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### **Congress Structure**

Sunday 22 August	WORKSHOPS				
	KEYNOTE A	ADDRESSES			
Monday 23 August to Thursday 26 August	CO-LOCATED CONFERENCES  • TCS: Theoretical Computer Science • SEC: Information Security • CARDIS: Smartcard Research and Advance • DIPES: Distributed and Parallel Embedded S • AIAI: Artificial Intelligence Applications and II • HESSD: Human Error, Safety and System DI • PRO-VE: Virtual Enterprises • I3E: e-Commerce, e-Business, e-Government • HCE: History of Computing in Education	Systems Innovations evelopment	TOPICAL DAYS	STUDENT FORUM	EXHIBITION (booths and forum)  partnership file: http://www.wcc2004.org/ partnership/partnership_ file.htm  contact: vgrimaldi@europa- organisation.com
Friday 27 August	WORKSHOPS		TUTORIALS		



## **Congress Organisers**



Hofstrasse 3 A-2361 Laxenburg Austria www.ifip.org



SEE 17 rue Hamelin 75783 Paris cedex 16 France www.see.asso.fr



LAAS-CNRS 7 avenue Colonel Roche 31077 Toulouse France www.laas.fr



**Europa Organisation** 5 rue Saint-Pantaléon 31505 Toulouse France www.europa-organisation.com



### **Congress Venue**

Centre de Congrès Pierre Baudis 11 esplanade Compans Caffarelli 31000 Toulouse - France www.centre-congres-toulouse.fr





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### Welcome to WCC 2004, welcome to Toulouse!



We are proud to present the Advance Programme in this brochure. Thanks to the hard work of hundreds of volunteers, the programme is extremely rich, featuring more than 600 presentations. Indeed, the attendees will be offered a large variety of opportunities:

- Five keynote talks by prestigious speakers.
- Nine co-located conferences for accomplished results, with 374 papers from 48 countries (selected from more than 900 submissions originating from 60 countries), 15 invited talks, and 7 panels.
- Fourteen topical days, an innovative feature for high-level surveys and prospective views, with 94 invited talks and 5 panels.
- A student forum for doctoral research, with 46 papers.
- Eleven workshops for on-going research (selected from 26 workshop submissions), with some 100 presentations.
- Eleven tutorials for state-of-the-art and state-of-practice, with 14 presentations.
- An exhibition of 1500 sq.m for display of latest products and services.

The coverage of the whole domain of information and communications sciences and technologies is truly exceptional. The high quality of the programme — guaranteed by the presence of an unparalleled number of internationally recognised top experts — can be assessed when reading the contents,

The Toulouse Congress will therefore be a unique event, where attendees will be able to appreciate the latest results in their field of expertise, and to acquire additional knowledge in other fields. Attendees arriving as specialist experts will thus have the opportunity to leave the Congress as enriched scientists, be they from academia or industry.

We are extremely satisfied to see that most of the hundreds of people that have already registered have expressed preferences for several events. The message has thus been carried.

The programme has been structured to favour interactions among attendees coming from many diverse horizons, scientifically, geographically, from academia and from industry. Included in this will to favour interactions are social events at prestigious sites.

Toulouse possesses the right mix of qualities for favouring the success of WCC 2004:

- A wide diversity of computing and communications activities, both in industry and in research or higher education.
- · A strong involvement of local bodies.
- Dynamic universities gathering 110 000 students.
- A friendly life style and a mild climate at that time of the year.
- A wide variety of places of interest, natural, historical and cultural sites, not to mention high quality, regional gastronomy.

Join for sharing during a week l'Esprit de Toulouse!

JA:

Nein leulalum



Jean-Claude Laprie Congress Chair



Reino Kurki-Suonio Programme Chair



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#### **High Committee of Patronage**

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The Minister of Research

The Ambassador in charge of International Investments

The President of the Chamber of Commerce and Industry of the Midi-Pyrénées Region

