GLOBAL FORUM 2005

Shaping the Future

GOOD PRACTICE EVENT 2005

THE BROAD CONVERGENCE Act II

Conference Proceedings

Monday, November 7th, 2005
Tuesday, November 8th, 2005

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FONDATION SOPHIA ANTIPOLIS

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Report written by
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assisted by Tema Best, Politech Institute

ACKNOWLEDGEMENTS

The conference is over and more than 300 high-profile delegates from more than 30 different countries attended the conference sessions which took place on 7 & 8 November in the historical Palais d'Egmont in Brussels. When looking back on fourteen years of successful networking, it seems to us, that such an historical place represents a fantastic environment for the Global Forum, which brings together - each year - so many different industry and political leaders, organisations, countries, cultures and viewpoints to cooperate.

For the 14th time, the Global Forum brought together, amongst others, industrial leaders, senior policy makers, user representatives, non-profit organisations and academic experts. And once again, the Global Forum proved to be much more than just another ICT-conference, but a real Think Tank and networking event connecting practical applications and innovative ideas – but first and foremost people sharing and shaping perspectives on the future of our Information and Knowledge Society.

The organisation of an international event like the Global Forum 2005 is not possible without the help of an excellent and highly motivated team and we wish to thank all those many people who contributed to the preparation of the Global Forum. We would like to particularly thank our partner of many years, Senator Pierre Laffitte, Foundation Sophia-Antipolis. We would also thank the Belgium Government for their support and the Politech Institute, Indigov and the staff of the Palais d'Egmont for their excellent work.

The Global Forum 2005 was held in cooperation with the Belgium Federal Government and a large group of companies and organisations which contributed to setting up the event. Without their help, this conference would not have been possible and we would like to express our sincere thanks to the main sponsors and co-operating institutions of the Global Forum 2005, which are, besides ITEMS International and the Belgium Federal Government,

Afilias, Alcatel, Capgemini, CNES, DLA Piper Rudnick Gray Cary, D Soft, ETSI, HP, IBM, idDOON and e-Ja, Microsoft, Motorola, Netsize, Proxim Wireless, Public Interest Registry. ORG, Qualcomm, SBC Telecommunication, SES Global, ST Microelectronics, SUN Microsystems, Thales and Verizon;

as well as the supporting sponsors, which are

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and our press supporters: EU Reporter, EuroNews, Policy Tracker and RTBF.

Last, but definitely not least, let us say thank you to the Global Forum's principal actors, who are its keynote speakers, chairs, moderators, panellists and participants for their enthusiasm and for having made of the Global Forum once again a creative space to share knowledge and to brainstorm ideas.

We are looking forward to seeing all of you next year at the fifteenth Global Forum. In the meantime thank you again for your continuing support and keep on networking!

Sébastien Lévy	Sylviane Torpokoff
Vice-President of the Global Forum	President of the Global Forum

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PROGRAMME

●●● **7 November 2005**

WELCOME ADDRESSES

> **Senator Pierre Laffitte**, President of the French Foundation Sophia-Antipolis, Alpes-Maritimes, France
> **Sylviane Toporkoff**, President of the Global Forum, ITEMS International, France

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> **Viviane Reding**, Commissioner, Information Society & Media, European Commission
> *Why Convergence is a Motor of Growth and Jobs in the Knowledge Economy*
> **Kevin Martin**, Chairman, U.S. Federal Communications Commission, USA
> *Introduction to the FCC*
> **Donald Abelson**, Chief, International Bureau, U.S. Federal Communications Commission, USA
> *The Impact of Convergence*
> **Zsolt Nagy**, Minister of Communications and Information Technology, Romania
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> **André Santini**, Former French Minister, President of the Global Cities Dialogue
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Patrick de Smedt, Chairman, Microsoft Europe, Middle East and Africa - EMEA
Enabling Innovation in the Information Society
Kathryn Brown, Senior Vice President, Public Policy Development and Corporate Social Responsibility, Verizon Communications, USA
Verizon FiOS
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Speakers:

Brent Olson, Assistant Vice President, Regulatory Policy, Emerging Services and Technologies, SBC Services, Inc., USA
The Convergence of the Communications Marketplace and SBC's Transition to a Multimedia Communications Company
Takahiro Yokoyama, Director, International Frequency Policy Office, Radio Department, Ministry of Internal Affairs and Communications - MIC, Japan
Spectrum Strategy for Wireless Broadband Services
Jørgen Friis, Deputy Director-General & **Margot Dor**, Director Business Development, European Telecommunications Standards Institute – ETSI
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Pierre Tournassoud, Vice President Network Strategy, Alcatel
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> **Michael Stankosky**, Professor, George Washington University, Department of Engineering Management & Systems Engineering
> *21st Century Software Engineering*
> **Jacques De Kegel**, Wireless Broadband & Sensing Solutions EBO - Benelux Sales Leader, IBM, Belgium
> *SAFIR - EU Project*
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> **Michael Ridley**, Partner, DLA Piper Rudnick Gray Cary UK LLP, UK
> *Television Regulation: The Final Frontier?*
> **Jean-Eric de Cockborne**, Head of Unit, Audiovisual and Media Policies, EC
> *Regulating Audio-Visual Media Services*
> **Gabrielle Gauthey**, Director, Information and Communication Technologies, ARCEP
> *Convergence and Regulation*
> **L. Marie Guillory**, Member and Founder, Guillory & Hjort, Advisors to the Rural Communications Industry, USA
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> **Desiree Miloshevic**, International Affairs and Policy Development Advisor, Afilias Global Registry Services, UK
> *Private Sector Perspective on Internet Governance*
> **Theresa Swinehart**, General Manager, Global Partnerships, ICANN
> *The Internet Corporation for Assigned Names and Numbers*
> **Jean-François Soupizet**, Deputy Head of Unit, International Relations, EC
> *Europe's Vision of the World Summit on the Information Society in Tunis*
> **Bernard Benhamou**, Director of Forecasting and Internet Governance, Agency for the Development of e-Administration - ADAE, Office of the Prime Minister, France
> *The Evolution of Internet Governance*

Chair: Patricia Cooper, Chief, Regional & Bilateral Affairs, U.S. Federal Communications Commission, USA
Hurricane Katrina and the Role of the Regulator in Disasters

Moderator: Jean-Pierre Chamoux, Professor, Université Paris V-René Descartes, France

Speakers:

Behnam Bavarian, MCEI Vice President and Director of Advanced Technology and Strategy, Biometrics Business Unit, Motorola, Inc., USA
Digital Identity Management: Biometrics Play
Steven B. Adler, Program Director, IBM Data Governance Solutions, IBM, USA
Defending Data: The Data Governance Blueprint
Craig Phillippe, Supervisory Special Agent, FBI, USA
FBI Cyber Crime Program
Nitya Karmakar, Professor, University of Western Sydney, Australia
Security, Privacy & Legal Issues in Relation to e-Business
Jacques Bus, Head of Unit, ICT for Trust and Security, DG Information Society, European Commission
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John G. Bullard, Global Ambassador, Identrus
TRUST- Interoperability and Liability Management Challenges in a Networked World
Igor Hansen, Founder, e-Ja, Poland, CLAN Systems, Scotland
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>   **Jon Leibowitz**, US Commissioner FTC - Federal Trade Commission, USA
>   *Competition in the Information Society - Uncorked and Unplugged*
>   **Benoît Cerexhe**, Brussels' Minister of Economy, Employment, Scientific Research,
>   Fire-fighting and Urgent Medical Aid, as well as Agriculture, Region Bruxelles-
>   Capitale, Belgium
>   *Promoting Regional Growth*
>   **Edith Cresson**, President of the Foundation "Ecole de la deuxième chance", Former
>   European Commissioner for Research, Former French Prime Minister, France
>   *The Link between Convergence and Innovation*
>   **John Gage**, Chief Researcher and Vice-President, SUN Microsystems, USA
>   *Students and the Power of Innovation*
>   **Rosa Bruno-Jofré**, Professor, Dean of Education, Queen's University, Canada
>   *Situating the Integration of Information Technology and Convergence Issues in the
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>   **Hubert Vigneron,** Strategic Marketing Director, EUROSMART, Belgium
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        European Commission, Belgium
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Speakers:

>   **Ronny Bjones**, Enterprise Secutity Strategist, Microsoft EMEA HQ
>   *Electronic Identification and Authentication as a Commodity in Daily Life*
>   **Frank Delanghe**, Founder & Managing Director, D-Soft, Belgium
>   *Use of e-Counters in a Secure Way*
>   **Jo Steyaert**, President, Indigov, Belgium
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>   **Peter F. Brown**, Senior Expert, Austrian Federal Chancellery - ICT-Strategy Unit,
>   Chair of the CEN eGovernment Focus Group, Austria
>   *3 Keys to eGovernment Convergence*
>   **Graham Colclough**, Vice President Cap Gemini, UK
>   *Measuring eGovernment – The Challenge*

Alan Shark, Executive Director, Public Technology Institute – PTI
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Yutaka Kobayashi, Division Manager, Town Management Orgainsation, City of
Mitaka, Japan
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Eric Legale, Managing Director, City of Issy-les-Moulineaux, France
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Daniel van Lerberghe, President & Executive Director, Politech Institute, Belgium
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Phil Noble, Founder, PoliticsOnline, USA
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Moderator: Patrice Cristofini, Healthcare Director-Systems Integration, Atos Systems
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Speakers:

Ilias Iakovidis, Deputy Head of Unit, ICT for Health, DG Information Society & Media,
European Commission
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Yannick Motel, Vice-Chairman, LESISS, France
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Richard Bonnar, Partner, DLA Piper Rudnick Gray Cary UK LLP, UK
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Edouard Varvarian, General Manager & Co-Founder, idDOON, France
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Patrick Sellem, Sales & Marketing Manager, TMA Medical Austria, & **André Petitet**,
CEO, CardioGap S.A., France
*Mobile Care Unit Diagnostic System – Interoperability, Data Transmission and
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Paul Cheshire, Consulting Director Welfare Sector, Atos Origin, United Kingdom
Lifelong Health Records - Who Needs Them?
Mario Po', Head of Administrative Office, Healthcare Institution Azienda ULSS n 8 di
Asolo, Italy
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Christine Leurquin, Senior Manager, European Programs, SES Global, Luxembourg
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Gérard Ségarra, Manager of Telematics Research and Innovation Projects, Renault, France
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Henry J. F. Ryan, Managing Director, Lios Geal Consultants Ltd, Ireland
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Gérald Santucci, Head of Unit, ICT for Business, DG Information Society, European Commission
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Valentina Mele, Assistant Professor, Bocconi School of Management and Naples University, Italy
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Nicolas Chung, Delegate for ICT, Education & Research, Association of the French Regions - ARF, France
The French Regions Weaving the Information Society at the Local Level
Irina Zalisova, Managing Director, EPMA/BMI Association, Czech Republic
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Alain Ducass, Head of "Digital Country Planning Team" Prime Minister Service, France
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Moderator: Alfredo M. Ronchi, Secretary Medici Framework, Politecnico di Milano, Italy

Speakers:

Rudi Vansnick, Chairman, Internet Society Belgium
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Marco Tempra, Solution Developer, Banca Digitale Accessibile, Italy
Accessible Digital Bank
Ranjit Makkuni, President, Sacred World Foundation, India
The Virtual Gandhi Museum
Luca de Marchi, Project Manager eLearning, Asolo, Italy
e-Learning in Health: From a Corporate System to a Territorial Network
Fabrizio Davide, PhD, Expert Learning Services, Research & Development in European FET Program, Italy
TILS and the European "Future & Emerging Technology" Program

Daniel Schütze, Project Manager R&D Art and Education, Association Memory of the Future, France
LopArt Duo
Phil Archer, CTO, Internet Content Rating Association – ICRA
Making Metadata Matter
Virginia Valzano, Adriana Bandiera, J.-Angelo Beraldin, SIBA, University of Lecce, Italy & NRC Canada
Carpiniana. A Virtualized Byzantine Crypt
François-Xavier Schlesser, Project/ Program Manger – TV-Traffic System, RTBF, Belgium
Challenges for Public Service Broadcasting
Omar Javaid, Senior Director, MediaFLO International Business Development, Qualcomm Inc., USA
Mobile Multimedia as a Global Perspective

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Chair: Pierre Laffitte, Senator, Alpes-Maritimes & President, Sophia-Antipolis Foundation, France

Moderator: Keith Brown, Councillor, Member Clackmannanshire Council and Rapporteur of a Recent Opinion of the Committee of Regions on eGovernment, President of the UEN-EA Group in the Committee of the Regions

Speakers:

Thierry Van Landegem, CTO, Alcatel, Belgium
The Lever of Regional Centers of Excellence for Innovation
Thomas Andersson, President Jönköping University, and President of the Board, IKED - International Organisation for Knowledge Economy and Enterprise Development, Sweden
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Isobel Harding, Head of the Information Society Unit for Yorkshire and Humber Regional Assembly and NorthlincsNet, UK Local e-Democracy National Project Lead Authority
Gilles Berhault, President, Association for Communication and Information for Sustainable Development – ACIDD, France
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Georges Bingen, Head of Unit, Strategy & Policy, Directorate D – The Human Factor, Mobility and Marie Curie Activities, European Commission
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Denis Ettighoffer, President & Founder, Eurotechnopolis Institute, France, and Delegate of the Development du Pole R&D Groupe IGS (Institut de Gestion Social), & **Yves Enregle**, Co-founder & Co-CEO, Groupe IGS, France
Innovation in the Century of Networks. Networks of Innovation or Creative Networks?
Eikazu Niwano, Senior Researcher Engineer, Service Integration Laboratories, NTT Corporation, Japan
Beyond a Card Community - PKI based Multiple Application Smart Card Management System for Global Interoperability

ABOUT THE GLOBAL FORUM

The "Global Forum on Shaping the Future" is an annual, independent international event dedicated to business and policy issues affecting the successful evolution of the Information Society. As a high-profile international think tank, bringing together senior government officials, policymakers and industry leaders from Europe, North America, the Pacific Rim and Africa, the academia, and the civil society – both from advanced and developing economies, its main purpose is to promote interaction and dialogue between the different stakeholders, to give impulses for the formulation of common visions, and to pool knowledge, expertise, research, policy analysis and networking capability.

The "Global Forum on Shaping the Future" is a not-for-profit initiative of ITEMS International and the Foundation Sophia-Antipolis. It is sponsored by organisations from all over the world, interested in sharing and influencing global IT-agendas, and enabling business and government leaders from all sectors of the ICT communities to meet and work with suppliers and service providers.

... THE GLOBAL ROADMAP

2005   The Broad Convergence – Act II – Brussels, Belgium

2004   The Broad Convergence – Malmö, Sweden

2003   Connecting Businesses & Communities – Rome, Italy

2002   The Promise of Broadband Services – Washington DC, USA

2001   Expanding the Global e-Society – Newcastle, United Kingdom

2000   Towards a Global e-Society – Sophia-Antipolis, France

1999   New Satellite and Terrestrial Applications – Sophia-Antipolis, France

1998   Networked communities – French Senate, Paris, France

1997   Smart Communities Forum – Economic Development in a Global Information Society – Sophia-Antipolis, France / Rome, Italy

1996   Smart Communities Forum - U.S. Tour of cities and regions – New York / Washington / San Francisco / Silicon Valley, USA

1995   The Second Europe / Japan Forum on Communications – Kyoto, Japan

1994   Europe / Japan Forum on Cooperation and Competition in Communications – Paris, France

1993   Europe / United States Meetings on Cooperation and Competition in the Field of Communications – Rome, Italy

1992   Europe / United States Meetings on Cooperation and Competition in Telecommunications – Washington / New York, USA

THINK TANK SYNTHESIS REPORT

The Global Forum 2005 took place on 7 & 8 November in the magnificent Palais d'Egmont in Brussels, Belgium. During these two days more than 300 high-level representatives from national and local governments, governmental organisations, the European Commission, ICT-industries, regulators, user groups, and the academia shared and shaped ideas and perspectives in order to commonly draw a blueprint of the future as regards the main topic of this year's Global Forum: The Broad Convergence – Act II.

The Forum was organised in 4 plenary and 8 panel sessions of which two always ran in parallel.

The following synthesis report highlights the key issues of each presentation and summarizes the discussions that took place during the panel sessions. All slides (PowerPoint presentations), speaker profiles, and other documentation are available on the website of ITEMS International www.items-int.com. Do not hesitate to contact ITEMS International to get in touch with one of the speakers.

The Global Forum's report is structured according to the actual sequence of presentations during the 2 conference days. The abstracts of the presentations made during the Global Forum 2005 are listed in chronological order corresponding to their succession in the final conference programme, as listed in the beginning of the present document.

Sylviane Torpokoff, President of the Global Forum, welcomed the participants and opened the 14th edition of the Global Forum taking place in the majestic and historic Palais d'Egmont - a site where history has been written and a centre of European diplomacy. Once again, the Global Forum brought together more than 300 high-profile delegates, including both industrial leaders and senior policy makers, from more than 30 countries.

A special thank you was given to the sponsors of this year's Global Forum without whose support it would not have been possible to realise such an event. The great mix of companies and organisations supporting this Global Forum 2005 is a real proof that the concept of "coopetition", trans-sectoral cooperation and networking is becoming more and more important in our converging world.

Convergence is about the collapse of different technology, equipment and services into a set of common and ubiquitous technology, equipment and services. The challenges emerging from such collapse are immense:

- What about regulation of service provision and consumer policy considerations?
- What about security and privacy?
- What about technical bottlenecks?
- How convergence impacts public service delivery, electronic services provision in general and the quality of life of each of us?
- What about content in a converging environment?

These and other questions will be addressed during the coming two days.

A special thank you was given to the Belgium Federal Government, co-organizer of the Global Forum 2005 within the context of the 175th anniversary of its independence and the 25th anniversary of the Belgian Federal State.

Senator Pierre Laffitte, President and Founder of the French Foundation Sophia-Antipolis, welcomed the participants of the Global Forum 2005. The Information Society is progressing very rapidly all over the world and the fact that today the 14th edition of the Global Forum is taking place confirms the importance of such an event. It also shows that the Global Forum is always ahead of the progress in this rapidly changing Information Society.

However, despite the benefits of such rapid evolution in ICT, it also raises a number of important questions and problems. Some of them are related to standards, which the European Telecommunications Standards Institute (ETSI) is dealing with in Europe. There are also regulatory problems and it might be worth thinking about the creation of an organisation similar to the FCC in the U.S. We also encounter problems related to International Property Rights, frequencies or the development of the IPv6 which is the capacity of having a much larger global addresses space in the Internet. All these are problems that have to be addressed before becoming too difficult to be solved – and some of them will be discussed during the coming two days.

As the first speaker of the Opening Session, **Marc Verwilghen, Belgian Minister for Economy, Energy, Foreign Trade and Science Policy**, presented the impressing

Belgium Approach to Meet Convergence

Convergence in infrastructures and systems, in software and contents, in regulation and governance in a secure environment are main challenges for today's economy. The Belgium Government started putting the conditions for making Belgium a better place to live and to work in place and e-Government has become an essential element of this strategy.

Today, data for social security matters or related to enterprises are accessible to all official services that need them. Thus, public services save a lot of the time they formerly spent on collecting and processing data. Adequate safeguards ensure that the authentic source is accurate and cannot be accessed by unauthorized persons. Other initiatives such as the payment of taxes through the Internet and the delivery of an electronic identity card have an increasing success in Belgium. Interoperability at a European level is of crucial importance in this context and Belgium is pleading for the adoption of a European approach regarding the exchange of data between public administrations as well as electronic identity.

The Belgium Government recently launched a campaign to promote the safer use of the Internet together with specific measures in order to reinforce confidence in e-Commerce transactions. A framework containing the minimum guaranties for trusted third parties assisting Internet users in online transactions will be issued. Furthermore, a point of contact for consumer complaints regarding Internet and e-Commerce is planned to be set up.

Broadband penetration is fairly good in Belgium and Internet access (including broadband) of Belgian companies is very widespread. However, the proportion of companies that receive their orders online or that sell via the Internet still needs to be increased. In order to fight the digital divide, a recent Council of Ministers decided to establish 300 new "digital public spaces" where the population can freely access the Internet and get the assistance of specially trained persons. However, Belgian citizens use the computer less in their daily lives than citizens of neighbouring countries. Initiatives have been launched to improve this situation by giving people the opportunity to buy PCs at an affordable price.

A strategic platform devoted to ICT has been launched in order to improve the use of ICT in the Belgian economy. The objective is to develop Belgium's scientific potential in the area of ICT and in particular to foster R&D activities in this special domain. In order to better monitor the development of the Belgium Information Society, a new tool called the Barometer for a Networked Society has been introduced benchmarking the development of the Belgium Information Society in comparison with other countries and will help authorities to adjust the public policies in this realm.

Digital TV sets sell very well in Belgium and new offers are finding their way through the somewhat complicated Belgian landscape. Triple play offering TV, Internet and telephony on the same bandwidth is one of these new opportunities. The main operators are investing heavily in Belgium and the incumbent telecom operator is rolling out a fibreglass local network in order to offer higher speed and capacities to its clients. Cable operators represent more than 35% of access to high speed Internet in Belgium.

The regulatory authority makes sure that alternative operators are able to replicate the offers of the incumbent by acceding to offers at a wholesale level that allow them to propose innovative products at the retail level. Obligations relating to the unbundling of the local loop or to the bitstream access will be maintained until the market becomes more competitive.

The question coming up during the **Q&A** session was about regulation in Belgium. Minister Marc Verwilghen emphasised that regulation has been part of the Belgium legal framework for several years now. The BITP (Belgium Institute for Post and Telecommunication) is an independent organisation in charge of controlling the market and opening it if there is a position of monopoly. There was a monopoly of Belgacom which ended with the emergence of mobile telecom. The position of the BIPT in this situation has been a very clear and good one. The BIPT, which reports to the government as well as to parliament, has taken all measures needed to open the market and to allow a high level of competition. A good regulatory instance is needed to open a market and to organise competition with all the advantages of such open market.

Viviane Reding, European Commissioner for Information Society and Media of the EC, [http://europa.eu.int/information_society/index_en.htm], outlined

Why Convergence is a Motor of Growth and Jobs in the Knowledge Economy

The information, communication and media industries are driving sectors of our economy. In the period 2000-2003, the ICT sector contributed to more than 25% of productivity growth. The growth of broadband and the convergence of networks, services and devices are paving the way for a new phase of growth and innovation. To get this growth, though, we need to fulfil some basic conditions, all of which are at the core of the i2010 strategic framework which the Commission adopted in June 2005:

The first condition is a fast communication backbone that is affordable and available in all parts of the Union. Although the European broadband market is growing at high rates, Europe is well behind its main international competitors, both in terms of take-up and of speed. Against the 10.5% achieved in the EU15, South Korea has achieved a penetration rate of 25% of population, or more than 70% of households. Japan had 15.4 million broadband subscribers in 2004, and nearly 10% of these were connected via fibre optic with downlink rates of up to 26 MB/second. In the EU, speeds are increasing, but there are few connections with bandwidth above 3 MB/second. Effective and independent regulation in all Member States will be decisive factors for the future development in Europe.

Research on ICT is essential for convergence and in this field Europe is still behind: Europe invests 80 Euros per head in ICT R&D, the U.S. 350 Euros and Japan 400 Euros. The Commission has recently made proposals for increasing this investment in the new Financial Perspectives.

The second condition are modern intellectual property rules: the emergence of the knowledge economy signifies a transition from the production and sale of artefacts that one can touch and see to a service economy in which Europe will increasingly have to live on its wits, talent and know-how. However, we cannot have a strong content industry without robust copyright protection and clear rules on liability for online-distribution, EU-wide and beyond. A single European market for content still does not exist. To be competitive, Europe's content industry needs the scale of an EU-wide market; it is not possible to boost Europe's digital economy without tackling the fragmentation both of its telecom and of its content markets. There is a need for a Europe-wide approach to reduce costs and raise

transparency. European IPR systems, whether they be patents, copyrights or trademarks, have to become forces for innovation and change and not deterrents to investors and entrepreneurs.

The third condition is that knowledge workers become entrepreneurs: the majority of growth and jobs will come from smart and motivated entrepreneurs who seize the business opportunities of convergence. For example, forecasts for online content revenues foresee a three-fold increase by 2008, however, despite high growth rates in the IT services and software sector, Europe is relatively weak in software and many of its services markets are fragmented into 25 or more different regimes. What seems to be the problem is that Europe is underutilising its research results and brainpower. In Europe as a whole 45% of university graduates, aged up to 35 are unable to find jobs at an appropriate level. Many of them are already qualified or have the potential to be business and IT leaders. Europe needs to provide a fertile environment for them to get meaningful work experiences and to provide incentives encouraging young and optimistic people to become the entrepreneurs that will create jobs for themselves and others in the future.

The fourth condition is administrations that drive change: public services represent a very large part of the European economy. EU governments spend over 1500 billion Euros per year. The efficiency of this spending is crucial to the economic performance of Europe as a whole. Another example is the health sector which represents 8% of EU GDP and employs 15 million people (nearly 10% of the total EU workforce). Health is an area in which ICT can give both higher performance and lower costs. Tackled appropriately, the opportunities are there both for greater efficiency and for new high bandwidth services to emerge from using ICT as a trigger of modernisation in the public sector. This is the only way that Europe can go ahead with the commitment to competition that underpins our European social model.

In conclusion, we need the right infrastructures, intellectual property regimes, to unleash a creative and innovative entrepreneurial force and we have a duty to lead through a pro-active public sector.

Kevin Martin, Chairman of the U.S. Federal Communications Commission, USA, [Kevin Martin was not able to join in person but was presented via video], gave an

Introduction to the FCC

The Global Forum provides an excellent opportunity to debate key issues such as the promotion of ubiquitous computing, deployment of broadband technology, treatment of next generation systems and network security. When discussing these policy issues with national colleagues it becomes clear that many regulators face similar challenges as they all struggle to react to rapid changes in the telecom sector. In truth, daily market advance and technical innovation know no geographic boundaries. We can learn a lot from each other. Regulators are all trying to craft regulatory decisions that spur the deployment of new technologies and services but also meet the needs of the national and global consumers. For a regulator, convergence is the biggest challenge to face but it is also the biggest opportunity we will encounter. Convergence is not just a technological phenomenon: it is also altering classic economic assumption and industry constructs as well as basic approaches to spectral management. In the U.S. the FCC is working hard to ensure that the regulatory framework encourages the development of new technologies and that it is not an obstacle for innovation. Our goal is a sound regulatory framework that will foster competition, increase certainty for investors and provide consumers with better services at lower prices.

Donald Abelson, Chief of the International Bureau of the U.S. Federal Communications Commission, USA, gave an interesting insight into the FCC's perspective on

The Impact of Convergence

Advances in technology are leading to a convergence of multiple platforms competing in the market. The development of *intermodal competition* is fundamentally changing the way that both carriers and their customers use communications network and services. As technology changes, we must evaluate whether our existing regulatory approaches remain relevant. Should Internet services be subject to the same regulations as traditional voice and broadcast services? Should broadband services provided over cable networks be treated like DSL services? Should providers using new wireless networks be licensed the same way we licence existing mobile carriers? Though we face common challenges of technological convergence on both sides of the Atlantic, the responses of regulators will vary depending on national circumstances and history of competition. This response will evolve over time as our national circumstances change, as market conditions evolve and as technology advances.

In the U.S., the FCC's response has been to move toward a deregulated, competitive market. The goal is a market that is undistorted by regulatory arbitrage and artificial distinctions and in which competition leads to higher quality, more innovative services, and cheaper rates.

A close examination of the effect of convergence on regulation reveals a common trend: there is a movement of ICT towards interconnected networks based on Internet protocol. Existing platforms for delivering data, telephony and audiovisual content are converging towards networks based on Internet protocol technologies. These developments are ushering in a new phase of competition where service operators are offering a "triple play" that bundles video, telephone and Internet products in one offer and a more seamless integration of fixed and mobile voice services. The "next generation of networks" will be high-capacity networks based on technologies with Internet protocol capabilities that will allow mobile access.

To date, the Internet has not been exposed to economic regulation in the U.S. as it pursues a policy of encouraging its growth. U.S. policy makers believe that centralised regulations may be ineffective and ill-suited to a decentralised network that is quickly evolving and global in nature. The fact that the FCC has not applied economic regulations to the Internet does not mean that the FCC has no role to play in the broadband market.

The FCC has adopted measures to ensure that public safety, law enforcement, and consumer protection needs continue to be met. One of the first actions taken by FCC under the leadership of Chairman Martin was to approve an order requiring that Internet phone services provide emergency calling capabilities to their customers. The FCC deemed that enhanced emergency calling services are critical to the government's and consumers' ability to respond to a host of crises. In addition, the FCC reaffirmed that law enforcement agencies must have the ability to conduct electronic surveillance over facilities-based Internet access providers. The requirements apply to interconnected VoIP providers (facilities-based broadband Internet access service providers and VoIP providers that offer services permitting users to receive calls from, and place calls to, the public switched network). These services can essentially replace conventional telecom services currently subject to wiretap rules. They should therefore be subject to the same wiretap rules.

The FCC also adopted a policy statement that outlines four principles to encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet. Under these principles, users of communications services are entitled to: (1) access the lawful Internet content of their choice; (2) run applications and services of their choice, subject to the needs of law enforcement; (3) connect their choice of legal devices that do not harm the network; and (4) competition among network providers, application and service providers, and content providers.

The following **Q&A** of the presentation referred to the question whether the FCC plans to create any economic regulation applying to the Internet in the near future and if so, how these regulations would be structured. As stressed by Donald Abelson, the FCC makes a distinction between economic and social regulation. The FCC did not and will not apply economic regulation to the Internet. But with regard to achieving social goals established by the FCC, the FCC has taken measures that will accomplish these goals, e.g. that citizens that have replaced their fixed wireline phone with a VoIP-phone should have access to the same emergency services that other citizens have, that law enforcements concerns must be accommodated, etc. The FCC is looking at the social issues but is staying away from economic regulation. The second question concerned whether content regulation is the same in the different states. As Donald Abelson pointed out, there are no state rules on content. Content is under the jurisdiction of the Federal Government, the FCC, but content in the sense of the FCC is different from content in the European sense: The U.S. is very similar in its concerns about certain social issues, such as children's programming, human dignity, balanced political speech, or certain advertising rules. What the U.S. does not share is an interest in promoting the production of content by national entities or national production.

Zsolt Nagy, Minister of Communications and Information Technology, Romania, provided a very interesting

Romanian ICT Overview

The main strategic objectives of the current Romanian Government are to increase the competitiveness of the Romanian economy by increasing the usage of ICT to consolidate the ICT industry and to make it competitive for the European market, to increase motivation for using new technologies in order to improve efficiency and to improve the citizens' living conditions.

Romania today counts about 21.5 million inhabitants. The number of fixed line subscribers increased from 3,900,000 in 2001 to 4,389,082 in 2004. The liberalisation of the Romanian telecom market on 1 January 2003 resulted in a considerable increase of subscribers and a decrease of prices up to 60% on international calls. As concerns mobile telephony, the penetration rate is close to 50%. The number of subscribers increased from 250,000 in 1997 to 11,379,214 in June 2005. The annual market value is growing with an average of 15%. Furthermore, 3G operations have been launched this year.

Internet usage in Romania increased from 2% in 1998 to 28% of the population who uses the Internet frequently plus 24% of the population who uses the Internet from time to time. As regards Cable TV subscribers, Romania holds a leading position compared to the European average: the number of CATV subscribers increased from 10,000 in 1990 to 4,000,000 in 2005, which means that more than the half of the Romanian households are connected to Cable TV services. Most of the companies are offering triple play services (voice, TV and Internet).

The Romanian ICT market amounted to 3.7 billion Euros in 2004 which corresponds to 8% of the Romanian GDP. Its annual growth is rising by over 20% what makes the Romanian ICT market the fastest growing ICT market in Europe.

Some of the main projects of the actual government is the Knowledge Based Economy Project, which is financed by the World Bank and which intends to create of up to 300 local electronic networks, including schools, city halls, mayor's offices and Public Internet Access Points. There is also the Universal Service Project, dedicated to the creation of Telecenters in regions where Internet access is very poor. Moreover, a pilot project based on PLC (Powerline Communication) Technology is run in order to provide an alternative for rural communities in Romania to access electronic communication.

Romania has already introduced several new technologies: 3G (two licences have been issued in 2004, two further licences will be issued at the end of 2005), PLC, trial applications on T-DAB (terrestrial digital audio broadcasting) and digital TV. WiMAX is planned to be introduced in 2006.

Some achievements of the actual government concern the work on a broadband strategy brought in line with the European strategy, a great interest in new technologies, the launch of the third mobile operator and an improved regulatory framework fostering competition on the market.

Romania has a large number of well trained IT and software specialists and is considered as one of the most attractive targets for software outsourcing. A Romanian company will receive the World Summit Award for an e-Learning Solution at the upcoming World Summit on the Information Society in Tunis.

André Santini, Former French Minister and President of the Global Cities Dialogue, presented a great initiative
The Global Cities Dialogue

The debates during the coming two days of the Global Forum aim at taking stock of the current state of technological convergence. However, beyond all these technical aspects, there is one main question politicians are facing today: How to enable our citizens to easily access the various contents - including texts, images and sound - made possible by this convergence?

Technologies are changing very quickly. The duty of politicians is to anticipate evolution in order to prepare the population for future developments. But their duty is also to understand what is at stake and to simply explain what this signifies for their fellow citizens. In order to understand, we have to share experiences and this is the reason why 180 mayors from all over the world band together within the "Global Cities Dialogue". The Global Cities Dialogue is an international network and a platform for discussion which was founded six years ago with the encouragement of the European Commission.

The mayors of the Global Cities Dialogue believe that at present, cities are the most pertinent level for developing new ICT applications. Cities are geographic, political, socio-economic and cultural entities, where millions of people live, work, exercise and enjoy their rights as citizens and consumers.

The worldwide dialogue between mayors on the Information Society also allows reminds that the most innovating experiences have been realised in our local territories and often on our

own initiative. It is this totality of experiences that the Global Cities Dialogue would like to make available to national governments, to the European Commission and to every national and international organisation as a way to avoid repeating mistakes and to provide a solid basis of work.

The Global Cities Dialogue does not have any financial commitments. The only engagement of the Cities is to formally sign the Helsinki Declaration "Mayors of the World for a Global Cities Dialogue" and to commit themselves to the promotion of an Information Society for All. The Global Cities Dialogue has partnerships with other organisations, such as the Global Business Dialogue on e-Commerce, the Network of Local Authorities for the Information Society, the European Knowledge Society Forum – TeleCities, or the Red Iberoamericana de Ciudades Digitales. These partnerships help to better evaluate the main evolutions affecting citizens in a local Information Society.

The Global Cities Dialogue is also an important partner of the Second World Summit of Cities and Local Authorities on the Information Society which will take place in Bilbao just after the Global Forum. It is of major importance for to convince the World Summit on the Information Society in Tunis that the Global Cities Dialogue is able to concretely contribute to the building of a new society and the fight against the digital divide.

Convergence is also about the convergence of ideas, about the convergence of practices and about the convergence of methods.
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The first question of the concluding **Q&A** part of this session was addressed to Commissioner Viviane Reding and concerned the possibility and complexity of regulating content across all the EU Member States. Commissioner Viviane Redding underlined that in Europe, content has been regulated for many years. There is a "Television without Frontiers Directive" which is now proposed to be changed into "Content without Frontiers Directive", due to the fact that today content can be delivered by other means than TV. As regards content, Europe is regulating issues such as the protection of minors as regards pornography as well as excess of violence, advertisement and the fair treatment of political parties. Other than the U.S., Europe seeks to protect its cultural diversity and gives the possibility to the Member States to introduce measures in order to help this cultural audio-visual diversity to be created. However, this is separated from the way Europe regulates infrastructure: Infrastructure in Europe is regulated on the basis of the Telecom Package with the national regulators being responsible for making a market analysis and to propose remedies. These remedies can only be put into practice if the European Commissioner agrees. Thus, there is a continuous collaboration between the national regulators and the European regulators on the basis of the European law, which has been adopted by all Member States. The second question addressed the digital divide: For developing countries the role of the government should not only be regulative. The government has to provide incentives and has to act as a facilitator for ICT. Otherwise the digital divide will grow and turn into an economic, social and political divide. Commissioner Viviane Reding stressed that Europe is taking measures in order to bridge the digital divide. There are going to be incentives by the Commission via the EU structural and regional funds in order to bridge the digital divide. Furthermore, the EC is working together with the European Investment Bank in order to provide venture capital. The digital divide and the developing world will be one of the subjects of the European Commission of the Tunis Summit. Minister Marc Verwilghen confirmed that Belgium has known the same problem that is mentioned in the question. Every government is taking measures to help on the social and the political way that is not regulated by the telecom pact. Every country in Europe is undertaking measures to close this gap.

As **moderator** of the session, **Miriam Sapiro, President of Summit Strategies International**, USA, introduced the session, by stressing the importance of working together to spur a greater convergence and access to the benefits of a fully networked society. The European-U.S. partnership alone is based on a 3.2 trillion U.S. dollar of investment and trade. Europe alone has nearly 15 million broadband subscribers already. Cooperation is needed to reduce regulatory barriers and to foster genuine competition and to ensure that governmental regulation occurs only where necessary and does not interfere with the marketplace or create unnecessary bureaucratic governance or other hurdles, whether nationally or internationally. The sector is on a verge of a new phase of growth based on a convergence between high speed broadband networks, audio-visual media and electronic devices. The convergence of voice, data and images is clearly the new reality but it is not without substantial challenges. These challenges include: expanding fibre, copper, cable, satellite, wireless, mobile, and VoIP infrastructures in the race to triple play; broadening availability of content in terms of platforms and access; enlarging the community of people that have access to the Internet and can enjoy the benefits of conversion without creating a new governance or regulatory regime that could undermine those very benefits; improving network security, dependability and resilience, consisting with privacy concerns and the promise of new technologies; enriching content in term of choice and localisation; and last but not least promoting a new generation of e-Government services at the national, regional and local levels.

As the session's first speaker, **Masao Matsumoto, Director-General for Technology Policy Coordination at the Ministry of Internal Affairs and Communications (MIC)**, Japan gave a very distinguished presentation on

Strategies for Realizing a Ubiquitous Network Society

The Japanese ICT strategy, called e-Japan Strategy, was launched by the Japanese Government in January 2001 with the objective to become one of the most advanced ICT nations by 2005. One of the goals of the strategy was to build up one of the world's highest developed Internet infrastructures. However, due to the fact that it was recognised that the actual utilisation of networks was not as efficient as expected, the Japanese Government revised the strategy in July 2003 in order to promote widespread ICT utilisation in various fields, such as medical and administrative services.

