



INESCPORTO

INSTITUTO DE ENGENHARIA DE SISTEMAS
E COMPUTADORES DO PORTO
LABORATORIO ASSOCIADO

PLANO DE ACTIVIDADES DAS UNIDADES

INESCPORTO

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ACTIVITY PLAN OF INESC PORTO UNITS

This part of INESC Porto Plan is divided in two main chapters: the plan of scientific and technological activities and the plan of support activities.

The plan of scientific and technological activities begins with a section presenting the Scientific Council, followed by the detailed description of the scientific and technological units of the institute, namely:

- Manufacturing Systems Engineering Unit
- Optoelectronics and Electronic Systems Unit
- Power Systems Unit
- Information and Communications Systems Unit
- Telecommunications and Multimedia Unit
- Innovation and Technology Transfer Unit

The plan of support activities presents in detail a large department - Information and Logistics Department (DIL) - and several other services. For DIL, we use a simplified version of the format used for the operational units. For the other services, we present a list of actions only.

P1. PLAN OF SCIENTIFIC AND TECHNOLOGICAL ACTIVITIES

P1.1 SCIENTIFIC COUNCIL

President: Manuel Matos

The Scientific Council will continue in 2009 to fulfill its statutory duties, regarding:

- analysis and opinion on annual reports and plans prepared by the Board of Directors;
- support to the process of issuing awards to the authors of papers published in scientific journals;
- analysis of other matters requested by the Board of Directors.

The Council will also try to establish a mechanism to monitor the scientific production of the institution in terms of publications and MSc and PhD theses, in conjunction with the Scientific Committees of the Units.

Efforts will also be made towards the organization of a series of seminars to promote the exchange of information about the activities of the different units, in order to strengthen the cohesion of the institution and favor synergies.

P1.2 MANUFACTURING SYSTEMS ENGINEERING UNIT

Managers: Luís Maia Carneiro, Jorge Pinho de Sousa

P1.2.1 SHORT DESCRIPTION OF THE UNIT

The main goal of the Manufacturing Systems Engineering Unit (UESP) 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 Unit is committed to conduct high quality research projects.

The Unit main competences are related to Operations Management and Enterprise Information Systems applied to industrial companies and enterprise collaborative networks. The Unit main activity areas include: Enterprise Cooperation Networks, Operations Management and Production Planning, Internal Logistics, Optimization of Cutting and Packing, Systems integration, and consulting services.

The Unit's 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 and Knowledge Management in Collaborative Networks: socio-technical analysis models in organizational networks, collaborative processes in organizational networks, information and knowledge management in organizational networks.
- Operations Management and Production Planning: structuring of decision processes; optimization methods; Combinatorial Optimization and meta-heuristics; optimization for planning and scheduling problems; Simulation; Decision Support Systems.
- Optimization of Cutting and Packing: 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.

The Unit promotes and participates in applied research projects, in partnership with software houses and equipment producers, aiming at the development of innovative products, and provides consulting services to industrial companies. Consulting services include the analysis and optimization of business processes, requirements analysis of IT systems, selection of IT systems (ERP and others), change management and support in the implementation phase. These services follow a proprietary methodology, developed over many years of experience. The Unit has also a large experience in the fields of manufacturing systems integration.

The Unit plays also a role in the promotion of the utilization of advanced technologies by industrial enterprises through dissemination, training and consulting actions, aiming at creating awareness of the advantages and limitations of new technological solutions, identifying new requirements, and supporting their implementation. The Unit provides R&D services to develop innovative products to technology suppliers, software houses, systems integrators and producers of manufacturing equipment.

Table of correspondence between know-how and industrial sectors

Know-how	Status (*)	Enterprise Collaboration Networks	Manufacturing	Software houses	Equipment producers
Structuring of decision processes	I	X	X	X	X
Business Models	I	X			
Information Systems Analysis	I	X	X	X	X
Socio-organizational Analysis	I	X	X	X	
Optimization	I	X	X	X	X
Simulation	I	X	X		X
IS development methodologies	I			X	
IS advanced applications	I	X	X	X	
Databases	I			X	X
Enterprise integration and frameworks	I	X	X	X	
Communications	I / O		X		X
Automation	I		X		X

(*) I - Internal; O - Existing in another Unit of INESC Porto; E - External; C - To be created

Coverage of the Innovation Process

Activity Area	Research	Development	Consulting	Training	Marketing and support	Evolutionary maintenance	Use
Enterprise Collaboration Networks	UESP	UESP, Sistrade, Oficina de Soluções	UESP	UESP	Sistrade, Oficina de Soluções	Sistrade Oficina de Soluções	Footwear Metalworking Cork Automobile
Logistics	UESP	UESP LIREL	UESP	UESP LIREL	LIREL	UESP LIREL	Footwear Metalworking Furniture
Planning	UESP	UESP, Softi9, Oficina de Soluções	UESP	UESP	Softi9, I68, CPC	UESP	Automobile Metalworking Footwear
Optimization	UESP	UESP	UESP	UESP	UESP, Lirel	UESP	Textile Paper Metalworking
Enterprise engineering and process optimization	UESP	UESP	UESP	UESP	UESP		All

Description of the Unit's organisational structure

The Manufacturing Systems Engineering Unit coordination is jointly assumed by Luís Maia Carneiro and Jorge Pinho de Sousa.

Currently the areas with more significant activity are Enterprise Cooperation Networks, Internal Logistics, Operations Management and Cutting and Packing. Consulting services are structured and provided by a specific group in the Unit.

Summary of results of the research activities of the team members

- Projects

Summary of projects developed in 2008

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	11	2		505.000
D - Development	3			59.300
C - Consulting	6	1		166.600
A - Advanced training				
T - Technology Transfer	2	1		37.600
O - Other			2	59.400
TOTAL	22	4	2	827.900

Summary of relative distribution of sources of income

Financing (3)	Status (4)			Total Income (€)
	S - Started	OG - On-going	C - Concluded	
NP - National Programmes	4,83%	3,87%	18,29%	223.400
EP - European Programmes		9,54%	19,72%	242.300
CS - Consulting and services	5,92%	11,72%	26,11%	362.200
O - Other R&D sources				
OS - Other sources				
Total	10,75%	25,12%	64,13%	827.900

Summary of projects developed in 2008

Name of the project	Respons.	Type proj. (1)	Degree of intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
CONSULTORIA	A. C. Alves	C	N	CS	-	-	Several contracts	OG
LIREL	P. S. Marques	T	N	CS	-	-	Renewable	OG
SONAFI	Paula Silva	D	N	CS	-	-	Renewable	OG
IRCPortugal	A. C. Alves	T	E	EP	Innovation	04-2004	03-2008	F
CEC Made Shoe	Rui Diogo	R	E	EP	Growth	10-2004	09-2008	F
CEC-MadeShoe-Prime	Rui Diogo	R	N	NP	Prime	10-2004	06-2008	F
DURIT AD	A. C. Alves	C	N	CS	Demtec	12-2004	05-2008	F
PRONIC	Luís Guardão	R	N	CS	-	01-2006	03-2008	F
SIDAT	Luís Guardão	T	N	NP	SIUPI	01-2006	06-2008	F
AC/DC	J.P. Sousa	R	E	EP	IST	10-2006	09-2010	OG
IZARO GREY	Luís Guardão	D	N	CS	-	01-2007	10-2010	OG
TecModa	C. Toscano	R	N	NP	Prime	01-2007	07-2008	F
SIMULOG	Paulo Marques	R	N	NP	Prime	02-2007	06-2008	F

Name of the project	Respons.	Type proj. (1)	Degree of intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
RCM	J.P. Sousa	R	N	NP	Redes Cp.	06-2007	06-2008	F
SAPIR	Rui Diogo	D	N	CS	-	06-2007	06-2008	F
CIFIAL	A. C. Alves	C	N	CS	-	10-2007	06-2008	F
PMCOLNET	A. Soares	R	N	NP	FCT	11-2007	12-2009	OG
CROME	J. S. Ferreira	R	N	NP	FCT	12-2007	12-2009	OG
BASYS	A. Azevedo	O	I	CS	-	01-2008	07-2008	F
ERIMA	J.P. Sousa	O	I	CS	-	01-2008	11-2008	F
SIBAP	Rui Diogo	R	N	NP	I&D Coop	06-2008	12-2009	S
e-BIZ-TCF	C. Toscano	C	E	CS	-	07-2008	06-2009	S
EPREV	Luís Guardão	C	N	CS	Vale Inov.	07-2008	12-2008	F
AGILPLAN	Luís Guardão	R	N	NP	I&D Coop.	12-2008	06-2010	S
Digitalpartners	A. C. Alves	C	N	CS	Vale Inov.	12-2008	12-2008	F
Enabler-plan	Luís Carneiro	R	N	CS	I&D Ind.	12-2008	12-2009	S
SIAMPOS	A. C. Alves	C	N	CS	Vale Inov.	12-2008	11-2009	S
Vale Softi9	Luís Guardão	R	N	CS	Vale IDT	12-2008	11-2009	S

- (1) Type of Project: R - Research; D - Development; C - Consulting; A - Advanced Training; T - Technology Transfer; O - Other
- (2) Degree of internationalization: N - National; E - European; I - International (*Select one*)
- (3) Source of financing: NP - National Programmes; EP - European Programmes; CS - Consulting and services; O - Other R&D financing sources; OS - Other sources
- (4) Status: S - Starting: activities initiated in 2008 and continuing in 2009; OG - On-going: activities started earlier than 2008 and continuing in 2009; F - Finished: activities ending in 2008.

• Summary of publications

Summary of publications in 2008

Type of publication	Number
Theses concluded in 2008 by members of the unit	4
Books (author)	
Chapter/paper in books	1
Publications (editor)	
Papers in International Journals with scientific referees	8
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	11
Other publications (National meetings, local journals, etc.)	1
Total	25

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2008

Type	Starting	On-going	Concluded	Total
Master	7	8	17	32
Doctoral	4	10	4	18
Total	11	18	21	50

- Summary of Advanced Training Actions

Summary of Advanced Training Actions organized for external trainees in 2008

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	3
Training for others (<i>estágios extra-curriculares</i>)	
Professional training actions (<i>estágios profissionais</i>)	1
Other actions	
Total	4

- Summary of activities of cooperation or dissemination

Summary of items

Type	Number
Organizing conferences or meetings	6
Collaboration in papers authored by INESC Porto researchers	23
External persons directly involved in actions organized by INESC Porto	14

- Human resources in 2008

Summary of Unit personnel at the end of 2008

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Polytechnic Staff</i>	11	5	1		17	0
<i>INESC Porto Fellows</i>		1	3		4	-1
<i>Other Fellows</i>					0	-2
<i>Employees</i>	1	2	8	2	13	0
<i>Trainees</i>			4		4	+1
<i>Other</i>						
Administrative			2		2	0
Total	12	8	18	2	40	-2

(*) Relative to 2007, in absolute numbers.

P1.2.2 SWOT ANALYSIS

Strengths

- Good technical and scientific background;
- Considerable experience in structuring complex, real problems;
- Good relationships with enterprise associations and technological centres from several industrial sectors;
- Trust relations with a significant number of companies;
- Good network of contacts at the European level.

Weaknesses

- Wide activity scope;
- Insufficient commercial effort.

Opportunities

- Companies are aware of the need to innovate and improve productivity;
- Start up phase of the 7th European RTD framework;
- Good relationships with many foreign entities and researchers.

Threats

- Reduced number of technology base Portuguese companies, with own products, especially in the software domain;
- Foreseen future reduction of structural funds for Portugal;
- Dependency of Portuguese companies from structural funds to perform RTD projects.

P1.2.3 MEDIUM TERM STRATEGIC OBJECTIVES AND OBJECTIVES FOR THE YEAR

Medium term objectives and management principles include:

- Increase scientific excellence by focusing activities in some specific areas, by participating in research projects with leading research organisations, at a national and an international level, by empowering younger researchers, and by promoting PhD and MSc projects;
- Assure critical mass in the Unit's main activity areas;
- Improve the alignment between basic research, applied research and consultancy;
- Maximise the impact of the Unit's activity in the companies, and promote the valorisation of results;
- Establish strategic partnerships with software houses and producers of manufacturing equipments, allowing the alignment of the research activities with future industrial projects, for a better valorisation of the developed intellectual property;
- Improve the balance between the income related with national projects, European projects and company projects, through an increase in the RTD and consulting services for companies- these services should represent a minimum of 40% of the total activity volume;

- Improve internal competences by:
 - developing the competences and motivation of human resources;
 - creating conditions for attracting high level national and international researchers;
- Improve the Unit's external visibility, through the organisation and participation in key national and international scientific and industrial events;
- Develop innovative training courses, increasing the total income of the Unit, and creating a powerful marketing instrument.

P1.2.4 ACTION PLAN (GLOBAL)

For 2009 a number of structural actions are planned, including:

- Continue the consolidation of the scientific activity in the areas of enterprise cooperation networks, meta-heuristics, cutting and packing, and developing the areas of internal logistics and simulation. Create and disseminate doctoral programmes.
- Promote an internal regular discussion on research opportunities and project organization.
- Promote a pragmatic application of the concepts and tools in enterprise cooperation networks for the companies of the region.
- Organize a set of innovative short and medium-size training initiatives for companies. These courses should be strongly linked to the Unit's main research areas and have a clear differentiation from those currently available on the market. This offer should include areas such as enterprise integration and collaboration, advanced planning and scheduling systems, decision support systems, methodologies for IT adoption by SMEs.
- Increase the quota of consultancy and technical assistance to companies, to a minimum of 20%.
- Develop new partnerships with national and international research organizations, leaders in fields near or complementary to the Unit's activity.
- Increase the UNIT participation and the visibility in European projects.
- Consolidate partnerships with software houses and producers of equipments.
- Continue direct contact with large number of companies, in Portugal and abroad.
- Continue improvement of the professionalism and quality of services and projects.
- Pursue the work done in standardization and in the improvement of software development methodologies and practices, with impact on productivity, quality and maintenance.
- Define plans for the valorisation of the intellectual property of the Unit.
- Develop specific actions to strengthen the institution's image in its main target markets. Special focus will be put on the organization of workshops and discussion panels with local companies and research centres.

P1.2.5 ACTIVITIES EXPECTED FOR 2009

- Projects

Summary of the projects to be developed in 2009

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	7	6		793.550
D - Development	2			24.000
C - Consulting	3	1		158.750
A - Advanced training				
T - Technology Transfer	2	1		45.000
O - Other				
TOTAL	14	8		1.021.300

Summary of the percentage distribution of budgetary revenue

Financing (3)	Status (4)			Total Income (€)
	OG - On-going	G - Guaranteed	E - Expected	
NP - National Programmes	16,53%		25,21%	426.300
EP - European Programmes	9,30%	34,37%	2,94%	476.000
CS - Consulting and services	10,67%		0,98%	119.000
O - Other R&D sources				
OS - Other sources				
Total	36,50%	34,37%	29,13%	1.021.300

Summary of projects to be developed in 2009

Name of the project	Respons.	Type proj. (1)	Degree of intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
CONSULTORIA	A. C. Alves	C	N	CS	-	-	Several contracts	OG
LIREL	P. S. Marques	T	N	CS	-	-	Renewable	OG
SONAFI	Paula Silva	D	N	CS	-	-	Renewable	OG
AC/DC	J.P. Sousa	R	E	EP	IST	10-2006	09-2010	OG
IZARO GREY	Luís Guardão	D	N	CS	-	01-2007	10-2010	OG
PMCOLNET	A. Soares	R	N	NP	FCT	11-2007	12-2009	OG
CROME	J. S. Ferreira	R	N	NP	FCT	12-2007	12-2009	OG
SIBAP	Rui Diogo	R	N	NP	I&D Coop.	06-2008	12-2009	OG
e-BIZ-TCF	C. Toscano	C	E	CS	-	07-2008	06-2009	OG
AGILPLAN	Luís Guardão	R	N	NP	I&D Coop.	12-2008	06-2010	OG
Enabler-plan	Luís Carneiro	R	N	CS	I&D Ind.	12-2008	12-2009	OG
SILAMPOS	A. C. Alves	C	N	CS	Vale Inov.	12-2008	11-2009	OG
Vale Softi9	Luís Guardão	R	N	CS	Vale IDT	12-2008	11-2009	OG

Name of the project	Respons.	Type proj. (1)	Degree of intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
H-know	A. Soares	R	E	EP	IST	01-2009	12-2011	G
Vales IDT	Luís Carneiro	R	N	NP	Vales IDT	01-2009	03-2010	E
Vales Inov	A. C. Alves	C	N	NP	Vales Inov.	01-2009	03-2010	E
Intereg	A. C. Alves	T	E	EP	Intereg	03-2009	09-2012	E
Net-Challenge	J.P. Sousa	R	E	EP	NMP	04-2009	09-2011	G
Pronic2	Luís Guardão	T	N	CS	-	04-2009	02-2010	E
FIT4U	Rui Diogo	R	E	EP	NMP	06-2009	05-2012	G
VFF	A. Azevedo	R	E	EP	NMP	06-2009	05-2013	G
Cornet	Luís Carneiro	R	E	NP	I&D Coop.	10-2009	09-2011	E

- (1) Type of Project: R - Research; D - Development; C - Consulting; A - Advanced Training; T - Technology Transfer; O - Other
- (2) Degree of internationalization: N - National; E - European; I - International (Select one)
- (3) Source of financing: NP - National Programmes; EP - European Programmes; CS - Consulting and services; O - Other R&D financing sources; OS - Other sources
- (4) Status: OG - On-going: starting before 2009; G - Guaranteed: activity with a firmly agreed contract, starting in 2009; E - Expected: Activity with expected achievement, corresponding to a level of achievement proposed as a goal by the Unit.