The President of the Chamber of Commerce and Industry of Toulouse

The President of the Midi-Pyrénées Region

The President of the Toulouse Metropolitan Area

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## <u>>> </u>

### **Sponsors**



















## Programme Structure

	<b>9h</b> 9h30 <b>1</b>	<b>Oh</b> 10	h30 <b>11</b>	<b>h</b> 11h30 <b>1</b> 2	<b>2h</b> 121	h30 <b>13h</b> 13	3h30 <b>1</b>	<b>4h</b> 14h30 <i>1</i>	<b>15h</b> 15	h30 <b>1</b> (	<b>5h</b> 16h30	<b>17h</b>	17h30	
Sunday	Sessio	ns	Coffee Break	Session	ns	· Lunch Bi	reak	Sessi	ons	Coffee Break	Sessi	ons		Welcome Reception
Monday	Opening Session	Coffee Break	Ke	enary eynote Idress	Lu	ınch Break	S	essions	Coffee Break		Sessions	S		City Reception
Tuesday	Plenary Keynote Address	Coffee Break	Se	ssions	Lu	nch Break	Se	essions	Coffee Break		Sessions	5		Classical Ballet
Wednesday	Plenary Keynote Address	Coffee Break	Ses	ssions	Lu	nch Break	Se	essions	Coffee Break		Sessions	;		Gala Dinner
Thursday	Plenary Keynote Address	Coffee Break	Ses	ssions	Lu	nch Break	Se	essions	Coffee Break		Sessions	;		
Friday	Sessio	ns	Coffee Break	Session	าร	Lunch Br	eak	Sessio	200	Coffee Break	Sessi	ons		



# Programme Ov

	Tutorials for state-of-the-art and state-of-practice	Workshops for on-going research		
Sunday 22 August	Tut2: Discrete-Event Simulation with Aplications to Computer Communication Systems and Performance Tut3: Service Oriented Computing Tut4: Test and DFT of Mixed-Signal Circuits Tut5: Software Rejuvenation - Modeling and Analysis Tut6: Semantic Web Services Tut7: Quality of Service in Information Networks Tut8: Critical Systems Development with UML: Methods and Tools Tut10: Developing Portable Software Tut11: Formal reasoning about systems, software and hardware Tut12: GeneSyS - an approach to distributed systems supervision	Ws1: Grammar Systems Ws2: Technology Enhanced Learning		
	Plenary	Keynote Addresses		
	Co-located Conferences for accomplished results	Topical Days for high-level surveys		
Monday to Thursday 23-26 August	TCS: Theoretical Computer Science	Top1: Semantic Integration of Heterogeneous Data  Top2: Virtual Realities and New Entertainment  Top3: Fault Tolerance for Trustworthy and Dependable Information Infrastructures  Top4: Abstract Interpretation  Top5: Multimodal Interaction  Top6: Computer Aided Inventing  Top7: Emerging Tools and Techniques for Avionics Certification  Top8: The Convergence of Bio- Info- and Nano-Technologies  Top9: E-Learning  Top10: Perspectives on Ambient Intelligence: Infrastructure, Governance, Applications and Ethics  Top11: TRaIn: The Railway Infrastructure — A Grand Challenge for Computing Science: Towards a Domain Theory for Transportation  Top12: Open Source Software in Dependable Systems  Top13: Critical Infrastructures Protection  Top14: Social Robots: Challenges for Machine Intelligence	Student Forum for doctoral research	<b>Exhibition</b> for display of latest products and services
ust	Tutorials for state-of-the-art and state-of-practice  Tut1: Applications of Multi-Agent Systems Tut9: Interaction Design of Highly Automated	Workshops for on-going research  Ws3 : Certification and Security in Inter-Organizational e-services		
Friday 27 August	Domain-Specific Systems	[Thursday and Friday]  Ws4: Formal Aspects in Security and Trust  Ws5: EduTech [Thursday and Friday]  Ws6: Architecture Description Languages  Ws7: Broadband Satellite Communication Systems  Ws8: Challenges of Mobility  Ws9: High Performance Computational Science and Engineering  Ws10: International Summit on Computing Professionalism		

