

*fet*¹¹

The European
Future Technologies
Conference and Exhibition

4-6 May 2011
Budapest, Hungary

Science *beyond* fiction

www.fet11.eu

European Commission
Information Society and Media



Introduction

Welcome to fet¹¹, the European Future Technologies Conference and Exhibition, a unique forum dedicated to future and emerging information technologies. This event brings together scientists, policy-makers, science journalists, industrialists and other stakeholders to discuss the visions, challenges and the latest breakthroughs that will form the basis for tomorrow's most exciting information and communication technologies.

Join the keynote talks and scientific sessions covering a wide range of topics, discover the latest results of ongoing projects in the hands-on exhibition and attend the launch of the flagship pilots by Neelie Kroes, and their kick-off sessions. Debate with keynote speakers and listen to ignite talks in the science café and meet with people from all over Europe in the poster sessions. And last but not least, treat yourself to a walk through the streets of the beautiful city of Budapest.

Welcome to "Science beyond fiction"!



Neelie Kroes,
Vice-President
of the European
Commission

I am excited to see the creativity and the energy that fet¹¹ brings together to discuss new challenges and opportunities in science and technology. Frontier and transformative research, as supported by FET, is a key element in Europe's 2020 strategy, as it plants the seeds for innovation and creates the knowledge workers of tomorrow which we need in order to ensure sustainable growth and jobs for the time to come. Let us discuss together how we can set Europe on the right track to be leading, strong and competitive in this fascinating and highly inspiring EU research domain.



Elisabeth Giacobino,
Programme
Conference co-chair

This conference is a celebration of multidisciplinary cross-fertilisation at the highest scientific level. It shows how Europe is full of new talent, full of visionary and grand ideas, and how this can benefit our society in the future.

I invite you to share in the engagement and creativity that define Science beyond fiction.



Rolf Pfeifer,
Programme
Conference
co-chair

"fet¹¹ is an event in that it brings together policy makers, media, and top level science. This is unique, and I invite you to take this opportunity to discuss future and emerging technologies, the great visions of today, and how we can bring the right people together to make breakthroughs that will change our lives and will enable us to face up to the big challenges of the 21st century.



Programme

09:00 - 09:45 **Keynote**

Josh Bongard, *University of Vermont, USA*

How Evolution Shapes the Way Roboticists Think

Room: Pátia

Roboticians, by necessity, are keen students of biology: we hope to create machines that are as agile, adaptive and intelligent as the organisms we see around us. However, we tend to copy the end products of evolution (compliant limbs, neural circuits, legged gaits) rather than evolutionary processes themselves (selection pressures, developmental programs). In this talk I will show how re-creating evolution in a computer can allow us to design robots automatically, rather than trying to build them manually.

09:45 - 10:15 **Plenary**

Political Welcome address

Room: Pátia

Neelie Kroes, *Vice President of the European Commission*
Zoltán Cséfalvay, *Minister of State for Economic Strategy and Parliamentary Affairs, Ministry for National Economy, Hungary*
József Pálincás, *President of the Hungarian Academy of Sciences*

10:15 - 10:20

Opening of the exhibition

Neelie Kroes, *Vice President of the European Commission*
Zoltán Cséfalvay, *Minister of State for Economic Strategy and Parliamentary Affairs, Ministry for National Economy, Hungary*

10:20 - 10:45 **Coffee break**

Rooms: Mirror corridor, Aula, Bartók corridor

10:45 - 11:00 **Plenary**

Perspective on Future and Emerging Technologies

Room: Pátia

Wolfgang Boch, *Head of Unit, FET Proactive, European Commission*
Aleš Fiala, *Head of Unit, FET Open, European Commission*

11:00 - 11:45 **Plenary**

Official Launch of FET-Flagship Pilots

Room: Pátia

fet¹¹ will mark the official launch of the FET Flagship Pilots by **Neelie Kroes**, *Vice President of the European Commission*

FET Flagships are science-driven, large-scale research partnerships pursuing a unifying goal of achieving major scientific and technological breakthroughs over a time period of approximately 10 years. In order to prepare these FET Flagships, Neelie Kroes will launch six so-called FET-Flagship Pilots. Each will deliver a FET Flagship proposal with a complete feasibility, strategic research roadmap and an implementation description by mid-2012. At that time two candidates are to be selected from the six pilots. The two fully-fledged FET Flagships are expected to start in 2013.

...✦ Speakers

Hans Lehrach, *Max Planck Institute for Molecular Genetics, Berlin, Germany (ITFoM Flagship Pilot)*
Jari Kinaret, *Chalmers University of Technology, Sweden (GRAPHENE Flagship Pilot)*
Steven Bishop, *University College London, UK (FuturICT Flagship Pilot)*
Henry Markram, *EPFL, Switzerland (Human Brain Project Flagship Pilot)*
Paolo Dario, *Scuola Superiore Sant'Anna, Pisa, Italy (RoboCom Flagship Pilot)*
Adrian Ionescu, *EPFL, Switzerland (Guardian Angels Flagship Pilot)*

Flagship Pilot Sessions

Six sessions are dedicated to introduce the FET Flagships Pilots on Thursday, 5 May.

11:45 - 13:00 **Plenary**

Panel Discussion on the topic "Large vs. Small"

Room: Pátia

"Large vs. Small" will be the motto of the moderated high-level panel discussion. Panellists will discuss, from scientists and policy makers' perspectives, how grand scientific challenge driven research and open research agendas complement each other, and their future roles in the common framework on research and innovation.

...✦ Panellists

Robert Madelin, *Director General for Information Society and Media, EC*
Jacques Stern, *Agence Nationale de la Recherche, France*
Norbert Kroo, *ERC and Hungarian Academy of Sciences, Hungary*
Paul Verschure, *University Pompeu Fabra, Spain*
Maria Da Graça Carvalho, *Member of the European Parliament*
Paul 't Hoen, *Eindhoven Technical University, The Netherlands*
Jerzy Langer, *Foreign Secretary, Academia Europaea, Poland*

...✦ Moderator

Clive Cookson, *Financial Times*

Programme

13:00 - 14:30 Lunch

Rooms: Gallery, Entrance level, Restaurant

14:00 Opening of Science Café (see page 15)

14:30 - 16:00 Parallel Sessions

Building Future Information Technologies with Artificial Atoms in Diamond

14:30 - 16:00 - Room: Bartók

Parallel Session

Find out how defects in diamonds can be put to use for the development of future nano-electronic devices. The session will be accompanied by a demonstration experiment to show how the magnetic resonance of the nitrogen-vacancy colour centre can be optically detected and applied to the measurement of weak magnetic fields.

Speakers

Jean-Francois Roch, *Ecole Normale Supérieure de Cachan, France: Overview of the field*

Daniel Twitchen, *Element 6, UK: The engineering of diamond material based on CVD growth, and defect incorporation*

Christian Eggeling, *Max-Planck-Institut für biophysikalische Chemie, Göttingen, Germany: Recent advances in optical 'nanoscopy'*

Fedor Jelezko, *Universität Ulm, Germany: How NV centers can be used for sensing magnetic and electric fields*

Session organiser

Jean-Francois Roch, *Ecole Normale Supérieure de Cachan, France*

Atoms, Photons and Entanglement for Quantum Information Technology

14:30 - 16:00 - Room: Lehar

Parallel Session

Crucial challenges in the implementation of Quantum Information Technologies call for smart strategies. This session aims to provide an overview of recent progress achieved by the combination of different photon-quantum matter approaches towards finding solutions.

Three talks will cover a variety of experimental and theoretical features. A main focus of the presentations will be to outline future scenarios, to address the problems in play and to look at the progress made so far meeting these challenges.

Speakers

Eugene Polzik, *Niels Bohr Institute, University of Copenhagen, Denmark*

Dieter Meschede, *Institut für Angewandte Physik der Universität Bonn, Germany*

Julio Barreiro, *University of Illinois at Urbana-Champaign, US*

Session organiser

Ennio Arimondo, *Università di Pisa, Italy*

The Future Museum

14:30 - 16:00 - Room: Brahms

Parallel Session

Find out how innovations from the worlds of ICT and multimedia have revolutionised the way in which museums operate. Now imagine how museums could look in the future.

The Future Museum proposes a breakthrough in the museum concept opening up the possibility of live interaction between scientists, artists, designers, intellectuals and the wider population.

Speakers

Enzo Badalotti, *Mediacontech, Milano, Italy*

Luca de Biase, *Nova-il Sole 24 ore, Italy*

Peter Greenaway, *Artist and director, UK*

Mario Ricciardi, *Faculty of Cinema and Media Engineering, Politecnico di Turin, Italy*

Sander van der Leeuw, *Department of Anthropology, Arizona State University, USA*

Session organiser

Enzo Badalotti, *Mediacontech, Milano, Italy*

Artificial Synapses: Memristors

14:30 - 16:00 - Room: Liszt

Parallel Session

The memristor promises to revolutionise non-conventional neuro-morphic computing.

