



INESCPORTO

INSTITUTO DE ENGENHARIA DE SISTEMAS
E COMPUTADORES DO PORTO
LABORATÓRIO ASSOCIADO

PLANO DE ACTIVIDADE DAS UNIDADES

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 2007 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.

Since it was not possible to perform in 2006 the necessary strategic discussion on the role of the Scientific Council, taking into account the experience of the recent years, the Council will organize it in 2007.

The Council will also continue to monitor the scientific production of the institution and will try to create a mechanism to follow up the development of MSc and PhD theses, in conjunction with the Scientific Committees of the Units.

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 is to promote the improvement of performance of industrial enterprises through R&D projects, consulting, technology transfer and training services. The Unit main Competences are related to Operations Management and Enterprise Information Systems, applied to industrial companies and enterprise cooperation networks. The Unit main Research and Development areas include:

- Networked Business Models: Value network design; operations management; advanced planning systems; performance management; information and knowledge management; interoperability.
- Decision Support and Operations Management: Process analysis; modeling and simulation; advanced planning systems; operations scheduling; intelligent automation and logistics; cutting and packing; multi-criteria optimization; decision support systems.

The Unit has regularly promoted and participated in applied research projects, in partnership with software houses, aiming at the development of innovative products in the fields of: production planning, scheduling and control, quality and maintenance management, decision support, cutting and packing optimization, knowledge management, and integration infrastructures.

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

- Inter-organisational Networks: Operations Management; collaboration processes; management and decision support; knowledge management; interoperability.
- Optimization and Decision Support: structuring of decision processes; optimization methods; Combinatorial Optimization and meta-heuristics; optimization for planning and scheduling problems; optimization for cutting and packing problems; simulation; Decision Support Systems
- Information Systems in Organisations: requirements engineering; advanced applications of information systems; enterprise integration.

The Unit provides consulting services to industrial companies, including 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	Internal Logistics	Manufacturing	Optimization	Enterprise Engineering
Structuring of decision processes	I	X	X	X	X	X
Information Systems Analysis	I	X	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	X	X	X	X
IS advanced applications	I	X	X	X		X
Software development tools	I	X	X	X	X	
Databases	I	X	X	X	X	
Frameworks	I	X	X	X		
Communications	I / O	X	X	X	X	
Automation	I			X	X	
Vision	E			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 Novabase	UESP	UESP	Sistrade Novabase	Sistrade Novabase	Footwear Metal mechanics Cork Automobile
Logistics	UESP	UESP LIREL	UESP	UESP LIREL	LIREL	UESP LIREL	Footwear Metal mechanics Furniture
Planning	UESP	UESP, Softi9	UESP	UESP	Softi9, I68, CPC	UESP	Automobile Abrading agents
Optimization	UESP	UESP	UESP	UESP	UESP, Lirel	UESP	Textile Paper Metal mechanics
Enterprise engineering and process optimization	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 activity are Enterprise Cooperation Networks, Internal Logistics, Operations Management and Cutting and packing. The consulting services are structured in a specific area.

Summary of results of the research activities of the team members

- Projects

Summary of projects developed in 2006

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	11	6		854.000
D - Development	6			87.950
C - Consulting	2			73.000
A - Advanced training				
T - Technology Transfer	3	3		237.500
O - Other				
TOTAL	22	9		1.252.450

Summary of relative distribution of sources of income

Financing (3)	Status (4)			Total Income (€)
	S - Started	OG- On-going	C - Concluded	
NP - National Programmes	11,30%	12,54%	6,87%	384.500
EP - European Programmes	1,60%	39,52%	8,46%	621.000
CS - Consulting and services	1,60%	10,20%	7,92%	246.950
O - Other R&D sources				
OS - Other sources				
Total	14,49%	62,25%	23,25%	1.252.450

Summary of projects developed in 2006

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
GESTE	J. S. Ferreira	R	N	NP	PRIME	10-2003	12-2006	F
Regina	A.C. Alves	T	E	EP	Interreg	11-2003	10-2006	F
CodeWork	Lucas Soares	R	N	NP	FCT	01-2004	12-2006	F
GlobalNest	M. C. Ribeiro	R	N	NP	FCT	03-2004	12-2006	F
IRCPortugal	A. C. Alves	T	E	EP	IST	04-2004	03-2008	OG
Kobas	A. Azevedo	R	E	EP	NMP	06-2004	05-2007	OG
I+D+I PME's	A.C. Alves	T	E	EP	Interreg	09-2004	05-2007	OG
Softi9	Luís Guardão	D	N	CS	-	09-2004	06-2006	F
CEC Made Shoe	Rui Diogo	R	E	EP	IST	10-2004	09-2008	OG
CEC-MadeShoe-Prime	Rui Diogo	R	N	NP	Prime	10-2004	06-2008	OG

Name of the project	Respons.	Type proj. (1)	Degree of intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
CoopNav	Luís Guardão	R	E	EP	Interreg	10-2004	05-2006	F
ISO-Pross	Paula Silva	R	N	NP	Ideia	10-2004	03-2007	OG
DURIT AD	A. C. Alves	C	N	CS	Demtec	12-2004	05-2007	OG
Benchmarking	Luís Guardão	D	N	CS	-	01-2005	06-2006	F
KnowConstruct	Lucas Soares	R	E	EP	C. R.	01-2005	08-2007	OG
SIASoft	Luís Guardão	R	N	NP	Ideia	01-2005	08-2006	F
AMINETFOOD	J.P. de Sousa	R	E	EP	IST	04-2005	12-2006	F
Sonae	Luís Guardão	D	N	CS	-	06-2005	02-2007	OG
META-SIM	J.P. de Sousa	R	N	NP	FCT	07-2005	06-2007	OG
RCED	Luís Carneiro	R	N	NP	PON	07-2005	03-2007	OG
APIS	J. F. Oliveira	R	N	NP	FCT	09-2005	08-2007	OG
Escalon. Durit	Luís Guardão	D	N	CS	-	10-2005	03-2007	OG
AVANTEC	A.C. Alves	T	N	CS	-	01-2006	12-2006	F
PRONIC	Luís Guardão	R	N	NP	-	01-2006	12-2007	S
SIUP	Luís Guardão	T	N	NP	SIUPI	01-2006	12-2007	S
ShoeBiz	César Toscano	R	N	CS	-	05-2006	12-2006	F
DCB	Rui Diogo	D	N	CS	-	09-2006	01-2007	S
AC/DC	J.P. de Sousa	R	E	EP	IST	10-2006	09-2010	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 2006 and continuing in 2007; OG - On-going: activities started earlier than 2006 and continuing in 2007; F - Finished: activities ending in 2006.

• Summary of publications

Summary of publications in 2006

Type of publication	Number
Theses concluded in 2006 by members of the unit	1
Books (author)	
Chapter/paper in books	2
Publications (editor)	
Papers in International Journals with scientific referees	2
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	16
Other publications (National meetings, local journals, etc.)	8
Total	29

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2006

Type	Starting	On-going	Concluded	Total
Master	2	9	5	16
Doctoral	1	11	2	14
Total	3	20	7	30

- Summary of Advanced Training Actions

Summary of Advanced Training Actions organized for external trainees in 2006

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	6
Training for others (<i>estágios extra-curriculares</i>)	
Professional training actions (<i>estágios profissionais</i>)	3
Other actions	
Total	9

- Summary of activities of cooperation or dissemination

Summary of items

Type	Number
Organizing conferences or meetings	7
Collaboration in papers authored by INESC Porto researchers	2
External persons directly involved in actions organized by INESC Porto	25

- Human resources in 2006

Summary of Unit personnel at the end of 2006

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Politechnic Staff</i>	12	6	1		19	0
<i>INESC Porto Fellows</i>		1	6	1	8	+3
<i>Other Fellows</i>		1			1	0
<i>Employees</i>	1	1	8	2	12	0
<i>Trainees</i>			1		1	-1
<i>Other</i>						
Administrative			1	1	2	0
Total	13	9	17	4	43	+2

(*) Relative to 2005, in absolute numbers.

P1.2.2 SWOT ANALYSIS

Strengths

- Good technical and scientific background;
- Good project management skills;
- Good relationships with enterprise associations and technological centers from several industrial sectors;
- Trust relations with a significant number of companies;
- Good network of contacts at the European level.

Weaknesses

- Activity scope too wide;
- Insufficient commercial effort.

Opportunities

- Companies are aware of the need to innovate and improve productivity;
- Start up phase of the 7th European RTD framework.

Threats

- Reduced number of technology base Portuguese companies, with own products, especially in the software domain;
- National programmes to support RTD finished recently and the programmes that are going to replace them are not yet defined;
- 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, and by promoting PhD and MSc projects;
- Assure critical mass in the Unit's main activity areas;
- Maximise the impact of the Unit's activity in the companies, and promote the valorisation of the results of its activity;
- 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 valorization of the developed intellectual property;
- Keep 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 2007 a number of structural actions are planned, including:

- Clearly identify and structure the scientific activity, consolidating 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;
- Improve the alignment between basic research, applied research and consultancy;
- Promote a pragmatic application of the concepts and tools from the area of enterprise cooperation networks in the region's companies;
- Organize a set of innovative courses for companies, leading to a minimum income of 15.000 Euros;
- Increase the quota of consultancy and technical assistance to companies, to a minimum of 80.000 Euros;
- Develop new partnerships with national and international research organizations, leaders in fields near or complementary to the Unit's activity;
- Consolidate partnerships with software houses and producers of equipments;
- Define and implement a plan to establish and promote contacts with target markets, in Portugal and abroad;
- Improve the professionalism and total quality of the services and projects developed;
- Pursue the work done in the standardization and the improvement of the software development methodologies and practices, with impact on productivity, quality and maintenance;
- Define plans for the valorization of the intellectual property of the Unit;
- Develop specific actions to strengthen the Institution's image in its main target markets;
- Improve the internal information management systems.

