
 CONF - Conference
 TRAIN - Advanced Training
 INC - Incubation
 O - Other

Source:

PROG – NAT – National Programmes
 PROG – EU – European Union Programmes
 SERV - NAT - Supply of Services - national
 SERV - EU - Supply of Services - European Union
 SERV - INT - Supply of Services - International
 ORD Other R&D Services
 O - Other External Services
 INT - Internal

Type:

IND – Individual Project
 NAT - National Cooperation
 EU - European Union Cooperation (EU+Associated Countries)
 INT - Internal Cooperation

Role INESCOP:

PROP - Proponent
 PAR - Partner
 CONT - Prime Contractor
 SUB - Subcontractor
 MEMB - Membre
 O - Other

G) LIST OF PATENTS

(void)

H) LIST OF PROTOTYPES

(void)

I) LIST OF THESES CONCLUDED IN 2010, SUPERVISED BY MEMBERS OF THE UNIT
I.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title
1	2	3	4	5

1 – Name of the post-graduation student

2 – Institution where the thesis is submitted; if the host institution for the student is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title of the thesis

I.2. MSC Dissertations

Author	Instit.	Supervisor	Instit.	Title
1	2	3	4	5

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title of the thesis

J) LIST OF THESES UNDER SUPERVISION
J.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
Alípio da Torre	FEUP	João Claro	INESC Porto / FEUP	Managerial Capabilities in High-tech High-growth New Ventures	2013/14
Catarina Maia	FEUP	João Claro, Pedro Vilarinho	INESC Porto / FEUP, COTEC / UA	Technology Entrepreneurship and Commercialization Education Policy	2013/14
Diana Magalhães	FEUP	João Claro	INESC Porto / FEUP	Innovation Systems in Public Hospitals	2013/14
José Coelho Rodrigues	FEUP	João Claro, José Manuel Mendonça	INESC Porto / FEUP	Technology and Operations Strategy in Chronic Disease Management Programs	2013/14
Vasco Teles	FEUP	João Claro, José Manuel Mendonça, Randy Kirchain	INESC Porto / FEUP, MIT	Technology Roadmapping	2012/13
1	2	3	4	5	6

- 1 – Name of the post-graduation student
 2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester
 3 – Name of supervisor or supervisors
 4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid
 5 – Title or topic of the thesis
 6 – Predicted year of conclusion and delivery – will be taken in account in summary tables

J.2. Other

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date	Type
1	2	3	4	5	6	7

- 1 – Name of the post-graduation student
 2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester
 3 – Name of supervisor or supervisors
 4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid
 5 – Title or topic of the work
 6 – Predicted year of conclusion and delivery – will be taken in account in summary tables
 7 – Type of work (MSc thesis, post-graduation dissertation, etc.)



INFORMATION SYSTEMS AND GRAPHIC COMPUTING

A) SUMMARY OF PUBLICATIONS

Summary of publications by members of the Unit in 2010

Type of publication	Number
Papers in International Journals with scientific referees	11
Papers in National Journals with scientific referees	1
Conference Proceedings in events with scientific referee and selection	37
Books (author)	1
Chapter/paper in books	1
Publications (editor)	1
Other publications (National meetings, local journals, etc.)	9
Theses concluded in 2010 by members of the Unit	1
TOTAL	62

Journal	Number
Logic Journal of the IGPL	1
Journal of Ambient Intelligence and Smart Environments	1
Turkish Online Journal of Educational Technology	1
Reviews in the Neurosciences	1
Computer Graphics Forum	1
Revista Iberoamericana de Tecnologías del Aprendizaje	1
International Journal on Advances in Software	2
Communications of the IBIMA	1
Journal of Virtual Worlds Research	1
Journal of Theoretical and Applied Electronic Commerce Research	1
Educação, Formação & Tecnologias	1
TOTAL	12

B) SUMMARY OF PROJECTS

Source of Funding	Year				Variation 2009 - 2010
	2007	2008	2009	2010	
National Programmes	7	75	242	294	21%
European Union Programmes	139	138	39	231	492%
R&D Services and Consulting	393	490	590	348	-41%
Other R&D sources				21	
Other external sources		2			
Total	539	705	871	894	3%

Number of Projects and income derived for Groups or Units in 2010

Project Typology		Number of Projects	Projects Income
Source of Funding	National Programmes - FCT	3	40
	National Programmes - QREN	5	254
	European Union Programmes - I&D	1	111
	European Union Programmes - Diversos	4	120
	R&D Services and Consulting - National	14	348
	R&D Services and Consulting - European Union		
	R&D Services and Consulting - International		
	Other R&D sources	2	21
	Other external sources		
	Internal		
Dominant Activity Type	Basic Research	9	333
	Applied Research and Development	7	228
	Consulting	12	325
	Technology Transfer	1	8
	Network		
	Conference		
	Advanced Training		
	Incubation		
	Other		
Execution Status	Started	10	325
	Continuation	11	449
	Finished	8	120
Total		29	894

C) SUMMARY OF POST-GRADUATION ACTIVITIES

Summary of theses supervised by members of the Unit in 2010

Tipo	Starting	On-going	Concluded	Total
Master	4	25	29	58
Doctoral		15	3	18
TOTAL	4	40	32	76

D) SUMMARY OF ACTIVITIES OF COOPERATION OR DISSEMINATION

Summary of Cooperation and dissemination actions

Type	Number
Conferences with INESC Porto in the organization (in the organizing committee or chairing technical committees)	28
Nº. of External co-authors of Publications of INESC Porto	76