40 years after its invention find out how these electronic nano-devices could hold the key to the future development of hardware Artificial Neural Networks (ANNs), what can be done with them and whether they are really the best opportunity for developing large scale, intelligent computing systems.

Speakers

Julie Grollier, *Unité Mixte de Physique CNRS-Thales, Palaiseau, France*

Bernabé Linares-Barranco, *IMSE-CNM-CSIC, Sevilla, Spain: How to compute with memristors: dedicated bio-inspired architectures*

Themis Prodromakis, *Imperial College London, UK: Titanium di-oxide memristor*

Vincent Garcia, *CNRS, Palaiseau, France: Ferroelectric memristor*

Viktor Erokhin, *University of Parma, Italy: Organic memristor*

André Chanthbouala, *Thales-TRT, Palaiseau, France: Spintronic memristor*

Yusuf Leblebici, *EPFL, Switzerland: Silicon nanowire memristors and their applications for synaptic functions*

Christian Gamrat, *CEA List-Leti, Saclay, France: Memristor: the ideal Synapse*

Session organiser

Julie Grollier, *Unité Mixte de Physique CNRS-Thales, Palaiseau, France*

Computational Social Choice

14:30 - 16:00 - Room: Mozart

Parallel Session

How should we aggregate the preferences of a group of individuals so as to arrive at an adequate collective preference, which can serve as the basis for making acceptable group decisions?

Programme

This session will provide an introduction to the new field of Computational Social Choice and demonstrate how it can contribute to addressing some of the major challenges associated with realising the next generation of decision making technologies in areas such as e-governance, electronic commerce, the semantic web, school choice, or transplant organ allocation systems.

Speakers

Peter Biro, *Institute of Economics, Hungarian Academy of Sciences*
Ioannis Caragiannis, *Department of Computer Engineering and Informatics, University of Patras, Greece*
Britta Dorn, *Faculty of Mathematics and Economics, University of Ulm, Germany*
Ulle Endriss, *Institute for Logic, Language and Computation, University of Amsterdam, The Netherlands*
Jérôme Lang, *LMSADE Laboratory, CNRS and Paris-Dauphine University, France*
Francesca Rossi, *Department of Pure and Applied Mathematics, University of Padova, Italy*

Session organiser

Ulle Endriss, *University of Amsterdam, The Netherlands*

Evolvability of Natural and Artificial Systems

14:30 - 16:00 - Room: Pátria

Parallel Session

In what sense is natural evolution open-ended and can this be replicated in artificial evolution?

A panel of experts will attempt to answer this and other questions as part of a session on the evolvability of natural and artificial systems.

Speakers

Dario Floreano, *Laboratory of Intelligent Systems, EPFL, Lausanne, Switzerland*
Mauro Santos, *Department of Genetics and Microbiology, Autonomous University of Barcelona, Spain*
Chrisantha Fernando, *School of Informatics, University of Sussex, Brighton, UK*
George Kampis, *Department of the Philosophy of Science, Eötvös University, Budapest, Hungary*

Session organiser

Eörs Szathmáry, *Collegium Budapest, Hungary*

16:00 - 16:30 Coffee break

Rooms : Mirror corridor, Aula, Bartók corridor

16:30 - 18:00 Keynote

Room: Pátria

Artur Ekert, *University of Oxford, UK and National University of Singapore*

Is the age of computation yet to begin?

The theory of classical universal computation was laid down in 1936, was implemented within a decade, became commercial within another decade,

and dominated the world's economy half a century later. This success story relied on progress in technology. As computers become faster they had to become smaller. The history of computer technology has involved a sequence of changes from one type of physical realisation to another - from gears to relays to valves to transistors to integrated circuits and so on. The unavoidable step to the quantum level will be one in this sequence; but it promises something more exciting as well. For the first time since the invention of the general purpose computer, a change in underlying hardware can give computers qualitatively new functionality. Quantum theory is already important in the design of microelectronic components. Soon it will be necessary to harness quantum theory, rather than simply take it into account. I will describe our quest to understand quantum theory, our efforts to develop quantum technology to support quantum computation, and our surprise and excitement once we discovered that nature already employs coherent quantum phenomena in biological systems. There is so much potential in this fundamentally new way of harnessing nature that it appears as though the age of computation has not yet even begun!

Gábor Proszéky, *MorphoLogic, Hungary*

The (hopefully near) future of human language technologies

Today's language technology applications usually rely on either human-designed rules (used sequentially by computers) or large amount of sequential data, that is, spoken or textual corpora. Today, computer modeling of human language abilities does not use parallel methods. In current natural language processing paradigms the notion of parallelism is almost totally missing. Multi-core processors are nowadays available even in commercial computers. On the other hand, results of brain research are quite far from existing language technology applications. Applying parallelism would lead us to a more realistic architecture for language understanding, with an increased processing speed.

18:00 - 19:00

Poster Session 1

Room: Pátria (see page 16)

20x20 presentations - Session 1

Science Café (see page 15)

20:00 - 22:00

Reception at the Palace of Miracles

Address: Budapest II., Fény utca 20-22.

Buses start from the Novotel hotel parking at 19:15



09:00 - 10:30 | Keynotes

Claire Tomlin, *UC Berkeley and Stanford University, US*

Mathematical models to help understand developmental biology and cancer

Room: Pátia

As the understanding of cellular regulatory networks grows, system dynamics and behaviors resulting from feedback effects of such systems have proven to be sufficiently complex so as to prevent intuitive understanding. Mathematical modeling in engineering and in physics or chemistry has traditionally sought to extrapolate from existing information and underlying principles to create complex descriptions of various systems, which could be analyzed or simulated, and from which further abstractions could be made. However, in studying biological systems, often only incomplete abstracted hypotheses exist to explain observed complex patterning and functions.

The challenge has become to show that enough of a network is understood to explain the behavior of the system. Mathematical modeling must simultaneously characterize the complex and nonintuitive behavior of a network, while revealing deficiencies in the model and suggesting new experimental directions. In this talk, we describe the process of modeling two biological networks: planar cell polarity in development, and treated regulatory networks in breast cancer. We demonstrate the use of the mathematical models, both in understanding the system behavior, and in suggesting new treatments.

Rodney Douglas, *ETH Zürich, Switzerland*

Constructive Cortical Computation

Room: Pátia

During the past century ever more sophisticated methods have been developed for constructing and programming computing and manufacturing machines. However, these methods are essentially forward processes that depend on intelligent human designers and programmers. They stand in stark contrast to Biology's methods of self-construction used to evoke the flexible information processor that is the mammalian neocortex. Understanding this radically different approach that uses algorithmic self-programming and construction could have enormous consequences for future computing and manufacturing technologies. In this talk we describe progress towards understanding these principles through detailed simulation of the development of the neocortex.

10:30 - 11:00 | Coffee break

Rooms: Mirror corridor, Aula, Bartók corridor

11:00 - 12:30 | Parallel Sessions

Guardian Angels for a Smarter Life (FET Flagship Pilot)

11:00 - 12:30 - Room: Bartók

Parallel Session

Discover the key concepts and technologies of Guardian Angels autonomous systems-of-systems featuring sensing, computation, and communication beyond human capabilities. Find out how Guardian Angels will provide assistance to people from infancy to old age. Foreseen are individual health support, monitoring of ambient conditions for environmental threats, and emotional man-machine interfaces. A series of selected talks will present the features of systems-of-systems and the major challenges of zero power requirements as these Guardian Angels will scavenge for energy and they will exploit ultra low power technologies. Applications scenario will be summarized by a short movie.

...❖ Speakers

Hervé Fanet, *CEA-LETI, France: Technological platform: novel functionality and disruption versus reality check*

Francis Balestra, *SINANO, France: Fundamental scientific challenges and limits for ultra low energy computation*

Christofer Hierold, *ETHZ, Switzerland: Ultra low power nano sensors*

Enrico Sangiorgi, *IUNET, Italy: Fundamental scientific challenges and limits for energy harvesting*

Kevin Sivula, *EPFL, Switzerland: Energy conversion inspired by nature*

Georges Gielen, *KUL, Belgium: Design strategies for ultra low power systems-of-systems*

Daniel Bertrand, *HiQScreen, Switzerland: Guardian Angels: breakthrough toward e-Health*

Robert Plana, *CNRS, France: Energy efficient communications*

Adrian Ionescu, *EPFL, Switzerland: One billion Euros for Zero Power Guardian Angels?*

Robocom - The Dream of Robot Companions for Citizens (FET Flagship Pilot)

11:00 - 12:30 - Room: Lehar

Parallel Session

Discover how a new generation of robot technologies is working to create Robot Companions to help out at home, at work and in hospitals. With their soft bodies and new levels of perceptual, cognitive and emotive capabilities, Robot Companions will be aware of their physical and social world and respond accordingly.

The session - in form of a "live science talk-show" will feature real robots as well as video and other multi-media material to demonstrate the Robot Companions vision.