P1.2.5 ACTIVITIES EXPECTED FOR 2007

- Projects

Summary of the projects to be developed in 2007

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	11	4		847.000
D - Development	4			75.600
C - Consulting	2			90.000
A - Advanced training	1			15.000
T - Technology Transfer	4	2		243.500
O - Other				
TOTAL	22	6		1.271.100

Summary of the percentage distribution of budgetary revenue

Financing (3)	Status (4)			Total Income (€)
	OG- On-going	G - Guaranteed	E - Expected	
NP - National Programmes	13,10%		16,05%	370.500
EP - European Programmes	39,34%			500.000
CS - Consulting and services	17,95%		13,57%	400.600
O - Other R&D sources				
OS - Other sources				
Total	70,38%	0,00%	29,62%	1.271.100

Summary of projects to be developed in 2007

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	IST	04-2004	03-2008	OG
Kobas	A. Azevedo	R	E	EP	NMP	06-2004	05-2007	OG
I+D+I PME's	A.C. Alves	T	E	EP	Interreg	09-2004	05-2007	OG
CEC Made Shoe	Rui Diogo	R	E	EP	IST	10-2004	09-2008	OG
CEC-MadeShoe-Prime	Rui Diogo	R	N	NP	Prime	10-2004	06-2008	OG
ISO-Pross	Paula Silva	R	N	NP	Ideia	10-2004	03-2007	OG
DURIT AD	A. C. Alves	C	N	CS	Demtec	12-2004	05-2007	OG
KnowConstruct	Lucas Soares	R	E	EP	C. R.	01-2005	08-2007	OG
Sonae	Luís Guardão	D	N	CS	-	06-2005	02-2007	OG
META-SIM	J.P. de Sousa	R	N	NP	FCT	07-2005	06-2007	OG
RCED	Luis Carneiro	R	N	NP	PON	07-2005	03-2007	OG
APIS	J. F. Oliveira	R	N	NP	FCT	09-2005	08-2007	OG
PRONIC	Luís Guardão	R	N	CS	-	01-2006	12-2007	OG
SIUP	Luís Guardão	T	N	NP	SIUPI	01-2006	12-2007	OG
AC/DC	J.P. de Sousa	R	E	EP	IST	10-2006	09-2010	OG
DCB	Rui Diogo	D	N	CS	-	01-2007	12-2007	E
Formação	J.P. de Sousa	A	N	CS	-	01-2007	12-2007	E
IAPMEI	Luis Carneiro	T	N	CS	-	01-2007	12-2007	E
ON-Manufuture	Luis Carneiro	T	N	NP	ON	01-2007	12-2007	E
Softi9	Luís Guardão	D	N	CS	-	01-2007	12-2007	E
TecModa	César Toscano	R	N	NP	Prime	01-2007	06-2008	E
Simulog	Paulo Marques	R	N	NP	Prime	02-2007	06-2008	E
Sistrade	Luis Carneiro	R	N	CS	-	02-2007	06-2008	E
SAI	Ricardo Madureira	R	N	NP	Prime	02-2007	06-2008	E
QuickSoft	César Toscano	R	N	NP	Prime	02-2007	06-2008	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 2007; G - Guaranteed: activity with a firmly agreed contract, starting in 2007; 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 2007

Type of publication	Number
Theses concluded in 2007 by members of the unit	
Books (author)	-
Chapter/paper in books	2
Publications (editor)	-
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	15
Other publications (National meetings, local journals, etc.)	8
Total	37

- **Summary of post-graduation activities**

Summary of theses supervised by members of the unit in 2007

Type	Starting	On-going	Concluded	Total
Master	8	3	8	19
Doctoral	6	7	5	18
Total	14	10	13	37

- **Summary of advanced training actions**

Summary of Advanced Training Actions expected for 2007

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	6
Training for others (<i>estágios extra-curriculares</i>)	
Professional training actions (<i>estágios profissionais</i>)	2
Other actions	
Total	8

- Summary of activities of cooperation or dissemination

Summary of cooperation and dissemination actions expected for 2007

Type	Number
Organizing conferences or meetings	3
Collaboration in papers authored by INESC Porto researchers	4
External persons directly involved in actions organized by INESC Porto	12

- Human resources in 2007

Summary of Unit personnel at the end of 2007

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
<i>R&D</i>						
<i>University or Politechnic Staff</i>	13	5	1		19	0
<i>INESC Porto Fellows</i>		1	6		7	-1
<i>Other Fellows</i>		1			1	0
<i>Employees</i>	1	1	8	2	12	0
<i>Trainees</i>			2		2	+1
<i>Other</i>						
Administrative			1	1	2	0
Total	14	8	18	3	43	0

(*) Relative to 2006, 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 fiber 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 fiber sources, optical communications, optical fiber sensors and microfabrication (thin films and integrated optics). In the framework of its activity it proportionates 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 Electrotechnical 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 fiber 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 the techniques of PZT films deposition in optical fibres;
- Research in optical coherent tomography for medical applications;
- Research and development in multi-axis optical fiber accelerometer.

Table of correspondence between know-how and the Industrial Sectors

Know-how	Status(*)	Instrumentation	Telecomun.	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		
Biomedicine	E					X
Technology Know-how						

Know-how	Status(*)	Instrumentation	Telecomun.	Environment	Energy	Health
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, UE	UOSE, UE	UOSE, UE	UOSE, UE			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 2006

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	7	4		180.156
D - Development				
C - Consulting				
A - Advanced training				
T - Technology Transfer	3	1		134.084
O - Other				
TOTAL	10	5		314.240

Summary of relative distribution of sources of income

Financing (3)	Status (4)			Total Income (€)
	S - Started	OG- On-going	C - Concluded	
NP - National Programmes		30,12%	3,98%	171.815
EP - European Programmes	3,39%		11,62%	54.667
CS - Consulting and Services	27,93%			87.758
O - Other R&D sources				
OS - Other Sources				
Total	31,32%	30,12%	15,59%	314.240

Summary of projects developed in 2006

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
URANUS	F. Araújo	R	E	EP	6PQ	07-2004	07-2007	OG
CORDVISION	I. Dias	T	N	NP	IDEIA	09-2004	08-2006	F
FIDELIO	M. J. Marques	R	E	EP	6PQ	12-2004	12-2007	OG
NODA	J. L. Santos	R	N	NP	FCT	01-2005	12-2006	F
CUTINSHEAR	F. Araújo	R	N	NP	FCT	03-2005	02-2007	OG
EVANESCENTE	J. L. Santos	R	N	NP	FCT	05-2005	04-2008	OG
OPTOPACK	F. Araújo	R	N	NP	FCT	05-2005	04-2007	OG
KAISER	L. A. Ferreira	R	N	NP	FCT	09-2005	08-2008	OG
WORKSTATION	F. Araújo	T	E	CS	PS	09-2005	12-2006	F
ESA-ONE	F. Araújo	R	E	EP	ESA	01-2006	12-2007	S
Fibersensing	J. L. Santos	T	N	CS	PS	01-2006	12-2006	S
MICROPACK	F. Araújo	T	N	NP	IDEIA	01-2006	12-2008	S
NEXTGENPCF	L. A. Ferreira	R	E	EP	6PQ	01-2006	12-2008	S
OREO	P. V. Marques	R	N	NP	FCT	01-2006	03-2007	S
OXIGÉNIO	J. L. Santos	R	N	NP	FCT	01-2006	12-2007	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 2006 and continuing in 2007; OG - On-going: activities started earlier than 2006 and continuing in 2007; F - Finished: activities ending in 2006.

• **Summary of publications**

Summary of publications in 2006

Type of publication	Number
Theses concluded in 2006 by members of the unit	4
Books (author)	
Chapter/paper in books	

Type of publication	Number
Publications (editor)	
Papers in International Journals with scientific referees	27
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	10
Other publications (National meetings, local journals, etc.)	29
Total	70

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2006

Type	Starting	On-going	Concluded	Total
Master	4	1	1	6
Doctoral	2	5	3	10
Total	6	6	4	16

- Summary of Advanced Training Actions

Summary of Advanced Training Actions organized for external trainees in 2006

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>)	1
Other actions	
Total	3

- 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	55
External persons directly involved in actions organized by INESC Porto	15

- Human resources in 2006

Summary of Unit personnel at the end of 2006

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
<i>R&D</i>						
<i>University or Polytechnic Staff</i>	11	3			14	-1
<i>INESC Porto Fellows</i>			5	1	6	+5
<i>Other Fellows</i>	2	6			8	0
<i>Employees</i>	1		2	1	4	0
<i>Trainees</i>						
<i>Other</i>						
Administrative				1	1	0
Total	14	9	7	3	33	+4

(*) Relative to 2005, 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 valorization 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 valorization 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 valorization;
- 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;
- To play an active role in the Associated Laboratory status renewal process;
- Evaluation of new opportunities in technology transfer.

P1.3.4 ACTION PLAN (GLOBAL)

- 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 2007

- Projects

Summary of the projects to be developed in 2007

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	7	5		227.621
D - Development				
C - Consulting				
A - Advanced training				
T - Technology Transfer	3			143.074
O - Other				
TOTAL	10	5		370.695

Summary of the percentage distribution of budgetary revenue

Financing (3)	Status (4)			Total Income (€)
	OG- On-going	G - Guaranteed	E - Expected	
NP - National Programmes	9,01%	11,14%	16,49%	135.838
EP - European Programmes	38,40%		3,37%	154.858
CS - Consulting and services		21,58%		80.000
O - Other R&D sources				
OS - Other sources				
Total	47,42%	32,72%	19,87%	370.695

Summary of projects to be developed in 2007

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
URANUS	F. Araújo	R	E	EP	6PQ	07-2004	07-2007	OG
FIDELIO	M. J. Marques	R	E	EP	6PQ	12-2004	12-2007	OG
CUTINSHEAR	F. Araújo	R	N	NP	FCT	03-2005	02-2007	OG
EVANESCENTE	J. L. Santos	R	N	NP	FCT	05-2005	04-2008	OG
OPTOPACK	F. Araújo	R	N	NP	FCT	05-2005	04-2007	OG
KAISER	L. A. Ferreira	R	N	NP	FCT	09-2005	08-2008	OG
ESA-ONE	F. Araújo	R	E	EP	ESA	01-2006	12-2007	OG
MICROPACK	F. Araújo	T	N	NP	IDEIA	01-2006	12-2008	OG
NEXTGENPCF	L. A. Ferreira	R	E	EP	6PQ	01-2006	12-2008	OG
OREO	P. V. Marques	R	N	NP	FCT	01-2006	03-2007	OG
OXIGÉNIO	J. L. Santos	R	N	NP	FCT	01-2006	12-2007	OG
CEMICRO	Ireneu Dias	T	N	NP	Adl	01-2007	07-2008	G
FCT2006	-	R	N	NP	FCT	01-2007	12-2008	E
Fibersensing	J. L. Santos	T	N	CS	-	01-2007	12-2007	G
7PQ	-	R	E	EP	7PQ	07-2007	06-2009	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 2007; G - Guaranteed: activity with a firmly agreed contract, starting in 2007; 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 2007

Type of publication	Number
Theses concluded in 2007 by members of the unit	2
Books (author)	
Chapter/paper in books	
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	2
Other publications (National meetings, local journals, etc.)	10
Total	29

- **Summary of post-graduation activities**

Summary of theses supervised by members of the unit in 2007

Type	Starting	On-going	Concluded	Total
Master			5	5
Doctoral		7		7
Total		7	5	12

- **Summary of advanced training actions**

Summary of Advanced Training Actions expected for 2007

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 2007

Type	Number
Organizing conferences or meetings	1
Collaboration in papers authored by INESC Porto researchers	6
External persons directly involved in actions organized by INESC Porto	10

- Human resources in 2007

Summary of Unit personnel at the end of 2007

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
<i>R&D</i>						
<i>University or Politechnic Staff</i>	11	3			14	0
<i>INESC Porto Fellows</i>			5	1	6	0
<i>Other Fellows</i>	2	6			8	0
<i>Employees</i>	1		2	1	4	0
<i>Trainees</i>						
<i>Other</i>						
Administrative				1	1	0
Total	14	9	7	3	33	0

(*) Relative to 2006, in absolute numbers.