A new ICT strategy, covering the period 2006 to 2010, is currently under discussion. During these discussions, the MIC made a proposal concerning the concept of the future ICT society that will be incorporated in the new strategy. The proposed name of this next ICT society is "Ubiquitous Network Society". In the Ubiquitous Network Society you can easily communicate through networks not only between person to person, but also between person to goods and between goods and goods. In such a society ICT exists everywhere in our lives and becomes part of our natural environment. Japan believes that the Ubiquitous Network Society will at the same generate a universal, user-oriented and unique society. The universal society means that all citizens can easily access the networks and enjoy the benefits of ICT; the user-oriented society means that ICT represents the viewpoint of users, rather than the one of suppliers and unique society means that individuals are allowed to make new challenges by the means of ICT.

In 2004, the u-Japan policy package has been adopted in order to promote the realization of this Ubiquitous Network Society. The u-Japan policy package aims to achieve the following three goals by 2010: (1) 100% of the population can access to broadband services; (2) more than 80% of the population to appreciate the role of ICT in resolving major issues; and (3) more than 80% of population can feel safe using ICT.

In order to achieve these goals, the policy package proposes a set of prior policies: The policies to achieve the first goal include the development of a next generation network by means of IP technology which enables seamless access for both fixed and mobile network, the rolling out of a nationwide broadband network to eliminate the digital divide, and the establishment of networks of real objectives such as RFID and sensor networks etc. The policies to achieve the second goal are to remove institutional and cultural obstacles to the use of ICT, to promote digital content distribution and universal design concepts, as well as to develop of human resources. In order to achieve the third goal, Japan set up an action plan to addressing various issues such as protection of privacy and information security and to improve the environment for the use of ICT.

In order to push R&D in ICT, a technological strategy, the so called UNS Strategy is going to be launched. This R&D programme to realise the Ubiquitous Network Society will start in 2006 and run for 5 years. It places great importance on the following three different fields of technology: (1) New-generation networks technologies, with a focus on network technologies such as photonic and mobile communications; (2) ICT security and safety technologies, which focuses on technologies necessary to make people feel confident and safe in using ICT; and (3) Universal communications technologies focusing on technologies enabling people to communicate free from linguistic or cultural barriers.

ICT is evolving each day and it is difficult to predict the future of the upcoming society. However, Japan made a proposal of how this next ICT society could be realised in the near future and would be happy to share its experience with other nations.

The question raised during the **Q&A** part of the presentation was about how successfully RFID technology is deployed in Japan? Mr. Matsumoto stated that RFID technology is currently under experiment in various fields in the industrial and governmental sector. Japan is aware of the security aspects related to the use of RFID and the MIC submitted some basic principles concerning information security in the use of RFID to the Japanese Government.

Patrick de Smedt, Chairman of MICROSOFT Europe, Middle East and Africa – EMEA, [www.microsoft.com], one of the main sponsors of this year's Global Forum, provided a brilliant insight into the ways of

Enabling Innovation in the Information Society

Innovation is the key driver for this knowledge economy. We are living in a world of more convergence but also in a world where the nature and the pace of innovation and globalisation is accelerating. Consequently, the economic playing field has been levelled. Europe needs to achieve higher economic growth by accelerating innovation while at the same time creating more and better jobs and addressing societal challenges, such as an aging population. Technology as such matters enormously for growth and competitiveness and big bets about technology and innovation are needed to deliver that growth potential. ICT represents some 6% of the EU GDP and contributes to close to 30% of the productivity increase across all the sectors in the EU. It is important to recognise that ICT is a sector with

a lot of jobs and well paying jobs with some 9 million people employed and some 2 million extra people expected in the next three years. Technology is at the centre of European competitiveness and is fundamental to address societal challenges to more socially valuable applications, for instance in the area of governmental services, healthcare, education and lifelong learning. The common theme of all this is innovation. Innovation can be seen as "the art of the possible", making sure that the combination of smart people working together in partnership in a dynamic and enabling environment to find new solutions for existing challenges and to find new ways of doing new things.

Technology should also be an enabler allowing organisations and people to innovate. Great IT and the possibilities of convergence also mean that innovation should be developed and delivered at lower deployment cost and lower operational cost. A few success factors in driving all that innovation forward are:

(1) The need for integrated innovation that makes it easier to use multiple devices in this converging world. Interoperability based on open standards are vital in this context as they enable the commercial sector to keep developing innovative products that will seamlessly work together.

(2) A culture of innovation empowering everyone in a company to come up with new ideas, while at the same time being ready to invest in research, development and innovation.

(3) Collaboration and partnerships. Innovation is not only what innovators do but especially what customers adopt. It has to ensure that what is invented leads to new services with an added economic and social value. R&D partnerships are vital and universities are a vital incubator for innovation.

(4) Perseverance to stand behind the big ideas and to make long-term investments.

The annual spending of Microsoft in R&D amounts to about 7 billion U.S. dollars (16% of the revenues). The Company has recently established its 5th R&D centre in Ireland. Furthermore, an initiative with universities has been launched to look at the intersections of science and ICT.

As regards SMEs, a much better job has to be done in order to help them to access venture capital. Access to e-Skills is of crucial importance in order to make sure that they can absorb and exploit the opportunities of new technology.

IT-skills training have to be increased, especially in the light of the digital divide and the aging population. Today, there are many more older people, but also a lot of unemployed young people, they have to be retrained to new promising sectors. All this requires large investments.

The governments need to keep moving foreword with its reforms by enabling business expansion and consumer confidence. More emphasis should be put on the development of the internal market, on investments, incentives and higher education. IPR is an essential aspect because it gives real value to ideas and innovation. Europe needs to act faster to reverse the decline in private R&D investments as well as in the number of researchers in Europe.

If governments act clearly and more confidently on the enabling framework for innovation, the private sector will invest more in Europe and for Europe.

The first question coming up in the following **Q&A** part concerned the need for governments and international organisations to address the Intellectual Property issues that foster innovation. Patrick de Smedt explained that analysis and research have shown that Intellectual Property is fundamental for economic growth and driving more jobs all over the world. The technology sector grows through innovation. When investing in R&D companies expect a certain return on investment and incentives for this research in order to sustain R&D for the future. When looking at the past 40 years of ICT, Intellectual Property protection has been one of the key success factors for driving growth in that special sector. It started with copyright protection, that was good for certain purposes but in a world of more convergence, more web services, more transparency and openness, a kind of patent protection is required. When looking at patent protection, you publish your innovation and share it more openly while at the same time protecting it. Intellectual Property protection and enforcement is very critical for economic growth as well as for exchanging and getting access to innovation on a global scale.

The second question referred to the specific points of how governments can work more closely with companies to foster job creation. Patrick de Smedt mentioned Public Private Partnerships as a great opportunity for governments, the industry and the academic sector to work more closely together in very different areas. Microsoft, for instance, is a very partner depending orgainsation, which means that the company grows through its partners. There is a sort of system to multiply job creation through such partner driven business model. In PPPs the symbiosis between industry and academia is fundamental. The U.S. provides some very good examples (e.g. MIT, Stanford) for how to transfer knowledge between publicly funded organisations, research institutes and the private sector. Europe should learn from these practices and create and invest in a certain number of centres of excellence. Another aspect concerns employability making sure that the private sector is taking its responsibility to help employability initiatives in partnership with the government and all industry players. Initiatives are needed to exploit the growth potential of SMEs in fostering the entrepreneurial spirit, providing access to capital and making sure that they have the right skills and that the skills do not mismatch with what the market is demanding.

Kathryn Brown, Senior Vice President, Public Policy Development and Corporate Social Responsibility, VERIZON COMMUNICATIONS, USA, [www.verizon.com], one of the main sponsors of the Global Forum 2005, gave a captivating presentation on

Verizon FiOS

Verizon is the first U.S. company to deliver a true, next-generation, broadband experience (network capacity of 100 megabits), by bringing fibre not only to the neighbourhood but also to the doorsteps.

The technology and innovation and competition fuelled by the speed and capacity of broadband networks, has enabled true convergence: Cable companies are providing high-speed Internet and voice services, wireless companies are providing voice and data and video, and traditional phone companies are providing wireless and data and video. Broadband technology enabled convergence, but it is not just about technology. Broadband has fuelled the competition and choice that has put the consumer in the driver's seat when it comes to communications.

Today, Verizon is making substantial investments to roll out ubiquitous DSL, high-speed wireless broadband and FiOS Broadband in addition to serving over 50 million telephone customers and almost 50 million wireless customers.

For consumers to receive the full benefits of broadband, and to encourage investment and deployment in broadband technology, requires new public policy for the new world of broadband: First, we need a policy that recognizes the global nature of the broadband world, and that encourages new investments and innovations. Capital migrates to where it is welcomed. Given the complexity of a global market, countries and regions compete for cash and there is a need for rational government policies that attract capital. A capital investment in new technologies will further innovation.

Second, we need to recognise that competition and choice are the best protections for consumers in the today's marketplace and we need an agile, problem-solving policy regime that is responsive to real – rather than imagined – problems in the multi-media space. One way to ensure consumer choice and protection could be an industry wide voluntary adoption of clear and simple "connectivity principles" – ensuring that consumers can navigate end-to-end on the Internet. Such principles should be based on the philosophy that innovation will flourish in an open, vibrant Internet space. They should respect the global nature of broadband and be applicable in the EU as they are in the U.S. These voluntary, industry supported principles (not regulations) protect consumers, and provide regulators with guidelines that ensure the marketplace remains fair and open to the development of new and innovative services for consumers.

Third, such consumer driven approach is central to frame public policy. Rather than "anticipatory regulation" of the past, government should act only where the market fails. Issues of access, content, protection of minors, privacy, and DRM are the new public policy issues for this new world. While the old policy is "government-centred", the new policy must be consumer-driven.

Forth, in order to allow true choice in the marketplace, barriers that hinder new entrants to the market, whether it is video, wireless or voice, have to be removed. The U.S. is currently engaged in an effort to streamline entry regulations for video offering. As an accident of history – in a world before the Internet and convergence happened, different laws were enacted for each medium. None of them makes sense today. It will be necessary to remove all the unnecessary regulations that slow innovator's ability to move into the market. Consumers want speed and a wide variety of choices to meet their needs.

The question addressed to Kathryn Brown during the **Q&A** part of the presentation, referred to Verizon's view on the principles of net neutrality in terms of trying to foster greater competition. Kathryn Brown referred to Verizon's connectivity principles. It is really about ensuring that the Internet remains an open network, where end-users are able to get from wherever they are to wherever they want to go in the world and to access information wherever they may find it on the worldwide web. It is innovation that enables them to use any devices wherever they are. It sounds simple but there are both private and public policy initiatives that would prevent the consumer to be in charge. Verizon is building a powerful network by investing billions of dollars and want people to use this network and want them to be able to go wherever they want to go. At the same time their commercial concerns can also use the network to deliver goods and services, such as healthcare services. Verizon wants to provide a pipe that allows that kind of interactivity between consumers and whoever the provider of content or services may be.

Jean-Paul Lepeytre, Senior Vice President of the Services Division at THALES, France, [www.thalesgroup.com], one of the main sponsors of the Global Forum 2005, concisely outlined the subject of

e-Government: A New Challenge for Europe

Promoted by thirteen major European ICT corporations, the Technology Platform NESSI (Networked European Software and Services Initiative) has been launched on 7 September 2005 in Brussels with a strong support of the European Commission. The 13 companies decided to bundle their strengths in the ICT domain in order to define, promote and federate R&D policy in the area of software and services. Special attention is given to the definition and the implementation of a research programme and precise topics in order to provide citizens, companies and public administrations with the new services they need and which will both generalise the access to the Knowledge Society and act a growth driver for Europe.

The NESSI initiative intends to develop the European backbone for e-Services and proposes three concrete main actions:

The first is to develop a generic transversal infrastructure based on Open Source Software, enabling to develop, deploy and manage the new services and software in order to provide European citizen with simple, secure, quick and powerful accesses. This European, respectively worldwide, infrastructure is still a missing part in the puzzle of the digital convergence between the Information Society, services, media, networks and devices. It will be a key element for the development of e-Government within the next 10 years.

The second action proposed is to create a European laboratory for research and demonstration, e-Services and e-Government oriented applications in order to implement a concrete agenda of strategic research, but also to test and validate European scope applications.

The third action is to define the required standardization and interoperability of the different systems, and notably the rules of using OSS for which NESSI wants to promote the development and the use because OSS has demonstrated its ability to be the base for excellent infrastructure software in a cooperative and reliable way.

The main expected benefits of NESSI are the creation of new services with a strong added value for all the actors of the European economy (citizens, industry, public administrations) as well as a contribution to the improvement of the well-being of citizens thanks to the development of e-Services. Furthermore, the development of new services involves creating jobs in a strong growth sector, ensuring current employment and facing the offshore relocation risk.

The 13 promoters of the NESSI platform are convinced that the bundling of the expertise existing in Europe can succeed in this ambitious challenge for the benefit of all European participants.

The question addressed to Jean-Paul Lepeytre in the following **Q&A** part of the presentation was about how NESSI will address the issues both of privacy and safety. As Jean-Paul Lepeytre stated, NESSI is a very open structure, not only for certain companies, and readily welcomes all stakeholders, such as the academia, SMEs, industries, and governmental administrations. Security is definitely a key success factor and a key constraint. However if NESSI can rely on a strong partnership, it has a good chance to be successful in security constraints and security solutions.

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The first question coming up during the closing **Q&A** part of this session was addressed to Kathryn Brown: How FiOS can help bridging the digital divide in particular regarding education? Kathryn Brown stated that Verizon's broadband roll-out is diversified – it is both FiOS and EvDO, which is covering all the major cities. FiOS is small right now as it is just starting. DSL covers up to 93% of Verizon's footprint. Broadband in the area covered by Verizon is almost ubiquitous and is available both in urban and in more and more rural areas. The company is also looking at Wi-Fi and WiMAX technology for those areas with very low density. In the U.S., it is then that the services offered over the broadband pipe that provides those kinds of social services to persons living in urban, rural and suburban. The point has been, however, to make sure that these networks reach as many people as possible. Kathryn Brown also mentioned the work done within the Verizon foundation, which goes out to communities every year to use these technologies to develop the applications on the other end. In the last 2 weeks, Verizon together with the Verizon foundation achieved to wire a low income area of the Bronx, New York, where 11 000 units of low income housing have been connected.

The second question addressed to Kathryn Brown concerned the ARPU in triple play, which is very different when comparing Europe and the U.S. Which trend will prevail: the European one, or the U.S. trend? Kathryn Brown stressed that it will be necessary to look on different business models. The business case is different in different parts of the word, as we look at different technologies and geographies.

Infrastructures & Systems Convergence

As chairman of this session, **Michael Kennedy, Senior Vice President and Government Relations and Country Manager for Canada and Latin America at MOTOROLA, Inc.**, USA, [www.motorola.com], one of the main sponsors of this year's Global Forum, welcomed the panellists and participants and introduced the overall topic of the session with a brilliant illustration of

Convergence through Seamless Mobility

The user is increasingly experiencing technologies at home, in the automobile, at work and out in the environment with his cell phone. The next big thing will be "seamless mobility". It is about how people can take content and how to move across these different devices, platforms and networks – in a sense that people control their own content and take their content with them. It is not only about connecting people or connecting people to things but also connecting things to people. Today the cell phone becomes the remote device of life; people are doing increasingly things with their cell phone, such as banking operations etc. This is becoming possible because governments worldwide are in the process of making lots of spectrum available for wireless services and because networks technologies have developed rapidly.

Wireless increasingly goes to a multi-media platform where we are not only getting voice, but high-speed data, video enabling us to carry our content wherever we go. Today, the cell phone becomes the third screen, after TV and the PC.

Convergence is all about multi-media, it is all about the power of the PC, cable companies are getting into VoIP, wireless and wired telecom companies are getting into video and offering some tremendous multi-media capabilities. Triple play is rolling out in all countries. In the developing world, cell phones become cheaper and cheaper and Motorola is proud to build the first "less than 40 dollar" cell phone.

The i2010 initiative is an exiting framework for the EU. Today momentum calls for ubiquitous communication, for building on GSM success and broadband rise, as well as the deployment of new technologies, such as WiMAX, DVB-H, FTTH. Achieving security and data protection is a priority.

However, challenges are there: Harmonizing regulation continues to be a big issue, spectrum is always an issue, and of course privacy is a major issue we all face as more and more information gets digitised and more and more information gets available through various networks.

The key is access to much richer content to drive uptake, providing enhanced economic and societal benefits. Convergence is a critical concept to allow multi-platform delivery of services and seamless mobility – the capability to move between networks – is the real-world approach to bring it all together and make it happen for everyone.

Brent Olson, Assistant Vice President, Regulatory Policy, Emerging Services and Technologies, at SBC SERVICES, Inc., USA, [www.sbc.com] - one of the main sponsors of the Global Forum outlined

*The Convergence of the Communications Marketplace and
SBC's Transition to a Multimedia Communications Company*

All forms of convergent communications rely on digital technology and as IP and broadband are deployed as the primary network technologies the barriers between formerly segmented markets are breaking down. In the past years, a number of advances are worth pointed out to show how these barriers are breaking down even more and how things are becoming more ubiquitous in people's every day's lives: The rise of pure Internet video providers, such as Akimbo. In addition the BitTorrent Technology is allowing transferring video bits over the Internet in a way that makes it faster to download videos. Today, 50% of the Internet traffic is the exchange of video files. With the Apple Video IPOD devices themselves are becoming more and more important. These devices can do more things and can do them more and more on the move. The maturity of Google, Yahoo! and MSN – these organisations act today as a one stop shop for people in the Internet. And finally, the spread of VoIP – eBay recently bought Skype/Vonage with over 1 million customers.

At SBC convergence is transforming the company: Starting as a telephone company providing local telephone services to the customers, SBC today becomes a pure multi-media communications company. Some examples are the project "Lightspeed", which is the equivalent to Verizon's FiOS, and wireless/wireline integration to provide seamless communications services.

The 6 "C" of the convergent communication marketplace are: (1) more competition – more platforms providing similar services; (2) more choices – consumers benefit from competing technologies and innovative services; (3) more capacity – increased deployment of advanced broadband (wireline and wireless) networks; (4) more connectivity – with IP, the shared language of the digital age; (5) more commercial deal making – means more opportunity both for businesses and consumers; and (6) more customisation – consumers do not just use devices, services and applications, they design and configure them according to their own preferences.

As regards policy implications, the current regulatory framework needs to be re-formulated based on the following assumptions: Regulating future technologies based on yesterday's communications landscape does not work. We need an active oversight model, not an active intervention model. Policy makers should take the view that the markets work and that monopolies are no longer the norm. There should be a broader view of the market and a lighter touch. Focus should be on bad actors (Spam, viruses, spy ware etc.) but it should not be assumed that networks are bad. Investment, innovation and competition are working together to define a consumer-driven marketplace. Regulation must foster growth in these areas.

As regards the situation in the U.S., progress has been made and the U.S. FCC has made large efforts in spurring broadband technologies. Removing regulatory barriers for new broadband and IP-based technologies is increasing. There is a movement to pass legislation that better reflects market realities and technologies. However, industry is still governed by the existing regulatory silos of yesterday's communications marketplace.

The question that was raised during the **Q&A** part of the presentation addressed the fact that more and more platforms are providing similar services. However, to provide similar services one needs similar infrastructure and performance. Should some infrastructure, such as optical fibre and wireless infrastructure, be duplicated or rather shared for an effective competition? Brent Olson pointed out that the market and not the providers themselves should figure out whether sharing or not is the best model. Competition between platforms gives both the investment and the innovation – and most importantly it is bringing different shaded competition. Even though a wireless phone may not work the same when it shows video as when watching the video on a TV set, it has advantages compared to the TV set and it has disadvantages. One advantage is mobility. People make choices about which one they want and whether they want only one of them. The regulatory framework should encourage this different shaded competition to see more consumer value in the market place.

Takahiro Yokoyama, Director of the International Frequency Policy Office, Radio Department, at the Ministry of Internal Affairs and Communications - MIC, Japan, presented with great devotion Japan's

Spectrum Strategy for Wireless Broadband Services

Japanese users and consumers are seeking for more mobility or broader bandwidth which is leading to the convergence of services and to a Ubiquitous Network Society. Infrastructure and service providers are trying to respond to those market demands. To accommodate these new services and technologies, it is necessary to allocate an additional large amount of radio spectrum.

The Japanese telecommunications market counts more mobile service subscribers than fixed services subscribers. The number of broadband services and subscribers has rapidly increased during the last years. People are enjoying 100 Megabits per second for about 50 US dollars per month. This rapid increase is one of the characteristics of the Japanese market. In Japan, mobile phones are not only used for voice communications but also fur surfing in the Internet, for downloading music or game software, or for purchasing train or concert tickets.

In respond to this trend, the Japanese government launched a Spectrum Strategy. The Japanese market is moving towards unwired, broadband and ubiquitous networks. To realise this, radio frequency is necessary and the Spectrum Strategy plays a very important role. Spectrum use in Japan has dramatically increased: The number of radio stations increased from 5,317 radio stations in 1950 to approximately 101.6 million stations in 2005 – most of them are used for mobile communications.

In July 2003, the Japanese Ministry made a forecast on the volume of the radio spectrum resources required for mobile communication systems and wireless LANs until 2008/2013. According to this forecast, an amount of more than 1.5 Gigahertz bandwidth needs to be additionally allocated until the year 2013. However, radio frequency resources have exclusive characteristics and therefore it is difficult to use these resources at the same time someone else is using them. Spectrum frequencies are very congested with the intensive use by a large number of radio stations in Japan. Therefore the basic policy to meet these new frequency demands is either to ask existing radio users to return their assigned

frequency bands and to distribute them to new users, or to ask new radio users to share their frequency bands. The methods are called "reallocation".

Allocating such an amount of frequency resources has a great influence on many existing radio spectrum users. Reallocation work will be controversial and if the spectrum bands in question are used intensively by many licensees, it is more difficult and will take a longer time to reallocate them. In 2003, the Japanese Ministry adopted a policy package, called "Spectrum Open Strategy". This package sets up the goal to develop the world's most advanced wireless broadband environment and includes seven concrete policy agendas.

Guidelines for radio spectrum reallocation have been published by the Ministry, in order to provide foreseeability and transparency to spectrum users. Moreover, several legislative measures have been introduced.

Before starting reallocation, it is necessary to target frequency bands. Thus, the MIC realised a survey of the current status quo of spectrum usage and identified those radio spectrums that are not used efficiently or could be replaced by other means, such as fibre optics. For existing radio stations it might cause difficulties to return their license. For this reason a compensation scheme to facilitate rapid withdrawal of existing radio stations, was introduced in order to compensate existing licensees for their losses caused by the reallocation. Furthermore, more simplified procedures have been introduced, in order to promote new entries and a major review of the spectrum usage fee system has taken place.

In order to underpin a Ubiquitous Network Society and the convergence of services, a large amount of spectrum will be needed. In this regard, one of the great challenges for spectrum management is to establish and implement a mechanism for supplying sufficient radio spectrum resources to new services. Such a mechanism is a driving factor in the introduction of wireless broadband services.

The concluding question of the **Q&A** part of the presentation referred to the reasons of the rapid increase of broadband subscribers in Japan. Surveys showed that the ratio between bandwidth and cost is very favourable to the Japanese users compared to users in other countries. Takahiro Yokoyama briefly outlined the two reasons for this: The first is related to the Japanese competition policy, obliging the incumbent company to unbundle the local loop copper line and also the optical fibre to the home. The second one is related to the entrepreneurial spirit of the new entrants, who actively compete with the incumbent company by using unbundled local loops to provide much higher bit rate at a cheaper price than the incumbent telecom operator.

Jørgen Friis, Deputy Director-General, & Margot Dor, Director Business Development, European Telecommunications Standards Institute – ETSI, [www.etsi.org], one of the main sponsors of the Global Forum 2005, provided an insight in ETSI's vision of

What Convergence Means to Us - Two Highlights

One can not speak about convergence without speaking about standardization. Created in 1998 and recognized by the EU, ETSI is an independent private, non-profit, ICT standards organisation with more than 650 members, thereof 80% belonging to the private sector. ETSI is a member-driven organisation, financed up to 70% by membership fees. The organisation is open to all players worldwide, with more than 20% of its members from overseas. ETSI provides strong interoperability services and is very experienced in IPR issues. ETSI has a strong IPR policy based on fair, reasonable, and non-discriminatory principles (including

royalty free) and is becoming a focal point for the discussion of IPR issues in the industry. All of ETSI's standards (about 50,000) are available free of charge on the Web.

Convergence perfectly matches standardisation – standardisation leads to convergence because it leads to competition, to choices from users, innovative technologies and connectivity through interoperability and it also leads to commercial opportunities and new markets. The only thing standardization does not fit in is customisation.

Technological convergence is the modern presence of a vast array of different types of technology to perform very similar tasks. Convergence can also concern the underlying communication infrastructure. An example of this is triple play, where communication services are packaged allowing consumers to purchase TV, internet and telephony in one subscription.

ESTI is very active in the field of mobile-fix convergence. The mobile SIP-based IP based Multimedia Subsystem is at the heart of both the 3GPP and 3GPP2 networks. Convergence is based on a multi-service multi-protocol, multi-access, IP. It is not one network, but different networks that interoperate seamlessly and that can be accessed by many different types of terminals and technologies. Convergence means that anywhere you are, at any time and by any terminal, you can get access to any information. This is the true Next Generation Network ETSI is aiming at.

The second important issue for ETSI is the convergence between IT, telecoms, broadcast and consumer electronics. One of the factors to take into account is that all this takes place within the background that software is gaining in importance. The bulk of ICT infrastructure development activities are now software related. New technology and functionality are introduced through software upgrades to existing systems. Furthermore, software component interoperability has dependencies both vertically in the layers (dependency on their deployment platform) and horizontally in the systems (dependencies on multiple client/server/peer systems and services in the infrastructure). The challenge for ETSI is to adapt the established standardization techniques to software interoperability. Another factor in this context is the middleware factor, which becomes increasingly important.

It is all about interoperability. Standardization has always been about ensuring interoperability – however convergence, amongst other factors, challenges the meaning of "interoperability": We come from a specifying end to end system, such as GSM, to a logic of interoperating building blocks. It is also about standardizing interfaces ex ante to addressing interoperability of components ex post. Other facts and paradigm changes have to be taken into account: The standards making market becomes increasingly fragmented. "Plate tectonics" is what is currently happen in the IT consumers industry – and this is it not a smooth process, but a process with winners and losers. Today, people are "shopping" for standards; e-Government provides a good example for this. The world can no longer be split in standards makers and standards takers. Another fact to taken into account is the fact that OSS has increasingly to be considered.

There is still an important role for ETSI to play, especially regarding end to end interoperability and standards integration.

"Standards allow different entities to create technically compatible equipment and services. It should be noted that "interoperability" requires more than "mere" technical compatibility. However, without standards neither compatibility nor interoperability would be possible. Standards can take different forms, such as open standards, proprietary standards and de-

facto standards among others. In general, open standards are preferred for mass-market applications". (Report of the High Level Group on DRM)

Laurent Chesnais, CEO of NETSIZE, France, [www.netsize.com], one of the main sponsors of this year's Global Forum, gave an excellent presentation on

Breaking Communication Barriers

Netzise is a mobile services enabler, helping its customers (companies, co-operations, associations and governments) to create and to manage mobile services for their consumers or citizens.

Today, everybody is using a mobile phone. The penetration rate of mobile phones in counties like Sweden or the Netherlands is close to 100%.

A mobile phone today is used for a wide range of applications: People are no longer using the mobile phone just as a telephone but to watch TV, to listen to music, to surf in the Internet, etc. People are carrying their mobile phones around with them everywhere they are, which means that they are connected anytime and anywhere. This also means that people are changing behaviours and this provides a tremendous opportunity for governments. e-Government is maybe already the past: we rather should talk about m-Government. Mobile services provide governments with a means to reach more and more citizens. There are many new possible services in the area of Citizen Relationship Management: public sector service reminders (driving tests, hospital appointments, …), tax form info, verify voting information, energy alerts, lottery results, traffic updates, tourist services, votes, etc. The advance of the mobile phone is that, other than TV or radio, it allows to target specific persons.

Many of the mobile phone users are already using their mobile phone to vote for TV polls. Even if it is maybe not yet the time to use the mobile phone for political polls, it might be used for surveys or polls regarding questions of local public interest. This aspect also addresses the issue of inclusion: Not everybody has Internet access, but most people have a mobile phone.

Another reason for the need of more mobile services is that things are going mobile, too: Devices are going mobile – we are living in a machine-to-machine world, where every machine is able to communicate and the easiest infrastructure to use is the mobile infrastructure.

Companies, associations, or governments have to provide innovation to launch a new product or service and mobile services are a real innovation factor. The problem is that there is a large choice in using wireless technologies and people get lost in this jungle of technologies. There are many challenges to address, such as the deployment of wireless technologies, which is not trivial; people have to seal with multiple access providers; implementation is complex and time-consuming; and there is high operational management overhead.

This is why there is an increasing need for mobile service enablers providing a single point of contact for universal access (the aggregation of wireless technologies, provision of cross-network mobility, service management and billing, security and user management), minimising the CapEx at a lower risk and ensuring fast deployment.

Pierre Tournassoud, Vice President of Network Strategy for ALCATEL, [www.alcatel.com], which is one of the main sponsors of the Global Forum 2005, provided a clearly focussed and concise presentation of

Triple Play Convergence from Fixed to Mobile

In the face of fixed-mobile convergence, fixed network operators are redefining their business scope by going nomadic and launching triple play, including IPTV. Mobile operators will probably follow, as major evolutions like video over IP, IPTV or mobile TV will come on the mobile side.

Equipment vendors have to recognize that many important factors shaping this industry are happening outside their own R&D centres and more and more in the global community, including the way competition and regulation is managed, but also Internet as a major factor. Competition, deregulation, Internet, and consumer electronics have given end-users bargaining power, which is leading to new solutions and new partnerships.

A survey asking the opinion of key telecom execs about convergence, showed that voice and data come on the first place, followed by telecom and media, telecom and IT, and finally devices. As a matter of fact, this trend influences R&D strategies of equipment vendors and Alcatel is investing heavily in convergence enablers, such as NGN, data aware transport, service aware routing, IMS, WiMAX, 3G, IPTV and mobile TV.

As regards fixed triple play, which is primarily bringing video on fixed networks, one can state that as soon as people have 20-25 Megabit per second available at their home, high quality IPTV is possible enabling a telecom operator to compete with a cable operator in terms of quality. However, it is more than just quality matching the experience of cable networks, it is also more interactivity: Alcatel is proposing to enable the IPTV middleware with more interactivity in order to allow other TV experiences than just passively watch more and more channels. "My own TV" and "Amigo TV" are solutions proposed by Alcatel to add three new dimensions to the TV experience: communication, personal content and communities. Amigo TV allows people to communicate, watch TV and sharing the TV experience with remote friends. My own TV enables people to create own channels, to share personal content with family, friends, a community, or customers.

The next wave will be mobile TV. In the same way fixed IPTV services on a PC moved from a very simple streaming service to a high quality IPTV experience on high definition sets, the 3G mobile TV will be enriched gradually and become a mass market with unlimited audience, unlimited usage, unlimited coverage, high quality image – even through a small screen, and more and more interactivity. Mobile TV is perceived as a natural evolution and 24% of the customers are ready to pay 10 Euros/month for 15 mobile TV channels.

In the context of TV services delivery, broadcast – such as DVB-H – is a much more effective way to deliver TV and to use the spectrum than the mobile network as it is designed today. Given the fact that in Europe, 20 channels cover typically 80 % of the audience on cable and satellite TV, industries propose to use dedicated broadcast bearers for broadcasting the more popular channels and to use the mobile network for the other contents. In such way a cost effective service platform combining unicast and broadcast services would be established.

As regards the broadcast bearer itself, it is proposed to use satellites in addition to terrestrial coverage as an hybrid system benefiting from the satellite for ubiquitous coverage and

terrestrial repeaters to have better in door penetration and a higher number of channels. In this context it is proposed to extend the DVB-H standard to satellites so that it becomes compatible with direct broadcast home satellite to the handset: DVB-H+ for a universal mobile TV service. As regards regulation, the EC has an important role to play in order to allow a fast rolling out of such innovative service.

The proposed mobile TV is not competing with 3G. It is rather a way to establish an attractive mass-market for mobile TV services that will help driving the 3G take-off.

The question coming up within the **Q&A** part of the presentation concerned the regulatory aspects of the proposed model for mobile TV: What is the main topic to consider as regards regulation? Pierre Tournassoud stressed the importance of a European wide and flexible regulation. The regulators have to focus on the services they want to have to be delivered and enable a choice of technologies to roll out these services as fast as possible.

Bernard Mathieu, Head of Radiocommunications Programmes, Directorate for Programmes and Industrial Policy, CNES - French Space Agency, France, [www.cnes.fr] one of the main sponsors of this year's Global Forum, presented with devotion

The Space Contribution to Digital Divide and to e-Inclusion and e-Accessibility

Convergence is certainly very useful, but first of all people have to get access to the broadband and the new services. Bridging the digital divide is still one of the highest priorities of political decision makers.

The recent and new strategic framework for the European Information Society "i2010 – A European Information Society for growth and employment" places particular emphasis on tackling the issues of both geographical coverage of broadband and the social and economic digital divide. The Digital Divide Forum report "Broadband Access And Public Support in Under-Served Areas", issued on the 15 July 2005, analyses the territorial broadband digital divide in Europe and possible EU initiatives to bridge this gap. The key issues identified are that remote and rural regions are less well served (in January 2005 broadband was available to more than 90% of the EU15 urban population but only to 62% of its rural population), and that coverage is progressing fast but some areas will suffer delays or be excluded from the broadband rollout (a recent study estimates that at least 4.7 million would-be broadband users will be excluded by the commercial rollout in 2013 in the EU25).

The possibilities for actions at the EU level include the use of structural funds and public-private partnerships, the exchange of best practices and reinforced monitoring, as well as a pan-European initiative for very sparsely populated areas to ensure coverage by satellites. The Commission supports the idea of demand aggregation as a means of helping to reduce the costs of user equipments in the context of satellite solutions in areas where satellite is considered to be the only practicable solution for broadband delivery.

However, there is a need for further actions, such as the provision of broadband access to the most remote and rural parts of the EU. A satellite based solution is recognized as the relevant solution for rural and remote areas. and a new architecture satellite system could offer a competitive set of services. The satellite system is perfectly suited for aggregating the demand at a EU level and providing simultaneously services to remote areas. Dedicated action is needed to aggregate the demand and a public private partnership initiative might be the key.

Within the framework of its AGORA initiative (providing affordable and guaranteed offers for rural areas), the CNES has very successfully worked on new generation architecture fixed services satellite systems using multispot coverage and Ka band. Together with Alcatel, the CNES is now extensively working in the area of mobile services in order to offer a complementary system to the terrestrial ones.

The key technical features behind Agora's competitiveness are a European coverage with 40 high gain spot beams instead of large unique coverage of today's broadcast satellites, the use of the Ka frequency band, the adoption of a new adaptive DVB S2/DVB RCS transmission standard, and the optimisation of satellite architecture and channelisation. This combination allows both a satellite increase throughput by a factor of 15 and a channel cost reduction by a factor of 10. At the same time, low cost (less than 300 euros) user terminals for the mass market have been developed. Typical broadband access services are offered to professionals, local communities and access points, tele-workers and residential areas. The next step will be mobile TV through an hybrid satellite/terrestrial system using S-DMB.

It was recommended to learn lessons from the European Galileo initiative and, in close relationship with national broadband strategies, to develop the relevant mechanism in order to aggregate under-served demand, to investigate and set up a public private partnership implying the value added chain actors to develop and deploy a pan-European initiative that may bring satellite services at low price to those communities where satellite is the only available option, and finally to rely on national and European Space Agencies to make this initiative a success and a model for other regions around the world.

Robert Bednarek, Executive Vice President of Corporate Development at SES-GLOBAL, Luxemburg, [www.ses-global.com], one of the main sponsors of the Global Forum 2005, provided a highly interesting insight in

Mobile Media and the Role of Satellites

SES, which is known in Europe under the brand name of Astra, has a global fleet of 40 satellites with optimal look angles and comprehensive landmass coverage.

Why going mobile has such a strong interest? Content creators and media companies – whether public or private – wish to reach audiences. There is a very clear model now with the satellite technologies which reaches standard definition TV households of which Astra alone reaches more than 100 million in Europe and a similar number of TV households in the U.S. reached primarily either though cable TV or DTH. Added to this audience, there is a growing audience of high definition TV viewers. It may be content that is repackaged or unique content created for this audience. And there is a new audience beginning to emerge, that is personal or mobile TV. One interesting aspect of this from a content providers perspective, is that the ability to take existing content and repurpose and repackage it for these audiences has become less and less expensive due to the advance of technologies in the digitisation of the content and production process.

As regards the evolution of devices, SMS is moving to mobile media services and ultimately to streaming services. Streaming services will certainly come in different varieties: one is the traditional pull where you are on an individual basis requesting more information to be transmitted to a handheld device. Another is broadcasting: there is an interest in large parts of the populations that some material should be broadcast just for technical efficiency reasons and also in order to improve the reach of the content itself.

There is some strong evidence that this is a very powerful and popular market concept. As an example XM Radio and Sirius Radio, which are hybrid satellite terrestrial broadcast one-way only networks to vehicles, in the U.S. could be mentioned. A similar service involving video is now active in Korea and Japan and enjoys some early success with their offerings which are video and audio oriented. 3G services have commenced commercial roll out across Europe. All of these operators are in some form of trails regarding video provisioning and tend to be very limited in scope at the moment. However, one of the key impediments to this, which is the introduction of the consumer technology, is actually being taken care of. When looking back to the DTH industry, the problem of getting set-top-boxes into the population was a key challenge to the deployment of video services. Here, video enabled devices are entering the market place before the network and the content is ready!

A number of broadcast networks that are complementary to the interactive telecoms' networks are also in various stages of trial and represent an important complement to networks. Mobile TV viewing complements traditional TV usage without necessarily impacting traditional television viewing time. This provides interesting opportunities for content providers and broadcasters to "follow their customers".