- Publications

Summary of the publications expected for 2009

Type of publication	Number
Theses concluded in 2009 by members of the unit	2
Books (author)	
Chapter/paper in books	
Publications (editor)	
Papers in International Journals with scientific referees	12
Papers in National Journals with scientific referees	2
Conference Proceedings in events with scientific referee and selection	14
Other publications (National meetings, local journals, etc.)	4
Total	34

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2009

Type	Starting	On-going	Concluded	Total
Master	12	4	11	27
Doctoral	3	10	4	17
Total	15	14	15	44

- Summary of advanced training actions

Summary of Advanced Training Actions expected for 2009

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	4
Training for others (<i>estágios extra-curriculares</i>)	
Professional training actions (<i>estágios profissionais</i>)	1
Other actions	
Total	5

- Summary of activities of cooperation or dissemination

Summary of cooperation and dissemination actions expected for 2009

Type	Number
Organizing conferences or meetings	3
Collaboration in papers authored by INESC Porto researchers	12
External persons directly involved in actions organized by INESC Porto	6

- Human resources in 2009

Summary of Unit personnel at the end of 2009

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Polytechnic Staff</i>	11	5	1		17	0
<i>INESC Porto Fellows</i>		1	6		7	+3
<i>Other Fellows</i>					0	0
<i>Employees</i>	1	2	8	2	13	0
<i>Trainees</i>			4		4	0
<i>Other</i>						
Administrative			2		2	0
Total	12	8	21	2	43	+3

(*) Relative to 2008, in absolute numbers.

P1.3 OPTOELECTRONICS AND ELECTRONIC SYSTEMS UNIT

Manager: José Luís Santos

P1.3.1 SHORT DESCRIPTION OF THE UNIT

The Unit develops its activity in the areas of Optoelectronics and Electronic Systems Integration, mainly in the domain of optical fibre technology. The Electronics section is essentially oriented towards the process of technology transfer to industrial Portuguese companies, the integration of optoelectronic systems. The scientific research made by the Unit is directed to the research in the domain of Optoelectronics, particularly the applied research in optical fibre sources, optical communications, optical fibre sensors and micro fabrication (thin films and integrated optics). In the framework of its activity it proportionate the adequate environment to the integration of post-graduate students, mainly coming from the Physics Department of the Sciences Faculty of the University of Porto and the Electro technical and Computer Engineering Department of the Engineering Faculty of the same University. Throughout the years, R&D collaborations have been made with prestigious institutions, national and international (Universities, Institutes or companies), very often within the framework of R&D joint projects. Nowadays, the Unit priorities are: strengthen its competences in its areas of activity, through crossed fertilization actions among them beginning with a careful and adequate selection of R&D projects to be submitted, as well as institutional links with other organizations, to develop actions in order to maintain a minimum number of PhD researchers able to frame all the Unit R&D activity, to define the process of equipment renewal of the Unit with the goal of keeping a modern laboratory in optoelectronic technologies.

The main vectors of the Unit activity development are presented:

- Research, development and technology transfer in the area of the optical fibre sensors;
- Development and technology transfer in systems integration;
- Research in sol-gel technology;
- Research in optical filtering using fused coupler technology, Bragg gratings and long-period gratings;
- Research in optical coherent tomography for medical applications;
- Research and development in multi-axis optical fibre accelerometer;
- Research and development in micro packaging;
- Research and development in photovoltaic cells;
- Research in energy harvesting and scavenging for sensing.

Table of correspondence between know-how and the Industrial Sectors

Know-how	Status(*)	Instrumentation	Telecommuni cations	Environment	Energy	Health
Scientific Know-how						
Optical fiber sensors	I	X		X	X	X
Microfabrication	I					
Optical fiber sources	I, E		X			
Civil engineering structures modelization	E	X				
Energy networks management	O	X				X
Chemical pollutants detection	E			X		

Know-how	Status(*)	Instrumentation	Telecommunications	Environment	Energy	Health
Biomedicine	E					X
Technology Know-how						
Electronic systems project and development	I	X	X	X	X	X
Electronic systems integration	I	X	X	X	X	X

(*) I - Internal; O - Existing in another Unit of INESC Porto; E - External; C - To be created

Coverage of the Innovation Process

Activity Area	Research	Development	Consulting	Training	Marketing and Support	Evolutionary Maintenance	Use
Instrumentation	UOSE/Lab. Structures FEUP	UOSE/Lab. Structures FEUP	UOSE/Lab. Structures FEUP	UOSE/Lab. Structures FEUP	FiberSensing	FiberSensing	Civil engineering structures instrumentation
Telecommunications	UOSE, UTM	UOSE, UTM	UOSE, UTM	UOSE, UTM			Optical fiber communication systems
Environment	UOSE/Dep. Química FCUP	UOSE/Dep. Química FCUP	UOSE/Dep. Química FCUP	UOSE/Dep. Química FCUP			Pollutants detection and monitoring systems
Energy	UOSE, USE	UOSE, USE	UOSE, USE	UOSE, USE			Energy networks management systems
Health	UOSE, ITQB	UOSE, ITQB	UOSE, ITQB	UOSE, ITQB			Biomedical sensors

Description of the Unit's organizational structure

The Unity is organized around technological and scientific competences. Each one of these competences is coordinated by a PhD who, in close collaboration with the Unit's coordinator, defines strategies and partnerships. The motivation to this organizational scheme is rooted on the crucial relevance of scientific competence as the activity thrust.

Summary of results of the research activities of the team members

- Projects

Summary of projects developed in 2008

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	13	3		299.002
D - Development				
C - Consulting	1			10.000
A - Advanced training				
T - Technology Transfer	4			175.814
O - Other		1	3	26.000
TOTAL	18	4	3	510.816

Summary of relative distribution of sources of income

Financing (3)	Status (4)			Total Income (€)
	S - Started	OG - On-going	C - Concluded	
NP - National Programmes	20,38%	9,40%	6,63%	185.953
EP - European Programmes	3,03%	12,18%	16,55%	162.237
CS - Consulting and Services	0,49%		28,41%	147.625
O - Other R&D sources				
OS - Other Sources			2,94%	15.000
Total	23,90%	21,58%	54,52%	510.816

Summary of projects developed in 2008

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
FIDELIO	M. J. Marques	R	E	EP	6PQ	12-2004	05-2008	F
ESA-ONE	F. Araújo	R	E	EP	ESA	01-2006	12-2008	F
MICROPACK	F. Araújo	T	N	NP	IDEIA	01-2006	05-2008	F
NEXTGENPCF	L. A. Ferreira	R	E	EP	6PQ	01-2006	05-2009	OG
OXIGÉNIO	J. L. Santos	R	N	NP	FCT	01-2006	06-2008	F
CEMICRO	Paulo Marques	T	N	NP	AdI	01-2007	07-2008	F
AMDRAPHYD	P. Jorge	R	N	NP	FCT	03-2007	02-2009	OG
OPTIC-ALGAE	J. M. Baptista	R	N	NP	FCT	06-2007	05-2010	OG
WELDING	O. Frazão	R	N	NP	FCT	07-2007	06-2009	OG
BIOPELVIC	L. A. Ferreira	R	N	NP	FCT	01-2008	12-2009	S
CostActions	J. L. Santos	O	E	EP	6PQ	01-2008	12-2009	S
ENDURANCE	F. Araújo	R	N	NP	FCT	01-2008	12-2009	S
EWOF2010	J. L. Santos	O	I	CS	-	01-2008	12-2010	S
FiberSensing08	J. L. Santos	T	N	CS	-	01-2008	12-2008	F
FS-CAD	Ireneu Dias	C	N	OS	PS	01-2008	12-2008	F
GRICES	J. L. Santos	O	I	NP	FCT	01-2008	12-2009	S
IMOLDE	F. Araújo	T	N	CS	CIM INOV	01-2008	06-2008	F
MOTION	O. Frazão	R	N	NP	FCT	01-2008	02-2010	S
Nanocrystalline	M. J. Marques	R	N	NP	FCT	01-2008	12-2009	S
OREO2	P. V. Marques	R	N	NP	FCT	01-2008	12-2009	S
SENROS	P. Jorge	R	N	NP	FCT	01-2008	12-2009	S
SmartBio	O. Frazão	R	N	NP	FCT	01-2008	02-2009	S
Biomotion	M. Correia	R	N	NP	FCT	04-2008	03-2011	S
BIOSWIM	M. Correia	R	N	NP	FCT	04-2008	09-2010	S
Sschool	J. L. Santos	O	I	OS	-	06-2008	12-2008	F

- (1) Type of Project: R - Research; D - Development; C - Consulting; A - Advanced Training; T - Technology Transfer; O - Other
- (2) Degree of internationalization: N - National; E - European; I - International (*Select one*)
- (3) Source of financing: NP - National Programmes; EP - European Programmes; CS - Consulting and services; O - Other R&D financing sources; OS - Other sources
- (4) Status: S - Starting: activities initiated in 2008 and continuing in 2009; OG - On-going: activities started earlier than 2008 and continuing in 2009; F - Finished: activities ending in 2008.

- Summary of publications

Summary of publications in 2008

Type of publication	Number
Theses concluded in 2008 by members of the unit	
Books (author)	
Chapter/paper in books	
Publications (editor)	
Papers in International Journals with scientific referees	21
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	21
Other publications (National meetings, local journals, etc.)	37
Total	79

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2008

Type	Starting	On-going	Concluded	Total
Master			2	2
Doctoral	2	11		13
Total	2	11	2	15

- Summary of Advanced Training Actions

Summary of Advanced Training Actions organized for external trainees in 2008

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	2
Training for others (<i>estágios extra-curriculares</i>)	
Professional training actions (<i>estágios profissionais</i>)	2
Other actions	
Total	4

- Summary of activities of cooperation or dissemination

Summary of items

Type	Number
Organizing conferences or meetings	1
Collaboration in papers authored by INESC Porto researchers	51
External persons directly involved in actions organized by INESC Porto	30

- Human resources in 2008

Summary of Unit personnel at the end of 2008

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
<i>R&D</i>						
<i>University or Polytechnic Staff</i>	13	1			14	-2
<i>INESC Porto Fellows</i>		2	4		6	+1
<i>Other Fellows</i>		12	1		13	+6
<i>Employees</i>	5		4	1	10	0
<i>Trainees</i>			3		3	-6
<i>Other</i>	3	1			4	+3
<i>Administrative</i>				1	1	0
Total	21	16	12	2	51	+2

(*) Relative to 2007, in absolute numbers.

P1.3.2 SWOT ANALYSIS

Strengths

- Prestige and image of excellence: as demonstrated by FCT reports and participation in Scientific Committees of International Conferences (example: OFS - Optical Fibre Sensors);
- Connections and partnerships with renowned scientific groups;
- Technological and scientific infrastructure and capability: the Unit has know-how, equipment and laboratorial infrastructure which constitute a competitive resource.

Weaknesses

- High costs regarding infrastructure operation and maintenance;
- Critical mass absence concerning some areas and unbalanced distribution of human resources by qualification levels: the Unit has a high number of post-graduation students and a need for recently graduated people for renewal of the training cycle.

Opportunities

- Know-how and technologies potential: the application areas for Unit's technologies are vast and diversified and, consequentially, a larger use can be foreseen.

Threats

- Inadequate framework of reference concerning valorisation of post-graduate training activity: after concluding their degrees, post-graduate students, generally, don't compensate the Unit's financial and human resource effort on their behalf and, in consequence, they don't contribute to the system; a significant proportion follow college and polytechnic teaching careers or in corporations with few or no connections with Unit's activity;
- Predictable decrease of public funding regarding R&D activities: the supposed and desirable increase of funding of I&D activity by companies doesn't seem easy on the current context.

P1.3.3 MEDIUM TERM STRATEGIC OBJECTIVES AND OBJECTIVES FOR THE YEAR

Medium term:

- Strengthening of installed and established scientific and technological capacity;
- Infrastructure re-equipment;
- Increase of participation in European projects (7th Framework Program);
- Integration of Unit's R&D interests with medium term objectives of current and potential corporate partners, for synergies and valorisation of Unit's activity;
- Increase of the economical and social impact of R&D results;
- Attraction of new university investigators;
- Internal cross fertilization of technological and scientific competences;
- Internationalization;
- Integrated policy of intellectual property application and valorisation;
- Participation in scientific committees of conferences related to Unit interests;
- Improvement of the publication ratios in the microfabrication area.

Year:

- Increase of integration and development of PhDs in the context of the Associated Laboratory framework;
- Assessment of medium/long term R&D new opportunities: negative refractive index materials; sensor networks; photovoltaic materials;
- Internal project concerning photovoltaic cells based on thin films: technical feasibility evaluation, search of industrial partners and venture capital funding
- Re-equipment investment plan;
- Evaluation of new opportunities in technology transfer, especially in the Framework of FP7 and Portuguese QREN.

P1.3.4 ACTION PLAN (GLOBAL)

- International summer course in optical fiber technology and integrated optics;
- Advanced professional training course in the field of optical fiber technologies for technicians;
- Establishment of new and strengthening of already in place industrial partnerships, both national and international;
- Proposals submission for national R&D projects;
- Proposals submission for European projects (7FP);
- Gradual and progressive internal re-organization.

P1.3.5 ACTIVITIES EXPECTED FOR 2009

- Projects

Summary of the projects to be developed in 2009

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	12	2		221.115
D - Development	4	1		99.669
C - Consulting	3	1		93.525
A - Advanced training	3			6.600
T - Technology Transfer	1			90.247
O - Other		1	2	35.000
TOTAL	23	5	2	546.157

Summary of the percentage distribution of budgetary revenue

Financing (3)	Status (4)			Total Income (€)
	OG - On-going	G - Guaranteed	E - Expected	
NP - National Programmes	38,66%		13,21%	283.289
EP - European Programmes	4,94%		7,12%	65.871
CS - Consulting and services	2,75%		33,32%	196.997
O - Other R&D sources				
OS - Other sources				
Total	46,34%		53,66%	546.157

Summary of projects to be developed in 2009

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
NEXTGENPCF	L. A. Ferreira	R	E	EP	6PQ	01-2006	05-2009	OG
AMDRAPHYD	P. Jorge	R	N	NP	FCT	03-2007	02-2009	OG
OPTIC-ALGAE	J. M. Baptista	R	N	NP	FCT	06-2007	05-2010	OG
WELDING	O. Frazão	R	N	NP	FCT	07-2007	06-2009	OG
BIOPELVIC	L. A. Ferreira	R	N	NP	FCT	01-2008	12-2009	OG
CostActions	J. L. Santos	O	E	EP	6PQ	01-2008	12-2009	OG
ENDURANCE	F. Araújo	R	N	NP	FCT	01-2008	12-2009	OG
EWOF2010	J. L. Santos	O	I	CS	-	01-2008	12-2010	OG
GRICES	J. L. Santos	O	I	NP	FCT	01-2008	12-2009	OG
MOTION	O. Frazão	R	N	NP	FCT	01-2008	02-2010	OG
Nanocrystalline	M. J. Marques	R	N	NP	FCT	01-2008	12-2009	OG
OREO2	P. V. Marques	R	N	NP	FCT	01-2008	12-2009	OG
SENROS	P. Jorge	R	N	NP	FCT	01-2008	12-2009	OG

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
SmartBio	O. Frazão	R	N	NP	FCT	01-2008	02-2009	OG
Biomotion	M. Correia	R	N	NP	FCT	04-2008	03-2011	OG
BIOSWIM	M. Correia	R	N	NP	FCT	04-2008	09-2010	OG
ECAD	I. Dias	D	N	CS	-	01-2009	12-2009	E
EconoPhysics	A. Guerreiro	A	N	CS	-	01-2009	12-2009	E
FiberSensing	J. L. Santos	T	N	CS	-	01-2009	12-2009	E
Memimetria	C. Rosa	D	N	NP	QREN	01-2009	12-2010	E
OtherBioChem	G. Aguilar	C	N	CS	QREN	01-2009	12-2009	E
OtherPV	J. Cruz	C	N	CS	QREN	01-2009	12-2009	E
PVServices	J. Cruz	C	N	CS	QREN	01-2009	12-2009	E
Skate	I. Dias	D	N	CS	-	01-2009	12-2009	E
Splice	J. L. Santos	A	N	CS	-	01-2009	12-2009	E
Sschool	J. L. Santos	A	N	CS	-	01-2009	12-2009	E
Emphotec	J. L. Santos	C	E	EP	INTERREG	03-2009	02-2012	E
SimbiEuro	P. Jorge	D	E	EP	EUROSTARS	04-2009	03-2011	E
MagPower	J. Cruz	D	N	NP	QREN	06-2009	05-2011	E
EP1	J. L. Santos	R	E	EP	7PQ	09-2009	08-2012	E

- (1) Type of Project: R - Research; D - Development; C - Consulting; A - Advanced Training; T - Technology Transfer; O - Other
- (2) Degree of internationalization: N - National; E - European; I - International (Select one)
- (3) Source of financing: NP - National Programmes; EP - European Programmes; CS - Consulting and services; O - Other R&D financing sources; OS - Other sources
- (4) Status: OG - On-going: starting before 2009; G - Guaranteed: activity with a firmly agreed contract, starting in 2009; E - Expected: Activity with expected achievement, corresponding to a level of achievement proposed as a goal by the Unit.

• Publications

Summary of the publications expected for 2009

Type of publication	Number
Theses concluded in 2009 by members of the unit	5
Books (author)	
Chapter/paper in books	
Publications (editor)	
Papers in International Journals with scientific referees	12
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	6
Other publications (National meetings, local journals, etc.)	6
Total	29

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2009

Type	Starting	On-going	Concluded	Total
Master				
Doctoral		8	5	13
Total		8	5	13

- Summary of advanced training actions

Summary of Advanced Training Actions expected for 2009

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	2
Training for others (<i>estágios extra-curriculares</i>)	
Professional training actions (<i>estágios profissionais</i>)	2
Other actions	
Total	4

- Summary of activities of cooperation or dissemination

Summary of cooperation and dissemination actions expected for 2009

Type	Number
Organizing conferences or meetings	1
Collaboration in papers authored by INESC Porto researchers	8
External persons directly involved in actions organized by INESC Porto	30

- Human resources in 2009

Summary of Unit personnel at the end of 2009

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Polytechnic Staff</i>	14				14	0
<i>INESC Porto Fellows</i>		4	2		6	0
<i>Other Fellows</i>	4	8	1		13	0
<i>Employees</i>	6		3	1	10	0
<i>Trainees</i>			3		3	0
<i>Other</i>	2				2	-2
Administrative				1	1	0
Total	26	12	9	2	49	-2

(*) Relative to 2008, in absolute numbers.