P1.3 POWER SYSTEMS UNIT

Managers: Manuel António Matos, João Peças Lopes

P1.3.1 SHORT DESCRIPTION OF THE UNIT

The Power Systems Unit focuses his activity in some of the key (emerging) areas of the electric sector: regulatory issues and electricity markets, integration of distributed independent producers (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. The unit develops basic and applied research in different topics and integrating the results in models that address high level problems in a way suitable for technology transfer to vendors, utilities and companies.

The researchers developed 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., most of the times 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 independent dispersed generation.

Table of correspondence between know-how and the Industrial Sectors

Know-how	Status (*)	Software Development	GIS Energy Planning	Electricity Markets and Regulation	Wind Power integration	Micro-grids	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
Software Development	USE	USE		USE	EFACEC	USE EFACEC	Utilities
GIS Energy Planning	USE	USE		USE	(USE)	(USE)	Energy Agencies, Planners

Activity Area	Research	Development	Consulting	Training	Marketing and Support	Evolutionary Maintenance	Use
Electricity Markets and Regulation	USE		USE	USE			ERSE, DGGE, Utilities
Wind Power integration	USE		USE	USE			DGGE, REN, EDP, Promoters
Micro-grids	USE	USE		USE	(USE)	(USE)	EDP, Manufacturers
Advanced Training				USE			REN, EDP, International market

Description of the Unit's Organizational Structure

The following specific areas were identified, along with a "general area" where miscellaneous activities are included. Are definition is still informal and will only be formalized when appropriate.

- *Development of advanced modules for DMS and EMS* - the Unit has been committed to working on 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 basic and applied research.
- *Static and dynamic network analysis* - being one of the basis of the scientific and technological know-how of the Unit, it also corresponds to the specific activity of conducting studies for different entities and generates methodological contributions to software development. More recently, the sub-area of micro-generation and micro-grids, where the Unit has a leading role in Europe, has grown in importance.
- *Regional energy planning* - this area resulted from the participation in European projects and has had a sustained international activity through the recent years. It has a strong potential for interaction with other areas, like integrated territorial planning (urban, water, waste, etc.)
- *Electricity Markets and Regulation* - area that covers the support of public entities like ERSE, DGGE and similar entities in the Autonomous Regions of Portugal, but also research about models and methodologies for the different agents of the electric sector.
- *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). Development at the national level is intended.

Summary of results of the research activities of the team members

- Projects

Summary of projects developed in 2006

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	5	1	2	174.925
D - Development	4	1		253.438
C - Consulting	5		1	220.450
A - Advanced training	1	1	1	31.500
T - Technology Transfer				

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
O - Other				
TOTAL	15	3	4	680.313

Summary of relative distribution of sources of income

Financing (3)	Status (4)			Total Income (€)
	S - Started	OG- On-going	C - Concluded	
NP - National Programmes		10%	1%	76.225
EP - European Programmes	14%	5%	1%	130.900
CS - Consulting and Services	15%	31%	18%	442.488
O - Other R&D sources			2%	10.700
OS - Other Sources			3%	20.000
Total	29%	46%	25%	680.313

Summary of projects developed in 2006

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
Reweb	C. Monteiro	R	N	NP	FCT	03-2004	12-2006	C
Venus	M. P. Leão	R	N	NP	FCT	04-2004	04-2007	OG
Genedis	J. Fidalgo	R	N	NP	FCT	05-2004	04-2007	OG
CarCons	M. Matos	D	N	CS	—	2004	2007	OG
EDA_Desp	J. P. Lopes	C	N	CS	—	2004	2007	OG
RISE	C. Monteiro	D	E	EP	INCO	01-2005	12-2008	OG
ONS	J. P. Lopes	C	I	CS	-	05-2005	04-2007	OG
EPSO	V. Miranda	R	N	NP	FCT	07-2005	08-2007	OG
MILES	J. Pereira	R	N	NP	FCT	07-2005	06-2008	OG
A. Port/Arg	M. Matos	A	I	O	-	2005	2006	C
EEM-Renov	J. P. Lopes	C	N	CS	—	2005	2006	C
Ren-Prev.	J.N. Fidalgo	D	N	CS	-	2005	2007	OG
TEMPUS_CEFES	V. Miranda	A	E	EP	TEMPUS	2005	2006	C
Consultoria	J. P. Lopes	C	N	CS	—	2006	2006	C
DGGE-Concurs	M. Matos	C	N	CS	—	2006	2007	S
EES-UETP	J. T. Saraiva	A	I	OS	—	2006	2006	C
MCDA63	-	R	I	O	-	2006	2006	C
More-MGrids	J. P. Lopes	R	E	EP	NNE	2006	2009	S
PrevEol	C. Monteiro	D	N	CS	—	2006	2007	S
Reservas *	M. Matos	C	I	CS	—	2006	2007	S
Anemus Plus *	J. P. Lopes	R	E	EP	TREN	2006	2008	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 2006 and continuing in 2007; OG - On-going: activities started earlier than 2006 and continuing in 2007; F - Finished: activities ending in 2006.
- (*) To be signed in December 2006.

- Summary of publications

Summary of publications in 2006

Type of publication	Number
Theses concluded in 2006 by members of the unit	4
Books (author)	
Chapter/paper in books	
Publications (editor)	
Papers in International Journals with scientific referees	11
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	37
Other publications (National meetings, local journals, etc.)	4
Total	56

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2006

Type	Starting	On-going	Concluded	Total
Master	6	8	3	17
Doctoral		13	3	16
Total	6	21	6	33

- Summary of advanced training actions

Summary of Advanced Training Actions organized for external trainees in 2006

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	10
Training for others (<i>estágios extra-curriculares</i>)	2
Professional training actions (<i>estágios profissionais</i>)	
Other actions	
Total	17

- 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	40
External persons directly involved in actions organized by INESC Porto	

- Human resources in 2006

Summary of Unit personnel at the end of 2006

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
<i>R&D</i>						
<i>University or Politechnic Staff</i>	9	3			12	0
<i>INESC Porto Fellows</i>		2	9		11	+2
<i>Other Fellows</i>	3	6	1		10	+3
<i>Employees</i>				1	1	0
<i>Trainees</i>	1	1			2	-2
<i>Other</i>	2	2			4	+1
<i>Administrative</i>				1	1	0
Total	15	14	10	2	41	+4

(*) Relative to 2005, in absolute numbers.

P1.3.2 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 entity and contractually responsible.
- 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.
- Difficulties in constructing consistent industrial partnerships.
- 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.
- Beginning of the activity of the wind energy cluster that came out of the public tender for new wind generation in Portugal (1500 MW).

Threats

- Lack of political definition regarding the Iberian Market (MIBEL).
- Possible globalization of the consulting activity, increasing competition.

P1.3.3 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.
- Investment in the development of new partnerships in the economic area, in order to merge know-how adequate to the electricity markets area.
- Promotion of the penetration of micro-generation in low-voltage grids, through the development of proposal for new regulatory policies.
- Development of new partnerships in the framework of the wind energy cluster that come out of the public tender for new wind generation.
- 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.
- Construction and dissemination of the concept of supplementary services for wind energy conversion systems in order to increase the robustness of operation.

P1.3.4 ACTION PLAN (GLOBAL)

- Internal discussion about new scientific areas of activity, through meetings of the Scientific Committee of the Unit
- 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 contracts for the intervention in the area of aggregated dispatch centers for wind power.

P1.3.5 ACTIVITIES EXPECTED FOR 2007

- Projects

Summary of the projects to be developed in 2007

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	4	2		191.970
D - Development	3	1		349.320
C - Consulting	5		2	242.850
A - Advanced training				
T - Technology Transfer				
O - Other				
TOTAL	12	3	2	784.140

Summary of the percentage distribution of budgetary revenue

Financing (3)	Status (4)			Total Income (€)
	OG- On-going	G - Guaranteed	E - Expected	
NP - National Programmes	9%			71.970
EP - European Programmes	17%			134.320
CS - Consulting and services	60%		14%	577.850
O - Other R&D sources				
OS - Other sources				
Total	86%		14%	784.140

Summary of projects to be developed in 2007

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
Venus	M. P. Leão	R	N	NP	FCT	04-2004	04-2007	OG
Genedis	J. Fidalgo	R	N	NP	FCT	05-2004	04-2007	OG
CarCons	M. Matos	D	N	CS	-	2004	2007	OG
EDA_Desp	J. P. Lopes	C	N	CS	-	2004	2007	OG
RISE	C. Monteiro	D	E	EP	INCO	01-2005	12-2008	OG
ONS	J. P. Lopes	C	I	CS	-	05-2005	04-2007	OG
EPSO	V. Miranda	R	N	NP	FCT	07-2005	08-2007	OG
MILES	J. Pereira	R	N	NP	FCT	07-2005	06-2008	OG
Ren-Prev	J.N. Fidalgo	D	N	CS	-	2005	2007	OG
Anemus Plus	J. P. Lopes	R	E	EP	TREN	2006	2008	OG
DGGE-Concurs	M. Matos	C	N	CS	-	2006	2007	OG
More-MGrids	J. P. Lopes	R	E	EP	NNE	2006	2009	OG
PrevEol	C. Monteiro	D	N	CS	-	2006	2007	OG

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
Reservas	M. Matos	C	I	CS	-	2006	2007	OG
Consultoria	J. P. Lopes	C	N	CS	-	2007	2007	E
P.Negociação	-	C	N	CS	-	2007	2007	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 2007; G - Guaranteed: activity with a firmly agreed contract, starting in 2007; 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 2007

Type of publication	Number
Theses concluded in 2007 by members of the unit	10
Books (author)	
Chapter/paper in books	
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	22
Other publications (National meetings, local journals, etc.)	
Total	48

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2007

Type	Starting	On-going	Concluded	Total
Master	5 *		13	18
Doctoral	3	3	10	16
Total	8	3	23	34

(*) This number may be very different under the new Bologna Integrated Master Courses.

- Summary of advanced training actions

Summary of advanced training actions expected for 2007

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	13 *

Type	Number
Training for others (<i>estágios extra-curriculares</i>)	2
Professional training actions (<i>estágios profissionais</i>)	
Other actions	
Total	15

(*) This number may be very different under the new Bologna Integrated Master Courses

- Summary of activities of cooperation or dissemination

Summary of cooperation and dissemination actions expected for 2007

Type	Number
Organizing conferences or meetings	1
Collaboration in papers authored by INESC Porto researchers	34
External persons directly involved in actions organized by INESC Porto	

- Human resources in 2007

Summary of Unit personnel at the end of 2007

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Politechnic Staff</i>	9	3			12	0
<i>INESC Porto Fellows</i>		2	9		11	0
<i>Other Fellows</i>	5	6	1		12	+2
<i>Employees</i>	1			1	2	+1
<i>Trainees</i>	1	1			2	0
<i>Other</i>	2	2			4	0
Administrative				1	1	0
Total	18	14	10	2	44	+3

(*) Relative to 2006, in absolute numbers.

