technology
from seed
1. WHO WE ARE
INESC-ID is a research institute dedicated to advanced research and development in the areas of Electronics, Communications, and Information Technologies.

INESC-ID was created in 2000, as a result of the reorganization of the R&D activities of its parent institution, INESC, in Lisbon.

INESC-ID is a not for profit, privately owned institution, declared officially of public interest. It is owned 51% by IST - Instituto Superior Técnico – and 49% by INESC – Instituto de Engenharia de Sistemas e Computadores.

INESC-ID operates in two locations, near (or inside) the two campi of IST, namely Alameda and Taguspark.

1.1 ASSOCIATE LABORATORY

INESC-ID was awarded the status of “Laboratório Associado” in December 2004. This has increased the funding and enabled the recruitment of a number of postdoctoral researchers and support staff.

The activities of INESC-ID in 2013 are structured into five research lines:

- Information and Decision Support Systems
- Interactive Intelligent Systems
- Embedded Electronic Systems
- Computing Systems and Communication Networks
- Energy Systems

Some research lines are composed of different research groups, but the research and administrative planning, once centered in the groups, has progressively moved towards the research lines.
1.2 INSTITUCIONAL STRUCTURE

1.2.1 Management structure

INESC-ID is structured according to the organization chart shown below. Current management of the organization is ensured by the Board of Directors, assisted by the Project Support Office (GAP), the Human Resources Office (GARH), and other administrative support units, which provide services sub-contracted to INESC (holding).

Fig. 1 – INESC-ID Organization Chart
Board of Directors

The Board of Directors is composed of three members proposed by the Scientific Council and appointed by the General Council. It is in charge of the general management of the Institution. The Board was composed, until June 2013, by Leonel Sousa (chairman), José Carlos Monteiro and Luís Rodrigues. From July 2013 until the end of the year the Board of Directors was composed by Luís Rodrigues (chairman), José Carlos Monteiro and Jorge Fernandes.

General Council

The General Council is composed by three representatives of IST (Instituto Superior Técnico), two of INESC, and by the chairman of the Scientific Council of INESC-ID. The General Council approves both annual technical and financial reports, as well as the plan and budget. It appoints the board of directors under proposal by the Scientific Council. In 2013 the General Council was composed by Prof. Arlindo Oliveira, Prof. Paulo Martins, Prof. José Tribolet, Dr. Abílio Ançã Henriques and Prof. João Miranda Lemos.

Audit Board

The Audit Board is composed of three members appointed by the General Council. It examines and certifies the accounts of the Institution. In 2013 the Fiscal Council was composed by Hermínio Ribeiro, Dr. João Catarino and Grant Thornton & Associados – Sociedade de Revisores Oficiais de Contas, Lda.

Scientific Council

The Scientific Council is composed of all researchers with a Ph.D. degree. It is responsible for the strategic planning and organization of the research units, and also evaluates the research projects, annual budget, plan, and reports. The Scientific Council is assisted by the Advisory Board which visits INESC-ID on a regular basis.
Board of the Scientific Council

The Scientific Council has a managing board composed of a chairman and two other members. In 2013 the Board of the Scientific Council was composed by Luís Silveira, Inês Lynce, and João Miranda Lemos (chairman).

Scientific Council Coordinating Committee

The Coordinating Committee is composed of the Board of the Scientific Council and representatives of the thematic areas.

Advisory Board

The Advisory Board is composed by external advisors that provide advice concerning the strategy and plans of the Institution. In 2013 the members of the Advisory Board were Prof. Srinivas Devadas (MIT, USA), Morris Sloman (Imperial College, London, UK), José Carlos Príncipe (Univ. Florida, USA), Braum Nauta (University of Twente, Netherlands) and Ricardo Baeza-Yates (Yahoo Labs, Barcelona).

Human Resources Office

This office (GARH – Gabinete de Apoio aos Recursos Humanos) is responsible for the human resources affairs of INESC-ID.

Projects Support Office

The Projects Support Office (GAP – Gabinete de Apoio aos Projectos) supports general applications for competitive funding and also the management of research projects. The scope is extended to support the activities of INESC-ID in technology transfer and the appreciation of intellectual property, namely through the creation of patents and launch of spin-offs. This office also organizes visits and institutional exhibitions, besides providing administrative support to the activity of the Board of Directors.
Administrative Support

Administrative Support is provided by six secretaries that support the researchers of the different R&D groups.

1.2.2 Scientific Structure

The research developed at INESC-ID is organized in five Research Units, which of them organized in several research groups.

Each research unit has one or two Coordinators, elected among the researchers with a doctoral degree. The Coordinators responsibilities are as follows:

- Represent the research unit on the Coordinating Committee of the Scientific Council;
- Coordinate the activities of several research groups belonging to the research unit;
- Promote the preparation of proposals for R&D projects;
- Coordinate the preparation of plans and reports concerning the research unit.

Each research unit integrates different research groups, which are listed below together with their coordinators in 2013:

Information and Decision Support Systems
Coordinators: Prof. Mário Silva, Prof. Ana Teresa Freitas

Knowledge Discovery and Bioinformatics – Prof. Ana Teresa Freitas
Information Systems – Prof. José Borbinha
Data Management and Information Retrieval – Prof. Mário Silva
Interactive Intelligent Systems
Coordinators: Prof. Isabel Trancoso, Prof. Joaquim Jorge

- Spoken Language Systems – Prof. Isabel Trancoso
- Intelligent Agents and Synthetic Characters – Prof. Ana Paiva
- Intelligent Multimodal Interfaces – Prof. Joaquim Jorge

Embedded Electronic Systems
Coordinators: Prof. Jorge Fernandes, Prof. Nuno Roma

- Analogue and Mixed-Signal Circuits – Prof. Jorge Fernandes
- Signal Processing Systems – Prof. Nuno Roma
- Quality, Test and Co-Design of HW/SW Systems – Prof. Marcelino Santos
- Electronic System Design and Automation - Prof. Horácio Neto
- Algorithms for Optimization and Simulation – Prof. Luís Silveira
- SW Algorithms and Tools for Constraint Solving – Prof. Inês Lynce

Communication Networks and Mobility
Coordinators: Prof. Augusto Casaca, Prof. Paulo Ferreira

- Distributed Systems – Prof. Paulo Ferreira
- Software Engineering – Prof. João Cachopo
- Communication Networks and Mobility – Prof. Augusto Casaca

Energy Systems
Coordinators: Prof. João Santana, Prof. João Miranda Lemos

- Control of Dynamic Systems – Prof. João Miranda Lemos
- Alternative Energies and Electromechanical Energy Conversion – Prof. Gil Marques
- Power Electronics and Power Quality – Prof. José Fernando Silva
- Power Systems and Energy Policy – Prof. Marcelino Ferreira
2. WHAT WE DO
2.1 OBJECTIVES

INESC-ID aims to produce added value to people and society in the field of Information and Communication Technologies (ICT). The mission of INESC-ID is to develop tomorrow’s technologies by excelling in research, today.