There is a clear need to work in both domains, the broadcast domain and the "on-demand" domain, which will exist side by side, because it is what consumers whish to receive. There is some common content which is desired on a continued basis and then there will be a fragmented audience along different interests that will be best served in on-demand models.

The role of the satellite is just emerging. One of the satellites' strength is the obvious one to many transmission advantage from a cost standpoint. One of the key features of satellites is also the ability to aggregate content in one point. Much of the content will be provided to fixed environments, however, the same satellite infrastructure can also be used to provide feeds to repeater networks, such as DVB-H or 3G, directly to vehicles and also directly to handhelds, either stand-alone or with complementary networks. In order to reach handhelds we most likely need to employ additional frequencies, such as S-band or L-band. These frequencies are highly constraint in terms of bandwidth and availability.

In summary, it is a good time to be in the content creation business as more and more distribution paths are beginning to emerge. Satellites have a role to play, as they can provide ubiquitous, instantaneous coverage in a dedicated spectrum. Technology-neutral policies should permit direct-to-handheld satellite solutions, considering in particular the complementary nature of broadcasting and communications.

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During the concluding **Q&A** part of the session the question whether governments are following the European Interoperability Framework recommendations to use only standards that have no IPR in them, has been addressed to the representatives of ETSI. As Margot Dor pointed out, ETSI has created an initiative to discuss the issues that have been raised by the European Interoperability Framework. The definitions put forward created some challenges in the industry with regards to what is an open standard and what should be considered open. However, it looks like that European Interoperability Framework recommendations have been followed.

Software in an Evolving Environment

As **chair** and **moderator** of the session **Gilles Polin, eGovernment EMEA Lead, MICROSOFT CORPORATION,** [www.microsoft.com], one of the main sponsors of this year's Global Forum, made a thought-provoking introduction:

Much of the progress we have seen, whether it be in e-Government or towards the objectives of the European Commission's i2010 strategy, is notably due to software development which has increased Europe's GDP.

In the last 20 years, the key developments in the industry were mainly on the performance of hardware; however there have been some significant breakthroughs in software.

Security is undoubtedly a major concern for all stakeholders and the key to expanding and improving the digital economy. While the industry offers a variety of solutions for security issues, the manner in which the user utilises and implements these tools is important. As seen often times, breaches in security are due to the user's implementation of the tools.

Microsoft is ever more connecting systems not originally designed to be connected, making interoperability central to permitting people to collaborate and communicate more effectively.

Over the last 10 years our digital workstyle has drastically changed and our channels of communication have multiplied, at the workplace and even at home, where the digital lifestyle is more integrated today (e.g. triple play - high-speed Internet, TV and telephone over a single broadband connection).

Microsoft invests 18% of its revenue on research and development which is fundamental to the success of the Information Society and a driver to generating jobs.

Jesús Villasante, **Head of Unit, Software Technologies and Distributed Systems, European Commission,** [www.cordis.lu/ist/st/index.html], provided an expert overview of

Software Technologies Research in Europe

Why is software so important today, why this renewed interest? There was a time when software was attached to computers; today software runs everything, cars, mobile phones, etc. There has been a radical change on the presence of software in our environment and this is certainly promoted and driven also by digital convergence.

This trend is not something that will end, however accelerate and therefore we will see more software demands. This Ambient Intelligence, interconnected world, in which every physical item will have information processing and storage capacity creates an environment hungry for software.

Software is not purely technological; it may run our machines but also incorporates our habits and culture. Part of what we are as a society, will be more and more embedded in software, which is why the capability to develop software and services is essential in any model economy.

There have been disruptive changes to this environment namely: (1) the growing demand for software which gives us the impression that it will be difficult to deal with the magnitude of this growth; (2) the transition from products to services – software today is something much more dynamic, it's not only a product that you buy but also a service, something that you modify, incorporate and integrate with something else thereby changing the business model in the software sector but also in the way software is developed and marketed; (3) the increase in system complexity – back in the 80's there was a mainframe, a system connected to terminals, sometimes a few computers connected through Ethernet and that was it. Today we have millions of people working together on a system requiring a new approach to the development and management of software; (4) the way in which software is developed has also changed. In the past it was done in a reduced community with a very clear purpose and they developed a commercialised product. Today, there are thousands working together to improve a product not necessarily for the market. It is new and not just anecdotal, what we see is that the Internet is run by open source routers, research centres for physics in CERN are run by open source and more and more applications are run by open source, a new mechanism and improvement in the development of software; (5) the emerging competition from other regions, for example China and India.

What is Europe's position in this context? Are these just threats or also opportunities? In Europe we have a very strong secondary software industry, companies that develop software not in order to be sold but incorporated in their products for example Siemens. Europe has a strong service and integration industry, very active open source community, several industries that demand innovative software – aeronautics, automotive, telecommunications.

On the downside, American companies dominate the software industry, Europe is not taking part of standards discussion forums and we don't have any strong IT giants.

To maximise the potential opportunities we must concentrate our energies, resources and intelligence in the development of an e-Service platform and influence the standardisation forums.

The EC provides a number of support programmes to reach these goals in: (1) research and development through its Framework Programmes, structures by which the EC funds collaborative research among the Member States (2) Policy – through the i2010 initiative.

His unit is running projects on software engineering, service computing, distributed and complex services, free and open source software which only represents half of the total investment.

The main ICT themes and activities in Framework Programme 7 will be divided into 4 areas: (1) Technology Pillars - including Software, Grids, security and dependability; (2) Integration of Technologies; (3) Applications Research and (4) Future and Emerging Technologies.

The Technology Platforms are meant to be a consortium of countries that agree on a research agenda and possible initiatives in terms of policy. Several noteworthy examples of running Technology Pillars in electronics embedded systems are: ENIAC (nanolectronics), ARTEMIS (embedded systems), NEM (networked electronic media), eMobility (mobile and wireless communications) EUROP (robotics) and (NESSI) Networked European Software and Services Initiative.

There are 3 priorities for the i2010 initiative: (1) a Single European Information Space - the completion of a Single European Information Space which promotes an open and

competitive internal market for information society and media; (2) Innovation and investment in research - strengthening Innovation and Investment in ICT research to promote growth and more and better jobs; and (3) Inclusion, better public services and quality of life - achieving an Inclusive European Information Society that promotes growth and jobs in a manner that is consistent with sustainable development and that prioritises better public services and quality of life.

The first question coming up in the following **Q&A** part addressed to Jesús Villasante concerned the whether a single European electronic identity card enabling remote identification and digital signature would be a appropriate for public and private e-Services and does the EC have a programme for research and development in that area? Jesús Villasante confirmed that one of the initiatives that may be appropriate is i2010, where one of its main objectives is to create a European Information Space centred around the reform of the regulatory framework based on electronic communications, basically telecommunications framework and audiovisual. The second questions referred to how software vendors and open source developers are working together and what are the frameworks or regulatory boundaries to collaborate? Jesús Villasante elaborate affirmed that the software industry today produces and uses open source software, there is no incompatibility between the two and the issue is how to implement this in daily life and in a commercial scenario while finding a way to promote these open source communities which is to the benefit of the software industry as to society in general. The third question addressed if there are any European programmes to support European software houses to develop European platforms in new areas. Jesús Villasante explained that the IST research programmes support these types of companies and has been finding software engineering for the last 15 years in addition to the DG Enterprise for Small and Medium Enterprises which covers all sectors.

Michael Stankosky, Professor, George Washington University, Department of Engineering Management & Systems Engineering, USA, outlined the topic of

21st Century Software Engineering

Software is governing and controlling our lives in a way that we don't like but its there, he grew up when there was no software and one day he woke up and there was software and has been dealing with it ever since.

It's amazing that at the University we still teach software engineering and management but we still can't figure out how to engineer and manage it correctly. Every programme we see is always behind schedule, over budget and never user friendly.

We do know that open source software has changed the name of the game and as it has all been said before and he came up with a few perspectives and laws based on about 30, 40 years of experience and herein imparts some new perspectives.

If ain't broke break it – we used to say that if ain't broke let it alone but today you have to break everything, it's a new era we live in and you have to challenge everything, nothing is sacred anymore, we need to be always exploring.

Knowledge is the true currency - we've always known that but haven't articulated it very well. He started the first world's masters and doctoral programme at a university and overnight had 40 doctoral students from all over the world but he goes into corporations, consulting for the World Bank and a little bit with Microsoft and goes into talk to the executives and asks if they have an inventory of all of the assets used to produce whatever you do and they look at

him very strange and this is a knowledge-based economy, knowledge is basically the factors of production to produce the things we deliver today. Even his new car, 65% of the cost of that car is nothing but knowledge assets. In recognising this it's a new perspective and of course around the world we don't have any way to value it.

If knowledge is the currency then collaboration is the wallet. Collaboration is so vital to innovation to doing things rightly and somehow along the way we say we're collaborating but why is it only stopping at Europe, why is it only stopping at so many companies.

If you are going to collaborate you have to go to the next perspective, the world is FLAT. He was in Shanghai visiting the College of Software and Technology where they are trying to create a joint programme with them and he saw more going on there than at MIT and George Washington University in development of software and the next things happening. Very exciting, 56,000 students and there he saw bright people trying to beat us through competition.

Internet is the computer. When at SAIC (Science Applications International Company) as vice-president, they bought network solutions, get name for the Internet, for 10 million U.S. dollars in 1995 and didn't know what they bought and sold them to Verizon for 15 billion U.S. dollars several years later and in ten year their lives has changed radically. The interesting part is that the Internet is just at its infancy. Al Gore invented the Internet and Sir Tim Berners-Lee invented the World Wide Web, the most significant man in our generation, the web is knowledge and information architecture that sits on top of the Internet and the Internet is just the plumbing. The real value is on top of the web and it's a separate architecture that is being continually developed by W3C (World Wide Web Consortium) and if you have never heard of it or part of it you're not in the mainstream, that's where the real action is. It's a consortium in collaboration with Japan, Europe, America and the world and that's where the money is. He remembers when he saw Tim Berners-Lee draw on a piece of paper the next generation web which was the semantic web and now being realized with XML and others.

3 Cs – collaboration, codification – if you don't documents it well you can't create and convergence – everything is coming together, everything is together and these are the 3 Cs we're dealing with today if you want to be competitive. Good software equals C3 squared.

It's not about software really but about life in general and sometimes we lose sight of what software is for, it permeates all of our lives.

When asked what is the problem they face, many executives answered the speed of business, and everything is happening at warp speed, we need to have software developed at that speed.

We don't want any bugs, the way you don't get any bugs is not to put them in. A long time ago the quality movement was very simple, turned around one simple philosophical statement, you don't inspect it out, you design it in.

Collaborate , collaborate, collaborate. The user is designer. Less is more, lesser is most.

The following has to be your design parameters when you create software – Software Engineering Laws: (1) if at first you don't succeed, get someone else; (2) in software we should design twice, test 4 times and code once; (3) software supports the operations, not vice versa; (4) design with integration/interfaces in mind; (5) design with enterprise in mind; and (6) design with globalization in mind.

The question addressed to Michael Stankosky during the **Q&A** part of the presentation, referred to open source, whether open should be free or on the market? Michael Stankosky expounded by saying that the business models have been changing and that open source draws it's own business case and there are multiple business cases out there that are quite exemplary in how much money you can make. They're projecting that Internet advertising will bring a few hundred billion U.S. dollars in revenue. Open doesn't necessarily mean free and still requires a delicate balance between discipline and openness. Clearly, the old way has not worked. The second questions addressed why he thinks the World Wide Web works, is this sustainable and what are the principles to extract from the Internet today? Michael Stankosky asserted that IT today is systemic organic, we can't live without it. The Internet is so pervasive that when it goes down companies are automatically losing millions of dollars a day and government can't exist. The W3C doesn't have any boundaries and no particular leader, all inclusive and transparent and that model is scalable.

Jacques De Kegel, Wireless Broadband & Sensing Solutions EBO - Benelux Sales Leader, IBM, Belgium, [www.ibm.com], one of the Global Forum's main sponsors, gave a very valuable demonstration of

SAFIR - EU Project

"Emerging Business Opportunities" (EBO) programme was initiated by IBM 7 years ago designed to drive the development of new business offerings by exploring, developing and testing novel projects, business models and market strategies and it is composed of 300 people worldwide.

One of the projects it is currently working on is SAFIR (Speech Automatic Friendly Interface Research) which is running under the EC 6th Framework Programme to develop the "Voice of Services", an innovative paradigm in interface combining voice and graphics.

Not even 50% of the population has a computer, Internet and broadband and when the government speaks about e-Government it is neglecting a vast majority of the population. IBM is brining e-Government to citizens through means the citizens already have in their households.

SAFIR will give citizens and special user groups an equal opportunity to access and modify and update, at any time, interactively, information through devices such as TV, wired and wireless devices (GSM/PDA) from anywhere by the usage of voice.

It's objectives are to: (1) offer easy transaction access to both PC illiterate citizens and special users like police, fire brigades, governmental employees (surveyors and other field employees in charge of recording facility assets modifications) while on the move; (2) establish the techniques and procedures to have up-to-date data to be used by the citizens and the special users; and (3) enhance data modelling and voice domains through ontology and semantic in a multilingual enlarged Europe.

It is run by a really international consortium made up of 18 European companies from 8 European countries and one Chinese partner funded by the Chinese Ministry of Science and Technology and the total budget is 14 million Euros of which nearly 50% is funded by the EU.

It offers a very powerful natural and therefore convenient user interface to all kind of databases, applications and services in such a way, that all citizens can become part of the e-Society and that professional users can become more effective in their day-today job.

SAFIR is a good example of improving the quality of life and narrowing the digital divide across the EU.

The question that was raised during the **Q&A** part of the presentation addressed the reliability of the SAFIR system? Jacques De Kegel ensured that IBM has a very long history in natural speech and it is now concentrating on voice embedment which is complicated as in an embedded environment you don't have the processing power that you can have on actual desktops, however we see that embedded systems are becoming quite powerful and we can really have good working environments.

Hervé Rannou, President, Items International, France, gave an attention-grabbing presentation on

Software & Interoperability

The model that prevails today in telecommunications for example in regulation is an extremely formal model; however the software model is by far superior in comparison to the telecommunications model and others dominating the video and IT businesses.

We come from different techniques, cultures and the global approach is that IP is a common layer and middleware applications support any application and network and if middleware is the engine of convergence, the approach is completely different for the other cultures.

When you go in telecommunications labs the main occupation is software, its becoming more and more a software culture with dynamic upload, component, interface and that produces standardisation. Before when hardware was the most important, the interfaces had to be standardised to a minimum and the products were defined after, however now everything is software and its important for companies to produce the software first and be the first on the market which gives you more of a chance to standardise your own products.

The problem regarding standardisation is that no one understands what is meant by open standards and where standardisation is going. Many try to simplify the model by creating fora and consortia to define specific profiles for applications making standardisation simpler but on the other hand quite messy.

Some players say open standards is to open the code, others say that open standards can be patented. Open source could be become the best way to define open standards and some organisations are promoting this point of view. It is nevertheless, not so clear as you have many kinds of open source and combining proprietary and free software gets quite complex. There are about 15 kinds of open source licences issued today but you have maybe a 100 categories of open source licences. The situation today is that no one exactly understands what is open source and the difference between it and public licences.

ITEMS International carried out a study for ETSI (European Telecommunications Standards Institute) about the impact of open source on standardisation showing that even standardisation bodies require help to understand what is going on with open source and standardisation.

Understanding what is open and not open is very complex and not one-dimensional and open source is a new way to compete in the market.

The IPR debate is just starting, but patents is a only a part of the issue. Companies do gain more money with IPR and due to convergence, players are faced with more interfaces and components and for each a new patent and some players are saying its enough and we have to change the rules.

VoIP is being integrated in telecommunications and IP is the best network layer and suddenly you have many players with a complete application approach who are not interested in networks, protocols but only applications which changes the rules. Providers of VoIP, for example MSN, Skype and Google are faced with the issue of interoperability as their applications don't interoperate but they are driving the market. Others are based on open source but don't interoperate.

For more and more players the engine of convergence and interoperability is in some cases middleware and VoIP shows that the true debate is on XML. Convergence is software, not only technically but culturally driven. The debate on standardised middleware and standardised XML is a real debate, some say we have to standardise XML and others say we only need to look at the upper layer of XML and do what they please with regards to middleware.

At the time of the bubble the value of Yahoo was about 120 billion U.S. dollars, 5,000 U.S. dollars per customer, when you compare this to Nissan at "only" 60 billion U.S. dollars the difference is staggering, needless to say no one is talking about the bubble anymore.

XML will be the real key to interoperability in the IP world and open source is a very important part of the debate for Europe.

The question coming up within the **Q&A** part of the presentation inquired if we are going to build the Information Society with open source? Hervé Rannou replied that open source is an optional for some players and it's for them to decide. The second question addressed the extent to which interoperability will become a requirement and how to handle that? Hervé Rannou stated that businesses, especially in telecommunications, interoperability is crucial. The third questions referred to the balance between standardisation and creative freedom to invent something new from a policy perspective? Hervé Rannou answered that he is not sure we have to impose standardisation, it's up to the market and the users to decide, the users have to promote interoperability. Last year the IDABC issued a paper declaring that the best way to promote open standards is open source. Many companies argue against that, open source may not be a guarantee or enough however it certainly is a way to achieve open standards.

Convergence, Regulation & Net Governance – Impact at the National and International Levels

The **chair** of this session, **Ashton Johnston, Partner of DLA PIPER RUDNICK GRAY CARY US LLP**, [www.dlapiper.com], one of the main sponsors of the Global Forum 2005, opened the panel by setting up the main themes of the panel:

In his book "The world is flat", Thomas Freedman writes that the world has been flattened by the convergence of ten major political events, innovations and companies. The 10th and final of these "flatteners", the ones that really drives all the others, are digital, mobile, personal and virtual technologies. They are driving convergence in every aspect of governmental, business and personal life.

When talking about convergence in the context of this panel, we can certainly identify the technologies, the trends and the events that are coming together and moving toward each other: The triple play of service delivery, voice, video and data are all moving to a digital format. The convergence of communication and broadcasting; the transmission of content; the cable and telecom business models; the convergence of carriers and media trough consolidation and mergers; the convergence of devices, such as TV, PC, telephone and mobile devices; as well as the convergences of technologies and the speed of change which is driving the convergence of all these other services and companies.

The old distinctions between services and communications networks, which are delivering one-to-one communications, and broadcasting networks, which historically have delivered a one-to-many communication, are fast becoming obsolete. At the same time, we see economic and social market distortions because the regulatory frameworks that are build up to accommodate the old networks no longer are adequate for the new converged networks. The challenge for regulators and companies is to develop and implement clear laws and policies to deal with these new realities and this is a matter not only of industrial competitiveness but also of consumer and public interest – nationally and globally. As convergence occurs at the global level among carriers, there will be a greater need for converging regulatory structures as well.

One of the key challenges for regulators is the concept of network neutrality. The U.S. congress is attempting to write a new law for the converged world that deals with this issues, including network neutrality – or in other words: how much control over customers choice the network operator will have. However, real work remains to be done in this area and national governments of the countries all around the world have to define such terms as what is reasonable network management, what is lawful Internet content, what is content of the users' choice and what are the devices that do not harm the network.

The session's **moderator**, **Andrew Lipman, Partner, Attorney at Law and Vice President of Swidler Berlin**, LLP, USA, provided an excellent overview of the regulatory issues that governments are facing today:

The regulation of VoIP varies significantly around the world. However, there are two predominant forms of regulatory approaches to VoIP: Many developing countries have historically left VoIP alone as an Internet product reluctant to regulate. Other countries have prohibited it. Regulators in developing countries, now that VoIP is becoming mainstream, are

moving away from pure licensing issues and are getting into the second area issues, which are consumer protection issues, such as emergency services etc. Meanwhile, regulators in developing countries, some of whom have prohibited VoIP, are now allowing it. Ultimately, once the decision is taken to allow VoIP, a number of legal issues are arising, such as numbering resources, access to emergency services, quality of service obligations, payment of regulatory fees, etc. And the question arises to what extend should regulators treat VoIP like a conventional telecom service or not.

VoIP does come in a lot of different forms: One is the computer-to-computer form (e.g., basic Skype), which is generally not considered as a telecom service as no national resources (numbers) are used. But also because of its global reach, it is very difficult to regulate. Regulators are more concerned with the substitution of traditional PSTN services like computer-to-phone or phone-to-phone VoIP applications (e.g., Vonage or Skype-In services). As time goes on, regulators are looking both at the economic and the social issues involving VoIP. Regulators are less concerned these days with some of the traditional economic regulation and more concerned with some of the social regulation, such as access to the hearing impaired, access to emergency services etc.

There are a lot of different approaches. One issue is licensing: some countries have heavily regulated, others have not regulated…. Another issue becoming more and more important is numbering, i.e., issues regarding access to numbering resources and the use of geographic or non-geographic numbers. This changes the whole concept of ownership: Who owns the numbers? Is it the carrier, the government, or the users? This also raises issues of number portability and the issue of access to emergency services. Interconnection is another issue: One of the issues with VoIP and maybe with more Internet uses, is that if you are an Internet provider and you do not want the obligations of being a carrier: Do you still get the rights? Do you have to have the obligations to get rights, such as interconnection or access? How much will be regulated, how much will be left to commercial negotiation? A key focus will be law enforcement: If a service operates like a telecom service then it should be subject at least to certain wiretapping and privacy rules. The number one issue is definitely net neutrality: To what extend can a gatekeeper, a telephone carrier, a cable company, control, distort, impair, and manipulate applications that go over its network? This is a key issue not yet addressed by many countries.

As the first speaker of this session, **Muna Nijem, CEO and Chairman of the Board of Jordan Telecommunications Regulatory Commission**, outlined with great clarity and insight the Jordan view with respect to

Convergence and its Great Impact on Regulation

Convergence raises fundamental questions on the process. Just imagine, for instance, a simple telephone conversation that starts from a landline and connects through a VoIP connection to a cellular telephone on the other end. Is it a landline connection? An Internet connection? Or a mobile phone connection? Which set of guidelines should be applied to regulate it? More complex questions emerge with more complex operations. When someone uses a fixed Internet connection or a cellular telephone to receive radio or TV programs, who should regulate this operation? Should it be the regulator of the telecommunications, the media, or the entertainment industry?

There are two alternative approaches to address these issues: The first one is to establish extensive sets of regulations addressing every possible combination of telecom connections, and then negotiating agreements to govern the areas of overlap between different regulators.

These regulations and agreements would then have to be re-negotiated and updated on a quarterly basis, or at least twice a year to cover new technological breakthroughs. The volume and intricacy of these regulations would make them large and unmanageable. Their implementation would be such a lugubrious process that it would become a serious handicap obstructing the versatility needed by operators.

The alternative approach follows the rule "the one who regulates best, is the one who regulates least." In Jordan, for instance, where we have followed this approach, the new integrated regulatory regime consists of two types of license: The first one, the class license, allows the operator to use any technology (subject to certain vital security considerations) to introduce any service. The second type of license, an individual license, is different from the class license by the fact that the operator needs to use the frequency spectrum extensively, a process that requires management. Jordan's experience is that this approach provides an adequate balance between giving operators the freedom, and hence the flexibility needed to develop their products and services in order to stay competitive. In practical terms, staying competitive means providing the customer with the latest products and services at affordable prices. This in turn means that the regulatory process works to the benefit of the customer, which is the main objective of the regulator.

Another question concerns the regulation of content. Should the content that comes across modern telecommunications channels be subject to regulation? One extreme of the spectrum takes an absolute stand on freedom of expression, and argues that no regulation should take place. The opposite extreme takes a stand on the equally cogent principles of security and morality, and argues that everything should be monitored and regulated. The role of decision makers is to define the happy medium that provides an adequate balance between the two extremes. However, this question is too complex for any of us to come up with an easy answer that adequately fits all situations, because aspects of local culture and sensitivity come into play. It would be safer to say that every country should have the right to address this question corresponding to what best fits its specific situation and context.

Finally, there is another issue which is not unique to the ICT industry. Economies of scale and the temptation of controlling the market share has frequently led to mergers between companies, which results in a quasi-return to a monopoly or duopoly situation. Monopolies, as we have seen in many countries, have a negative effect on the market, most fundamentally on access to the internet. Anti-monopoly regulations should be introduced to control merger activities in order to maintain competition and prevent the emergence of monopolies.

As Ms Muna Nijem is known as one of the strongest candidates for the position of the Secretary-General of the ITU at the next election in 2006, the question that raised during the **Q&A** part of the presentation referred to the main policies Ms. Nijem would like to advocate, in case of being elected: Ms Muna Nijem stated that one of the most important issues are the digital divide and the wealth divide. There is a growing gap between the "haves" and the "have-nots" as well as between the ones who have access to education and the ones that have not. Both issues are closely interrelated. ICT is extremely important for providing services to underprivileged parts and people of the world. In the case of an election as Secretary-General of the ITU, teaming up with the private sector and R&D institutions around the world to provide ICT services to less advantaged areas and populations would be among the first things to do. There should be some incentives and ways for governments to entice the private sector into providing services to such – maybe uneconomical – segment. The second very important issue is the gender gap – especially in less developed countries. There is not only a gap between the rich and the poor, the educated and the uneducated, but

women are also very disadvantaged in developing countries. Initiatives and sustainable programmes for closing the digital divide and the gender gap should be supported by the ITU. The third issue is to provide services to mentally and health challenged persons. The ITU should put in place sustainable measures to help these people becoming efficient members of the society. Furthermore, ICT is a very good means to improve the welfare of human beings. ICT can help to bridge the gap between countries and different cultures. e-Education, e-Learning, e-Meetings, etc. are useful means to overcome cultural boundaries.

Michael Ridley, Partner, DLA PIPER RUDNICK GRAY CARY US LLP, [www.dlapiper.com], one of the main sponsors of the Global Forum 2005, gave an interesting outlook on

Television Regulation: The Final Frontier?

The EU's Television without Frontiers Directive is undergoing a revision. The intention behind the revision of the Television without Frontiers Directive is to update it from its "before convergence" inspired past and to encompass and embrace not only television but all audio-visual content.

At the end of September a major EU wide audio-visual conference was held in Liverpool, to discuss and debate many of the outstanding issues to help enable the EU to produce a new draft directive at the end of 2005. The Television without Frontiers Directive provides a legal framework for television broadcasting within the EU. It was intended to promote freedom of transmission of broadcasts, minimum rules for regulating broadcast content and the protection of vulnerable groups, and also to promote European and independent programme production. When the directive was past in 1989, the title reflected the aims and objectives of the directive. The EU's proposals are to extend the Television without Frontiers Directive to all audio-visual content services, but to apply different levels of regulatory intervention to different categories of services. The EU proposes to divide the audio-visual world into two types of services: linear services, which broadly correspond to the traditional "before convergence" model of a pre-scheduled viewing experience, and non-linear services, which are essentially the on-demand world where the viewer chooses when to view their content.

A basic set of regulatory principles would apply to both types of services and then the linear services only would be subject to more detailed rules. However, there is a set of fundamental questions and unresolved issues which have not been solved in the current draft: Do we need a directive that attempts to cover the entirety of the delivery of audio-visual content to the public? In the case of the 1989 directive, the TV industry understood that there was a policy need to create a properly functioning internal market. And even if there where hot debates on the details of the provisions, there was a large understanding of the need to have such a directive. In the case of the current proposals, the policy objectives are seen by the Commission, but not are not shared across all industries' sectors that would be affected. Traditional broadcasters tend to support the initiative because they are seeing the new services as having a profound impact on their audience and markets. New service providers in contrast are opposed to any form of "before convergence"-inspired television focussed regulation. Many participants of the Liverpool conference required a cost-benefit analysis of the new directive. Such regulatory impact assessment has already been prepared for the British regulator: Their conclusions were that an extension of the directive will have little impact in terms of achieving internal market objectives; it will not promote competitive equality between the service providers on different platforms, and competition in audio-visual content services will be weakened by an extension of the directive, with new services offering less vigorous competition to traditional services as result of the additional cost they will face

from the extension of the directive. They concluded regulations will favour a large providers which could lead to a reduction in diversity and plurality.

Another second core question is, does the linear/non-linear distinction work? Many participants of the Liverpool conference dismissed this distinction as being inappropriate, in particular because of the already rapid development of PVRs and DVRs in the traditional broadcast world. Furthermore, such distinction would in a relatively short term become meaningless. Up to now, there is no agreement on the definition of a specific boundary between linear and non-linear services and therefore there is great concern that creating a valid future-proofed definition is a major challenge. The next question is, if that distinction does not work, is there a better way of categorising service categories or types? However, in both the papers submitted prior to the conference and the reports of the discussions during the conference, nobody proposed an alternative categorization of services. The final question is, whether co-regulation will work and what is it. Many participants, and in particular the new service providers, urged the need to self-regulatory and co-regulatory models to implement the EU directives. However, a fundamental question remains to be answered: What is co-regulation for this purposes? There still seems to be some uncertainty on this point.

The question of the **Q&A** part of the presentation referred to the distinction of linear and non-linear services. VoIP showed that one can move from one definition to another. Is this likely to happen here with the result that providers can almost self-select how they want to be regulated? Michael Ridley underlined the great danger of either having no clarification or of having over-clarification. Over-clarification would drive people to "jurisdiction hop". An SMP - type regulatory model, where companies that have significant market share are subject to a higher level of regulation, seems to make more sense.

Jean-Eric de Cockborne, Head of Unit for Audiovisual and Media Policies at the European Commission, [http://europa.eu.int/information_society/index_en.htm], provided an excellent insight in the current debate of

Regulating Audio-Visual Media Services

The European Commission does not intend to extend the Television without Frontiers Directive as a starting point for regulating the new services. There seems to be a kind of misunderstanding which often occurs when talking about regulation in this area. The EC is not discussing the introduction of regulation on a EU level but rather to harmonize regulation in Europe: the choice is not between one regulation or no regulation, but between one regulation or 25 different regulations.

Various consultations have shown that the Television without Frontiers Directive has worked well for the broadcasting sector in order to ensure the fulfilment of the objective of general interest, protection of minors, cultural diversity and the correct application of the country of origin principle. The question is now, whether it is sufficient or should be changed. Thus, an impact assessment will be provided by the European Commission by the end of 2005. In this assessment, five options will be considered: (1) the repeal of the directive, (2) maintaining the directive as it is, (3) clarification of what the directive actually covers at present, (4) the adoption of a regulatory framework which covers all audio-visual media services, including a graduated approach for linear and non-linear services, and (5) complete harmonization for all audio-visual media services without graduation.

Options one and five have not been studied in detail because they have not been supported by any stakeholder. Thus, the impact assessment will concentrate on the options two, three,

and four. Option four is the most innovative one, because it involves a certain number of new notions, such as the idea of having a comprehensive framework for all audio-visual media services with the differentiation between linear and non-linear services. One of the interesting points of the Liverpool discussion concerned the notion of audio-visual media services. The discussion was not so much about the difference between linear and non-linear services, but rather about the question of what such a directive would cover – for instance, would it apply to a website containing only little audio-visual content compared to other services.

The working definition of the EC after Liverpool is the notion of audio-visual media services which would cover services that have the purpose to deliver moving images, accompanied or not by sound, to the general public on electronic communication networks. This means that the directive would basically apply to services that have the objective to educate, inform and entertain, but not to websites that are related e.g., to car selling, travelling agencies, etc.

The second key notion in this option is the difference between linear and non-linear services. There is one major difference between those two types of services with respect to both the degree of choice of the user and the societal impact. When using a non-linear service, the user has a large choice and the content will be transmitted specifically for this user. In respect to linear or scheduled services, the responsible editor organizes the programmes and determines at what moment a specific content is transmitted to a large public; this means that the user can either chose to watch it or not – or to record it and watch it later.

The discussion is not about introducing new regulation at a EU level, but whether or not it is appropriate to have some harmonization in order to have a full application of the country of origin principle.

The question addressed to Mr. de Cockborne within the **Q&A** part of the presentation was, if there are some new voices in the debates, e.g., from the new IP platform and information management companies? Jean-Eric de Cockborne answered that there has been a number of contributions both from ISPs and telecom operators. However, their positions are different. There is a majority which is against some provision at the EU level. Others in contrast have the opinion that provision would be useful, in particular with respect to pan-European services with one single regulation.

Gabrielle Gauthey, Director of the Information and Communication Technologies at the ARCEP, France, presented the French regulator's point of view on

Convergence and Regulation

The present EU framework was drafted with the objective to take into account the growing competition and the technological convergence. Correspondingly, in its transposition into the French laws, the term "electronic communications" replaced that of "telecommunications". A common definition for all networks has been adopted as well as new definitions of radio and TV services. A definition of public online communication as a part of audiovisual communication, but distinct from TV and radio and not subject to any sectorial regulation has been included. Furthermore, a harmonised regime for electronic communications networks and harmonised regimes for the distribution of radio and TV services have been put in place. Broadcasting activities have come under the scope of market regulation by the telecom regulator ARCEP (former ART). This was the first time the regulator got the possibility to impose on SMP broadcast operators the revision of their current contracts with broadcasters. This lead to a closer cooperation between the French authority for audio-visual content (CSA) and the one for electronic communication (ARCEP, former ART).

CSA is responsible for all questions concerning publishing and distribution of radio and TV services, and to settle disputes between producers and broadcasters of radio and television services. However, there a few shared competencies between CSA and ART: Electronic communication services using frequencies allocated by CSA allowed after ART's agreement; certain dispute settlements decided by CSA after ART's opinion; certain ART decisions adopted after CSA decision, such as general decisions (when they have a significant effect on radio and TV services broadcasting activities); dispute settlements (when they might restrict the offer of audiovisual services); and certain market definitions and SMP designations.

As regards convergence in the fixed line environment, France has a booming DSL market and a booming triple play market. As a consequence of this converging fixed market, telcos are trying to substitute decreasing fixed telephony revenues by going to the Internet. ISPs without network are now looking for additional revenues with telephony (boxes); TV on DSL and triple play offers are developing very fast. Today, a growing integration between telcos and IAPs as well as between the technical and commercial functions can be observes. The key value of access is controlled by the different "boxes" and access to content has a critical influence on the competition between the different IAPs. French regulation distinguishes between VoIP and Voice over Broadband.

As regards convergence in a mobile environment, there is certainly a growing interest in many markets worldwide for TV on mobile. Up to now, mobile operators have succeeded in preserving an important part of the value generated by new services through strict control of access-subscription-traffic. Mobile operators' revenues is still massively based on voice, however, the emergence of 3G shows great interest of the public for TV on mobile. From the viewpoint of a regulator, this might entail a revision of the frequencies allocation rules but also a revision of the rules relevant for content in order to adapt to new push services.

The next regulatory challenge will be the NGN. Major European operators have announced progressive NGN roll-out plans. These major technological improvements concern the core networks not really the access and will allow the roll-out of new services. It remains unclear whether in the short or medium term, a substantial cost reduction and quality improvement can be expected. Questions challenging the regulatory bodies are: Which ex-ante obligations? What impact on scarce or public resources? At which level in this new architecture should delivery of wholesale services be requested? Which impact on present market definitions and analysis? Which impact on cost models of networks and traffic?

Convergence creates a real shift in the existing economic models. In this changing environment, the principles of regulation remain to develop the market and allow different actors to act in an open and competitive environment, at all levels of the value chain, without reducing the incentive for efficient investment. There is a clear need for a common European vision.

The **Q&A** part of the presentation addressed the question whether all carriers providing services should be regulated equally or whether certain carriers, such as those with market power or historical incumbency, should be treated different from new entrants. Gabrielle Gauthey stressed that the EU framework bases on the concept of SMP, which is still and which will remain a driving concept. The concept of SMP has been critical in France to regulate broadband and imposed the local loop unbundling. It has been proved very successful in France and allowed to broaden the market and foster competition.

L. Marie Guillory, Member and Founder of Guillory & Hjort, Advisors to the Rural Communications Industry, USA, outlined with great understanding the topic of

Rural Providers Adjust to a Regulatory Environment Changed by the Convergence of Markets and Technologies

NTCA is the National Telecommunications Cooperative Association. Since 1954, NTCA is the voice of small, rural telecommunications carriers connecting the heartland of America to the world. These companies are community-based, locally owned companies, dedicated to providing vital telecommunications services - ensuring the economic future of rural America.

Convergence impacts small carrier protections. Traditionally, small carriers in the U.S. have protections that relate to their seize and the market to which they provide services. The regulatory models of the past promoted universal service with varying degrees of financial support for certain carriers serving rural areas. Both the carrier's size and service area governed the level of access to universal service support. The carriers operated in niche markets.

The 1996 act did not really contemplate the idea that carriers would be providing a multiplicity of services and that they would be engaged in triple play. One of the problems of the 1996 law is that it allowed the FCC to implement new universal services provisions which makes rural support available to a multiplicity of carriers serving the same customer. But more importantly, wireless carriers are supported on the basis of the costs of the incumbent carriers in rural areas. Support becomes explicit with the passage of the 1996 act and the consumer now sees what universal service costs.

The landscape for rural carries had changed because of the impact of mobility and the migration of customers from landline to wireless facilitated by wireless carrier access to support. Wireless is lightly regulated and advantaged in both rural and urban markets. While wireless services are regulated only on the federal level, fixed services are regulated both at the state and the federal level. Rural carriers adjust by offering wireless services themselves.

Another issue is the migration to IP networks, with VoIP emergence as an alternative to circuit switching. Cost recovery based on circuit switching is threatened and the rural carriers' reliance on access charges becomes a problem. Rural carriers are adapting by piloting IP services themselves.

Another regulatory thread that derives from convergence and that affects rural telephone companies is the treatment of broadband Internet access by the FCC. The cable modem decision which the U.S. Supreme Court firmed basically says that the provision of broadband Internet access is not a telecommunications service. DSL services, for instance, are no longer telecommunications services. However, collections for universal service are based on assessments based on the provision of telecommunications services and those revues are no longer assessed for the purposes of supporting universal services. The shrinking contributor base causes assessments on remaining contributors and consumers go up. Solutions to these problems would be creative cost recovery models and the expansion of the base of contributors to universal service to non-telecommunication service providers.

There is a need for a level playing field for rural carriers as well as other telecommunications providers. Rural carriers have traditional obligations of carrier of last resort, which their competitors do not have. Rural carriers are expected to provide secure and redundant

facilities – their competitors are allowed to operate on a very light or no regulation. This has to change.