P1.4 INFORMATION AND COMMUNICATIONS SYSTEMS UNIT

Managers: António Gaspar, João José Pinto Ferreira

P1.4.1 SHORT DESCRIPTION OF THE UNIT

The Information and Communication Systems Unit (USIC) studies, develops and promotes integrated solutions in the communication and information systems fields. 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: telecommunications, local administration, industry, commerce, healthcare, ship building, Central and Regional Government.

The Unit is composed by an heterogeneous team, with skills in diversified areas: computer systems, office automation, telecommunications, computing sciences, software engineering and geographic engineering.

The Unit acts independently from technology suppliers, complementing its partners and enabling them to select and implement the solutions needed for the modernization of their activities.

Table of correspondence between know-how and the Industrial Sectors

Know-how	Status (*)	Public Administration	Telecommunications	Healthcare	Others
Design, Analysis and Development of Information Systems	I	X	X	X	X
Specification, Development and Deployment of GIS Solutions	I	X	X		
Analysis, Specification and Set-up of Communication Systems	I	X		X	X

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

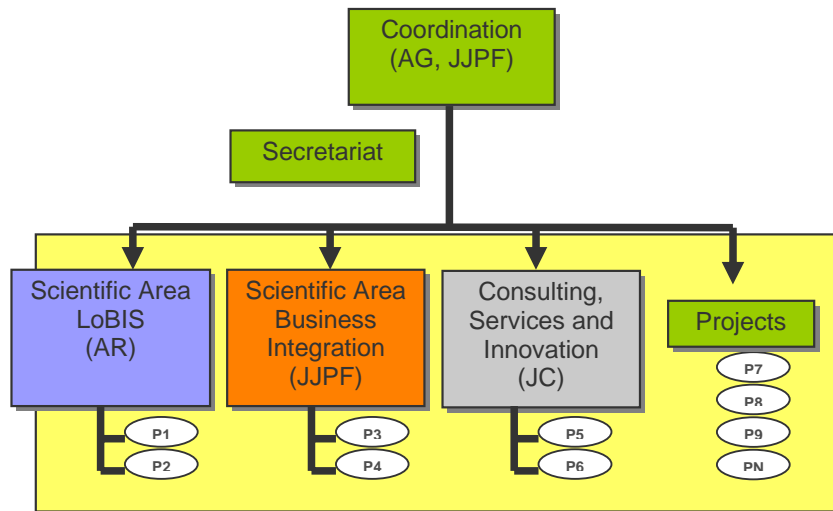
Coverage of the Innovation Process

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 Adm. Regional Adm.
Telecom.		USIC	USIC	USIC PT IN	PT IN	PT IN	PT Group
Healthcare			USIC	USIC			Ministry of Health
Others		USIC	USIC	USIC			Transportation

Description of the Unit's organizational structure

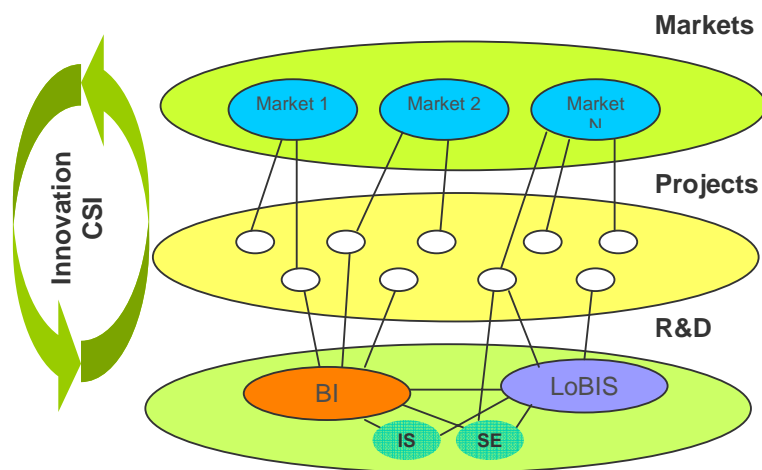
The Unit was re-structured in 2004 and has two coordinators: Antonio Gaspar and Jiao José Pinto Ferreira.

The Unit is structured into coordination, secretarial support, two scientific areas (Location Based Information Systems and Business Integration) and one innovation task force.



Music's organ gram

Specific projects are linked to any of the scientific areas, to the innovation task force or directly to the coordination.



Music's positioning

The Unit also integrates scientific competences in Information Systems (IS) and Software Engineering (SE).

The Unit has a multidisciplinary team made of 24 elements with heterogeneous training, involving areas like: computer systems, office automation, telecommunications, computing sciences, software engineering and geographic engineering.

Summary of results of the research activities of the team members

- Projects

Summary of projects developed in 2006

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research		1		89.525
D - Development	5			98.706
C - Consulting	10			210.203
A - Advanced training				
T - Technology Transfer	2			26.000
O - Other				
TOTAL	17	1		424.434

Summary of relative distribution of sources of income

Financing (3)	Status (4)			Total Income (€)
	S - Started	OG- On-going	C - Concluded	
NP - National Programmers				
EP - European Programmers		21,09%		89.525
CS - Consulting and Services	52,24%	3,34%	14,85%	334.909
O - Other R&D sources				
OS - Other Sources				
Total	52,24%	24,43%	14,85%	424.434

Summary of projects developed in 2006

Name of the project	Response.	Type Prom. (1)	Degree of Intern. (2)	Finance.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prig.			
IMOPPI	Ruiz Barros	C	N	CS	-	03-2003	03-2007	OG
e-ASLA	Ruiz Barros	R	E	EP	Interred	02-2005	06-2007	OG
m-GIS	Arturo Rocha	T	N	CS	PT IN	03-2005	04-2006	F
Consultadoria	J. J. P. F.	C	N	CS	-	01-2006	-	S
UPTV	J.P.Rodrigues	D	N	CS	UP	01-2006	12-2006	F
SIGCMP	A. Carvalho	D	N	CS	CMP	01-2006	03-2007	S
Geoforum	Artur Rocha	D	N	CS	Medidata	02-2006	12-2007	S
Invicta TV	José Correia	D	N	CS	Invicta TV	03-2006	-	S

Name of the project	Response.	Type Prom. (1)	Degree of Intern. (2)	Finance.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prig.			
LINK-IVDP	Artur Rocha	C	N	CS	LINK	04-2006	12-2006	F
SIGEP	Artur Rocha	D	N	CS	GCP	07-2006	12-2006	F
SIVIDA	José Correia	C	N	CS	ACS	07-2006	01-2007	S
PROT-OVT	A. Gaspar	C	N	CS	CCDR-LVT	07-2006	12-2007	S
SEGALAB	A. Gaspar	C	N	CS	Segalab	10-2006	12-2007	S
AIADigital	Artur Rocha	C	N	CS	Declarativa	11-2006	12-2006	F
PLAT CEM	José Correia	T	N	CS	CEM	11-2006	12-2006	F
POAP CCDRN	Artur Rocha	C	N	CS	CCDR-N	12-2006	12-2007	S
PROT C	A Gaspar	C	N	CS	CCDR-C	12-2006	12-2007	S
PORTMOS	Rui Barros	C	N	CS	Fordesi	12-2006	06-2007	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 2006 and continuing in 2007; OG - On-going: activities started earlier than 2006 and continuing in 2007; F - Finished: activities ending in 2006.

- Summary of publications

Summary of publications in 2006

Type of publication	Number
Theses concluded in 2006 by members of the unit	
Books (author)	
Chapter/paper in books	
Publications (editor)	1
Papers in International Journals with scientific referees	1
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	11
Other publications (National meetings, local journals, etc.)	3
Total	16

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2006

Type	Starting	On-going	Concluded	Total
Master	6	8	4	18
Doctoral	1	1	2	4
Total	7	9	6	22

- Summary of advanced training actions

Summary of advanced training actions organized for external trainees in 2006

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	10
Training for others (<i>estágios extra-curriculares</i>)	
Professional training actions (<i>estágios profissionais</i>)	
Other actions	
Total	10

- 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	
External persons directly involved in actions organized by INESC Porto	

- Human resources in 2006

Summary of Unit personnel at the end of 2006

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Politechnic Staff</i>	6	1			7	+1
<i>INESC Porto Fellows</i>			1	1	2	-3
<i>Other Fellows</i>						
<i>Employees</i>		3	9		12	0
<i>Trainees</i>			1		1	+1
<i>Other</i>			1		1	0
Administrative			1		1	0
Total	6	4	13	1	24	-1

(*) Relative to 2005, in absolute numbers.

P1.4.2 SWOT ANALYSIS

Strengths

- Team with experience in consulting activities.
- Integrated and encompassing offer of consulting services, development, demonstration and technology transfer in the area of ICT.
- Large experience in the provision of services.

- Strong technical ability in the area of GIS.
- Team's flexibility and operability.

Weaknesses

- Absence of a meaningful academic component.
- Not very diversified partnerships.
- Short projects.
- Limited marketing activity.
- The traditional clients' dependence on grants.

Opportunities

- Various financing opportunities, at a national and international level.
- Slowing down of the ICT labour market.
- Internal innovation process started.

Threats

- Slow economic growth and our traditional clients' dependence on grants.
- Budgetary discipline in public administration.
- Loss of critical mass.
- Risk of acceptance and not fighting back the difficult external environment.

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

The strategic objective for 2007 and for the next few years is to develop the Unit's scientific activity, particularly through the reinforcement of the academic component.

On the other hand, the building of a new Culture and positioning is fundamental for USIC. The building of this Culture should be the result of an internal attitude of continuous innovation in its positioning and actions, through a systematic research of opportunities to generate excellence and contribute to the competitiveness of the companies or entities with whom USIC collaborates.

There is a clear need for a new paradigm and positioning of USIC, possibly with a new mission and objectives. The number of contracted people, the poor performance or new R&D project proposals and, finally, the current economic cycle contributed to a performance of this unit that is well behind the desired level. This issue is to be addressed at the very beginning of 2007 jointly with the Direction of INESC Porto (DIP). This analysis effort has already started.

In the meantime, USIC further aims at creating new joint opportunities with other INESC Porto Units, namely with UTM. Our objective is twofold. On one side, we want to bringing extra R&D muscle to USIC's consulting services; on the other we aim at making the services of resident USIC consultants to units such as UTM which has limited manpower for consulting activities.

Objectives from the point of view of the strategic management:

- New positioning.
- Financial balance.
- Dynamize the existing structure and make it able to provide a business volume that provides a comfortable financial situation.

- Motivating the process of innovation and strategic reflection in R&D and services.
- The financial comfort should enable a strategic execution involving, for instance, the opening of new areas.