P1.4 POWER SYSTEMS UNIT

Managers: Manuel António Matos, João Peças Lopes

P1.4.1 SHORT DESCRIPTION OF THE UNIT

The Power Systems Unit focuses its activity in some of the key (emerging) areas of the electric sector: regulatory issues and electricity markets, integration of distributed generation (namely wind power and other renewable energy sources), technical and economic management of distribution systems, use of GIS and other IT in regional energy planning, microgeneration and microgrids. Most of these activities are understood in the framework of the Smart Grids paradigm. The Unit develops research in different topics and integrates the results in models that address high level problems in a way suitable for technology transfer to utilities, system operators, industrial companies and regulators.

The researchers develop existing know-how in techniques and methodologies like Artificial Neural Networks, Fuzzy Sets, Machine Learning techniques, Evolutionary Programming, Meta-Heuristics, Negotiation and Decision-aid methodologies etc., inside and outside formal projects and contracts. At the same time, MSc and PhD level training remain a major objective, in order to create internal excellence in the salient research areas and to provide the industry with highly qualified professionals, capable of dealing with the challenges of new electricity sector organization. Finally, consulting activities allow the unit to promote the use of modern and efficient methodologies to manage power systems, thus contributing to the dissemination of research and development results, namely in the areas of renewable energy sources and integration of distributed generation.

Table of correspondence between know-how and the Industrial Sectors

Know-how	Status (*)	Network Management Systems	GIS Energy Planning	Electricity Markets and Regulation	Wind Power integration	Microgrids and V2G	Advanced Training
Static and dynamic network analysis	I	X		X	X	X	X
Soft computing	I	X	X				X
Optimization and decision	I+O	X	X	X	X		X
Forecasting	I		X				X
Electric energy systems	I	X		X	X	X	
GIS	I+O		X				X
Programming	I	X	X				
Internet and Web	I		X	X			

(*) I - Internal; O - Existing in another Unit of INESC Porto; E - External; C - To be created

Coverage of the Innovation Process

Activity Area	Research	Development	Consulting	Training	Marketing and Support	Evolutionary Maintenance	Use
Network Management Systems	USE	USE		USE	EFACEC	USE EFACEC	Utilities
GIS Energy Planning	USE	USE		USE	(USE)	(USE)	Energy Agencies, Planners
Electricity Markets and Regulation	USE		USE	USE			ERSE, DGGE, Utilities

Activity Area	Research	Development	Consulting	Training	Marketing and Support	Evolutionary Maintenance	Use
Wind Power Integration	USE		USE	USE			DGGE, REN, EDP, Promoters
Microgrids and V2G	USE	USE		USE	(USE)	(USE)	EDP, Manufacturers
Advanced Training				USE			REN, EDP, International market

Description of the Unit's Organizational Structure

The Unit organizes its activity in projects, under the direct supervision of the unit's leaders. It is possible to cluster the activities in the following areas (this definition is informal and would only be formalized if appropriate).

- *Development of advanced modules for DMS and EMS* - the Unit has been committed to working in this area in the last decade, namely in a successful partnership with EFACEC, but also in European projects. Software development has been a drive to new research.
- *Wind power and DG integration* - besides the analysis of the local and global impact of DG integration, this area covers research on wind power forecasting, ancillary services provision, virtual power plants and other emerging topics.
- *Micro-generation, micro-grids and electric vehicles integration* - this is an emerging and fast growing area, where the Unit has a leading role, in the framework of the Smart Grids concept. Related topics like smart metering are also included here.
- *Electricity Markets, Regulation and System Operation* - area that covers the support of public entities like ERSE, DGGE and similar entities in the Autonomous Regions of Portugal, but also research on models and methodologies for the different agents of the electric sector, in particular the TSO and DSO.
- *Advanced Training* - horizontal area where the Unit and its members are recognized at an international level (EES-UETP consortium, tutorials in conferences, TEMPUS projects, training projects in Latin America).
-

Summary of results of the research activities of the team members

- Projects

Summary of projects developed in 2008

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	5	2		207.900
D - Development	3			163.500
C - Consulting	7	1	2	432.100
A - Advanced training			1	26.122
T - Technology Transfer				
O - Other	1		1	310.000
TOTAL	16	3	4	1.139.622

Summary of relative distribution of sources of income

Financing (3)	Status (4)			Total Income (€)
	S - Started	OG - On-going	C - Concluded	
NP - National Programmes		3,07%	2,84%	67.400
EP - European Programmes		12,33%		140.500
CS - Consulting and Services	6,54%	38,86%	6,86%	595.600
O - Other R&D sources				
OS - Other Sources		1,40%	28,09%	336.122
Total	6,54%	55,67%	37,80%	1.139.622

Summary of projects developed in 2008

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
EFACEC	J. Pereira	D	N	CS	-	04-2001	-	OG
EDA_Desp	J. P. Lopes	C	N	CS	-	2004	2008	F
ONS	J. P. Lopes	C	I	CS	-	05-2005	04-2008	F
EPSO	V. Miranda	R	N	NP	FCT	07-2005	04-2008	F
MILES	J. Pereira	R	N	NP	FCT	07-2005	06-2008	F
TSO-Reservas	M. Matos	C	E	CS	-	09-2006	09-2009	OG
More-MGrids	J. P. Lopes	R	E	EP	NNE	2006	12-2009	OG
PrevEol	C. Monteiro	D	N	CS	-	2006	2009	OG
JADES	V. Miranda	R	N	NP	FCT	09-2007	08-2009	OG
SECEEN	V. Miranda	R	N	NP	FCT	09-2007	08-2009	OG
Anemus Plus	J. P. Lopes	R	E	EP	TREN	2007	2010	OG
Coord. EES-UETP	J. P. Lopes	O	I	OS	-	2007	2009	OG
ENERCON	J. P. Lopes	C	N	CS	-	2007	2009	OG
HEO-wind	J. P. Lopes	C	I	CS	-	2007	2008	F
InovGrid	J. P. Lopes	C	N	CS	-	2007	2009	OG
PLASM	V. Miranda	R	N	NP	FCT	2007	09-2010	OG
RAVE	J. P. Lopes	C	N	CS	-	2007	2009	OG
REN-Recep	J. P. Lopes	C	N	CS	-	2007	2009	OG
Carcons	M. Matos	D	N	CS	-	06-2008	07-2009	S
CONSULTORIA	J. P. Lopes	C	N	CS	-	2008	2008	F
EES-UETP	J. P. Lopes	A	I	OS	-	2008	2008	F
Eneop2	J. P. Lopes	C	N	CS	-	2008	2009	S
ENERGIA	M. Matos	O	N	OS	-	2008	2008	F

- (1) Type of Project: R - Research; D - Development; C - Consulting; A - Advanced Training; T - Technology Transfer; O - Other
- (2) Degree of internationalization: N - National; E - European; I - International (*Select one*)
- (3) Source of financing: NP - National Programmes; EP - European Programmes; CS - Consulting and services; O - Other R&D financing sources; OS - Other sources
- (4) Status: S - Starting: activities initiated in 2008 and continuing in 2009; OG - On-going: activities started earlier than 2008 and continuing in 2009; F - Finished: activities ending in 2008.

- Summary of publications

Summary of publications in 2008

Type of publication	Number
Theses concluded in 2008 by members of the unit	5
Books (author)	
Chapter/paper in books	5
Publications (editor)	
Papers in International Journals with scientific referees	15
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	15
Other publications (National meetings, local journals, etc.)	
Total	40

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2008

Type	Starting	On-going	Concluded	Total
Master		6	57	63
Doctoral	5	8	4	17
Total	5	14	61	80

- Summary of advanced training actions

Summary of Advanced Training Actions organized for external trainees in 2008

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	2
Training for others (<i>estágios extra-curriculares</i>)	3
Professional training actions (<i>estágios profissionais</i>)	1
Other actions	
Total	6

- Summary of activities of cooperation or dissemination

Summary of items

Type	Number
Organizing conferences or meetings	2
Collaboration in papers authored by INESC Porto researchers	22
External persons directly involved in actions organized by INESC Porto	

- Human resources in 2008

Summary of Unit personnel at the end of 2008

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Polytechnic Staff</i>	12	3			15	+2
<i>INESC Porto Fellows</i>		2	4		6	-3
<i>Other Fellows</i>		3	6	2	11	-4
<i>Employees</i>		1		1	2	-1
<i>Trainees</i>				1	1	-5
<i>Other</i>	2	1			3	-2
Administrative				1	1	0
Total	14	10	10	5	39	-13

(*) Relative to 2007, in absolute numbers.

P1.4.2 SWOT ANALYSIS

Strengths

- Stable basis of university researchers, enhanced in the framework of Associated Laboratory contract, and a well defined scientific and technical program that eases the integration of grantees and trainees.
- Strong recognition in Portugal in the areas of regulation, electricity markets and renewable energy integration, in particular regarding wind power.
- Credibility as an independent and contractually responsible entity.
- Leading research activity in emergent technological areas, like microgeneration, microgrids and wind energy integration.
- European and international activity, with some ability to participate at a strategic level in the European Union.

Weaknesses

- Excessive contractual responsibility of a reduced number of researchers.
- Some lack of diversity in the basic scientific interests.
- Medium-term increase of the fixed costs with human resources due to aging.

Opportunities

- Present and futures changes in the organization of the electric sector, at the national, Iberian (Iberian Market) and European level.
- Emergence of new paradigms for the organization of electric networks.
- Development of wind and other renewable energy generation in Portugal.
- New industrial developments related with microgeneration and smart metering.
- Electric vehicles emergence and development

Threats

- Possible globalization of the consulting activity, increasing competition.
- Increasing competition in the European projects.

P1.4.3 MEDIUM TERM STRATEGIC OBJECTIVES AND OBJECTIVES FOR THE YEAR

- Continuation of a balanced activity regarding high level research and development, technology transference to industry and support to industry and public administration, while contributing to the financial viability of INESC Porto.
- Consolidation of the present scientific and technologic areas of intervention through national and international contracts, supported by the human resources contracted in the framework of Associated Laboratory.
- Development of the international scientific partnerships, namely regarding European projects in new areas.
- Intensification of the international exchange of researchers, both by receiving foreign researchers and by motivating the members of the Unit to go abroad.
- Development of new tools for the evaluation of the security of supply and reserve definition, in power systems with a large penetration of wind power.
- Promotion of the integration of the concepts of microgrids and smart metering and development of related industrial solutions.
- Increasing the advanced training activity.

P1.4.4 ACTION PLAN (GLOBAL)

- Definition of specific targets regarding the development of decision-aid tools in the area of Electricity Markets
- Characterization of the international situation of the Unit, through the identification of similar institutions and benchmarking.
- Evaluation of the software developed internally in the framework of projects and contracts in order to detect opportunities for the conception of innovative software products.
- Establishment of partnerships with utilities and manufacturers to develop standards and innovative products for smart metering and active management of distribution grids with large scale integration of microgeneration.
- Development of concepts, organizational schemes and general specifications for electric vehicles integration (V2G).
- Definition of a portfolio for advanced training actions.

P1.4.5 ACTIVITIES EXPECTED FOR 2009

- Projects

Summary of the projects to be developed in 2009

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	3	2		155.270
D - Development	3			161.000
C - Consulting	7	1		584.000
A - Advanced training			1	26.122
T - Technology Transfer			1	35.000
O - Other	1		1	322.000
TOTAL	14	3	3	1.283.392

Summary of the percentage distribution of budgetary revenue

Financing (3)	Status (4)			Total Income (€)
	OG - On-going	G - Guaranteed	E - Expected	
NP - National Programmes	3,53%			45.270
EP - European Programmes	8,57%			110.000
CS - Consulting and services	30,93%	4,68%	22,44%	745.000
O - Other R&D sources				
OS - Other sources	1,25%	28,61%		383.122
Total	44,28%	33,28%	22,44%	1.283.392

Summary of projects to be developed in 2009

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
EFACEC	J. Pereira	D	N	CS	-	04-2001	-	OG
TSO-Reservas	M. Matos	C	E	CS	-	09-2006	09-2009	OG
More-MGrids	J. P. Lopes	R	E	EP	NNE	2006	12-2009	OG
PrevEol	C. Monteiro	D	N	CS	-	2006	2009	OG
JADES	V. Miranda	R	N	NP	FCT	09-2007	08-2009	OG
SECEEN	V. Miranda	R	N	NP	FCT	09-2007	08-2009	OG
Anemus Plus	J. P. Lopes	R	E	EP	TREN	2007	2010	OG
Coord. EES-UETP	J. P. Lopes	O	I	OS	-	2007	2009	OG
ENERCON	J. P. Lopes	C	N	CS	-	2007	2009	OG
InovGrid	J. P. Lopes	C	N	CS	-	2007	2009	OG
PLASM	V. Miranda	R	N	NP	FCT	2007	09-2010	OG
RAVE	J. P. Lopes	C	N	CS	-	2007	2009	OG
REN-Recep	J. P. Lopes	C	N	CS	-	2007	2009	OG

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
Carcons*	M. Matos	D	N	CS	-	06-2008	07-2009	OG
Eneop2	J. P. Lopes	C	N	CS	-	2008	2009	OG
CONSULTORIA	J. P. Lopes	C	N	CS	-	2009	2009	G
EES-UETP	J.P. Lopes	A	I	OS	-	2009	2009	G
ENERGIA	M. Matos	O	N	OS	-	2009	2009	G
ParaFuzzy	J. P. Lopes	T	I	OS	-	2009	2011	G
P. Negociação	M. Matos	C	N	CS	-	2009	2009	E

- (1) Type of Project: R - Research; D - Development; C - Consulting; A - Advanced Training; T - Technology Transfer; O - Other
- (2) Degree of internationalization: N - National; E - European; I - International (Select one)
- (3) Source of financing: NP - National Programmes; EP - European Programmes; CS - Consulting and services; O - Other R&D financing sources; OS - Other sources
- (4) Status: OG - On-going: starting before 2009; G - Guaranteed: activity with a firmly agreed contract, starting in 2009; E - Expected: Activity with expected achievement, corresponding to a level of achievement proposed as a goal by the Unit.

- Publications

Summary of the publications expected for 2009

Type of publication	Number
Theses concluded in 2009 by members of the unit	4
Books (author)	
Chapter/paper in books	2
Publications (editor)	
Papers in International Journals with scientific referees	16
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	25
Other publications (National meetings, local journals, etc.)	
Total	47

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2009

Type	Starting	On-going	Concluded	Total
Master			30	30
Doctoral	4	5	8	17
Total	4	5	38	47

- Summary of advanced training actions

Summary of advanced training actions expected for 2009

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	2
Training for others (<i>estágios extra-curriculares</i>)	1
Professional training actions (<i>estágios profissionais</i>)	2
Other actions	
Total	5

- Summary of activities of cooperation or dissemination

Summary of cooperation and dissemination actions expected for 2009

Type	Number
Organizing conferences or meetings	1
Collaboration in papers authored by INESC Porto researchers	30
External persons directly involved in actions organized by INESC Porto	

- Human resources in 2009

Summary of Unit personnel at the end of 2009

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
<i>R&D</i>						
<i>University or Polytechnic Staff</i>	13	3			16	+1
<i>INESC Porto Fellows</i>		4	2		6	0
<i>Other Fellows</i>		3	7	2	12	+1
<i>Employees</i>		1		1	2	0
<i>Trainees</i>			1	2	3	+2
<i>Other</i>	2	1			3	0
Administrative				1	1	0
Total	15	12	10	6	43	+4

(*) Relative to 2008, in absolute numbers.

P1.5 INFORMATION AND COMMUNICATIONS SYSTEMS UNIT

Manager: António Gaspar

P1.5.1 SHORT DESCRIPTION OF THE UNIT

The Information and Communication Systems Unit (USIC) is mainly involved in Advanced Information Systems Engineering, with some activities in Communication Systems Engineering and Strategic IT Consulting. Its main R&D areas are Location Based Information Systems Engineering and Software Engineering.

The Unit performs several types of activity, namely: research, development, technology transfer, consulting, auditing and advanced training.

These activities are carried out in several sectors. Important partners and clients may be referenced in the following areas: public administration (local, regional and central government), healthcare, telecommunications, transport and industry, commerce and services sectors. The most relevant application area in the past years has been eGovernment.

The Unit is composed by a heterogeneous team, composed by 22 collaborators, with skills in diversified areas: computer systems, office automation, telecommunications, computing sciences, software engineering and geographic engineering. This mix is complemented by a group of academic researchers active in Advanced Information Systems Engineering that lead USIC's scientific activities.

Its mission is to contribute to the modernization of enterprises and institutions using advanced ICT solutions. Our challenge is to link market needs with research objectives, creating innovative solutions based on excellent research results.