The main objectives of INESC-ID are: to integrate competences from researchers in electrical engineering and computer science to advance the state of the art in computers, telecommunications, information systems, and energy; to support the first stages of the value generation chain: basic research, applied research, and advanced education; in cooperation with other institutions, to perform technology transfer, to support the creation of technology based startups, and to provide technical support.

Tangible results of the institution activity are: publications in national and international journals and conferences; methodologies, tools, patents, and prototypes to be transferred to the academic, scientific or industrial sectors, advanced professional education and training.

In order to fulfill its mission, INESC-ID values internationalization, networking, partnership and visibility.

R&D activities cover a broad (although focused) range of research areas and application markets, such as wireless communications, electronic equipment, health care, medical imaging, industrial automation, e-learning, and enterprise information systems. INESC-ID also acts as a service provider, to stimulate cooperation with industry, to focus research on practical issues, and to make the economic market aware of its capabilities. Close ties with professionals qualified by INESC-ID are encouraged, not only for lifelong education support, but also for networking activities.

The scientific activities of INESC-ID are financed by a number of funding agencies, of which the most important are FCT-Fundação para a Ciência e a Tecnologia, ADI – Agência de Inovação, and the European Commission. Additionally, INESC-ID also participates in other funding programs involving government funding with the purpose of developing R&D in companies through consortiums with research partner institutions.
2.2 MAIN ACHIEVEMENTS

In the last year the institution has worked hard to fulfill its mission. Our research is now quite visible at an international level, and its quality is recognized.

INESC-ID has also been involved, at an institutional level, in the establishment and development of the training activities in the context of the Portugal-CMU and the Portugal-MIT programs.

Among the most significant achievements, we would like to highlight the following activities:

- The exceptional quality of the publications of INESC-ID researchers has been recognized in 2013 with several best paper awards, in national and international conferences;

- The organization of the conferences Mobacc2013, the International Workshop on Information Technology for Energy Application (IT4Energy) and InForum, that required the participation and the effort of the institution as a whole;

- The success of the six INESC-ID startup companies. Three of them (Coreworks, VoiceInteraction and PetSys) were created in early years as a result of a very significant technology transference. In 2009 there is also the participation in a fourth startup company, NWC, a highly innovative company in the implementation and development of specific social and network applications. In 2010 SiliconGate, a startup that operates in the field of microelectronics and develops and licenses high performance power management blocks that are key elements in any mobile equipment; The newest participation is HeartGenetics. HeartGenetics genotyping technology is based on a DNA MICROCHIP that can include all genetic variants that have been proved to be the main cause of a specific cardiac genetic disease. Genotyping is achieved through a high-throughput and high accurate DNA Microchip platform optimized for genetic analysis using an iPlex MassArray system.
The increasing in scientific productivity results in about 105 international journal papers, and more than 300 communications in international conferences. Moreover, about 27 PhD theses were finished in 2013;

From a total of 20 research projects that started in 2013, 5 have received European funds and 15 are supported by national funding (FCT). In 2013 there were a total of 76 research projects ongoing (17 European, 1 managed by ADI and 58 funded by FCT);

We have put some effort in order to promote technology transfer through the participation of the mentioned startups, but also to support the invention registration through patents and the increase of industry research contracts. The reason we are focusing considerable effort in such activities is that as an institution of excellence we know how important is the funding diversity to motivate researchers and put forward their results expectations.

Besides the competitive national and international funding we expect to create our own revenues to add value for what we do best: develop tomorrow’s technologies by excelling in research, today.
3. HUMAN RESOURCES
The majority of the researchers of INESC-ID are members of the academic staff and post-graduate students of IST. There are also researchers from other Universities and Polytechnic Institutes and a small number of contracted postdoctoral researchers.

On 31 December 2013 INESC-ID had a total of 372 collaborators, 164 of which with a Ph.D degree and 118 with a M.Sc. degree.

Since INESC-ID focuses its activity on the rapid growth areas of information technology, communications and electronics, an increase is to be expected in the number of researchers with higher degrees within the next few years. Many researchers are carrying out their post-graduate work at INESC-ID. Table I summarizes the qualifications of INESC-ID researchers.

<table>
<thead>
<tr>
<th>ACADEMIC DEGREE</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habilitation</td>
<td>31</td>
</tr>
<tr>
<td>PhD Degree</td>
<td>133</td>
</tr>
<tr>
<td>MSc Degree</td>
<td>118</td>
</tr>
<tr>
<td>1st Degree</td>
<td>83</td>
</tr>
<tr>
<td>High School</td>
<td>7</td>
</tr>
<tr>
<td>TOTAL</td>
<td>372</td>
</tr>
</tbody>
</table>

The increase of technical and scientific activity, as a result of the status of Associate Laboratory, leads to the need to improve technical support and administrative services. The institution is mostly composed by researchers with a PhD, which reflects the motivation given to our collaborators to develop a structured researcher career.

INESC-ID also has a very young structure, due to the amount of fellowships and young researchers; about 55% have ages between 20 and 40 year old and have a high degree level.

INESC-ID is continuously seeking highly qualified candidates with a PhD degree and with a track record showing their ability to perform independent research in their scientific areas. In 2013 researcher Pedro Monteiro won the FCT Researcher Program. The FCT Investigator Programme aims to create a talent base of scientific leaders, by providing a five year funding for the most talented and promising researchers, across all scientific areas and nationalities. The programme supports both outstanding post-doctoral researchers who wish to make the transition to independent researcher, and already independent researchers, with a proven track record, who wish to consolidate their research skills and establish leadership in their research fields.
4. OUTCOME
A main source of national funding of INESC-ID is FCT – Fundação para a Ciência e Tecnologia, through direct funding of the associate laboratory projects awarded in a nationwide competitive basis. National funding is also provided by AdI – Agência de Inovação. Another main source of funding are European Union projects.

The following set of tables summarizes the activities carried out in 2013 and the results achieved.