In sum, maintaining universal service in a converged market requires broad access to communications by all members of the society. In a country with vast geography and wide ranges of prosperity some areas and consumers will not have access unless the society provides support to provide service to these areas. The challenge of convergence is: How does the society foster universal service and innovation at the same time? How do regulators balance the interests of competing parties at different stages of development in the convergence process? How do regulators distinguish between essential services and luxuries?

Desiree Miloshevic, International Affairs and Policy Development Advisor at AFILIAS GLOBAL REGISTRY SERVICES, UK, [www.afilias.info], one of the main sponsors of the Global Forum 2005, provided a remarkable insight in the

Private Sector Perspective on Internet Governance

Hiroshi Ishii (MIT) brought the tasks ahead of policy makers, regardless of the sector they work in, to the point: "At the seashore, between the land of atoms and the sea of bits, we are now facing the challenge of reconciling our dual citizenship in the physical and digital world".

Afilias, a global leader in advanced domain registry services, launched its registry service in July 2001 with its inaugural product, .INFO - the most successful of the seven new top-level domains (TLDs) selected by the Internet Corporation for Assigned Names and Numbers (ICANN). Today, Afilias provides registry services for .INFO, .ORG and several ccTLDs. The .MOBI domain name extension, that caters to mobile devices, is intended to be launched in 2006.

What is a domain name? The notation 170.224.17.212 is a convention for expressing 32-bit IP addresses, the unique identifiers used in the Internet to denote network hosts and routers. They sometimes provide easy-to-remember mnemonics for referring to an IP Address, for example: www.afilias.info corresponds to 170.224.17.212.

Open standards have been one of the main drivers of the success of the Internet. Other success factors are its decentralized nature providing intelligence at the edges and based on an end-to-end principle. The Internet is based on grand co-ordination and collaboration of all players, on dynamic self-organisation and self-regulation and constitutes a democratic communication medium.

We are today witnessing an evolution of Internet governance. Conventions of politeness and social self-regulatory policies governing the Internet, such as the netiquettes, are developing. A netiquette is a voluntary self-regulation with an implicit social contract. Netiquettes are characterized by self-regulation, co-ordination, best practice documents, requests for comments, the adoption of open standards, codes of conduct, acceptable use policies, a rough consensus, and contracts or agreements.

However, there is room and need for Internet governance by official entities, notably in the area of allocation of address space (IP), the Domain Name Space (DNS) integrity, IDNs, central root servers, protocol ports, etc. But also in the market area as regards monopolies and liberalisation issues. Net neutrality, consumer protection (fraud, libel e.g., "phishing"),

privacy, Spam, IPR, the freedom of speech, harmful content (abuse, child pornography), VoIP, ENUM, etc. are further important issues.

There is no single entity that governs the Net. It is a collaboration effort of many disparate organisations. The ICANN environment is an international and multi-stakeholder environment, based on transparency and a bottom-up policy making process. ICANN is the Domain Name System (DNS) governance body, focussing on specific issues and the management of unique identifiers.

Afilias actively participated to the WSIS and its Preparatory Committees and contributed to the elaboration of the declaration of principles "Building the Information Society: a global challenge in the new Millennium" adopted in Geneva. The WSIS takes into account that, today, technology is a major factor in the future of any economy. It provides a platform for government, business and civil society to come together to discuss issues, challenges, and opportunities in the global networked economy, with the objective of building a global ICT policy environment conducive for the achievement of the potential of information technology by all and addressing the digital divide.

When looking in the future, there is a need for multiple specialized forums related to Internet Governance, the need for a stable internationalised ICANN as well as a need for more co-operation between all stakeholders.

The **Q&A** part of the presentation referred to the question if governments have a role to play in Internet governance or if this should be done under the responsibility of the private sector? Desiree Miloshevic stressed the need for more collaboration and good governance. However, governments should let Internet governance to the private sector.

Theresa Swinehart, General Manager, Global Partnerships, ICANN, shared her long-time experience at
The Internet Corporation for Assigned Names and Numbers

ICANN is responsible for the global technical self-management of the Internet's unique identifiers, which entails some non-technical policy issues, such as, the WHOIS database, and registrar accreditation for .com, .info, .org, .biz, etc. ICANN is dedicated to, preserving the operational stability of the Internet, promoting competition, achieving broad representation of global Internet communities, and developing policy appropriate to its mission through bottom-up, consensus-based processes. ICANN does not control the Internet!

ICANN has been created in 1998 due to the need for changes. In the "pre-ICANN" area, responsibilities have been handled by one individual directly on behalf of the U.S. government. However, in 1996/97 there was a need for independence from US government and a clear need to change due to the globalisation of Internet, the need for accountability and a more formalized management structure, the dissatisfaction with lack of competition and trademark and domain name conflicts.

ICANN operates on the basis of its founding principles, which are internationalisation, stability, competition, private and bottom-up co-ordination, the involvement of all stakeholders and representation. Operating under a Memorandum of Understanding with the US government, which is expected to end in 2006, ICANN is international in structure having one of its offices in Brussels and involving the participation of all relevant organisations at the national, regional, and global level. The ICANN policy process is an open and transparent

process, open to the full participation of those who have an interest, including all governments and relevant international organisations. The work of ICANN has been recognized by the OECD.

ICANN is based on a truly multi-stakeholder model, with equal participation of all. Cooperation is an important aspect of ICANN's work – not in the DNS space but in the global space. Relevant stakeholders include Governments, international organisations, the private sector and civil society, registry groups, technical and academic communities.

During the following **Q&A** part of the presentation, the questions raised "After 35 years of work in this area: What is the issue that keeps you up at night"? Theresa Swinehart emphasized the aspect of security as one of the most important ones to be handled. This aspect can only be effectively addressed by the participation of all stakeholders. Internet governance has to be based on a stakeholder model not on a government model.

Jean-François Soupizet, Deputy Head of Unit for International Relations at the EC, [http://europa.eu.int/information_society/index_en.htm], presented

Europe's Vision of the World Summit on the Information Society in Tunis

The WSIS process has been an opportunity to debate on important issues of the Information Society. However, it has not been a very easy debate with differences of opinion concerning some basic concepts: Freedom of information and human rights took a large part of the discussions. As regards this field, the results of the Geneva discussion have been very positive. The EC specifically advocated a full participation of the private sector and the civil society. Real progresses in this field have been achieved.

Further differences of opinion, which have been rather classical in the UN context, occurred between industrialized and poor countries. One of the key questions addressed was how the Information Society has to take into account international cooperation or development aids. In this context, the EC refused the setting up of a new UN mechanism to intervene in the development of infrastructure. This position corresponds to the EC's principle which considers that first of all market forces have to be present in the development and roll out the infrastructure. Only in the case where this is not working properly, some kind of intervention could be considered. This position is now widely shared by all the participants of the WSIS – as reflected in the Geneva declaration and hopefully in the Tunis commitment and the Tunis agenda for actions.

Other differences of opinion concerned economic interests. Emerging countries are more and more representing large markets with interesting perspectives. And emerging economies are also interested to take part in the governance of the Information Society. Further disagreements concerned the UN system itself with respect to the follow-up and responsibilities in the implementation of the WSIS outcomes as well as the role the different agencies, and notably the ITU, should play.

The EC considers the Geneva achievements as a real progress. However, further progresses are needed. The EC is now preparing the third Preparation Committee and there is reason to be optimistic: 80 to 90% of the final documents are already agreed. This is in particular the case for the first part of the Tunis commitment, notably concerning human rights and freedom of speech, or the relation between IT and development. Regarding the agenda for action, a long list of agreements has already been set up. The two main remaining problems concern the question of follow-up and Internet governance. Questions

regarding e-Content and the independence of media have already been settled. As regards, Internet Governance, basic elements for an agreement are already defined. This concerns in particular the identification of main issues of Internet governance but also issues such as security and confidence, Spam, freedom of information, respect of privacy and data protection and even multilinguism. Therefore the EC is entering the final phase of the negotiations quite optimistic.

The **Q&A** part of the presentation addressed the question of the likely timing for reaching an agreement and the next steps in the WSIS process. Jean-François Soupizet emphasised that large parts of the texts have already been agreed on. The EC is confident that the three days of the upcoming third PrepComm will lead to an acceptable wording of the key principles. The WSIS is a learning process providing the opportunity to prepare together with all stakeholders a framework with respect to confidence, security and stability but also to ensure a sustainable progression of the Internet which becomes more and more a global facility.

Bernard Benhamou, Director of Forecasting and Internet Governance, Agency for the Development of e-Administration - ADAE, Office of the Prime Minister, France, outlined some concerns about

The Evolution of Internet Governance

Most of the today's discussions on Internet governance concern the current state of the Internet – that means discussions about the architecture of the DNS, which is one of the very few centralised structures of the Internet and one of the most controversial. There is a need for a more multinational, transparent and democratic Internet governance.

As the Internet is becoming one of the growth engines of developed as well as of developing countries, it is also becoming a crucial element for policy, freedom, culture, education and economic development. The Internet of today is basically an Internet of machines – 95% of the devices connected to the Internet are computers. This is true now, but it will no longer be valid in the near future. Very soon we will see the connection of devices, objects, and the possibility of linking things that are not yet invented providing information about contextual information about what people see, where they are, what they are doing, etc. This is the change the MIT researchers have called the "Internet of machines is becoming the Internet of things".

Today, RFID is not yet directly linked to the Internet and its governance but very soon it will be. All objects and people, e.g., via passports containing RFID chips, will be directly connected to the system of the DNS via another system which is called "Object Name System" (ONS). This system is a subset of the DNS. So, if you have the governance of the DNS in your hands, you have also all the objects and peoples' move under your control. The political and public policies implications of the Internet will become more and more important. Sharing a decision about a global facility such as the Internet has an immediate impact on public policy related to the goods, merchandize moves but also to the citizens' and persons' move all around the world.

We need to create a consensus about the basic values and principles that have to be defended in the future, such as interoperability, the openness of the Internet, the end-to-end and the neutrality principle. By signing the proposal presented by the EU for the WSIS, the 25 countries have expressed their position that the Internet is not only a stack of protocols or machines, but an architecture standing for values that have to be defended. There is a need for a more democratic Internet governance, with more visibility for the citizens of what the

Internet is today and what it will become in the future. Such an important topic like Internet governance, which will shape our lives, our culture and the economies all around the world, can not be discussed only by a handful of people.

Internet governance is also about issues which are not DNS issues, such as Spam, phishing, identity theft, etc., which are systemic diseases coming from inside and which could threaten the global trust in the Internet. It will be necessary to build a culture of trust and security of the network. Democratic governance also means that the entire population of users is able to create and to develop the Internet and to lead and to master its evolution.

The question that was raised during the **Q&A** part of the presentation referred to the safeguards to be set up to ensure the innovation and creativity that we have experiences so far in the Internet. Bernard Benhamou stressed the importance for governments of being "modest". Governments have to realise that some things have to be dealt by other stakeholders than the governments. Those values we want to protect can only be sustainable when governments are working with the private sector and civil societies. This has already been essential for the evolution of the Internet as it is today. Agreeing on these principles, represents an essential step in preserving an Internet of people being able to interact with each other and to create and to innovate from the edge of the network.

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The first question which came up during the closing **Q&A** part of the session addressed the role of regulators if we would be 5 years from now – would their role be smaller, the same or larger? Michel Ridley stated that the principle of "the best regulation being least regulation" is quite a sound one. So long as we can see the fundamentals that we are looking for in the Information Society being upheld, there so not need to intervene. Jean-Eric de Cockborne stressed the importance to look on the rational of regulation, which is very different for regulation of transmission and access on one side and the transmission of content on the other side. Regulation of transmission and access is basically a level playing field where the SMP concept is working very well. As regards the regulation of content, social and public interest aspects are becoming more important and regulation has to consider issues such as the protection of minors or human dignity. Some regulation in this specific area remains necessary, except if it can be implemented by a kind of self-regulation or co-regulation as long as this is widely accepted and effectively enforceable. Desiree Miloshevic emphasized the fact that additional regulation means additional costs. Another important issue is that Internet is an amorphous network and currently accommodates all types of regimes and regulations. E.g., if a country wants to block the content from another country in their national interest, there are additional cost that have to regulate that. The balance of costs and benefits and the harm would decide where the new regulations will be implemented. L. Marie Guillory stressed that in the five year horizon, the U.S. will probably be in a transition process of figuring out what needs to be regulated. There is going to be a big push in the U.S. to move regulation to the federal regime and take it out of the state regime. State regulators may have less of a role in telecommunication than they do now (and they already have a very reduced one). But then, it will all depend on the people's behaviour whether it will be necessary or not to reimpose regulation to achieve the social goals and to protect the consumers. Teresa Swinehart answered that there might be a kind of catch-22 regarding the emergence of new technologies that are coming out. Many of those are emerging because there is no regulatory framework to inhibit their development. How to ensure that these things evolve by at the same time maintaining an enabling environment? We should look on regulation not in the context of how do we keep this innovations and technologies emerging,

but how can we make them affordable to make sure that people can utilise the infrastructure. Jean-François Soupizet stressed that regulation is a broad concept – there is compulsory regulation, core regulation, and self-regulation. The key point is to have a basis of common values and to identify afterwards the best way to do things.

The question on how to involve the citizens in such a complex issue like Internet governance, given the fact that the majority of the world has not access to the Internet, was addressed to Bernard Benhamou. Bernard Benhamou underlined that the three main stakeholders' parties that have been in Geneva and that will be in Tunis will be governments, the private sector and the civil society. The empowerment of citizens can be done in many ways – the first one being education. Example: Spam can not be solved by legislation only; it can not be solved by technical measures or education/awareness only. It should be a mix of all three aspects. Governance in the future have to mix all these three issues. There is a need to create a debate involving citizens. Internet governance today is debated as a technical issue but not as a political issue. Hopefully the Tunis Summit will be a start for a debate that can be understood by more citizens.

Trust, Security & Privacy in a Convergent Environment

Jean-Pierre Chamoux, **Professor, Université Paris V-René Descartes,** France, **moderator** of the session, inspired the speakers by sharing his experience

Currently teaching communications, he was formerly the French telecommunications regulator for 3 years providing him insight into the role of the ICT industry in an organised society.

In the mid-70's, when he started to be involved in security studies, there was absolutely no market despite the advice of many experts to invest in security and furthermore, years of investment did not bring any significant income.

Today the situation has radically changed and investment in security is no longer an option but a must.

As **chair** of the session, **Patricia Cooper, Chief, Regional & Bilateral Affairs, United States Federal Communications Commission (FCC),** USA, opened the audience's eyes with a case study on

Hurricane Katrina and the Role of the Regulator in Disasters

The number of physical paths to us in the communications network and the kinds of services at our disposal are multiplying, but for that communications network to work commercially it must be trusted. Our modern society depends on it and we all have a role in maintaining that trust in order for the communications industry to flourish.

Hurricane Katrina demonstrates an instance where there was a fault in the reliability of the network and the questions raised when something extraordinary happens and what is expected of individuals, companies and of governments when the networks fail.

Hurricane Katrina, a category 4 storm hit the southern U.S. August 29 2005 creating quite a lot of damage in 3 major U.S. states, Louisiana, Mississippi and Alabama and the subsequent flooding broke a levy that protected the City of New Orleans, much of it flooded in the second wave of the destruction. The official death toll being 1,302 and over 1 million displaced, economic damages estimated between 70 and 130 billion U.S. dollars and that meant that Hurricane Katrina was the costliest and most destructive natural disaster ever to befall the Louisiana, Mississippi and Alabama, unprecedented.

This catastrophic event, devastated communication networks and services citizens relied upon. The FCC was called upon to devote a fair amount of time and energy in some cases in ways it did not foresee.

Three million telephone lines were knocked out immediately following the storm and remained out of service for about a week. Also damaged were wirelined switching centres that routed calls and the lines that connected buildings and customers to the network, about 38 emergency call centres, 911 call centres, that customers rely upon in a disaster and about 1,000 cell sites.

The FCC also regulates the media industry and about 80% of the radio stations in the gulf coast region were knocked out of service, about 100 broadcast stations in total and hundreds of thousands of cable television customers also lost service. Since then, stations came back on the air almost immediately but several lost service when a second hurricane hit the area, Hurricane Rita knocked out about 48 additional radio broadcast stations.

Due to the damage to the telecommunications and media network it was extremely difficult for citizens to talk to each other, to reassure their families that they are fine. Also difficult for fire and emergency service providers to help each other and help the citizens to recover. This is when we find out how much telecommunications and the services we've been developing have woven their way into our every day lives.

The FCC devoted an enormous amount of time and effort to this and immediately created a task force of experts and the FCC operated 24/7, unprecedented for bureaucracy. Most of what it was asked to do falls into 3 categories: (1) regulatory action – its normal task – issue licences, give permissions, evaluate spectrum requests; (2) an unexpected role as an industry liaison; and (3) consumer outreach.

For the regulatory role, it tried to cut the red tape, speed the restoration of the networks, ease burdens for the service providers, issue special temporary authorities for news service providers trying to come into the area and in many cases wireless local loop and wireless facilities, satellite as well.

It also tried to expedite the waivers for certain regulatory obligations that might be burdens for service providers which in many case were turned around within hours, not its usual processing time and extend filing deadlines, all regular kind of activities treated differently as a result of this extraordinary disaster.

Its industry liaison activity was unexpected and needed kind of role, one that was a voluntary role not part of our regulatory operation. Small entrepreneurial companies with solutions unregulated by the FCC wanted to help the region but didn't know how and didn't have any contacts. The emergency and relief organisations needed communication services and didn't know anyone in the industry, the FCC did, not only the companies but in many cases the individuals, had their cell and home phone numbers to reach them after hours and match the resources with requirements.

It received calls from hundreds and thousands of victims, relatives and other Americans wanting to find out what was going on and its 1-800 call centre extended its to 7 days a week. But also those evacuated, inquired what happens to their bills that they normally needed to pay. It provided some consumer protection to prevent any abuse in this situation.

It began an additional service, a universal service fund providing assistance to high cost telephone service and low income consumers, schools and libraries and added about 211 million U.S. dollars for relief, developed a new subsidy to give free wireless handsets and subsidies for telephone minutes.

This confirmed its role as a regulator, communicator and as a liaison with the public safety community, industry and consumers. The FCC has set up a task force to see what it might need to change, reorganise, internally and reported to Congress on what it hopes to do.

In talking about these various different levels of reliability and trust both on the physical network and on the personal data that travels along those networks and the services developed, the question remains, who must play this role? And, how can we plan for it?

The question addressed to Patricia Cooper during the **Q&A** part referred to the comparison between Hurricane Katrina and 9/11? Patricia Cooper emphasised the enormous geographical area affected while 9/11 was quite isolated, extending over multiple cities, states, and involving different entities. Affecting wireless services WiMAX, Wi-Fi, VoIP which hadn't been around during 9/11. It found that some of these new wireless technologies and alternate approaches give more flexibility for responses but are not regulated and hard to find.

Behnam Bavarian, **MCEI Vice President and Director of Advanced Technology and Strategy, Biometrics Business Unit, MOTOROLA, INC.,** USA, [www.motorola.com], one of the main sponsors of this year's Global Forum, enlightened on

Digital Identity Management: Biometrics Play

Motorola's government solutions division provides a secure communications space for police, fire and medical emergency. With the transition from analogue to digital, about 7 years ago, it started working on convergence to provide applications over these secure networks and his particular business unit is about applications and specifically biometrics.

It has been delivering these kinds of systems for over 30 years, with 300 customers – very large country wide systems, for example, police information system for identification and millions of databases.

There is a huge body of knowledge in the area of digital identity management. Going beyond the typical ID and password entry to computer software, there is a new era of connecting those passwords and the persons behind the identity, a global mega trend.

After the recent events of terrorist activities, the use biometrics in for example visas to authenticate a person's identity, making sure that the person that applied for a visa is actually the one that shows up at the border and not his brother, is going to remain part of our lives with all its connotations in terms of privacy and human rights and be a flourishing market.

Biometrics links the username, password and the actual physical person behind them, applying physiological attributes of the person – fingerprints, palm prints, hand or ear geometry, irises, facial picture or behavioural attributes such as voice, signature, keystroke on a computer, the way you walk, it can actually be recorded and measured to identify you when you walk through the gate at the airport.

Two problems arise beyond the academic algorithmic basis; there are huge system requirements, business and operations requirements. Three different markets exists for biometric use: (1) criminal justice for the traditional police system of identifying people; (2) e-Passport or national ID card; and (3) commercial purposes - cyber security, health care and e-commerce – all requiring security and authentication.

As an international or European community there are many challenges and a good number of issues to address to make this a reality as it will be part of our infrastructure: (1) standards - need to work on those not developed yet; (2) performance measures – accuracy and (3) extending it to a larger scale.

Day time quality capture is a big issue, is there enough lighting when pictures are taken, also the need for expanded governmental investment in academic research, the need to initiate national labs as independent agents to develop the expertise.

The major issues to underline are the human rights, legal and social acceptability aspects and research to develop technology to support privacy and data protection must be done.

Biometrics prospects are quite good and they are here to stay. The U.S. already has a huge travel documents processing solution with 2 finger and face capture features. In the EU there will be a visa information system as part of the Schengen System for which a biometrics procurement tender will be coming out.

The drivers behind biometrics are evident, however all of these issues must be addressed and solved.

During the **Q&A** part of the session the question addressed to Behnam Bavarian referred to when fingerprint identification began over a century and a half ago in investigations no questions on privacy were linked to it, today privacy is significant, how must one cope with that? Behnam Bavarian pointed out that because fingerprints for example are associated with crime, the work on social acceptance is critical. In addition, much like with your bank, the contract between you and the government agency collecting your data that it be protected and not disclosed is for now the only promise, beyond that there technologies being developed for example in the electronic identity card (smart card) in which one will carry his biometrics and if one loses the it no one can decode it. There's also definitely more work to be done on the legislative front.

Steven B. Adler, **Program Director, IBM Data Governance Solutions, IBM,** USA, [www.ibm.com], one of the main sponsors of this year's Global Forum, skilfully revealed IBM's perspective and efforts on

Defending Data: The Data Governance Blueprint

We're collecting data about people today and whether is personal info, name, address, phone number, etc. or biometric, video or audio, we're collecting a vast amount of data and finding new and incredibly innovative ways of combining it and creating really interesting profiles. That new rich data creates both opportunities for many companies and important exposures and many customers are very concerned about some of those exposures, IBM is exploring various methods with its customers around defending it. Start with the simple thesis that you can't defend something unless you know what it is worth, the same goes for protecting data.

We often think about data as an intangible asset, something so incredibly redundant and easily copied that doesn't potentially have any value, it does have a value and we all expect a return on investment for what we put in to data and if we thought more about what's it's worth we could align that with what we're doing to protect it.

What we see in the market place today is that a lot of security is user based, access control, identity management or even biometrics is based on the user and privacy protection is more about data. And, what we see from a security point of view as well as privacy is the rapidly eroding parameter that most organisations have today moving away from the firewall and intrusion detection, access control and identity management to the database itself but we

have a big semantic problem and it comes from whether we look at it from a business or IT perspective. A business person sees data as raw material for a transaction, apply their own knowledge in transforming that data into an asset to produce value for an organisation and sees data at the starting point of a revenue chain and an IT person sees that's a business person comes to him with requirements to build an application based hopefully on an architecture to collect, retain, use, store data and sees data as a maintenance costs and doesn't really understand the values of the data and not using the data to produce value they see it as something that they have to maintain.

These two different important groups in an organisation, business and IT, talk about the same thing meaning something entirely different. This is a big impediment to really securing information effectively. Today only one half of the equation is involved in securing the data, the IT side, the business side isn't really consulted.

IT normally protects data through a risk based data classification scheme based upon and predicated on what would happen if we lost the data, how important is the data to us if its stolen, risk-based. It's doesn't really tell us anything about the data itself, its doesn't tell us the business view of the data, how much it is worth, whether its reliable, what's its quality, what it means, who owns its, who uses it, it doesn't actually show us any business value. What is data actually worth?

Is data worth the total of all IT budgets since the company was founded? That's obviously what they are spending from an IT perspective to build applications, to leverage it for the purposes of creating business value or is it only worth the amount of the security budget that a company spends? If you would equate how much a company spends to protect the data that must be what it's worth. Does the business have an anticipated ROI for data? Could one calculate for example the amount of money that an organisation generates from data? Or is it the lifetime customer value? Or is it potentially the market cap of the organisation of a company, like eBay which really only exists in data. Or is it the total cost of brand damage?

Suppose the following scenario, a fictional character, Carla, who works in a big company and is going to travel from Dallas to Hamburg, Copenhagen and Vienna, stay in hotels, rent cars and take customers out to dinner. A trip reservation handler processes her trip, say she's spending about 10,000 U.S. dollars with this travel agency and from the travel agency's perspective her data from a net present value perspective is worth 10,000 U.S. dollars. That's not the only value however. The travel agent is only acting as a custodian for Carla's data. In some sense her perspective on the data value is her financial asset value but from an identity theft perspective, the average identity theft cost to a consumer in the U.S. is about 90,000 U.S. dollars according to the Federal Trade Commission, and to a business 300,000 U.S. dollars for forensic investigation, remediation, hacking costs, etc. The comprehensive cost for one incident would be around 600,000 U.S. dollars. Carla is only one of maybe 700 people in her company processing transactions and anyone who wants to steal the data is not only interested in Carla's data. If you want data you want it all. The nice thing about stealing data is you steal it and nobody knows it's missing, most people aren't even keeping track of it, it's still there, it just has been copied. If there are 6,000 trips being processed by travel agency a day and the average value is 10,000 U.S. dollars what is the net present value of that data, the future value of that data, how much would you spend to protect it?

These are difficult questions to answer. One of the problems when we calculate the value of data is how we look at risks. Often times, security and IT look at risks from a two-dimensional perspectives, events and effects. They rarely ever look at the root causes until long after the event has occurred and they do a forensic investigation. But rarely do think of the incident

occurring because of a cause. Even more rarely the sub-effects if data is compromised it's not likely that the organisation will feel any significant loss until many months if not years after the incident has occurred. It takes that period of time for law suits to wind themselves through the courts or banking systems which means that most organisations don't fully understand the real cost to their bottom line of data disclosures and losses because those effects come long after the event has occurred and they are not tracked.

Evaluate which data is flowing through the business and transactions, which risks you have, which probability and how much would you spend to authenticate and control those anticipated risks.

IBM thinks that most organisations have a lot of data today, some of its customers have hundreds of terabytes, how much of it do they really want to protect? Can they protect it all, encrypt it all, the answer is obviously no. How do you figure out which data is the most valuable, which risks are most serious, how much to spend to control and mitigate.

That's why IBM is working on data governance with many of its customers, 45 today working together with IBM to understand these complicated issues.

IBM is convinced this is an important area for governments as well as private sector.

The **Q&A** part of the presentation addressed the question whether IBM has from an information and knowledge perspective, where the true value lies. Steven Adler clarified that not to say that there is a methodology, just to offer a perspective, there is no single value number to the data, all the variables put forth are equally valid, the travel agency's or Carla's perspective. It's actually not possible to come up with one number value for data its contextual.

Craig Phillippe, **Supervisory Special Agent, Federal Bureau of Investigation (FBI),** USA, brilliantly uncovered the extensive activities of cyber criminals through

FBI Cyber Crime Program

The FBI is the law enforcement arm in the U.S. charged with investigating cyber-crime, there are others that also investigate them but congress designated the FBI as the lead agency. There are 56 field offices throughout the country, controlling 400 satellite offices, 50 legal attaché offices, about 14,000 agents and 16,000 support staff. The police force of New York City is larger but the FBI covers the whole country.

The cyber mission of the FBI is to: (1) prevent computer related terrorist attacks – any attack against U.S. critical infrastructure using computers, for instance using a computer to control SCADA systems for controlling power grids, telephone lines or dam water flow; (2) prevent computer facilitated crime, stealing data or DDoS (distributed denial-of-service) to take someone off the Internet.

There are five sections within the division: (1) computer intrusion – handling the hackers, malicious code, crimes where a computer is the target of the crime or critical to the commission of the crime; (2) computer crime – traditional crimes using a computer, for example phising schemes, crimes that could happen without the computer but they have been used; (3) outreach – building private public alliances to make the public feel comfortable giving the FBI information. Traditionally, U.S. companies that fall victim to computer crime don't like talking to the FBI because of shareholder issues and a bit of

mistrust of the FBI, it requires face-to-face meetings to ensure them that the FBI will not put the information out there; (4) intelligence – gathering intelligence on cyber related crimes; and (5) special technologies.

The FBI usually investigates cyber-crimes of computer intrusion, hacking, creation of malicious code, distributed denial-of-service attacks, intellectual property rights (copying MP3s, movies, etc.), *phising* and *pharming* – posing as a legitimate company's web page to take the information by using both local and federal laws to investigate these crimes.

With regards to privacy, the FBI has procedural requirements to get information on private citizens which is fairly extensive and designed to prevent the police from just saying they want information. It can force a company to preserve the records of the hack, send a preservation letter, get subpoenas and court orders to get that information, go before a judge to request permission to obtain it but the FBI can't just go to a company and ask for the information.

Search and seizures is perhaps the most extreme of the FBI activities, going into a building and taking things is the most difficult to achieve as the court doesn't want the policing agency to go in and take people's equipment.

There are many international challenges. Cyber-crime has no geographical boundaries and the FBI has no jurisdiction outside the U.S. Some countries are just beginning to formulate their cyber laws so it's incumbent upon the FBI to tell them that it has identified a bad guy in their country and offer help and information. It's developing quite well with countries like Rumania to which it gave data recently and they were on the culprits in a matter of a half an hour.

In one case study which had every crime the FBI ever wanted, someone ran an Internet service provider from his basement in the mid-West U.S. with 357 computers, the largest computer seizure so far. He was running a business, saw people weren't utilising it, hired gangs and thugs on the Internet to deny service to customers he wanted and then he would call them up and offer to protect them on his Internet provider. Extortion, gang of thugs, intruding on private computers to spread software for DDos attacks, botnets, fibre – the ISP was so connected that when they were taken offline so were other clients. There were multiple jurisdictions, international ties, the thugs resided in a European country.

The FBI is looking at the following emerging technologies - wireless, botnets, peer-to-peer and code wars – two warring cyber gangs going back and forth taking control of computers which leads to the development of malicious code developed so quickly that antivirus programmes can't follow and increases the infection rate of these computers.

The **Q&A** part of the presentation addressed the question of using human intelligence to find cyber-criminals. Craig Phillippe concurred that cyber crime is the same as any other crime and a good part of any investigation is human, sources, informants which you sometime have to pay to get the information, some of them do it out of sense of duty or plain hate for the other person. Maybe half of cyber-crimes are solved with human sources. The second question inquired 9/11 and the timing of the creation of cyber-crime division to prevent computer terrorist attacks and Craig Phillippe explained that virtually all missions changed after 9/11 these kinds of crimes jumped up to the top of the list as the FBI hadn't given a lot of thought to them before then.

Nitya Karmakar, **Professor, University of Western Sydney,** Australia, edified with

Security, Privacy & Legal Issues in Relation to e-Business

e-Business is any business conducted over digital media, which not only includes the sale of goods and services directly over the Internet, but also serving customers and collaborating with business partners (Promotion and Facilitation).

e-Business, B2C (business to consumers) has grown to 240 million U.S. dollars and B2B (business to business) to 7 trillion U.S. dollars, only 2% of total business.

The challenges to e-Business are numerous: (1) the international nature which includes issues relating to language, culture and infrastructure; (2) the legal environment which include issues relating to border and jurisdiction; (3) jurisdiction on the Internet; (4) the enforcement and web site content; (5) the ethical issues which include issues relating; (6) the defamation and privacy rights and obligation; (7) the taxation issues.

The global concern is that some issues may or may not be covered by laws. The Internet allows scrutiny of all of us and therefore security, the process of protecting electronic transactions over digital media with a reasonable assurance of safety through the proper utilisation of policies, procedures, tools, techniques and methods, is of utmost importance.

e-Business can have impacts on two types of privacy: (1) physical privacy - the ability of an individual to avoid unwanted intrusions into personal time, space, and property and (2) and information privacy - the ability of an individual to determine how, when, and to what extent personal information is communicated to others.

Although enforcing privacy on the Internet is a real challenge some possible solutions are encrypting the messages thereby making them unreadable to third parties, ensuring that keys are not transmitted in plain text over the Internet and establishing internal policies that govern the use of e-Business related information which must be protected from illegitimate or unauthorised use.

The Internet reflects the real world using new technologies, so it reflects not only the pleasant side but also the evil side of life and as terrorism is a threat in the real world it is also a real threat in the cyber-world.

Cyber-terrorism is a threat to everyone that is connected to the Internet, no matter if you're an individual, company or government agency.

To date companies worldwide have already lost over 3 trillion U.S. dollars as a result of cyber-crime. A study conducted reveals the nations responsible for 80% of all cyber-terrorism: (1) US 35.4%; (2) South Korea 12.8%; (3) China 6.9%; (4) Germany 6.7%; (5) France 4 %; (6) Taiwan 3.9%; (7) Canada 3.2 %; (8) Italy 3; (9) Great Britain 2.2; and (10) Japan 1.8%.

The global trend for greatest expected economic loss due to cyber-crime is 31% and asset misappropriation, 35% ('Global Economic Survey 2003' by the PricewaterhouseCoopers of Senior representatives of more than 3,600 companies in 50 countries*)*.

In a 2001 survey, Global e.fr@ud conducted by KPMG, the e-Business concerns expressed were with regards to hackers, poor implementation of security policies and the lack of employee awareness (consistent responses [1,253] for all participating countries).

The improvements suggested were regular system penetration testing (authorised hacking), use of software specifically designed for security issues in an e-Business environment and increased use of encryption technology.

The question addressed to Nitya Karmakar during the **Q&A** part referred to the statistics on the reluctance to conduct business online. Nitya Karmakar indicated that in Australia 80% are afraid of using their credit cards online.

Jacques Bus, **Head of Unit, ICT for Trust and Security, DG Information Society, European Commission,** [http://www.cordis.lu/ist/trust-security/index.html], cleverly guided on
i2010 - The Research Challenges for Security and Trust

Security is an essential part of the i2010 initiative along the following lines: (1) creating an open and competitive single market for the information; (2) increasing EU investment in research and information; and (3) promoting the inclusiveness of the European Information Society.

In the IST 6th Framework Programme there was already preparatory actions for security research as well as in the IST programme for ICT for trust and security. With regards to research, the upcoming Framework Programme 7 (FP7) will include security research and pure cyber security will be under the IST programme.

The FP& will be particularly multi-disciplinary and focus on security solutions for the citizens, not so much about anti-terrorism but crisis management, interoperability in crisis management, border control, airports and ports security, looking into integration and development into overall systems to help security of citizens and infrastructure.

The FP7 IST programme for trust and security will be along the following lines: (1) the technology pillar – working together with infrastructures, services and software in order to develop the trust and security in the information and communication infrastructures, software and services and (2) the social techno aspects of security, dependability, trust and security, identity management, authentication and various issues that relate to ethics in general in the Information Society.

The main issue is that the user, which is the challenge. He expects freedom of choice, ease of use and creates many challenges for providers to ensure that they are providing a natural interaction environment and that services are available anywhere, anytime.

The EC will particularly support research to develop knowledge and technology to understand the various implications and benefits of security, not just securing but in an acceptable way that respects human rights, dignity and privacy and ensure user safety and the proper assessment of them.

One of the main issues in this discussion technology wise is that we have the possibility to create surveillance systems but users would like to have the feeling that technology is also there to help them, they are at the centre (user-centric) and it is worth being part of the Information Society.

In the current research the main issue are focused on protecting data, the value systems, however the EC will put emphasis on the societal and legal impacts, potential privacy issues and how to develop technology that will give the user control on that environment and on their own data and privacy.

The question addressed to Jacques Bus during the **Q&A** part addressed the main agenda of the EC besides raising awareness on security and privacy. Jacques Bus expressed the focus on advocating real technology research and research in privacy enhancing the ways users control their data while developing protection of the networks, devices and systems themselves. In the future when RFID and sensor networks will provide one-to-one mapping of the physical world into the cyber world we have to ask ourselves what does privacy mean in the cyber-world, what will identity in the Information Society look like? It is important that Members States work together with European organisations to bring these issues to the political debate and solve them before we are faced with real danger.

John G. Bullard, **Global Ambassador, Identrus**, UK, delivered a most illuminating talk on

TRUST- Interoperability and Liability Management Challenges in a Networked World

Identrus is about building awareness and one of the most interesting real world applications happening in the identity management world in Europe, U.S. and Asia.

Identrus is a leading global identity management initiative, bank built, government regulated and fully recapitalised. It was once owned 100% by the banks, 6 in Europe, went through a number of changes in the late 90's and by 2005 is fully recapitalised with new owners. As it stopped being just a bank consortium lights went on in the corporate world and in the government world it's now no longer just a bank consortium. The banks still use it; it is still essentially designed by the banks and still regulated.

Identrus is based upon PKI (public key infrastructure) as the most scalable, longstanding encryption processes we could perfectly well use in the future biometrics. The technology tends to be the easy bit, it's the pieces that sits on top on legal and operational aspects that get much more complicated when you start looking at liability management and true interoperability.

Identrus has initiated the Single European Payment Area (SEPA) – 10 billion British pounds cost of infrastructure and Markets in Financial Instruments Directive (MiFID) – 1-5 billion British pounds cost of implementation and a vast range of vertical market initiatives around e-Invoicing.
As well as, Pharma SAFE (Secure Access for Everyone), an interesting real world application using Identrus based credentials whereby the world's pharmaceutical industries needing to communicate with investigators worldwide. It used to be a very slow paper intensive process; they needed Pharma SAFE in order to stay competitive and speed up that process of investigation and testing out of drugs and to do so in a trusted environment.

An internal technology driven identity solution inside a government body, corporation is relatively straightforward, but multiple communities of interest across multiple legal jurisdictions makes it much more complicated to build and deploy a trusted identity management platform that can operate worldwide. That is exactly why Identrus was built by the world's financial institutions.

You'll never have true interoperability if we're just sitting at the bottom arguing about technical interoperability, you have to go up through operations, legal and policy if you want true business interoperability, which is what companies here in Europe dealing with companies in Taiwan, etc. will really need.

We need to establish that identity, store it, validate and then be able to rely upon it, Identrus based credentials can do that. Identrus uses the world's regulated financial institutions as delivery channel, as channels for the distribution of credentials, so they all play to the same rule set.