erview			
Workshops for on-going research			
Ws1: Grammar Systems Ws2: Technology Enhanced Learning			
Keynote Addresses			
Topical Days for high-level surveys  Top1: Semantic Integration of Heterogeneous Data  Top2: Virtual Realities and New Entertainment Top3: Fault Tolerance for Trustworthy and Dependable Information Infrastructures  Top4: Abstract Interpretation Top5: Multimodal Interaction Top6: Computer Aided Inventing Top7: Emerging Tools and Techniques for Avionics Certification  Top8: The Convergence of Bio- Info- and Nano-Technologies  Top9: E-Learning  Top10: Perspectives on Ambient Intelligence: Infrastructure, Governance, Applications and Ethics  Top11: TRain: The Railway Infrastructure — A Grand Challenge for Computing Science: Towards a Domain Theory for Transportation  Top12: Open Source Software in Dependable Systems  Top13: Critical Infrastructures Protection  Top14: Social Robots: Challenges for Machine Intelligence	Student Forum for doctoral research	<b>Exhibition</b> for display of latest products and services	
Workshops for on-going research			
Ws3: Certification and Security in Inter-Organizational e-services [Thursday and Friday] Ws4: Formal Aspects in Security and Trust Ws5: EduTech [Thursday and Friday] Ws6: Architecture Description Languages Ws7: Broadband Satellite Communication Systems Ws8: Challenges of Mobility Ws9: High Performance Computational Science and Engineering Ws10: International Summit on Computing Professionalism Ws11: Prep-WITFOR 2005 Workshops			



## Schedule of Conferences and Student Forum

	TCS: Theoretical Computer Science	Track 1: TCS-Algorithms						
	196. Theoretical compater colonice	Track 2: TCS-Logic						
	SEC. Information Convity	Conference						
	SEC: Information Security	Embedded Workshop: Information Security Management (ISM)						
a	DIPES: Distributed and Parallel Embedded Systems							
Monday	A141 A 1/2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Conference						
<b>P</b>	AIAI: Artificial Intelligence Applications and Innovations	Symposium on Professional Practice in Al						
-		Track A						
	PRO-VE: Virtual Enterprises	Track B						
	I3E: e-Commerce, e-Business, e-Government							
	HCE: History of Computing in Education							
		Track 1: TCS-Algorithms						
	TCS: Theoretical Computer Science	Track 2: TCS-Logic						
		Conference						
	SEC: Information Security	Embedded Workshop: Information Security Management (ISM)						
	CARDIS: Smart Card research and Advanced Application	Embedded workshop, miormation Security Management (ISM)						
Tuesday	DIPES: Distributed and Parallel Embedded Systems	0						
l so	AIAI: Artificial Intelligence Applications and Innovations	Conference						
Ž		Symposium on Professional Practice in Al						
•	HESSD: Human Error, Safety and System Development							
	PRO-VE: Virtual Enterprises	Track A						
		Track B						
	I3E: e-Commerce, e-Business, e-Government							
	HCE: History of Computing in Education							
	Student Forum							
	TCS: Theoretical Computer Science	Track 1: TCS-Algorithms						
	Tos. Theoretical Computer Science	Track 2: TCS-Logic						
	OFO lefe weether O and the	Conference						
	SEC: Information Security	Embedded Workshop: Information Security Education						
	CARDIS: Smartcard research and Advanced Applications							
dnesday	DIPES: Distributed and Parallel Embedded Systems							
esc		Conference						
Ë	AIAI: Artificial Intelligence Applications and Innovations	Symposium on Professional Practice in AI						
We	HESSD: Human Error, Safety and System Development							
>		Track A						
	PRO-VE: Virtual Enterprises	Track B						
	I3E: e-Commerce, e-Business, e-Government	Hack D						
	HCE: History of Computing in Education							
	Student Forum							
	otadont i ordin	Track 1: TCS-Algorithms						
	TCS: Theoretical Computer Science	Track 2: TCS-Logic						
	SEC: Information Security	Conference						
		Embedded Workshop: Privacy and Anonymity in Networked and Distributed Systems						
N N	CARDIS: Smartcard research and Advanced Applications							
Thursday	DIPES: Distributed and Parallel Embedded Systems							
n n	AIAI: Artificial Intelligence Applications and Innovations	Conference						
두		Symposium on Professional Practice in Al						
	HESSD: Human Error, Safety and System Development							
	PRO-VE: Virtual Enterprises	Track A						
	The Virtual Enterprises	Track B						
	I3E: e-Commerce, e-Business, e-Government							
	Student Forum							