E) LIST OF PUBLICATIONS

E.1. International Journals with scientific referees

1. COSTA, L., PEREIRA, J., FILIPE, V., COUTO, P., MAGALHÃES, L.G., BULAS-CRUZ, J., MAURICIO, A.C., GEUNA, S., VAREJÃO, A., "The Effect of Gait Speed on Three-Dimensional Analysis of Hindlimb Kinematics during Treadmill Locomotion in Rats", *Reviews In The Neurosciences* 2010, vol.21, no.6, p.487-497. (ISI, IF=2.60)
2. LIMA, L., NOVAIS, P., FERNANDES COSTA, R., CRUZ, J.B., NEVES, J., "Group Decision Making and Quality-of-Information in e-Health Systems", *Logic Journal of the IGPL* 2010 (ISI, 0.32).
3. NOVAIS, P., FERNANDES COSTA, R., CARNEIRO, D., NEVES, J., "Inter-Organization Cooperation for Ambient Assisted Living", *Journal of Ambient Intelligence and Smart Environments* 2010, vol.2, no.2, p.179-195 (ISI)
4. REIS, M.G., CABRAL, L., PERES, E., BESSA, M., et al. , "Using IT Based Exercises in Primary Math Teaching of Children with Cerebral Palsy and Mental Retardation: A Case Study", *Turkish Online Journal of Educational Technology*, July 2010, vol.9, no.3, p.106-118. (ISI)
5. URBANO, C., MAGALHÃES, L.G., MOURA, J.P., BESSA, M., MARCOS, A., CHALMERS, A., "Tone Mapping Operators on Small Screen Devices: An Evaluation Study", *Computer Graphics Forum*, December 2010, vol.29, no.8, p.2469-2478.(ISI, IF=1.681)
6. CRUZ-CUNHA, M.M., REIS, M.G., VARAJÃO, J., BESSA, M., MAGALHÃES, L.G., BARBOSA, L., BARREIRA, J., "Realidade Aumentada e Ubiquidade na Educação", *Revista Iberoamericana de Tecnologías del Aprendizaje*, November 2010, vol.5, no.4, p.167-174.
7. FLORES, N., AGUIAR, A., "Understanding Frameworks Collaboratively: Tool Requirements", *International Journal on Advances in Software* 2010.
8. PERES, E., LIBERATO, N., BESSA, M., VARAJÃO, J., "Ubiquitous System for Events Promotion", *Communications of the IBIMA*, February 2010, vol.2010.
9. RODRIGUES, N., MAGALHÃES, L.G., MOURA, J.P., CHALMERS, A., SANTOS, F., MORGADO, L., "ArchHouseGenerator - A Framework for House Generation", *Journal of Virtual Worlds Research*, May 2010, vol.2, no.5.
10. ROMPANTE, C., PERES, E., MORAIS, R., BESSA, M., REIS, M.C., "Contextualized Ubiquity: A New Opportunity for Rendering Business Information and Services", *Journal of Theoretical and Applied Electronic Commerce Research*, December 2010, vol.5, no.3, p.55-64.
11. SERENO FERREIRA, H., FIGUEIREDO CORREIA, F., AGUIAR, A., PASCOAL FARIA, J., "Adaptive Object-Models: a Research Roadmap", *International Journal on Advances in Software, IARA Journals*, vol.3, no.1, p.70-89, 2010.

E.2. National Journals with scientific referees

1. MOREIRA DA SILVA, P., CORREIA LOPES, J., SILVA, M.J., "Ubiquitous Computing in Children Education: Framework for Georeferenced Multisensory Information", *Educação, Formação & Tecnologias*, p.35-45, April, 2010.

E.3. Conference proceedings with scientific referees (international or national)

1. AMARAL, L., PASCOAL FARIA, J., "A Gap Analysis Methodology for the Team Software Process", *QUATIC'2010, IEEE Xplore*, p.424-429, 2010.

2. CARNEIRO, D., NOVAIS, P., FERNANDES COSTA, R., NEVES, J., "Enhancing the Role of Multi-agent Systems in the Development of Intelligent Environments", 8th PAAMS 10, Springer, Advances in Intelligent and Soft Computing, no.71, p.123-130, 2010.
3. COSTA, A., NOVAIS, P., FERNANDES COSTA, R., CORCHADO, J., NEVES, J., "Multi-Agent Personal Memory Assistant", 8th PAAMS 10, Advances in Intelligent and Soft Computing, Springer, no.71, p.97-104, 2010.
4. CRUZ, A., PASCOAL FARIA, J., "A Metamodel-based Approach for Automatic User Interface Generation", 13th MODELS'2010, LNCS 6394 , p.256-270. (ISI-P)
5. CUNHA, M., PAIVA, A.C.R., SERENO FERREIRA, H., ABREU, R., "PETTool: A Pattern-Based GUI testing Toll", 2nd ICSTE'2010, IEEE Xplore, 2010.
6. FERNANDES COSTA, R., NOVAIS, P., COSTA, A., LIMA, L., NEVES, J., "User Recognition in AAL Environments, in Ambient Intelligence, Future Trends ", ISAmI'2010, Springer, Series Advances in Intelligent and Soft Computing, vol.72, p.177-184, 2010.
7. FERREIRA, P.M.T., ROSSETTI, R.J., COELHO, A., "Information Systems for Public Transport Users", 13th IEEE ITSC 2010.
8. FERREIRA, R., PASCOAL FARIA, J., PAIVA, A.C., "Test Coverage Analysis of UML Activity Diagrams for Interactive Systems", 7th QUATIC'2010, IEEE Xplore, p.268-273, 2010.
9. FERREIRA, R., PASCOAL FARIA, J., PAIVA, A.C., "Test Coverage Analysis of UML State Machines", 3rd ICSTW'2010, IEEE Xplore, p.284-289, 2010.
10. FREITAS, T.R., COELHO, A., ROSSETTI, R.J., "Correcting Routing Information through GPS Data Processing", 13th IEEE ITSC 2010.
11. FREITAS, M., SOUSA, A., COELHO, A., A visualization paradigm for 3D map-based mobile services, VISIGRAPH'2010, Springer, CCIS series, vol.68, p.89-103, 2010.
12. LOPES, C.T., RIBEIRO, C., "Context in Health Information Retrieval: What and Where ", 4th HCIR'2010. (ISI-P)
13. LOPES, C.T., RIBEIRO, C., "Using local precision to compare search engines in consumer health information retrieval", 33rd ACM SIGIR'2010, ACM digital library, 2010.
14. NUNES, S., RIBEIRO, C., DAVID, G., "Term frequency dynamics in collaborative articles", ACM DocEng2010, Manchester, UK, p.267-270.
15. RAHMAN, A., DAVID, G., RIBEIRO, C., "Model Migration Approach for Database Preservation", ICADL 2010, Springer, LNCS 6102, p.81-90, 2010.
16. RODRIGUES, R.M., COELHO, A., REIS, L.P., "Data model for procedural modeling from textual descriptions", IEEE CEC 2010, p.1-8, 2010.
17. BRANDÃO SILVA, P., COELHO, A., "Procedural Modeling for Realistic Virtual Worlds Development", SLACTIONS 2010.
18. BRANDÃO SILVA, P., COELHO, A., "Procedural Modeling of Urban Environments for Digital Games Development", 7th ACE'2010.
19. CARNEIRO, D., NOVAIS, P., FERNANDES COSTA, R., NEVES, J., "Developing Intelligent Environments with OSGi and JADE", IFIP AI 2010 – 3rd IFIP International Conference on Artificial Intelligence in Theory and Practice, 2010.
20. COELHO, F.E., RIBEIRO, C., "Evaluation of Global Descriptors for Multimedia Retrieval in Medical Applications", DEXA 2010 - DEXA Workshops, p.127-131, 2010.
21. CORREIA, F., CAMACHO, R., CORREIA LOPES, J., "An Architecture for Collaborative Data Mining", 2nd KDIR'2010, p.467-470, 2010.