P1.4.4 ACTION PLAN (GLOBAL)

- Reinforcement of the unit's scientific activity.
- Process of internal innovation, a new Culture for the Unit.
- Create new research and service opportunities by increasing the collaboration with other INESC Porto units
- Reinforcement of the activities of provision of services.
- Presentation of proposals to national programmes.
- Convert our contact network into solid partnerships.
- Presentation of proposals to European projects, namely in the areas of GIS and eGov.
- Increase in the participation in conferences and in the publication of results.

P1.4.5 ACTIVITIES EXPECTED FOR 2007

- Projects

Summary of the projects to be developed in 2007

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	3	3		173.540
D - Development	4			85.000
C - Consulting	13	1		266.200
A - Advanced training				
T - Technology Transfer	1			45.000
O - Other				
TOTAL	21	4		569.740

Summary of the percentage distribution of budgetary revenue

Financing (3)	Status (4)			Total Income (€)
	OG- On-going	G - Guaranteed	E - Expected	
NP - National Programmes	0,63%		11,25%	67.710
EP - European Programmes	5,32%	20,18%	1,76%	155.330
CS - Consulting and services	39,16%		21,69%	346.700
O - Other R&D sources				
OS - Other sources				
Total	45,11%	20,18%	34,70%	569.740

Summary of projects to be developed in 2007

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
IMOPPI	Rui Barros	C	N	CS	IMOPPI	03-2003	03-2007	OG
e-ASLA	Rui Barros	R	E	EP	Interreg	02-2005	06-2007	OG
IVY	Pascoal Faria	R	N	NP	FCT	07-2005	06-2008	OG
SIGCMP	A. Carvalho	D	N	CS	CMP	01-2006	03-2007	OG
Geoforum	Artur Rocha	D	N	CS	Medidata	02-2006	12-2007	OG
PROT-OVT	A. Gaspar	C	N	CS	CCDR-LVT	07-2006	12-2007	OG
SIVIDA	José Correia	C	N	CS	ACS	07-2006	01-2007	OG
SEGALAB	A Gaspar	C	N	CS	Segalab	10-2006	12-2007	OG
POAP CCDRN	Artur Rocha	C	N	CS	CCDR-N	12-2006	12-2007	OG
PORTMOS	Rui Barros	C	N	CS	FORDESI	12-2006	06-2007	OG
PROT C	A Gaspar	C	N	CS	CCDR-C	12-2006	12-2007	OG
ADIAANT UAV	A Gaspar	R	N	NP	Adl	01-2007	12-2007	E
CAALYX	Artur Rocha	R	E	EP	IST	01-2007	12-2008	G
Cabo Madeira	A Gaspar	C	E	CS	IDATE	01-2007	06-2007	E
Enlasses II	Rui Barros	C	N	CS	IMOPPI	01-2007	06-2007	E
EU	A Gaspar	R	E	EP	IST	01-2007	12-2008	E
GIS APDL	Artur Rocha	D	N	CS	APDL	01-2007	12-2007	E
IVDP	Artur Rocha	C	N	CS	IVDP	01-2007	03-2007	E
Metropolis	Artur Rocha	T	N	NP	POSC	01-2007	12-2007	E
Netdouro Rede	P. Monteiro	C	N	CS	Netdouro	01-2007	03-2007	E
RAVE	A Gaspar	C	N	CS	RAVE	01-2007	06-2007	E
SIGEP	Artur Rocha	D	N	CS	GCP	01-2007	12-2007	E
SRU	Artur Rocha	C	N	CS	SRU	01-2007	12-2007	E
VITIPREC	Rui Barros	C	N	NP	ON	01-2007	06-2007	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 2007; G - Guaranteed: activity with a firmly agreed contract, starting in 2007; 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 2007

Type of publication	Number
Theses concluded in 2007 by members of the unit	1
Books (author)	
Chapter/paper in books	
Publications (editor)	2
Papers in International Journals with scientific referees	6
Papers in National Journals with scientific referees	2
Conference Proceedings in events with scientific referee and selection	15

Type of publication	Number
Other publications (National meetings, local journals, etc.)	1
Total	27

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2007

Type	Starting	On-going	Concluded	Total
Master	2	1	14	17
Doctoral	1	4		5
Total	3	5	14	22

- Summary of advanced training actions

Summary of advanced training actions expected for 2007

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 2007

Type	Number
Organizing conferences or meetings	3
Collaboration in papers authored by INESC Porto researchers	1
External persons directly involved in actions organized by INESC Porto	

- Human resources in 2007

Summary of Unit personnel at the end of 2007

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
<i>R&D</i>						
<i>University or Politechnic Staff</i>	6	1			7	0
<i>INESC Porto Fellows</i>			1	1	2	0
<i>Other Fellows</i>						
<i>Employees</i>		3	9		12	0
<i>Trainees</i>					0	-1
<i>Other</i>			1		1	0
<i>Administrative</i>			1		1	0
Total	6	4	12	1	23	-1

(*) Relative to 2006, in absolute numbers.

P1.5 TELECOMMUNICATIONS AND MULTIMEDIA UNIT

Manager: José Ruela

P1.5.1 SHORT DESCRIPTION OF THE UNIT

The Telecommunications and Multimedia Unit carries out research and development, consulting and technology transfer in scientific and technological areas that lay the foundation of the modern communications networks and services.

The Unit is organized in three main Areas. Each Area addresses a number of specific but related research topics, under a common strategy and goals that are mainly determined by the market sector it covers:

- Network Architectures and Services: IP Networks, Network Monitoring and Test Systems, QoS and Resource Management, Wireless and Mobile Communications.
- Multimedia Technologies and Systems: Audio Signal Analysis, Image and Video Processing, Digital Television, Multimedia Services.
- Optical and Electronics Technologies: Optical Communications and Microwaves, Microelectronics, Micro-optics Technologies.

The R&D groups that constitute the Unit perform basic and applied research in the above areas and promote advanced training of his members. Coordination between these groups allows the exploitation of their specific competences in information, communications and signal processing technologies as well as the synergies necessary to design, develop and integrate complex systems that cover a broad range of application fields.

An important part of the activity of the Unit has been oriented towards the international market and carried out under contract and in partnership with network operators and service providers, television broadcasters and manufacturers of communications systems and test equipment. In this context, the successful participation in projects funded by European R&D programmes has a high strategic value, since it allows scientific and technical co-operation with leading R&D institutions, continuous progress and updated knowledge and experience in state-of-the-art technologies and research topics, and liaison with standards bodies.

Table of correspondence between know-how and the Industrial Sectors

Know-how	Status (*)	Digital Television	Communication Networks	Telecommunication Services	Digital Video	Digital Audio
Scientific Know-how						
Digital Communications	I	X	X	X		
Computer Networks	I	X	X	X		
Image and Video Processing	I	X		X	X	
Audio Processing	I	X		X		X
Computer Graphics	I				X	
Technology Know-how						
Multimedia Applications	I	X	X	X	X	
Design of Networks and Network Elements	I		X	X		
Mobile Networks	I			X		
Speech processing	C	X	X			X

Know-how	Status (*)	Digital Television	Communication Networks	Telecommunication Services	Digital Video	Digital Audio
Product Engineering	E	X	X	X	X	X
Services and product marketing	E	X	X	X	X	X
Project management	I	X		X	X	X
Information Systems	I	X	X	X		
Specification and test of protocols and services	I		X	X		
Distributed Systems	I	X	X	X		
Man-machine interfaces	I	X		X	X	X
Image synthesis	I				X	
Virtual Reality	I				X	
Development of DSP based systems	I		X			X
Design of Electronic Systems	O		X			X
Software Radio	I		X			

(*) I - Internal; O - Existent 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
Multimedia Systems	UTM	UTM MOG Solutions XAREVISION	UTM MOG Solutions XAREVISION	UTM	MOG Solutions XAREVISION	MOG Solutions	Broadcasters Content Producers /Providers
Telecom Networks	UTM	UTM	UTM	UTM			Telecom Operators Manufacturers
Telecom Services	UTM	UTM	UTM	UTM			Telecom Operators

Description of the Unit's organizational structure

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

The *Communications Networks and Services* Area has reached a stable structure, as far as leadership, the nucleus of its research team and the main goals of its research activity. The latter is focused on the emerging fourth generation 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 of the Sixth Framework Programme of the EC (in the thematic area *Mobile and wireless systems beyond 3G*) and constitutes a natural framework for post-graduate students to carry out their research work (mainly at PhD level); both aspects have contributed to the creation of critical mass within this area.

The *Multimedia Technologies and Systems* Area was created more recently, in order to integrate and coordinate well established R&D activities in Audio, Video and Image Processing 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 is mainly carried out in projects of the Sixth Framework Programme of the EC (in the thematic area *Networked audiovisual systems and home platforms*) and is also tightly connected to ongoing post-graduate research programmes.

The *Optical and Electronics Technologies* Area is still in an early stage of organization. It 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, Microelectronics and Micro-optics. The activities in this Area will be supported in a recently equipped Photonics and Microwave laboratory and in existing know-how and facilities in micro-fabrication. Besides basic research and academic work, they will also be oriented towards the development of pre-industrial prototypes for different application fields (Telecommunications, Sensors, LIDAR, Lab-on-chip, etc.) and will allow a strategic positioning in emerging areas, such as nano-technologies.

The activities in the three Areas are not carried out independently and isolated from each other; 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 in the past.

Summary of results of the research activities of the team members

- Projects

Summary of projects developed in 2006

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	7	9		405.200
D - Development	5			104.500
C - Consulting	1			1.300
A - Advanced training				
T - Technology Transfer				
O - Other				
TOTAL	13	9		511.000

Summary of relative distribution of sources of income

Financing (3)	Status (4)			Total Income (€)
	S - Started	OG- On-going	C - Concluded	
NP - National Programmes		7,83%	6,42%	72.800
EP - European Programmes	54,21%	2,94%	7,91%	332.400
CS - Consulting and Services			20,70%	105.800
O - Other R&D sources				
OS - Other Sources				
Total	54,21%	10,76%	35,03%	511.000

Summary of projects developed in 2006

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
Daidalos	M. Ricardo	R	E	EP	6PQ	11-2003	04-2006	F
3D4LBMS	A. A. Sousa	R	N	NP	FCT	11-2003	04-2006	F
Enthroner	T. Andrade	R	E	EP	6PQ	12-2003	03-2006	F
TAICAS	A. J. Ferreira	R	N	NP	FCT	01-2004	06-2006	F
Target	V. Tavares	R	E	EP	6PQ	01-2004	06-2007	OG
WANDER	J. Ruela	R	N	NP	FCT	03-2004	02-2006	F
IAMA	V. Tavares	R	N	NP	FCT	06-2004	05-2007	OG
DOMIR	C. Ribeiro	R	N	NP	FCT	03-2005	03-2007	OG
Multicast IP	M. Ricardo	D	N	CS	-	03-2005	06-2006	F
MPEG21	T. Andrade	D	N	CS	-	04-2005	03-2006	F
VoIP	J. Ruela	C	N	CS	-	04-2005	01-2006	F
C. Feira	G. David	D	N	CS	-	05-2005	06-2006	F
CFD	J. C. Alves	R	N	NP	FCT	05-2005	11-2007	OG
EBGCOM	H. Salgado	R	N	NP	FCT	09-2005	08-2007	OG
DAIDALOS 2	M. Ricardo	R	E	EP	6PQ	01-2006	06-2008	S
WWI AN 2	J. Ruela	R	E	EP	6PQ	01-2006	12-2007	S
nPVR	S. Macedo	D	N	CS	-	04-2006	12-2006	F
UPMEDIA	S. Macedo	D	N	CS	-	04-2006	12-2006	F
MOSAICA	M.T. Andrade	R	E	EP	6PQ	06-2006	11-2008	S
UROOF	H. Salgado	R	E	EP	6PQ	07-2006	12-2008	S
VISNET II	M.T. Andrade	R	E	EP	6PQ	07-2006	12-2007	S
ENTHRONE 2	J. Ruela	R	E	EP	6PQ	09-2006	08-2008	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 2006 and continuing in 2007; OG - On-going: activities started earlier than 2006 and continuing in 2007; F - Finished: activities ending in 2006.