...❖ Speakers

Paolo Dario, *Scuola Superiore Sant'Anna, Pisa, Italy*

Barbara Mazzolai, *Center of MicroBioRobotics, IIT@SSSA, Italy*

Giorgio Metta, *Italian Institute of Technology, Italy*

Pieter Roelfsema, *University of Amsterdam, Netherlands Institute for Neuroscience, The Netherlands*

Rolf Pfeifer, *Department of Informatics, ETH Zurich, Switzerland*

Giulio Sandini, *Italian Institute of Technology, Italy*

Programme

Jackie Scully, *PEALS (Policy, Ethics & Life Sciences) Research Centre, Newcastle University, UK*

Wolfram Schultz, *University of Cambridge, UK*

Paul Verschure, *University Pompeu Fabra, Barcelona, Spain*

...✦ **Session organiser**

Paolo Dario, *Scuola Superiore Sant'Anna, Pisa, Italy*

Heaven and Hell: Visions for Pervasive Adaptation

11:00 - 12:30 - Room: Brahms

Parallel Session

User heaven or user hell? Technology experts in artificial intelligence, adaptive systems, ambient environments and pervasive computing discuss the technological benefits and useful applications of pervasive adaptation, but also its potential threats.

Based on themes from the PerAda book 'This Pervasive day', and featuring authors from the PerAda projects, it will appeal to anyone interested in the personal, social, economic and political impacts of pervasive, ubiquitous and adaptive computing.

...✦ **Speakers**

Ben Paechter, *Edinburgh Napier University, UK*

Jeremy Pitt, *Imperial College London, UK*

Nikola Serbedzija, *Fraunhofer FIRST, Germany*

Katina Michael, *University of Wollongong, Australia*

The session will be chaired by **Ben Paechter**, *Edinburgh Napier University, UK*

...✦ **Session organiser**

Jennifer Willies, *Edinburgh Napier University, UK*

From a Spike-Centered Brain Universe to its Underlying Synaptic Landscape: Future Technologies for Brain Reverse Engineering and Neuroprosthetic

11:00 - 12:30 - Room: Liszt

Parallel Session

Can we break/repair the neural code by only reading/writing high-resolution precise intracellular 'words' spoken by single neurons? Or is it necessary to record/replay low-resolution 'pictures' of the extracellular population activity, as it integrates information both in time and space? Experimental brain scientists, computational neuroscientists, and experts in enabling technologies for invasive neuroprosthetics, and whoever is interested, are invited to join the debate following presentation by experts in the field.

...✦ **Speakers**

Luc Gentet, *EPFL, Switzerland*

Michele Giugliano, *University of Antwerp, Belgium*

Micha Spira, *Hebrew University of Jerusalem, Israel*

John Simeral, *Brown University, USA*

...✦ **Session organiser**

Michele Giugliano, *University of Antwerp, Belgium*

Solving Problems with Visual Analytics

11:00 - 12:30 - Room: Mozart

Parallel Session

In a world where we are bombarded by an increasing amount of data on a daily basis, time and money are wasted because we lack the ability to adequately deal with it.

Visual analytics is an emerging research discipline which aims to make the best possible use of huge information loads in a wide variety of applications by appropriately combining the strengths of intelligent automatic data analysis with the visual perception and analysis capabilities of the user.

...✦ **Speakers**

Daniel Keim, *Computer Science department of the University of Konstanz, Germany*

Margit Pohl, *Vienna University of Technology, Austria*

Gennady Andrienko, *Fraunhofer Institute LAIS, Sankt Augustin, Germany*

Giuseppe Santucci, *Department of Computer and System Science at the University of Rome "La Sapienza", Italy*

...✦ **Session organiser** **Jörn Kohlhammer**

Fraunhofer IGD, Darmstadt, Germany

Complex Systems for an ICT-enabled Energy System

11:00 - 12:30 - Room: Pátia

Parallel Session

Learn more about the ways in which Complex Systems Science has a role to play in the modelling, control, simulation, and governance of the future Energy System. This session aims to lay the foundations for the creation of a new research community able to formulate innovative approaches in the area of energy system modelling and governance, paving the way for future European-scale initiatives.

...✦ **Speakers**

Pablo Viejo, *European Institute for Energy Research, Germany*

Carlos Álvarez, *The Innaxis Research Institute, Madrid, Spain*

Nikos Hatzigargyrio, *National Technical University of Athens, Greece*

...✦ **Session organiser**

David Perez, *The Innaxis Research Institute, Madrid, Spain*

12:30 - 14:00 **Lunch**

Room: Gallery, Entrance level, Restaurant

Programme

14:00 - 15:30 Parallel Sessions

The FuturICT Knowledge Accelerator: Creating Socially Interactive Information Technologies for a Sustainable Future (FET Flagship Pilot)

14:00 - 15:30 - Room: Bartók

Parallel Session

Experts from the FuturICT flagship pilot project will discuss its aims to understand and manage complex, global, socially interactive systems, with a focus on sustainability and resilience.

Integrating ICT, Complexity Science and the Social Sciences will create a paradigm shift, facilitating a symbiotic co-evolution of ICT and society.

Speakers

Steven Bishop, *University College London, UK*
David Price, *University College London, UK*
Roland Siegwart, *ETH Zurich, Switzerland*
Dirk Helbing, *ETH Zurich, Switzerland*
Paul Lukowicz, *University of Passau, Germany*
Rosaria Conte, *Institute of Cognitive Sciences and Technologies, Rome, Italy*
László Barabási, *University of Notre Dame, Indiana, USA*

ITFoM - IT Future of Medicine (FET Flagship Pilot)

14:00 - 15:30 - Room: Lehár

Parallel Session

As data-intensive analysis and computer intensive modelling technologies become common clinical practice, IT capacity and organization will become key limiting factors in medicine. Indeed the development of a new, data-rich, individualised medicine, likely to surpass the demands of all other IT development fields.

Experts in the field will outline what is being done to develop this IT driven, data rich, individualised medicine of the future.

Speakers

Hans Lehrach, *Max Planck Institute for Molecular Genetics, Berlin, Germany*
Hans Westerhoff, *University of Manchester, UK*
Kurt Zatloukal, *Medical University of Graz, Austria*
Tim Hubbard, *Wellcome Trust Sanger Institute, UK*
Angela Brand, *Maastricht University, The Netherlands*
Peter Boyle, *International Prevention Research Institute, Lyon, France*

Session organiser **Hans Lehrach**

Max Planck Institute for Molecular Genetics, Berlin, Germany

Robots as Companions: What can we Learn from Servants and Companions in Literature, Theater, and Film?

14:00 - 15:30 - Room: Brahms

Parallel Session

Truffaldino, Sancho Pansa, Figaro, Jeeves, Schwejk, and many, many more. Authors, dramatists, film makers have given us rich pictures

of servants and their masters. The organisers invite all conference participants to experience and to explore their influence on and significance for the future of social robotics.

Speakers

Zsófia Ruttkay, *University of Twente, The Netherlands*
Markus Krajewski, *Bauhaus-University, Weimar, Germany*
Virgil Widrich, *University of Applied Arts, Vienna, Austria*

Session organiser

Robert Trapp, *Austrian Research Institute for Artificial Intelligence, Vienna, Austria*

Biological and Chemical Information Technology: Bottom-Up Chemistry and Synthetic Biology

14:00 - 15:30 - Room: Liszt

Parallel Session

Biological and chemical information technology (bio/chem IT) is one of the most vibrant and important emerging research domains in recent years, especially with the growth of research into systems and synthetic biology, artificial cells, chemical information processing, micro-electro-mechanical systems, nanotechnology and artificial intelligence. This session will present scientific results in the field, focussing on bottom-up chemistry and synthetic biology. Particular attention will be paid to bio/chem IT outside Europe, through the presentation of our plenary speaker.

Speakers

Farren Isaacs, *Yale University, US*
 Short presentations will also be given by representatives of the current core COBRA project:
Steen Rasmussen, *University of Southern Denmark, Denmark*
John McCaskill, *Ruhr University, Bochum, Germany*
Peter Dittrich, *Friedrich Schiller University, Jena, Germany*

Session organiser

Martyn Amos, *Manchester Metropolitan University, UK*

Brain-Chip Interfaces: The Present And The Future

14:00 - 15:30 - Room: Mozart

Parallel Session

Brain-chip interfacing is becoming a key and powerful technology with multiple applications to investigate neuronal and brain function and to develop new devices for therapy of neurological diseases.

This session focuses on recent achievements in Brain-Chip Interfacing and provides a general overview of world-wide progress in the field.

Speakers

Roland Thewes, *Technical University of Berlin, Germany*
Roeland Huys, *IMEC, Leuven, Belgium*
Stefano Vassanelli, *University of Padova, Italy*
Paul Verschure, *University Pompeu Fabra, Barcelona, Spain*
Wolfgang Eberle, *IMEC, Leuven, Belgium*

Session organiser

Stefano Vassanelli, *University of Padova, Italy*

Programme

Quantum Effects in Biology and their Applications to Light Harvesting and Sensing

14:00 - 15:30 - Room: Pátia

Parallel Session

What is the role that quantum effects play in biological functions, and how can this understanding help us develop novel devices, namely more efficient solar cells and finer sensing?