### Projects

<table>
<thead>
<tr>
<th>TYPE OF PROJECT</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Programs (research projects ongoing)</td>
<td>17</td>
</tr>
<tr>
<td>National Programs (research projects ongoing)</td>
<td>58</td>
</tr>
<tr>
<td>Contracts with companies</td>
<td>23</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>98</strong></td>
</tr>
</tbody>
</table>

### Publications

<table>
<thead>
<tr>
<th>PUBLICATION TYPE</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books</td>
<td>4</td>
</tr>
<tr>
<td>International Journals</td>
<td>120</td>
</tr>
<tr>
<td>National Journals</td>
<td>2</td>
</tr>
<tr>
<td>Book Chapters</td>
<td>21</td>
</tr>
<tr>
<td>International Conferences</td>
<td>294</td>
</tr>
<tr>
<td>National Conferences</td>
<td>32</td>
</tr>
<tr>
<td>Patents</td>
<td>2</td>
</tr>
<tr>
<td>Technical Reports</td>
<td>30</td>
</tr>
<tr>
<td>Special Issues of Journals (edition)</td>
<td>3</td>
</tr>
<tr>
<td>Conference Proceedings</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>512</strong></td>
</tr>
</tbody>
</table>
512 R&D PUBLICATIONS
615 DISSERTATIONS
98 PROJECTS
160 SCIENTIFIC EVENTS
### DISSECTIONS

**Table IV – Thesis**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>ONGOING</th>
<th>COMPLETED</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD Theses</td>
<td>145</td>
<td>27</td>
<td>172</td>
</tr>
<tr>
<td>MSc Theses</td>
<td>319</td>
<td>92</td>
<td>411</td>
</tr>
<tr>
<td>Graduation Theses</td>
<td>32</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>496</strong></td>
<td><strong>119</strong></td>
<td><strong>615</strong></td>
</tr>
</tbody>
</table>

### ORGANIZATION OF SCIENTIFIC EVENTS

**Table V – Organization of Scientific Events**

<table>
<thead>
<tr>
<th>TYPE OF ACTION</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associate Editor of Journal</td>
<td>11</td>
</tr>
<tr>
<td>Committee Chair</td>
<td>12</td>
</tr>
<tr>
<td>Committee Member</td>
<td>82</td>
</tr>
<tr>
<td>General Chair</td>
<td>3</td>
</tr>
<tr>
<td>Invited Speaker</td>
<td>5</td>
</tr>
<tr>
<td>Reviewer</td>
<td>47</td>
</tr>
</tbody>
</table>
5. COOPERATION, PARTNERSHIP AND MOBILITY
INESC-ID participates in the programs between Portugal and CMU (Carnegie-Mellon University) and with Portugal/MIT (Massachusetts Institute of Technology). Other partnerships include Cadence Design Systems, TU Darmstadt, IST, ISCTE, Universidade da Madeira, Escola Superior de Tecnologia e Gestão de Beja, and Escola Superior de Tecnologia de Setúbal. Other partnerships were established in 2013, namely with Instituto Superior de Engenharia de Lisboa (ISEL) and Universidade da Beira interior (UBI). In addition to the above formal partnerships, there is a large number of cooperation agreements with other institutions within the framework of the research projects.
6. TECHNOLOGY TRANSFER
Our research and development activities cover a broad range of research areas and application markets, such as wireless communications, electronic equipment, health care, medical imaging, industrial automation, e-learning, and enterprise information systems. INESC-ID also acts as a service provider, stimulating cooperation with industry and focusing research on day life issues, providing a high level of technology transfer.

Several startup companies have been created by researchers and former graduate students associated with INESC-ID. This is an interesting indicator of the industrial technology impact of INESC-ID.
INESC-ID currently has equity in the following start-up companies:

**Coreworks** \(\text{digital integrated circuit design}\)

Coreworks, founded in 2001 by two researchers of INESC-ID, is a provider of Semiconductor Intellectual Property (SIP) for multi-standard multimedia and communications applications, such as digital television, internet protocol television (IPTV), portable audio players, mobile Internet devices, and software defined radio. Their products have been implemented in a wide variety of technologies, for more than 30 customers worldwide. The company received an A-series investment round from Espírito Santo Ventures in 2006.

**SiliconGate** \(\text{mixed-signal circuit design}\)

SiliconGate operates in the field of microelectronics and develops and licences high performance Power Management blocks that are key elements in any mobile equipment. Funded in 2008, SiliconGate brought together the experience of senior designers from Industry with the research expertise of an INESC-ID research group.

Recently, Wolfson Microelectronics plc, a global leader in high-performance mixed-signal semiconductor solutions for the consumer electronics market, has selected SiliconGate to provide high-performance power management IP in a four year contract.

**PETsys** \(\text{medical imaging}\)

PETsys, SA was established in 2008 to exploit the results of a research project, started in 2003, on PET (positron emission tomography) systems for mammography. The shareholders are 5 institutions, and 15 individuals that participated in the project, together with a Belgium business angel.

PETsys has acquired the rights to use the internationally patented PET scanner technology that allows early cancer detection with higher resolution (1-2 mm against 5-10 mm) and higher sensitivity (x10) than with standard devices.
**VoiceInteraction \ speech processing**

VoiceInteraction was founded in 2008 by researchers from the Spoken Language Systems Lab of INESC-ID, following the work developed in TECNOVOZ, a technology transfer project funded by the Portuguese Innovation Agency (AdI).

Based on a solid background of R&D, VoiceInteraction offers innovative solutions in the area of speech processing. Their solutions are based on speech recognition, speech synthesis, 3D facial animation, and spoken dialogue systems technologies. The applications cover different areas: subtitling systems for RTP (public national TV broadcaster), media clipping, dictation systems for hospitals, spoken dialogue systems for kiosks in monuments.

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**NetworkConcept \ communication networks**

NWC Network Concept, Lda was founded in 2008. It had its origin in a joint project by Instituto Superior Técnico (IST) and INESC-ID to develop a software multi-services platform, Kelius.

Kelius integrates all the services in residential or professional environments, including Internet, video surveillance, television, and telephone.

The control is performed through an interface implemented in a computer or in a Personal Digital Assistant (PDA). The new methods and techniques behind this platform are patented.

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**HeartGenetics \ genetics & biotechnology**

HeartGenetics is a new company, founded in 2013, that has developed a revolutionary methodology that includes (i) a DNA MICROCHIP array platform optimized for genetic analysis and (ii) efficient and scalable algorithms for data processing. This new methodology is particularly relevant for improving significantly cardiovascular diagnostics. On top of the core competences on the subject of cardiovascular genetic testing, they develop new high-tech bioinformatics technologies that support highly accurate analysis and integration of both genetic and clinical data.