Organisations are benefiting from interoperability and the liability management framework mostly heavy domestic and regulatory compliance, industry and governmental mandates, multiple cross-border transactions, large volumes of financial transactions. Identrus based credentials are used by the UK ACH (Automated Clearing House) called BACS.

Think of Identrus as that identity and validation solution, totally discreet and separate from the entitlements and privileges, messaging and communication standards, a single identity token you can use across a variety of different areas.

The core themes about the Identrus platform: (1) all participating financial institutions are highly regulated by their national regulatory bodies, Identrus itself is regulated by the Fed and OCC; (2) Identrus is built upon the bank's strong issuance processes, in order to combat money laundering, banks go through very strong customer processes. The concept of Identrus is building upon those strong identity processes; (3) multiple use of applications across the identity validation layer, this contractual legal framework is very important to try to build a truly interoperable, global identity management platform built upon nation-state digital signature law.

It's a contractual legal framework everybody knows what their liabilities are and are not, and it is based upon open standards and best practice.

The question addressed to John Bullard during the **Q&A** portion of the session referred to Identrus being 100% foolproof? John Bullard asserted that nothing is 100% foolproof. Identrus is an identity management platform that manages the risks associated with identity. The reasons it's built around the world's regulated financial institutions is because they are good managers of operational risk, they are not eradicators of operational risk, they are managers, and that is why Identrus based credential are issued not just through banks but through regulated financial institutions. The second question brought up the issue of e-Government identity management solutions for the 25 Member States? John Bullard advised looking at you're the end customers, the citizens and businesses who will need to operate and compete in a ruthless global market place and to make it interoperable not just with respect to the EU as this will not necessarily be enough for your businesses to survive in the world, think about this in a global context.

Igor Hansen, Founder, e-Ja, Poland, CLAN Systems, Scotland, [www.e-ja.pl], one of the Global Forum's main sponsors, sensibly conveyed

Personal Data Spaces – Symbiosis of Privacy & Security or Putting e-Citizens before e-Administrations

Convergence of data concerns us all as individuals and so do accessibility, privacy and security.

If we actually concentrated our IT efforts on individuals instead of big e-projects we may actually get some real convergence, resulting in unique level security, very convenient and controllable.

We should store our data with those we trust? In a 2003 survey to British adults, aged 16+, respondents answered to which degree they trust the following people: (1) doctor 91%; (2) teacher 87%; (3) professor 74%; (4) judge 72%; (5) clergyman/priest 71%; (6) TV news reader 66%; (7) scientist 65%; (8) the police 64%; (9) man in the street 53%; (10) pollster 46%; (11) civil servant 46%; (12) trade union official 33%; (13) business leader 28%; (14) government minister 20%; (15) politician 18%; (16) journalist 18%. The question remains how much do we trust ourselves? Probably much more than any of these persons.

There is still an uphill struggle to make people trust us.

Today there are big e-projects storing our data all over the place, separate websites. Privacy is a critical issue as we are worried about this centralised storage and businesses usually have problems of exchanging data.

What would happen if technology helped us reclaim this data and let it converge on us, outside parties could access, contribute to it but we would be at the centre?

We wouldn't store this data in our pockets in card, we should have a trusted third party, outsource service using cryptographic tools and allow me to control this data, others would be able to access the data due to them by convenience or as law requires it.

There has been some in Poland about including blood group on the electronic ID card and if for example this were to be added we wouldn't need a new card, the additional biometrics would simply be added.

The biometrics space is entirely open and allows for multi-timed history of biometrics giving even stronger proof of identity.

Take for example a driver's licence. The right to drive doesn't actually belong to us but to the party that issuing the driver's licence and the police can take it away from us. The authority that gives us some right or another would be able to view the data and allow us to show the data the authority requires, administration has the ultimate control and we get ultimate convenience.
As the police that stops us put his card into the reader, show us he has the right to check us and when we plug our card into the reader it fetches just the necessary objects from my space and the authority can check if my biometrics are correct and if we have the right to drive.

This can obviously be expanded, once have this space for myself I can use it for all kinds of other purposes as well which has a huge impact on costs. We don't have huge centralised data spaces, just one space that can be used for many purposes from driving to professional entitlements, banking operations and travelling to other countries. The most valuable part of that space is that we can collect our medical records as well, making them portable.

With regards to the digital divide, is not about giving people computers or putting Internet in every home but giving people access to data everywhere. When a for example a 70 year old retiree goes to the doctor, he doesn't care whether he can use a computer or not, what he wants is that doctor will have all the information he needs to make an accurate diagnosis. He wants the pharmacist to be able to see all the medications and maybe remind him that he needs to buy insulin or something. This is Information Society at its best, not having to be specifically competent in computer use but still reaping the benefits of IT. Rather than having several cards in our wallets we would have one card having one key to the secure data space making it an open function card. The conveniences of biometrics are numerous, they can be multidimensional, have a history, can be certified by digital signatures and simple to update.

The question addressed to Igor Hansen during the **Q&A** portion of the session referred to trusting a third party to store your data? Igor Hansen responded that we don't have to. That third party doesn't even know who we are and doesn't have access to that data. The way the technology works is that the third party only offers us the capacity and bandwidth, just like a commodity. The second question addressed the different identities and relationships with the various authorities, businesses and how to manage them? Igor Hansen assured that everything is encrypted and there is no centralised database, however people associate the Internet with danger so we have to find a way to market it. In Poland we are looking at the banks to be our partners which people generally trust to store their money already, local governments are also well trusted. The third question raised the issue of managing audit trailing, would the be able to see who is accessing his data and under what authorisation? Igor Hansen explained that there is an application that allows the user to monitor this in a number of ways.

Bogdan Stefanescu, Account Manager Sales Representative Global Services, IBM, Romania, [www.ibm.com], one of the main sponsors of this year's Global Forum, efficiently presented

SVN Rom@nia Project

The SVN Rom@nia Project initiated by Stan Virgiliu, its Founder and Manager, is brining the electronic identity card (e-ID) to Romania.

Due to the fact that in Romania paper identification can easily be copied in back yard, security is a major problem. Instead of investing in the previous technologies, former ways of thinking Romania has decided to solve this problem by developing and issuing the electronic identity card. By doing so Romania is advancing one of the EU approaches to redesign and implement new concepts to security issues. The concept is to have a multi-functional digital ID card with multi-application possibilities.

The SVN concept was developed in a way or other, together with, software companies (e.g. IBM), the chip industry (e.g. Philips), the smart-card industry (e.g. G&D), financial Institutions (e.g. VISA), certification authorities (e.g. Identrus), Internet Service Providers (e.g. RCS & RDS), EU experts on the ID domain (e.g. European Committee of Standardization) and

country representatives of countries with experience in the e-ID: Austria, Finland, Belgium, Norway and United Kingdom.

The e-ID was developed in partnership with government entities such as the Romanian Ministry of IT&C (Mr. Netin Aurel, IT State Secretary), Local Arad City Hall and Arad County Council, as well as with private partners and IBM is involved as the integrator of this concept.

One of the further reasons to develop the e-ID is savings, increasing the GDP by 1-2% in a couple of years as shown by the Moscow Social Card issued to over 2.5 million citizens at present. The results in Moscow have shown that significant savings can be achieved in a relatively short amount of time. In 1 year and a half, the Moscow metro has reported 30% savings, the Moscow City Hall 10% savings and the Bank of Moscow an increase, 10 times, in VISA cards issued.

A good practice model, the Moscow Social Card spans social services, health services, indemnifications for students and pensioners, public transport, VISA payments, shops and local taxes.

This multi-application card will replace the actual infrastructure and use different ways to access the information or to access services. It will also connect all the ministerial services by using one portal rather than various access points with different interfaces unfamiliar to the users.

Patricia Cooper, chair of the session, closed the session with these words:

At some point during the discussion, risks and the magnitude of the danger of protection, started to feel overwhelming, the question raised whether we were better off before telephones doesn't seem so as ridiculous as it first sounded.

The panellists effectively showed the value of these services, the convenience the enormous efficiencies and that the benefits of convergence outweigh the risks that at some point make us a little nervous.

The reassurance is that there is great value in the Information Society and overriding benefits of ICT and the cautionary tail underneath this, is that there is more to be done to overcome this very real sense of risk and security even for us as professionals in this field certainly for consumers and users. Nothing is foolproof, is the challenge and call for action to continue to look at this subject very profoundly in order to meet the goal laid out to reassure consumers and users to the extent that they can gain the practical benefits from ICT.

DAY 2 – MORNING – PLENARY SESSION

The **moderator** of this opening session of the second day, **Sébastien Lévy, Vice**-**President of the Global Forum**, France, welcomed the panellists and participants and conducted the session with ease.

As the session's first speaker, **Peter Vanvelthoven, Minister for Employment and e-Government, Belgium**, addressed the very interesting topic of

An e-Government Building Block - The e-Identity Card

To make e-Government becoming reality, the Belgian government has created a firm foundation consisting of a number of e-government building blocks – one of them being the electronic identity card. The eID gives both private citizens and businesses highly secure access to the government's electronic "customer service window", as well as to a whole host of data files or applications belonging to public or private institutions and companies.

Belgium is one of the first countries in the world to issue mandatory electronic identity cards on a large scale. Issuing of the cards began in 2005 and by 2009, all Belgians aged 12 and over (making a total of 8,200,000 Belgians) will have their own electronic identity card. By the end of 2005, about two million Belgians will have an eID.

The new card features much of the same information as the traditional identity cards before: photo, first name and last name, gender, nationality, date and place of birth, signature, period of validity and state register number. However, the eID does not show a print-out of the person's address (although it is still contained on the chip). Thus, people who change their address no longer have to apply for a new card.

The same identity data that is printed on the card, plus the person's address, is stored on a chip. The electronic chip also contains an authentication certificate which private individuals, businesses and civil servants can use to authenticate themselves electronically. This means that acting as a highly secure key; the eID is able to provide safe access to an endless number of data files and applications. Finally, the chip contains yet another certificate that enables the user to place a digital signature that has the same value, legally speaking, as a handwritten signature.

The eID can also be used for signing electronic text documents, e-mails and PDF documents. The validity of the electronic signature lapses as soon as anything is modified in the documents signed. The eID makes it possible to send and receive registered letters via the Internet. By using their eID, people can complete and lodge their tax returns electronically. Furthermore, in a number of local boroughs, residents can use their electronic identity card to apply for and obtain certain official documents from home, which means they no longer have to present themselves in person at the town hall. Members of parliament can sign and lodge acts, decrees and parliamentary questions electronically. Moreover, employers can use their eID to fulfil their social security obligations electronically.

Many more eID applications are currently being developed: The eID can be used as the access key to computer networks, but also as the key to office buildings. A number of

companies are already using the eID in this way and local government offices are also considering implementing it. Libraries use the eID as a library pass so that people can log on from home and reserve or borrow books. Another application is "Be-health", which is a healthcare portal site through which healthcare providers and patients can access all sorts of information and applications in the healthcare sector. In time, patients will also be able to use the card to view their own medical records.

Special printing processes and holograms are used that make it extremely difficult to misuse the card. In addition, the electronic chip of the card involves state-of-the-art technology and is constantly upgraded. One simple but very strong security measure is that the chip itself does not contain any sensitive information (just the data that can also be printed physically on the card). Instead, it contains a key to data files that are located elsewhere. Also, people can only access files containing personal details once they have authenticated themselves by way of a strictly personal PIN number, along the lines of bank cards. Anybody who loses his or her eID can immediately call a "Cardstop" number so that the certificates on the chip can be blocked.

Jon Leibowitz, US Commissioner at the FTC - Federal Trade Commission, USA, presented a clear and forward-looking view on

Competition in the Information Society - Uncorked and Unplugged

It is almost universally acknowledged that Internet access is essential to economic growth and education. In its most fundamental form, broadband access is about consumer empowerment – giving users access to and control of information.

Today, access to broadband in the U.S. could fairly be considered even more vital than some traditional government services because the Internet is both a repository of information and a shared common space to which the public should have access. To that end, local governments are beginning to step up in various communities across the United States to meet the information and technology needs of their residents by offering high-speed wireless Internet access or broadband, as a public service. A growing number of U.S. municipalities are establishing broadband networks that potentially compete with commercial operators.

Beginning last year, the city of Philadelphia undertook plans to offer wireless Internet access. Many of its residents simply did not have access to broadband, and Wi-Fi service would spur economic development, improve education, attract tourists, and benefit city agencies at lower cost than the current telecom infrastructure. These plans, however, were almost terminated at their inception by the lobbying efforts of commercial operators pressing for state legislation prohibiting municipal provision of Wi-Fi. But fortunately, after a public outcry, reason won out and today the city is moving forward with its plans.

Municipal development of broadband may be the best option in some cities where many residents cannot afford the high prices of private Internet providers, or where Internet providers simply did not see enough economic incentive to provide universal coverage. It may be the only option in some of the many rural areas where phone and cable companies have not extended any service – often contending that it would be prohibitively expensive. Indeed, even the mere threat of local government entering the broadband market may entice phone and cable companies to compete in these low-income and low-density areas.

Although in Philadelphia, the city prevailed, many similar municipal initiatives are being defeated by the efforts of commercial incumbents who simply do not want the competition.

Yet so far, phone and cable companies have successfully pressured about a half dozen states to place some sort of restrictions on their books, and similar measures are being considered in many others. To be certain, opponents of municipal broadband make several arguments that at first blush, might seem persuasive. They assert that supplying access to the Internet simply is not a proper function for local government. They argue that municipal participation in the establishment of Wi-Fi networks would amount to "unfair competition" because municipalities have certain advantages over private providers, such as lower fixed costs and no need to pay for rights of way, an argument that seems to raise concerns similar to those embodied in the EC's proscription on state aid. And they claim that cities would be incompetent suppliers of broadband service.

Municipalities in the U.S. already provide their residents with many services that compete with private sector counterparts, such as libraries, schools, recreational centres, police, parking, subways and buses and, in some places, electricity. And it stands to reason that if the companies truly believed that municipalities would be incompetent broadband service providers, they would not be spending tens of millions of dollars lobbying to prevent government-sponsored competition.

This issue is also of highest relevance in Europe: There are reportedly very early talks progressing about introducing municipal Wi-Fi in Birmingham. Canary Wharf recently launched its own wireless Internet network, and the Corporation of London is now considering wiring the Square Mile. It has likewise been reported that the city of Amsterdam is involved in supporting a fibre network to be built around the city.

The potential contributions that e-commerce can make to our world economy – and to the quality of our lives as consumers – are limited only by those forces that impede the competitive process. The Internet is a true global resource; accordingly, threats to its vitality are of global concern.

Benoît Cerexhe, Brussels' Minister of Economy, Employment, Scientific Research, Fire-fighting and Urgent Medical Aid, as well as Agriculture, Region Bruxelles-Capitale, Belgium, shared his experience in

Promoting Regional Growth

Various scientific studies show that innovation stands for half of the growth of added value in the European regions. It is also one of the basic elements of the Lisbon strategy. The most innovative companies realise 50 % of their sales thanks to new products. This proportion amounts to only 20 % for less innovating companies.

Thus, innovation as the key to the knowledge economy is not an empty word. The sense for risk taking, the passion to develop entrepreneurship and the search for innovation are decisive elements for economic dynamism and for the growth that leads to more welfare. The Brussels' government has made it a priority from the very beginning of the current legislative period and concentrates on the following three innovating sectors in order to obtain results more rapidly: Life sciences (such as medicine, biotechnology, pharmaceutics, etc.), ICT and environment. This choice is not surprising: The extreme density of university hospitals on the regional territory confers to life sciences a very high scientific significance, reinforced by the presence of private research institutes with an excellent reputation. As far as the ICT sector is concerned, the high concentration of leading companies in Brussels, in association with the emergence of spin-offs, creates a national and international pole of attraction which gathers one of three jobs in this sector on the Belgian scale. Environment is another main

preoccupation. Brussels welcomes about 350,000 commuters every day and totals – globally – almost 12 million m2 office space. The Brussels region is a zone of excessive urban density which is submitted to severe environmental pressure. As a result, one objective consists in working in the field of ecological building.

The first two sectors will have very soon an incubator at their disposal – a kind of real property structure providing accommodation and assistance for spin-offs at very interesting financial conditions. These incubators will turn innovation more easily into growth. Brussels currently has two incubators which are full up. 20 million Euros will be spent for two new projects: one devoted to the ICT sector and another one devoted to biotechnology. Within the scope of its Contract for Economy and Employment, the Brussels region has also managed to develop a specific action in order to stimulate innovation in SMEs. The MISTRAL Program allows every business to make a diagnosis of themselves and to benefit from coaching by specialists. Specialists to be mentioned are the Brussels' Agency for Enterprises of which two directions deal with innovation, in a bottom-up process, as well as the Brussels Institute for Scientific Research and Innovation, in a top-down process.

As part of the policy to stimulate R&D with an economic purpose, two calls for proposals are launched each year. All companies whose R&D project implies an obvious interest for its activities in Brussels, is allowed to submit a demand for financial aid. This year, the Brussels' region has financed 30 R&D projects for a total of 10 million Euro. As regards the valorisation of the results of research, the universities and business school can count on their interfaces which have to promote and facilitate co-operation between the academic world and their external partners. As from 2006, young university talents will be able to benefit from pre-incubation scholarships, according to the example of the formula in the Walloon region, as part of the initiative FIRST. This amply proves that innovation and creativity sometimes are possible simply by working on an idea which was developed elsewhere. Indeed, sometimes even old recipes give the best results.

Edith Cresson, President of the Foundation "Ecole de la deuxième chance", Former European Commissioner for Research and Former French Prime Minister, France, gave a remarkable presentation of

The Link between Convergence and Innovation

In the past, we often confused convergence with financial operations by underestimating the possibilities technological innovation can offer. E.g., this has been the case when Vivendi bought Universal in order to associate fixed and mobile communications, TV and cinema. Another example is the merger between AOL and Time Warner, key players in the area of TV and cable, in the U.S. The following failure of these operations has been rashly interpreted as the ultimate failure of convergence – although it was a matter of merger operations or acquisitions realized with the objective to control the market, to absorb competitors, and to ensure ongoing profits. Added to this financial vision was the illusion of a future belonging to content owners. A widespread illusion was the one of a synergy between the purse of subscribers and the purse of the property rights' owners. However, as reality has shown, there is no such synergy.

Neither fusions and acquisitions, nor synergy strategies are driving convergence – but innovation does. This has an obvious reason: The generalisation of the Internet has become the universal platform for the exchange of data, voice and image. The effect of banalizing the Internet created unlimited opportunities for developers to invent new applications associating voice, data and image. Before the Internet, this has been possible only within a very limited

circle of persons. With Internet, everybody gets a change because the basic technology is the same for all. Additionally, with Internet, the delivery service is included: The possibility to widespread information is one of its forces.

Everybody is recognising the engagement of American universities and the research efforts of both private groups and the government. Examples are Google as well as the increase of budgets for public organisations dealing with the Internet, while all other budgets are decreasing. Everybody recognizes China's engagement in new technologies. Often misjudged as an electronics assembler, China is today a country of innovation in both equipment and software. Development programmes and software parks have been launched in several Chinese regions. 21 software parks were planned for 2003 and the central government is providing millions of dollars for each of them. Another example is India, which today is one of the major targets of software outsourcing of European and American enterprises.

Where is Europe in all this? If we should define the centre of gravity in the future of innovation and convergence, this would be "software" – where services have to be added because it is usage that implicates the markets. Europe holds some of the major actors in the area of service activities. However, Europe has to recognise that this is an issue which is strongly related to investments and innovation. MP3, for instance, has been developed by Thomson and the Fraunhofer Institute. It was a Frenchman who developed DivX – and who had to move to California to find investors and partners. These examples show that convergence today is software innovation.

This evolution leads to new models of financing research in the private sector. It is no longer about bringing together and financing large structures, but to promote concrete projects – based on flexible financial tools adapted to these projects. In order to reach the Lisbon objectives, we have to think about new financial and fiscal instruments. Europe should learn from best practices, such as the innovation tax returns in Canada or the lease revenue bonds in California. Such instruments require a stable fiscal policy as well as stability of the allocation mechanisms. Software innovation obeys to other rules than mergers and acquisition. Software innovation requires another vision of enterprises and economic actors; it opens doors to new reflections and prepares our future.

John Gage, Chief Researcher and Vice-President of SUN MIRCROSYSTEMS, USA, [www.sun.com], one of the main sponsors of the Global Forum 2005, presented with his usual brilliance and wisdom the relation between

Students and the Power of Innovation

When establishing a list of innovations in the world of the Internet, it becomes clear very fast, that the people inventing things are to a very large part students: Computer Aided Design was invented by Ivan Sutherland when he was a graduate student at MIT. The initial Internet protocol has been created by students (Vinton G. Cerf, Steve Crocker). As regards the implementation of relational databases, students did ring in the IBM first round of SQL databases. Students created the circuit simulation software that allows everyone today to simulate the most complicated circuits. The student Bill Joy build Open Source with Berkley Unix. Whitfield Diffie was a student when he invented public key encryption. Bob Metcalfe was just out of school when he developed the Ethernet protocol. The microprocessors that became the foundation for IBM, Sun or Intel where innovations, initially at the IBM lab, but than been picked up by students that build them. Students build the first single board computer, developed the first Virtual Reality system, and MPEG 4. Marc Andreessen, a

student, developed the first web browser. Linus Thorvald was a student when he built the core components of Linux.

Many of the students have been fundamental in creating jobs, such as Jerry Yang with Yahoo!, or the Google founders Larry Page and Sergey Brin. Napster, the first peer-to-peer system, which was developed by a student, revolutionized the music and film industry. The movement to utilise the Internet for free telephone calls of IP revolutionized the Internet: Skype has been developed by students. Sling, allowing to watch your television set from anywhere, redirects IP packets for TV to wherever you are. Each of these innovations came from students. The discussion about where things are is fundamentally important and suddenly the Internet defeats many the of the regulatory regimes based entirely on boundaries.

Enormous content creativity is springing up from the free encyclopaedias, such as Wikepedia. People around the world are building, self-monitoring and self-correcting an encyclopaedia. People around the world are adding their knowledge to change the access to knowledge freely. This is very powerful content creation.

All these innovations came from those who are able to be in a place where there is recognition of the importance of supporting innovation. Governments have to pay a lot of attention to the investments that allow these innovations to occur in an environment that makes them as barrier free as possible to those that will create the world we are all live in: the innovators we find today among our students.

Rosa Bruno-Jofré, Professor and Dean of Education at the Queen's University, Canada, provided an interesting overview on

Situating the Integration of Information Technology and Convergence Issues
in the Context of Teacher Preparation and Educational Aims

Teacher preparation in Canada for both elementary and secondary teachers takes place in Faculties of Education at Universities. The engagement of Faculties of Education with ICT has encompassed a transformative moment in education. The integration of ICT has been shaped by radical epistemological, political, and socio-economic changes.

Universal usability as a basic condition to integration and to the fostering of distributed systems of knowledge. In faculties convergence takes various shapes, in particular in the networked e-learning environment, in the course management systems, in the management of administrative information across institutions, in Smart classrooms, and in the integration of tools such as curriculum planners and reports cards in schools. Main concerns have to do with design and interface problems. Mastering a new tool often requires an investment of time, yet that time factor seems impractical or not worth the investment to many practitioners.

Instability is a source of concern for educators. There are two main sources of instability: first, the vendors are guided by market priorities or profit when identifying needs; second, the developers of new and exciting programs may behave like artists whose creativity may be welcomed, but whose zeal may inadvertently impede the usability of the new product. There is a need for a level of stability rather than the constant move to the newest version of a particular program. Further to lack of stability, unresolved gaps in convergence and inconsistencies in IT integration often motivated by market priorities affect the distribution of systems of knowledge.

The use of ICT Education in the classroom or in a networked collaborative virtual environment opens new ways of thinking about collaborative scholarship, sharing of information, and also it creates new public spaces that lead to different forms of civil engagement. However, ICT integration should be inspired by precepts of social equity and justice, embracing critical multi-media literacy, understanding of difference, issues of identity, cultural diversity, and a preoccupation with equity and inclusivity.

Technological integration increases its value when the new technologies reflect familiarity with theories of learning. This is an issue related to design that goes beyond the user centred design claim and calls attention to specific consideration of teaching and learning as an educative experience.

Educators see with alarm that there is a great interest in what has been called "edutainment. However, the danger of accepting the notion of "edutainment" is that such a way of thinking can lead to a distorted presentation of subjects like history, and, eventually to political. A data-rich Virtual Globe environment should not be a stand-alone environment, for students still require the guidance of a knowledgeable teacher, one who is able to ensure that the technology succeeds in providing the freedom to think more deeply about the information they access.

Teacher education should lead both in the educational uses of technology and in thinking critically about the use of technology in support of novel, inventive, and imaginative forms of teaching and learning that transform or enhance learning environments. Research and development partnerships with Faculties of Education are a step forward in order to provide a forum to initiate and develop a conversation on the aims of an authentic, inclusive, and just education in a high tech environment, while also paying heed to the market demands of concern to business and developers.

Hubert Vigneron, Strategic Marketing Director at EUROSMART, Belgium, outlined the topic of
Shaping the Future: The Role of Smart Cards

Eurosmart gathers 30 industrial companies all along the smart card value chain. Smart cards are the most used computing devices today and they are used in various segments. The two most successful ones being wireless telecommunications, with 2 billion users in 2005 and 1.3 billion SIM cards, followed by financial services, with 4 billions plastic cards in use and over 300 million smart cards. The success of smart cards in these two markets is mainly due to standards. With an potential of 6 billion smart cards, ID, security and e-Government are very promising areas. However, due to missing standards the take up of smart cards in this area is very slow.

Two major evolutions occur simultaneously today: An extended usage of the smart card (identification /authentication) for other services than the core one, e.g., wireless network access, and the convergence of mechanisms which will ease interoperability when eID (digital identity) functions are needed. These evolutions are possible thanks to an increased standardization of the card interfaces and of the core functions of the smart card, i.e., identification, authentication and signature.

The mobile phone represents a good example for the extension of usage from a core function to a multi-applications usage. It offers secure Internet access, access to public transport facilities, e-voting possibilities, etc. The identification /authentication function of the card is the core of these services.

e-Government and the electronic identity card reveal a lot of potential. As response to the lack of standardization in this area, the industry initiative "IAS platform for government to citizen applications" has been launched. The objective of this initiative is to achieve a common specification to allow the interoperability of secure services through a precise definition of identification, authentication and signature functions. A working draft has been submitted to the CEN TC 224 WG 15 European Citizen Card. This specification will be combined with a set of test suited for homologation and a protection profile for security evaluation and certification.

The smart card is a key tool for secure access to public and private services and fits well with European values, such as privacy, citizen freedom, mobility, etc. The card is the common denominator to multiple citizen needs and a major component to insure ease of use and interoperability, e.g., in the field of e-Health. It is urgent to federate pilot and leading programs (e-Health, citizen card,…) in Europe to avoid the spreading of non-interoperable infrastructures. Active workgroups in the technical domain organize/prepare the convergence of specifications for e-Government applications, but they need to be relayed at political and operational level.

The Final Phase in e-Government:
Introducing the Instruments and Channels to go Transactional

Hugo Kerschot, **Consultant e-Government, Indigov,** Belgium, **moderator,** welcomed the panellists and participants and skilfully conducted the session.

As **chair Paul Timmers**, **PhD, Head of Unit, eGovernment, DG Information Society and Media, European Commission**, [http://europa.eu.int/information_society/index_en.htm], gave a stimulating presentation on

Towards the European eGovernment Policy in i2010

It's possible to innovate within public administrations and at the same time be guided by major policy demands. In e-Government, probably almost more than in any other area, there is a strong interest from the policy side to make use of e-Government and give indications to where it should go.

The some of the most relevant areas for real life good practices to be implemented are social security, immigration, employment where public services play a major role. The challenges are many but the conclusion is that there has been a lot of improvement in e-Government in terms of going online, but citizens and businesses have yet to reap all its benefits.

e-Government developments are part and parcel of i2010 initiative to promote Information Society and clearly fit into its goals of inclusion, better public services, quality of life. They also have a strong dimension in innovation and research through the eTEN and IST programmes.

Certain infrastructure elements are being developed within the e-Government areas such as the electronic identity card (e-ID) and authentication, you might say are forming part of the Single European Information Space and making cross-border transactions possible.

The future e-Government policy will be outlined in the proposed i2010 action plan to accelerate the delivery of the benefits.

The various topics on the table are: (1) going beyond online availability and delivering the major and measurable benefits along focused objectives; (2) progressing in e-ID and authentication for public services especially across borders, building upon all the developments that are already going on and are beyond the phase of experimentation in Member States; (3) working in a multi-level, multi-system environment that will be typical on the European scene.

Which applications and services will make a significant impact and drive the agenda forward? How does e-Government contribute to major elements of the Lisbon Agenda, reducing bureaucracy and creating more user satisfaction? In fact, the standard for citizens in the future will probably be that public services have to be as good as the private sector's, as many citizens experience that most public services are not so easily accessible.

What should do to achieve a more inclusive e-Government for all citizens and businesses? The EC has launched a whole series of projects on advanced e-Government such as e-

Participation – participation enabled by ICT and democratic decision-making, not so much e-Voting but the debate around it – simulation, assessment of alternatives, large scale dialogue, personalised inclusive services for everyone, "My Gov" type of approach, use of knowledge management to tap into the vast knowledge and information that in public administrations for much smarter public services and security in e-Government to strengthen the enlargement.

There are also new pilots in validation in the eTEN programme more oriented towards cross-border validation and deployment, more downstream from research and new projects and studies in the IDABC programme, oriented towards actual implementation. As well as a new e-Commission initiative, promotion of the exchange of good practices at the European level. There are various studies running on good practices – the Good Practice Framework which has about 120 cases and 500 experts registered – interoperability at local and regional levels and into other areas such as legal barriers.

Ronny Bjones, **Enterprise Security Strategist, MICROSOFT EMEA,** one of the main sponsors of this year's Global Forum, [www.microsoft.com], gave a rich presentation on

Electronic Identification and Authentication as a Commodity in Daily Life

The whole IT industry including vendors but also those creating and deploying the services really need to step up on authentication means and open standards.

The threats previously posed by the Internet, worms, viruses, etc. are still going on but have decreased since the industry has made a lot of progress on the issue of security; the last big attack was in 2003 and had a huge impact on businesses and users, since then however there haven't been attacks on that scale.

We must now deal with the issue of authentication mechanisms. User IDs and passwords are definitely not sufficient especially if you look at the new kinds of attacks criminal organisations are dreaming up and they see the Internet as a market place. They are using social engineering techniques we know from the physical world and transposing them into the cyber-world such as phising to steal people's credentials and identity. User awareness is lacking, criminals have identified how easy it is to do social engineering.

We must move away from passwords. The technology has been available since the 1980's such as smart cards and many services use calculators for one time passwords. The problem is they are not being used and Microsoft strongly believes in the electronic identity card to solve this problem. Many governments are issuing these cards to citizens and Microsoft has identified more than 30 countries in the near region which are also planning to do so and has created an application to enhance the uses of the e-ID providing more value to the citizens.

With regards to the building of new systems, industry has come together and developed new concepts and architectures with complete security, privacy and interoperability in mind and this is how they need to be built.

Microsoft is developing a new technology called InfoCard an identity creation and management experience that allows users to maintain control over how their personal information is used online based on cryptographic codes and a different code for each service so there is no issue about transactions being linked.

Industry players are working on service oriented architectures built with privacy, security, interoperability and open standards, a big step for industry.

Frank Delanghe, **Founder & Managing Director, D-SOFT,** Belgium, one of the main sponsors of this year's Global Forum, [http://www.dsoft.be], made a noteworthy presentation on

Use of e-Counters in a Secure Way

D-Soft was founded in 1997 and focuses on ICT, particularly the development of e-Forums and their applications, authentication and digital signatures. It has worked with the Flanders government, the Netherlands tax administration and French Association of Accountants.

D-Soft developed the e-Counter application in response to the citizen's need to communicate with their local administrations by simple processes on a platform that is easy to use. The e-Counter application provides an identity system and digital signature functionalities.

There are two components to electronic identity card (e-ID): (1) the visual part with name, photo, etc. and (2) the electronic part. D-Soft is concerned with the electronic part which in e-Counter has two certificates, certificate pairs, one for authentication and another for digital signature.

After a user has introduced his PIN number and the system verifies the information on the card the users is free to access services such as requesting a birth certificate which demands absolute assurance of identity.

A second application is digital signature. Some forms require citizens to sign such as student loan applications. The user selects and completes the form, some details already on the card are extracted and the form is converted to PDF.

The Belgian e-ID uses a qualified certificate to create a qualified signature which is by definition equal to a handwritten signature.

Jo Steyaert, **President, Indigov,** Belgium, persuasively shared the vision of the

iDTV as a New Platform for eGovernment

iDTV uses interactive digital television as a new platform for e-Government. As government services are becoming more and more process and demand oriented, citizens and enterprises are at the centre.

Providing access to services through different platforms, TV, computer and mobile phone, multi-channel approach, should also allow citizens the possibility to make a service demand through one channel and see its status on the other platforms.

e-Government is becoming i-Government, interactive Government and is a trend that must be supported by governments. iDTV in Belgium and around the world is becoming a channel with real interactivity and broadband connection.

The iDTV interfaces are "granny proof" in comparison to Internet browsers which are less interactive platforms and bring services directly into the home as the majority of the population already owns a TV, bridging the digital divide.

iDTV project coordinated by Telenet, a major Belgian cable company in Flanders and Belgacom, a major Belgian telecommunications company began test trials in 2004 in 300 households and today there several thousands are subscribed.

e-Government application have been developed with the support of the Flemish Government and have been incorporated.

Indigov iDTV monitor is conducting research into the public interests for iDTV services and although the majority are interested in entertainment services, movies-on-demand and the like, Indigov was surprised to discover that in 4th, 5th and 6th places came government applications such as local community guides, e-Government alerts and general government information even before e-ticketing, gaming, etc. So people are interested in government services, even those not online.

Through the deployment of a gateway to enable iDTV over the Internet citizens are able to access information, mail their local governments through TV and even search for employment through the TV as for example with the Vlaamse Infolijn (the central contact point for Flanders Government information).

The employment search application is particularly popular and employment agencies noticed that whereas the majority of the jobseekers on the Internet were already employed and looking to switch jobs, those searching through the TV were unemployed, a major societal contribution.

Peter F. Brown, **Senior Expert, Austrian Federal Chancellery - ICT-Strategy Unit, Chair of the CEN eGovernment Focus Group,** Austria, gave an inspired presentation on

3 Keys to eGovernment Convergence

The following key issues will drive e-Government in the next decade:

(1) Transformation – we haven't seen anything yet in e-Government. It's the last of the old attempts to just digitise the familiar approaches of public bureaucracy of the last 100 years; we really want to move into a new phase of e-Government.

Vision and the vision of architects is what drives things as much as technology towards a real transformation of e-Government. Technology and engineers are essential for providing capability and solutions but we need more architects and visionaries. Ultimately the convergence we're talking about must be driven by vision and enabled by technology.

(2) Governance – e-Government convergence should be achieved through Interoperability. We're sort of at a three-way tipping point in e-Government today between what is technologically possible, what is socially and politically desirable and what is acceptable to the citizen and the real challenge to convergence is to leverage innovation.

In terms of interoperability, which is one of the key enablers towards such innovation, we've seen a lot of work particularly in standards communities and technology consortia for the lower levels of interoperability - technical and syntactic (e.g. XML data standard), the problem for real interoperability is at the higher levels, organisational and semantic which is not the job of the IT community, but who is in charge?

At a national level we see quite strong governance models in place. In the European space we face many challenges with the growing importance of cross border and "pan-European" e-Government services and the need for equivalent authority and sustainability models at the European level.

(3) Identity Management – the other aspect of governance which is important in this is that we tend not to think of our IT assets as valuable business assets, we see them as "disposables" (e.g. program code, data models, etc.), there needs to be some explicit asset management. In order to manage something you can only manage what you can measure and in order to manage some of these assets we also need to know what they are.

In an increasingly inter-connected world, we need to clearly identify what we are connecting to. It's not just sufficient to authenticate an individual in an electronic transaction but the individual may wish to know who government is connecting to. The need for identity goes beyond just identifying and authenticating people but extends to all types of digital artefacts.

(4) Semantic Interoperability - A stable system of identity is a cornerstone for interoperability. Many technological solutions have been offered to provide identity stability, some are propriety inevitability, some are not that stable, many are device dependent but many look at the problem as technical rather than as a policy issue. The question of identity, a system of permanent identity that is not device dependent is the key to maintaining and developing sustainable interoperability.

Real innovation will be the key to convergence. The future of innovation and convergence will be very firmly in the hands of those people who are prepared to grasp that challenge and not accept the mediocrity that is often presented whether by the private or public sector as quick fix solutions for their issues and prepare to take on the major battle of transformation for the future.

Graham Colclough, Vice President Cap Gemini, UK, [www.capgemini.com], one of the main sponsors of this year's Global Forum, motivated the participants on

Measuring eGovernment – The Challenge

e-Government must figure out a means by which it demonstrates its paying for itself today. Convergence makes it more complicated, we have multi-channel, multiple needs, changing needs and still it has to demonstrate it's paying its way. You get what you measure but the key is to know what you need and in a convergent world those needs are more complicated.

Some of the issues that affect us today: (1) international and real issues: Mitigate the impact of bird flu and be aware of who is crossing our borders; (2) Social and personal: Easy access to quality public services and our young to be knowledgeable, healthy and safe, our old to live long and fulfilling lives; (3) Economic: know our taxes are being used effectively and not pay so much tax – efficient use of our taxes. These are important to us and they ALL benefit from better use of 'joined-up' information locally, nationally, internationally, and personally. Every single one is information rich, very real and not going to go away and also very personal and e-Government won't be perceived as any value until it's driven down to you, to an individual and personal level.

Cap Gemini has been focused on measurement going back to 2001. Countries made 100% availability of e-Government services online by 2005 a goal, we didn't really know what that meant by it's a starting point, targets are important that's called leadership. In 2003 however

we all revisited those targets because we decided we could not really make a 100% available online and would that be very sensible. So we fashioned them somewhat, what is blatantly evident now is that we don't have hard targets for 2010.