22. CRUZ, A., SOUSA, A., COELHO, A., "Using games to promote student integration in universities through the use of virtual worlds", SLACTIONS 2010.
23. DEVESAS, J.L., RIBEIRO, C., NUNES, S., "Studying Blog Features over Link Popularity ", SOMA 2010.
24. DIAS, J., CASTRO, J.M., ROMÃO, X., GONÇALVES, M., CORREIA LOPES, J., "SelEQ: a web-based Application for the Selection of Earthquake Ground Motions for Structural Analysis", ECEE 2010.
25. LOPES, C.T., RIBEIRO, C., "Context effect on query formulation and subjective relevance in health searches", IliX 2010.
26. MAGALHÃES, H., PINTO, A., SOUSA, A., "Plotting and Navigation through Data using Dynamic Charts", 8th SVG Open, 2010.
27. MARTINS, A., COSTA, A., "Mass Customization in Engineering Programs: A Framework for Program Management ", 6th International CDIO Conference, 2010.
28. MARTINS, J., SILVA, J.A., SOUSA, A., "Façade Tracking System for Outdoor Augmented Reality", WSCG 2010.
29. MIRANDA, J.C., BLANCO, X.A., SOUSA, A., GUTIERREZ, D., ORVALHO, J., ORVALHO, V., "Painting on Canvas: A Facial Sketching Control System", ACM-SCA 2010.
30. NUNES, S., RIBEIRO, C., DAVID, G., "Blog Track: Temporal Evidence in the Faceted Blog Distillation Task", TREC 2010.
31. PORTELA, L., CARVALHO, R., VARAJÃO, J., MAGALHÃES, L.G., "A review of Chief Information Officer' main skills", 3rd WSKS 2010.
32. PASCOAL FARIA, J., VIDAL, R., PAIVA, A.C., "A Roadmap Toward Software Quality at FEUP", SEPG EUROPE 2010.
33. REIS, M.G., PEREIRA, L.C., PERES, E., BESSA, M., et al. , "Using Digital Exercises to Help Children with Cerebral Palsy in Primary Math Teaching: A Case Study", 10th Int. Educational Technology Conference, vol.3, p.1664-1670, 2010.
34. ROCHA, A., MARTINS, A., HENRIQUES, R., VAN DE VEN, P., NELSON, J., "CAALYX: Using Wireless Sensor Networks to Support e-Health Monitoring", EWSN'2010.
35. RODRIGUES, R.M., COELHO, A., REIS, L.P., "Procedural Modeling of Monumental Buildings from Textual Descriptions", 5th Int. Conf. in Computer Graphics Theory and Applications, p.130-133, 2010.
36. SERENO FERREIRA, H., FIGUEIREDO CORREIA, F., AGUIAR, A., YODER, J., "Core Patterns of Object-Oriented Meta-Architectures", PLOP'2010.
37. SILVA, M.J., CORREIA LOPES, J., MOREIRA DA SILVA, P., MARCELINO, M.J., "Sensing the Schoolyard: Using Senses and Sensors to Assess Georeferenced Environmental Dimensions ", 1st COM.Geo 2010.

E.4. Books (Author)

1. VELEZ GRILO, F., CASIMIRO, A., CORREIA LOPES, J., AZEVEDO, J., "Teoria do Sinal e suas aplicações" 2010, Escolar Editora

E.5. Chapter/paper in Books

1. CRUZ, A., PASCOAL FARIA, J., "Automatic Generation of User Interface Models and Prototypes from Domain and use Case Models User Interfaces", INTECH'2010, p.35-60, 2010.

E.6. Publications (Editor)

1. BRITO E ABREU, F., PASCOAL FARIA, J., J. MACHADO, R., (eds) Proceedings of 7th International Conference on the Quality of Information and Communications Technology - QUATIC'2010, IEEE Xplore, 2010.

E.7. Other Publications

1. DIAS, L.J., COELHO, A., "Novos Serviços Turísticos para Mobile Advertising", INFORUM 2010 - INFORUM- Simpósio de Informática 2010, Braga, Portugal, p.415-426.
2. GRILO, A., PAIVA, A.C., PASCOAL FARIA, J., "Reverse Engineering of GUI Models for Testing", Actas de CISTI'2010 - 5ª Conferência Ibérica de Sistemas e Tecnologias de Informação 2010, ISI Web of Knowledge, Santiago de Compostela, Espanha, p.284-289.
3. JACOB, J., COELHO, A., "Geo Wars - The Development of a location-based game", Videojogos2010 - Conferencia de Ciências e Artes dos Videojogos 2010, Lisboa, Portugal.
4. MOREIRA, P.M., REIS, L., SOUSA, A., "i-opt: Intelligent Optimization for Computer Graphics and Visualization", Actas de CISTI'2010 - 5ª Conferência Ibérica de Sistemas e Tecnologias de Informação 2010, Santiago de Compostela, Espanha.
5. MOREIRA, R., PAIVA, A.C.R., AGUIAR, A., "Testing Aspect-Oriented Programs", Actas de CISTI'2010 - 5ª Conferência Ibérica de Sistemas e Tecnologias de Informação 2010, Santiago de Compostela, Espanha.
6. ORTEGA, M.D., ALVARADO, L., FEITO, F., COELHO, A., SOUSA, A., "Hacia una ciudad virtual", CEIG 2010 - Congreso Espanol de Informatica Grafica 2010, Valencia, Espanha.
7. ORVALHO, V., MIRANDA, J., SOUSA, A., "What a feeling: Learning Facial Expressions and Emotions", Videojogos2010 - Conferencia de Ciências e Artes dos Videojogos 2010, Lisboa, Portugal
8. TEIXEIRA, R., VARAJÃO, J., BESSA, M., MAGALHÃES, L.G., "Agenda Digital Local: um caso português" [Local Digital Agenda: the Portuguese case-study], CAPSI2010 - 10ª conferência da Associação Portuguesa de Sistemas de Informação, October 2010, Viana do Castelo, Portugal.
9. TEIXEIRA, R., VARAJÃO, J., BESSA, M., PERES, E., "Projectos Digitais: uma reflexão e pontes para o futuro" [Digital Projects: one reflection and bridges to the future.], June 2010, 5ª Conferencia Ibérica de Sistemas y Tecnologías de Información, vol.1, p.185-191.