Leading experts in the field address the question of detecting and understanding the role of quantum effects in biological systems, including its more fundamental and theoretical aspects.

Speakers

Greg Engel, *University of Chicago, USA*

Martin Plenio, *University of Ulm, Germany*

Luca Turin, *BSRC Fleming, Athens, Greece*

Session organiser

Yasser Omar, *CEMAPRE, ISEG, Technical University of Lisbon, Portugal*

15:30 - 16:00 Coffee break

Rooms : Mirror corridor, Aula, Bartók corridor

16:00 - 17:30 Parallel Sessions

Graphene-Driven Revolutions in ICT and Beyond (FET Flagship Pilot)

16:00 - 17:30 - Room: Bartók

Parallel Session

Find out how graphene has the potential to make a profound impact in ICT. Integrating graphene components with silicon-based electronics, and gradually replacing silicon in some applications, allows not only substantial performance improvements, but also enables completely new applications.

The session will feature presentations on graphene science and technology and on the organization of a pilot project to develop the research agenda for the flagship initiative: Graphene-Driven Revolutions in ICT and Beyond.

Speakers

Andrea Ferrari, *Cambridge University, UK*

Jari Kinaret, *Chalmers University, Sweden*

Vladimir Falko, *Lancaster University, UK*

Jani Kivioja, *NOKIA, Finland*

Session organiser

Jari Kinaret, *Chalmers University, Sweden*

The Human Brain Project (FET Flagship Pilot)

16:00 - 17:30 - Room: Lehar

Parallel Session

Find out how the Human Brain Project is working to create the informatics, modeling and supercomputing technologies required to build biologically detailed models of the human brain.

The HBP team will present the project's goals, rationale and strategy and explore its potential impact, including the possibility of a new generation of brain-enabled robots.

Speakers

Henry Markram, *EPFL, Switzerland: Introducing the HBP*

Sten Grillner, *Karolinska Institutet, Sweden: Brain simulation for a new kind of neuroscience*

Thomas Lippert, *Jülich Supercomputing Centre, Germany: Brain simulation and the future of supercomputing*

Richard Frackowiak, *CHUV, Switzerland: Brain simulation for the diagnosis and treatment of brain disease*

Kris Verstreken, *IMEC, Leuven, Belgium: New interfaces to the brain*

Karlheinz Meier, *University of Heidelberg, Germany: Brain simulation as a source of neuromorphic technology*

Alois Knoll, *Technical University Munich, Germany: Brain simulation and robotics*

The City in Cinema: How Popular Culture can Influence Research Agendas

16:00 - 17:30 - Room: Brahms

Parallel Session

Where can researchers find inspiration for the transformative applications, concepts and infrastructures that they believe will characterise the next decade?

One approach to predicting the future is to reflect on the visions of the future that have been proposed in the past, and question how these visions are actively shaping our present. This session looks at the way in which cinema's portrayal of the future city has been a source of inspiration for scientists, technologists and commentators.

Speakers

Michael Smyth, *Edinburgh Napier University, UK*

Ingi Helgason, *Edinburgh Napier University, UK*

Ivica Mitrovi, *Arts Academy, University of Split, Croatia*

Gianluca Zaffiro, *Telecom Italia, Torino, Italy*

Session organiser

Ingi Helgason, *Edinburgh Napier University, UK*

Programme

Talking with Chemicals: Challenges of Biomimetic Infochemical Communication

16:00 - 17:30 - Room: Liszt

Parallel Session

Find out about a new form of biomimetic chemical communication with a demonstration involving both robots and insects. Speakers will provide an overview of the biological and technological inspiration for a project that aims to demonstrate how this new class of technology could be realized. Hear the latest advances and convergence of expertise in the fields of pheromone biochemistry, molecular biology, neuroscience, microengineering and bioelectronics.

Speakers

Bill Hansson, *Max Planck Institute of Chemical Ecology, Jena, Germany*

Paul Verschure, *University Pompeu Fabra, Barcelona, Spain*

Shannon Olsson, *Max Planck Institute of Chemical Ecology, Germany*

Zoltan Racz, *University of Warwick, Coventry, UK*

Session organiser

Zoltan Racz, *University of Warwick, Coventry, UK*

Agent Based Modeling

16:00 - 17:30 - Room: Mozart

Parallel Session

What are the achievements and possibilities for Agent Based Modeling, as applied in the context of social sciences, economics and finance, and what are its weak points?

Leading exponents in the field will lead a theoretical discussion while the demands and expectations of practitioners and decision makers will be highlighted by a senior European official.

Speakers

Nigel Gilbert, *University of Surrey, UK*

Domenico Delli Gatti, *Catholic University of Milan, Italy*

Doyne Farmer, *Santa Fe Institute, New Mexico, USA*

Werner Röger, *DSGE modeling unit, Directorate General for Economic and Financial Affairs, European Commission*

Session organiser

Imre Kondor, *Eötvös University, Budapest, Hungary*

Soft Robotics: Theories and Technologies

16:00 - 17:30 - Room: Pátia

Parallel Session

In contrast to the conventional robotics research, the investigations of Soft Robotics focus on the use of soft and deformable materials in the robot bodies, dynamic changes of morphology and mechanical passive dynamics for agile motor capabilities, and sensory-motor control for gentle system-environment interactions. In this session, we discuss how Soft Robotics has been developed in the last decades, what progress have been made and what stage are we at now. This session brings together leading scientists to discuss strategic research collaborations together with important theoretical and technological issues which will lead to high impact applications and innovation in the near future.

Plenary speaker

Hod Lipson, *Cornell University, USA*

Showcase of technologies

Cecilia Laschi, *Scuola Superiore Sant'Anna, Italy*

Dario Floreano, *EPFL, Switzerland*

Fumiya Iida, *ETH Zurich, Switzerland*

Panel discussion

Paolo Dario, *Scuola Superiore Sant'Anna, Italy*

Rolf Pfeifer, *University of Zurich, Switzerland*

Josh Bongard, *University of Vermont, USA*

Session organiser

Fumiya Iida, *Bio-Inspired Robotics Lab, ETH Zurich, Switzerland*

17:30 - 19:00

Poster Session 2

Room: Pátia (see page 17)

20x20 presentations - Session 2

Science Café (see page 15)

20:00 - 23:00

Conference Dinner: Boat Európa

Address: Budapest I., Szilágyi Dezső rakpart/quay

Buses start from the Novotel hotel parking at 19:15



Programme

09:30 - 10:15 **Keynote**

John Pendry, *Imperial College London, UK*

The Science of Invisibility

Room: Pátia

Refractive materials give limited control of light: we can fashion lenses, and construct waveguides, but complete control is beyond simple refracting materials. Ideally we might wish to channel and direct light as we please just as we might divert the flow of a fluid.

Manipulation of Maxwell's equation shows that we can achieve just that and metamaterials open the door to this new design paradigm for optics, providing the properties required to give complete control of light. One potential application would be to steer light around a hidden region, creating a cloak of invisibility.

10:15 - 10:45 **Coffee break**

Rooms: Mirror corridor, Aula, Bartók corridor

10:45 - 12:15 **Parallel Sessions**

Fundamental Frontiers of Quantum Science and Technology

10:45 - 12:15 - Room: Bartók

Parallel Session

The session focuses on modern advances in the foundations of quantum physics and a selection of routes towards new quantum technologies.

It explores the current frontiers in basic research with complex quantum systems, covering photonic, atomic, molecular and micromechanical systems as well as challenges for quantum theory.

Speakers

Anton Zeilinger, *University of IQOQI Vienna, Austria: Quantum science and technology: exciting fundamental challenges and opportunities*

Domenico Giulini, *University of Hannover, Germany: The impact of gravity on quantum evolution*

Jean-Michel Raimond, *ENS Paris, France*

Angelo Bassi, *University of Trieste, Italy*

Antoine Heidmann, *ENS Paris, France: Radiation pressure, photons and mechanical resonators: towards quantum optomechanics*

Markus Arndt, *University of Vienna and Vienna Center for Quantum, Austria: Quantum information in molecular quantum optics: from Schrödinger cats to quantum sensing*

Session organiser

Markus Arndt, *University of Vienna and Vienna Center for Quantum Science and Technology, Austria*

Sustainable ICT: Micro and Nanoscale Energy Management

10:45 - 12:15 - Room: Lehar

Parallel Session

ICT energy issues form the basis of this session which brings together international experts interested in the realization of efficient low-power ICT devices.

What are the basic mechanisms behind the heat production and how can we take advantage of the fluctuations instead of avoiding them? The aim is to understand the energy management physical mechanisms at nanoscale with a view to setting the bases for a new thermodynamics of ICT devices.