• **Summary of publications**

Summary of publications in 2006

Type of publication	Number
Theses concluded in 2006 by members of the unit	6
Books (author)	
Chapter/paper in books	3 + 1 (*)
Publications (editor)	
Papers in International Journals with scientific referees	5 + 4 (*)
Papers in National Journals with scientific referees	
Conference Proceedings in events with scientific referee and selection	25 + 2 (*)
Other publications (National meetings, local journals, etc.)	5 + 4 (*)

Type of publication	Number
Total	44 + 11 (*)

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

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2006

Type	Starting	On-going	Concluded	Total
Master	5	22	10	37
Doctoral	14	19	3	36
Total	19	41	13	73

- Summary of advanced training actions

Summary of advanced training actions organized for external trainees in 2006

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	13
Training for others (<i>estágios extra-curriculares</i>)	1
Professional training actions (<i>estágios profissionais</i>)	1
Other actions	
Total	15

- 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	30
External persons directly involved in actions organized by INESC Porto	

- Human resources in 2006

Summary of Unit personnel at the end of 2006

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
<i>R&D</i>						
<i>University or Politechnic Staff</i>	27	6			33	+2
<i>INESC Porto Fellows</i>			7		7	-2
<i>Other Fellows</i>	1	5	14		20	+3
<i>Employees</i>		1	1		2	-2
<i>Trainees</i>						
<i>Other</i>						
<i>Administrative</i>				1	1	
Total	28	12	22	1	63	+1

(*) Relative to 2005, in absolute numbers.

P1.5.3 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, etc.).
- Capability to integrate know-how and technologies, applied to multidisciplinary and innovative projects.
- Flexibility and capability to adapt to new challenges and to launch new areas of work.
- Well established participation in prominent European R&D projects.
- Capacity to attract young researchers and to engage them in post-graduate programmes (MSc and PhD).

Weaknesses

- No active involvement of many senior researchers affiliated to the Unit in scientific supervision as well as in negotiation and management of R&D projects and contracts.
- Low index of publications (per PhD) in international journals and magazines, in spite of the quality of scientific results in projects and PhD theses.
- Difficulty to attract senior researchers at post-doctoral level.
- Difficulty to establish stable and diversified strategical partnerships.
- Lack of a well proven and solid model and business oriented staff for the transfer of know-how and technology to industry.

Opportunities

- The 7th Framework Programme of the European Community opens the possibility of strengthening existing partnerships or creating new ones, as well as launching new research areas.

- Emergence of new business models and acting roles in the multimedia sector, which exploit the convergence between the Internet and the traditional broadcast services.
- Creation of spin-off companies (under way).
- Exploitation of synergies with other Units (in particular with USIC and UOSE).
- Recruitment of senior researchers at post-doctoral level (under way).

Threats

- Lack of strategical and sizeable contracts and partnerships (R&D, consulting or technology transfer) creates an undesirable unbalance in the sources of funding and constitutes a serious risk to the economic viability of the Unit.

P1.5.4 MEDIUM TERM STRATEGIC OBJECTIVES AND OBJECTIVES FOR THE YEAR

In spite of differences in composition and specific goals of each Area, which will be addressed separately, there are a number of strategic objectives that will be pursued at Unit level and thus under a common coordination, namely:

- Reinforce management and leadership skills at various levels as well as the links between the Areas.
- Continue to pursue a high-level of scientific excellence, widely recognized.
- Acquire knowledge and expertise in advanced or emerging technologies, as a means of adding value and differentiating the offer in highly competitive markets.
- Establish strategical partnerships, combining existing scientific and technological skills, and benefiting from the capacity to design, develop and integrate innovative solutions and systems.

It is expected that a significant number of new R&D projects will start during 2007. This would be the natural outcome of proposals prepared during 2006. Over twenty proposals have been submitted to the call launched by FCT (*Fundação para a Ciência e a Tecnologia*), most of them with the leadership of senior researchers of the Unit and, in many cases, in partnership with academic and research institutions, industrial companies and other Units of INESC Porto. Similarly, five new projects have been submitted to PTIN (*PT Inovação*) in the framework of a call to the *Plano de Inovação do Grupo PT 2007-2009*, and are currently under evaluation.

It is also planned to actively participate in the new call of the 7th Framework Programme to be launched by the EC, early in 2007. Besides existing partnerships, new ones will be sought.

Most of the planned activities in 2007 will be carried out in projects of the 6th Framework Programme, which have started in 2006. This somehow stable condition gives the opportunity to plan and execute in a systematic and consistent way a set of actions leading to the creation of sound partnerships, either reactivating/reinforcing those with traditional partners or establishing new ones; in order to fulfill this objective, joint efforts with USIC (*Unidade de Sistemas de Informação e Comunicação*) seem desirable and possible, due to the different and complementary profiles of their human resources and type of activity. Cooperation with UOSE (*Unidade de Optoelectrónica e Sistemas Electrónicos*) is already a common practice and will be pursued in 2007, in the framework of common projects and sharing of laboratory infrastructures.

Finally, it is expected that the process of incubation of two spin-off companies, which started in 2006, will be concluded, with success, in 2007.

The specific objectives of each Area are detailed next.

Communications Networks and Services

The research activities in this Area are currently focused on the field of mobile communications. Problems are approached from a network of point view, that is, new architectural solutions for the challenges placed by the communication scenarios and paradigms that are becoming possible with the advent of 4G networks are being investigated. The main topics under research are:

- Mobility of devices and networks, aiming at the development of mechanisms that support the mobility of terminals between heterogeneous access networks (managed from the user's perspective) and the seamless handover of entire networks.
- Quality of Service (QoS) in wireless mobile networks, in particular mechanisms for providing QoS in networks composed of moving terminals and moving networks, which need to be connected to the Internet.
- Mesh and ad-hoc networks, including techniques and mechanisms for supporting the realization of optimized networks composed of network elements deployed arbitrarily; auto-configuration, multi-radio and routing aspects are being addressed.
- Multicast, with a focus on mechanisms that support multicast sessions whose participants are mobile terminals, mobile network elements, and mobile networks.
- Cross-layer optimization, that is, optimization of routing, QoS, multicast, and security by taking advantage of similar mechanisms available at multiple protocol layers.

Research on these topics is part of a strategy that has been established some years ago and which is at present anchored on two flagship Integrated Projects of the 6th Framework Programme - *Daidalos* and *Ambient Networks* (now on their second phase, upon completion with success of the first phase in 2005). Some of these topics are also object of PhD theses, which have been defined as part of this overall plan. In line with this strategy is also the submission of new projects to FCT and PTIN (as mentioned above).

Researchers of this Area have been quite active in the activities organized by the *Mobile Communications Thematic Area* (RTCM - *Rede Temática de Comunicações Móveis*) and it is expected that this will continue in 2007.

Multimedia Technologies and Systems

Research and development activities in this Area are carried out in topics related to audio, video and image processing, with application to different domains, notably context-aware adaptable multimedia services in heterogeneous networked environments, digital television and video surveillance. Designing and specifying these kinds of services requires also considerable knowledge and investment in distributed technologies and middleware platforms, as well as metadata and content search and retrieval.

To accomplish these goals, it is foreseen to continue or initiate research in the following topics:

- Music and audio analysis and segmentation aiming at developing efficient and automatic tools for classifying and describing these signals.
- Audiovisual, video and image analysis focusing on aspects related to spatial segmentation and to multimodal analysis, to take advantage of combining information extracted from different media signals.
- Distributed video coding and its application to video surveillance systems.
- Context-awareness, studying and specifying types of relevant contextual information, how to generate, collect and use it and how to evaluate the impact of using different types of contextual information in different context-aware adaptable multimedia services; the main objective is to acquire relevant expertise to develop a framework that enables the efficient

gathering and use of context information to ultimately build content adaptation applications that maximise the user satisfaction.

- Peer-to-peer and other distribution technologies such as Web Services, and their use to build efficient and interoperable networked multimedia services.
- Digital Rights Management (DRM) in the context of adaptable multimedia networked services and suitable business models for these services.
- Semantic and ontology-based content search. In line with major ongoing efforts within the research community to solve the semantic-gap problem, the proposed plan in this field is to address strategies that include the extended use of semantic concepts, dictionaries or ontologies, the use of relevance feedback and to investigate how to transform from low level descriptions to high level semantics.

These activities are being carried out in projects of the 6th Framework Programme - *ENTHRONE* (now in phase 2) and *MOSAICA*, and of a Network of Excellence of the same programme - *VISNET* (in phase 2, as well). The above listed research topics are also object of several PhD theses, some already ongoing and others just starting by the end of 2006 and the beginning of 2007.

Common to all these action lines is the need to deepen the relationships with strategical partners, both at national and international level, and to detect and exploit the opportunities to promote and transfer the technology developed in the context of past and current projects.

Optical and Electronics Technologies

During 2006, the first steps leading to the reorganization of this Area were given; this process will continue and mature in 2007 and the coming years. This Area includes some lines of research that was believed could benefit from a common strategy and coordination, more specifically Microelectronics, Optical Communications and Microwaves, and Micro-optics technologies.