E.8. Theses (concluded by members of the Unit)

Phd theses:

1. NUNES, S., "Information Retrieval on Time-Dependent Collections", Doctoral Program in Informatics Engineering, December 2010, (Cristina Ribeiro, supervisor; Gabriel David, co-supervisor)

F) LIST OF PROJECTS

Short Name	Leader	Dominant Activity Type	Funding			Cooperation		Execution	
			Source	Programme	Project Typology	Type	Role INESCP	Start	Satus 2009-12
DBPreserve	Gabriel David	RES	PROG - NAT	FCT	PROJ IC&DT	NAT	PROP	2007-10	FIN
Urbis	Augusto Sousa	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2008-02	FIN
3DWikiU	Augusto Sousa	RES	PROG - NAT	FCT / POFC	PROJ IC&DT	NAT	PROP	2010-04	START
EiNautilus	António Gaspar	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2008-07	CONT
ADD-ME	Rui Barros	RES	PROG - EU	CIP		EU	PAR	2009-11	CONT
RAIA	Artur Rocha	RES	PROG - EU	INTERREG		EU	PAR	2009-01	CONT
Palco3.0	António Gaspar	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2008-12	CONT
eCAALYX	Ângelo Martins	DEV	PROG - EU	AAL		EU	PAR	2009-05	CONT
PortalDouro	António Coelho	DEV	PROG - NAT	POR Norte		NAT	PAR	2009-04	CONT
Mobiles-1	José Correia	RES	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2009-05	CONT
CEMSDI	Rui Barros	RES	PROG - EU	CIP		EU	PAR	2010-06	START
RobVigil-2	António Coelho	DEV	PROG - NAT	POFC / POR	PROJ CO-PROM	NAT	PAR	2010-01	START
ICT4Depression	Ricardo Henriques	RES	PROG - EU	FP7		EU	PAR	2010-01	START
SI.VIDA	José Correia	CONS	SERV - NAT			IND	CONT	2007-12	FIN
WineSlot	António Gaspar	CONS	SERV - NAT			IND	CONT	2007-02	FIN
CCDRN-TIC	António Gaspar	CONS	SERV - NAT			IND	CONT	2006-12	CONT
CCDRN-RJUE	Rui Barros	CONS	SERV - NAT			IND	CONT	2008-06	CONT
Generg	António Gaspar	CONS	SERV - NAT			IND	CONT	2009-02	CONT
SIGFreg	Rui Barros	TT	SERV - NAT			IND	CONT	2009-06	FIN
SIGAve	Lúgia Silva	DEV	SERV - NAT			IND	CONT	2009-09	FIN
WebReports	Rui Barros	DEV	SERV - NAT			IND	CONT	2010-07	START
Escolinhas	António Gaspar	CONS	SERV - NAT			IND	CONT	2009-12	FIN
Unicer-TI-1	António Gaspar	CONS	SERV - NAT			NAT	CONT	2010-09	START
MNRF-CA	António Gaspar	CONS	SERV - NAT			NAT	CONT	2010-11	START
CCDRN-EA	António Gaspar	CONS	SERV - NAT			IND	CONT	2010-10	START
SIGAP	António Gaspar	CONS	SERV - NAT			IND	CONT	2010-10	START
Consultoria	António Gaspar	CONS	SERV - NAT			IND	CONT	2008-01	CONT
ICPG-UP	Alexandre Carvalho	RES	ORD	PROJ PLURI		NAT	PROP	2010-01	FIN
e-mili	Rui Barros	CONS	ORD	GULBENKIAN		NAT	CONT	2010-08	START

Dominant Activity Type:

RES – Research
 DEV – Development
 CONS - Consulting
 TT - Technology Transfer
 NET - Network
 CONF - Conference
 TRAIN - Advanced Training
 INC - Incubation
 O - Other

Source:

PROG – NAT – National Programmes
 PROG – EU – European Union Programmes
 SERV - NAT - Supply of Services - national
 SERV - EU - Supply of Services - European Union
 SERV - INT - Supply of Services - International
 ORD Other R&D Services
 O - Other External Services
 INT - Internal

Type:

IND – Individual Project
 NAT - National Cooperation
 EU - European Union Cooperation (EU+Associated Countries)
 INT - Internal Cooperation

Role INESCP:

PROP - Proponent
 PAR - Partner
 CONT - Prime Contractor
 SUB - Subcontractor
 MEMB - Membre
 O - Other

G) LIST OF PATENTS

(void)

H) LIST OF PROTOTYPES

1. El-Nautilus - Escola Interactiva NAUTILUS – New version of NET_SCHOOL, now UNI_NET Classroom, a classroom control software, compatible with several OS (Windows, MAC OS and Linux), for the integrated control of student PCs and interactive boards in the classroom, integrating student's and classroom's information management. This project was developed for NAUTILUS, a producer of classroom material (with integrated PCs) and retailer of interactive classroom boards.
2. RAIA - First version of a web based oceanographic georeferenced sensor network (sensor observation service and catalog service).
3. DB Preserve - Demonstrator of a database preservation system, independent of legacy components, such as hardware, operating system and DBMS.
4. URBIS – Spatio-temporal database management system (ACTION !). Spatio-temporal information, visualization system for urban data.
5. ANAFRE - First version of a collaborative management system for Small Local Authorities (SLA). First version of a rapid web platform deployment system. First version of a SLA dashboard application. ANAFRE is a national association of Small Local Authorities (Parishes).
6. eCAALYX - First version of a body area sensor network, interconnecting several medical sensors, upgrading CAALYX interface to match the new eCAALYX platform.
7. SIGAVE - Open source webmapping GIS application using OGC (Open Geospatial Consortium) standards and implementing INSPIRE EC Directive for AMAVE (regional association of local authorities) to be integrated into several regional web portals.
8. Portal Douro - First version of a web regional portal for the touristic promotion of the Douro Region, incorporating advanced location based content features.
9. WebReports - A reporting application for a web based ERP for Local Authorities

I) LIST OF THESES CONCLUDED IN 2010, SUPERVISED BY MEMBERS OF THE UNIT

I.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title
Francisco Sousa Pereira	UTAD	Luís Magalhães	UTAD	Efficient Use of Multiple Hardware components for Image Synthesis and Animation
Nuno Carlos S. Rodrigues	UTAD	Luís Magalhães	UTAD	Rule-based Generation of Virtual Traversable Architectural-period Houses
Sérgio Sobral Nunes	FEUP	Cristina Ribeiro Gabriel David	INESC PORTO/ FEUP	Information Retrieval on Time-Dependent Collections
1	2	3	4	5

1 – Name of the post-graduation student

2 – Institution where the thesis is submitted; if the host institution for the student is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title of the thesis