Speakers

Leonardo Alfonsi, *European Science Events Association, Austria*

Adrian Ionescu, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*

Fabio Marchesoni, *Università di Camerino, Italy*

Bruno Michel, *ETH Zurich / IBM Research, Switzerland*

Eric Pop, *Univ Illinois, & Beckman Inst, Urbana, USA*

Georgios Fagas, *Tyndall Institute, Ireland*

Ralph Stübner, *European Commission, ICT-FET Proactive*

Session organiser

Luca Gammaitoni, *Università di Perugia, Italy*

Pervasive Socio-Technical Fabric

10:45 - 12:15 - Room: Brahms

Parallel Session

Leading experts in their field outline the challenges to pervasive systems research as well as looking ahead to the next grand challenge: Pervasive Socio-Technical Fabric.

The session will also include a discussion on the Pervasive Adaptation Research Agenda Book which has been compiled by collecting about 100 research issues and challenges from not only, outstanding European researchers, but also from the whole worldwide scientific community, as well as from industrial stakeholders.

The proposed networking session will take the form of a live debate, primed by short (7 minute) talks by four experts in the field who will each outline research challenges towards Socio-technical Pervasive Fabric from their own background.

Speakers

Norbert Streitz, *Smart Future Initiative, Germany*

Albrecht Schmidt, *University of Duisburg-Essen, Germany*

Nigel Davies, *University of Arizona, US and Lancaster University, UK*

Alois Ferscha, *University of Linz, Austria*

Session organiser

Alois Ferscha, *University of Linz, Austria*

Programme

Vision Restoration and Vision Chip Technologies

10:45 - 12:15 - Room: Liszt

Parallel Session

Find out how bionic vision devices could help blind people to regain some of their sight. This session will look at how retinal implants, bionic glasses and the genetic modification of retinal cells to recreate light sensitivity can all help with vision restoration.

The session will also look at how vertically integrated vision chip technology is bringing about a revolution in the design of artificial vision systems.

The session is jointly chaired by **Ákos Kusnyerik** and **Ákos Zarándy**

Speakers

Botond Roska, *Friedrich Miescher Institute for Biomedical Research, Switzerland*

Ákos Kusnyerik, *Rózsakert Medical Center, Hungary*

Angel Rodriguez-Vazquez, *Instituto de Microelectronica de Sevilla - CNM-CSIC, Spain*

Kristof Karacs, *PPKE Információs Technológiai Kar, Hungary*

Ákos Zarándy, *MTA SZTAKI, Budapest, Hungary*

Session organiser

Ákos Zarándy, *MTA SZTAKI, Budapest, Hungary*

Innovation, Sustainability and ICT

10:45 - 12:15 - Room: Mozart

Parallel Session

Cascades of innovation can take society in directions that nobody intended beforehand and that are very hard to adjust en route. They combine force with a lack of control in a way that is unsettling even when the effects seem mostly positive, but can be disastrous when their destructive potentials dominate.

Find out what steps are being taken to consolidate a deeper understanding of the dynamics of innovation cascades and the implications of this understanding for the design of innovation policy processes that monitor them.

Speakers

David Lane, *University of Modena and European Center for Living Technology, Italy*

Sander van der Leeuw, *School of Sustainability, Arizona State University and Santa Fe Institute, USA: Core ideas of INSITE on Innovation and Sustainability*

Claes Andersson, *Chalmers Institute of Technology, Sweden: Modeling pragmatics for innovation policy*

Filippo Addarii, *Euclid Network, London, UK*

Alberto Massini-Zannetti, *TheHub, London and Milano, Italy: Social innovation*

Session organiser

David Lane, *University of Modena, Italy*

Robots Interacting with Humans – Embodied Intelligence for Better Robots

10:45 - 12:15 - Room: Pátia

Parallel Session

Can robots move towards becoming a companion in everyday life? Experts in the field explore design and control ideas for a new generation of robots that can co-exist and co-operate with people and get much closer to the human manipulation and locomotion performance than today's robots do.

Speakers

Alin Albu-Schäffer, *DLR, German Aerospace Center, Germany*

Dino Accoto, *Campus Bio-Medico University, Roma, Italy*

Antonio Bicchi, *University of Pisa, Italy*

Maria Chiara Carrozza, *Scuola Superiore Sant'Anna, Pisa, Italy*

Herman van der Kooij, *Twente University, Enschede, The Netherlands*

Bram Vanderborght, *Vrije Universiteit Brussel, Belgium*

Session organiser

Alin Albu-Schäffer, *DLR, German Aerospace Center, Oberpfaffenhofen, Germany*

12:15 - 14:00

Lunch

Rooms: Gallery, Entrance level, Restaurant

14:00 - 14:45

Keynote

Jean-Philippe Bouchaud, *Capital Fund Management, ESPCI Paris Tech, Ecole polytechnique, France*

The endogenous dynamics of markets: price impact and feedback loops

Room: Pátia

We review the evidence that the erratic dynamics of markets is to a large extent of endogenous origin, i.e. determined by the trading activity itself and not due to the rational processing of exogenous news. In order to understand why and how prices move, the joint fluctuations of order flow and liquidity – and the way these impact prices – become the key ingredients. Impact is necessary for private information to be reflected in prices, but by the same token, random fluctuations in order flow necessarily contribute to the volatility of markets. Our thesis is that the latter contribution is in fact dominant, resulting in a decoupling between prices and fundamental values, at least on short to medium time scales. We argue that markets operate in a regime of vanishing revealed liquidity, but large latent liquidity, which would explain their hyper-sensitivity to fluctuations. More precisely, we identify a dangerous feedback loop between bid-ask spread and volatility that may lead to microliquidity crises and price jumps. We discuss several other unstable feedback loops that should be relevant to account for market crises: imitation, unwarranted quantitative models, pro-cyclical regulation, etc.

Friday 6 May 2011

Programme

14:45 - 15:15 **Plenary**

Awards ceremony

Room: Pátria

Awards will be handed over to the 3 best exhibits and posters resulting from the vote of the conference participants.

15:15 - 15:30 **Plenary**

Political closing address

Room: Pátria

Zoran Stančić, *Deputy Director General for Information Society and Media, European Commission*

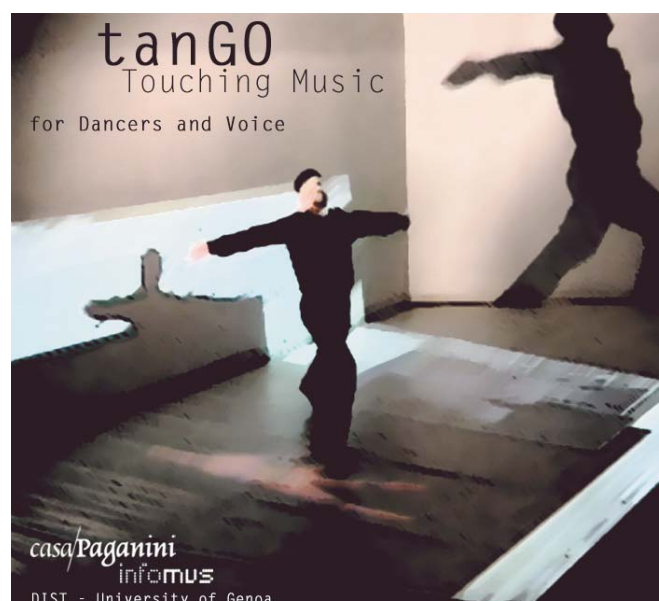
Tamás Fellegi, *Minister for National Development, Hungary*

15:30 - 16:00 **Plenary**

Closing performance

Room: Pátria

“tanGO - Touching Music”, an artistic performance for dancers and voice, Casa Paganini – InfoMus, University of Genoa.



Science Café Programme

The Science Café is the casual meeting place for discussions at fet¹¹. Anyone can participate, or even start their own discussion. The Science Café will be opened during the whole conference and host inspiring discussions alternating with ignite-style 20x20 presentations on Future and Emerging Technologies.

Wednesday 4 May 2011

14:00 - 14:45 Discussion with

Josh Bongard, *University of Vermont, USA*

“Crowdsourcing Science(?)”

How the wisdom of the crowd can be harnessed to invigorate robotics research in particular, and 21st century science in general?

15:00 - 15:45 Discussion with

Robert Madelin, *Director General for Information Society and Media, EC*

“What more should be done to empower Young Scientists in Europe?”

18:00 - 19:00 Discussion with

Ignite Talks: Your ideas for Future Information Science and Technology

20x20 presentations - Session 1

1. Michael Smyth, UrbanIXD: An inter-disciplinary network
2. István Fehérvári, Complexity on the workbench
3. Tatiana Ryabukha, On Interplay Statistical Mechanics and Life Sciences in Globalization Perspective
4. Giovanni E Pazienza, The Future of Computation
5. Cyril Velikanov, Mass Online Deliberation: How to Make it a Reality?
6. Alan Winfield, Can Robots teach us anything about Culture?
7. Laura Margheri, The octopus: biomechanical measurements of a biological model for novel soft-robotics design principles

Thursday 5 May 2011

10:45 - 11:30 Discussion with

Artur Ekert, *University of Oxford, UK and National University of Singapore*

“Can information technology avoid quantum revolution?”

13:15 - 14:00 Discussion with

Rodney Douglas, *ETH Zürich, Switzerland*

“Can technology mimic biological self-construction?”