We've measured in many different ways things being available online, that's not good enough, in a convergent world we have a lot of choices, channels and we need to drive things which are relevant to us as individuals and the key issues are about understanding the use and the impact of these services.

So looking forward what should we measure? We currently measure availability of services on a national level and that's a bit of a standard, benchmark to compare all of the European countries and give some aspect of how we're developing. That must continue because it is a recognised and consistent measure and very useful. That actually tells us something about our global competitiveness, how we're comparing Europe with the rest of the world.

From a geographical perspective people are interested in regional measures, to understand what's going on in a locality, which is more pertinent to them. We already see some activity and measurement at a regional level which need to broadened and realigned.

The majority of people live in cities, in fact the growth of cities is vastly greater than in rural areas and important to understand how the cities are performing, they are the hub of economic vitality. On geographical basis we have to be more sophisticated in terms of how we slice and dice the information.

We need to start focusing on service vertical, around tax, health, learning and security to understand how to measure specific service areas.

Fundamentally the biggest mindset change for the public sector is too understand what the private sector has been doing in its direct access and management of customers, through understanding what is relevant to the customer you'll actually get adoption of public services. And related to that is efficiency, interoperability and speed, putting a service online which was the challenge a few years ago is no longer relevant, what is really needed now is the total transformation of that service in terms of information being managed from the customer in a way, through a channel that you wish to receive it at a time of day, that is convenient to you and know that all of that is connected back into information systems and across different public sector organisations at the same time.

We need more real life examples that e-Government is paying its way, that's the proof that is absolutely vital for success.

In terms of measurement, we have quite a few, we need to enrich them and align them better because it's through that we'll manage to form the strategy and policy.

It's become more complicated and sophisticated but that should be absolutely no excuse for inactivity in terms of measuring how we're making progress.

Alan Shark, **Executive Director, Public Technology Institute (PTI),** USA, knowledgeably covered

Convergence: Beyond e-Government

We could talk about e-Government and i-Government all we want, but if we're not talking about its availability, affordability and innovation in terms of giving people we are trying to serve what they need or integration, we'll be talking about the same thing every year.

PTI was created by the National League of Cities, National Association of Counties and the International City/County Management Association. It was formed when technology was more of a mystery and is the technology arm of these groups and represents about 35,000 jurisdictions between themselves and their sponsors, covering almost 40,000 local governments, cities, towns and counties and a third of them at the very basic stage at what PTI calls e-Government and the upper third are way ahead of the rest.

There is a digital divide even amongst our governments. Look at local government, when it comes to technology, we regulate, hopefully innovate, are a prime user, tax authority and most important provider of first and last resort.

We have a very powerful battle going on in the U.S. on who should provide broadband services, incumbents are fighting all the time, at all levels and that's counter-productive and unfortunate. They think they have probably grown out of e-Government only because the "e" has so many different meanings "electric", "governance", "administration", "enhanced", "enriched" and i-Government, is that a better term? Innovation government suggests that we are looking at a different approach towards innovative ways to provide services and information to citizens. Innovation is positive, continuous and really champions creative solutions using technology.

We know that there is a high degree of acceptance of online transactions which was not true three years ago. But, the digital divide continues to grow and becomes a greater disconnect between people in a growing society, local government and its citizens. When looking at the features, no one disagrees in terms of the standards, multi-functional devices, the mobility, functionality and accessibility.

One example of convergence is how many functions can today's cell phone emulate, there are 40, anywhere from MP3 player to a video camera, GPS, you can track your teenager this, walkie-talkie, TV, smart card, news, weather, VoIP, book reader and flash light, etc., etc. It's an incredible list and continues to grow. But this is what our publics are seeing, the kind of sophistication and devices and local officials then are asking how important is broadband availability, penetration to my city? Where is it available and the big question is what should local leaders be doing about it? In many cases they are organising or trying to develop things of last resort.

There are two phases of e-Government: (1) passive – 1/3 of U.S. local governments provide just information, opening hours, leaving an e-mail, etc.; (2) participatory or digital democracy – being able to respond, give advice, polling. 40,000 blogs come online every single day and now we're into podcasting, it means the public is very connected and local governments have the challenge to remain connected with its citizens.

When we look at implications, it is clear we have a greater connected society and then with the Internet the ability of greater sight, hearing, language, monitoring – voluntary and involuntary because there's a great problem with prisons and not just in the U.S. and we

have found that its much more useful to have bracelets on somebody where they are confined to their home, being monitored by the Internet. They are now introducing GIS features; we can look at a map and a particular locality 5, 6, 7 different ways.

He looks at i-Government from the point of view that there is an external piece to it and we spend a lot time talking about the whole issue of passive information and transactional and participatory kinds of things, public forums, the ability to communicate with our citizens, but the internal is the piece that continues to get less attention and probably is viable in terms of crime and justice and public safety. And these are the areas local governments have to focus on and all these different databases and systems have to be able to work together and that's an enormous challenge, therefore internal communication, systems integration, it requires innovation.

The missing piece in all of this is not technology it is absolute leadership, the ability of someone to see the big picture and not only capture the vision, share that vision and then move it and inspire people to work towards that common goal. That is the missing piece we need to spend more time with, educating our citizens is one part and also providing leadership to our staffs.

The CIO (Chief Information Officer) function will continue to grow in importance and strength because convergence is going to change the way we do business within government, with all those different areas, it will require for someone to make some centralised decisions and again that will call for a lot of leadership.

There are ongoing concerns are privacy, security and the list continues, the one that is growing in importance all of a sudden is that smaller governments do not have the resources to take advantage of the technologies even if the leadership existed, so more has to be done with our smaller communities and there are thousands that have the same needs as the larger.

Alisoun K. Moore, **Chief Information Officer, Montgomery County, Maryland,** USA, gave a captivatingly presentation on

e-Government Metamorphosis: Building an Integrated Information and Communications Technology Program Serving Citizens

Montgomery County is a large jurisdiction just outside of Washington D.C. with a very progressive government, a population of about 1 million and its annual budget is 3.3 billion U.S. dollars. 90% of households have a computer with Internet access and a good portion have broadband access through Comcast, a cable provider which provides cable modem services, DSL service, satellite service and soon because Verizon has selected Montgomery County to put in very high speed broadband access, that will be available to its citizens as well.

The community is very government oriented with 22 federal facilities including the national institutes of health, nuclear regulatory commission and also a very vibrant business community in the biotech, defence and IT sectors.

The concept of paradigms is very important in e-Government and it forced us in government to see our world quite a bit differently than before. A new paradigm that started in the late 90's in Montgomery County is seeing that services could be delivered electronically, this

created a very customer-centric view and literary changed the way we think about delivering technology systems and government services.

If you view an organisation as an entity that delivers something, government delivers services and goods to its citizens, whether it's a transportation system, health care or education that is in fact what it does. If technology can allow government to deliver those services much more efficiently than it should and deliver those services through multiple channels. If you're doing that than why can't technology support all your operations be it education, health care, transportation and even something as simple as waste pick-up.

When you start thinking of the citizen while delivering those services you realise that departments don't really matter to the citizen, they want to get online and conduct their business with government as quickly and efficiently as possible without regard to which department that service is being delivered from either at the county, state or federal level. That major paradigm starts shifting how you think about delivering technology and moves you more into a citizen-centric.

The second major paradigm shift for Montgomery County was the enterprise concept. Whereas previously it had separated out e-Government from their entire ICT programme, where the bulk of the dollars is spent in government, it took its entire ICT programme and essentially made it its e-Government programme. That way they could start to deliver all of their services electronically and use all of their available dollars towards that service delivery model.

When you do that you have take a different approach, an architectural approach, decide at the outset to web enable all of your services, think about integrated systems, eliminating those stove pipe systems that are so prevalent in government, move to a shared infrastructure and shared services so that you eliminate redundancies, save and become centralised and policy driven.

This is essentially what Montgomery County has done. It required a basic change in how it delivers its technology and support of services and changed the value chain. First thing it did was to change the organisational structure; the CIO position became critical because they possess the technical expertise that can actually deliver technology programmes. CIOs were elevated to a cabinet level position, equal partner to the Chief of Police, Chief of Finance, etc. It created a government-wide ICT governance structure, codified that through legislation, created strategic plans and goals, reorganised the ICT department to focus on the enterprise and the customer and held all the other departments accountable to the strategic plans and goals it set forth by annual performance evaluations and bonuses awarded to department heads for enabling services they have under their jurisdiction.

In addition to the organisational changes, it: (1) focused on the enterprise and the customer, became the mantra within the organisation; (2) eliminated the e-Government office, as a separate entity there was difficulty getting it funded and it was always questioned; (3) in order to get buyin for this approach it did some early applications, built a great messaging system which became a foundation for its architectural approach; (4) created an art architecture, hired an IT architect, absolutely critical when you move into this new paradigm, it means you consolidate your networks, created one portal. Today everyone in the government uses the same design and standards for the Montgomery County portal, before there were separate websites for every department, very confusing to the citizen, now you have the same look and feel no matter where you go; (5) consolidated hardware software storage management; (6) built enterprise application integration techniques, all using GIS layers; (7) introduced

project management methodologies, implemented a new IT budget and procurement approval process to have all projects within the County conform to that architecture; (9) upgraded and hired more professional staff; and (10) introduced the concept of a matrix, used on a weekly basis and hold staff accountable to those matrices.

Everything relates back to architecture, from the networks to the applications, radio systems, security and help-desk.

Several valuable applications have been developed: (1) an apartment finder for the department of Housing and Community Affairs, allows citizens to go online and search for housing and comparison shop, especially helpful since apartments are a rare commodity in the County; (2)   a human resources service centre where County employees find a wide variety of services from health care benefits to pension calculators.

The critical thing is that they only have to log-in once and they access to the overall directory, at least whatever they have privileges to access at that point in time and don't have to login several times for different services.

The metamorphosis occurs when you take a very holistic view of how you're delivering your services, your e-Government morphs into your entire ICT programme because it is your ICT programme within your government that provides direct support for all that you do. Everything we do is directed to that mission and is accounted for in the yearly budget process and in hearings before the County Council and County Executive.

Yutaka Kobayashi, Division Manager, Town Management Organisation, City of Mitaka, Japan, presented spot-on good practices in e-Government in

Intelligent Community of the Year

The City of Mitaka is a residential town adjacent to the Tokyo metropolitan area with a population of about 173,000 and 16.5 square kilometres large.

It is a prime example of the cooperation between citizens, local industries, academia, research institutions and government, namely public-private partnerships and has long advocated the participation of its citizens in the town management.

Some 25 years ago a field test of the Information Network System (INS) was conducted to provide optical fibre networks in homes, a real forerunner of the Internet and later collaborated with a local cable company to provide broadband services. In this way Mitaka has proved itself to be amongst the pioneers for broadband systems diffusion in Japan.

Since the latter half of the 90's Mitaka has been working on a project called "SOHO City Mitaka" to promote the development of small office/home office businesses that are so important to its economy. The Mitaka Town Management Organisation (MTMO) was founded to create a SOHO incubator and its seven facilities are home to 100 technology businesses.

Not surprisingly it was the recipient of the Intelligent Community of the Year trophy awarded by the World Teleport Association in 2005 on the merit of the collaboration between the public and private sectors.

Mitaka began a website to help mothers in child rearing, a function usually undertaken by government ministries. Citizens were invited to apply to manage and upload materials to the

website and many busy mothers applied for the job. Today the scope of the website has expanded to include shopping information, hobby gatherings, comments, ideas and suggestions and this website is now considered a treasure of information. This experiment has shown that ICT provides great opportunities in this case for new mothers and housewives often excluded in this period of their lifecycle and this way they stay in contact with the community.

It also started the "Senior SOHO Salon Mitaka" where senior citizens and retirees can share their know-how and rich experiences. Computer skills training courses are run and now the scope of their activities has expanded to include new business ventures. Because senior citizens are often left out of the digital trend this programme is attracting drawing much attention in Japan and hopefully other communities will follow suite.

People in Japan tend to look at the cyber-world as a virtual experience but Mitaka is using ICT as a new communication tool to promote real communication by promoting the social aspects of e-Government.

Eric Legale, **Managing Director, Issy-Media, Issy-les-Moulineaux,** France, presented an encouraging view of democracy with

The Example of Issy-les-Moulineaux

Issy-les-Moulineaux was also amongst the 7 Intelligent Communities of 2005 recognised by the World Teleport Association as "pioneers and role models for the development of vibrant Digital Age communities in the 21st Century".

A smart and connected city, it has a very dynamic economic base with mainly ICT companies such as HP and Cisco Systems.

Already 10 years ago it adopted a local plan to provide information to its citizens online and today the two most popular applications are used to borrow documents from its multimedia library and the PUCI smartcard to pay for school lunches. Last year 55% of school lunches were paid electronically.

In a city of 63,000 inhabitants, there are 70,000 jobs, 70% are connected from home (55% with broadband connection), 57% of companies in the ICT sector and a wide variety of e-Services for citizens of all ages.

To provide public e-Services is not enough we must reinforce democracy. Citizens in France are using SMS, chatrooms, weblogs to dialogue, to express themselves and understand what's happening in the country and Issy-les-Moulineaux is convinced that ICT can also have a big impact on our democratic life.

As such it has implemented several tools to reinforce citizen participation:
(1) The Interactive City Council on cable TV and Internet – in which citizens can watch, ask questions and receive responses live from their representatives and councillors, clearly enhances transparency. The questions, responses and decision of the City Council are then uploaded to the website.

(2) The Citizen Panel – 800 citizens members of this panel are consulted in local interest matters every three months. This tool provides decision-makers public opinion information on very specific subjects such as cultural life, traffic, etc. Although Issy-les-Moulineaux usually

receives immaculate scores from the panellists, in one particular consultation 75% expressed dissatisfaction with traffic in the City enabling it to reassess the traffic situation and provide the solutions its citizens require. The citizens are satisfied to be heard.

(3) e-Voting - voting is the last step of the democratic process and the natural evolution is to allow citizens to vote through the Internet and 82% of its inhabitants are favourable to the idea. Issy-les-Moulineaux tested electronic voting machines for the first time 10 years ago and since then, during its last district council elections 3 years ago and European constitution referendum May 2005. The French Ministry of Interior has chosen it to test the e-Poll system, a European electronic polling system for remote voting operations and for its future district council elections it has chosen a system provided by a French company, Election Europe to allow citizens to vote by internet, at home or in public places. It is a partner of the Cybervote, a European research project which prototype was also implemented in Bremen and Stockholm.

(4) The Worldwide Forum on e-Democracy – All of these issues are debated during this annual this Forum discussing important topics such as e-Government, electronic identity card, e-Voting, the digital divide, open source software and so on. In 2004, 1,800 participants from 43 countries and more than 100 speakers participated. In 2005, it launched the e-Democracy Awards at global, European and national levels in cooperation with Politech Institute and PoliticsOnline.

The 2006 Forum will take place 18 and 19 October with South Korea as a special guest.

Daniel van Lerberghe, President & Executive Director, POLITECH Institute, Belgium, proposed an innovative and practical concept to analyse the development of e-Democracy in Europe with

European e-Democracy Award 2005

Interactivity, *collaboration*, *measurements*, *new paradigm*, *visionary*, *leadership* and *convergence*, all of these reflect the findings of The European eDemocracy Award Report 2005:

The European eDemocracy Award was organised in the framework of Issy-les-Moulineaux 6th Worldwide Forum on e-Democracy and is an annual award recognizing the most valuable European eDemocracy initiatives and websites amongst 50 selected in the 25 EU Member States featuring a wide range of eDemocracy tools and content strengthening eParticipation, transparency, representative democracy and citizen participation in the democratic decision-making processes at the European, national or local levels of governance. The evaluation was conducted based upon a call for suggestions from stakeholders and citizens, POLITECH Institute carried out analysis of the features and IP Label measured the technological performance of governmental, decision-maker and civil society e-Democracy initiatives in terms of their contribution to the democratic process.

Interactivity and Collaboration: There are 3 main actors in our political system and democracy: (1) the political entrepreneur (2) the knowledge-civil servant and (3) the active citizen - the citizen who is involved in the political process such as: blogging, responding in forums. The knowledge-civil servant is empowered by new technologies through inside and outside collaboration. The political entrepreneur, as his/her business counterpart, is carrying a political project, mobilising support and resources. In a participative representative

democratic system these actors interact and collaborate with each other as key elements of a sound and transparent decision-making system.

Measurements and New Paradigm: These past years we've been speaking a lot about public value management and public value to measure the success of e-Government, POLITECH has introduced the concept of "eDemocracy value" or "Democratic value", which confronts a given feature or service disclosed by a website or initiative, providing an added-value to the democratic process of a given community. This emerging concept of *eDemocracy value* proposed a magnifying glass to analyze the evolution of eDemocracy. The degree of contribution to the democratic process transcends e-Government and differentiates democratic countries from the others. The POLITECH Index, a ratio measuring these initiatives in terms of innovation, usability, content and diversity of technology and tools strengthening participative democracy in Europe and around *4 key dimensions* – The Political Dimension; The Democratic Dimension; The Civic Dimension; and The Technological Dimension.

Visionary and Leadership: The results – the winner of the 2005 Award, the UK Local e-Democracy National Project, truly embodies the visionary and leadership in the field of eDemocracy, necessary to implement the true potential of the digital revolution. It is supported by its national government, the first time in Europe that a national government engages itself in a large-scale eDemocracy action.

Convergence: The UK Local e-Democracy National Project has developed 80 tools from eDemocracy games embedded in mobile phones to website tools like consultation finders.

One interesting result is that all the categories for public institutions were won by UK initiatives and categories for civil society were won by French initiatives such as democratie-electronique.org or the UMP official website demonstrating that whereas the UK is adopting a top down approach involving all stakeholders in developing policy and holding decision makers to account, France has approached eDemocracy from the grassroots. The 2005 report is available on our website.

Phil Noble, Founder, PoliticsOnline, USA, challenged the participants with

The "Global Conversation" Project

The "Global Conversation" Project has been underway for 2-3 years now between PoliticsOnline and the BBC.

The big idea is to bring together 100 million people per day in a conversation about what is going on in the world regardless of language, electronic device or culture.

Over the last 3-4 years they have developed several pilot projects testing lots of different kinds of technology, techniques, and ways to accept and understand people's opinions and inputs for example an online global poll for the UN Summit on Environment in Johannesburg, with the European Union and the Greek presidency and an e-Vote project.

The big challenge is not connecting the technology, be it TV online, mobile phones, radio, the technology is much easier to connect than the people, ideas and that is our great challenge. How do you get people's input in different languages, by e-mail, voting, writing, sending their own pictures and videos?

They ran a beta prototype site launched in the U.S. that brought together voting, comments, user-generated pictures, video all for first time within a standard template, blogs, etc.

The technology is there, it works, the question is ramping it up, expanding it and as we go. The technology is not just media company based, that's where the distribution is provided vis-à-vis lots of different media partners but that is something corporations, governments and NGOs and many more can use.

Up until today they've had people from 175 different countries participate in one pilot or another, 26 languages, 23 simultaneously, 75 media and distribution partners and hundreds of thousands of users.

Part of what's interesting is the political support, what they are trying to do has been warmly embraced by the political leadership who see this as a new way, tool, mechanism to begin to expand democratic institutions.

We're just getting started and there is a lot more to come, we are in the process of constantly looking for new partners, technology and media companies' investment for literally a variety of tools and technologies that will build a global conversation with 100 million users. The branded launch of this project is expected in late 2006.

DAY 2 – MORNING – PARALLEL SESSION

Challenges for Transforming e-Health

The session's **chair Anne Bolot-Gittler, Director for SBL Civil Administration at THALES**, France, [www.thalesgroup.com], one of the main sponsors of the Global Forum 2005, welcomed the participants and opened the session on transforming e-Health.

The session's **moderator, Patrice Cristofini, Healthcare Director-Systems Integration, Atos Systems Integration**, France, introduced the first speaker.

Ilias Iakovidis, Deputy Head of Unit, ICT for Health, at the DG Information Society & Media of the EC, [http://europa.eu.int/information_society/index_en.htm], provided a striking insight in

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e-Health – The Proven Benefits

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The EU has been the first community in the world who decided in the beginning of the 1990th that e-Health needs a funding of its own. Due to this early commitment, Europe has been for a long time a leading research community in this field, especially in the establishment of regional health information networks. However, this took a long time and required to bring together all stakeholders (hospital's staff, industry and politicians) – but this is not enough: The major challenges and six dimensions to work on when realising e-Health projects concern organisational and cultural issues, national and regional strategies, industrial issues, legal issues and privacy (security of data), technology and standards, and user acceptance. Especially industrial issues are very hard to address, due to the fact that no one becomes rich by e-Health. It is important that industrials stay behind their users and that it is the user who drives e-Health developments – not the industry.

The lessons learned from the past e-Health experiences are that is important to ensure a well thought-out strategy, to break the pattern of large scale all at once implementations, to ensure the commitment of the "leaders", to keep it up and not just to set it up, to ensure legal and ethical compliance, not to underestimate the aspect of user acceptance, and to be aware that none of the parties (administration, industry, users) can do it alone. e-Health works. However, today, there is more knowledge in e-Health about what did not work than of what did work: 99% of the knowledge existing in e-Health is knowledge about failures. This is important knowledge, because other can learn from these mistakes, but it is difficult to capture, because people do not want to talk much about this.

After 15 years, the EC took the decision to support the deployment of e-Heath. Until then, only research activities have been supported. The EC now co-ordinates the deployment of e-Health in Europe by bringing together each year the European Ministers of Health in order to get an overview on the national priorities, the budgets available etc. In 2004, the EC issued the e-Health Communication and Action Plan describing what is e-Health, what are the tasks of the Member States and how the EC supports e-Health, with the objective to collect and exchange best practices, to reach common approaches for the patient identifier, to foster electronic health records interoperability and support the certification and labelling of e-Health systems.

FP6 research activities no longer focuses on electronic health records and regions, but put citizens in the centre: The main question addressed is how to make the system rotate around a patient, instead of patients rotating around the hospital. The today's health system is

hospital based. Efforts have to be undertaken to make it person based. Systems monitoring the persons health status and symptoms, supporting prevention, primary care and diagnostics and homecare should prevent that the patient gets really ill and needs hospital treatment. A transformation of the healthcare system is needed and IT is the only enabling tool do this. Next generation research will deal with health grids – a kind of Google of medicine, biomedical informatics – support to molecular and genomics medicine, and wearable health systems based on biosensors.

The **Q&A** part of the presentation addressed the question of the role the EC can play in assessing or influencing national healthcare systems – given the fact that healthcare is a national matter and subject to national policies. Ilias Iakovidis stressed that national healthcare systems are a taboo for Brussels. The only DG dealing with public health is the DG SANCO (Directorate General for Health and Consumer Affairs). The EC is using the neutral window of technology for healthcare to address the Members States and to show the deficiencies of healthcare systems per se. The EC annually organizes a Ministerial Conference for Healthcare, which provides an opportunity to give unofficial recommendations and to highlight issues that could be improved in healthcare. Furthermore, the EC is monitoring the deployment of e-Health and benchmarks healthcare systems with respect to a set of indicators and with respect to how much money is spent for IT in healthcare, in order to picture the situation in Europe and to provide this picture to the national Ministries.

Yannick Motel, Vice-Chairman of LESISS, France, gave a very interesting perspective of

IT Suppliers Constraints & the Industrials Vision for Transforming e-Health

The annual healthcare spending in France is about 158 billion euros, which corresponds to 10.4% of France's Net Domestic Product. This puts France on the 5th place in the ranking of healthcare spending (the U.S., being on the first place, spends nearly 15% of its NDP for healthcare). France spends 2,951 euros per year per inhabitant (EU average: about 2,500 euros per inhabitant).

The deficit of healthcare spending has doubled in the last 10 years. It will amount to 11-12 billion euros in 2005 and will reach 66 billion euros per year in 2020, if no reforms will stop this development. A report issued by the Conseil Economique et Social (Economic and Social Council) in June 2005 concludes that e-Health is an absolute necessity to adapt the French healthcare organisation to the necessary evolution. However, only 1.5% of the hospitals' budget is devoted to IT (the European average is about 3%).

Nevertheless there are some good news as regards the evolution of e-Health: e-Health will be easily adapted in France as it is non-existing at the moment. There is a clear political will and a law on information sharing concerning the EPR (electronic personal records) on a national base has been adopted. IT industrials from different sectors are organising themselves and are working closely together to support the government's decision making in e-Health. The three main keys to success are: A clear and constant strategy; one central driver who takes the decisions, and finally money. Information sharing is long and costly and budgets for electronic personal records and telemedicine, which is one of the priorities, have to be increased.

Industrials have to take their responsibilities and cooperate with the government, healthcare professionals, and users in order to actively participate in working out a solution around the following three axes: Identification and elimination of obstacles (e.g., interoperability, security and legal issues and the development of a suitable business model); the publication of

advices and recommendations to support governmental decision makers; and to encourage an industrial national and concerted approach. To achieve these goals, there is a need for a clear governmental strategy, which is centrally driven by the government in cooperation with the other stakeholders, and adapted means.

The first question of the **Q&A** part of the presentation referred to whether there is a sufficient level of financing available in France to realise this goal. Yannick Motel emphasised that is difficult to estimate the budget needed, due to the fact that the French government has not yet specified concrete goals, e.g., the kind of EPR the government wants to establish. But one can take examples of other countries working on EPR: Germany spent 1.7 billion euros, The U.K. provides a budget of 11.4 billion euros over 10 years, and the U.S. invests 123 billion euros. In France the experimentation of EPR has just started with a budget of15 million euros. There is gap and solutions to be find. The second question addressed the issue if the industrials have enough recourses to realise the EPR project. Mr. Motel confirmed that the industrial partners in their respective domains of competence certainly have the resources, but it will be necessary to involve a large group of stakeholders to achieve the goals.

Richard Bonnar, Partner of DLA PIPER RUDNICK GRAY CARY US LLP, [www.dlapiper.com], one of the main sponsors of the Global Forum 2005, gave an amazing presentation of England's experience in

Connecting the English NHS – the NHS Care Record

A ten year 6.2 billion British pounds (11.4 billion euros) e-Health programme has been launched to deliver four key elements in England: the National Health Service (NHS) Care Records Service, electronic appointment booking, the electronic transmission of prescriptions, and the underpinning IT infrastructure.

The national health service is one of the largest sectors in the word and there is a clear need for change: As regards the administration of paper records, 1 in 6 case notes are not available in some hospitals, what leads to treatment errors and repeat tests; around 10% of appointments are missed, costing hundreds of millions of pounds per year; prescribing errors lead to the death of 1,200 people annually and errors cost of 500 million British pounds a year.

The U.K. has recognised that care records should work on two different levels. Detailed health care records should be generated at a local level. These detailed health care records will generate information which is fed into a common person based information service which will be stored on a repository system called the data spine. The outcome will be that every individual patient in England (48 million people) will have a summary health care record, which will be available for use by healthcare professionals at any place. The record contains some basic personal data, such as date of birth, unique NHS number, and residence, but also some clinical data, such as recent drug prescriptions, allergies, adverse drug reactions, recent major procedures etc. And over time the record will be build up.

Example: Somebody resident in Bristol visits Newcastle. He is taken ill and goes to the local hospital. He consults a doctor in the accident and emergency department and the doctor needs his medical history. The doctor searches Spine as repository by name, address, or NHS Number and he is able to pull up the individuals health care records. He is able to treat the individual and the details recorded in Newcastle are transmitted straight back to the

Spine. When the patient goes back to Bristol, a discharge message is issued, transmitted to the Spine and from the Spine to the patient's general practitioner in Bristol for follow-up care.

As regards confidentiality, England tries to strike a balance between the benefits this new approach will generate and the concerns patients will have to allow access to sensitive personal date. Any healthcare professional, in order to access a health care record, has to have a smart card with „chip & PIN" protection before he/she can access the record. Furthermore, there will be an audit trail for all transactions involving the record. The third layer protection consists in rigorous, role based access controls. The patient decides who will get access to the records. Access to the records will depend on the role the individual plays in the NHS. E.g., a receptionist may be entitled to quite limited information by a patient, but consultants may be entitled to much more detailed and relevant information. Patient's choice is a key part of the approach and the patients will have the opportunity to give only partial access to their health care records or even to have no health care record at all. All professional and employees will have to undergo detailed training and have to apply codes of conduct regulating the usage. The final protection for access to the record is the concept of legitimate care relationships, which says that only a healthcare professional who is directly involved in the healthcare of an individual will get access to the individual's records.

During the following **Q&A** part of the presentation it was stressed that Europe has one of the strictest directives on privacy protection. In principle, it is forbidden to collect information on somebody's health – however, there is a number of exceptions. It was also stressed that governments often forget that deploying e-Health is much more than just setting up the technology. Software, hardware and technology developments constitute only 1/3 of the costs of deploying electronic healthcare systems. Other necessary aspects, such as training, reorganisation, a code of conduct, new contracts, etc. cost twice as much and double the time of the deployment. One can estimate 6 years to deploy electronic healthcare. Richard Bonnar confirmed that the 6.2 billion pounds are only for the software and services and do not include any costs in bringing the desktops up to date or training etc.

The question raised whether healthcare professionals are willing to use the new system. Richard Bonnar emphasized that the programme itself consulted extensively with healthcare professionals. However, one can never do enough in stakeholder management with healthcare professionals, especially in this case where the main issue is not about IT but about the changing ways the NHS does its business. To get the necessary backing of all healthcare professionals, there is still a lot more to be done in terms of stakeholder engagement. The second question concerned whether the patient has the possibility to decide which personal medical data will be accessible to a special person or whether the patient only has the possibility to give full access or no access? Richard Bonnar confirmed that there will be the right to regulate the level of access and the option of providing only partial access. The system is based on a concept of a sealed envelope: There might be very sensitive personal data which are put in this "envelope", that could be opened only by a quite limited circle of persons. The system for access information will be much more heavily regulated when it is going forward than it is at the moment. In this very early stage of the project, there is still a combination of paper based records and electronic records.

Edouard Varvarian, General Manager and Co-Founder of idDOON, France, [www.iddoon.com], one of the main sponsors of this year's Global Forum, presented the very promising technology solution

CipherMe – Electronic Health Records in the Hands of Patients – Owners

CipherMe is an all-in-one solution for the management of personal data in a highly secured environment. This personal secured data space provides secured email and back-up online functionality, global access and data sharing options, based on digital signatures. CipherMe provides a powerful solution to be used for the administration of personal data in the healthcare sector. Driven by the basic idea to develop applications that concentrates on the patient, CipherMe enables people to hold their medical records in their own hands – not in the hands of third parties – and to share it with others. It provides a unique level of security and privacy and represents a global solution without national boundaries.

The records are stored on a server but the server/storage provider has no access to the content of the stored data nor to the identity of its owner. The patient disposes of some cryptographical tools enabling him to present his records wherever he needs it. The same goes for third parties: The patient can let them see the data that are pertinent to the role of this specific institution. The CipherMe system is working in Poland under the name of e-Ja since over a year and is used by a small group of people keeping and sharing their health records. Up to date, this is the only way to have consistent health records all over the world. CipherMe is a kind of electronic bag for documents enabling the patient to put important documents in this bag and to carry them with him.

Once the doctor plugs in his card, important information on the doctor are displayed (photo, certifications of specializations, etc) from the doctor's personal data space. When the patient plugs in his card in, the doctor can verify the patients identity, gets information about the patients insurance, as well as on clinical information such as blood pressure texts, x-rays etc. When the doctor does the prescription, he can access a kind of electronic prescription booklet for doctors containing a list of currently available medicines (fed by the Ministry of Health). The doctor signs the prescription and places it in the patients data space.

Once this is done, the patient gets a medical note which is signed by the doctor. Then both the doctor and the patient sign a certificate that the doctor had rendered a medical service to the patient as a basis for medical refund. Once the patient removes his card, some elements remain visible to the doctor because the issuers of medical notes have the right of reading these notes. However, they do not need to store data about a patient at all – it is the patient who stores the data for them. Furthermore, the medical organisation the doctor is representing has the right to see all the decisions the doctor had taken on their behalf.

The patient then goes to the pharmacy and once he plugs in his card, the pharmacist can see all the prescriptions. The patient also has insurance certificates in his data space and can select the refund body he wants to use to pay for the medicine. Both patient and pharmacist sign a contract of sale for the medicine which also goes to the data space of the pharmacy. Because the patient has shown a insurance certificate, there is also a public key of this refund body and the pharmacy then just allows the refund body to see that contract. Thus, the refund body sees in real time all the healthcare processes that are subject to refunding by them.

The technology enables individuals to store their personal data in a highly secured place, to manage access to third parties and to licence access to specific information. No one has to

store data about third parties. There is no need to train doctors in being IT specialists. Doctors have to take care of the patient – IT has to run in the background. Encrypted medical data items are held by the patients on a server. The patient has full security and privacy of his medical records and has access at any time and wherever he is. He then licenses his data to access by doctors, hospitals, laboratories or institutions. Offers of medical entries have irrevocable access rights to these objects because they are actually the records of the doctor. This guarantees secure archives for doctors, hospitals and institutions as well as a secure refund chain.

The question that raised in the **Q&A** part of the presentation addressed the technical capability of patients to use the system and the experience that has been done so far with healthcare professionals. Igor Hansen stated that the project is mainly driven by healthcare professionals. There are only few people working on the software, most of the people involved are healthcare professionals. Making information accessible to people should not require to make them IT specialists. All the patient has to have is a card, but he does not need to know anything about the technology behind.

During the following discussion the importance of a good partnership between all stakeholders to successfully roll out medical record systems nationally and internationally has been stressed. It was also emphasised that the trend in many European countries is to build up patient summary records, due to the fact the building up comprehensive medical records will take too long.

Patrick Sellem, Sales & Marketing Manager, TMA Medical Austria, & André Petitet, CEO, CardioGap S.A., France, introduced the

Mobile Care Unit Diagnostic System – Interoperability, Data Transmission and Simplicity

The Mobile Care Unit is a unique stand-alone multi-devices diagnostic system operated by a tablet-PC and designed for mobile and stationary operation. The Mobile Care Unit is an interoperable platform dedicated to diagnostics such as blood oxygen saturation, blood pressure, ECG, spirometry, cardio check, audiometry, and visual acuity. It is a closed system; all medical data are stored in a local data base. The system can also be a slave connected to the central data base of a healthcare institution. The Mobile Care Unit may use any kind of communications like LAN, W-LAN, standard or mobile telephone, and even satellite transmission. The Mobile Care Unit is also a breakthrough in telemedicine and e-Health, representing the most affordable "Office Call Centre" with user-friendly remote functionalities. All users of the Mobile Care Unit system can communicate with each other and exchange – send and receive – clinical data in a secure environment. Installed on a PC, which becomes a receiving/sending station, the Mobile Care Unit software enables a remote diagnostic in real time operation and a second opinion specialist diagnostic.

The Mobile Care Unit it is a multilingual system and it is possible to communicate between different countries – each of them using its own user interface. The use of the system is highly intuitive and requires almost no training. It can be used by any user without any technological skills. As regards interoperability, the system can accept any PC based medical device – there is only a minimum of standardization needed to fit into the platform. The interface offers the possibility to use two different sensors from two different manufactures from different countries. The reporting is standardized. The system can be used for remote support, remote assistance, remote diagnostics and remote expert advice. The system is dedicated to high-end devices only, so that the diagnostic analysis can be done by an expert in an hospital. The system is an on/off device and thus, very easy to use.

There is no need to have any knowledge about the software. The data of a patient can be reviewed at any time. Concerning remote functionalities, it is possible to define several destinations, such as a cardiologic centre or a hospital. Thus, the Mobile Care Unit can be installed in a rural area, far away from the next city and healthcare facility, and provide the citizens of this area with remote diagnostics and expert advice. The data will be encrypted and send to the selected destination, e.g., a hospital.

The question coming up during the **Q&A** part of the presentation referred to the field experiences done with of the Mobile Care Unit and the place it can take in the electronic medical records. Patrick Sellem emphasised that the Mobile Care Unit is already in use, especially in Portugal for occupational health. As regards electronic medical record, the development took into account existing practices and the data collected with the Mobile Care Unit can be used afterwards in any existing database.

Paul Cheshire, Consulting Director Welfare Sector, Atos Origin, UK, provoked the question on
Lifelong Health Records - Who Needs Them?

Is it really possible to rely on technology in a case of emergency? Entries in records could be wrong – technology could breakdown. If there is a mismatch between the data in the records and the results obtained from examination or the laboratory: Which information should be trusted? Instead of relying on records, analysis should be done more rapidly. In an emergency case, the doctor should treat the patient first – and worry about his/her identity later.

Storing medical data from your birth leads to an information overload and does not imperatively prove the current health status of a person. Furthermore, as regards the U.K., people sometimes have more than just one health card due to changes in addresses.

Delegates at the British Medical Association's Local Medical Committees' conference in June 2005 decided that patient care would not "benefit from the safe sharing of electronic information across the NHS".

A typical patient record often omits links to causal factors - especially psycho-social, unreported, undiagnosed and unrecognised conditions, diagnosis accuracy assessment, the rationale for treatment regime decision and treatment compliance, treatment regime outcomes and treatment effectiveness assessment, as well as links to social care follow-up. A person-centric lifelong electronic "day-book" that only records encounters with welfare and healthcare professional neither holds all the information needed to manage the patient's well-being nor that needed to make significant contribution to the nation's.

What is certainly needed, is better data capture, i.e., data capture at more and useful points in the entire end to end process. Data capturing should be an integrated part of the process and not a burdensome add-on. It should be ergonomic, intuitive and transparent. Data storage and retrieval has to be reliable. We need better collation and consolidation of available data by at the same time respecting personal privacy and fulfilling legal and ethical obligations. We need reliable, (secure and error-free) methods for data matching and secure but accessible repositories.

In July 2005, the U.K. Care Services Minister announced a joint white paper, designed to deliver integrated health and social care systems. Furthermore, there is a commitment of the U.K. Government to set up a "virtual" social care information initiative to look at information

sources and ensure that it can be readily available to support policy development, practice improvement and performance management.

When designing and deploying medical records, it is important to keep in mind that things are evolving and what could be up to date today, could be obsolete tomorrow: IT is evolving, so data have to evolve as well. There is no universal language or terminology in healthcare and terminologies are changing: How to know what term will be used in 10 years? Medical knowledge is expanding very fast: How to design records that will be still valid in 50 years?