Morning 10h30 - 12h	Afternoon 13h30 - 15h 15h30 - 17h/17h3			
101130 - 1211		15h30 - 17h/17h30		
	TCS1-Algorithms	TCS2-Algorithms		
	TCS1-Logic	TCS2-Logic		
	Risk Management	Panel: Meeting the Global Challenges of Security Incident Response		
	Malicious Code Analysis	200 20 K 100 M 20		
	UML Based System Design	Verification and Analysis		
	Applications 1	Neural Networks and Fuzzy Systems		
	Knowledge Management	Agents		
	Research trends in collaborative networks	Modelling Methodologies for Collaborative Networks  Risk Management in Collaborative Networks		
	E-government Models and Processes	E-Governance		
	Opening	Transitions		
TCS3-Algorithms	TCS4-Algorithms			
TCS3-Logic	TCS4-Logic	Invited Talk (TCS-Algorithms): Juraj Hromkovic (ETH Zurich, Switzerland)		
Information Flow	Security and Control of IT in Society: Identity Management	Intrusion Detection		
Corporate ISM	ISM-Risk Analysis Methods and Frameworks	ISM & Technology		
Invited Talk: Olivier Libon (FedICT, Belgium)	Java Cards	Privacy		
Fault Detection and Toleration	Automotive and Mechatronic System Design	Networks and Communication		
Agents	Applications 2	Theory		
Learning	Applications 2	Recognition		
Risk Management	Formal Methods and Notations	Error Analysis		
Modelling Enterprise Networks	Distributed Business Processes	Knowledge Management in Networked Enterprises		
Collaborative engineering	Professional Virtual Communities	Collaborative spaces		
M-Commerce	Invited Talks: W. Cellary (U. Economics Poznan, Poland) Reinhard Riedl (U. Zurich, Switzerland)	Service provisioning		
Perspectives on Computing Education	Reinhard Riedl (U. Zurich, Switzerland)  Advances in Computing Education	Octiviou provisioning		
Networking	Security	Modelling and Computer Engineering		
	TCS7-Algorithms	TCS8-Algorithms		
Invited Talk (TCS-Logic): Robin Milner (Cambridge U., UK)	TCS7-Logic	TCS8-Logic		
Authentication	Security Protocols	Security Protocols and Home Security		
Doctoral Programmes – Breadth and Depth	Doctoral Programmes – from East to West	Doctoral Programme - Strategy and Cooperation		
Side-Channel Attacks	Fault Injection Attacks	Middleware 1		
Scheduling and Resource Management	Hardware Architectures and Synthesis	Invited Talk: Patrick Lysaght (Xilinx Res Labs,USA)		
Intelligent Tutoring and Collaboration	Internet	Genetic Algorithms		
Semantics	Methods	Knowledge Systems		
Incident and Accident Analysis 1 (Aviation and Maritime)	Methodologies	Incident and Accident Analysis 2 (ATC and Healthcare)		
Ontology Handling in Collaborative Networks	VE / VO Management	VE / VO Configuration		
Web Service Markets and Hubs	Education on VO and Knowledge Sharing	Case studies of VO/CN		
Purchase and Payment	E-Business Architecture and Processes	Panel: E-Business, Only Chances without Riscs		
Practical Issues in Computing Education	Invited Talk: JAN Lee (Virginia Tech / Radford U., USA)	Reflections in Computing Education		
Distributed Systems & E-commerce	Socio-Technical Systems & IT Economic impact	Information Systems Analysis & Quantum Computing		
		TCS11-Algorithms		
TCS9	TCS10	TCS11-Logic		
Database management	Access Control and Data Protection	Security Architecture		
Privacy Enhancing Technologies	Design for Privacy and Identity Management	Privacy Threats and Trusted Computing		
Cryptographic Protocols	Middleware 2			
Design Space Exploration	Design Methodologies and User Interfaces	Short Papers		
Invited Talk: Eunika Mercier-Laurent	Ontologies and Data Mining	Reasoning and Scheduling		
(EML Conseil, France)	Topics	Techniques		
Design for Error Tolerance	Invited Talk: Christopher Wickens (U. of Illinois, USA)			
Negotiation and Contract Management	Multi-Agent Models in Collaborative Networks	Networking technologies for VO		
Management issues in CN	Distributed Software Production and Support	Innovation, sustainability, and readiness for collaboration		
Infrastructure and Marketplaces	Value Chain Management	E-Business Models		
Artificial Intelligence & Language processing	Image Processing and Robotics	Student Interaction Session		