15:45 - 16:30 Discussion with

Claire Tomlin, *UC Berkeley and Stanford University, USA*

“Humans and automation: how do we design automated systems that work well with people?”

17:30 - 19:00 Discussion with

Ignite Talks: Your ideas for Future Information Science and Technology

20x20 presentations - Session 2

1. Janos Perczel, Invisibility Cloaking
2. Ozgur Akan, There's a Plenty of Room for Communication Networks at the Bottom!
3. Ignacio Llatser, Graphene-based Wireless Communication Networks at the Nanoscale
4. Greet Bilsen, Pervasive ICT: The quest for low energy and privacy
5. Andrea Vitaletti, The "dark side" of Green Computing
6. Virginia Dignum, CoSA: next generation social cognitive, situational awareness to support decision making
7. Serge Kernbach, Bio- and Chemo- Hybrid Robotics: a Way of Approaching Synthetic Life?
8. Pavel Kordik, Collaborative Interactive Evolution in Knowledge Discovery
9. Robert Wechsler, Music Through Movement - an Intuitive Expression Tool for Persons with Handicaps

Friday 6 May 2011

13:15 - 14:00 Discussion with

Gábor Prószéky, *Morphologic, Hungary*

“Research and business: between the lab and the start-up”

The Science Café is animated with the support of László Bacsárdi and István Lám from Budapest University of Technology and Economics.

Posters

Poster Session 1

Wednesday 4 May 18:00 - 19:00

Room: Pátria

- 1 Model of perception by the electric sense: application for the navigation of underwater vehicles
[Frédéric Boyer *et al.*](#)
- 2 Weakly electric fish as models for underwater robots: the use of active electrolocation for the perception of 3-dimensional objects in complex environments
[Katharina Behr *et al.*](#)
- 3 From Fermat's principle to invisibility
[Janos Perczel *et al.*](#)
- 4 Activity recognition in opportunistic sensors environments
[Daniel Roggen *et al.*](#)
- 5 Theoretical simulations on electric properties of CNT-Me and GNR-Me interconnects using effective media approach
[Yuri Shunin *et al.*](#)
- 6 Self-aware pervasive service ecosystems
[Franco Zambonelli *et al.*](#)
- 7 Unipolar nitride photonic devices
[Charlotte Croquet *et al.*](#)
- 8 Automated dialogue-based ontology elicitation
[Eugeniu Costetchi *et al.*](#)
- 9 A role for spiral waves in visual attention?
[Nick Wilkinson *et al.*](#)
- 10 Affordable supercomputing for data mining applications
[Andras Benczur *et al.*](#)
- 11 VIATORS - Variable Impedance ACTuation systems embodying advanced interaction behaviors
[Alessandra Parravicini *et al.*](#)
- 12 TRAMS Project: variability and reliability of RAM memories in sub-22nm bulk-CMOS technologies
[Antonio Rubio *et al.*](#)
- 13 Terrestrial locomotion modeling bio-inspired by elongated animals
[Mathieu Porez *et al.*](#)
- 14 Artificial bivalves
[Daniel Germann *et al.*](#)
- 15 Applying simulation & computation to innovation research
[Petra Ahrweiler *et al.*](#)
- 16 Current trends for 4d space-time topology for semantic flow segmentation
[Kresimir Matkovic *et al.*](#)
- 17 Understanding Science 2.0: crowdsourcing and open innovation in the scientific method
[Thierry Buecheler *et al.*](#)
- 18 A novel multisite silicon probe for laminar neural recordings
[Richárd Fiáth *et al.*](#)
- 19 Mass production of silicon MOS-SETs: can we live with nano-devices' variability?
[Marc Sanquer *et al.*](#)
- 20 Reflective Assistance - Pervasive Adaptation in Real Life Computing
[Andreas Schroeder *et al.*](#)
- 21 From Sensorimotor Knowledge to Abstract Symbolic Representations
[Marek Rucinski *et al.*](#)
- 22 Electrically controllable magnetoresistance switching in multifunctional organic based spin-valve devices
[Mirko Prezioso *et al.*](#)
- 23 Organic memristor based on the composite materials: conducting and ionic polymers gold nanoparticles and graphenes
[Konstantin Gorshkov *et al.*](#)
- 24 Adaptive properties of stochastic memristor networks: a computational study
[Rodrigo Sigala *et al.*](#)
- 25 Towards a THz (terahertz) room-temperature integrated parametric source
[Giuseppe Leo *et al.*](#)
- 26 Ubiquitous tracking in the medical environment
[Tamas Haidegger *et al.*](#)
- 27 BOVINOSE: pheromone-based sensor system for detecting estrus in dairy cows
[Wim Wiegerinck *et al.*](#)
- 28 Supermodeling by combining imperfect models
[Ljupco Kocarev *et al.*](#)
- 29 Quilt: interactive publications
[Piotr Nowakowski *et al.*](#)
- 30 eMorph: towards neuromorphic robotic vision
[Chiara Bartolozzi *et al.*](#)
- 31 This pervasive day: creative interactive methods for encouraging public engagement with FET research
[Ingi Helgason *et al.*](#)

- 32 THz detection by thermopile antenna
Béla Szentpáli *et al.*
- 33 Computational modeling of visual selective attention
Kleanthis Neokleous *et al.*
- 34 FOCUS: a way towards single molecule activation and computing
Donato Ramani *et al.*
- 35 High channel count electrode system to investigate thalamocortical interactions
Domonkos Horvath *et al.*
- 36 The shanghAI lectures: connecting continents in cyberspace
Nathan Labhart *et al.*
- 37 Information recording in photosensitive photonic cholesteric liquid crystals
Andro Chanishvili *et al.*
- 38 Infants and iCubs: applying developmental psychology to robot shaping
Mark Lee *et al.*
- 39 The state trajectory of cell using renyi entropy coefficients
Jan Urban *et al.*
- 40 Analyzing the quantum based satellite communications
Laszlo Bacsardi *et al.*
- 41 Apparent moving sensation recognition for prosthetic applications
Alejandro Hernandez Arieta *et al.*
- 42 Scaling laws in robotics
Konstantinos Dermitzakis *et al.*
- 43 The SCENIC project: environment-aware sound sensing and rendering
Augusto Sarti *et al.*
- 44 CURVACE - CURVed artificial compound eyes
Ramon Pericet-Camara *et al.*
- 45 Medical visual information retrieval based on multi-dimensional texture modeling
Adrien Depeursinge *et al.*
- 46 Flexible rehabilitation robots through multiple intention detection
Stefano Marco Maria De Rossi
- 47 Co-evolution of morphology and control of a wearable robot for locomotion
Jesse van den Kieboom *et al.*
- 48 Actuation and sensing properties of electroactive polymer whiskers
Nicolas Festin *et al.*

Poster Session 2

Thursday 5 May 17:30 - 19:00

Room: Pátia

- 49 Adiabatic quantum computing simulations using GPGPU
Salvador Venegas-Andraca *et al.*
- 50 Expression of insect olfactory receptors for biosensing on SAW sensors
Melissa Jordan *et al.*
- 51 How to harness the dynamics of a soft body
Kohei Nakajima *et al.*
- 52 Learning a curvature dynamic model of an octopus-inspired soft robot arm using flexure sensors
Naveen Kuppaswamy *et al.*
- 53 Photonic nanoarchitectures in butterfly scales allowing species identification
Gábor Piszter *et al.*
- 54 Correlations topology and efficiency in LCHII
Paolo Giorda *et al.*
- 55 Nonlinear kinetic energy harvesting
Flavio Travasso *et al.*
- 56 Building simple formations in large societies of tiny mobile artifacts
Bastian Degener *et al.*
- 57 Quantum Theory-Inspired Search
Massimo Melucci *et al.*
- 58 Potential of social modelling in socio-technical systems
Kashif Zia *et al.*
- 59 Physical measurement of brain perception abilities. Foundations of a working methodology for the design of "intelligent" beings
Sara Lillian Gonzalez Andino
- 60 Adhesion mechanisms inspired by octopus suckers
Francesca Tramacere *et al.*
- 61 Certified complexity
Dominic Mulligan *et al.*
- 62 A chemoemitter system mimicking chemical communication in insects
Angel Guerrero *et al.*
- 63 An innovative approach to diffuse optical tomography using code division multiplexing
Gianluca Berrettini *et al.*