Besides owning equity in each company, there is close connection of these start-ups with INESC-ID due to partnerships for R&D projects.
7. VISIBILITY
7.1 Annual General Meeting

INESC-ID has been organizing each year a strategic planning meeting. These meetings, that have taken place since 2004, have involved the participation of external invitees with high impact backgrounds. The 2013 meeting took place in October, at Queluz, were researchers met to discuss issues related with technology transfer. A special historical visit was organized in the Queluz Palace during the afternoon to the meeting participants.

With the goal of gathering the institution research team, the theme of knowledge valorization was also presented and motif of interest and discussion from the audience.

Eng. Paulo Rosado, from OutSystems, and Prof. Luís Caldas de Oliveira, from IST were this year invited speakers for the general annual meeting. The entrepreneurship new office was also presented in this meeting.
7.2 Seminars

INESC-ID has also a very active schedule of seminars, presented by our researchers and/or invited speakers. These seminars are organized in a regular basis, in order to promote collaboration between researchers and research groups and also across disciplines.

These seminars are opened for all the scientific community: students, researchers and general public are welcomed to participate. A significant amount of external speakers were invited to present and participate in some of these seminars. During 2013, about 40 seminars were organized by our research groups at INESC-ID facilities. These seminars are described in the annexes of this report.

7.3 Distinguished Lecture Series

The INESC-ID Distinguished Lecture Series is designed to bring to the institute outstanding scientists, academics or practitioners to share their vision, and present their groundbreaking work.

The series aims to promote a regular sequence of high quality seminars in the core areas of the lab. Invited speakers cover a broad range of interests, activity profiles, and different stages of the professional career, being selected among those that have raised significantly above their peers in one or more aspects of their activity.

One of the main goals of the Distinguished Lecture Series is to encourage the interaction and promote discussion and exchange of ideas between the invited speakers and lab researchers. The INESC-ID Distinguished Lecture Series was launched in September 2012, with a seminar planned to take place every month.

The Distinguished Lecture Series are described in the annexes of this report.
7.4 Media & Dissemination

INESC-ID research work is often news in several wide public known media. Besides TV interviews and paper, our researchers are opened to show their team work at several levels. In 2013 we were news for several research projects results. These news are also published in our website or social networks.

7.5 Prizes and International Recognition

INESC-ID researchers were awarded the following prizes recognizing the excellence of the R&D activities developed:

- **Best Paper Award** to the article *Lightweight identification of captured memory for Software Transactional Memory*, at the 13th International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP-2013), Italy, Dec 2013, to Fernando Miguel Carvalho and João Cachopo;


- **Best Paper Award** of the EuroGP-2013 conference for the paper: *A New Implementation of Geometric Semantic GP and Its Application to Problems in Pharmacokinetics*, to Leonardo Vanneschi, Mauro Castelli, Luca Manzoni and Sara Silva;

Best Paper Award Runner-up in the 5th IEEE International Middleware on Cloud Computing Technology and Science (CloudCom 2013), Bristol, UK, Dec. 2-5, 2013 (Published by IEEE Computer Society), entitled *Flexible SLAs in the Cloud with a Partial Utility-Driven Scheduling Architecture*, to José Simão and Luís Veiga;

Institution of Engineering and Technology (IET) fellow nomination to Leonel Sousa;

HiPEAC Paper Award, for the article *Accelerating the Computation of Induced Dipoles for Molecular Mechanics with Dataflow Engines*, IEEE International Symposium on Field-Programmable Custom Computing Machines (FCCM), to Frederico Pratas, Diego Oriato, Oliver Pell, Ricardo Mata, and Leonel Sousa;

Best Paper Award in the International SPIN Symposium on Model Checking of Software Stony Brook, NY, USA, 8-9 July 2013, with the paper *Automatic Equivalence Checking of UF+IA Programs*, for both researchers José Carlos Monteiro and Nuno Lopes;

Best Full Paper Award in the VSGAMES2013, for the article *Engaging Engineering Students with Gamification*, to Gabriel Barata;

Best Paper Award for the paper *Identifying the Optimal Level of Parallelism in Transactional Memory Systems*, in the NETYS2013, to Paolo Romano and Diego Didona;

Gopala Anumanchipalli was awarded with one Spoken Language Processing Student Grants, for the paper presented at ICASSP2013;

The research project VITHEA, led by Alberto Abad, received the Award Gala IV Inclusion Applied Research, in Leiria. The IV Inclusion Gala, which featured high patronage of Maria Cavaco Silva, intends to celebrate the International Day of Persons with Disabilities, and to distinguish good practice in the area. This project also received an award for the best service in Mobile Health, at the SaudeCUF 2013 conference;
In 2013 internal prizes were given. These INESC-ID Awards were created in 2009. These awards are annually given, usually at the annual general institutional kick-off meeting. The juri is composed by the Advisory Board members, an independent committee made of world class experts. The existence of awards for the best researchers has a high importance and value for the institution. It is a contribution to strengthen the scientific prestige and social intervention of INESC-ID in its scientific environment.

The established categories are: PhD student, Researcher and Young Researcher. In 2013 the commission selected for the Best PhD Student Award Luís Tarrataca, for the Best Young Researcher both Sara Silva and Sara Madeira, and, for the Best Senior Researcher Prof. João Marques da Silva.
7.6 Exhibitions

In 2013 the effort to improve the external image of the institution continued. INESC-ID has organized and participated in several events of high visibility, such as:

- Open visits to INESC-ID, within the participation in the JEEC2013 - Jornadas da Engenharia Electrotécnica do IST;

- Participation in The European Researchers Night, with the research groups of the Interactive Intelligent Systems research area. Presentations of researchers Prof. Ana Paiva (Queres ser meu amigo?), Prof. Luisa Coheur and Prof. Isabel Trancoso (SPRINTALKs) and also demos in the building atrium of the Knowledge Pavilion;
Participation in the SET (technology entrepreneurship week) with the workshop “Interactive Robotic characters” given by Tiago Ribeiro, from the GAIPS research group;

The DataStorm research project organized a workshop to present its goals with distinguished presentations from leaders of key related initiatives at the European level. The event took place at the IST Taguspark Campus on July;

Ciência Viva summerships, coordinated by Prof. Moisés Piedade, were a success. About 30 high school students spent some days at Taguspark, with the goal of assembling race cars.