Table of correspondence between know-how and the Industrial Sectors

Know-how	Status (*)	Public Admin	Healthcare	Telecom	Transport	Industry, Commerce and Services
Analysis, Specification, Development and Deployment of Information Systems	I	X	X	X		X
Analysis, Specification, Development and Deployment of GIS Solutions	I	X		X	X	
Analysis, Specification and Deployment of Communication Systems	I	X	X		X	X

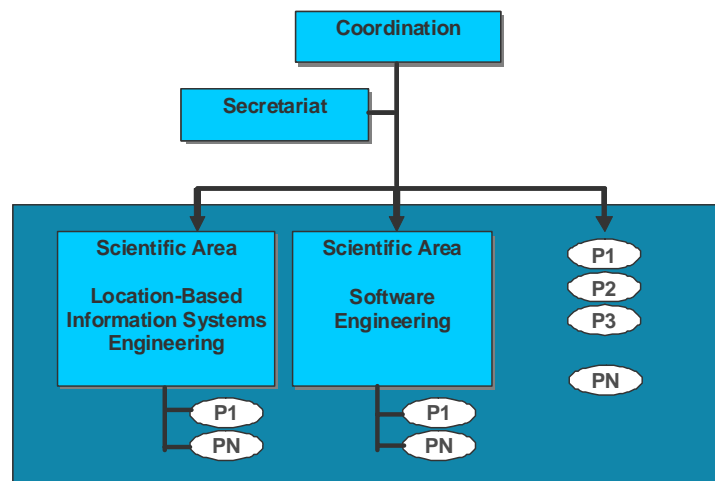
(*) I - Internal; O - Existing in another Unit of INESC Porto; E - External; C - To be created

Coverage of the Innovation Process

Activity Area	Research	Develop	Consulting	Training	Marketing and Support	Evolutionary Maintenance	Use
Public Admin.	USIC	USIC	USIC	USIC MEDIDATA PH Informatics	MEDIDATA PH Informatics	MEDIDATA PH Informatics	Local, Regional and Central Public Administration
Healthcare	USIC	USIC	USIC	USIC	To Be Defined	To Be Defined	Ministry of Health Caretakers
Telecom.		USIC	USIC	USIC PT IN	PT IN	PT IN	PT Group
Transport		USIC	USIC	USIC			Operators Central Public Administration
Industry, Commerce and Services		USIC	USIC	USIC			

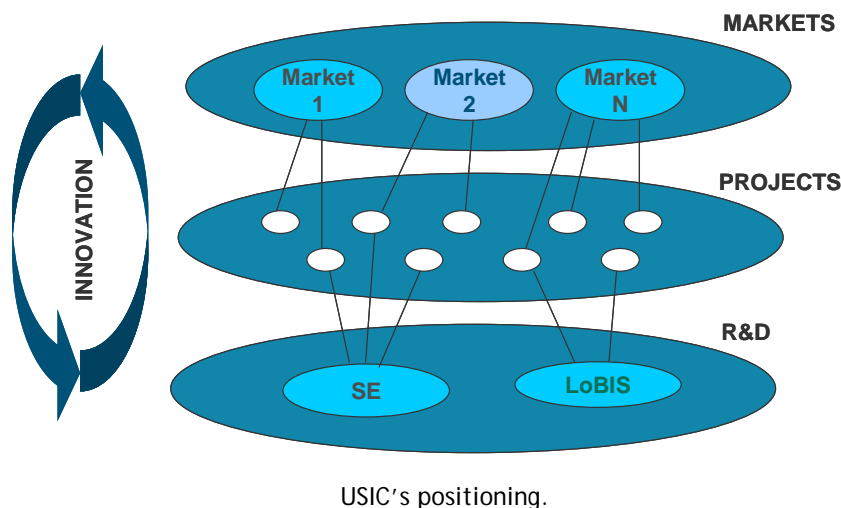
Description of the Unit's organizational structure

The Unit is structured into coordination, secretarial support and two scientific areas (Location Based Information Systems and Software).



USIC's organigram.

Specific projects are linked to any of the scientific areas or directly to the coordination.



Summary of results of the research activities of the team members

- Projects

Summary of projects developed in 2008

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	2	1		117.500
D - Development	6			88.917
C - Consulting	9			458.629
A - Advanced training	1			2.000
T - Technology Transfer				
O - Other				
TOTAL	18	1		667.046

Summary of relative distribution of sources of income

Financing (3)	Status (4)			Total Income (€)
	S - Started	OG - On-going	C - Concluded	
NP - National Programmers	3,37%		5,14%	56.795
EP - European Programmers			17,24%	115.000
CS - Consulting and Services	9,82%	27,47%	36,66%	493.251
O - Other R&D sources				
OS - Other Sources			0,30%	2.000
Total	13,19%	27,47%	59,34%	667.046

Summary of projects developed in 2008

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
IVY	Pascoal Faria	R	N	NP	FCT	07-2005	06-2008	F
Consultadoria	P. Monteiro	C	N	CS	-	01-2006	-	OG
Geoforum	Artur Rocha	D	N	CS	Medidata	02-2006	12-2008	F
PROT-OVT	A. Gaspar	C	N	CS	CCDR-LVT	07-2006	09-2008	F
SEGALAB	A. Gaspar	C	N	CS	Segalab	10-2006	03-2008	F
CCDRN-TIC	Artur Rocha	C	N	CS	CCDR-N	12-2006	12-2008	F
CAALYX	Artur Rocha	R	E	EP	IST	01-2007	12-2008	F
IVDP	A. Gaspar	C	N	CS	IVDP	01-2007	03-2009	OG
RCM	A. Gaspar	D	N	NP	CE-ADI	07-2007	12-2008	F
SAGAWeb	Rui Barros	D	N	CS	Medidata	07-2007	07-2008	F
EOLOS	A. Gaspar	C	N	CS	ENEOP2	12-2007	06-2009	OG
CEDT	A. Gaspar	D	N	NP	CE-ADI	01-2008	07-2008	F
Observ. Mob.	A. Gaspar	C	N	CS	CCDRLVT	01-2008	07-2008	F
SIVIDA II	José Correia	C	N	CS	ACS	01-2008	12-2009	S
Coloquium	A. Aguiar	A	N	OS	-	04-2008	07-2008	F
EI-Nautilus	Rui Barros	D	N	NP	Nautilus	06-2008	06-2010	S
CCDRN-RJUE	A. Gaspar	C	N	CS	CCDRN	07-2008	12-2009	S
Platafor. ATL	A. Gaspar	D	N	CS	ATL	09-2008	12-2008	F
Palco Principal	A. Gaspar	R	N	NP	SI-IDT	12-2008	12-2010	S

- (1) Type of Project: R - Research; D - Development; C - Consulting; A - Advanced Training; T - Technology Transfer; O - Other
- (2) Degree of internationalization: N - National; E - European; I - International (*Select one*)
- (3) Source of financing: NP - National Programmes; EP - European Programmes; CS - Consulting and services; O - Other R&D financing sources; OS - Other sources
- (4) Status: S - Starting: activities initiated in 2008 and continuing in 2009; OG - On-going: activities started earlier than 2008 and continuing in 2009; F - Finished: activities ending in 2008.

• **Summary of publications**

Summary of publications in 2008

Type of publication	Number
Theses concluded in 2008 by members of the unit	
Books (author)	
Chapter/paper in books	
Publications (editor)	4
Papers in International Journals with scientific referees	1
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	7
Other publications (National meetings, local journals, etc.)	
Total	12

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2008

Type	Starting	On-going	Concluded	Total
Master	9	5	13	27
Doctoral	4	6		10
Total	13	11	13	37

- Summary of advanced training actions

Summary of advanced training actions organized for external trainees in 2008

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	2
Training for others (<i>estágios extra-curriculares</i>)	
Professional training actions (<i>estágios profissionais</i>)	
Other actions	1
Total	3

- Summary of activities of cooperation or dissemination

Summary of items

Type	Number
Organizing conferences or meetings	5
Collaboration in papers authored by INESC Porto researchers	2
External persons directly involved in actions organized by INESC Porto	0

- Human resources in 2008

Summary of Unit personnel at the end of 2008

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Polytechnic Staff</i>	4	1			5	0
<i>INESC Porto Fellows</i>			4		4	0
<i>Other Fellows</i>						
<i>Employees</i>		3	8		11	0
<i>Trainees</i>						
<i>Other</i>			1		1	0
Administrative			1		1	0
Total	4	4	14		22	0

(*) Relative to 2007, in absolute numbers.

P1.5.2 SWOT ANALYSIS

Strengths

- Large experience in ICT consulting, development and project management activities, ranging from Contracted Services to R&D&TT projects in European and National funding programs.
- Integrated and encompassing offer of consulting services, development, demonstration and technology transfer in the area of ICT.
- Strong technical ability in the GIS and Software Engineering areas, particularly in some emerging fields like GI interoperability, Wikis, Aspect Oriented Programming and Software Quality.
- eGovernment domain knowledge.

Weaknesses

- Limited number of academic researchers.
- Lack of funded research projects.
- Not very diversified partnerships.
- Short projects.
- Limited marketing activity.
- Limited cooperation with national software industry.
- Unbalanced economic situation.

Opportunities

- Various funding opportunities, at national and international level, with QREN, FP7 and improved national economic situation.
- Membership of LIAAD and CRACS R&D groups in Rede INESC Porto Laboratório Associado.
- Increased use of ICT due to modernization need of institutions and enterprises.
- Growing national software industry.

Threats

- Reduced public investment.
- Dependence on grants mindset.
- Increased competition in funding programs, particularly European.

P1.5.3 MEDIUM TERM STRATEGIC OBJECTIVES AND OBJECTIVES FOR THE YEAR

The two main strategic objectives for 2008 and for the next few years are:

- Develop the Unit's scientific activity;
- Achieve a sustainable balanced economic performance.

P1.5.4 ACTION PLAN (GLOBAL)

- Take advantage of various funding opportunities, at national and international level, and of large experience in consulting, development and project management to submit diversified

proposals to different programs and partners, in cooperation with other Units, LIAAD and CRACS groups and involving national software industry.

- New projects should be based on key competences, to guarantee differentiation regarding other Units, R&D groups and enterprises, as well as guaranteeing added value to partners.
- eGovernment domain knowledge and track record will be used as a base to promote USIC's activities and create new partnerships.
- Involve private companies in consortia, taking advantage of new funding opportunities for the private sector.
- Proposal submission in diversified funding programs, selecting partners with successful track records.
- Use key competences in proposals to guarantee added value and ROI for partners.
- Leverage academic core team, in proposal submission, with internal and external scientific partnerships, like other Units, LIAAD, CRACS and Hillside Group.
- Use funding opportunities to diversify partnerships, internally and externally, with institutions and enterprises, particularly software houses, focusing in medium and long term projects.
- Develop website, focusing on success stories, key competences and their added value, particularly for the software industry. Approach software houses using funding opportunities or through service contracts with added value proposals.

P1.5.5 ACTIVITIES EXPECTED FOR 2009

- Projects

Summary of the projects to be developed in 2009

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	1	8		360.131
D - Development	10			165.000
C - Consulting	15			288.413
A - Advanced training				
T - Technology Transfer				
O - Other				
TOTAL	26	8		813.544

Summary of the percentage distribution of budgetary revenue

Financing (3)	Status (4)			Total Income (€)
	OG - On-going	G - Guaranteed	E - Expected	
NP - National Programmes	6,76%	3,07%	12,29%	180.000
EP - European Programmes		6,16%	35,03%	335.131
CS - Consulting and services	18,17%	3,69%	14,82%	298.413
O - Other R&D sources				
OS - Other sources				
Total	24,93%	12,92%	62,15%	813.544

Summary of projects to be developed in 2009

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
Consultadoria	P. Monteiro	C	N	CS	-	01-2006	-	OG
IVDP	A. Gaspar	C	N	CS	IVDP	01-2007	03-2009	OG
EOLOS	A. Gaspar	C	N	CS	ENEOP2	12-2007	06-2009	OG
SIVIDA II	José Correia	C	N	CS	ACS	01-2008	12-2009	OG
EI- Nautilus	Rui Barros	D	N	NP	Nautilus	06-2008	06-2010	OG
CCDRN-RJUE	A. Gaspar	C	N	CS	CCDRN	07-2008	12-2009	OG
Palco Principal	A. Gaspar	R	N	NP	SI-IDT	12-2008	12-2010	OG
AC SAMA	P. Monteiro	C	N	CS	CCDRN	01-2009	12-2009	E
ADDME	Rui Barros	R	E	EP	7º PQ	01-2009	12-2010	G
ALERT	A. Martins	D	N	NP	Demonstr.	01-2009	12-2009	E
APDL	Rui Barros	C	N	NP	Cluster Mar	01-2009	12-2010	E
Azkar	A. Gaspar	D	N	CS	Azkar	01-2009	12-2009	E
e-ALA	Rui Barros	R	E	EP	Interreg-IV SUDOE	01-2009	12-2010	E
NIDT Forum	A. Gaspar	C	N	CS	Forum	01-2009	01-2010	G
NIDTProc.Net	A. Gaspar	C	N	CS	Process.Net	01-2009	01-2010	G
NOVIS	P. Monteiro	C	N	CS	NOVIS	01-2009	12-2009	E
SIGEA	A. Gaspar	D	N	CS	GCA	01-2009	12-2009	E
SIGEP II	A. Gaspar	D	N	CS	GCP	01-2009	12-2009	E
Tecnasol-FGE	A. Gaspar	D	N	CS	TecnasolFGE	01-2009	07-2010	E
Transtecnolocal	Rui Barros	R	E	EP	Interreg-V SUDOE	01-2009	12-2010	E
Wiki Wipro	A. Aguiar	C	N	CS	Wipro	01-2009	04-2009	E
RAIA	Artur Rocha	R	E	EP	Interreg-IVB	04-2009	12-2011	G
AAL-PM	A. Martins	R	E	EP	ADI	06-2009	06-2012	E
Afocelca	A. Gaspar	C	N	NP	Polo Floresta	06-2009	06-2010	E
eCAALYX	A. Martins	R	E	EP	169- AAL	06-2009	06-2012	E
Ecoplanner	J. Correia	D	N	NP	SI-IDT	06-2009	06-2010	E
eEscola	A. Gaspar	D	N	NP	Polo TICE	06-2009	06-2010	E
iPortal+	Rui Barros	D	N	CS	SI-IDT	06-2009	12-2010	E
PLEGG	Artur Rocha	R	E	EP	7º PQ	06-2009	06-2012	E
RFID Loc	A. Gaspar	D	N	NP	SI-IDT	06-2009	06-2010	E
Vale Medidata	Rui Barros	C	N	CS	Vale-IDT	06-2009	06-2010	E
Vale Segalab	Rui Barros	C	N	CS	Vale-IDT	06-2009	06-2010	E
Wiki CEDT	A. Aguiar	C	N	NP	SI-IDT	06-2009	06-2010	E
AAL 7PQ	A. Martins	R	E	EP	7º PQ	07-2009	07-2011	E

- (1) Type of Project: R - Research; D - Development; C - Consulting; A - Advanced Training; T - Technology Transfer; O - Other
- (2) Degree of internationalization: N - National; E - European; I - International (Select one)
- (3) Source of financing: NP - National Programmes; EP - European Programmes; CS - Consulting and services; O - Other R&D financing sources; OS - Other sources
- (4) Status: OG - On-going: starting before 2009; G - Guaranteed: activity with a firmly agreed contract, starting in 2009; E - Expected: Activity with expected achievement, corresponding to a level of achievement proposed as a goal by the Unit.

- Publications

Summary of the publications expected for 2009

Type of publication	Number
Theses concluded in 2009 by members of the unit	1
Books (author)	
Chapter/paper in books	1
Publications (editor)	1
Papers in International Journals with scientific referees	3
Papers in National Journals with scientific referees	1
Conference Proceedings in events with scientific referee and selection	13
Other publications (National meetings, local journals, etc.)	
Total	20

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2009

Type	Starting	On-going	Concluded	Total
Master	5	1	9	15
Doctoral		6	3	9
Total	5	7	12	24

- Summary of advanced training actions

Summary of advanced training actions expected for 2009

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	2
Training for others (<i>estágios extra-curriculares</i>)	
Professional training actions (<i>estágios profissionais</i>)	
Other actions	
Total	2

- Summary of activities of cooperation or dissemination

Summary of cooperation and dissemination actions expected for 2009

Type	Number
Organizing conferences or meetings	4
Collaboration in papers authored by INESC Porto researchers	
External persons directly involved in actions organized by INESC Porto	

- Human resources in 2009

Summary of Unit personnel at the end of 2009

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Polytechnic Staff</i>	8	1			9	+4
<i>INESC Porto Fellows</i>			4		4	0
<i>Other Fellows</i>						
<i>Employees</i>		3	8		11	0
<i>Trainees</i>						
<i>Other</i>			1		1	0
Administrative			1		1	0
Total	8	4	14		26	+4

(*) Relative to 2008, in absolute numbers.

P1.6 TELECOMMUNICATIONS AND MULTIMEDIA UNIT

Manager: José Ruela

P1.6.1 SHORT DESCRIPTION OF THE UNIT

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 four 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: media processing (music, audio, video and image), content management, advanced multimedia services.
- Wireless and Mobile Networks: multicast and mobility management, quality of service, mesh and ad-hoc networks, cross-layer optimization.
- Internet Architectures and Networking: novel Internet architectures, community networking design, disruptive communication models.
- Optical and Electronics Technologies: optical communications and microwaves, microelectronics.

Coordination at Unit level allows the exploitation of complementary technical and scientific skills developed by each Area as well as the synergies necessary to design solutions and to develop and integrate HW/SW components in networked multimedia systems and services, suitable for dynamic and heterogeneous environments characterized by:

- the need of end-users to access multimedia content, anytime, anywhere;
- the increased mobility of end-users and devices;
- heterogeneous access networks;
- high-speed transmission systems;
- new networking paradigms;
- new business roles played both by traditional customers and providers, as well as by new (Internet) stakeholders.

The Unit pursues a high-level of scientific excellence, with international recognition. An important part of its activity is oriented towards the international market and is 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.

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.