Mario Po', Head of Administrative Office, Healthcare Institution Azienda ULSS n 8 di Asolo, Italy, presented an outstanding initiative

Local Health System and Services in the Global Village

The Asolo Unità Locale Socio Sanitaria (ULSS) n°8 is the Health Department in the region of Veneto (230,000 inhabitants) with 2 hospitals (800 beds) and outside hospital services for 30 towns (50% of the total ULSS activities). The Asolo Health Department has 2,400 employees, 200 primary service doctors and a yearly budget of 275,000,000 euros. Its WAN 2 network reaches every working building in the region, what turns the Asolo Health Department in a networked healthcare village.

A Health Assistance Call Center has been set up as unique management system for the ULSS hospitals' agendas. This call centre is the "one stop" portal to the hospitals' health services and allows fixing appointments for clinical visits, tests, and caring reservations by phone, PC, and cash card. The phone call management avoids waiting times of more than 60 seconds. The patient receives a confirmation three days before the appointment, either by mobile phone or by email.

Nuclear medicine and radiological activities have a unified departmental digital management and archiving system called PACS/RIS, which is shared among each unit of the different hospitals. PACS allows retrieving the tests of the last 10 years and guarantees immediate research results and an unlimited number of users. Medical report images are available both on the net, for authorized users only, and on CD-ROMs that are given to the patients.

A booked and done visit or test is documented in a Clinical Data Report. An ICT-based management procedure, which is integrated in all ambulatory services, creates a digital Clinical Data Report. These reports are transmitted to an ambulatory Clinical Data Repository. Doctors and patients can consult the report on the web, once the doctor who has done the test, has signed with a digital signature.

Case history documents are digitised by optical scanning processing in order to allow immediate consultation of the documents in every hospital's unit; to make a copy of these documents, even at distance, without handling the original document; and to carry out clinical studies and epidemiological researches based on digital documents from 1900.

By introducing logistic solutions and data processing for drug management, Asolo ULSS envisages to reduce of wrong dispensing of drugs up to 80% and the cost of repurchasing drugs up to 30%.

Web-based e-Learning and e-Education facilities are provided to train the hospitals' staff. This is supported by different technology mixes, such as Web and TV, Web and mobile phone, or Web and TV and traditional classrooms.

Alessandra Preziosa, Researcher at the Instituto Auxologico Italiano, Italy, gave a fascinating presentation of

The Dream Island

"The Dream Island" has been awarded with the Italian e-Content award in the area of e-Health. "The Dream Island" is a Virtual Reality (VR) experience, designed to combat stress and anxiety in clinical and non-clinical populations and the first project worldwide exploiting the clinical potential of advanced UMTS phones, in the provision of mobile VR experiences for relaxation.

There are several applications of VR in the treatment of anxiety disorders, such as acrophobia, agoraphobia, flying and driving phobia, claustrophobia, post-traumatic stress disorder, social phobia, etc. The strength of VR is that the individual can freely explore experiences, feel, live, and revive feelings and/or thoughts in the virtual environment. The individual copes with experiences – starting from easy performances to very difficult ones. The abilities acquired in the VR experience can then be translated to other situations. Furthermore, VR stimulates several sensorial modalities (auditory/ visual), supporting those who have difficulties in imagining. VR could enhance the relaxation by visually presenting, and thereby enhancing, key images. Due to the interactive role of the individual in the virtual environment, the individual promotes his/her own relaxation process by practising specific relaxation techniques.

The new generation of mobile phones provides many functionalities that have formerly been available only on PC, such as multimedia and interactive contents. The mobility and portability of mobile phones allows availability of contents at anytime and everywhere.

"The Dream Island" is based on an integrated protocol including two phases: During the first one the user interacts with an immersive virtual environment. Then, he consolidates the results in his/her real life context (at home or at work) experiencing the same virtual island on mobile phones. In both phases the user navigates in different areas of the island to practice relaxing experiences. The process is supported by a therapeutic narrative. The narrative plays a key role because it guides the user through the environment, assists the user in exploring the island, and guides relaxation exercises that involve superior and inferior limbs based on the integration of traditional techniques (in depth breathing, autogenous training, and progressive muscular exercises).

"The Dream Island" requires a head-mounted display with a moving-sensor, a computer with a second VGA-out, a copy of PC engine Far Cry and a Java-3D enabled mobile phone.

The system has already been tested within two trials: The first one studied the role of VR in inducing relaxation; the second one analysed the role of multimedia experiences on mobile phones in inducing relaxation. The first study, which compared the VR "Dream Island" experience to a commercial DVD for increasing relaxation, showed a significant anxiety reduction and an increased relaxation for both VR and DVD, however VR condition showed a higher significant decrease of the respiration rate. The second trial, which compared "mobile dream island experiences" to videos on mobile phones extracted from a traditional DVD for relaxing, showed a significant decrease in anxiety and an increase of relaxation state from the beginning to the end of the treatment when using the mobile "Dream Island".

The system overcomes the limitations of traditional relaxation techniques, such as progressive muscle relaxation, autogenous training, breathing exercises, yoga, stretching,

imagination, and meditation. These techniques, even if effective, require a lot of time for learning and can be used only in protected settings. Moreover, imagination techniques require advanced visualization skills. Finally, all of these techniques work separately on cognitive symptoms or physical techniques. The Dream Island's approach involves at the same time cognitive, behavioural and motivation aspects.

DAY 2 – AFTERNOON – PARALLEL SESSION

Challenges for More Efficient e-Services

Moderator of the session **Hubert Fabre, Secretary-General, Politech Institute**, Brussels, conducted the session with poise.

The **chair** of the session, **Giorgio Prister, Government Leader of IBM South West Europe, IBM** [www.ibm.com], one of the main sponsors of this year's Global Forum, imparted his experience and recommendations for

Delivering Value Services to Civil Society

Europe is at a watershed. Delivering services to civil society demands properly assessing and prioritizing the needs of citizens and businesses; it is now time for real Government transformation to enable the next step of high value services within each Agency and cross the whole Public Administration with seamless horizontal integration, cooperation and interoperability.

Merely transposing the government services of yesterday to the net is insufficient. Providing efficient e-Services involves devising and implementing a strategy specific to this new environment which must foresee Government transformation in three dimensions: business, technology and culture.

This obligation resonates throughout Mr. Prister's visits to customers implementing such services, for example the City of Barcelona, a forerunner of e-Government services, drawing probably the highest number of users in Europe to its portal, is re-evaluating the impact and fruits of implementing them.

Like other Public Administrations, the City of Barcelona in partnership with IBM is reformulating its strategy taking into account this paradigm and as Mr. Prister advises, it is about the convergence of technologies but also about the transformation of the way these organisations run their business through horizontal integration leading to value services for civil society as a whole.

Lionel Chmilewsky, **Vice President, International Sales, PROXIM WIRELESS**, [www.proxim.com], one of the main sponsors of this year's Global Forum, made a magnificently comprehensive presentation on

Scaleable Broadband Wireless Networks

Developing a wireless infrastructure requires heavy investment and Proxim Wireless has been doing so over the past 25 years with some 2 billion U.S. dollars in developing infrastructure to either meet standardisation requirements or develop proprietary systems.

Proxim Wireless is a global pioneer in scaleable broadband wireless networking systems supplying solutions to all types of public and private organisations and a founding member of the Wi-Fi Alliance and the WiMAX Forum.

Wireless is connectivity, connecting people with applications such as public hotspots, connecting enterprises and also connecting buildings with other buildings.

With regards to the technology, while 2G did advance the notion of mobility it was limited by its bandwidth and information transmission capacity. Then 3G came along bringing more bandwidth and data rate yet still a limited data rate in comparison to what is required, nevertheless the positive aspect of 3G is the developed mobility parameters.

Wi-Fi is bringing huge capabilities and capacities to users and WiMAX will go even further bringing high capacity and a huge range. There are two WiMAX standards, one for fixed WiMAX called the diversion and the other for mobile WiMAX called eversion. 3G is a licensed area, Wi-Fi is a non-licensed area and WiMAX will or will not be licensed, it remains to be seen.

The Well-Recognized Markets are what we call the "last mile access", providing broadband connection to remote areas as an alternative to DSL and cable such as hotspots, either in a limited area or in a hotzone.

There are a number of emerging markets: (1) security and surveillance, within airports, bridges and highways and moving vehicles like trains and buses; (2) temporary infrastructure – in emergency recovery, new homes or business park developers; (3) mobile environments – at marina hotspots and long distance trains and ferry systems.

A few examples of what has been employed at Proxim Wireles: (1) mobile enterprise, providing high broadband content to a fixed building, either a company, school, university and the advantage is that you can have access for visitors and internal employees, there's a partition of what is private and what is in the public space; (2) public hotspot, provides public and private access, now being deployed at a Norwegian airport; (3) a complete hospitality system and solution with wireless, for example at the Olympic Games in Greece, hotspot access was provided to visitors and DSL connection to remote areas. Prior to this, broadband penetration in Greece was quite low and so this provided a good occasion to redeploy in remote areas; (4) increase coverage with more hotspots and last mile access.

The question is how to deliver broadband to less densely populated areas as has been done in Sweden, starting with a very small area and expand as traffic requirements grow.

Proxim Wireless provided a Metropolitan Area Network for emergency responders, businesses, residential areas and boating enthusiasts, the same thing as using edge broadband delivery but all point-to-point and point to multi-point in Michigan, U.S.

A huge demand for security and surveillance is evident, especially after 9/11 and Proxim Wireless combined IP cameras with wireless networks to supervise 250 points, 7 bridges and two tunnels in the California Bay Area and in the mines of Lesoto and can do the same thing for coal mining with VoIP communication between upper and lower towers, GPS data connection for the people involved along the drag lines and are doing the same for private application.

On these types of wireless technologies the ROI can be quick, as low as 9-10 months contrary to the big investment of 150 billion U.S. dollars made in Europe for example just to buy the 3G licences.

Christine Leurquin, **Senior Manager, European Programs, SES GLOBAL,** Luxembourg**,** [www.ses-global.com] one of the main sponsors of this year's Global Forum, gracefully introduced

Key Challenges for Governmental Services

SES Global is a mother company that owns 100% of SES ASTRA in Europe, SES AMERICOM in the U.S. and a number of companies globally in different services, for example SATLYNX which offers two-way satellite services, Accelon in Africa which delivers Internet and satellite services and ORBCOMM which provides local messaging services.

With regards to civil protection and disaster relief, recent natural disasters and catastrophes have wreaked havoc on the provision of government services to cities and small groups causing everything to go down and when we cannot rely on terrestrial systems, satellite may be an option.

SES GLOBAL that due to these unfortunate catastrophic occurrences there is an emerging market for government access to satellite need on the spot and the SES Group it thus recently created a governmental services entity to meet this dire need and works closely with SATLYNX and ND SATCom a hardware Company based in Germany to offer turn-key solutions.

The advantages of satellite over terrestrial services are evident, the positioning of satellites away from terrestrial devastations, the global coverage it provides for communication anywhere and at any time and can be easily deployed and operated on the spot. This was the case for the Tsunami; it provided a two-way satellite connection when terrestrial services were overloaded and inoperable.

When you have a catastrophe of this scope you need to be able to recover your data backup at any time and to communication in all sorts of ways to ensure the continuation of public and emergency services but also business must go on. You need to maintain corporate and commercial control and reduce the financial impact of problems encountered in order to save lives. Satellite has been saving lives, for example telemedicine, doctors unable to reach disaster areas instruct local doctors onsite how to save lives via satellite.

No region is safe from disaster, rich or poor as we have seen with Hurricane Katrina and it is happening more than we would like, therefore making disaster management crucial to saving lives. The U.S. government has announced plans to implement a 37.5 million U.S. dollar alert system worldwide relayed by satellite to be fully operational by mid-2007 after the Tsunami.

Man-made terrorism is also a major problem as was evident during 9/11 when communications were down and as a result the U.S. has decided to implement constant satellite connections for communications when telephone lines are overloaded.

Three case studies on what is happening in our regions:

(1) In south of Europe where there are frequent fires, flooding and earthquakes in mountainous areas, local authorities together with SATLYNX have set up a disaster management system via Wi-Fi using VoIP, video conferencing and data transmission applications.

(2) SES GLOBAL provides emergency support vehicles and incident command vehicles fitted with mobile VSATs to the Oxford County Council's Emergency Planning Department, Avon Fire Brigade and the West Midlands Fire Brigade allowing them to be onsite quicker and send information back to their centres.

(3) SES GLOBAL is working on a pilot with SWISSPHONE to develop an application with safety tasks for organisations with a mobile two-way satellite solution for emergency services using VoIP and data communication which can be installed in 15 minutes and will be deployed in Switzerland and eventually also Austria.

Satellite is not the only solution but an easily deployable one in case of emergencies allowing for governmental or local government management in addition to commercial activities.

Rather than implementing satellite solutions after such events, they should be installed, used on a regular basis which makes it easier to activate in cases of emergencies to provide instant communication and save lives by shortening the response time.

ASTRA is working closely with its partners and has the experience and global coverage to support disaster relief and emergency management.

The question coming up during the Q&A part of the presentation referred to these solutions bridging the digital divide. Christine Leurquin replied that they believe satellite can bridge the digital divide as there is a market in Eastern Europe and more than anything they have been concentrating their efforts on developing countries. They have satellite capacity over Latin America, Asia and Africa providing tele-education and telemedicine services and although satellite in Africa is not sufficient due to the number of inhabitants they envisage providing complementary services like WiMAX or mobile in the future.

Gérard Ségarra, **Manager of Telematics Research and Innovation Projects, Renault,** France, presented ground-breaking developments with

*New Innovative Telematics Applications to Improve Traffic Safety and Traffic Management –
With a Special Focus on Standards*

Telematics is a global challenge and Renault is developing fours classes of applications within the EC e-Safety EC programme to improve safety and traffic efficiency:

(1) Passive Safety – although it can't help drivers to avoid accidents it mitigates the result of accidents and is efficient to trigger the rescue chain through e-Call, which will be mandatory in all vehicles by 2010. e-Call can be manually or automatically triggered when the airbag opens and transmits a message to a public service answering point to start the emergency chain management and also transmits a full set of data to the private assistance service.

(2) Active Safety – helps drivers to avoid an accident by using car-to-car communication which assists in perceiving the risk of collision much before the other car is in sight through intense communication between the different cars on the road in a radius of 1 kilometre. This system is based on the emerging standard of IEEE 802.11p under finalisation now and is similar to Wi-Fi but is more robust and has an extended coverage.

(3) Traffic Management Support – the car will being used as a sensor to detect bad weather, road conditions, traffic situations for road managers to be able to offer real time road and traffic information services through satellites.

There is much to be done on standardisation if all the cars will implement these standards protecting drivers and pedestrians and separate proprietary protocols for the different cars would be unbeneficial to everyone including the automobile industry.

The diversity of actors and the complexity of the automotive telematic system requires a standardization approach at the level of interfaces between main subsystems (communication and application protocols).

The C2C and C2I deployment requires the allocation of a protected bandwidth (2x10 Mbits/sec) free of charge for road safety services (which can not be sold to customers). The IEEE 802.11p proposal in the 5.9 Ghz Band is currently the best candidate.

Consequently, the proposed telematics applications are only viable if a converging, common, global European approach can be achieved.

Henry J. F. Ryan, **Managing Director, Lios Geal Consultants Ltd**, Ireland, roused enthusiasm on

Electronic ID: A Key Gateway for Efficient e-Services

Lios Geal is not married solely and simply to the contactless card or a typical contact card, the ID functionality can be embedded in any integrated chip, we really want memory and computing capability so you can have it in your mobile or PDA.

The objective of the electronic identity card (e-ID) is online assurance verification of the cardholder identity, authentication and electronic signature capability. The e-ID will give us security in terms of convenience and trust in electronic transactions, e-Government services and business requirements and the possibilities are endless.

There is a need for e-ID at the European level but also consider addressing global issues, global collaboration to bring us to a global capability.

e-ID can provide a building block for global support for e-Services, this is something you can use independent of your location and time. In e-Government which deals directly with citizens in many ways there are times you can be anonymous but in some cases you don't have the right to be anonymous or not get any benefits of being anonymous, so the ability to be able to produce your identity is well established and it's a prerequisite to receive e-Government services.

It can also combat global ID fraud. If you really get down to it, if you have been defrauded yourself, the cost to you, your family and friends the inconvenience is extremely high, none of us want to get in that position. When looking at your e-ID you want to be able to protect it, make sure it is in your control and under your command at all times.

You can say it is the next step forward towards EU integration because if you look at your identity and are willing to belong to a community, membership to that community can easily be shown through your e-ID and you can avail of the services of that community building in many ways a more politically cohesive, a more globally united Europe and can also be integrated at the world level if you want to go even higher.

There have been many national implementations of e-ID and we're not talking about changing any of them dramatically, so you have to have a method of co-habiting with the existing implementations. How to solve this problem? In Lios Geal's work with the Global Collaboration Forum gathering people from Japan, U.S. and Europe it is looking at how to establish a common approach to identity which could be interoperable across all of the regions. One of the initiatives that has come forward is the concept that in Asia between Korea, China and Japan and many others there's a multi-application card that you can use in any country at any time to avail of specific services only giving to the application as much identity regarding you and your personal features that are required.

His recommendations are: (1) a set of pilot areas, pilot demonstrations, pilot projects that can enable the demonstration and the creation of that kind of linkability, once you have that then you're into the realm of building on what you have, you cannot throw away what people have invested a lot of money on; (2) an interoperable secure infrastructure; (3) card readers and card writers to be available to people with PCs; (4) an EC directive on common identification and authentication processes across Europe; (4) advanced standardisation, this is well underhand with the work being done under JVC1 at the international and under European Citizen Card, so there's a lot to build on already; (5) mutual support and collaboration between countries to turn our e-ID from being a blockage into an open gateway.

Gérald Santucci, **Head of Unit, ICT for Business, DG Information Society, European Commission**, [http://europa.eu.int/information_society/index_en.htm], gave an expert presentation on

RFID – A Pointer to the Future

RFID (Radio Frequency Identification) is part of our common future and RFID is a pointer to the future. Four hundred years ago a British poet John Donne said "no man is an island" and with RFID we will soon belong to communities, communities of human beings living together with communities of objects.

RFID is most times perceived as a device that will replace the current barcode; the most interesting innovation will come not from a better and easier to use barcode, nor neither from an increased capacity to track objects but from using RFID capabilities to solve business process issues and to create new business opportunities and processes.

Radio frequency enabled sensor networks will create a dynamic link between people, objects and processes by collecting, integrating, alligating and enriching data and increasing its value to enable and sustain versity, agility and innovation.

This is a prospect of what we like to call in Europe Ambient Intelligence or Ubiquitous Computing in the U.S., a more virtual space where all objects can communicate to provide tremendous opportunities to people and organisations.

There are many ways to define and present the features of RFID tags, it's important to know that there are passive tags, semi-passive tags, active tags and that they can be distinguished in terms of the power supply, read range, type of memory, cost and lifetime. In terms of cost, it will be really commercial when the cost will drop to about 5 cents in volume purchases and we are very far from that, today the cheapest tags cost about 15 cents in single roll quantities and although you may read it is much less, people refer not to the tag itself but to its inlay, which is not a completed ready to use tag.

In terms of the market, there is no dominant hardware vendor for ultra high frequency, there are large numbers of companies focusing on specific hardware components but they are not capable to provide end-to-end solutions. The global market should reach about 7 billion Euros by 2010.

There is a fast growing market for item level RFID tagging, in 2008 there will be approximately 7 billion tags for medicine, books, tickets and in addition some 15 billion tags for palates and cases which are the biggest part of the market today, so there is an increasing trend towards item tagging.

A remarkable market shift at the global level by 2010, it is perceived that almost half of RFID tags will be sold in East Asia followed by the U.S. with 1/3 of the market, however Europe has started to recognise wider applications and there is a lot of work done to apply RFID tags to logistics, aviation and health care. Europe changed its spectrum regulations a year ago spurring the development of the RFID market and developing awareness raising and information dissemination. The RFID initiative of the German retail chain Metro alone will promote the European RFID market growth and around 300 of its suppliers already are expected to be compliant within two years.

There are four key issues to stress: (1) research and development – new tag design, new packaging and middleware to articulate the tag, readers, and databases. The EC intends to provide some support for this work; (2) standards – as is often the case with new technologies the progress of RFID appears to be slowed down by the usual battle over standards and the rush to develop the new generation before the current one has been fully exploited which is even more the case for RFID because of the rapid technological developments. Still some of the greatest applications and unique solutions based on RFID technology have yet to come to market; the adoption rate will accelerate gradually and RFID will eventually be ubiquitous and that has to be true in the Ambient Intelligence era, ubiquitous enough to lower the barrier to entry to the point that it could become disrupting technology. The problem with standards is that there is a multiplicity of stakeholders at the international, national, regional, private sector levels with EPC Global being a kind of horizontal organisation looking at the standards for the development of RFID based applications; (3) spectrum – in Europe the amount of spectrum today in the UHF band is about 15-20 times less than in the U.S.; (4) reliability - It's important to know that the industry works hard to build reliability into the infrastructure and an important next step is to build trust and the focus for that is on privacy. In Europe the legal context is two-fold, there is the Data Protection Directive (1995) and Privacy in Electronic Communication Directive (2002) and the focus there is on the provision of information consent access and purpose limitation principles when personal information is connected and can be linked to.

There has been much done between the EC and the Member States, the Article 29 working party has returned a paper on privacy for RFID and has been a wide open consultation on a draft paper confirmed a week ago. In order to cope with it, we need standards, research and development, regulation, perhaps technology assessment, and government guidelines for industry; legislation, if any, should be take stock of the fact that the technology and the market are growing very fast.

RFID offers tremendous economic benefits but also raises a lot of concerns in the population and in order to settle the problems we need collaboration between all stakeholders at the international level. The EC will open a wide consultation at the beginning of 2006 to promote international dialogue amongst all the regions of the world that share the same problems.

Valentina Mele, **Assistant Professor, Bocconi School of Management and Naples University,** Italy, shared interesting findings in

e-Government in Large EU Cities

She presents research based on work done at Bocconi University in Milan thanks to a grant from the IBM Centre for the Business of Government in Washington D.C. and from previous research conducted for the OECD and the Italian EU Presidency.

Previous research showed that there is a need to understand what large EU cities are doing in terms of e-Government. The focus of the research is the 7 most populated EU cities from which a panel of experts was selected for interviews, to examine online and internal documents to determine what these cities are doing in terms of strategies and implementation.

Some of the findings include: (1) Large EU cities represent an interesting case as they have the critical mass that a small city doesn't have and are complex on the one hand, but on the other hand must still be close to their citizens. In addition, they are relatively easy to compare while regions for example differ a lot in jurisdictional power; (2) digital cities are the issue of urbanisation, 70% of the EU population lives in cities and secondly. The two phenomena have strong interdependencies and are proved by the fact that we talk about digital cities of urbanisational cyberspace; (3) Large EU cities have also been defined as innovation and transactional hubs; (4) ICT represents a challenge for large cities as national governments are reinventing government and we hope to observe a shift from efficiency to effectiveness.

The research areas are: (1) government organisation and coordination, is there an agency in charge of e-Government and if so, they signalling the relevance of the issue and acting as a catalyser of energies, skills, resources and people. All of the 7 cities have established ad hoc units for e-Government; (2) funding – how much funds are being invested in e-Government at the municipal level, how often are funds received and how are decisions made on funds – do national governments stipulate how to spend the funds or are cities free to manage the funds; (3) information systems and integration, services online and offline – the impact of ICT and the integration on offline traditional services; (4) how the cities are enabling the territory to take part in the Information Society, are there free access points, digital literacy initiatives targeting populations not connected; (5) citizen participation – concrete examples and experiences of inclusion in policy making at the municipal level .

If we look at ad hoc units in charge of e-Government, some of the cities have one office and others like Madrid have a number of offices dealing with e-Government.

With regards to funding, some have funds designated specifically to e-Government and others receive finds from their information infrastructure. Often their budget comes from call for projects at the central level which means that accountability and responsibility is shared between the local and national governments requiring coordination and cooperation between them.

Concerning information systems and integration, GIS is prevalent and in terms of enabling the territory, there is free access in libraries, municipal offices and digital literacy initiatives aiming at teaching and training the disadvantaged to use IT.

Nicolas Chung, **Delegate for ICT, Education & Research, Association of the French Regions - ARF,** France, gave an excellent overview of

The French Regions Weaving the Information Society at the Local Level

There are 26 regional authorities in France averaging 2.3 million in population and the Association of the French Regions (ARF) has very little operational responsibilities with regards to them but acts as public investors, acts in the domains of higher education research, economic development, territory planning and regional transportation in relation to IT.

It defends the interests of the regions on national and European levels, hosts communities of practice, on the technical and political level, has an IT commission, provides common resources, databases and studies for member regions and produces common decisions on various subjects.

Although the French national government is responsible for interoperability framework laws, fundamental e-Services, public finance backoffice, taxes, social security, has a regulator and does a lot to foster pilot projects in IT, the local authorities have all the rest to do, local networks, infrastructure, everyday e-Services rolled out on a generalised basis and IT adoption programmes, etc.

With regards to network infrastructure, the prophecy was that Internet will abolish all distance in France however access to triple play services and even broadband remains uneven on the French territory.

Thousands of small areas, hundreds of business areas are still waiting for good coverage and/or reasonable prices. There was a recent study showing price discrepancies between 1 to 7 times between areas.

Since there are so many small areas local authorities can address so many particular cases. Local and regional authorities have been allowed to initiate public networks and today we have over 150 projects for over 1 billion Euros over the past year demonstrating the huge demand and how much there's to be done.

There is a need for a blended human and IT approach for e-Services as the needs from one territory to another are very different and human mediation remains essential.

The ARF provides at the regional level, common infrastructure, hard or software, common methodology, competencies and communities of practice as all of the municipalities don't have the means to have a highly qualified IT manager.

Recent EU studies have shown that there are huge efforts being made towards fragile populations, the poor, elderly, handicapped, isolated mothers, etc. and e-Learning is in insufficient, we still need face to face contact. Only local authorities know their populations well enough to provide crash courses and integrate them within larger community services.

The trends in regional Information Society policies are that the need for a bottom up approach to Information Society is widely recognised in France although top-down initiatives are very important to initiate movement towards the Information Society. The Information Society must become increasingly integrated as a dimension of fast standard policies,

education, economic development but we still need transverse Information Society governance structures.

The lessons learned is that local governments don't follow the usual paradigm of infrastructure, service and adoption and this is very convenient with regards to market push.

We need to answer two questions: What are the economic and social benefits of IT and who has access to them? The whole e-Inclusion policy and governance structure must enable all the different levels to act together, many more local projects a greater pooling and a highly organised network of project managers and that's the direction in which the regional authorities are experimenting their new policies.

Irina Zalisova, Managing Director, EPMA/BMI Association, Czech Republic, communicated her vision for e-Government in

e-Government 2020 Fairy Tale

Her work in the domain of e-Government has imparted her insight into the visions and issues from the different actors involved and dealing with the advancement of Information Society issues has raised more questions than answers, questions connected to our common future and shared European values.

The Czech Republic has quite a developed IT market, there are more than 10 million mobile phones for quite mature for its 10 million people, a good internet penetration rate – more than 1/3 of households are connected to the Internet and 75% of businesses are online – and it has adopted an e-Signature law.

There are a lot of common approaches to e-Government but the challenges are similar in the whole world. The possibility that the European regions will be able to reshape their social interactions according to the new ICT demand and new scientific paradigm seems like a dream. That all European regions understand the public values in the same manner and can appreciate the value of e-Government projects, calculate ROI, is also quite questionable. In How do we achieve that dream in this situation?

Have European regions reached the e-Government 2005; have the newcomers such as the Czech Republic? ICT is developing rapidly in New Member States even more so than in the social arena but regions need social as well as technical innovation.

We are lacking multi-disciplinary research on e-Democracy and e-Government issues, they are reshaping government and with notions like e-Participation which promotes citizen participation in decision-making processes and the use of new technologies to enhance that participation. In addition, research into the economics of e-Government.

Often times we see that national governments are slower and regional governments are more flexible in understanding and implementing modern challenges.

We must strive to reach the i2010 objectives and looking forward to 2020 by determining the values we seek as a community, in our separate communities, what new kinds of interrelations between individuals, organisations and nature. How are technologies changing our relationships and lives in terms of time and space, is this new social paradigm the direction we want to go in?

Alain Ducass, Head of "Digital Country Planning Team" Prime Minister Service, France, gave a noteworthy outline of

e-Accessibility and e-Development in Remote Areas

Population density in France differs drastically from one area to another, creating challenges to bridge the digital divide, however France is taking a hard-core approach to mitigating these challenges through the efforts of the e-Government Ministry together with the Delegation for the Use of Internet (DUI) focusing on sociological digital divide and Delegation for National and Regional Planning and Development (DATAR) focusing on geographical digital divide.

Although broadband connection is growing very rapidly in France its remote areas are sometimes difficult to connect as they constitute 2% of population and 10-15 % of territory, no market for operators. Some of remote areas without DSL are connecting through mesh networks, different kinds of solutions like satellites and so on.

When we look at the map of the territory we notice 3 areas: (1) remote areas; (2) areas where you can have broadband but only up to 1MB; (3) areas with triple play and up to 10 MB and better services. The issue is not only providing broadband everywhere but also offering better services.

Also there is a bug discrepancy in prices; small companies are paying two times as much as those in Paris paying around 300 Euros.

The French government is working on this major problem of accessibility and providing better services to those with access on the technical but also on the social level.

Content in a Convergent Environment

The session's **moderator, Alfredo M. Ronchi, Secretary Medici Framework at Politecnico di Milano**, Italy, welcomed the participants and opened the session by pointing to the fact that yesterday everyone was talking about infrastructure – today, the infrastructure exists and there is a need for services and content. Big "pipes" are available to transfer information, but there is only few content in terms of quality which is worth to be transferred.

The chair of the session, Peter Schmitz, Head of New Media at EuroNews, introduced the topic of the session by reflecting on what EuroNews is doing and how this fits into the context of convergence.

10 years ago, there was only the TV signal and teletext – today EuroNews is on digital TV, on the Internet, on Interactive TV, on PDAs and on Mobile Phones. A different distribution, a different consumption and different business models. This is not just something new, but has also consequences for existing business models.

The first issue is the future of the advertising-funded model. The industry recognised that a growing number of advertisement partners want to be associated with content. As more and more people watch time shifted TV thanks to their Personal Video Recorder, the 30-second-spot and the business model it comes with is under mounting pressure.

The second issue related to this is IPTV. IPTV allows broadcasting hundreds of channels over the telephone line. Viewers got more and more choice and have therefore less and less time for channels – even generalists score below the 10% mark. The question is whether all channels, even traditional ones, survive?

The third issue is mobile TV. It is not only a new screen, but also a new form of consumption. EuroNews has launched Live TV services on 9 networks in Europe and took part in two DVB-H trials. The results show that mobile TV will not replace traditional TV, but just add new usages. A lesson learned is that mobile phone users "snack" content – they tune in for 2 or 3 minutes. There seems to be a general agreement that a client wants to see content whenever he or she wants and does not want to wait for a certain time slot to watch his/her programme. This means that sooner or later EuroNews will produce dedicated mobile content. But first, it will be necessary to learn more about what users do with their phones.

Rudi Vansnick, Chairman of the Internet Society Belgium, presented his valuable experiences from the World Summit Award 2005

Content in a Convergent Environment

There is a clear need for good and valuable content. The World Summit Award has been launched in 2003. Out of the 168 participating countries, about 50 countries launched national awards to select their entries for the WSIS award. A total of 742 products participated in this global award. 40 products from 26 countries have been selected as best practices. Good and innovative content came essentially from the developing countries. High technological features were not present and none of the products has been accessible on mobile platforms. However, there have been some very interesting products in terms of accessibility and closing the digital gap. It is important to create websites that are accessible

for all. The market is not only for those who can see but also for visually impaired persons. Outside the Internet, these people are not able to visit a shop, but on the Internet they can be enabled to do shopping. This is an example where content will be valuable while at the same time representing business opportunities.

New technologies, such as IDTV, are emerging rapidly. Another example is the TV in your pocket, meaning that people can watch TV on their mobile phone. Data casters are coming up with a broader offer. New models of interactive entertainment and education are emerging. And there is less distinction between voice, fax, streaming video, audio and other multimedia applications. You just have to click a button and you get it all.

One of the experiences from the WSIS is that there is a great difference in the content from different continents. Content creation in Asia is completely different from content creation in Europe. When a European organisation is setting up a website, it will provide the same content in at least 3 languages. It will start with a site in its own language and when time and money are available it will be translated. This means spending a lot of efforts for telling 3 times the same. In the Arabian or Asian world, people just start with the English version.

Advances of ICT bring benefits through low transaction and distribution costs. However, there still a problem of overall access and providing PCs and Internet connection is a preliminary step towards a fully networked society. (Example: 58% of the Belgium households have a PC, but 99% have a TV.)

As regards policy issues related to converging content, there is an increasing public interest in content and governments have to focus on what the public needs. Content is increasingly becoming platform independent leading to an interesting phenomenon of competition between service providers. A policy framework should embrace competition as key principle in decision-making. Trust should be facilitative rather than regulative.

Today, 50% of the Internet users are non-native-English speakers, thereof 25% coming from Europe and 25% from Asia. 65% of the overall content on the Internet is in English, while 5 years ago it was about 80%. This shows that more and more non-English websites are coming up.

Marco Tempra, Solution Developer, Banca Digitale Accessibile, Italy, introduced a great initiative from the banking sector, the

Accessible Digital Bank

A bank can be a content producer, and even if it mainly builds online banking services, it may also create a number of informative web sites. The "Accessible Digital Bank", a methodological and ethical approach to design web services, has been launched by the Banca Popolare di Sondrio 3 years ago. The project's main focus is the digital divide and e-inclusion, and notably accessibility. Even if, in a few years 100% of the population will have Internet connection, the problem of the digital divide will not be solved, since there will be still people unable to use the delivered content. Accessibility means the possibility, even for disabled or handicapped persons, to have access to all information available on the Internet without prejudice and in a completely autonomous way.

A blind person can use a PC rather normally, through the use of specific technological tools. His/her PC runs a software called "screen reader" that is able to browse the contents of the

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screen, extracting all the readable texts and the information about all the active elements available on the interface (menus, menu items, buttons, links, etc.). This information and texts are then passed to other modules, e.g., a voice synthesizer or a Braille keyboard. After some exercise, a blind person can use a PC in a very effective way. The main difference between a seeing and a blind person is that the seeing person looks at the screen and directly interprets its content; the blind's persons view, instead, is mediated by a computer program, the screen reader. However, a large number of the web sites available is written in a way the screen reader can not read correctly. For each type of disability, a specific technical assistance is available and if web sites are written correctly, i.e., accessible, then it will be usable independently to the assistance technology used. The "Accessible Digital Bank" adopts the standard W3C coding rules, as well as the guidelines of the W3C Web Accessibility Initiative, followed by a thorough testing performed either with the use of automatic tools, either with the help of disabled persons.

In Italy, about 2,800,000 persons have a disability. 19% of the population is over 65 years old, and 19% of them is disabled. It is interesting to note, that a significant percentage of disabled persons started using the Internet, since it represents a powerful medium to get information, to socialize, and to gain independence or autonomy. The "Accessible Digital Bank" project aims at making all its published content accessible to all customers – whether he/she is disabled or not and independently from the technology used. The project obtained good results in terms of relationship with customers and disabled persons associations, and a good return in visibility and awareness about its solutions. But the project also got interesting results regarding the quality of coding and maintenance costs, as well as a reduction of customer problems related to the use of different browsers or operating systems.

Launched in 2003, SCRIGNOfacile, an Internet Banking service, was the first of the fully accessible web sites created within the "Accessible Digital Bank". The Bank's new institutional web site was also a great achievement, as it was necessary to adopt a new content management solution to completely separate contents from their graphical presentation, since it would not have been possible to correct by hand 12,000 web pages. A significant part of this site is of editorial and cultural nature, mainly related to Valtellina, the alpine valley on the border with Switzerland where the bank started operating in 1871. All this content is now available to disabled people. Later, an accessible web cam site, also providing weather forecast, has been set up.

The most recent fully accessible site is the "Galleria d'arte", a site presenting the bank's cultural heritage with paintings from the 15th to the 20th century. Particular attention has been given to blind persons, which get information about each painting through a text explaining the contents of the image, the colours, the theme, as well as the main subjects appearing on the paintings and their position. Furthermore, accessible Virtual Point of Sale solutions enable each customer to pay on the web with a credit card. This is an important step towards independence for disabled persons enabling them to benefit from e-Commerce.

Ranjit Makkuni, President, Sacred World Foundation, India, demonstrated an exciting project using tangible computing to explore the world of Gandhi

The Virtual Gandhi Museum

The Eternal Gandhi Multimedia Museum is one of the world's first digital multimedia museums. Located at the site where Mahatma Gandhi attained martyrdom, it not only preserves the historical events of Gandhiji's life but presents a spectrum of information technology visions inspired by Gandhian thought. The project revives the values by which

India obtained freedom; it also redefines those values in order to animate modern products and design.

The project presents a language of physical interface actions derived from classical symbols of the spinning wheel, turning of the prayer wheels, touching symbolic pillars, the act of hands touching sacred objects, collaboratively constructed quilts, sacred chanting in the collective group, the satsanga and the touching and rotating of prayer beads. These tradition-based interactions inspire a rich panorama of tactile interfaces that allow people to access the multimedia imagery and multidimensional mind of Gandhiji.

The technology developed does not "merely scan" Gandhian images. It extrapolates Gandhian ideals to newer domains of information technology and product design, and at higher levels, the creation of meaning in a globalised world. For example, the Gandhian commitment to hand-based production and its symbiotic relationship with nature is interpreted in the context of modern culture-conscious design.

The contributions of the spectrum of artists, spanning wide geographic boundaries and disciplines, illustrate the universal resonance in Gandhian messages. Computer scientists, modern designers, mosaic makers, craftsmen, artists, and wood carvers offer their work as a dedicated prayer, in remembrance of the Gandhian vision; a collective Likita Japa, the endless remembrance of the Divine through repetition of the written mantra. Each object in the museum, whether a pixel of light, a bit-map on the screen, an animation, a circuit or a handcrafted object is a living prayer. Here lies the reaffirmation of the Gandhian view, a commitment to the dignity of hands, the healing of divides, the leveraging of village creativity and cultural diversity in the face of homogenisation.