These events/exhibitions allow not only a closer relation between INESC-ID and other scientific organizations, but also an important promotion of our activities near the general public and companies. These activities help to strengthen important connections in order to improve technology transference.

Besides the high impact exhibitions, INESC-ID also promoted external visits, mostly from other organizations and groups of external researchers or students from abroad.

Prof. Peter Staeker visited INESC-ID, as part of his visit to Portugal, in September. The goals of this visit, which was coordinated by the IEEE Portugal Section, were to understand the IEEE role in the country, as well as to establish solid bridges between IEEE members and the universities, research institutions and companies in Portugal.

Members of the MITI, Ministério das Tecnologias de Informação, from Angola, also visited INESC-ID, in April. Some presentations and demos were prepared for this event.

We also welcomed a serbian committee, within a project about technology transfer, in July. The purpose of this visit also involved our startup companies.

We also promoted the participation in initiatives with the goal of gathering different research groups allowing researchers to interact in different and relaxed environments. We participated in the Bike to Work Day, an initiative with the purpose to motivate people to come to work by bike.
8. HIGHLIGHTS
8.1 PlanGridEv

PlanGridEV: Distribution grid planning and operational principles for EV mass roll-out while enabling DER integration.

**Objective.** The overall objective of PlanGridEV is therefore to develop new network planning tools and methods for European DSOs for an optimized large-scale roll-out of electromobility in Europe whilst at the same time maximizing the potential of DER integration. The comprehensive approach of PlanGridEV takes into account requirements and constraints of all relevant stakeholders, in particular through an effective cooperation between Original Equipment Manufacturers (OEMs) and DSOs accompanied by leading scientific and technological research partners in the consortium.

The main objective of this project is to design new planning rules and operational principles for the optimal integration of EV for different network topologies and with different levels of DER penetration such as PV, wind and solar energy and micro CHP. Tools and methods will be developed that permit DSOs to design new or adapt existing planning rules and investment strategies to ensure technical efficiency and the cost-effective evolution of infrastructures to facilitate the mass roll-out of EV in networks characterized by different levels of DER penetration. Finally, recommendations for the regulatory framework and further developed business models will be elaborated.

**Approach strengths and output.** For the first time, PlanGridEV will adopt a European approach involving DSOs as well as OEMs to develop new distribution network planning rules and operational principles. This approach accounts for the need to adopt a multi-stakeholder perspective to satisfy customer expectations and to ensure a safe and efficient network operation integrating EVs.
The research strategy of PlanGridEV will focus on the perspective of planning rules and operational principles, thereby following the steps below. INESC-ID’s strong research background in optimal planning of distribution networks is a key asset to develop the new planning tools necessary to validate the new planning rules.

**Research team.** Two different groups are involved in the project: Power and Energy Systems and Communication Networks and Mobility. Main researchers are Prof. Pedro Carvalho (PI), Prof. Mário Nunes, Prof. Luis Marcelino Ferreira, and Prof. João Santana.

**Partners.** The consortium is composed of major European players from the energy and automobile sector (DSOs, OEMs) as well as research institutions (universities, research organizations) and engineering consultancies. Their know-how is complementary and safeguards a successful course and outcome of this project. The consortium of PlanGridEV unites partners from different European regions and thereby ensures a holistic European perspective and interdisciplinary approach. The project is led and managed by RWE Deutschland AG as the coordinator of PlanGridEV. [www.plangridev.eu](http://www.plangridev.eu)

### 8.2 BiomagPLT

The BiomagPLT research project “A high throughput magnetoresistive biodetection platform” is a national project financed by FCT.

The main goal of this research project is to investigate and design a novel multi-channel high performance embedded electronic acquisition and processing system and a new high density multi-channel magnetoresistive biochip. The new high density magnetoresistive biochip can be useful for numerous applications where high throughput screening is required and in which the current magnetoresistive biochips are not suitable due to their reduced sensor count. Moreover, a higher sensor count would also increase the confidence levels in the assays that can already be performed using actual magnetoresistive biochips. This system will take advantage of a recently developed technology that joins CMOS and Thin Film microelectronics technologies which allows the implementation of digital and analog electronic circuits coupled with magnetoresistive biosensors in the same chip.

**State of the art.** Nowadays conventional analysis methods are beginning to be replaced by novel highly evolved and compact biochip based point-of-care devices that perform common blood or glucose analysis at a fraction of the cost and require a much shorter analysis time. Due to the potential of these new technologies the research in biodetection methods and biochips has significantly grown in the past decade. From this research,
methods like gene expression profiling, where thousands of biosensors analyze a given sample in parallel, became possible and now provide a valuable tool for several applications like clinical diagnoses, forensics or drug screening. However, its miniaturization was not yet accomplished which have led to significant efforts to achieve a portable device that can perform such analysis. Such a portable device would have a significant impact on the aforementioned applications as it would allow its widespread usage and may reduce both cost and analysis time.

Starting in 2000 magnetoresistive based biochips have been developed at INESC-MN and, since 2005, research to achieve its integration with highly compact and sensitive electronic systems has been performed at INESC-ID. The new embedded system will enhance both reading speed and biosensor addressing capabilities of the current biochip reading system (http://sips.inesc.pt/biochip) and will be able to interface biochips with a much higher number of biosensors. Scalable architectures for both embedded system and biochip, aiming the implementation of a high throughput, portable and autonomous biosensing device, are proposed. The new reading system deals with the high volumes of data by adopting an FPGA as main processing device. The data from each acquisition channels is treated by one dedicated signal acquisition and processing co-processor implemented in the FPGA, allowing the system to be easily scaled. This system enables a new set of applications, currently only possible using microarrays, to be performed with magnetoresistive based biochip having the inherent advantage of providing higher sensitivity and dynamic range when compared to microarrays.

**Preliminary Results.** In the scope of this on-going work several publications have already been achieved, as well as an MSc and a PhD thesis. The figures describe both the initial prototype of the embedded system and the first version of the CMOS biochip.

Moreover, the Intellectual Property has been secured by submitting a Provisional Patent Application and it is planned that this technology will be transferred to a Spin-off that is being incubated at INESC-ID and INESC-MN.
8.3 Euro-TM

The advent of multi-core architectures caused a disruption in software development. While in the past each new generation of processors produced faster sequential executions, over the last decade, and in future, processors will become only marginally faster. Fortunately, however, their computational capacity will keep on growing by increasing the number of parallel processing units that future CPUs will make available.

It is hence of the uttermost importance to provide software developers with abstractions and tools to simplify parallel programming, and allow for effectively exploiting the potential of modern parallel processors.