Posters

- 64 Machine learning optimization of evolvable artificial cells
Filippo Caschera *et al.*
- 65 Models of physical intelligence
Martin Hanczyc *et al.*
- 66 Real time visual attention and its impact on the computer vision products
Vikram Tadmeri Narayan *et al.*
- 67 A bio-inspired fuzzy agent clustering algorithm for search engines
Radu Gaceanu *et al.*
- 68 First order processing of complex olfactory information in the moth brain
Linda Kuebler *et al.*
- 69 Sensitivity analysis of bacterial chemotaxis models
Judit Danis *et al.*
- 70 First steps towards artificial culture in robot societies
Alan Winfield *et al.*
- 71 Satellite- and ground-based temperature observations used in assessing the urban heat island phenomena
Enikő Lelovics *et al.*
- 72 Methodological bridges for complex systems
Emanuela Merelli *et al.*
- 73 Model-based analysis of functional connectivity during associative learning in schizophrenia
Mihály Bányai *et al.*
- 74 Biologically inspired computation for chemical sensing
Jordi Fonollosa *et al.*
- 75 iSense: a portable ultracold-atom-based gravimeter
Vincent Boyer *et al.*
- 76 Impact of body parameters on dynamic movement primitives for robot control
Cristiano Alessandro *et al.*
- 77 CEEDs: unleashing the power of the subconscious
Jane Lessiter *et al.*
- 78 Sipping science in a café
Bagnoli Franco *et al.*
- 79 Influence of slow oscillating transcranial direct current stimulation (so-tDCS) on electroencephalogram and cognitive performance
Isabella von Mengden *et al.*
- 80 Theoretical study of the emission of light stimulated by phonons in indirect bandgap semiconductor
José María Escalante Fernández
- 81 Phonon storage of optical pulses in silicon phoXonic chips
Jean-Charles Beugnot *et al.*
- 82 HOMM. ICT for hands-on laboratories
Margherita Russo *et al.*
- 83 Detection of ligand-elicited secondary cellular responses using surface acoustic wave biosensors
Zoltan Racz *et al.*
- 84 Novel smart concepts for designing swimming soft microrobots
Lucia Beccai *et al.*
- 85 A robotic model of the human neuro-musculo-skeletal system
Nicola Vitiello *et al.*
- 86 CYBEREMOTIONS – collective emotions in cyber-space
Janusz Holyst *et al.*
- 87 Towards a next-generation multimechanics simulation environment
Nathan Quinlan *et al.*
- 88 Do-it-yourself environmental sensing
Radka Peterova *et al.*
- 89 Novel nature inspired techniques in medical data mining
Miroslav Bursa *et al.*
- 90 Freestanding functionalized nanofilms for biomedical applications
Virgilio Mattoli *et al.*
- 91 Exploiting tera-device computing challenges and possibilities
Antonio Portero *et al.*
- 92 From the virtual to the robotic: bringing emoting and appraising agents into reality
Kiril Kirayzov *et al.*
- 93 Energy efficiency of robot locomotion increases proportional to weight
Jørgen Christian Larsen *et al.*
- 94 Control architecture for generating locomotion patterns for robots with different morphologies
Soha Pouya *et al.*
- 95 Modeling and analyzing creative communication within groups of people: the artistic event at fê^t
Antonio Camurri *et al.*
- 96 MicroElectricImaging: Inverse solution for localization of single neuron currents based on extracellular potential measurements
Zoltán Somogyvári *et al.*

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Samuel Réthoré

Jean-Guilhem Rouel

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Gusztáv Hencsey

Viktor Richter

Exhibition

Stand 1: Brain-Computer Interaction

✦ Contact: **José del R. Millán**

Stand 2: The future of biomimetic machines

✦ Contact: **Anna Mura**

Stand 3: Non visual floor augmentations

✦ Contact: **Federico Fontana**

Stand 4: Restoring vestibular functions using an implantable neuroprosthesis

✦ Contact: **Silvestro Micera**

Stand 5: OCTOPUS - Novel Design Principles and Technologies for a New Generation of High Dexterity Soft-bodied Robots Inspired by the Morphology and Behaviour of the Octopus

✦ Contact: **Cecilia Laschi**

Stand 6: CyberRat: High Resolution Bi-directional Brain-Chip Interface

✦ Contact: **Stefano Vassanelli**

Stand 7: Single Photon Imaging: from Dream to Reality

✦ Contact: **Claudio Bruschini**

Stand 8: Pd-net - Towards Future Pervasive Display Networks

✦ Contact: **Nigel Davies**

Stand 9: ANGELS Reconfigurable eel like robot with electric sense

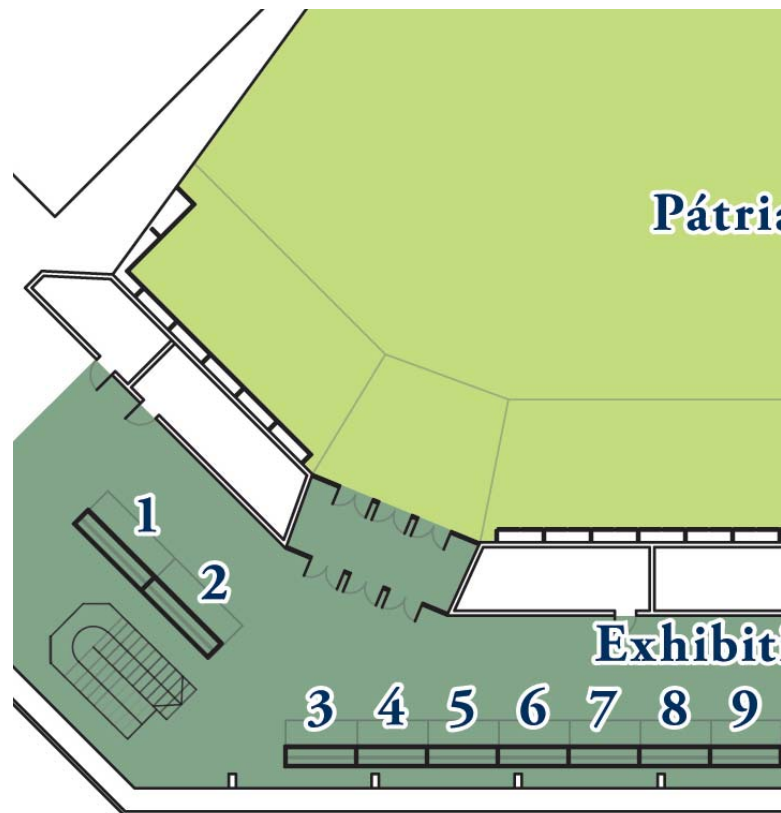
✦ Contact: **Alexis Girin**

Stand 11: Swimming bio-inspired artefacts with 3D vision

✦ Contact: **Stefano Orofino**

Stand 12: Synthetic Pathways to Bio-inspired Information Processing

✦ Contact: **Viktor Erokhin**



Stand 13: Acroban the Humanoid: Playful and Compliant Physical Human-Robot Interaction

✦ Contact: **Olivier Ly**

Stand 14: Brain-Inspired Computing - Theory, Technology and Education

✦ Contact: **Björn Kindler**

Stand 15: A new kind of robot: ECCEROBOT

✦ Contact: **Owen Holland**

Stand 16:

Future technologies to support collaborative solutions for grand challenges (Biological water safety, Augmented collaboration, e-Infrastructures for science)

- Fluorescence Digital Holographic Microscope for Biological Water safety Inspection System