	9h 1	0h 10h I	130 1 I	<b>2h</b> 13h	130 1	5h 15l	17h/ 1 <mark>30 17h3(</mark> 
Monday	Opening Session	Coffee Break	Plenary Keynote Addresses	Lunch Break	PRO-VE Trends Session	Coffee Break	SEC Panel Session
Tuesday	Plenary Keynote Address	Coffee Break	CARDIS Invited Talk Session	Lunch Break	I3E Invited Talk Session	Coffee Break	TCS-Algorithms Invited Talk Session
Wednesday	Plenary Keynote Address	Coffee Break	TCS-Logic Invited Talk Session	Lunch Break	HCE Invited Talk Session	Coffee Break	DIPES Invited Talk Session
Thursday	Plenary Keynote Address	Coffee Break	AIAI Invited Talk Session	Lunch Break	HESSD Invited Talk Session	Coffee Break	Student Forum Interaction Session



### Plenary Keynote Addresses

#### Monday 23 August, 10h30 - 12h

Internet Governance Moderator: Jacques Berleur, Notre-Dame-de-la-Paix U., Belgium

#### **Paul Twomey**

President and CEO, ICANN (Internet Corporation For Assigned Names and Numbers), USA

#### **Christopher Wilkinson**

Adviser Directorate General Information Society, European Commission; Head of Secretariat, ICANN Governmental Advisory Committee (GAC)

### Public Policy for Internet Governance



#### Abstract

The management of the Internet naming and addressing system has been assigned to a public-private partnership in the context of the ICANN organisation and the GAC. Although this system is still experimental, it has been much improved during the past two years. Problems have been identified and are being addressed; they would be present under any alternative arrangement. Effective global participation is key in this respect; both public and private. Public participation must include the full range of languages, levels of development and geographical regions. Private participation is not limited to operators. Users and civil society must also play their roles.

In future, ICANN and the governments will have to address more indepth issues within the ICANN mandate such as IDN and IPv6. Governments will also have to address issues that are currently

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### **Plenary Keynote Addresses**

outside the ICANN mandate. This may give rise to different international systems, or to other solutions.

Meanwhile, work must go on. The Internet does not stop for international consultation. A global public-private partnership such as ICANN-GAC requires a lot of hard work. Both private operators and public officials have to put in time and energy to achieve results. At its best, this can be more efficient than formal intergovernmental procedures. But it is not cost-less. A significant flow of public and private resources is necessary, on a permanent basis.

#### **Biography**

Christopher Wilkinson is Head of the GAC Secretariat and Adviser, Directorate General for Information Society, European Commission. The GAC Secretariat supports the work of the ICANN Government Advisory Committee. http://www.gac.icann.org

Following a career with the Commonwealth Secretariat, OECD and the World Bank, Mr. Wilkinson joined the European Commission as Head of Division in 1973. He worked successively in Regional Policy, Industrial Affairs, Information Technology and Telecommunications, including responsibility for international aspects of information technology and telecommunications.

He was involved in the initial constitution of the ICANN organisation and represented the EU in the GAC from its inception in 1999. He was a GAC Vice Chair, 2001-2002.

Mr. Wilkinson was educated in England, in Yorkshire and at Cambridge university, where he took degrees in Natural Science and Economics. He has also studied at the London Business School and at Harvard University. He taught economics at Holland Park Polytechnic (1962-63) and at the College of Europe, Bruges (1989-90).

#### Tuesday 24 August, 9h - 10h

#### Hervé Gallaire

President, Xerox Innovation Group for Xerox Corporation, corporate senior vice president and Chief Technology Officer, USA

### Innovation and Information Processing



#### Abstract

Technical progress in Information Processing has been extraordinary over the last 40 years. In this presentation we will briefly review some of the most significant improvements in both hardware and software, from micro-electronics to storage, from algorithms to databases. While scientific progress has been key to this progress, the next wave of innovation will come from two different directions.

First, a number of application domains are going to drive further innovation at a fast pace. The development of MEMS technology will enable inexpensive and miniature sensors and actuators of all types. These will create innovation opportunities in major industries, including bioengineering, health, device service, as well as in the home. To realize these opportunities we will face system and software challenges. Since most of our systems design knowledge has its roots in the mechanical systems world, the applications and evolution of MEMS technologies will force us to rethink systems design and new digital paradigms will take hold. The development of new web services standards is also making great headway. This will be further accelerated by the better integration of information streams, including structured and unstructured information. This integration is key to full automation of business processes. The enablers for this transformation are not only the web service standards, including XML, but also the natural language processing technologies that have become significantly mature. The presentation will review examples of these capabilities. There is no doubt that intelligent systems still need development to reach the next level of automation.