The standard approach to concurrent programming is based on, so called, lock-based synchronization. Unfortunately developing applications using locks is extremely complex for two main reasons: 1) if the programmer uses a few, very coarse locks, applications achieve very limited concurrency, failing to unleash the parallelism of modern multi-core architectures; 2) using fine grained locks, conversely, can improve performance, but at the cost of a strong increase of the complexity in developing, verifying, maintaining and reusing applications.

Transactional Memory emerged as a concurrent programming paradigm alternative to locking. In Transactional Memory, programmers are required only to identify which code blocks should run automatically, and not how concurrent accesses to shared state should be synchronized (as with locks). How this result is achieved is totally transparent for the developers, benefitting ease of programming, and yielding, to reductions in the development cost and time-to-market.
Launched in 2011, and Chaired by Prof. Paolo Romano, of the Distributed Systems Group at INESC-ID, the COST Action Euro-TM is a pan-European research network that connects European researcher units working in the area of Transactional Memory. Bridging more than 200 researchers from 50 institutions in 17 European countries, Euro-TM aims at consolidating European research on this important field, by coordinating the European research groups working on interdisciplinary aspects of Transactional Memory, including theoretical foundations, algorithms, hardware and operating system support, language integration and development tools, and applications.

To this end, Euro-TM implements a number of diverse dissemination activities aimed at raising awareness on scientific results and fostering international collaborations. Up to date, Euro-TM has organized 8 international scientific workshops, 2 Doctoral Schools, organized dissemination events in the largest European open-source conference (FOSDEM 2014). Notably, Euro-TM has gathered not only researchers from academia, but also from industry, across all the spectrum of events.

On the scientific side, Euro-TM has funded dozens of short-terms scientific collaborations between different European research units. This has led to the production of numerous interdisciplinary publications in top scientific conferences and journals. Researchers of the Euro-TM COST Action have been directly involved in two of the most exciting recent evolutions in the area, namely the development of hardware supports for IBM and Intel processors, and the standardization of language level supports for C++.

Additional information on the scientific and dissemination activities of Euro-TM can be found on its online portal: www.eurotm.org, along with pointers to teaching material, existing tools, projects, and related events in the area.
8.4 GALA

GALA (GAme and Learning Alliance) is a network of excellence set to coordinate, disseminate and promote research on serious games at the European level and become an international reference point for the field. The network consists in a highly multidisciplinary consortium of 31 partners, coming from 13 countries all over the European Union. It includes universities, research centers and enterprises, thus representing a mix of the interests and skills involved in serious games development and deployment chain allowing an effective synergy between research, education and business.

A Serious Game (SG) is a game developed with objectives beyond entertaining. SG may be used to teach, train, sensitize or motivate people. These games cover very diverse topics with prominent examples in medicine, business, heritage, crisis management, social learning and engineering. GALA activities are motivated by the great potential of SG for society and the need to defragment and structure the field due to its strong multidisciplinary nature. The activities of the network are structured along three major axes: Research Integration and Harmonization, Joint Research Activities and Spreading of Excellence.
**Research Integration and Harmonization.** GALA promotes effective communication among its partners and a broad community of stakeholders potentially interested in SG. It runs a program of associate partnership, currently, with more than 30 parties that work together with GALA’s members. The goal is to congregate many different stakeholders with different perspectives and promote a common understanding. The work has a strong focus on education standards and means to favor real uptake and scaling of the SG initiatives.

**Joint Research Activities.** Through the creation of multidisciplinary teams it has been possible to iteratively analyze, identify and address key issues in SG thematic areas. The synergy between different perspectives is bridging the gap between specific needs and problems of thematic areas and available technical solutions. As a result, a repository with serious game studies and a repository with serious game services have been developed to support everyone interested in getting to know the field and developing SGs. In addition, some effort has been put into publishing didactic books, the creation of a Serious Games M.Sc. framework and internship exchange programs.

**Spreading of Excellence.** Communication channels have been created for timely and high-quality dissemination and discussion of SGs regarding techniques, tools, applications and methodologies. The visibility of the work and its sustainability beyond the project’s funding is promoted by the creation of a Serious Games Society that hosts several initiatives, such as, a Serious Game Academy, an International Journal of Serious Games, European SG Awards and the established peer-reviewed European conference on SG. 

🔗 [www.galanoe.eu](http://www.galanoe.eu)
9. RESEARCH UNITS
9.1 Information and Decision Support Systems

This research unit integrates the following research groups: Knowledge Discovery and Bioinformatics, Information Systems, and Data Management and Information Retrieval.

The “Information and Decision Support Systems” research line aims at designing novel processes, techniques, and technology for the analysis, design, development, integration, deployment, and operation of distributed information systems and enterprise architectures. It gathers the INESC-ID groups that perform research in the fundamental areas of knowledge required to assure efficient, intelligent, aligned, safe, reliable, secure, and trustworthy information systems to support the whole structure of the modern economic and social framework. In this context, INESC-ID gathers a body of competences that renders it a national and international reference. These competences include significant expertise in fundamental technology, techniques, algorithms, data structures, and programming techniques, as well as in more applied areas such as software engineering and web application development.

Domains of activity:

- Constraint solving and optimization algorithms (Boolean satisfiability and discrete optimization algorithms);
- Databases: data profiling and cleaning, transformation and integration;
- Text mining: information extraction, sentiment analysis;
- Information retrieval;
- Knowledge management and engineering;
- Linked data and semantic web technologies;
- Scientific data management and digital libraries;
- Computational biology, systems biology and bioinformatics;
- Health Informatics;
- Social Computing;
The team has a diverse set of backgrounds/competencies:

- Algorithms and complexity;
- Machine learning and data mining;
- Statistics;
- Software engineering: requirements engineering, model-driven engineering;
- Enterprise engineering;
- IT projects and services management;
- Corpus linguistics.

9.2 Interactive Intelligent Systems

This research unit was recently restructured to encompass three different groups with strong synergies between them: GAIPS (Intelligent Agents and Synthetic Characters), VIMMI (Visualization and Intelligent Multimodal Interfaces), and L2F (Spoken Language Systems).

Their goals are:

- explore multimodal interaction models in virtual environments by using interfaces based on synergic recognition of multiple modalities;
- create intelligent agents and synthetic characters that can interact with users in a natural way, inspired in the way humans interact with each other;
- bridge the gap between natural spoken language and the underlying semantic information;
- create and develop new architectures of cooperative virtual environments using artificial intelligence techniques to create realistic synthetic characters;
- develop software architectures for virtual environments, with emphasis on image synthesis algorithms;
- develop innovative applications in areas such as games and learning environments.
9.3 Embedded Electronic Systems


Embedded Electronic Systems (EES) are crucial in the development of new devices and products, for emergent applications, and for consumer electronics, IT, communications and media, energy, environment, transports, biomedicine and life sciences.