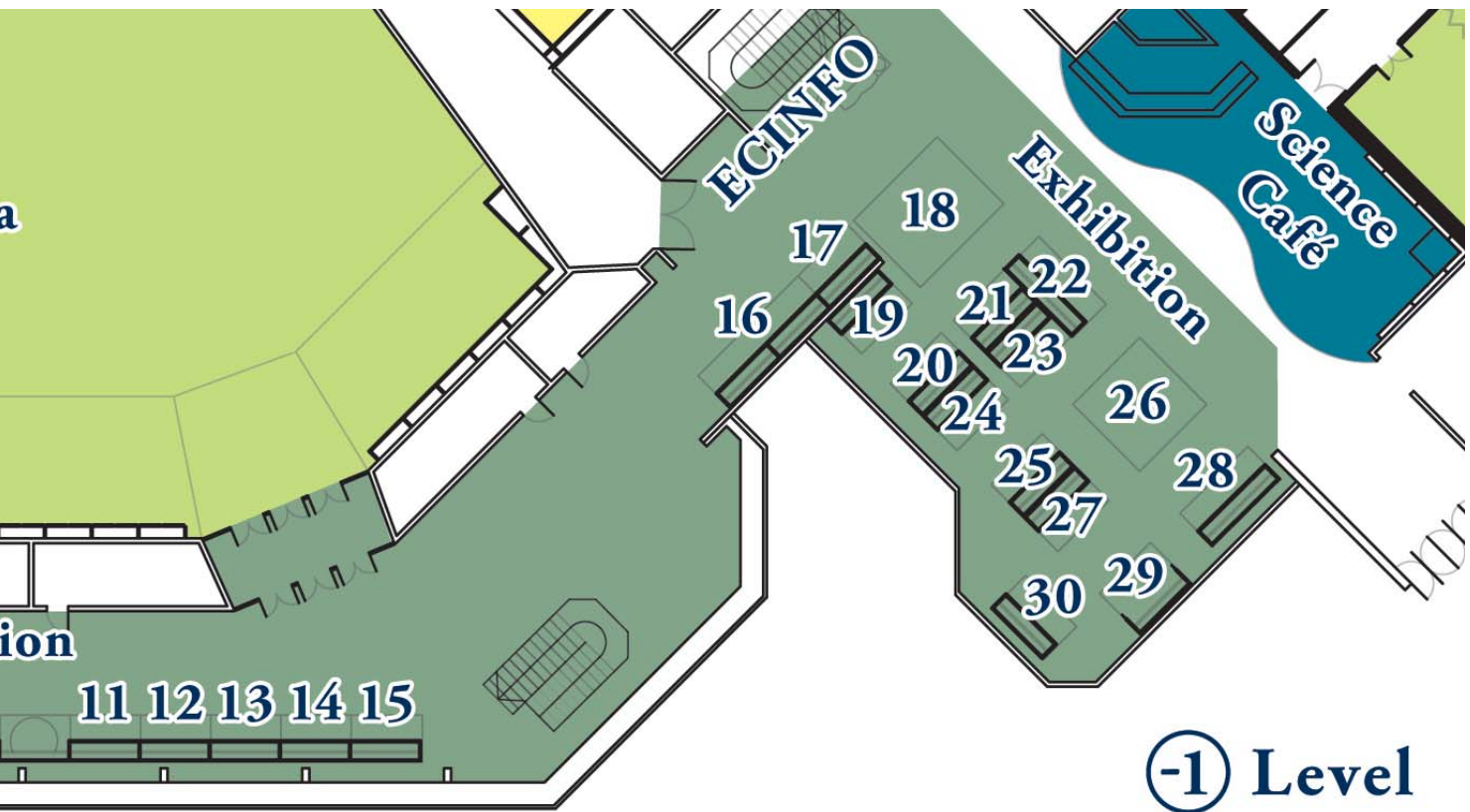
✦ Contact: **Szabolcs Tökés**

- 3D Virtual Collaboration Arena

✦ Contact: **Péter Galambos**

- 21st Century Fuel for Research and Development

✦ Contact: **Robert Lovas**



① Level

Stand 17: Energy harvesting for powering wireless ICT devices

✦ Contact: [Luca Gammaioni](#)

Stand 18: Swarmanoid

✦ Contact: [Marco Dorigo](#)

Stand 19: Exploring the Quantum world: from Games to Diamond Qubits and Secure Quantum Communication

✦ Contact: [Kamna Pruvost](#)

Stand 20: Frontiers of Nanoscale, Opto- and Electro-Mechanical Technologies

✦ Contact: [Markus Aspelmeyer](#)

Stand 21: Graphene based nanoelectronic devices

✦ Contact: [Daniel Neumaier](#)

Stand 22: BIOMimetic Technology for vibrissal ACtive Touch (BIOTACT)

✦ Contact: [Tony Prescott](#)

Stand 23: Living Knowledge diversity-aware technologies

✦ Contact: [Vincenzo Maltese](#)

Stand 24: The Eye, the Doctor and the Engineer

✦ Contact: [Ákos Kusnyerik](#)

Stand 25: Browsing the digital traces of science

✦ Contact: [David Chavalarias](#)

Stand 26: Diving into the Internet

✦ Contact: [Jorge Louçã](#)

Stand 27: Adaptive Networked Societies of Tiny Artefacts

✦ Contact: [Ioannis Chatzigiannakis](#)

Stand 28: Pervasive Adaptation: it's here!

✦ Contact: [Jennifer Willies](#)

Stand 29: Interview corner

✦ Contact: [Jennifer Willies and Stephen Dunne](#)

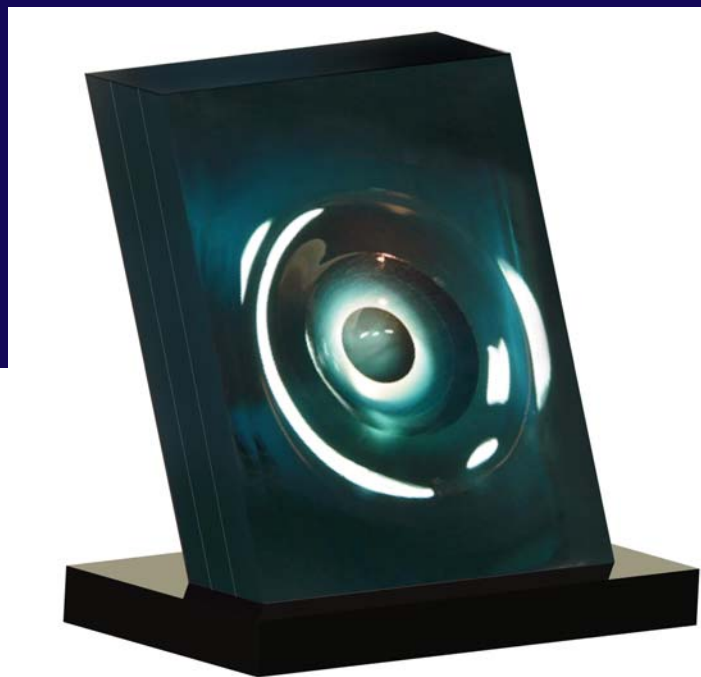
Stand 30: Starlab, a high-tech SME in FET

✦ Contact: [Stephen Dunne](#)

Vote for the Best Exhibit and the Best Poster at *fet*¹¹!

You will find your voting cards in your registration envelope.
Please return your voting cards to the European Commission
Information Stand or the Registration Desk by
Thursday 5th of May 19.30

The three best exhibits and posters will receive
a FET trophy awarded by the European Commission



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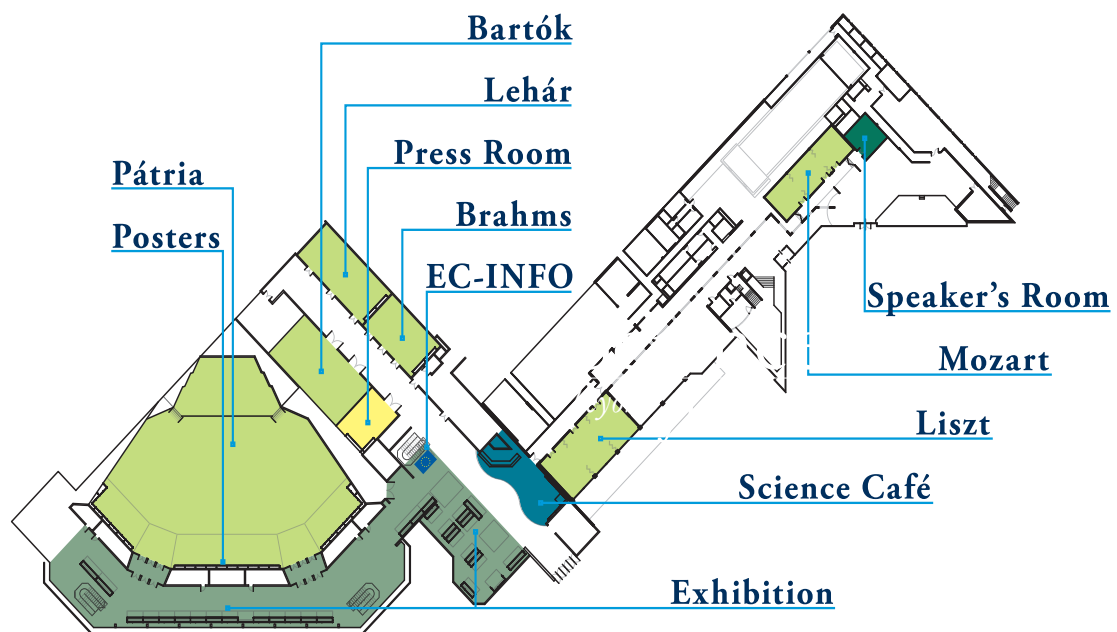


European Commission
Information Society and Media

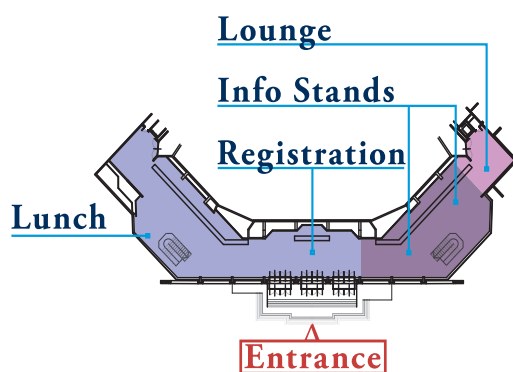


Orientation Map

① Level



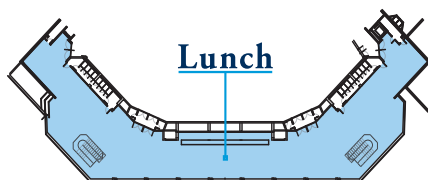
① Level



Info Stands

- 1 – Ideal-IST - Your Worldwide ICT support network
- 2 – e-ScienceTalk - Talking about e-Science
- 3 – CHIST-ERA : European Coordinated Research on Long term Challenges in ICST
- 4 – FRONTS Experiment - People Tracking
- 5 – ERCIM / W3C

① Level



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