I.2. MSC Dissertations

Author	Instit.	Supervisor	Instit.	Title
Alfredo Silvestre	FEUP	António Coelho Rosaldo Rossetti	INESC PORTO/ FEUP	Integration of the Social Web in Navigation in Real Time Devices
Ana Remelgado	FLUP/ FEUP	Alberto Gomes António Coelho	FLUP/ INESC PORTO/ FEUP	Municipal Cemetery Management GIS: A Case Study of the Sendim Cemetery
André M.Silva Barbosa	FEUP	Gabriel David	INESC PORTO/ FEUP	Scenarios for Use of Citizen Cards in Academic Information Systems
Angela Maria Moreira da Silva	FEUP	Ademar Aguiar António Coelho	INESC PORTO/ FEUP	Platform of Interaction for 2D Multi-player Educational Games for 6-12 years
Francisco Xavier R. Rebello de Andrade	FEUP	João Pascoal Faria	INESC PORTO/ FEUP	Automatic Test Generation from Algebraic Specifications
Gonçalo Santarém da Silva	FEUP	Ademar Aguiar	INESC PORTO/ FEUP	Scalling rails: a system-wide approach to performance optimization
Hector M.Gomes Dantas	FEUP	João Correia Lopes	INESC PORTO/ FEUP	Email Evolution for Models of Real-time Communication
Helder Nunes	FEUP	Rosaldo Rossetti António Coelho	FEUP/ INESC PORTO	Equipment Management and Urban Furniture
Hugo André M. S. Ferreira Gomes	FEUP	João Pascoal Faria	INESC PORTO/ FEUP	Test Process Automation for a Multiplatform Web-based System
João Carlos Santos Barreira	UTAD	Maximino Bessa Luís Magalhães	UTAD	Proposal of a Framework for Developing Augmented Reality Applications
João Jacob	FEUP	António Coelho	INESC PORTO/ FEUP	Electronic Game Location-based

Author	Instit.	Supervisor	Instit.	Title
João Pedro C. Silva Martins Costa	FEUP	João Correia Lopes	INESC PORTO/FEUP	New Paradigms for Web Browsing: Tabs Integrated Hierarchical Favorites and History
João Tiago Barbosa Pinto	FEUP	João Pascoal Faria	INESC PORTO/FEUP	Tools to support practical teaching of software engineering
Jorge A. Santos Pópulo	FEUP	Gabriel David	INESC PORTO/FEUP	FEUP Digital Information Service in the Perspective of Information Preservation
José Fernando M.Guedes	UTAD	Raul Morais dos Santos Maximino Bessa	UTAD	Ubiquity and Context Management in Vineyard using NFC
José L. Silva Devezas	FEUP	Cristina Ribeiro Sérgio Nunes	INESC PORTO/FEUP	Link Ecosystem of the Portuguese Blogosphere
Leonel Dias	FEUP	António Coelho	INESC PORTO/FEUP	New Services to Mobile Advertising
Manuela Silva de Carvalho	FEUP	Gabriel David	INESC PORTO/FEUP	Plataform Enterprise 2.0 Study
Pedro Ferreira	FEUP	Rosaldo Rossetti António Coelho	FEUP/INESC PORTO	Information Systems for Public Transport Users
Pedro L. de Faria Coelho	FEUP	João Correia Lopes	INESC PORTO/FEUP	Open Location Based Services Platform
Pedro Pacheco	FEUP	António Coelho	INESC PORTO/FEUP	Automatic Evaluation System for e-Learning
Pedro Silva	FEUP	António Coelho	INESC PORTO/FEUP	Procedural Modeling for Computer Games Development
Rafael Araújo Pires	FEUP	Ademar Aguiar	INESC PORTO/FEUP	Knowledge Management using Wikis: a need and features analysis
Roberto C. Moura Carvalho	UTAD	Luís Magalhães	UTAD	Determinants Activities of the Information Systems Manager
Rui André C. Polónia	FEUP	João Correia Lopes	INESC PORTO/FEUP	User Tracking Through Web Sessions
Steeve Alves Ferreira	FEUP	Ademar Aguiar	INESC PORTO/FEUP	Reengineering Web applications to stand alone rich internet applications
Telmo da Rocha Pereira	FEUP	A.Augusto Sousa	INESC PORTO/FEUP	Framework for the Development of Haptic Interaction with Virtual Experiences
Tiago Fernandes	FEUP	António Coelho	INESC PORTO/FEUP	Game Engine to Location Based Services
Tiago Lira Pereira	FEUP	Cristina Ribeiro João Correia Lopes	INESC PORTO/FEUP	Information Systems for Natural Areas using Geo-referencing and Physical Identification
1	2	3	4	5

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title of the thesis

J) LIST OF THESES UNDER SUPERVISION

J.1. PhD Dissertations

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date
André Monteiro Oliveira Restivo	FEUP	Ademar Aguiar	INESC PORTO/ FEUP	Disciplined Reuse of Aspects	2011
António M.R.S. Rosado da Cruz	FEUP	João Pascoal Faria	INESC PORTO/ FEUP	Automatic Generation of User Interfaces from Rigorous Domain and Use Case Models	2011
Arif Ur-Rahman	FEUP	Gabriel David Cristina Ribeiro	INESC PORTO/ FEUP	Data warehouses in the Path from Databases to Archives	2012
Artur Jorge da Silva Rocha	FEUP	Ademar Aguiar	INESC PORTO/ FEUP	Cooperative and Distributed Location-Based Decision Support	2012
Daniel Oancea	FEUP	João Correia lopes	ISEP/ INESC PORTO/ FEUP	An Adaptive Cross-Layer Framework for Multimedia Delivery over Heterogeneous Networks	2011
Fernando J. G. Matos Cosme	FEUP	M ^a Antónia Carravilha Gabriel David	INESC PORTO/ FEUP	A Business Process Management (BPM) Framework for Bus Transport Service Operations Process	2012
Fernando Sérgio Barbosa	FEUP	Ademar Aguiar	INESC PORTO/ FEUP	Generic Roles: Reducing Code Replication	2013
Filipe Correia	FEUP	Ademar Aguiar	INESC PORTO/ FEUP	Supporting the evolution of software knowledge with adaptive software artifacts	2013
Hugo M.G.C.Machado da Silva	FEUP	António Coelho	INESC PORTO/ FEUP	Collaborative environment integrating Augmented Reality and Augmented virtuality	2013
Hugo Sereno Ferreira	FEUP	Ademar Aguiar	INESC PORTO/ FEUP	Adaptive Object-Modeling Patterns, Tools and Applications	2011
Marco A. Amaro Oliveira	FEUP	Ademar Aguiar Inês Dutra	INESC PORTO/ FEUP	Decentralizing processing on opengeospatial consortium compliant spatial data infrastructure	2012
Nuno Honório R. Flores	FEUP	Ademar Aguiar	INESC PORTO/ FEUP	Patterns and Tools for improving Framework Understanding: a Collaborative Approach	2011
Pierre Polzin	FEUP	Luis Borges António Coelho	FEUP/ INESC PORTO	A Methodology to Analyze Users' Access to Health Services and Competition Between Health Services Providers	2012
Roberto M.F. Marques Rodrigues	FEUP	António Coelho Luís Paulo Reis	INESC PORTO/ FEUP	Expedited Modelling of Monumental Buildings	2013
Rodrigo Manuel Lopes de Matos Moreira	FEUP	Ana Paiva Ademar Aguiar	FEUP/ INESC PORTO	Pattern-Based GUI Testing	2013
1	2	3	4	5	6