Table of correspondence between know-how and target customers

Know-how	Status (*)	Category						
		User		Access / Core		Services		
		Customers						
		Vendors	Communities	Vendors	Operators	ASPs	Virtual operators	ISPs
Transmission systems	I	X	X	X	X			X
Modulation and coding	I	X	X	X	X			X
Radio resource management	E		X	X	X			
Signal Processing	I	X	X	X	X	X		
Design and test of electronic systems	I	X	X	X	X			
Reconfigurable systems	I	X	X	X	X			
Microwave and RF circuit design	I	X	X	X	X			X
Cognitive radio	E	X	X	X	X		X	
Cooperative networking	I	X	X	X	X		X	X
Grassroots trust management	C	X	X	X	X		X	X
Distributed path computation algorithms	I			X	X		X	
Wireless technologies	I		x	x	x	x		x
Radio-aware networking	I		x	x	x	x		
Cross-layer design	I		x	x	x	x		
Mesh networks	I		x	x	x	x		x
Mobility management	I		x	x	x	x		x
Network security	I		x	x	x	x		x
Traffic monitoring	I		x	x	x	x		
Overlay networks	I		x	x		x		x
Audiovisual analysis	I	X	X			X	X	
Machine learning	I	X	X			x	x	
Multimedia processing	I	X	X			X	X	
Distributed technologies	I					X	X	X
Information systems and metadata	I	x	X			X	X	X
Ontological reasoning	I	X	X			X	X	

(*) I - Internal; O - Existent in another Unit of INESC Porto; E - External; C - To be created

Description of the Unit's organizational structure

The Telecommunications and Multimedia Unit is now organized in four Areas, as a result of a process that has been matured during the last years, but still needs to be consolidated in the future.

The *Multimedia Technologies and Systems* Area was created to integrate and coordinate well established R&D activities in Media Processing (Audio, Video and Image) and Multimedia Distributed Systems. This was mainly driven by the need to allow a broader and unified scope of intervention in all aspects related with multimedia content value chains, namely generation, description, manipulation, adaptation, transmission and distribution of multimedia content over heterogeneous platforms. This

activity has been mainly carried out in projects funded by EC programmes and is also tightly connected to ongoing post-graduate research programmes.

The *Wireless and Mobile Networks* (WiMobNet) Area has for the past years focused its research activity on mobile networks and addresses innovative architectural solutions (e.g., Quality of Service, mobility, security) required by these networks, as well as new communications paradigms that they make possible. This activity has been strengthened with the participation in projects funded by EC programmes and constitutes a natural framework for post-graduate students to carry out their research work (mainly at PhD level).

The *Internet Architectures and Networking* (IAN) Area was brought to UTM in November 2007 by two PhD researchers that were already pursuing the goal of addressing disruptive Internet paradigms abroad. INESC Porto lacked such know-how and agreed to host the new area as part of UTM.

IAN is focused upon user-centric trends that are emerging in several fields of *Information and Communication Technology* (ICT). IAN's mission relates to a simple and yet highly disruptive approach: **nomadic people become the center of the networking system**. Users on the move are part of communities and will not only be consumers but also active providers of different Internet services. As in other grassroots movements, the user will have an active say concerning services provided and consequently, concerning the techno-social environment that surrounds him/her. In such mission, IAN's main goals are:

- **Make the end-user a reliable part of the Internet wholesale chain.** Consider the end-user as a provider of Internet services (e.g., of a community local-loop), investigating how this impacts current stakeholders and Internet users as well as which business opportunities it may give rise to.
- **Strengthen ICT intertwining with society.** By relying on the dual end-user role of consumer and provider, strengthen and expand the applications of ICT to assist the regular day-to-day living, based on specific community needs and grassroots movements.
- **Develop techno-social models that strengthen social integration and interaction.** Mass media are normally considered a tool for social alienation. On the other hand, wireless technologies can aid in increasing social interaction by means of new cooperative communication models that have into consideration not only adequate filtering of information but also the nomadic lifestyle and mobility patterns of Internet users. This is a central topic to IAN, namely, develop user-centric networking models so that the end-user has the chance to, actively or passively, provide services that relate to social interaction by targeting novel paradigms for socially intelligent information dissemination and communication technologies.

The *Optical and Electronics Technologies* Area was created with the main goal of defining and pursuing a strategy that could leverage existing and promising R&D activities with a technological intensive basis, namely in Optical Communications and Microwaves, and Microelectronics. This process is not yet complete and thus is still under evaluation. An important asset for research work in this Area is a recently equipped Photonics and Microwave laboratory, which allows supporting basic research and academic work as well as the development of pre-industrial prototypes for different application fields.

Although each Area has its own strategy and plan of activities (detailed in a separate section), synergies between them have been and will continue to be exploited, when possible and necessary. Similarly, there are examples of successful collaboration with other Units that are expected to continue and be reinforced in the coming years.

It is expected that during 2009 some global restructuring will take place at INESC Porto, with an impact on the composition of different Units. For this reason, a number of researchers may leave UTM. On the other hand, some researchers currently affiliated with UTM, but with no active involvement in projects and contracts in a regular basis, will be associated with INESC Porto under a different statute. Both facts are taken into account when considering the personnel figures foreseen at the end of 2009.

Summary of results of the research activities of the team members

- Projects

Summary of projects developed in 2008

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	10	6		642.000
D - Development	1			18.000
C - Consulting	1			25.000
A - Advanced training				
T - Technology Transfer				
O - Other				
TOTAL	12	6		685.000

Summary of relative distribution of sources of income

Financing (3)	Status (4)			Total Income (€)
	S - Started	OG- On-going	C - Concluded	
NP - National Programmes	1,75%	1,48%	1,68%	109.000
EP - European Programmes		28,47%	49,34%	533.000
CS - Consulting and Services	2,63%		3,65%	43.000
O - Other R&D sources				
OS - Other Sources				
Total	4,38%	40,95%	54,67%	685.000

Summary of projects developed in 2008

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
IAMA	V. Tavares	R	N	NP	FCT	06-2004	01-2008	F
DAIDALOS 2	M. Ricardo	R	E	EP	FP6	01-2006	12-2008	F
MOSAICA	M.T. Andrade	R	E	EP	FP6	06-2006	11-2008	F
UROOF	H. Salgado	R	E	EP	FP6	07-2006	12-2008	F
VISNET II	J. Ruela	R	E	EP	FP6	07-2006	06-2009	OG
ENTHRONE 2	M.T. Andrade	R	E	EP	FP6	09-2006	11-2008	F
EDCINE	M.T. Andrade	R	E	EP	FP6	07-2007	06-2009	OG
VOCAL	A. Ferreira	R	N	NP	FCT	09-2007	09-2008	F
BCCT	J. Cardoso	R	N	NP	FCT	10-2007	09-2010	OG
DBPreserve	G. David	R	N	NP	FCT	10-2007	09-2009	OG
OMR	J. Cardoso	R	N	NP	FCT	10-2007	09-2010	OG
ROFWDM	H. Salgado	R	N	NP	FCT	10-2007	09-2009	OG
DR-VidS	J. C. Ferreira	R	N	NP	FCT	11-2007	11-2009	OG

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
VECTOR	J. C. Alves	R	N	NP	FCT	11-2007	11-2010	OG
INOVGRI	J. Ruela	C	N	CS	-	01-2008	12-2008	F
URBIS	A. A. Sousa	R	N	NP	FCT	02-2008	07-2010	S
GrCLIFmcast	M. Ricardo	D	N	CS	-	03-2008	02-2009	S
AHRS	V. Tavares	R	N	NP	QREN	10-2008	04-2010	S

- (1) Type of Project: R - Research; D - Development; C - Consulting; A - Advanced Training; T - Technology Transfer; O - Other
- (2) Degree of internationalization: N - National; E - European; I - International (*Select one*)
- (3) Source of financing: NP - National Programmes; EP - European Programmes; CS - Consulting and services; O - Other R&D financing sources; OS - Other sources
- (4) Status: S - Starting: activities initiated in 2008 and continuing in 2009; OG - On-going: activities started earlier than 2008 and continuing in 2009; F - Finished: activities ending in 2008.

- Summary of publications

Summary of publications in 2008

Type of publication	Number
Theses concluded in 2008 by members of the unit	7
Books (author)	1
Chapter/paper in books	4
Publications (editor)	1
Papers in International Journals with scientific referees	24
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	66
Other publications (National meetings, local journals, etc.)	5
Total	108

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2008

Type	Starting	On-going	Concluded	Total
Master	18	9	59	86
Doctoral	3	37	2	42
Total	21	46	61	128

- Summary of advanced training actions

Summary of advanced training actions organized for external trainees in 2008

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	38
Training for others (<i>estágios extra-curriculares</i>)	3

Type	Number
Professional training actions (<i>estágios profissionais</i>)	5
Other actions	
Total	46

- Summary of activities of cooperation or dissemination

Summary of items

Type	Number
Organizing conferences or meetings	16
Collaboration in papers authored by INESC Porto researchers	> 100
External persons directly involved in actions organized by INESC Porto	20

- Human resources in 2008

Summary of Unit personnel at the end of 2008

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
<i>R&D</i>						
<i>University or Polytechnic Staff</i>	31	5			36	+1
<i>INESC Porto Grant Holders</i>		2	3		5	-6
<i>Other Grant Holders</i>		9	17		26	+2
<i>Employees</i>	3	1			4	0
<i>Trainees</i>						
<i>Other</i>						
<i>Administrative</i>				1	1	0
Total	34	17	20	1	72	-3

(*) Relative to 2007, in absolute numbers.

P1.6.2 SWOT ANALYSIS

Strengths

- Existing know-how and practical experience in a broad scope of scientific and technological domains (signal processing, networks and services, multimedia systems and applications, optical and electronics technologies, etc.).
- Capability to apply know-how and to integrate technologies in the design of new systems and applications, from conception to prototype development.
- Capacity to attract young researchers and to engage them in research projects and contracts.

Weaknesses

- Difficulty to present to the outside a global perspective and the mission of the Unit as a whole.

- Absence of active involvement of researchers at all levels in the process of negotiation and acquisition of R&D projects and contracts.
- Lack of a methodology for seeking and establishing new partnerships.

Opportunities

- Exploitation of partnerships at national level in the framework of QREN (*Quadro de Referência Estratégico Nacional*).
- Emergence of new business models and acting roles in the telecommunications and multimedia sectors, as a result of the convergence between the Internet and traditional broadcast services.
- Increasing number of spin-off and start-up companies.
- Exploitation of synergies with other Units, in particular with UESSI (formerly USIC) and UOSE, and more recently with USE in the area of intelligent power networks (*smart grids*).

Threats

- Difficulty in answering short-term requirements from potential customers.

P1.6.3 MEDIUM TERM STRATEGIC OBJECTIVES AND OBJECTIVES FOR THE YEAR

Some general and common goals will be pursued at Unit level:

- improving management and sharing of resources;
- planning and assessment of R&D productivity;
- reinforcing cohesion and exploiting synergies between Areas;
- strengthening management and leadership skills at all levels;
- achieving a high-level of scientific excellence, measured by means of objective indicators;
- establishing strategic partnerships, based on existing scientific and technical know-how;
- seeking for new sources of funding and reinforcement of research contracts with industry.

The Unit will continue to host MSc and PhD students and post-doc researchers, with active involvement in research projects. On one hand this is already occurring in the framework of PhD programmes jointly offered by the Universities of Minho, Aveiro and Porto in Telecommunications and Informatics (MAP-Tele and MAP-i, respectively). On the other hand, a number of R&D projects have been submitted to programmes funded by FCT, with CMU and the University of Texas at Austin, which include support for PhD scholarships and stays at those US universities (decision is pending).

Scientific and technical results will be exploited in research contracts with the industry, in particular in the framework of QREN (*Quadro de Referência Estratégico Nacional*). Some contracts have already been signed in 2008 and others are planned to be submitted during 2009. On the other hand, four proposals have been submitted to the Innovation Plan of the Portugal Telecom (PT) Group (decision is pending).

It is recognized that it will be difficult to keep the current level of participation in projects funded by EC programmes (which have so far contributed with a strong share to the budget of the Unit). However, their importance (that goes beyond financial aspects) motivates an active involvement of the Unit on the preparation and submission of new proposals to the next calls of FP7.

The Unit will continue to encourage and help the incubation of new start-up companies and to reinforce the cooperation with former ones.

The specific objectives of each Area are detailed next.

Multimedia Technologies and Systems

Research effort in this Area is motivated by the increasingly widespread acceptance of the network-based paradigm and the present heterogeneity-convergence phenomena. In this context, it aims at building knowledge and developing solutions to simplify the creation of intelligent automatic applications and innovative multimedia services, especially targeting mobile platforms. The aim is to enable the access to multimedia content to any user in an adaptable and personalised way, fulfilling his/her requirements and preferences in the most seamless way.

Research topics that are being addressed embrace aspects closely related with: 1) the audiovisual (A/V) content itself and 2) the creation and delivery of the A/V service. Accordingly, algorithms are being investigated for A/V media analysis using content knowledge techniques, as well as approaches for context-awareness and QoS support of multimedia services in heterogeneous and distributed environments. In this last research axe, extensive use is made of metadata, distributed technologies and, more recently, semantic concepts. In the first axe, algorithms are being studied to extract in the most efficient and automatic way, low-level knowledge from raw audio and video signals. This low-level data is further processed using machine learning techniques and statistical methods, inferring high-level information and enabling the development of intelligent automatic or semi-automatic audiovisual applications.

Accordingly, it is planned to continue research in the topics that were already being addressed in the last year, now putting a stronger emphasis on the use of semantic concepts, artificial intelligence techniques, mobility and personalisation.

These research objectives have been pursued and have evolved during the last two years, with the support of externally funded projects, notably from European Community RTD programmes, but also through national projects, in particular with grants from FCT and PhD scholarships.

Research work is expected to continue along these lines. Funding support for this research, given that most of the on-going European projects are coming to an end or will be finalised within a few months, is now being pursued through new channels:

- preparation of new project proposals to be submitted to call 4 of FP7 (on-going process);
- submission of project proposals within the context of the collaboration programmes with CMU and University of Texas at Austin (3 proposals submitted to the Austin programme and 1 to CMU);
- submission of project proposals to the QREN programme (2 already accepted);
- preparation of proposals to submit to the new QREN incentive programmes to SMEs (“Vale Inovação” and “Vale I&DT”);
- submission of two proposals to the “Innovation Programme 2009-2011” of the Portugal Telecom group, one on “Predictive Multimedia Content Adaptation” and the other on “Smart Mobile Services”;
- PhD grants.

WiMobNets: Wireless and Mobile Networks

This Area is focused on the design of Wireless and Mobile Networks (WiMobNets) with the purpose of extending-infrastructure networks and enabling the emergence of networks of “things”. Research activities are aimed at providing PhD level training in this field, transferring know-how to national and regional players, and enabling the creation of new companies.

Most of the research problems are dealt with in the framework of PhD and MSc theses and the following topics will be addressed in 2009:

- the mobility of (sub) networks and terminals in large and multi-technology mesh networks;
- the usage of dynamic radio channel allocation, smart antennas, and cross layer techniques to implement adaptive radio-aware networks;
- routing techniques aware of explicit congestion control mechanisms, adequate for WiMobNets;
- efficient and secure support of new types of traffic (IPTV, peer-to-peer applications, Web services) in WiMobNets.

The main results expected in 2009 include:

- a network mobility solution for vehicular mesh networks;
- a multi-technology mobile router;
- a technique for auto-configuring multi-technology personal area networks and integrating them in mesh networks;
- a solution for the dynamic and distributed allocation of radio channels in IEEE mesh wireless LANs;
- a solution for provisioning efficient and secure IPTV over heterogeneous access networks, including sessions sourced at the user;
- optimal deployment of P2P video services over mobile mesh networks in scenarios where peers and network elements are co-located.

These activities will be supported by a set of projects or proposals, which include:

- two projects submitted to the “Innovation Programme 2009-2011” of the Portugal Telecom group (“Security in 3GPP MBMS” and “System for monitoring P2P traffic”), besides an ongoing project on secure multicast over heterogeneous access networks, due to complete on the first quarter of 2009;
- one FCT project (recently approved) on the joint management of mobility and multicast over heterogeneous access networks, in collaboration with IT Aveiro and PT Inovação;
- a QREN project on the development of a metropolitan multi-technology wireless network and its mobile equipment, for public transportation systems, in collaboration with the STCP bus company, a P2P video distribution company, and an equipment manufacturer;
- two CMU projects (exploration of P2P services by telecom operators, mesh sensor network for monitoring power lines) in cooperation with CMU and other Portuguese players, including universities, industry and operators;
- projects in the area of intelligent power networks (*smart grids*), namely Inovgrid (whose second phase is expected to start in 2009) and other projects in preparation, for which the know-how in communication technologies and network protocols is required.

Project proposals currently under discussion, but not yet submitted, may include two European projects on the area of personal networks and moving networks and three “Vales Inovação” on the topics of intelligent routing, dynamic channel allocation in wireless networks, and security in wireless networks.

During 2009 four students will be involved on writing their PhD theses on the following topics: a) auto-configuration of multi-technology personal area networks; b) security in WiMobNets; c) autonomic allocation of radio channels in IEEE mesh wireless LANs; d) multicast over heterogeneous wireless access networks.

Three papers are expected to be accepted for publication in relevant international journals or magazines; papers will also be submitted to major international conferences.

IAN: Internet Architectures and Networking

The research to be developed in IAN follows a two-fold methodology. Having a long-range (10 year) perspective, IAN explores new technologies and advanced architectures, as well as disruptive communication models. On a short-range perspective (1-3 years) IAN fosters synergies with industry and relevant international research entities. The balanced coordination of industry awareness and exploitation of new technologies with devising disruptive Internet architectures aims at opening new horizons in scientific and technological fields: disruptive technologies are normally left aside by industry due to the high risk they embody, but nonetheless are crucial in what concerns opening new market fronts and impacting the way technology is perceived (and applied) by society. These main fronts are to be sustained by four main research tracks focused on OSI Layers 2 and 3, being their workload split between the two senior PhDs but in full cooperation, according to their background and expertise:

- **Cooperative Networking.** This track relates to user-centric networking models that are emerging. However, cooperative networking requires functionality and support that current Internet models and architectures are not always suitable to serve. The main topics for 2009 are *dynamic management of wireless resources* and *social networking* (trust management)
- **Advanced Forwarding and Routing.** This track focuses on advanced distributed path computation mechanisms that take advantage of *traffic locality* (sources and destinations correlation) and path diversity. Sub-topics considered for 2009 are *robust routing* (e.g., loop avoidance, preventing count-to-infinity) and *routing for intermittent connected networks* (e.g., Delay Tolerant Networking).
- **Disruptive Internet Architectures.** This research track relates to novel Internet architectures and functionality where the user is an active player and a provider of services, assuming as starting point the current Internet architectures and user requirements. Specific topics being considered are the design of scalable low-cost architectures, as well as *autonomic user-provided network integration*.
- **Mobility Management.** This research track deals with heterogeneous network environments where seamless nomadic end-user (consumers and providers) experience is required for any application. It considers both multi-access and single access networks where the end-user may or may not be part of the mobility management chain. Topics being addressed are *architectures where the end-user is a micro-provider (virtual operator) of mobility management*, and *mechanisms capable of providing intelligent connectivity*.