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. Run-time assembly of reconfigurable modules (including on-line routing) is currently being investigated on a PhD programme, and will be followed by the integration of DRL-related services with conventional operating systems (Linux). Two projects related to this line of work were submitted to FCT and represent a deliberate effort to apply and extend the expertise in DRL-based systems to relevant application domains (video segmentation, involving another group of the Unit, and robotics, in collaboration with researchers from ISR / FEUP).
- 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. Another line of research, to be pursued in the context of a PhD work plan, addresses methods to minimize transceiver power consumption, through parameterization, for wireless sensor applications; a related project was submitted to FCT aiming at the development of a Wireless Sensor Network (WSN) with truly distributed processing and covering all aspects of a WSN: topology, protocols and physical implementation. There was also collaboration in three other projects submitted to FCT (ranging from RF design to image sensing and processing).
- In the third domain, the main objective is strengthening the skills on design for testability and built-in self test of RF transceivers, as well as high-level test generation for analogue-to-digital converters; testing of adaptive RF transceivers aiming at the optimization of their linearity in wide operating conditions is under investigation in the framework of a PhD work plan. It is also expected to launch in 2007 a new project (NanoTest), in the context of an international partnership, aiming at the development of testing methodologies and infrastructures for

systems-on-chip implemented with new submicron technology nodes. The development of methodologies and techniques to test wireless networks of sensors addressing all implementation layers (from physical to higher protocol layers) is the main goal of a project submitted to FCT, in collaboration with INESC-ID, University of Minho and researchers of the Communications Networks and Services Area of the Unit.

A new Photonics and Microwave laboratory is being set-up at INESC Porto, with funds from Programa de Reequipamento of FCT (Fundação para a Ciência e a Tecnologia). The acquisition of equipment was planned for a two year period (2005-2006) and is now almost complete.

The line of research Fibre Supported Microwave/Radio Technology, which was associated with the creation of that infrastructure, is a strategic objective for the following 3 years and will continue to be sought. The choice of this field of work was justified by the experience acquired in past PhD programs, the advice given by external scientific panels and the possibility of integration of young PhD student. Moreover, being a multidisciplinary topic, it is particularly suited to establishing the interaction with other fields of work, namely microwave techniques and the design of high-frequency circuits that other groups in the Unit are also aiming at.

The expectations are high since the amount of investment was considerable and the work has already started at a good pace - a new European project has recently started (UROOF - Photonic components for Ultra-Wideband radio over optical fiber), a PhD student is carrying out his research work in this area and a new project was submitted to FCT in partnership with FCUP, IT(Aveiro) and Siemens, SA.

In the microwave field, work is currently under way in the area of EBG (Electromagnetic Band-Gap) design, in the context of an FCT funded project (EBGCOM - Electromagnetic bandgap antennas and components for broadband communications) and a PhD student also started his postgraduate studies in this field.

In parallel, a research topic that could embrace the ongoing work on micro-optics, high-speed circuit design and optical communications was sought; the design of electrical equalizers for dispersion compensation in coherent optical systems was chosen (among other possibilities that were considered). To support research in this area, another project was submitted to FCT, in partnership with IT(Aveiro) and Siemens, SA, and the collaboration of University College London (UCL). Besides the design of high speed MMIC equalizers for coherent optical systems for operation above 40 Gbit/s, a hybrid receiver is planned involving the use of micro-optics technology to achieve the required phase and polarization diversity at the receiver. A student who recently started his PhD programme in this topic will spend periods of time at UCL, as part of that collaboration agreement.

It is believed that this interaction between groups and people with different and complementary views of the technology may promote the growth and development of new ideas and confirm the strategy that is being pursued. The initiatives taken in 2006, as well as the results already obtained, confirm that research in this Area, besides their importance from an academic point of view, has also a high value in applications of interest to high-tech companies.

P1.5.4 ACTION PLAN (GLOBAL)

The main strategical objectives previously outlined, both at Unit and Area level, will be pursued during 2007, as explained, and therefore the associated actions are only briefly mentioned here:

- Continuation of ongoing R&D projects funded by EC programmes.
- Conclusion of ongoing R&D project funded by FCT.
- Start of newly approved R&D projects, submitted during 2006.
- Participation in the elaboration and submission of new projects to the 7th Framework Programme.

- Creation of better conditions for a stronger cooperation between the Areas (at scientific, technical and management level).
- Reinforcement of cooperation with other Units (in particular, USIC and UOSE), especially for establishing strong external partnerships.
- Support to MSc and PhD theses in progress and to new ones to be proposed.
- Support to the creation of new spin-off companies and engagement in joint projects and actions.
- Active participation in activities organized by the *Mobile Communications Thematic Area* (RTCM - *Rede Temática de Comunicações Móveis*).

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.

P1.5.5 ACTIVITIES EXPECTED FOR 2007

- Projects

Summary of the projects to be developed in 2007

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research	5	7		628.550
D - Development	1			48.000
C - Consulting				
A - Advanced training				
T - Technology Transfer				
O - Other				
TOTAL	6	7		676.550

Summary of the percentage distribution of budgetary revenue

Financing (3)	Status (4)			Total Income (€)
	OG- On-going	G - Guaranteed	E - Expected	
NP - National Programmes	8,36%		5,17%	91.550
EP - European Programmes	64,70%			537.000
CS - Consulting and services			7,09%	48.000
O - Other R&D sources				
OS - Other sources				
Total	75,76%		12,27%	676.550

Summary of projects to be developed in 2007

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
Target	V. Tavares	R	E	EP	6PQ	01-2004	06-2007	OG
IAMA	V. Tavares	R	N	NP	FCT	06-2004	05-2007	OG
DOMIR	C. Ribeiro	R	N	NP	FCT	03-2005	03-2007	OG
CFD	J. C. Alves	R	N	NP	FCT	05-2005	11-2007	OG
EBGCOM	H. Salgado	R	N	NP	FCT	09-2005	08-2007	OG
DAIDALOS 2	M. Ricardo	R	E	EP	6PQ	01-2006	12-2008	OG
WWI AN 2	J. Ruela	R	E	EP	6PQ	01-2006	12-2007	OG
MOSAICA	M.T. Andrade	R	E	EP	6PQ	06-2006	11-2008	OG
UROOF	H. Salgado	R	E	EP	6PQ	07-2006	12-2008	OG
VISNET II	M.T. Andrade	R	E	EP	6PQ	07-2006	12-2007	OG
ENTHRONE 2	J. Ruela	R	E	EP	6PQ	09-2006	08-2008	OG
PS	-	D	N	CS	-	-	-	E
PN	-	R	N	NP	-	-	-	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 2007; G - Guaranteed: activity with a firmly agreed contract, starting in 2007; 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 2007

Type of publication	Number
Theses concluded in 2007 by members of the unit	8
Books (author)	
Chapter/paper in books	3
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	25
Other publications (National meetings, local journals, etc.)	6
Total	50

• **Summary of post-graduation activities**

Summary of theses supervised by members of the unit in 2007

Type	Starting	On-going	Concluded	Total
Master	6	3	24	33

Type	Starting	On-going	Concluded	Total
Doctoral	8	26	7	41
Total	14	29	31	74

- Summary of Advanced Training Actions

Summary of Advanced Training Actions expected for 2007

Type	Number
Training for graduation students (<i>estágios curriculares</i>)	20
Training for others (<i>estágios extra-curriculares</i>)	2
Professional training actions (<i>estágios profissionais</i>)	2
Other actions	
Total	24

- Summary of activities of cooperation or dissemination

Summary of cooperation and dissemination actions expected for 2007

Type	Number
Organizing conferences or meetings	6
Collaboration in papers authored by INESC Porto researchers	30
External persons directly involved in actions organized by INESC Porto	

- Human resources in 2007

Summary of Unit personnel at the end of 2007

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
R&D						
<i>University or Politechnic Staff</i>	29	4			33	0
<i>INESC Porto Fellows</i>			6		6	-1
<i>Other Fellows</i>	1	7	16		23	+3
<i>Employees</i>	1		1		2	0
<i>Trainees</i>						
<i>Other</i>						
Administrative				1	1	0
Total	31	11	23	1	65	+2

(*) Relative to 2006, in absolute numbers.

P1.6 INNOVATION AND TECHNOLOGY TRANSFER UNIT

Manager: Alexandra Xavier

P1.6.1 SHORT DESCRIPTION OF THE UNIT

It is argued that 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 that might allow them to manage and promote their R&D results outside the organization, in order to create economic value.

In this context, the main goal of the Innovation and Technology Transfer Unit is to develop and promote Knowledge valorisation practices, acting directly in the internal innovation process, promote an academic entrepreneurship culture and increase knowledge concerning Innovation Management practices and tools.

In terms of activities, the Unit will be structured in three main areas:

- The Innovation Management: the main purpose is to 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 valorization opportunities.
- Academic Entrepreneurship: the main purpose of this area is to promote an entrepreneurship culture behind academic researchers and creating awareness by organization of training actions, creating tools and giving direct support in the process of turning ideias into business.
- R&D Projects: the Unit also plays a role in the creation and increase of knowledge in the scientific area of Innovation Management and Entrepreneurship Process, by development of R&D projects.

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 an transversal Unit that can take responsibility and leadership into the process of knowledge valorization.

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

Know-how	Status (*)	Internal Units	External	Promoters
Scientific Know-how				
Innovation Management	I	X	X	
Creativity	E	X		X
Business Concept Development	I/E	X	X	X
Business Plan Development	I/O/E	X		X
Technology Transfer	C	X		
Management of "proof of concept" projects	I/O	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 innovation process	X	X	X	X	X
Implementation of innovation processes			X	X	X
Business Plan methodologies and tools			X		X
Definition and development of methodologies to analyse and protect R&D results	X	X		X	X
Commercial Feasibility studies				X	X
Technology transfer Practices	X	X		X	X

Description of the Unit's organizational structure

The Unit's coordination is taken on by Alexandra Xavier with direct support of the Board of Direction.

The Unit will be focused on three areas: Innovation Management, Business Development and Entrepreneurship and R&D Projects.

The main activities will be:

- organizing training actions;
- helping promoters 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 R&D activities in order to increase Knowledge and sustain the overall activity.

The Unit will work in collaboration with the others R&D Units, with the Board of Directors and with promoters.

P1.6.2 SWOT ANALYSIS

Strengths

- Past experience in the implementation of processes and tools concerning innovation process;
- INESC Porto has developed competences in the area of IP and technology transfer process;
- Experience and competence concerning business development process;
- Good relationship between the Unit and researchers;
- Good relationships between the Unit and some entrepreneurship training courses.

Weaknesses

- Lack of international networking for development of R&D projects
- Inefficient commercial approach for the development of consulting activities in the area of innovation management
- Lack of post-graduate researchers in the innovation management areas.

Opportunities

- Academic Institutions are seen as important players in technological development and economic growth. It means they must have the ability to apply new technology-based knowledge to access new markets by development of new products, process, management techniques and development of skills across all collaborative people;
- INESC Porto recognizes the importance of “academic entrepreneurship” as a way in which research people from academic institutions go beyond the development of useful knowledge and take responsibility and leadership on their transference;
- External communities recognize INESC Porto as an institution that has competence and methods that can be efficient in the development of the “proof-of-concept” phase of the innovation process.

Threats

- Lack of entrepreneurship culture and empowerment behind researchers and economic agents.

