

INESC PORTO

PLAN FOR 2004

INTRODUCTION

The economic environment, in Portugal, will continue to be of recession or very modest growth and any predictions for 2004 must be formulated cautiously. A strict policy of confining costs will be continued, trying, however, not to put in jeopardy the global objectives of high level research with international quality and scope. This will be partially accomplished by participating in a significant number of projects in the 6th Framework Programme of the EU, which is seen as a strategic guideline and will help setting the standard for quality in research and in the internationalisation of activities.

INESC Porto is confident that the Associated Laboratory Programme will continue to be supported by the Government, and therefore will continue recruiting high profile researchers at Post-Doc level, in the international market.

In 2004, INESC Porto will also try to develop a special effort in order to recover activity in the area of innovation and technology transfer. This will hopefully have an effect in an increase in the number of direct contracts with industry, which are essential to the good balance and financial health of the institution and also to keep its activity focused on the reality of the markets. INESC Porto will also reinforce its support to the emergence of spin-off companies from its research activities.

PREDICTED PERFORMANCE INDICES

The following table displays a set of indices about the predicted activity of INESC Porto during 2004. These indices were collected from cautious predictions made by the research Units.

UNIT	UTM	UOSE	UESP	USE	USIC	Total
PhD Theses to be concluded	10	1	3	6	1	21
MSc Theses to be concluded	24	0	12	9	2	47
On-going PhD and MSc Theses	21	9	30	20	1	81
Short courses	2	0	2	2	0	6
Development projects and consulting contracts	15	15	8	12	13	63
Visitors (foreign students, post-docs)	4	0	2	12	0	18
Publications	40	40	25	39	7	151
Participation in the organization of conferences or international meetings	6	1	1	1	0	9

PREDICTED SCIENTIFIC RESULTS

At INESC Porto the research activities take place in each research Unit - with different degrees of importance, as well as different impact on other activities as graduate education and training, or technology transfer. In this report the option has been to mention only a selected number of foreseen results that may nevertheless be representative of the diversity of the activity to be developed. The following table, therefore, summarizes the most important scientific results expected during 2004, in each research Unit of INESC Porto, together with an identification of their scientific areas.

UNIT: UTM - Telecommunications and Multimedia	Area
1. Algorithms for automatic identification of critical acoustic reflections in rooms, adaptive cancellation of multiple feed-backs, and adaptive equalization of rooms in a transparent way.	Audio Signal Processing
2. Development of a video coded statistical multiplexer using perceptual based metrics. Development of video segmentation algorithms based on depth maps. Implementation of an MPEG4 editor.	Image Analysis and Synthesis
3. Methodology for integrating ad-hoc into structured networks. Monitoring Testing System for 4 th Generation wireless access networks. Mechanisms for mapping layer three QoS parameters into heterogeneous layer QoS parameters. Discovery and auto-configuration of Ambient Networks. Ambient Intelligence testbed. Location of 802.11 mobile terminals.	Network Architectures and Services
4. Research of new methods and technologies to implement the UMA (Universal Multimedia Access) concept, based on the use of distributed technologies and MPEG-21. Contributions to the MPEG-21 standard - development of software modules that implement parts of the standard, mainly for the adaptation of multimedia content. Harmonisation of existing formats for the storage and exchange of multimedia content and associated descriptions.	Distributed Multimedia Systems
UNIT: UOSE - Optoelectronics and Electronic Systems	Area
1. Optical fibre sensors for biomedical and eco-monitoring applications	Sensors
2. Optical fibre sensors for civil engineering	Sensors
3. Optical fibre sensors for equipment condition monitoring	Sensors
UNIT: Manufacturing Systems Engineering	Area
1. Business Coordination and logistic management for enterprise networks from the fashion industry and made to fit products.	Enterprise Networks
2. Advanced a flexible system to support collaboration and promotion of the CRAFTS, ECO-AGRO TOURISM and CULTURE sectors in Latin America.	Enterprise Networks
3. Design and development of several innovative manufacturing equipments and intra-company logistic systems for the shoe industry.	Intra-company logistics
4. Design and development of an intra-company logistic system for custom made products for stitching in the shoe industry.	Intra-company logistics
5. Definition of a Technological and innovation strategy for the automotive, electronics and IT sectors in the North of Portugal.	Consulting
UNIT: Power Systems	Area
1. Strategies for islanding operation and back-start of micro-grids	Operation planning
2. Economic optimization of distribution systems with micro-grids and micro-generation	Electricity markets, Distribution operation
3. Algorithms for Unit Commitment in Power Systems with a large hydro component	Power System Operation Optimization
4. Control strategies for delivering primary reserve from double-fed induction wind generators	Power Systems Analysis Electricity Markets
5. Load profiles for electricity consumers and network characterization regarding losses and peak occupation	Electricity Markets Distribution Management
6. Multi-Agent system prototype for electricity markets	Electricity markets, AI
UNIT: Information and Communication Systems	Area
1. MEDSI - First prototype (crisis management tool)	Geographic Information Systems
2. SCOPE project - Implementation of software certification process	Information Systems

FACILITIES AND EQUIPMENT

Since 2002 INESC Porto has a new building and no significant change in the facilities is foreseen during 2004. Also, the facilities for the UOSE Unit, at the Faculty of Sciences, will be maintained.

INESC Porto will continue to try to benefit from the nationally funded research to renovate part of the computing equipment. We also expect that in 2004 we will finally have access to funds to renew infrastructures and heavier equipment.

ASSOCIATE LABORATORY IN 2004

During 2004 we expect to have the funds to fulfil our duties deriving from the statute of Associate Laboratory. The selection of new senior Post-Docs to be contracted will continue and the decision will be based not only on the absolute qualities of the candidates but also on their research interests that will have to fit our own development strategy.

Pedro Guedes de Oliveira

President of INESC Porto