Throughout the first year of its existence, IAN managed to set the following activities, which resulted in 7 international journal papers, 6 international conference papers, and 1 industrial project acquired:

- **National Activities**
 - *1 national industrial project acquired.* NSRF project (SI I&DT) in cooperation with a national industry partner, with a total of 700k€ budget.
 - *4 industrial project proposals submitted.* Two of these are NSRF proposals (one of them already accepted as mentioned in the previous point); the remainder two are proposals coordinated by IAN and involving the USIC team of INESC Porto, being industry sub-hiring projects, for two different Portuguese access operators.
 - *Doctoral programme involvement.* Following a tenure track perspective (which is lacking in Portugal), IAN proposed 2 optional courses for MAP-TELE, which were accepted. The courses are entitled “Advanced Forwarding and Routing” and “Cooperative Networking” and have as main purpose to engage young researchers into IAN’s activities. In addition, IAN presented 3 seminars in MAP-TELE.

- *Student supervision.* IAN supervised 2 MScs in 2008, expected to graduate in 2009. Student supervision in IAN is seen as a means to reach an end, namely, researchers will be trained to understand that research can be innovative and yet have a practical application.

- **International Activities**

- *1 CMU Portugal R&D project proposed.* IAN proposed and coordinated a project proposal (topic cooperative networking) having as partners Nokia-Siemens Networks Portugal, IT Aveiro, and CMU USA. Project expected to start on January 2009.
- *4 international (informal) cooperations established.* IAN has an informal cooperation agreement with BT UK (financing under discussion) and with Ericsson Finland (financing by both partners) under the R&D track of Cooperative Networking. In addition, IAN has an informal cooperation agreement established with Columbia University (Prof. Henning Schulzrinne) and with University of Pennsylvania (Prof. Roch Guérin) under the R&D track of Advanced Forwarding and Routing.
- *1 proposal for an ERC Starting Grant.* The grant would provide financing support for IAN's R&D long-range tracks.
- *Participation in the European EIFFEL Support Action* (<http://www.fp7-eiffel.eu/home.html>) and *eMobility platform* (<http://www.emobility.eu.org/>). IAN has been invited to EIFFEL and is actively involved in several eMobility groups.
- *1 ICT 2008 Networking Event proposed and organized.* IAN is organizing an ICT 2008 Networking Event entitled: "user-centric provided networks: challenges and opportunities" with the purpose to gather consensus for an FP7 proposal (call 4 or 5).
- *1 Eureka-CELTIC invitation.* IAN was invited by Alcatel-Lucent BellLabs France to participate on a Eureka-CELTIC labeled project, entitled AWARE: Aggregation of WLAN Resources. The project focus relates to the cooperative access and mobility management R&D tracks of IAN.
- *1 workshop organization.* IAN has proposed a workshop on the topic of user-provided networking (falling into the R&D track of Disruptive Internet Architectures and Cooperative Networking) to SIGCOMM'09.

In regards to 2009, IAN expects to set a series of activities which are described next:

- **National Activities**

- *Submission of 3 NSRF proposals together with industry partners* (both sub-hiring and in consortium).
- *Acquisition of 1 NSRF project, consortium based* (8 partners; 4 SMEs and 4 academic entities) and a total budget of 900k€.
- *Acquisition of 2 industrial projects (sub-hiring).*
- *2 PhD courses (MAP-TELE) lecturing and 1 PhD seminar.*
- *Supervision of 2 MSc students and 6 PhD students (first year).*

- **International Activities**

- *CMU Portugal participation.* IAN expects to see the project proposed in 2008 approved. The project has a duration of 2 years.
- *EU FP7 participation.* IAN expects to submit a *Future Emergent Technology (FET)* proposal together with the national partner University of Coimbra. In addition, IAN expects to participate on the development of 1 EU FP7 call4 proposal.

- *Eureka CELTIC project participation.* IAN will work on the Eureka-CELTIC project AWARE (Aggregation of WLAN Resources).
- *Organization/hosting of 1 international workshop.*

In what concerns result quantification, IAN has the following (minimum) expectations: 2 international journal papers; 4 international conference papers; acquisition of 4 projects (3 national, 1 international); 1 European patent (jointly developed); 2 MSc theses; organization of 1 workshop (jointly with a renowned event in the field of computer science); active participation in 2 technology platforms (eMobility and EIFFEL).

Optical and Electronics Technologies

This Area merges the research activities in Optical Communications and Microwaves, and Microelectronics. Both groups have joined efforts and are currently participating in a EU project of the Marie Curie Initial Training Network programme, "Data Acquisition, Electronics, and Optoelectronics for LHC Experiments", with CERN as the main institution. Similar efforts are being planned for the future, specifically the application of FPGAs for the implementation of dispersion algorithms in coherent optical systems. Collaboration with other areas of activity within UTM is also being sought, in particular the use of UWB-over-fiber technologies, explored in the UROOF project, for providing multimedia services and content.

The know-how acquired in the last two years since this Area has been formally recognized within INESC Porto, has enabled the future collaboration with international partners in a very important research activity "Fiber optics in avionic systems", which opens a new research direction within this area.

The activity in Microelectronics is organized in three main domains: dynamic reconfigurable logic and custom computing hardware; analogue and RF circuits design; test and design-for-testability of analogue, mixed-signal and RF circuits.

- Research on dynamic reconfigurable logic (DRL) will continue to address the area of application development support. Current work on run-time assembly of reconfigurable modules (including on-line routing) will be expanded. The effort to adapt open-source operating systems to support DRL-related services will continue.

The second year of the research project DR-VidS (funded by FCT) will continue to investigate ways of applying and extending the expertise in DRL-based systems to real-time video segmentation (involving another group of the Unit).

The implementation of several real-time video processing operations on reconfigurable systems (stereo image rectification, production of depth maps from stereo images, hand recognition) will be investigated in the context of MSc activities.

The current work on the physical implementation of irregular reconfigurable fabrics for SoCs will reach an important milestone with completion of an MSc dissertation.

- The research on reconfigurable custom computing will be focused on the continuation of two R&D projects started in 2008 and the deployment of the works of one PhD and one MSc students.

The research in the scope of project VECTOR, led by INESC-ID, will be focused on the development of automated synthesis tools for vector-processing architectures. This will continue the work carried out during 2008, where elementary floating point datapaths were created from high-level netlists. The objective for 2009 is to assembly a design framework capable of building custom floating point processing units with efficient vector processing capabilities as the target for custom-compiled Matlab programs.

In the scope of a QREN project promoted by a startup Portuguese company working in aero-spatial systems, a FPGA-based computing system will be developed for an Attitude-Heading

Reference System. This is a core set of orientation sensors used in aircrafts and other space crafts, based on integrated accelerometers, compass and gyroscopes. Most of the development work will be done during 2009, including the assembly of a final hardware prototype that will be validated in airborne applications.

Besides this, other works will continue the activity in this area. One PhD student will enter his 2nd year and start the work on reconfigurable computing for population based optimization processes (genetic algorithms and alike). An MSc student will investigate on the deployment of efficient processing architectures for computation of optical flow.

- The main research effort on analogue and RF circuits design is focused on the design of effective low power and area circuits for signal processing systems, especially those that are biologically plausible. In this line of research, an FCT project is starting with a task aimed at the design of intelligent image sensors, using analogue pre-processing based on Biological evidence. Under this line, another project funded by QREN will follow, with the main goal of designing low-noise low-power reading circuits for capacitive MEMS sensors. Another research goal is the design of very efficient circuits, especially those for power transmission.
- In the domain of analogue, mixed-signal, and RF test and design for testability, the previous activity continues with the development, in the context of a PhD thesis, of an adaptive scheme to evaluate and correct RF amplifiers' nonlinearities. This work is now entering its final stage with the development of a demonstration prototype. Preliminary results based on proof-of-concept prototype were presented in two international conferences during 2008. The domain of RF BIST (built-in self-test) is also being pursued with the development of an on-chip distortion detector based on the cross-correlation between the output voltage and power supply current.
- With the start of the ITN ACEOLE project, the collaboration with CERN will continue with the development of a low-phase noise low-bandwidth Phase-Locked Loop (PLL) to synthesize clocks with high spectral purity, and of an analogue to digital converter, both to be designed with radiation-hard methods. It is foreseen that two students (one MSc and one PhD) will be devoted to these tasks.
- The activity on design and test of micro-electro-mechanical systems continues in collaboration with the University of Minho with the development of test methods for capacitive based accelerometers - in 2008 a paper was presented in the International Mixed-Signals, Sensors, and Systems Workshop and another one was published in the VLSI Design journal.
- A new project proposal was submitted in collaboration with Carnegie-Mellon University in the framework of the CMU Portugal program. It addresses the application of wireless sensor networks towards smarter power-grids, and aims at the development of: a) MEMS and fiber optical based sensors; b) new dedicated sensor modules proper for intercommunicating in wider spaces, acquiring and processing data in a distributed environment, and provided with built-in self-test facilities; c) an application driven WSN framework, based on cross-layer optimization techniques and used to improve the overall WSN routing process; d) new enhanced power grid control and management algorithms.

This project also involves the WiMobNet Area at UTM, Univ. Minho, EFACEC Sistemas de Electrónica, and FiberSensing.

The activity in Microwave and Optical Communications embraces the following topics:

- The line of research Fibre Supported Microwave/Radio Technology has been a strategic objective for the past year and will continue to be sought, including the design of high-frequency circuits which is one of the research topics aimed at by the Microelectronics group. The plan is also to further investigate the optimum receiver detection of nonlinear distorted OFDM signals in application scenarios that include both the access network and long distance transmission links. This research will be conducted at the PhD level and through the ROFWDM project currently in its first year, funded by FCT in collaboration with Nokia-Siemens SA and Instituto de Telecomunicações. The UROOF European project (UROOF - Photonic components for Ultra-Wideband radio over optical fiber) is now finishing and there are plans to continue this

line of work in collaboration with the WiMobNet and Multimedia areas by exploring architectures and services that can be provided using UWB over fiber.

- In the microwave field, work is currently under way in the area of EBG (Electromagnetic Band-Gap) and antenna design for wireless applications. Two PhD students are currently doing their postgraduate studies in this field. The objective is the theoretical modeling of EBG structures and identification of applications for this technology as well as the design/synthesis of multiband reconfigurable microstrip antennas using fractal techniques.
- A new topic of research is begin pursued, namely Signal Processing in Optical Communications. This activity is targeting signal processing techniques for coherent optical communication systems and is being the object of a PhD thesis. Signal processing is also being applied to combat nonlinear distortion in radio-over-fiber systems. Algorithms have already been developed for dispersion compensation and simultaneously phase estimation in coherent optical systems. The implementation of these algorithms in FPGA will be explored taking advantage of the existing expertise in the microelectronics area. In the near future the compensation of fiber nonlinear effects will also be investigated. The collaboration with the University College London will continue to be strengthened as well as other European partners for possible collaboration in international projects.
- The ITN ACEOLE project (Data Acquisition, Electronics, and Optoelectronics for LHC Experiments) has recently been approved under the FP7 program, and in this context work is planned for collaboration in developing a radiation tolerant, multi-Gigabit/s optoelectronic data transmission link suitable for several distinct functions at an upgraded SLHC detector. Specifically, in the coming year INESC Porto will be responsible for the experimental characterization of semiconductor laser devices and in the optimization of their electrical matching to the laser driver ASIC. This will take advantage of the facilities made available by the Microwave and Optical Communications laboratory, and will involve hosting an experienced researcher (ER) for conducting this work, which has started on the 1st of October 2008.
- For the coming three years this research group will have a strong participation in the DAPHNE project "Developing aircraft photonic networks", which has recently been approved for funding by the European Commission under the FP7 program. This opens a new and very important area of research, "Fiber-optics in future avionic systems".

The mentioned activities will require in the near future strengthening the group with research personnel at a senior level. This would be made possible through research fellowships within the Associated Laboratory program and particularly the Science 2008 program.

P1.6.4 ACTION PLAN (GLOBAL)

The main strategic objectives previously outlined, both at Unit and Area level, will be pursued during 2009, as explained, and therefore the associated actions are only briefly summarised here:

- Preparation and submission in partnership with industrial companies of new projects in the framework of QREN (*Quadro de Referência Estratégico Nacional*).
- Participation in the elaboration and submission of new projects to the 7th Framework Programme.
- Creation of conditions for a stronger cooperation between the Areas (at scientific, technical and management level).
- Planning and assessment of R&D productivity.
- Reinforcement of cooperation with other Units, especially with USE, in the area of intelligent power networks (*smart grids*).
- Support to MSc and PhD theses in progress and to new ones starting in 2009.
- Support to the incubation of spin-off companies and engagement in joint projects and actions.

The current practice of organizing regular internal sessions for presenting and discussing ongoing research work and results (associated to theses, projects, published papers, etc.) will be kept; these sessions are widely announced and open to external participants.

The results of research activity will be presented by the usual means: in events organized by the Unit (workshops, demo sessions, etc.), publications in journals and magazines, presentations in international conferences, as well as in ordinary meetings of projects.

P1.6.5 ACTIVITIES EXPECTED FOR 2009

- Projects

Summary of the projects to be developed in 2009

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	14	9	6	676.000
D - Development	2			36.000
C - Consulting	3	1		238.500
A - Advanced training				
T - Technology Transfer				
O - Other		1		9.000
TOTAL	19	11	6	959.500

Summary of the percentage distribution of budgetary revenue

Financing (3)	Status (4)			Total Income (€)
	OG - On-going	G - Guaranteed	E - Expected	
NP - National Programmes	17,20%	12,35%	21,67%	491.400
EP - European Programmes	12,71%	6,83%	20,33%	382.600
CS - Consulting and services	1,25%		5,63%	66.100
O - Other R&D sources		1,09%		10.500
OS - Other sources			0,94%	9.000
Total	31,16%	20,27%	48,57%	959.500

Summary of projects to be developed in 2009

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
VISNET II	J. Ruela	R	E	EP	FP6	07-2006	06-2009	OG
EDCINE	M.T. Andrade	R	E	EP	FP6	07-2007	06-2009	OG
BCCT	J. Cardoso	R	N	NP	FCT	10-2007	09-2010	OG
DBPreserve	G. David	R	N	NP	FCT	10-2007	09-2009	OG
OMR	J. Cardoso	R	N	NP	FCT	10-2007	09-2010	OG
ROFWDM	H. Salgado	R	N	NP	FCT	10-2007	09-2009	OG
DR-VidS	J. C. Ferreira	R	N	NP	FCT	11-2007	11-2009	OG

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
VECTOR	J. C. Alves	R	N	NP	FCT	11-2007	11-2010	OG
URBIS	A. A. Sousa	R	N	NP	FCT	02-2008	07-2010	OG
GrCLIFmcast	M. Ricardo	D	N	CS	-	03-2008	02-2009	OG
AHRS	V. Tavares	R	N	NP	QREN	10-2008	04-2010	OG
DAPHNE	H. Salgado	R	E	EP	FP7	01-2009	04-2010	G
MuMoMgt	J. Ruela	R	N	NP	FCT	02-2009	04-2010	G
Palco3.0	F. Gouyon	R	N	NP	QREN	01-2009	04-2010	G
Semantic PACS	J. Cardoso	R	N	NP	QREN	01-2009	04-2010	G
CMU-0030	M.T. Andrade	R	I	NP	CMU-PT	01-2009	12-2010	E
IANCoops	P. Mendes	R	I	O	-	01-2009	12-2009	G
Inovgrid	J. Ruela	C	N	CS	-	01-2009	12-2010	E
ReCoop	P. Mendes	R	N	NP	QREN	01-2009	12-2011	G
U. Texas 1	M.T. Andrade	R	I	NP	UTA	01-2009	12-2010	E
U. Texas 2	P. Viana	R	I	NP	UTA	01-2009	12-2010	E
UPL-CMU	R. Sofia	R	I	NP	CMU-PT	01-2009	12-2010	E
PTIN	M. Ricardo	D	N	CS	-	03-2009	02-2010	E
VI / VI&DT	J. Ruela	C	N	NP	QREN	03-2009	12-2009	E
E2E EGC	M.T. Andrade	R	E	EP	Eureka	04-2009	-	E
FOSIN	P. Mendes	O	E	OS	-	05-2009	12-2009	E
Portlab	R. Sofia	R	N	NP	QREN	05-2009	04-2012	E
Transvision	M. Ricardo	R	N	NP	QREN	05-2009	04-2012	E
AWARE	R. Sofia	R	E	EP	Eureka/Celtic	06-2009	-	G
ERCUPI	P. Mendes	R	I	EP	ERC	06-2009	12-2013	E
IANV	R. Sofia	C	N	NP	QREN	09-2009	06-2010	E
Contextaware	M.T. Andrade	R	E	EP	FP7	10-2009	-	E
Mmextended	M.T. Andrade	R	E	EP	FP7	10-2009	-	E
Personal nets	M. Ricardo	R	E	EP	FP7	10-2009	-	E
Ubiquo	F. Gouyon	R	E	EP	FP7	10-2009	-	E
v6Tender	R. Sofia	C	E	EP	FP7	-	-	E

- (1) Type of Project: R - Research; D - Development; C - Consulting; A - Advanced Training; T - Technology Transfer; O - Other
- (2) Degree of internationalization: N - National; E - European; I - International (Select one)
- (3) Source of financing: NP - National Programmes; EP - European Programmes; CS - Consulting and services; O - Other R&D financing sources; OS - Other sources
- (4) Status: OG - On-going: starting before 2009; G - Guaranteed: activity with a firmly agreed contract, starting in 2009; E - Expected: Activity with expected achievement, corresponding to a level of achievement proposed as a goal by the Unit.