The EES covers all the areas for designing electronic based systems, with research activity on new algorithms, architectures, methodologies, tools, electronic and microelectronic circuits covering RF, analog, mixed-signal and digital parts. The EES comprises the know-how to design and produce prototypes using discrete electronic systems, ASICs and reconfigurable electronics for the design of complete embedded electronic systems.

The EES performs advanced research, development, innovation, technology transfer and professional training with, and for, the academia, R&D, and industry with the highest international standards.

The EES main targets are to produce highly trained human resources, to establish international networking, and to push research economic value, promoting the global competitiveness of the existing industry or the creation of new start-up companies.
9.4 Computing Systems and Comunication Networks

The Computing Systems and Communication Networks research line integrates the following research groups: Distributed Systems, Communication Networks and Mobility, Software Engineering.

Thus, this research line aims at providing innovative algorithmic, middleware, communications architecture and mobility support to build complex and dynamic distributed applications and network protocols.

It gathers the INESC-ID groups that perform research in the fundamental areas of knowledge required to assure efficient, safe, reliable, secure, and trustworthy computing and network systems to support the whole structure of the modern networks and complex software.

In this context, INESC-ID gathers a body of competences that renders it a national and international reference. These competences include significant expertise in fundamental technology, techniques, protocols, architectures and algorithms.

9.5 Energy Systems

The Energy Systems research line integrates the following research groups: Control of Dynamical Systems, Alternative Energies and Electromechanical Energy Conversion, Powe Electronics and Power Quality, and Power Systems and Energy Policy.

The objective of the research line on Energy consists of performing research and promoting technology transfer in the area of Energy, with particular focus on problems that are concerned with alternative energies and energy conversion, power electronics and power quality, power and energy systems, energy policy and control and optimization applied to energy production. A special attention will be given to the fact that energy systems are complex systems, sometimes with large or very large dimensions and distributed over space. Furthermore, these systems involve stochastic phenomena and significant levels of uncertainty, and pose large scale optimization problems.
Therefore, aspects related to distributed coordination and optimization due to uncertainty will receive special attention. Furthermore, the exploitation of the interdisciplinary relationship between the groups of the line of Energy that are expert on Electrical Engineering and other groups that have their center of expertise on Information Technologies and Control will be a key issue to boost the research.

*Within the period, the main achievements planned (some experimental) are:*

- Development of adjustable speed generators for renewable energy
- Electromechanical drives for a More Efficient Use of the Electric Energy
- To design advanced power electronic converters for pulsed power, electric vehicles, renewable energy sources (wind, photovoltaic), clean power supplies, energy harvesting, all-electric aircraft, hybrid sources
- To obtain robust sliding mode, generalized sigma-delta, predictive optimum controllers or fast predictive controllers for Multilevel and Matrix or Sparse-Matrix Converters to synthesize Unified Power Flow Controllers (UPFC), Active Power Filters (APF) and Dynamic Voltage Restorers (DVR), for renewable energy sources and FACTS/UPFC/IPFC applications.
- Analysis and solution of real problems related with energy sector
- Collaboration and contracts with industry and government agencies
- Market versus regulation debate
10. ANEXES
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Oleksandr Bodaskro and Luís Veiga and Paulo Ferreira, First Person Shooter for Tablets - FpsTab., INFORUM (Simpósio de Informática), 5 e 6 de Setembro 2013, Évora (Portugal), Sep. 2013.

Bruno Jesus Andrade and Luís Veiga and Paulo Ferreira, Locality and Interest Awareness for Wireless Sensor Networks (LIASensor), Comunicação no INFORUM (Simpósio de Informática), 5 e 6 de Setembro 2013, Évora (Portugal), Sep. 2013.


Filipe Manuel Lemos Ferreira and Miguel Coimbra and Diogo Proença and Ana T. Freitas and Luis M. S. Russo and José Borbinha, Risk Aware Data Management in Metagenomics, 5th INForum (INForum 2013), Sep. 2013.

I. Bastos and Luís Oliveira and J. Oliveira and J. Goes and M. Medeiros Silva, Double Feedforward 0.6V LNA with High Gain and Low Noise Figure, Int. Conf. Mixed Design of Integrated Circuits and Systems (MIXDES), Jun. 2013.


10.2.4 Technical Reports


10.3 Dissertations

10.3.1 PhD Theses


10.3.2 MSc Theses


Fábio Alex Rabuske, Estudo sobre Conversores Analógico Digitais para Aplicações em RF, MSc Thesis, IST, Dec 2013.

Joana Rita Gonçalves da Cruz, Host-pathogen interaction upon infection with Listeria using NGS techniques, MSc Thesis, Dec 2013.

Paulo Miguel Curado de Carvalho, Motor de baixo momento de inércia para integração em cadeia de tração eléctrica, MSc Thesis, IST, Dec 2013.


Eduardo Cruz Francisco, Estudo e Desenvolvimento de um Modelo de Envelhecimento Aplicado a Baterias de Tração, MSc Thesis, IST, Dec 2013.


André Camões, Localização e encaminhamento geográfico em redes veiculares, MSc Thesis, IST, Oct 2013.

Miguel Antunes Mendes Ferreira, SiMD Parallelization of Profile HMMs, MSc Thesis, Instituto Superior Técnico, Universidade de Lisboa, Oct 2013.


Muhammet Orazow, Data locality aware partitioning schemes for large-scale data stores, MSc Thesis, IST, Jul 2013.


Vítor Manuel Pereira Dionísio Machado dos Reis, •Caracterização do funcionamento de uma cadeia de tração com motor síncrono alimentado através de um conversor electrónico comercial, MSc Thesis, IST, Jul 2013.


João Vitor Gomes dos Santos, Scalable Architecture for Unified Transform Coding in Embedded H.264/AVC Video Coding


Ricardo Horta, Construção de um Cockpit Organizacional para a Divisão de Operações do Estado Maior da Força Aérea, MSc Thesis, Academia da Força Aérea, Mar 2013.