It is worth noting that a great deal of IT progress has been due to the creation of new knowledge in other sciences, like physics and chemistry, which drove advances in microelectronics, storage and communications. Therefore, the second driver for the next wave of innovation in IT will in fact also rely on scientific progress in other disciplines. In addition to continual improvements in the silicon

based technology, today we are seeing the emergence of new semiconductor materials and processing methods based on organic and polymer technologies. These technologies will shape the future of display technologies, and also MEMS, thereby closing the loop to where we started from. A number of recent inventions will be described and ideas of innovative applications will be given.

#### **Biography**

Hervé Gallaire is President, Xerox Innovation Group for Xerox Corporation. He was appointed to this position October, 2001. He is also a corporate senior vice president and Chief Technology Officer.

He is responsible for overseeing the worldwide research and technology organizations in Xerox, to maximize the company's \$1billion annual investment in research and development. He is also responsible for intellectual property management, licensing and value creation from the intellectual property and technology. Additionally, he oversees the operations of a number of companies in the Xerox portfolio.

As head of research and technology, Gallaire leads an organization that is one of the world's most prolific generators of patentable ideas, with world-renowned research and technology centers that include the PARC Incorporated, the Xerox Research Centre of Europe, in Grenoble, the Xerox Research Centre of Canada, and the Wilson Center for Research and Technology in Webster, N.Y. Finally, the Imaging & Services Technology Center, and the Xerox Engineering Center are distributed over several locations in the USA.

From 1993 to 1998 he served as manager of the Xerox Research Centre Europe in Grenoble, France, which develops document technology for multilingual and multinational uses. Most recently, Gallaire held the position of Chief Architect for the corporation and Senior Vice-President of the Research and Technology group of Xerox Corporation, based in Stamford, Conn.

Before joining Xerox in 1992, Gallaire headed the department of mathematics and computer science at l'École Nationale Supérieure de l'Aéronautique et de l'Espace in Toulouse, France and directed several private and public research laboratories in Europe before managing hardware and software development divisions at Bull and GSI.

Gallaire holds a master of science degree and a PhD from the University of California, Berkeley in electrical engineering and computer science and from École Nationale Supérieure des Arts et Métiers in France a master degree in mechanical engineering. He is the first recipient of the distinguished alumnus award of the EECS department from the University of California, Berkeley. He was elected founding member of Académie des technologies in France December 2000. The Academy is the equivalent of the National Academy of Engineering in the United States.



### **Plenary Keynote Addresses**

#### Wednesday 25 August, 9h - 10h

To be announced

#### Thursday 26 August, 9h - 10h

#### **Robin Milner**

University of Cambridge, UK

Grand Challenges in Computing Research: the Global Ubiquitous Computer



#### **Abstract**

The UK Computing research Committee has launched a programme of Grand Challenges, to focus the long-term aspirations of the computing research community (national and international) both in science and in engineering. At present there are seven proposals for such challenges, arising from ideas submitted to a workshop in 2002. For each proposal there is a core group of researchers aiming to form a road-map.

Two of these proposed Challenges involve what may be called the Global Ubiquitous Computer; it subsumes both the Internet and instrumented environments. Its name reflects the reasonable prediction that, within two decades, virtually all computing agents (heart-monitors, satellites, laptops, ...) will be interconnected, forming an organism that is partly artefact and partly natural phenomenon -- in either case one of the most complex ever constructed or studied. What models help us to understand it? What engineering principles can cope with the vast range of magnitudes involved?

My lecture will consider how to begin to address these two Challenges. Very many concepts are involved. They include authenticity, beliefs, connectivity, compilation, continuum, data-protection, delegation, duties, provenance, failure, intentions,

locality, model-checking, mobility, obligations, reflectivity, security, simulation, specification, stochastics, trust, and many more.

Models are needed that explain and implement some of these concepts in terms of others. I shall end the lecture by describing some of my own work in modelling connectivity, locality and mobility. These notions arise naturally out of our existing models of concurrent computation, and can help to lay a foundation for global ubiquitous computation.