- Publications

Summary of the publications expected for 2009

Type of publication	Number
Theses concluded in 2009 by members of the unit	7
Books (author)	1
Chapter/paper in books	3
Publications (editor)	
Papers in International Journals with scientific referees	18
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	50
Other publications (National meetings, local journals, etc.)	6
Total	85

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2009

Type	Starting	On-going	Concluded	Total
Master	10	0	55	65
Doctoral	8	30	10	48
Total	18	30	65	113

- Summary of Advanced Training Actions

Summary of Advanced Training Actions expected for 2009

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	30
Training for others (<i>estágios extra-curriculares</i>)	2
Professional training actions (<i>estágios profissionais</i>)	3
Other actions	
Total	35

- Summary of activities of cooperation or dissemination

Summary of cooperation and dissemination actions expected for 2009

Type	Number
Organizing conferences or meetings	8
Collaboration in papers authored by INESC Porto researchers	> 60
External persons directly involved in actions organized by INESC Porto	

- Human resources in 2009

Summary of Unit personnel at the end of 2009

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Polytechnic Staff</i>	20	1			21	-15
<i>INESC Porto Grant Holders</i>		5			5	0
<i>Other Grant Holders</i>	2	30	10		42	+16
<i>Employees</i>	3	1			4	0
<i>Trainees</i>						
<i>Other</i>						
Administrative				1	1	0
Total	25	37	10	1	73	+1

(*) Relative to 2008, in absolute numbers.

P1.7 INNOVATION AND TECHNOLOGY TRANSFER UNIT

Managers: Alexandra Xavier, Aurora Teixeira

P1.7.1 SHORT DESCRIPTION OF THE UNIT

R&D Institutions that intend to take advantage of the economic opportunities of their R&D programmes should leverage their innovation potential through appropriate strategies and management processes which might allow them to manage and promote their R&D results outside the organization, in order to create economic value.

The purpose of the Unit is to consolidate last years' investments and experience of INESC Porto in the development of internal processes and tools to manage their R&D results, and organize this knowledge and competences in a transversal Unit that can take responsibility and leadership of the process of knowledge valorisation.

In this context, the main goal of the UITT is to develop and promote innovation management practices, acting directly in the internal processes, supporting entrepreneurship activities helping business development as well as incubation.

The Unit also plays a role in the creation and increase of knowledge in the scientific area of Innovation Management, Technology Transfer and Entrepreneurship. Thus, advanced training - MSc and PhD level training -constitutes a major objective aiming at creating internal excellence in the relevant research areas and to provide the industry with highly qualified professionals, capable of dealing with the challenges of entrepreneurial innovation.

The Unit main Research and Development areas and activities are:

- The Innovation Management:
 - Act directly in the internal innovation process and practices, by developing, in collaboration with other R&D Units, processes and tools that enable an efficient management of R&D projects results in order to maximize the valorisation opportunities.
 - Provide consulting services to companies, concerning the implementation of R&D+I management systems according to NP 4457:2007. These services follow a proprietary methodology, developed in the context of COTEC Portugal project.
 - Provide training to companies in order to increase awareness and knowledge concerning the NP R&D+I management systems and methodologies.
 - Development research projects in order to increase emergent knowledge that supports internal and external activities.
- Entrepreneurship:
 - Promote an entrepreneurship culture behind academic researchers
 - Create entrepreneurial awareness through the organization of training actions, development of tools, and giving direct support to promoters in the process of turning ideas into business.
 - Supply of incubation services through the recently created incubator LET-IN.

Table of correspondence between know-how and External and Internal application

Know-how	Status (*)	Internal Units	Companies	Entrepreneurs
NPD	I/E	X	X	X
R&D + Innovation Management System	I	X	X	
Creativity	E	X		X
Business Concept Development	I/E	X	X	X
Business Plan Development	I/O/E	X		X
Management of "proof of concept" projects	I	X	X	X
Commercial Feasibility studies	I	X		X
Technology Feasibility studies	O	X	X	X
Technology Transfer	C	X	X	
Innovation Metrics	I/E	X	X	
Open Innovation	I/E	X	X	X

(*) I - Internal; O - Existing in another Unit of INESC Porto; E - External; C - To be created

Potential Coverage of the Innovation Process

Activity Area	Research	Development	Consulting	Training	Internal Use
Development of R&D + innovation management systems	X	X	X	X	X
Implementation of innovation processes			X	X	X
Business Plan methodologies and tools			X	x	X
Definition and development of methodologies to analyse and protect R&D results	X	X		X	X
Definition and development of methodologies to analyse and control R&D+I management systems	X	X	X	X	X
Technology Feasibility studies			X	X	X
Commercial Feasibility studies			X	X	X
Innovation Metrics	X		X	X	X
Open Innovation	X			X	X
Technology transfer Practices	X	X		X	X

Description of the Unit's organizational structure

The Unit's management is jointly assumed by Alexandra Xavier e Aurora Teixeira with direct support of the Board of Direction.

The Unit is focused on the areas: Innovation Management, Business Development and Entrepreneurship, and Technology Transfer.

The main activities are:

- Training actions.
- Consulting services for companies in order to increase their potential for Innovation.
- 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 IP protection, evaluation and technology transfer.
- Development of R&D activities in order to increase Knowledge and sustain the overall activity.

The Unit works in collaboration with the others R&D Units, with the Board of Directors, and with entrepreneurs.

Summary of results of the research activities of the team members

- Projects

Summary of projects developed in 2008

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research			2	
D - Development				
C - Consulting	3			41.015
A - Advanced training	2			92.192
T - Technology Transfer				
O - Other	8			45.170
TOTAL	13		2	178.377

Summary of relative distribution of sources of income

Financing (3)	Status (4)			Total Income (€)
	S - Started	OG - On-going	C - Concluded	
NP - National Programmes	3,59%		46,11%	88.653
EP - European Programmes				
CS - Consulting and Services	5,33%	27,76%	17,21%	89.724
O - Other R&D sources				
OS - Other Sources				
Total	8,92%	27,76%	63,32%	178.377

Summary of projects developed in 2008

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
Tomorrow Options	Alex. Xavier	O	N	CS	-	03-2006	08-2008	F
FORMINOV	Alex. Xavier	A	N	NP	ON Norte	10-2006	12-2008	F
CONSULTORIA-UITT	Alex. Xavier	C	N	CS	-	02-2007	-	OG

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
LET-In (projectos)	Alex. Xavier	O	N	CS	-	02-2007	-	OG
NEXT2You	Alex. Xavier	O	N	CS	-	02-2007	12-2009	OG
XAREVISION	Alex. Xavier	O	N	CS	-	04-2007	01-2008	F
CIFIA I&D+I	Alex. Xavier	C	N	CS	-	06-2007	01-2008	F
I&D UTEN	A. Teixeira	R	I	CS	-	11-2007	06-2008	F
OPEN	A. Teixeira	R	I	EP	-	11-2007	12-2008	F
AUDOLICI	Alex. Xavier	O	N	CS	-	01-2008	03-2008	F
Formação IPP	Alex. Xavier	A	N	CS	-	01-2008	02-2008	F
SmartWatt	Alex. Xavier	O	N	CS	-	01-2008	02-2009	S
Process.net	Alex. Xavier	O	N	CS	-	05-2008	12-2009	S
OMLX	Alex. Xavier	O	N	CS	-	06-2008	12-2008	F
EI-Nautilus	Alex. Xavier	C	N	NP	QREN	07-2008	06-2010	S

- (1) Type of Project: R - Research; D - Development; C - Consulting; A - Advanced Training; T - Technology Transfer; O - Other
- (2) Degree of internationalization: N - National; E - European; I - International (*Select one*)
- (3) Source of financing: NP - National Programmes; EP - European Programmes; CS - Consulting and services; O - Other R&D financing sources; OS - Other sources
- (4) Status: S - Starting: activities initiated in 2008 and continuing in 2009; OG - On-going: activities started earlier than 2008 and continuing in 2009; F - Finished: activities ending in 2008.

• Summary of publications

Summary of publications in 2008

Type of publication	Number
Theses concluded in 2008 by members of the unit	
Books (author)	3
Chapter/paper in books	3
Publications (editor)	3
Papers in International Journals with scientific referees	8
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	17
Other publications (National meetings, local journals, etc.)	10
Total	44

(*) papers co-authored with researchers of other Units

• Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2008

Type	Starting	On-going	Concluded	Total
Master	4	13	5	22
Doctoral			1	1
Total	4	13	6	23

- Summary of advanced training actions

Summary of advanced training actions organized for external trainees in 2008

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	
Training for others (<i>estágios extra-curriculares</i>)	
Professional training actions (<i>estágios profissionais</i>)	
Other actions	
Total	

- Summary of activities of cooperation or dissemination

Summary of items

Type	Number
Organizing conferences or meetings	2
Collaboration in papers authored by INESC Porto researchers	
External persons directly involved in actions organized by INESC Porto	

- Human resources in 2008

Summary of Unit personnel at the end of 2008

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Polytechnic Staff</i>	2				2	0
<i>INESC Porto Fellows</i>			2		2	-1
<i>Other Fellows</i>						
<i>Employees</i>			1		1	-1
<i>Trainees</i>			1		1	+1
<i>Other</i>	1				1	+1
Administrative						
Total	3		4		7	0

(*) Relative to 2007, in absolute numbers.

P1.7.2 SWOT ANALYSIS

Strengths

- Past experience in the implementation of processes and tools concerning innovation process.
- Competences in the area of IP and technology transfer process.
- Competences in the area of R&D + Innovation management systems.

- Experience and competence concerning business development process.
- Experience and competence in advanced training in the area of innovation, technology transference and entrepreneurship.
- Good relationship between the Unit and researchers.
- Good relationships between the Unit and some entrepreneurship advanced training courses.
- Good relationships between the Unit and pilot companies that implemented the certification on innovation management (NP 4457:2007).

Weaknesses

- Incipient international networking for the development of R&D projects.
- Inefficient commercial approach and lack of adequate staff to meet the expected increase of consulting activities in the area of innovation management systems.

Opportunities

- Collaboration with other International Research Unit in European Projects (Lappeenranta University of Technology, Texas Austin University, IC2, WIFO), which will foster the Unit scientific output.
- Increasing awareness by public (Portuguese Government - QREN) and private (COTEC and Portuguese largest firms) entities of the need of innovation and R&D+I management training and certification.

Threats

- Relative scarcity of entrepreneurial culture and empowerment of Portuguese economic agents in general and researchers in particular.
- Increasing competition in the area of R&D+I related training and consulting.

P1.7.3 MEDIUM TERM STRATEGIC OBJECTIVES AND OBJECTIVES FOR THE YEAR

The main strategic objectives for 2008 are:

- Develop an internal document containing an explicit and formal scientific policy.
- Consolidate our offer of consulting services in the R&D+I area through a careful selection process of key clients.
- Attract high quality MSc and PhD researchers in order to increase our critical mass both at scientific and consulting levels.
- Implement visible and high quality training actions, namely by initiating a North-Galiza network, in order to reinforce and create competences to sustain Unit's future activity.
- Organize high quality events that financially support and give visibility to the Unit's scientific and technology resources.
- Enlarge our international collaborations through the participation in EU (and other international) projects.
- To diffuse the 'Open Innovation' paradigm within the Portuguese economy.

P1.7.4 ACTION PLAN (GLOBAL)

- Reinforcing the scientific activity of the Unit.
- Implementation of the training action plan in the areas of Innovation Management and Technology Transfer.
- Implementation of training actions concerning the dissemination of an entrepreneurial culture among researchers.
- Identification and development of strategic collaborations and formal partnerships that might seem important to the development of the main areas of activities.
- To become a privilege consulting partner of Portuguese companies in the implementation and certification of Innovation management systems.
- To become a nationally and internationally renowned unit in the R&D+I Management area.

P1.7.5 ACTIVITIES EXPECTED FOR 2009

- Projects

Summary of the projects to be developed in 2009

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research				
D - Development			1	
C - Consulting	3			102.000
A - Advanced training	4			52.900
T - Technology Transfer				
O - Other	4			15.025
TOTAL	11		1	169.925

Summary of the percentage distribution of budgetary revenue

Financing (3)	Status (4)			Total Income (€)
	OG- On-going	G - Guaranteed	E - Expected	
NP - National Programmes	8,83%	7,06%		27.000
EP - European Programmes				
CS - Consulting and services	52,98%		31,13%	142.925
O - Other R&D sources				
OS - Other sources				
Total	61,81%	7,06%	31,13%	169.925

Summary of projects to be developed in 2009

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
CONSULTORIA-UITT	Alex. Xavier	C	N	CS	-	02-2007	-	OG
LET-In (projectos)	Alex. Xavier	O	N	CS	-	02-2007	-	OG
Next2You	Alex. Xavier	O	N	CS	-	02-2007	12-2009	OG
SmartWatt	Alex. Xavier	O	N	CS	-	01-2008	02-2009	OG
Process.Net	Alex. Xavier	O	N	CS	-	05-2008	12-2009	OG
EI-Nautilus	Alex. Xavier	C	N	NP	QREN	07-2008	06-2010	OG
Ferramenta Gestão de Ideias	Alex. Xavier	D	I			01-2009	04-2009	G
Vale ID&T Ferramenta diag.	Alex. Xavier	C	N	NP	QREN	01-2009	04-2009	G
Formação Executivos	Alex. Xavier	A	N	CS	-	03-2009	10-2009	E
Workshop 1	A Teixeira	A	N	CS	-	03-2009	12-2009	E
Workshop 2	A Teixeira	A	N	CS	-	03-2009	12-2009	E
Conferência	A Teixeira	A	N	CS	-	05-2009	07-2009	E

- (1) Type of Project: R - Research; D - Development; C - Consulting; A - Advanced Training; T - Technology Transfer; O - Other
- (2) Degree of internationalization: N - National; E - European; I - International (Select one)
- (3) Source of financing: NP - National Programmes; EP - European Programmes; CS - Consulting and services; O - Other R&D financing sources; OS - Other sources
- (4) Status: OG - On-going: starting before 2009; G - Guaranteed: activity with a firmly agreed contract, starting in 2009; E - Expected: Activity with expected achievement, corresponding to a level of achievement proposed as a goal by the Unit.

• Publications

Summary of the publications expected for 2009

Type of publication	Number
Theses concluded in 2009 by members of the unit	2
Books (author)	1
Chapter/paper in books	2
Publications (editor)	2
Papers in International Journals with scientific referees	10
Papers in National Journals with scientific referees	2
Conference Proceedings in events with scientific referee and selection	20
Other publications (National meetings, local journals, etc.)	15
Total	54

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2009

Type	Starting	On-going	Concluded	Total
Master	4	3	10	17
Doctoral	3	0	0	3
Total	7	3	10	20

- Summary of Advanced Training Actions

Summary of Advanced Training Actions expected for 2009

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	
Training for others (<i>estágios extra-curriculares</i>)	
Professional training actions (<i>estágios profissionais</i>)	
Other actions	
Total	

- Summary of activities of cooperation or dissemination

Summary of cooperation and dissemination actions expected for 2009

Type	Number
Organizing conferences or meetings	3
Collaboration in papers authored by INESC Porto researchers	
External persons directly involved in actions organized by INESC Porto	2

- Human resources in 2009

Summary of Unit personnel at the end of 2009

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Polytechnic Staff</i>	2				2	0
<i>INESC Porto Fellows</i>			1		1	-1
<i>Other Fellows</i>						
<i>Employees</i>		2			2	+1
<i>Trainees</i>		1			1	0
<i>Other</i>	1				1	0
Administrative						
Total	3	3	1		7	0

(*) Relative to 2008, in absolute numbers.

P2. SUPPORT ACTIVITIES PLAN

P2.1 DEPARTMENT OF INFORMATION AND LOGISTICS

Manager: Maria da Graça Barbosa

P2.1.1 SHORT DESCRIPTION OF THE DEPARTMENT

The main objective of the Department of Information and Logistics (DIL) is to assure, in an integrated way, the information, administrative and organizational support necessary to INESC Porto's good functioning. Comprehending the majority of the support functions and combining administrative/executive functions with research, specialised analysis and advice, DIL strongly contributes to the preparation and substantiation of the decisions made by the authorised bodies.

Currently, DIL seeks to take full advantage of the Intranet's potentialities, aiming to offer more complete and updated information of relevance to the institution, as well as the rules and procedures in force.

It is also DIL's objective to increase the efficiency of the services rendered upon the simplification and automation of the processes.

Description of the Department's organizational structure

The current structure has been reasonably stable for years, corresponding to the functions required by the type of activity that has been carried out by INESC Porto. Since October 2004, there has been a change in the Responsibility for the Human Resources Area, which has been assumed directly by the Department's manager. This change demanded the reinforcement of the now called "General Coordination" of the department, with the allocation of a person to support the coordination functions. Since January 2007, the General Coordination took also charge of the organization of the Board of Directors' meetings, dispatch and follow-up of its decisions.

A new change in the organizational structure is foreseen from 2009 on: the logistic support, consisting of three persons who perform copy services, internal mail, external services and logistic support, will be transferred to the Infrastructures Management Service. This way, the Department will concentrate more on information and organizational support, which is its main purpose.