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

The short term strategic objective is to launch the UNIT at the beginning of 2007.

The main strategic objectives for 2007 are starting the Unit’s scientific activity, developing the process and the rules concerning the support activities for entrepreneurship projects, implementing training actions in order to reinforce and create competences to sustain the Unit’s future activity and creating awareness and empowerment behind the researcher to knowledge valorisation issues.

P1.6.4 ACTION PLAN (GLOBAL)

- Starting a sustained scientific activity
- Development of a process of internal and external communication in order to create awareness concerning the Unit’s importance and rules.
- Implementation of a training action plan, in the areas of Innovation Management and Technology Transfer
- Implementation of training actions concerning the dissemination of an entrepreneurship culture behind researchers
- Identification of the development and implementation of the process and tools in collaboration with others Units that potentiality helped in the process of knowledge valorisation.
- Identification and development of strategic collaborations and formal partnerships that seem important to the development of the main areas of activities.

P1.6.5 ACTIVITIES EXPECTED FOR 2007

- Projects

Summary of the projects to be developed in 2007

Type of Activity (1)	No. Projects (2)			Total Income (€)
	N	E	I	
R - Research				
D - Development		1		70.000
C - Consulting				
A - Advanced training	1			158.582
T - Technology Transfer				
O - Other				
TOTAL	1	1		228.582

Summary of the percentage distribution of budgetary revenue

Financing (3)	Status (4)			Total Income (€)
	OG- On-going	G - Guaranteed	E - Expected	
NP - National Programmes	69,38%			158.582
EP - European Programmes	30,62%			70.000
CS - Consulting and services				
O - Other R&D sources				
OS - Other sources				
Total	100,00%			228.582

Summary of projects to be developed in 2007

Name of the project	Respons.	Type Proj. (1)	Degree of Intern. (2)	Financ.		Starting date	Conclusion (prediction)	Status (4)
				Type (3)	Prog.			
FormInov	Alex. Xavier	A	N	NP	ON Norte	10-2006	12-2007	OG
Leadership	J. C. Caldeira	D	E	EP	6ºPQ	02-2006	08-2007	OG

- (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 2007; G - Guaranteed: activity with a firmly agreed contract, starting in 2007; 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 2007

Type of publication	Number
Theses concluded in 2007 by members of the unit	1
Books (author)	
Chapter/paper in books	
Publications (editor)	
Papers in International Journals with scientific referees	1
Papers in National Journals with scientific referees	1
Conference Proceedings in events with scientific referee and selection	
Other publications (National meetings, local journals, etc.)	1
Total	4

- Summary of post-graduation activities

Summary of theses supervised by members of the unit in 2007

Type	Starting	On-going	Concluded	Total
Master		1		1
Doctoral				
Total		1		1

- Summary of Advanced Training Actions

Summary of Advanced Training Actions expected for 2007

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>)	1
Other actions	
Total	1

- Summary of activities of cooperation or dissemination

Summary of cooperation and dissemination actions expected for 2007

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

- Human resources in 2007

Summary of Unit personnel at the end of 2007

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

(*) Relative to 2006, in absolute numbers.

P2. SUPPORT ACTIVITIES PLAN

P2.1 DEPARTMENT OF INFORMATION AND LOGISTIC

Manager: Maria da Graça Barbosa

P2.1.1 SHORT DESCRIPTION OF THE DEPARTMENT

The Information and Logistics Department's main objective is to guarantee, in an integrated way, the information, administration and logistic support necessary to INESC Porto's good functioning. Comprehending the majority of the support functions and combining administrative/executive functions with research, analysis and advice, DIL strongly contributes to the instruction and fundamentation of the decisions made by the authorised persons.

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 is reasonably stable, 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. Adding to that, the Legal Service is, since the beginning of 2006, an area inside DIL: the Legal Support area.

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

Human Resources: Coordination and execution of all the activities concerning administrative management of human resources, as well as the actions necessary to the fulfillment 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 fulfillment 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.

Manager: Maria da Graça Barbosa

Logistic Support: aims to guarantee the copy services, internal mail, external services and logistic support.

Secretarial Coordination: coordination of the Units', Services' and Departments' secretaries, to guarantee the coherence in 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 and maintains her previous functions as Unit's secretary (Lídia Vilas Boas).

- Human resources of the Department

Summary of Department personnel at the end of 2006

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
<i>R&D</i>						
<i>University or Politechnic Staff</i>						
<i>INESC Porto Fellows</i>						
<i>Other Fellows</i>						
<i>Employees</i>						
<i>Trainees</i>						
<i>Other</i>						
Administrative		1	8	8	17	
Total		1	8	8	17	

(*) Relative to 2005, in absolute numbers.

P2.1.2 SWOT ANALYSIS

Strengths

- The integration and inter-disciplinarity 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.

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 unavailability to take the opportunities that may arise;
- The course of specialization taken so far proving to be inadequate in a short/medium-term;
- The current dimension of DIL proving to be too heavy in a scenery of reduction of the institution's activity.

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.

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 value/valorization 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 PRIME multiannual training plan (2007-2008), in case it is approved, in articulation with the area of Management Control;
- Periodic revision and updating of the Welcome Guide; implementation of a systematic and effective procedure of welcoming of new collaborators;
- 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 sceneries);
- 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;
- Creation of the Fellow Nucleus on the intranet;
- 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;
- 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.

Accountancy and Finance Area

- Continuing the study of the behaviour of certain financial parameters throughout time, aiming to define a financial management policy;
- Implementation of the rules for purchasing and, in collaboration with SIG, improve the respective automatic process;
- Integration of the process of Publishing Awards in SACA, in collaboration with SIG;
- Continuing of the development formulation of a handbook for the area of Accountancy and Finance;
- Promotion of the establishment of partnerships with Financial Institutions, in the technological areas, in articulation with the Board of Directors.

Management Control Area

- Implementation of an automatic process of Time-Cards recording;
- Development and implementation of a Balanced Scorecard for INESC Porto that enables the monitoring of the strategy's execution;
- 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;
- Introduction of changes in INESC Porto's Report and Accounts that increase the value the institution's external image, namely, its translation into English (according to one of the strategic Guidelines - internationalization) and change of the format and presentation material, in collaboration with the Communication Service;
- Creation of a handbook on procedures for financed projects.

Legal Service

- 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;
 - Legal support to the institution's internationalization project;
 - Study and advice on the legal issues of the Seventh R&D Framework Programme;
 - 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.

Secretarial Coordination

- Verification and support in the use of applications such as ULTIMUS, SACA and other process management applications by the secretaries and suggestion of changes/improvements, namely the possible integration of the tool of reservation of the service's vehicle with the Travel application in ULTIMUS;
- 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 2007 (estimate)

Type	Education				Total	Variation (*)
	PhD.	MSc.	BSc.	Other		
<i>R&D</i>						
<i>University or Politechnic Staff</i>						
<i>INESC Porto Fellows</i>						
<i>Other Fellows</i>						
<i>Employees</i>						
<i>Trainees</i>						
<i>Other</i>						
Administrative		1	8	9	18	+1
Total		1	8 ⁽¹⁾	9	18 ⁽¹⁾	+1

(*) Relative to 2006, in absolute numbers.

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

P2.2 SERVICES

P2.2.1 COMMUNICATIONS AND COMPUTER SERVICE

Summary of actions expected for 2007

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)	Implementation of a new Email Web client for INESC Porto users.	First Semester
Users support	Support services (help-desk) for all INESC Porto users.	Annual Task
	Technical support service for internal IT purchase processes.	
IT infrastructure management and maintenance	IT infrastructure management and maintenance and related services.	Annual Task
	Maintenance and support contract management, covering the IT infrastructure and software applications.	
Specialized consulting services	Specialized consulting services and tasks, in cooperation with other Units or by request of external entities.	Sporadic Tasks
	Organization of short term training actions and traineeships.	

P2.2.2 MANAGEMENT INFORMATION SERVICE

Summary of actions expected for 2007

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 tool.	
Integrated implementation of a new Web/Intranet concept.	Support in the implementation of INESC Porto's new website.	January
	Guarantee a safe integration of the website and Intranet. Only one home page for both.	First quarter

Action	Description	Schedule
	Implementation of BIP in the content management system.	First quarter
	Development of new functionalities and migration of the existing ones to a content management system.	The whole year
Collaboration in the development of the Units' websites, services, projects and conferences.	Support to the units and services in the creation of the necessary websites. All must have common nuclear functionalities.	The whole year
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
	Assessing Project Management tools in the market. Start specification process.	The whole year
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, Intranet, Ultimus, Workflow, SACA, PHC Personal, etc.	The whole year

P2.2.3 COMMUNICATION SERVICE

Summary of actions expected for 2007

Action	Description	Schedule
Solidification of the implementation of INESC Porto's new institutional image.	Support to actions and supervision of the new institutional image developed which will imply the production of all the office supplies and communication material.	The whole year
Development and internal advertisement of a new text-book image.	Support in the definition of rules of use of logos and specification of rules of use of the communication material. Internal advertisement, promotion of the use and tutorial, in case of doubts.	The whole year
Support and advisory in the standardization of INESC Porto's and Units' webpages.	Support to SIG and to the team of designers in the standardization of INESC Porto's webpage image. Monitoring and advisory concerning the contents of the Units'	The whole year

Action	Description	Schedule
	websites.	
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 in the website. Weekly update.	The whole year
Production of INESC Porto's new institutional video.	Collection of images and writing of script for the updating of INESC Porto's institutional video. English version for subtitling.	Second quarter
Intensification of the external communication: news and opinion articles in the most relevant newspapers, in radio and television.	The objective is to guarantee the publication or release of one item of news (at least) per month about the activities in INESC Porto.	The whole year
Development of the POCI/FEDER PROTET project - Promotion of the Electronic and Telecommunications Technologies, if approved.	The objective is to promote and make the students of School Fontes Pereira de Melo and other schools aware of the Electronic and Telecommunication Technologies through the carrying out of experimental work in INESC Porto and in the companies that use its technologies.	The whole year
Organization of the institution's internal and external communication activities.	Includes organization of events, participation in Exhibitions, propaganda of initiatives, among others.	The whole year
Production of BIP - INESC Porto's Bulletin.	Collection and processing of information and images to include in BIP. Production of 11 editions in Portuguese and 4 in English.	The whole year
Support to the edition of an Activities Report in English for partners and clients.	Articulation with DIL and with the external team of designers for the quality production of the Activities Report in English to offer partners and clients.	First quarter
Production of a bilingual communication piece to present INESC Porto's activity.	Coordination of the production of an e-book that introduces INESC Porto and promotes its image, its activity and the innovative projects developed.	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 archive of footage and multimedia in the intranet and its advertisement to all the collaborators.	The whole year
Organization of visits to INESC Porto.	Support in the students' visits that are interested in our activity areas.	The whole year

P2.2.4 INFRASTRUCTURE MAINTENANCE SERVICE

Summary of actions expected for 2007

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 2007

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