1 – Name of the post-graduation student

2 – Institution holding the course where this student is enrolled in; if the host institution is other than INESC Porto, write the name in brackets. Ex. FEUP, for a student enrolled in a course at FEUP and having INESC Porto as host institution; FCUP (Univ. Manchester), for a student enrolled in a course at FCUP and staying at the University of Manchester

3 – Name of supervisor or supervisors

4 – Affiliation institutions of supervisors – ex: INESC Porto/FEUP, FCTUC, P. Univ. Comillas Madrid

5 – Title or topic of the thesis

6 – Predicted year of conclusion and delivery – will be taken in account in summary tables

J.2. Other

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date	Type
André Cruz	FEUP	António Coelho Armando Jorge Sousa	INESC PORTO/ FEUP	Digital Game to the Integration of College Students	2011	MSc
André Pinto	FEUP	António Coelho	INESC PORTO/ FEUP	Cooperative Environment for Serious Game-based Location Systems	2011	MSc
André Rodrigues	FEUP	António Coelho	INESC PORTO/ FEUP	Web site for Suggestion of Personalized Tourist Routes	2011	MSc
António A.Cunha Almeida	IPP/EST GF	Ricardo Costa	IPP/EST GF	Face Recognition Technology (FRT)	2011	MSc
Daniel Almeida	FEUP	Rosaldo Rossetti António Coelho	FEUP/ INESC PORTO	FaceBike: Information Aggregation Using Bicycles via Social Network for Cyclists	2011	MSc
David Mendes	FEUP	António Coelho Armando Sousa	INESC PORTO/ FEUP	Digital Game to the Integration of College Students	2011	MSc
Eduardo Ramalho	FEUP	António Coelho	INESC PORTO/ FEUP	Integration of Maps Viewer in Electric Grids	2011	MSc
Enrique Kato	FEUP	António Coelho	INESC PORTO/ FEUP	A game design for a serious game working as a tool to teach programming to FEUP students	2011	MSc
Filipe Sousa	FEUP	Ademar Aguiar António Coelho	INESC PORTO/ FEUP	A New Collaborative Solution for Product Design	2011	MSc
Francisco Pinto	FEUP	António Coelho Jorge Alves da Silva	INESC PORTO/ FEUP	Augmented Reality System for Indoor Spaces	2011	MSc
Guilherme Jacob Alexandre	UTAD	Maximino Bessa Emanuel Peres	INESC PORTO/ UTAD	New Support Advertising	2011	MSc
João Filipe Pereira Valente	FEUP	Ademar Aguiar	INESC PORTO/ FEUP	Web Usability for Children	2011	MSc
João Gradim Pereira	FEUP	Ademar Aguiar Hugo Sereno Ferreira	INESC PORTO/ FEUP	Improving Variability of Applications using Adaptive Object-Models	2011	MSc
Jaime Fins	FEUP	António Coelho	INESC PORTO/ FEUP	Expedited Interior Modeling of Buildings for Virtual Reality Environments	2011	MSC
João Xavier	FEUP	António Coelho	INESC PORTO/ FEUP	Automatic Evaluation System for e-Learning for Teaching Programming	2011	MSc
Marco Costa	FEUP	António Coelho Rosaldo Rossetti	INESC PORTO/ FEUP	Support System for User Mobility Bike	2011	MSc
Maria Teresa	FEUP	António Coelho	INESC PORTO/ FEUP	Interface design for an engine to create portfolios	2011	MSc
Mário Manuel Dominguez da Silva	FEUP	António Coelho	INESC PORTO/ FEUP	Specification, Testing and Validation in Virtual Urban Environments Expedited Modelling	2011	MSC
Miguel A. Correia Melo	UTAD	Maximino Bessa Luis Magalhães	INESC PORTO/ UTAD	Digital Services in Collaborative Environments 3D	2011	MSc

Author	Instit.	Supervisor	Instit.	Title or topic	Concl. Date	Type
Nuno A. Osório Liberato	UTAD	Maximino Bessa João Varajão	INESC PORTO/ UTAD	Proposal of a Model for Developing m-commerce Solutions Location-based	2011	MSc
Nuno F. Oliveira Vasconcelos	IPP/EST GF	Ricardo Costa Paulo Jorge Novais	IPP/EST GF/UM	Celorico Wireless	2011	MSc
Paula Ribeiro	FLUP	Teresa Sá Marques António Coelho	FLUP/ INESC PORTO/ FEUP	Geographic Information System applied to the Urban Regeneration Process	2011	MSc
Pedro Paiva	FEUP	António Coelho	INESC PORTO/ FEUP	Digital Game for Teaching the Fundamentals of Programming	2011	MSc
Regina Alexandra Correia Teixeira	UTAD	Maximino Bessa João Varajão	INESC PORTO/ UTAD	Peso da Régua Digital Agenda	2011	MSc
Ricardo Gonçalves	FEUP	António Coelho	INESC PORTO/ FEUP	Digital Game for Teaching the Fundamentals of Programming	2011	MSc
Ruben Veiga	FEUP	Jorge Alves da Silva António Coelho	FEUP/ INESC PORTO	Application of Augmented Reality for Indoor Decoration	2011	MSC
Sérgio Daniel Pinto Gomes	IPP/EST GF	Ricardo Costa Paulo Jorge Novais	IPP/EST GF/UM	Information System as Support to the Management System Quality (ISO9001:2008)	2011	MSc
StephanieT.Reis	UTAD	Maximino Bessa Luis Magalhães	INESC PORTO/ UTAD	Webjournalism: Analysis of its Structure in the Web Environment and Mobile Slides	2011	MSc
Tiago Martins	FEUP	António Coelho Pedro Silva	INESC PORTO/ FEUP	Collaborative Virtual Environment for the Municipal Planning and Management	2011	MSc
1	2	3	4	5	6	7

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3 – Name of supervisor or supervisors

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5 – Title or topic of the work

6 – Predicted year of conclusion and delivery – will be taken in account in summary tables

7 – Type of work (MSc thesis, post-graduation dissertation, etc.)