Thus, apart from General Coordination, DIL will cover five main functional areas: Human Resources, Accountancy and Finance, Management Control, Legal Support and Secretarial Coordination, with the following specific missions:

Human Resources: Coordination and execution of all activities concerning administrative management of human resources, as well as the actions necessary to the fulfilment of the legal and budgetary obligations. Follow-up and management of INESC Porto's insurances related to people, namely Health Insurance, Personal Accidents and Work Accidents, as well as the follow-up and control of the services rendered by the hired company in the area of Health, Hygiene and Occupational Safety.

Manager: Maria da Graça Barbosa

Accountancy and Finance: Coordination and execution of the activities of general accountancy and financial management, as well as the necessary actions to the fulfilment of the tax obligations.

Manager: Paula Faria

Management Control: Coordination and execution of the activities regarding planning and budgetary control and management information. Support to the submission of applications of financed projects and administrative, economical and financial management of these projects.

Manager: Marta Barbas

Legal Support: Juridical support to the institution, in terms of information, advice, prevention and solving of problems and verification of the legal and statutory conformity of acts and contracts, maintenance and update of the institutional documentation. It also supports the functioning of the associative bodies of INESC Porto, particularly the Board of Directors and the General Council. Due to the increasing work in this area, a new person will be hired with a fixed term contract.

Manager: Maria da Graça Barbosa

Secretarial Coordination: coordination of the Units', Services' and Departments' Secretaries, in order to guarantee the coherence of the typical procedures of those functions, as well as to ensure homogeneity and control the compliance with the internal rules and procedures. The person in charge of these functions is allocated to it in part-time, maintaining her previous functions as Unit's secretary (Lídia Vilas Boas).

- Human resources of the Department

Summary of Department personnel at the end of 2008

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Polytechnic Staff</i>						
<i>INESC Porto Grant Holders</i>						
<i>Other Grant Holders</i>						
<i>Employees</i>						
<i>Trainees</i>						
<i>Other</i>						
Administrative						
<i>Employees</i>		1	9 ⁽¹⁾	7	17 ⁽¹⁾	-1
<i>Trainees</i>			3		3	+2
Total		1	12	7	20	+1

(*) Relative to 2007, in absolute numbers.

⁽¹⁾ The person that guarantees the function of Secretarial Coordination is allocated to the Department only by 25% of her working time.

P2.1.2 SWOT ANALYSIS

Strengths

- Integrated and interdisciplinary services under a common coordination has proved to enable a more coherent, informed and effective response;
- The engagement in the continuous improvement of the key-elements' work methods, as well as the investment in training, whether professional or post-graduate directly related with the function, enables a global increase of DIL's response capacity, reducing the need to resort to external advisory to the minimum;
- The fine organization of information and its adaptation to several purposes has been recognized even as a of best practice model.

Weaknesses

- Some difficulties in identifying, conceiving and implementing measures of rationalization and automation of processes;
- Some discrepancies in terms of qualifications and capacity of response and, consequently, in terms of amount of work and level of responsibility assigned to each employee;
- Difficulty in improving fruitful collaboration between areas.

Opportunities

- The exploring of partnerships with external entities, from which improvements in procedures and implementation of best practices may result. Furthermore, the institution itself may become a reference of good practices in certain areas;
- The possibility of including DIL's services and competences in the array of services and competences offered by the institution to its stakeholders and, consequently, be an additional source of revenue.

Threats

- The current dimension of DIL proving to be too heavy in a scenery of reduction of the institution's activity;
- The increasing complexity and burden of the management of funded projects, may consume too much time and energy of several persons in the department, deviating them from their value-added core functions.
- The added bureaucratic work necessary for the compliance with the Public Contracts Code, in force from 30th July, 2008, will certainly take much time and energy of several persons in the department.
- The unavailability to take the opportunities that may arise, due to the lack of time consequent of the above mentioned increase of workload;

P2.1.3 MEDIUM TERM STRATEGIC OBJECTIVES AND OBJECTIVES FOR THE YEAR

Involvement in the several aspects and strategic guidelines: due to its positioning in the organizational structure and its knowledge and specific competences, DIL is capable of collaborating, in a small or large scale, in the following strategic aspects:

- Economic value of knowledge: the Legal Support area intends to intensify its intervention, mainly in the technology transfer processes, advanced training and protection of intellectual property;
- Relation with the economic and social environment: The area of Management Control intends to collaborate in the definition of sectoral strategies and in the definition of a coherent image in the market as well as to improve the monitoring of the degree of compliance with those strategic objectives; in collaboration with the Board of Directors, the area of Accountancy and Finance will seek strategic partnerships with Financial Institutions for the provision of audit services in the different technological areas of INESC Porto;
- Internationalization: According to its specific competences, DIL proposes to collaborate in the initiatives that may be developed; in the scope of Secretarial Coordination, DIL also hopes to collaborate in the organization of international congresses;
- Institutional Positioning: DIL proposes to collaborate in the creation or development of institutional partnerships, stressing the external offer of internal competences that have been created (namely in project management and information management), that may place INESC Porto as a reference institution;
- Definition of the policies and financing sources: The areas of Management Control and Accountancy and Finance in particular, propose to intensify their contribution to the search and diversification of INESC Porto's financing sources;
- Management of Human Resources: the area of Human Resources proposes to study the ways of carrying out the diagnosis of INESC Porto's factors of attraction for the several types of collaborators, as well as to contribute to the redefinition of the collaborators' regulation;
- Internal Organization: within this strategic aspect, DIL will maintain the achievement of objectives defined previously. They are:
 - Promotion of the inter-units articulation: DIL aims to promote initiatives involving unit and area managers, with the objective of fomenting the articulation between the several productive units, concerning the issues of the department's competence.
 - Simplification and automation of processes: DIL intends to identify, propose and implement effective measures of simplification and active collaboration in the automation of processes, as a way of obtaining efficiency gains, without control or rationality loss and ensuring the compliance with the applicable laws; especially, DIL will take on the dynamization and development of the Workflow project and its extension to other processes;
 - Creation of an Integrated Information System: DIL proposes to actively collaborate in the specification of a system that satisfies INESC Porto's needs and that may be also applicable to institutions of the same kind.
- Acquirement of new competences: DIL is constantly updating knowledge and adapting its competences to the institution's evolution, in a way as to maintain or increase the capacity of response to new problems and situations, by means of research, adequate training, benchmarking etc.
- Collaboration in the management of the enlargement process of INESC Porto - Associated Laboratory, in terms of articulation of scientific and contractual activities, budgets and accountability, procedures, human resources, etc. between INESC Porto and the Groups that have adhered to the Associated Laboratory, without prejudice of their autonomy (so far LIAAD and CRACS). Organization of the INESC Porto-LA Coordinator Council's meetings and follow-up of its decisions.

P2.1.4 DEPARTMENT'S ACTION PLANS

All the actions mentioned below, most of which already started, aim to contribute to a better management and valorisation of resources (human, material, financial and intellectual) and to a greater efficiency of the processes, as well as to the carrying out of the strategic guidelines established by the Board of Directors.

General (in general coordination or involving one or more areas)

- Management of the execution of POPH training plan (2008), in case the project submitted is approved, in articulation with the area of Management Control;
- Search for new opportunities of funding of continuous training in the framework of QREN, that may be more adequate to INESC Porto needs;
- Improvement of the proposed model of INESC Porto as an Accredited Training Entity, following the accreditation by DGERT;
- Periodic revision and updating of the Welcome Guide; Reviewing of the information offered by DIL in the new Intranet and Internet sites: improve accessibility and the organization of the information, within the general reforming of Intranet and Internet process, managed by SIG;
- Participation in the definition of an Integrated Information System for INESC Porto;
- Continuing the participation in the internal project of automation of processes (collection and modelling of processes and specification of test and validation scenarios);
- Provide training or information sessions, periodically or whenever it is necessary, whether for the project managers or for the secretaries.

Human Resources Area

- Redefinition of the status of the several categories of collaborators;
- Extension of the automated process of Recruitment, Selection and hiring of human resources to other categories of collaborators and other stages of the process;
- Improvement of the automated process of Performance Assessment, which includes the extraction of information on training needs from the individual auto-assessment forms, in order to support the elaboration of the training needs diagnosis and the training planning;
- Improvement of the processes of collection, integration and processing of the information with the purpose of the Social Report/Balance and, in general, facilitating the supply of information for several purposes;
- Collaboration with SIG in the creation of a system for the electronic submission of applications and creation of a collective database;
- Creation of a section in the intranet containing information, forms and FAQ related with health insurance and other forms of protection of INESC Porto's collaborators in case of disease occurring during business trips.

Accountancy and Finance Area

- Continuing the adaptation of the internal rules for the purchasing of goods and services to the new Public Contracts Code, implementation of the new rules and procedures and, in collaboration with SIG, improve the respective automatic processes;
- Integration of the process of Publishing Awards in SACA, in collaboration with SIG;

- Promotion of the establishment of partnerships with Financial Institutions, in the technological areas, in articulation with the Board of Directors;
- Improvement of the handbook on procedure of the accountancy and Finance Area;
- Implementation of the procedure payment, by bank transfer, of the personal expenses.

Management Control Area

- Implementation of an automatic process of Time-Cards recording;
- Creation and development of an Internal Audit Plan;
- Start a record of the proposals of provision of services that, together with the control of the billing of the existing bilateral contracts, will make it possible to feed operational performance indicators;
- Creation of a Handbook on procedures for funded projects.
- Development and implementation of a Balanced Scorecard for INESC Porto that enables the monitoring of the strategy's execution.

Legal Support Area

- Collaboration in the implementation of the Handbook on Intellectual Property, written by an external specialized company, in articulation with the new Innovation and Technology Transfer Unit (UITT):
 - definition of the policy and approval and application of the Regulation of Intellectual Property;
 - Revision of contracts with collaborators and creation of new drafts;
 - creation of drafts for several kinds of agreements/contracts with the purpose of defending INESC Porto's rights;
 - Articulation with the external company of intellectual property in the handling of real cases of protection of intellectual property, centralization, follow-up and filing of the processes.
- Legal support to the Business Incubation Projects, new Spin-offs of INESC Porto and other participations of INESC Porto in companies and associations;
- Legal support to the institution's internationalization projects;
- Study and advice on the legal issues of the Seventh R&D Framework Programme and other European or International Programmes;
- Revision and enriching of the information and documentation available on the intranet, namely drafts of documents (contracts, declarations, etc.), relevant legislation, updating of the frequently asked questions, as well as relevant institutional documentation.
- Legal support to implementation of the new rules and procedures foreseen in the new Public Contracts Code: conception of internal rules and templates, documents drafting and revision, overall supervision of files, procedures and reports, in-house training, etc.

Secretarial Coordination

- Verify and support the use of intranet applications such as ULTIMUS, SACA and other process management applications by the secretaries, suggesting changes and improvements, namely integrating the Intranet reservations process of services and equipment, allowing multiple requests and confirmations (namely with Plone interface);

- Implementation of an organised and effective procedure in order to welcome new collaborators within the Units;
- Continuous finding of possible integrations of the management application processes to the secretarial daily tasks;
- Continuous planning of the Secretaries' training:
 - Proposals for single individual participations;
 - Proposals for the group's training based on the assessment of lacunas
- Formulation of a chart that compares the tasks performed by the several secretaries as a way to evidence the different types of use of these human resources in the different Units and make the coordinators aware of a more efficient use of them.

Human resources of the Department

Summary of Department personnel at the end of 2009 (estimate)

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Polytechnic Staff</i>						
<i>INESC Porto Grant Holders</i>						
<i>Other Grant Holders</i>						
<i>Employees</i>						
<i>Trainees</i>						
<i>Other</i>						
Administrative						
<i>Employees</i>		2	9 ⁽¹⁾	4	15 ⁽¹⁾	-2
<i>Trainees</i>			2		2	-1
Total		2	11	4	17	-3

(*) Relative to 2008, in absolute numbers.

(1) The person that guarantees the function of Secretarial Coordination is allocated to the Department only by 25% of her working time.

P2.2 SERVICES

P2.2.1 COMMUNICATIONS AND COMPUTER SERVICE

Summary of actions expected for 2009

Action	Description	Schedule
VoIP	Conclusion of the VoIP systems and services implementation.	First Semester
IPv6	Conclusion of the IPv6 infrastructure implementation.	Second Semester
Electronic mail (E-mail)	Introduction of new engines for SPAM filtering.	First Semester
	Reorganization and refinement of the mail servers' management tools and procedures.	
	Development, configuration, installation and deployment of new services in INESC Porto network.	
Calendar and Agendas Management service	Start exploitation phase of the new calendar and agendas management service.	First Semester
New network services	Restructuring of the Wi-Fi network infrastructure and introduction of new access service for INESC Porto visitors.	Annual Task
Systems Backup	Support services (help-desk) for all INESC Porto users.	First Quarter
Users support	Technical support service for internal IT purchase processes.	Annual Task
	Development of a new version of the Communications and Computer Service web site, supporting more user interactivity and facilities to access the software and network databases.	
	IT infrastructure management and maintenance and related services.	
IT infrastructure management and maintenance	Maintenance and support contract management, covering the IT infrastructure and software applications.	Annual Task
	Periodic auditing of systems installed software and network access.	
	Specialized consulting services and tasks, in cooperation with other Units or by request of external entities.	
Specialized consulting services	Organization of short term training actions and traineeships.	Sporadic Tasks
	Consultancy for Instituto de Gestão de Fundos de Capitalização da Segurança Social	

P2.2.2 MANAGEMENT INFORMATION SERVICE

Summary of actions expected for 2009

Action	Description	Schedule
Development of business workflow solutions.	Conversion of the existing forms to electronic format.	First semester
	Collection and specification of the business processes in INESC Porto in articulation with the work group created for that purpose.	During the whole year
	Automation of procedures in the workflow of content management system.	
	Implement the new platform and processes for the new Public Contracting code.	
Enhanced of INESC Porto Website	Migrate content management system to Plone 3 and enhanced performance.	First trimester
	Enhanced of collaboration tools.	The whole year
Collaboration in the development of the Units' projects and conferences websites.	Support to the units and services in the creation of the necessary websites. All must have common nuclear functionalities.	The whole year
	Support to SMC 2009 and EWOFS 2010 conferences websites.	
Development of the concept of database in INESC Porto for management.	Structuring an integration model of INESC Porto's databases.	The whole year
	Proposing a model for administration of database servers in INESC Porto (Oracle, SQL, Server). Service to provide to the units.	
Development of applicational units to support internal management functions.	Re-structuring SACA in a way as to integrate it with the content management system and with FEUP's database.	Second quarter
	Evaluate Fordesi Project Management tool.	First quarter
	Evaluate Microsoft Project Server.	First quarter
Coordination of a work group for document management.	Specification on document management and digital archive.	The whole year
	Implementation of the document management system, digital archive and test phase. A dedicated server may be necessary.	
Maintenance of services of management applications, integration of information among applications, etc.	Maintenance of the Website, Ultimus, Workflow, SACA, PHC Personal, etc.	The whole year

P2.2.3 COMMUNICATION SERVICE

Summary of actions expected for 2009

Action	Description	Schedule
Intensification of external communication: news and opinion articles in the most relevant newspapers, radio and television.	The aim is to guarantee the publication or release of (at least) one news item per month regarding the activities in INESC Porto.	The whole year
Development of a Common Strategy in order to promote Communication with the Rectory of the University of Porto and associated Faculties and Institutes.	Promoting several initiatives which result from combining efforts and benchmarking activities from several institutions belonging to this work group.	The whole year
Search for opportunities to carry out new projects that will promote the dissemination of INESC Porto's scientific activities.	Elaboration of applications for the development of new projects related to the dissemination of our scientific and technological activities, both at national and international levels. These projects should be coordinated and co-coordinated by INESC Porto.	The whole year
Promote other initiatives to young people in the area of Science Communication.	Looking for opportunities to establish relationships of cooperation with other high schools in order to develop initiatives related to Science and New Technologies which are appealing to students.	The whole year
Preparing the celebrations for INESC Porto's 25th anniversary	Creating a task force, planning several initiatives and calculating the costs for the celebrations of INESC Porto's 25th anniversary that will take place in 2010.	First semester
Dynamization of INESC Porto's new website in Portuguese and in English.	Translation and inclusion of news on projects and events as well as clippings on the website. Daily update.	The whole year
Production of INESC Porto's new institutional video.	Collection of images and script writing in order to update INESC Porto's institutional video. English version for subtitling.	First quarter
Organization of the institution's internal and external communication activities.	Includes organization of events, participation in Exhibitions, and propaganda of initiatives, among others.	The whole year
Production of BIP - INESC Porto's Bulletin.	Collecting and processing information and images to include in BIP. Production of 11 editions in Portuguese and 4 in English.	The whole year
Production of a bilingual communication piece to present INESC Porto's activities.	Coordinating the production of an e-book that introduces INESC Porto and promotes its image, its activities and its innovative projects.	First quarter
Photo and video coverage of events.	Photo and video coverage of internal and external events, at the Units' request.	The whole year
Updating and offering of a photo and video archive.	Updating of the historical footage archive and multimedia in the intranet and its advertisement to all the collaborators.	The whole year

Action	Description	Schedule
Organization of visits to INESC Porto.	Supporting visits from students who are interested in our areas of activity.	The whole year

P2.2.4 INFRASTRUCTURE MAINTENANCE SERVICE

Summary of actions expected for 2009

Action	Description	Schedule
Buildings' management and maintenance	Management of the provision of services associated with the operation and maintenance of the buildings. Buildings maintenance	The whole year
Support to the Units' electronic production activities.	Offering of infrastructures and material for the electronic production (in collaboration with UOSE)	The whole year

P2.2.5 LIBRARY AND DOCUMENTATION SERVICE

Summary of actions expected for 2009

Action	Description	Schedule
Management and operationalization of the interface with FEUP's library.	Support to the operationalization of the agreement between INESC Porto and FEUP for the management of the library and documentation services.	The whole year
Inventory of INESC Porto's documental heritage	Cataloguing of the institution's publications including books, magazines, theses and multimedia material.	The whole year