10.4 Seminars

20-Dec-2013
The Organization of the Retina and Visual System
Prof Eduardo Fernandez, Instituto de Bioingenieria, Facultad de Medicina, Universidad Miguel Hernandez

18-Dec-2013
Application of RNS to Cryptography
Prof Jean-Claude Bajard, Université Pierre et Marie Curie, Paris

12-Dec-2013
Everything you always wanted to know about worst-case (but were afraid to ask)...
Helmut Graeb, Technische Universitaet Muenchen

05-Dec-2013
A data mining approach to study disease presentation patterns in Primary Progressive Aphasia.
Telma Pereira, IST DEI

04-Dec-2013
Some results with MWMR registers
H. Fauconnier, University Paris Diderot

03-Dec-2013
Towards face-to-face conversations with social robots
Joakim Gustafson, KTH

28-Nov-2013
Evaluating differential gene expression using RNA-sequencing data: a case study in host-pathogen interaction upon Listeria monocytogenes infection
Joana Cruz, IST DEI

31-Oct-2013
MetaGen-FRAME
Miguel Coimbra, IST DEI

31-Oct-2013
Unsupervised semantic structure discovery for audio
Bhiksha Raj, Carnegie-Mellon

24-Oct-2013
On Multi-class Classification Problems Using Genetic Programming
Vijay Ingalalli, IST DEI

23-Oct-2013
Tracking attention to issues as a way to learn about political systems: An Introduction to the Comparative Agendas Project
Enrico Borghetto, Universidade Nova de Lisboa

10-Oct-2013
Quick Hyper-Volume
Luis Russo, IST DEI

07-Oct-2013
Distributed Computations Using Local Broadcasts
Fabian Kuhn, University of Freiburg

26-Sep-2013
Parallel efficient alignment of reads for re-sequencing applications
Miguel Coimbra, IST DEI

17-Sep-2013
Incremental Maintenance of RDF Views of Relational Data
Vânia Vidal, Universidade Federal do Ceará
19-Jul-2013
Coupling Pattern Recognition and Signal Processing
Ahmed Hussen Abdelaziz, Institut für Kommunikationsakustik, Ruhr-Universität Bochum

19-Jul-2013
Identification of Hybrid Time-varying Parameter systems with Particle Filtering and Expectation Maximization
Andras Hartmann, IST DEI

03-Jul-2013
The Brazilian National Institute of Science and Technology for the Web: Towards a Better Understanding of Web Data
Alberto H. F. Laender, Universidade Federal de Minas Gerais

03-Jul-2013
Deterministic Scheduling for Replicated Systems
Franz Hauck, Ulm University

24-May-2013
Novel semantic approaches in Genetic Programming
Stefano Ruberto, IST DEI

10-May-2013
Equilibria in a Repeated Epidemic Dissemination Game
Xavier Vilaça, IST DEI

29-Apr-2013
Technical Deep-Dive in a Column-Oriented In-Memory Database
Martin Faust, Hasso-Plattner-Institute

26-Apr-2013
Novel semantic approaches in Genetic Programming
Stefano Ruberto, IST DEI

17-Apr-2013
Named-entity recognition in the past
Gerrit Bloothooft, Universitaet Utrecht

12-Apr-2013
Identification of microRNAs and analysis of their expression in Eucalyptus globulus
Jorge Oliveira, IST DEI

10-Apr-2013
SSL/TLS session-aware user authentication against man-in-the-middle attacks
Rolf Oppliger, eSECURITY Technologies Rolf Oppliger

05-Apr-2013
Towards OpenLogos Hybrid Machine Translation
Anabela Marques Barreiro, Inesc-ID

21-Jun-2013
Unravelling communities of ALS patients using network mining
André Carreiro, IST DEI

07-Jun-2013
Host-pathogen interaction upon infection with Listeria using NGS techniques
Joana Cruz, IST DEI

24-Jun-2013
Spoken Dialogue Systems: Progress and Challenges
Steve Young, University of Cambridge

29-Apr-2013
Technical Deep-Dive in a Column-Oriented In-Memory Database
Martin Faust, Hasso-Plattner-Institute

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05-Apr-2013
Towards OpenLogos Hybrid Machine Translation
Anabela Marques Barreiro, Inesc-ID
01-Mar-2013
NLP-triggered, ontology-based KB enrichment strategies
Nuno Silva, Instituto Superior de Engenharia do Porto (ISEP)

25-Feb-2013
Re-Thinking Web Accessibility
Vicki Hanson, University of Dundee

22-Feb-2013
Organizational Learning and Support Tools
André Luis Andrade Menolli, Universidade Estadual do Norte do Paraná

13-Feb-2013
Perceptual and automatic processing of French accents
Philippe Boula de Mareüil, LIMSI-CNRS

01-Feb-2013
Optimal Design of Distributed Sensor Networks for field reconstruction
Sérgio Pequito, IST DEI

25-Jan-2013
Partilha de dados científicos: Um contributo do LNEG
Teresa Ponce de Leão, LNEG - Laboratório de Energia e Geologia

21-Jan-2013
Ultra Low-Power Circuits
Tuan-Vu Cao, Norwegian University of Science and Technology

18-Jan-2013
Understanding the mechanisms of virulence and resistance
Felipe Lira, IST DEI
10.5 Distinguished Lecture Series

24 January 2013
Design reliable electronics in an unreliable world
Prof. Georges Gielen, Katholieke Universiteit Leuven, Belgium

11 February 2013
Symbiotic Autonomy: Robots, Humans, and the Web
Prof. Manuela Veloso, Carnegie Mellon University, USA

13 March 2013
Model Checking and the Curse of Dimensionality
Prof. Edmund M. Clarke, Carnegie Mellon University, USA

18 April 2013
The Multicore Revolution
Prof. Maurice Herlihy, Brown University, USA

21 May 2013
An integrated view on future information and communication networks and services
Prof. Daniel Kofman, Telecom ParisTech (ENST), France (in cooperation with IEEE ComSoc Portugal).

24 June 2013
Spoken Dialogue Systems: Progress and Challenges
Prof. Steve Young, University of Cambridge, UK

4 September 2013
Digital information storage in DNA
Dr. Paul Bertone, European Molecular Biology Laboratory - European Bioinformatics Institute

21 October 2013
Achieving Photoreal Digital Actors in Film and in Real-Time
Dr. Paul Debevec, Associate Director, Graphics Research, USC Institute for Creative Technologies

14 November 2013
A component and an interface algebra for dynamic networks of interactions
Prof. José Fiadeiro, Royal Holloway, University of London

2 December 2013
Repetitions in Strings
Prof. Maxime Crochemore, Institut Gaspard-Monge, Université Paris-Est