INESCPORTO

INSTITUTO DE ENGENHARIA DE SISTEMAS
E COMPUTADORES DO PORTO
LABORATÓRIO ASSOCIADO

Anexo

Organização

2010

INESCPORTO
LABORATÓRIO ASSOCIADO

Campus da FEUP
Rua Dr. Roberto Frias, 378
4200 - 465 Porto - Portugal
T +351 222 094 000
F +351 222 094 050
www.inescporto.pt

ANEXO – Situação organizacional INESC Porto 2010

1 Situação no final de 2010

1.1 Dados institucionais

Tipo de Instituição:	Associação privada sem Fins Lucrativos declarada de Utilidade Pública (declaração de utilidade pública em 19/06/2001)
Associados:	Universidade do Porto (40%) INESC–Instituto de Engenharia de Sistemas e Computadores (36%) Faculdade de Engenharia da Universidade do Porto (18%) Faculdade de Ciências da Universidade do Porto (4%) Instituto Politécnico do Porto (2%)
Património Associativo:	1.250.000 €
Site Internet:	www.inescporto.pt

1.2 Localização física

ASPRELA:	Campus da FEUP Rua Dr. Roberto Frias, nº 378 4200-465 Porto Telef.: 22 2094000 Fax: 22 2094050
CAMPO ALEGRE:	Rua do Campo Alegre, nº 687 4150-179 Porto Telef: 220 402 301 Fax: 220 402 437

1.3 Objectivos gerais institucionais

O INESC Porto é uma instituição criada para constituir uma interface entre o mundo académico e o mundo empresarial da indústria e dos serviços, bem como a administração pública, no âmbito das Tecnologias de Informação, Telecomunicações e Electrónica, dedicando-se, nestas áreas, às atividades de investigação científica e desenvolvimento tecnológico, transferência de tecnologia, consultoria e formação avançada.

A escolha criteriosa de áreas de intervenção onde possa pautar a sua ação por critérios de excelência científica, inovação, internacionalização e impacto no tecido económico e social, mormente através do estabelecimento de parcerias estratégicas, é encarada pelo INESC Porto como condição fundamental para a realização da sua missão.

Neste enquadramento, o INESC Porto propõe-se:

- levar a cabo a produção de ciência e de tecnologia nas suas áreas de competência capazes de competir a nível internacional;
- colaborar na formação de recursos humanos de qualidade científica e técnica, motivados para apostar nas capacidades nacionais e na modernização do País;
- contribuir para a evolução do sistema de ensino científico e tecnológico, modernizando-o e adaptando-o às necessidades e desafios do tecido económico e social;
- assegurar a valorização da tecnologia internamente desenvolvida e apoiar a incubação de novas atividades empresariais em áreas afins aos seus domínios principais de intervenção;
- contribuir, pela realização dos objectivos anteriores, para a construção de um Portugal moderno, de uma economia sólida sustentada por atividades inovadoras e diferenciadas e de uma sociedade de qualidade.

1.4 Laboratório Associado

O INESC Porto é reconhecido como Laboratório Associado pela FCT – Fundação para a Ciência e Tecnologia, abrangendo nesta qualidade Grupos Associados que não estão integrados na instituição jurídica, designando-se nesta qualidade como INESC Porto LA.

1.5 Modelo de organização

A organização do INESC Porto LA inclui a Direção, Serviços de Apoio Administrativo e Técnico, estruturas produtivas (seis Unidades, uma proto-Unidade e três Grupos Associados de I&D), Conselho das Unidades, Conselho de Formação Avançada, Conselho Científico e Comissão de Acompanhamento, Conselho Coordenador INESC Porto LA (ver figura).

A atividade é organizada em áreas de intervenção, designadas genericamente como Unidades quando não houver necessidade de explicitar, de acordo com os seguintes princípios:

- cada área de intervenção deverá corresponder a um conjunto estruturado de competências tecnologicamente avançadas, reconhecidas nacional e internacionalmente e, simultaneamente, a uma capacidade real de aplicação dessas competências e tecnologias, de forma inovadora;
- cada unidade deverá ser globalmente sustentável, compreendendo uma combinação de atividades de I&D, de desenvolvimento de tecnologia e de prestação de serviços;
- cada unidade deverá ter capacidade autónoma de definição de estratégias científicas, assim como de angariação, implementação e gestão de projetos.

Os grupos de investigação associados LIAAD, CRACS e UGEI, que integram o INESC Porto Laboratório Associado gozando de autonomia de governo e não-assimilação jurídica, têm vindo progressivamente a ser acolhidos na organização, passando a estar representados no organograma do INESC Porto LA.

1.5.1 Direção e Serviços de Apoio

Os Serviços de Apoio Administrativo e Técnico incluem seis estruturas, com um total de 31 contratados, estagiários e bolsiros em número variável mas sempre inferior a uma dezena (números a 31/12/2010):

- Departamento de Informação e Logística (DIL)
- Serviço de Comunicações e Informática (SCI)
- Serviço de Informação de Gestão (SIG)
- Serviço de Gestão de Infraestruturas (SGI)
- Serviço de Comunicação
- Serviço de Biblioteca e Documentação (SBD)

De observar que foi possível fazer face ao crescimento de 40% da instituição no período 2004-2009 – passou de 260 para 403 pessoas (no âmbito do Laboratório Associado), com a atividade a evoluir de cerca de 6 ME para perto de 8,5 ME – mantendo controlada a dimensão dos serviços de apoio administrativo e técnico, apenas com um aumento marginal tornado inevitável pelo acentuado crescimento da instituição. Isto foi conseguido apesar do aumento de trabalho trazido pela pressão crescente de auditorias externas, a pedido das entidades e programas de financiamento, pela complexidade administrativa introduzida pelas novas regras da contratação pública.

1.5.1.1 Departamento de Informação e Logística (DIL)

Responsável: Graça Barbosa

Recursos humanos: 17 pessoas

Assegura as seguintes áreas de apoio administrativo e especializado:

- contabilidade, tesouraria, imobilizado, compras, faturação e controlo de recebimentos;
- informação de gestão, planeamento e controlo orçamental, projetos nacionais e europeus;
- recursos humanos;
- apoio jurídico.

1.5.1.2 Serviço de Comunicações e Informática (SCI)

Responsável: João Neves

Recursos humanos: 3 pessoas

O Serviço de Comunicações e Informática é responsável pela gestão da rede de comunicações e pelo parque informático.

1.5.1.3 Serviço de Informação de Gestão (SIG)

Responsável: José Carlos Sousa

Recursos humanos: 3 pessoas (sendo 1 bolsheiro)

O Serviço de Informação de Gestão é responsável pela concepção, desenvolvimento e operação das aplicações de gestão e de informação da instituição.