#### Biography

Robin Milner graduated at the University of Cambridge in 1957, in Mathematics and Philosophy. He worked in Ferranti Ltd (1960-63), The City University (1963-68), University College Swansea (1968-70), and the Artificial Intelligence Laboratory at Stanford University (1971-72). He joined the University of Edinburgh in 1973, became Professor of Computation Theory there in 1984, and with colleagues founded the Laboratory for Foundation of Computer Science there in 1986. He was elected Fellow of the Royal Society in 1988, and in 1991 won the A.M. Turing Award. He was appointed Professor at Cambridge in 1995, headed the Computer Laboratory there from January 1996 to October 1999, then became a Research Professor until retirement in 2001. In retirement he is fully active in research.

His implemented logical system LCF (Logic for Computable Functions) was a model for several later systems for computer-assisted reasoning. He led a team which designed and defined Standard ML, an industry-scale programming language whose semantic definition is fully rigorous. His main contribution has been to the theory of concurrent computation, especially the Calculus of Communicating Systems (CCS) and the Pi Calculus, reported in two books: "Communication and Concurrency" (Prentice Hall 1989) and "Communicating and Mobile Systems: the Pi Calculus" (CUP 1999). He now works on rigorous models of mobile informatic systems, reconciling virtual and real notions of locality, connectivity and mobility.



## Schedule of Topical Days

Topical days, an innovative feature of WCC 2004, provide the opportunity of surveys, of latest developments, of challenging prospects in domains of dramatic importance for the building of the Information Society, and of the Ambient Intelligence landscape.

	Morning 10h30 - 12h	After 13h30 - 15h	noon 15h30 - 17h/17h30		
		Top1: Semantic Integration of Heterogeneous Data			
Monday		Top2 : Virtual Realities and New Entertainment			
		Top8 : The Convergence of Bio- Ir	nfo- and Nano-Technologies		
		Top3 : Fault Tolerance for Trustworthy and Dependable Information Infrastructures			
	Top3 (cont.): Fault Tolerance for Trustworthy and Dependable Information Infrastructures				
Tuesday	Top4: Abstract Interpretation				
	Top5 : Multimodal Interaction				
	Top6: Computer Aided Inventing				
	Top7: Emerging Tools and Techniques for Avionics Certification				
Wednesday	Top9: E-Learning				
		<b>Top10 :</b> Perspectives on Ambient Governance, Applications and Ethi	Intelligence: Infrastructure, cs		
	Top11: TRaln: The Railway Infrastructure - A grand challenge for computing science: towards a domain theory for transportation				
Thursday	Top12: Open Source Software in Dependable Systems				
	Top13: Critical Infrastructures Protection				
	Top14: Social Robots: Challenges for Machine Intelligence				





# Schedule of Workshops and Tutorials

		Morning	Afternoon	
Sunday	Tutorials	Tut2: Discrete-Event Simulation	Tut4: Test and DFT of Mixed-Signal Integrated Circuits	
		Tut3: Service Oriented Computing	Tut5: Software Rejuvenation - Modeling and Analysis	
			Tut6: Semantic Web Services	
		Tut7: Quality of Service in Information Networks		
		Tut8: Critical Systems Development with UML: Methods and Tools		
		Tut10: Developing Portable Software		
		Tut11: Formal Reasoning about Systems, Software and Hardware		
		Tut12: GeneSyS - An Approach to Distributed Systems Supervision		
	Workshops	Ws1: Grammar Systems		
	Workshops	Ws2: Technology Enhanced Learning		
	Workshops	Ws3: Certification and Security in Inter-Organizational e-Services		
Thursday		Ws4: Formal Aspects in Security and Trust		
		Ws5: EduTech		
	Workshops	Ws3 (cont.): Certification and Security in Inter-Organizational e-Services		
Friday		Ws4 (cont.): Formal Aspects in Security and Trust		
		Ws5 (cont.): EduTech		
		Ws6: Architecture Description Languages		
		Ws7: Broadband Satellite Communication Systems		
		Ws8: Challenges of Mobility		
		Ws9: High Performance Computational Science and Engineering		
		Ws10: International Summit on Computing Professionalism		
		Ws11: Prep-WITFOR 2005 Workshops		
	Tutorials	Tut1: Applications of Multi-Agent Systems		
		Tut9: Interaction Design of Highly Automated Domain-Specific Systems		