1.5.1.4 Serviço de Gestão de Infraestruturas (SGI)

Responsável: Carlos Costa

Recursos humanos: 4 pessoas

Garante as funções genéricas de operação e manutenção dos edifícios, bem como o apoio logístico.

1.5.1.5 Serviço de Comunicação (SCOM)

Responsável: Sandra Pinto

Recursos humanos: 4 pessoas (sendo 1 estagiária)

Garante as funções de coordenação e gestão da comunicação interna e externa.

1.5.1.6 Serviço de Biblioteca e Documentação (SBD)

As funções de gestão da documentação são asseguradas pela Biblioteca da FEUP, com o apoio da secretária do DIL.

1.5.2 Estruturas Produtivas

As atividades de I&D desenvolvidas no INESC Porto cobrem sete grandes áreas de intervenção, enquadradas nas Unidades, que combinam as capacidades de I&D e de intervenção no tecido económico (transferência de tecnologia):

- UESP: Unidade de Engenharia de Sistemas de Produção
- UOSE: Unidade de Optoelectrónica e Sistemas Electrónicos
- USE: Unidade de Sistemas de Energia
- USIG: Unidade de Sistemas de Informação e Computação Gráfica
- UTM: Unidade de Telecomunicações e Multimédia
- UITT: Unidade de Inovação e Transferência de Tecnologia
- ROBIS: Grupo de Robótica e Sistemas Inteligentes

Este último Grupo foi criado em 2009, com a admissão no INESC Porto de um conjunto de investigadores vindos da FEUP, e desenvolve a sua atividade na forma de uma proto-Unidade, estando em fase de aquisição de competências organizacionais e estrutura para poder vir a ser ponderada a formalização, no futuro, de uma Unidade à semelhança das restantes.

O modelo organizativo interno de cada uma destas estruturas é diverso, como resultado da diferente sua dimensão, das especificidades das respectivas áreas de intervenção e da qualificação dos seus recursos humanos; tem, contudo, um denominador comum, que é a existência de um ou dois responsáveis, que coordenam com grande autonomia todas as atividades e respondem perante a Direção por todos os aspectos de gestão operacional, nomeadamente no que se refere ao planeamento e execução orçamental.

A caracterização das Unidades e respectiva atividade é apresentada em detalhe no Relatório de Atividade submetido à FCT e que se inclui como Anexo A.

Além das Unidades de I&D, completamente integradas na organização do INESC Porto, o INESC Porto LA inclui ainda os seguintes Grupos de Associados:

- LIAAD - Laboratório de Inteligência Artificial e Apoio à Decisão
- CRACS - Centro de Investigação em Sistemas Computacionais Avançados
- UGEI – Unidade de Gestão e Engenharia Industrial

O LIAAD negociou a admissão ao INESC Porto LA em finais de 2007, o CRACS em 2008 e a UGEI já em 2009. O processo de formalização da inclusão destes grupos no Laboratório Associado, com consequente consolidação científica, continua pendente de decisão da FCT. Prevê-se que, finalmente, em 2011 seja oficializado o reconhecimento *de jure* de uma situação que já existe *de facto*.

1.5.3 Conselho das Unidades

O conjunto de responsáveis de Unidades reúne regularmente com a Direção do INESC Porto, com uma periodicidade quinzenal. Este “Conselho das Unidades” constitui uma das bases da cadeia de decisão adoptada no INESC Porto, conta também com a presença do presidente do Conselho Científico e dos responsáveis do Departamento de Informação e Logística e das respectivas Áreas de Apoio Administrativo e Técnico.

A este nível são tratados todos os assuntos de despacho corrente, gestão orçamental e assuntos de carácter institucional, tendo a experiência demonstrado ser uma estrutura relativamente leve e eficaz, e um fórum essencial de partilha de informação e discussão de problemas e desafios da instituição.

1.5.4 Conselho Científico e Comissão de Acompanhamento Científico

O INESC Porto constituiu um Conselho Científico com a seguinte missão:

- apoiar a Direção na definição de uma estratégia de desenvolvimento científico do INESC Porto;
- implementar procedimentos de estímulo à excelência da produção científica dos Investigadores;
- implementar procedimentos de avaliação da qualidade da atividade das Unidades;
- articular uma política de imagem nacional e internacional para a atividade científica do INESC Porto;
- assistir a Direção nas matérias do foro científico e estratégico que lhe forem submetidas.

A organização do Conselho Científico resulta diretamente da estruturação da atividade pelas seis áreas correspondentes às Unidades. Assim, cada Unidade tem o seu próprio Conselho Científico interno, constituído por todos os doutorados. O Conselho Científico do INESC Porto, por sua vez, é constituído por dois representantes de cada Unidade (apenas no caso da USIC e da UITT) e três membros designados pela Direção. O Presidente é eleito pelos membros do Conselho.

Finalmente, o INESC Porto tem uma CAC - Comissão de Acompanhamento Científico (Scientific Advisory Board) que, inclui individualidades externas, nomeadamente cientistas portugueses residentes no estrangeiro e outros membros da comunidade científica internacional. Esta Comissão de Acompanhamento analisa criticamente a atividade de I&D, produzindo relatórios periódicos que constituem elementos essenciais de avaliação-correção da atividade da instituição.

O relatório de atividades do Conselho Científico constitui igualmente uma peça incluída no Relatório de Atividade das Unidades.

O Conselho Científico e a Comissão de Acompanhamento Científico são órgãos estatutários do INESC Porto.

O Conselho Geral aprovou, em 14 de Dezembro de 2007, a extensão dos órgãos consultivos do INESC Porto/Instituição ao INESC Porto Laboratório Associado, por forma a abranger as áreas de atividade do LIAAD e CRACS, consagrando-se a formação da Comissão de Acompanhamento Científico do INESC Porto LA, como extensão da atual Comissão de Acompanhamento Científico do INESC Porto/instituição e do Conselho Científico do INESC Porto LA, como extensão do Conselho Científico do INESC Porto/instituição, mantendo-se os respectivos Presidentes.

1.5.5 Conselho Coordenador do INESC Porto Laboratório Associado

Com o objectivo de assegurar a coesão estratégica e operacional das atividades do INESC Porto Laboratório Associado, foi criado, já em 2007, o Conselho Coordenador do INESC Porto Laboratório Associado, composto pela Direção do INESC Porto, um representante de cada Grupo autónomo, um representante de cada Unidade e um representante da estrutura administrativa do INESC Porto. O seu funcionamento efetivo aguarda por reconhecimento formal pela FCT da nova arquitetura do laboratório Associado.