The project demonstrates state of the future tangible learning media. Research has shown that building technology that allows people to utilize their innate abilities of physical manipulation and sensing greatly improves the user interface and learning.

Luca de Marchi, Project Manager eLearning, Asolo, Italy, gave an interesting overview on

e-Learning in Health: From a Corporate System to a Territorial Network

The Asolo Healthcare Department is a public institution in the Veneto region in northern Italy with an annual budget of 3 million euros. It serves about 200,000 inhabitants in two social districts and has about 800 beds in two hospitals.

In Italy, investments in e-Leaning amounts to about 4% of the investments in education in the public sector in general. Content and technology are the principal key factors of an online training system's success. The e-Learning experience of the Asolo healthcare institution started in 2003. Today, the Asolo Healthcare Department has become a significant partner of a network between some of the most important Italian hospitals operating in different parts of the world. Asolo has become the content supplier for this network, providing online learning courses and "digital pills" for general health education. The objective has been to completely digitalise the health department with respect to its two main areas: the management level, including administration and management, and the clinical field involving all health sectors.

When launching the e-Learning programme, special attention was given to human resources improvement. The objective was to support managerial and organisational changes by the help of formative tools.

The introduction of digital training required the adoption of technological (digital platform), organisational (team management, the organisational system and rules) and infrastructural (house-to-house service, prepaid cards, classroom for computer science) solutions in order to turn e-Learning into exploitable reality. The Asolo healthcare institution also produced the digital content needed to achieve real and constant training of the staff, as well as adaptable and flexible courseware for every professional group.

Digital e-Learning content has been elaborated for both the healthcare professionals and the administration and management staff. Courses are available, for instance, on the Severe Acute Respiratory Syndrome, management changes in healthcare, human resources management, privacy in health institutions, industrial safety, and clinical risk.

The project involved 2000 operators in two years with the result that at the end of the year 2004, 30% of the staff was trained by e-Learning. The project has been awarded with the Italian e-Content Award for digital learning content in health and was special guest at the Expo e-Learning Italy 2005.

The e-Learning contents in healthcare, initially produced to train the staff of the Asolo Health Department, is now used in several other healthcare organisations, thanks to a partnership with the Veneto Regional Health Department. The Asolo Health Department is currently working on the development of "digital pills" (online training courses) designed to improve health education in the population.

Fabrizio Davide, **PhD, Expert Learning Services, Research & Development in European FET Program**, Italy, presented some best practices resulting from R&D activities at Telecom Italia Learning Services (TILS)

TILS and the European "Future & Emerging Technology" Program

TILS consists of the two research units "software and network technologies", dealing with pervasive computing, ambient intelligence, and smart content delivery and overlay networks, and "brain cognition and complex systems" dealing with neuroinformatics, neurophysiology and bio-inspired technologies, innovative learning, immersive and virtual environments, and social research and human factors. The current project portfolio covers 18 ongoing projects funded by third parties, including the EC.

A concept that has proven to work very well is the "concept of internal content". This means that content is not purposely created but was born when certain conditions occur. These main four conditions are: people having a certain competence in specific research domains, familiarity with internationally recognised R&D activities, interaction with cutting edge science and technology, and structured relationships with workers and stakeholders in other organisations. Four representative projects addressing content and interactive content delivery realised in the context of the European FET (Future and Emerging Technologies) Programme are: I-Learning, DELIS, PACE, and PASION.

I-Learning (Imagery Enhanced Learning), aimed at exploiting basic research into "mental imagery" to develop new VR based techniques for the teaching of complex motor skills, as well as at developing effective and economically viable techniques and tools (the use of portable devices allowing mix of lab & home-based learning). The project's objective was to validate new techniques for the rehabilitation of stroke patients and teaching of advanced driving skills (driving on ice) and to extend techniques to teaching of other motor skills.

The objective of the DELIS (Dynamically Evolving, Large Scale Information Systems) project is to understand the structure, self organisation and dynamics of large-scale information systems, to provide methods, techniques, and tools for control and optimisation, and to demonstrate the quality of the findings in applications such as a management platform for telecommunication networks and a decentralized, self-organizing Web search engine.

PACE (Programmable Artificial Cell Evolution) investigates the stepwise evolution of the simplest technically feasible elementary living units (artificial cells much simpler than current cells), explores the utilization of such systems to build evolvable complex information systems, provides theoretical and simulation frameworks for understanding the emergent computational properties of such systems, and develops experimental frameworks for programming them by evolutionary exploration of chemical reactions.

The PASION project aims at achieving more efficient and effective group interaction in mediated environments. The project addresses two applications: Collaborative knowledge work and social gaming.

Daniel Schütze, Project Manager for R&D Art and Education, Association Memory of the Future, France, demonstrated a great drawing, education and art software, the

LopArt Duo

LopArt Duo is the evolution of LopArt, created by the Montreal based company les Produits Logiques LopLop. It is widely used in about 500 elementary schools in Canada and countries like China. The software's advantages are its accessibility coupled with rich graphic capabilities and the virtual museum for seamless online publication of the children's artworks.

LopArt Duo allows real time drawing on a shared canvass over the Internet. There is a central website and through the software the art works are sent to a gallery so that everybody can see them. There is no need to know anything about ftp or file management. Teachers can be trained in a few hours to use this tool. Combining local software and a shared creative application, LopArt Duo is a graphic chat. Experiences in workshops between France and Canada have shown that it represents a form of a new universal language, where the need to collaborate is the key element of the exchange. The approach is to use symbols as a pedagogical tool.

There are several ongoing projects using LopArt Duo, such as projects with the cultural association Memory of the Future or projects between schools in France, Germany, Israel, Palestine and elsewhere. LopArt Duo represents a means to communicate without using words and creating lasting ties between cultures through novel artistic activities. There is a need for light and accessible tools for education and cultural exchanges, overcoming language barriers and the difficulty for teachers to master computer based activities. On-line shared drawing also allows students and adults with literacy problems and learning disabilities to communicate and use computers as a creative tool.

Another global R&D project is the K2K (kid to kid) project aiming at the development of a platform of networked software for expression and creativity. Furthermore, it is intended to produce a website creation tool based on the same philosophy as LopArt, i.e., real time collaboration, automatic publishing, teacher management and intuitive learning, allowing kids to create websites and to develop their full creativity. The next step will be the creation of a 3D tool.

Phil Archer, CTO of the Internet Content Rating Association – ICRA, presented a very interesting approach on

Making Metadata Matter

The Internet Content Rating Association is a non-profit organisation funded largely by their members. Traditionally ICRA has been associated with a very simple meta data application, which is labelling content. Here, ICRA's labelling system checks if a site does or does not contain nudity and sexual content, violence etc. so that the filtering programme at the other side can decide to access it or not.

These days, ICRA moved to a much broader scope of dealing with metadata. One particular activity in this context is the W3C Mobile Web Initiative, initiated by Vodafone. The idea behind this initiative is to make the Internet we are familiar with as accessible on mobile devices as it is on a desktop and laptop, or with other words, to fit Yahoo! or Google onto the mobile. ICRA is working on a set of recommendations, providing guidelines on what to do to create content that is more likely to be accessible on mobile devices than simply on fixed devices, but also on what to do to make content for mobiles more likely accessible on fixed desktops.

The Web Accessibility Initiative is where mobile web starts: A lot of the things to do to make content more mobile friendly are exactly the same things to do to make it accessible to blind people, to people with hearing difficulties or people who are simply driving a car. People must not necessarily be impaired by physical conditions – they could simply be doing something else which impedes the use of a keyboard etc. A lot of the things that work for mobile web are true for web accessibility. Many of the best practises recommendations, which are now available as drafts, are directly lifted from the WAI guidelines. A content that follows the recommendations will get the label "mobile OK". A trustmark system will be set up allowing to identify that material is following these recommendations. Moreover, this "mobile OK" trustmark will be machine readable. This means that a machine can look at the content and the meta data provided and contests these meta data against some online services. And if the content/ metadata matches all the criteria, then the site will be validated "mobile OK". First "mobile OK" trustmarks are expected to appear in 2006.

Examples for typical trustmarks are BBBOnLine, TRUSTe or VeriSign. If you see the logo on a site you should be able to click it and get a report back from the trustmarks scheme. Something likely will be set up for "mobile OK". However, none of the trustmaks available today is machine readable and therefore searchable. ICRA is involved in a programme (called Quality Assurance and Content Description project – Quatro), enabling people to do this and to get additional information (annotated search) on the search results. First results are expected to be online in February 2006. The mobile operator O2 has made a public commitment to use the machine-readable trustmark system developed under the Quatro project to carry accessibility trustmarks awarded by Segala.

Virginia Valzano, Adriana Bandiera, J.-Angelo Beraldin, SIBA, University of Lecce, Italy & NRC Canada, presented a fascinating 3D modelling work Carpiniana.

A Virtualized Byzantine Crypt

When describing and explaining the history of a heritage site or an artefact, the use of spatial information becomes very important in order to facilitate its understanding. The approach based on spatial information i.e. where 3D information about the shape is acquired digitally using a measuring instrument allows one to exploit this digital information to visualize cultural

heritage artefacts in new ways and to extract new knowledge not possible with conventional techniques.

This approach has been applied to perfectly reproduce shape, size and colours of the Byzantine Crypt of Santa Cristina, using both photogrammetric techniques and dense 3D laser scanner information combined with high-resolution colour images. Geometrically correct texture mapping is essential to render the environment realistically, to produce virtual visits and to apply virtual restoration techniques. As opposed to "traditional" restoration that is performed on the physical object or site, virtual restoration is applied directly onto the digital copy or surrogate. An interactive virtual visit of the Crypt on CD-ROM and a video animation have been created to show the results. All of these representations are aimed at showing the three-dimensionality of the site that is not visible in a typical visit to the site. The interactive CD-ROM allows navigating through the virtual crypt. In fact, users navigate through the 3D model and receive additional information on certain topics, such as the writings (inscriptions) on the wall, their meaning, translations, etc. It is also possible to measure dimensions of different sections of the crypt, or to get views which are not be possible in real visits of the crypt, e.g., outside views. Features that are small or only visible from a distance can be interactively examined, thus, allowing the study of fine details such as tool marks or surface texture. Architectural elements that have been added over the years can be removed and the digital 3D model of the site can then be viewed in the correct historical context. A DVD including a virtual visit, i.e., a virtual 3D animation inside the crypt, has been produced.

Once a full 3D description of a site is available, it is possible to generate other products, such as holograms using holographic printers. It is also possible to create a live virtual tour inside the crypt using virtual reality technology: A group of people guided by an expert can navigate inside the virtual crypt. Another aspect is that sites that must be closed for conservation reasons can still be studied and visited once a high quality digital 3D model has been created.

François-Xavier Schlesser, Project/ Program Manger – TV-Traffic System, RTBF, Belgium, outlined the main

Challenges for Public Service Broadcasting

There have been drastic changes in TV, such as the development from one-channel to multi-channel TV, but also regarding the consumption of TV, from an initially socially event to a multitasking event, where people watch TV alone while doing other things at the same time. There is also big change in the rules of schedules: It is no longer the broadcaster who decides about schedules, but the viewer who gets tools in his hand to make the choice about what he/she wants to watch and when.

The first industries' response to this increasing need of the viewer to control his TV experience, have been the VHS recorders enabling the viewer to view when he/she wants to watch TV. However, this solution never reached a substantial level of viewers due to bad quality and difficult handling. The next TV market response was the multiplication of the channels increasing the viewers' choice. But experience showed that even if there are hundreds of channels available, only few of them are viewed. As a consequence the first goal in TV brand management became "being in the first 10 buttons of the remote control" in order to make sure to be seen. This leads to high branding costs and financial losses. DVDs then provoked a change in consumption. A substantial level of people are watching TV (in addition to other screens) on DVDs. Quality associated to large screens seems to be an essential factor in this changing behaviour.

Another important step is the very easy to use PVR, recording "classical TV channels". PVR became a real success (20% of the population in the U.S. watch time shifted TV). As a non linear TV experience allowing commercial skipping, time shifted TV threatens traditional business models of broadcasters. Moreover, commercials have to find a new way to reach people. In the future, only exclusive content and the strongest premium brands will survive in this business model. But PVR also influences the TV habits of the younger generation which might completely loose the notion of watching life TV, i.e., to watch a certain broadcast at a certain time. The good news for broadcasters is that people watch more TV. The next step in this changing TV world, is interactive distribution in which people can choose the content they want. They also can watch a video or TV at new moments and at new places.

Consumer goods have significantly changed and the consumer becomes more and more IT based: PC and Broadband, mobile phone and videophone over IP, large size IP based TV sets, hybrid TV sets (LCD TV combining tuner, wireless, LAN, web browser and mail, and a PC card slot), mediacenter, PVR, interactive set top boxes… The web experience that users can have by downloading content from the Internet also increased the number of users that consume TV in a non-linear way. The first phase in the progressive convergence between IT and broadcasting has been numerisation, which was more a constraint than an improvement. In the second phase when the IT world got access to video and compressions, the broadcasters realised the opportunity to reduce costs and improve competence. Radio started and TV followed in production, exchanges and contribution, distribution.

But also the broadcasted content changes: Before, the activity of a broadcaster was centred on TV broadcast; then the multiplication of distributors became more important to provide the viewers with more opportunities to see TV. Today a multiplication of services come to the fore, to enable the viewer to see what he/she wants and when he/she wants, to see more, anywhere, differently, and to see something else. This requires new formats (remastered for small screens (size, time…), permanent availability, etc.) and new content with an added value and adapted to the new platforms.

Omar Javaid, Senior Director, MediaFLO International Business Development, Qualcomm Inc., USA, [www.qualcomm.com], one of the main sponsors of this year's Global Forum, gave a brilliant insight in

Mobile Multimedia as a Global Perspective

State of the art of a PC in 1996 was a Pentium desktop with 75 Megahertz clock speed, 8 Megabytes of RAM, and 1 Gigabit hard disc drive available in the U.S. at 1,500 dollars. At that time, the standard phone was operating at 9.8 Megahertz, less than half of a megabyte of memory, no significant hard disk or external storage and cost about 500 U.S. dollars retail price. From the late 1990th to 2004/2005, there has been a tremendous amount of innovation in the PC side and the mobile market has increased in capability and power. In 2005, many of the high-end chips available in cell phones operate at 1 Gigahertz – so it is tracking very closely with PCs – 128 Megabytes of RAM and 1 to 4 Gigabytes of external storage. Video capabilities of mobile devices are becoming more and more powerful. On the wireline side, a tremendous amount of bandwidth became available over the last decade and acceleration on the wireless side can be observed (WiMAX etc.)

Underpinning all of this is that this is a market that is truly global with the attended economies of scale behind it. The camera phone resolution actually exceeds the one of the digital camera in the late 1990th. In 2005, the shipment of camera phones exceeded that of digital

phones worldwide. And when adding the global deployment of 3G networks, this year alone there are about 2 billion mobile phone users worldwide but 2010 there will be 3 billion. The market continues to accelerate as it becomes accessible to a greater part of the world.

Japan is widely known as a very advanced market with 3 powerful incumbent wireless operators, NTT DoCoMo, KDDI and Vodafone, and 80% low wireline broadband penetration. What is striking about Japan is the amount in the success that wireless data have in this market. There is a tremendous focus on quality and Japanese wireless operators have taking the lead in designing the handsets. Most operators in other countries acted as mere economic buyers of handsets so that they would have purchasing power; Japanese operators did leverage this process from earlier getting into industrial design and trying to design the user experience.

Korea is another advanced market with 3 incumbent operators, over 80% penetration and the highest broadband per capita (wireline and wireless) in the world. Korea is also taking a leading role in the development and the commercialisation of advanced multimedia technologies, such as the design of a mobile phone designed for high quality satellite TV with 14 video channels, including e-Learning and children's channels. Registration fees are about 20 U.S. dollars and subscription fees of about 12-13 U.S. dollars per month.

In the U.S., about 30% of the adults use the Internet and will probably adopt broadband at some point of the life cycle. There is a clear interest on the average consumer in the U.S. for mobile multimedia and this is leading to huge investments in these kinds of next generation technologies.

"Yesterday's products are tomorrow's features" – this is something we have seen today in the handsets. The increasing capabilities is not just processing power but the services available on portable devices and handsets, such as radio, TV, gaming capabilities, camera and camcorders, mapping positioning systems, iPod or music capabilities, M-Wallets, or barcode reading capabilities.

As regards rich media trends, in Japan alone, the interest in music download is tracking very closely to the global downloads that Apple had with iTunes. This indicates and explains why the large handset manufacturers are investing so heavily in mobile music.

Japan and Korea leads the world typically by a couple of years, followed by Europe and the U.S.

What we can see nowadays an increasing interest in mobile TV. Primary research in user preferences showed that this is the first time where voice has been rated only the second place. Interest in mobile TV is six times more than in mobile games. Mobile TV will certainly be the next mass market service offering.

Innovation and R&D / Regional Centres of Excellence in R&D and Innovation

As **chair** of the session, **Pierre Laffitte**, **Senator, Alpes-Maritimes & President, Sophia-Antipolis Foundation,** France, motivated and provoked participants to seriously reflect on the ways to enhancing innovation:

Although innovation is very strong amongst our Member States it is not as much as it should be and we all know that we are not meeting the Lisbon Agenda objectives, filling in the gap and we therefore need to work harder.

With regards to Regional Centres of Excellence, various initiatives are underway, such as the French Competitive Pole which is a type of cluster that contains the main ingredients for innovation in hi-tech industries, research centres, universities and educational centres with the help of local governments to create new tools in software, hardware and other hi-tech areas and boost innovation in France and internationally.

A second noteworthy initiative is the pan-European group oriented towards innovation, ELITE (Enlarging and Elevating Innovation and Talent in Europe) which is a type of lobby organisation promoting a strong innovation policy for the 25 Member States and EU organisations to focus on innovation in the different national policies.

Innovation is often times perceived as negative as it creates difficulties and we must show that innovation generates jobs, there is much work to be done with regards to improve public opinion and ELITE has been instrumental in changing this perception.

The U.S. invests more than 50 billion U.S. a year on innovation and if we want to keep pace Europe has to invest a good part of its GDP towards innovation and perhaps, as many regions are doing today, borrow the funds from other regions of the world. ELITE has already convinced 4 countries, Poland, Denmark France, Germany that this approach of borrowing is the way to go.

We must also consider adopting a similar Small Business Act to that in the U.S. which up until today hasn't been possible due to EU regulations and cannot be implemented in individual countries.

We need enthusiasts and individuals devoted to innovation to change our European society, the general mood and advance innovation; individuals, contrary to organisations, have the freedom to make the decision to move the agenda forward and we must join them in doing so.

Moderator, of the session, **Keith Brown, Councillor, Member Clackmannanshire Council and Rapporteur of a Recent Opinion of the Committee of Regions on eGovernment, President of the UEN-EA Group in the Committee of the Regions**, passionately urged us to excel:

In the early days of the Bill Clinton presidency the U.S. identified the need for research and development and substantial investment in it as a key factor for economic development and it lead to the economic expansion which they enjoyed in subsequent years, there is a lesson there for us in Europe as well. The EC has made proposals to significantly increase the

research and development budget and these are welcomed, however it is now down to the national governments to respond to this initiative and provide the requisite resources.

The Committee of the Regions has taken a keen interest in research and development and innovation since its creation in 1994 and it is clear that the whole of Europe has a role to play in research and development and ensuring Europe's future economic success. It is also true that most regions in Europe also play host to some of our top research institutions and innovative practices such as e-Commerce in remote areas.

Like many people he welcomes the fact that Europe and America are now being challenged by emerging economies like China and India, which is good news for the world economy providing opportunities for all of Europe's various economies, however we do have to remain at the top of our game and invest to make sure that we continue to enjoy the prosperity that many of us have become used to.

Isobel Harding, **Head of the Information Society Unit for Yorkshire and Humber Regional Assembly and NorthlincsNet, UK Local e-Democracy National Project Lead Authority,** made a first-rate presentation on

Innovation, Research and Development

There is a lot gong on in the UK in terms of innovation, partnership and national projects around research and development that are all to do with e-Government.

The UK has set up Centres of Excellence that sit in its 9 regions and develop projects around education and supporting people, local public transport, community and transactional services, construction and procurement, children services, procurement and commodity of goods, adult services, fire, productive time and social housing.

There is a huge wealth of project work going on in terms of research and development with a view of producing solid software, best practices and documents to be shared amongst 388 local authorities.

In terms of e-Government outcomes, the UK has been driven very strongly down the route of delivering e-Government outcomes against a set of projected activities. The national projects have been developed against some of those priority outcomes in terms of democratic services, schools, payments and so forth and are aimed at delivering specific software in particular, frameworks and so on.

The ones she has been particularly involved in is the one around democratic renewal, the Local e-Democracy National Project, funded very generously by the UK Office of the Deputy Prime Minister, is a risk taking project, something that the UK is strong at doing in terms of taking a managed risk and looking at the way it can deliver something that is going to benefit the citizens by delivering more effective, more efficient services, transparency and honesty and decision making at the very lowest local level. However there is a huge culture change to be involved.

The Project is about 3 levels of conversation communities talking to councils, elected members, communities which requires a culture change both at the local authority level in terms of ensuring that elected members are able to receive the communications, not be disempowered by them, able to give back the decision-making capacity back to the citizens

in the community and also a culture change in terms of both education and attitude of communities to want to take that decision-making on in the first place.

The Project has developed over 80 tools around e-Campaigning, e-Petitioning, Micro-Democracy, two-way consultation available on the website.

We go far too much sometimes, in Europe definitely in the UK, down a route of directed consultation that we ask the questions we want to hear the answers for and what we have concentred on is the communication that needs to take place in terms of the conversation, ask a question and then discuss what the answer might be.

Outputs are innovative ones: (1) Captain Campaign, one of three e-Democracy games. Kids these days are up and coming democratic citizens of the future the one thing they enjoy doing is playing games why aren't we approaching them they way they want to communicate through mobile phones, PC games, etc; (2) teaches young people in school about citizenship and how funding works in a local authority scenario and about what it means to be a councillor; (3) Large numbers of websites you can visit in terms of best practice Bristol e-Petitioner is up and running and very effective in getting the community involved in setting up petitions and campaigns then culminating scrutiny or hearing in the local council; (4) What works scenarios, a lot of training packages, step-by-step guides on how to implement.

The majority of these tools are open source software available to anyone wants to take it and downloadable from the website.

Thierry Van Landegem, **CTO, ALCATEL,** Belgium, **one of the main sponsors of this year's Global Forum,** [www.alcatel.com], gave good insights into

The Lever of Regional Centres of Excellence for Innovation

Innovation is the combination of great visions, feasible things and markets; it's the turning of creativity into a product.

Alcatel's research preparing the company's future through new visions, product concepts, is not only technology driven but also a way to ensure that these new concepts are proven feasible as products which means that new disruptive concepts are analysed along with evolutionary concepts. If proven feasible and de-risked Alcatel moves them towards its business division to develop the products for the market.

If you look at optical systems, very basic scientific research you still have a long turn around time, what we are seeing now in a number of fields is that the research lifecycle is much shorter. When thinking about network, fixed or mobile there is a cycle of less than 3 years in which you have to analyse research the networking technology, come up with a new product concept and then be put on the market. Services and applications is even less, a year on the average.

Taking all of these factors intro consideration, Alcatel is not able to do it alone anymore in order to truly understand what new usages can be made of existing and new technologies, to test innovation in the fields together with end-users, combining innovation in various fields – multi-disciplinary approach for different technologies for different new usages – and to create strategic customer relationships. It has therefore created dynamic partnerships with customers, industrial partners, government research centres and universities to complement its own skills.

It has set up the Alcatel Research Partnership Programme together with a number of key partners, mostly universities and research centres, to improve access to the best sources of innovation and a means to be immediately aware of what technologies are available, complementing its lack of expertise in some new domains and providing insight to academia on the needs of the industry.

Two of these research partners and good cases of regional centre of excellence are located in Flanders, the Northern part of Belgium: IMEC (Interuniversity MicroElectronics Center) a 20 year old world renowned institute in nano-electronic research that does advanced research 10 years ahead of industrial needs, making it an excellent partner for Alcatel and IBBT (Interdisciplinary Broadband Institute for Technology) which conducts multi-disciplinary research, social, legal and regulatory, driven by the industry. Both IMEC and IBBT are both located close to Alcatel giving it enormous leverage on all the areas of IT, software and broadband.

The advantages of such a cluster are numerous: (1) it combines university and market driven research where industry can input its requirements from the market to these universities; (2) it is a multi-disciplinary innovative environment; innovations don't only come from technology but also from using exiting technologies with a new business model and social usage; (3) it fosters mobility of researchers between universities and the industry; (4) it contributes to solving political and regulatory especially from the industry to the university direction; (5) it creates a development platform for the industry and great opportunities for the creation of spin-offs from big corporations or universities and while making use of the infrastructure provided by these centres of excellence.

This cluster is hopefully building a sustainable competitive advantage for industrial partners in the region and is definitely reinforcing the role of the Alcatel Belgium Unit within the Alcatel Mobile Group.

This is a prime example of putting theory into practice.

Thomas Andersson, **President Jönköping University, and President of the Board, IKED - International Organisation for Knowledge Economy and Enterprise Development,** Sweden, gave an illuminating speech on

Science, Technology and Innovation on the Road towards European Revival

We are living at a time of major new opportunities but also massive structural changes. Some industries particularly technological and skill intensive are evolving very rapidly but there is also a blending of industries both production and services to create new products and at the same time different regions are managing this playing field very differently. The share of the U.S. in GDP is almost stable but decreasing bit step-by-step, in Asia by contrast there is very rapid expansion particularly in China and India and others whereas Japan has declined over the years. European countries are not doing so well, larger Member States are having the greatest problems long-term wise and some of the smaller Member States are doing better in this respect.

This reflects various developments, one aspect is if you look at the share of manufactured exports of the high technology kind that is developing very poorly in Europe and that share is also going down in the U.S. but you see very rapid advances in Asia especially in China. Not all high technology exports there are of the high skill requiring kind perhaps but there is a major change on the way. Part of the reason is research and development in absolute terms,

the EU is still a major force but relative to the size of the economy, how much is invested, number of researchers Europe is much less well placed, clearly behind the U.S. and even further behind Japan.

When you look at the growth of research and development expenditure you see a massive expansion, some of it driven by domestic actors and a lot driven by foreign enterprises. Major multinational enterprises today have about 700 research and development centres in China and the number is growing by the day.

Of course it is not only research and development that makes the difference; innovation is a major aspect and is in part driven by the supply side of new knowledge from science and technology but also very much driven by demand. And what is happening now in the Information Society is that there are so many opportunities to link these two sides in new ways that whether the opportunity is grasped or not by the individual players will make a major difference and no individual player can do it alone, networking and a very serious process of specialisation needs to go on, learning around the core business of each organisation and region and then growing together with others that specialise in their ways on their turf.

No single actor can afford to be active in one single location, in order to stay on top in the high value added end of the specialisation pattern, efforts need to be made, and sensible incentive structures need to be in place. Some of that challenge is at the rational level, the EU level and the enterprise level.

Europe has worked very hard in many areas to create a common policy for research and development and the EU Framework Programme 7 holds great promises for enhancing investment in research and development and improved structures but renewed efforts are needed.

He recently participated in a high level expert group for EC on research infrastructure and the advice was: (1) excellence – capacity to offer a top-level service to scientists if the European level is to go into refunding for infrastructure; (2) Impacts should be returning added value of EU support (catalysing and additionality effect) so you get more than what comes out at the country level and favourable impact on the European research area in terms of sustainable development; (3) Implementation – adequacy of the preparatory phase, life-cycle costs evaluated, commitment of stakeholders and quality of management.

Yet again the infrastructures and joint programmes will not be sufficient, there is a much broader agenda and we must make conscientious efforts to strengthen the conditions for renewal, for spin-offs, for the venture capital to be allocated at earlier stages – there is quite a bit of venture capital in the European context but much too little going to the early phases. In the beginning public money is usually received and in the mature stages private money and both ends may work reasonably well but in between there is a very costly gap and the public and private funding need to meet at the early stages.

In the end it is not about funding but the playing rules and incentives, the acceptance of risk-taking, the ability of the individual and firms to make the effort in ventures that are really difficult and require different kinds of skills and working together. There is really a European effort needed to strengthen that entire agenda not only in research and development policy in a narrow sense but a real comprehensive effort.

Gilles Berhault, President of the Association for Communication and Information for Sustainable Development – ACIDD, France, challenged the subject of

Ecology of the Digital Infrastructure

Between 1993 and 2000, the number of PCs per capita in the world has increased by 181%. The number of mobile phone subscriptions should exceed 2 billion during the year 2006.

In April 2002, 1 billion PCs were delivered. In 2003, 471 million mobile phones were sold worldwide; in 2004, this figure amounted to 630 million. Each year, between 50 million tons of electrical and electronic waste is produced worldwide. This waste produced by the ICT sector falls into the WEEE (Waste Electrical and Electronic Equipment) category. This category varies from one country to another but includes almost everywhere ICT waste and waste from electric household appliances, audio visual equipment and IT and telecommunications equipment. Each EU citizen produces 25 kg of electrical and electronic waste and the volume increases of between 3 and 5% per year. In average, a mobile phone contains between 500 and 1000 components, among them very toxic ones like mercury, lead, cadmium, chromium, the PBBs (polybrominated biphenyls) and the PBDEs (polybrominated diphenyl ethers). On average, people change their computer every two to four years. The life span of mobile phones in industrialized countries is two years. All of these products are regulated by various regulations and international conventions. Their persistent organic pollutants are toxic for human beings and accumulate in the environment.

The electronic industry is one of the most polluting in the world as it uses a great deal of very pure water and numerous toxic products, which are difficult to eliminate. 240 kg of fossil fuels, 22 kg of chemical products and 1,500 litres of water are needed to produce a PC (24 kg). Out of the 20 million personal computers which became obsolete in 1998 in USA, only 13% were reused or recycled. However, the conditions of recycling can be dramatic: In Giyu, 100,000 Chinese people (men, women and children) sort through waste, burning cables to recover the copper, for 1.5 U.S. dollars per day…

The tendency is to resort as frequently as possibly to the extending liability of the producer of the product. The "polluter pays" principle is moving from to the holder of the waste to the producer of the product. A EU directive on the WEEE was adopted in 2002 should be implemented in 2005. The WEEE provides for a minimum collection of 4 kg of WEEE to be obtained per year and per inhabitant by 31st December 2006. The directive implies the question of separate networks, but does not cover the problem of the payment of these collection costs. Environmental associations want the producer to be as much as liable as possible for the products he puts on the market. They also push for the reuse of components, while the industry would prefer to send the material directly to the factories which are responsible for separating the components. However, the efficiency of the recovery process of resources in the recycling network is not known until now.

The directive on the Restriction of Hazardous Substances, on the other hand, introduced a ban on the use of certain substances in electrical and electronic equipment. Environmental associations consider that the manufacture could make a lot of progress in reducing the toxic substances and that they do not do so due to quick profit reasons.

The Basle Convention, which came into force in 1992, was created to prevent rich countries from sending dangerous waste to poor countries. Its amendment, which was signed in 1995, prohibits the export of dangerous waste from the EU or OECD countries to other member

states. The United States have not ratified it. Exports to China or to India may be considered as a violation of international convention's rules.

The ecology of digital infrastructures is still not widely known. Studies often refer to the positive effects of ICT, such as distant working to reduce carbon consumption, home shopping to optimise deliveries, videoconferencing to reduce transport, etc. But the use of ICT also has opposite effects: The access to the various documents in the Internet encourages print-out. The Information Society is an obvious progress for sustainable development, if for no other reason than that it contributes to democracy and human development and to the success of the millennium development objectives: access to culture, education, and health. But it should commit itself to another global project: sustainable development.

Georges Bingen, Head of Unit, Strategy & Policy, Directorate D – The Human Factor, Mobility and Marie Curie Activities, European Commission, reflected the question of

The Evolving Role of Universities in R&D and in Regional Development

Universities have a role to play in regional development and there is a need to change universities as they are today. There is a need for more (an estimated 700,000) researchers and better research. Important factors for increasing the quality of research are investment but also the attractiveness of a researcher's career in Europe as well as the attractiveness of the environment in which research happens. And this concerns universities very much because a big share of the research in Europe is done within universities. Two points are clearly accepted by the scientific community: the quality of universities is directly correlated to the quality of their research teams, and in order to increase the recognition of a university, investment in research and above all in high level researchers is crucial. And this is indeed necessary in Europe, as European universities are placed very low in international universities rankings.

Some of the main points identified to improve the situation in European universities are: (1) more private-sector collaborations; (2) many universities need revised management structures in order to be more flexible in using economic opportunities; (3) adapting education curricula to research reality, which becomes more an more cross-disciplinary; (4) the opportunities of regional initiatives should be far more exploited; (5) IPR must be exploited by universities and research results must be better communicated; (6) exploit education-research synergies, e.g. science shops allowing students in their last year to be involved in a concrete research project; (7) researchers have to be trained for market needs; (8) output-based funding of universities and not funding based on e.g. the number of students; and (9) to better exploit and diversify funding sources (incl. the private sector and the EC).

There is a need for cultural change within universities and an importance of better investing in human resources.

The three major instruments of the European Community to support actions in human resource development in RDT and universities are the Marie Curie Actions for the development of human resources in research, the Mobility Strategy for researchers, and the career development policy for researchers.

There is a Commission's proposal for the *Marie Curie Actions* in the 7th Community RTD Framework Programme (2007-2014), to be funded with 900 million euros per year, covering

the four action lines of initial training of researchers, life-long training and career development, industry-academia pathways and partnerships, and an international dimension.

Mobility Strategy is a policy line where a number of actions have been initiated in order to facilitate the mobility of researchers between countries. The *ERA-More* Network helps researchers when they change countries and encounter administrative or technical problems. The *ERA-Careers* Mobility portal provides a large set of links related to mobility. The implementation of a "scientific visa" directive obliges EU member states to facilitate researchers from outside of Europe the entrance in EU countries.

The career development policy for researchers includes the *European Researchers Charter* and the *Code of Conduct for the recruitment of researchers*. These joint instruments contain a number of principles that research institutions, universities and companies are encouraged to adopt and to implement in order to improve the carriers of researchers in Europe, and thus make Europe a more attractive place to carry out research, development and innovation activities.

Denis Ettighoffer, President & Founder, Eurotechnopolis Institute, France, and Delegate of the Development du Pole R&D Groupe IGS (Institut de Gestion Social) & **Yves Enregle**, Co-founder & Co-CEO, Groupe IGS, France:

Innovation in the Century of Networks. Networks of Innovation or Creative Networks?

The scarcity of ideas is a sign of decline, deficit in social vitality, and loss of economic fertility. A recent survey concluded that nine senior managers out of ten consider innovation as a critical factor for competitiveness. These innovations are considered to come from specialized poles, such as internal R&D departments or external sources. At the same time the own employees are de facto prevented from communicating and producing innovative ideas. Although, these ideas and intellectual contributions from the own staff can make the difference in the competitiveness of the company. More than one company out of two is unconscious of the value of its intangible assets and does not know how to take advantage of it.

In 2002, Thomson made a 429 million euros profit resulting from its branch "patents and licenses" representing 90 % of the revenues. 20% of IBM's net profit results from the sale of licenses for 1.54 billion U.S. dollars. The number of registered patents in the U.S. increased by more than 84 % during the last 10 years. In 2004, half of the companies which get more than 25% of their annual revenue from new products are those that formalize innovation by increasing their intellectual assets. Less than 15% of the companies make an effort to promote internal innovative processes and behaviour.

Exploitation of knowledge establishes a new system of wealth creation: The added value settles down in networks to make immaterial capital profitable and creates a marketplace of ideas. Our companies move from a logic of capital management to a logic of immaterial capital management.

In electronic networks, only ideas and innovations circulate as fast as the financial exchanges! Today, networks offer the advantage to capture the intellectual elite, the knowledge of cleaver people which are geographically and culturally scattered. The network of cooperative organisations substitutes hierarchical lines. Researchers foresee that companies will create structures on the Web which will make them competing with R&D centres, and other knowledge and ideas providers. Moreover, networks help scanning the

scientific and technological trends. The pollination of ideas and knowledge through networks becomes as important as productivity gains.

A survey on the 100 most important companies in the world (80% of these companies have a central R&D department) shows that only a 55% of the innovation results from the company itself. Companies having worked on innovation together with their customers demonstrate a decreasing rate of failure: only 50%-70% of new product introductions failed (against 80% some years ago). The professional community is an echo chamber for the "low noises" of the market. It has to incorporate the customers: they are the origin of most new ideas. It has to imply the staff: most progress was brought by them.

The use of networks has to contribute to the elaboration of the processes of ideation, as a key of a consolidated added value.

Eikazu Niwano, Senior Researcher Engineer, Service Integration Laboratories, NTT Corporation, Japan, explained an innovative approach

Beyond a Card Community - PKI based Multiple Application Smart Card Management System for Global Interoperability

A smart card is a kind of secure computer with CPU and memory. The demand for smart cards is growing rapidly, and they are no longer just used as banking or credit card but also for transportation, national ID cards and many more. The purpose of a smart card management system is to upload multiple smart card applications onto the smart card.

The development of smart card management systems has passed through several phases: In the first phase, the service provider was the card issuer and issued the smart card with one single application. In this case, the service provider had to purchase smart cards and also to manage these cards.

In the second phase of smart card management, service provision and card issuing have been separated. However, the card issuer had to upload the service provider's applications onto the card.

In the next phase, service provider and card issuer could be completely different, and the service provider could download smart card applications from the Internet – but exclusively on the card of one specific card issuer, which means that there is a kind of "one card community".

Open but secure and interoperable systems for multiple card communities are required.

To solve this problem, a PKI based technology is employed. The basic idea is to put a registration and a certification authority, authorizing both card issuer and service provider, on the top of both. Thus, service providers can collaborate with multiple card issuers and card communities consists of multiple service providers and multiple cards (card holders).

In this secure and interoperable system for multiple card communities, card holders can download smart card applications beyond the card community. The card holder can load applications whenever he/she moves to another card community. For instance, a citizen living in Brussels and having a citizen card can load smart card applications during his/her business trip to Tokyo in Japan. Communities could be cities, schools, or telecom networks, or even corporate communities.

The multi-application smart card market, especially national eID and citizen eID cards with multi-applications are growing rapidly. However, they are still hard to be used beyond a special card community. By applying PKI, federated card communities such as cities, schools, clinics, realizing service and locative conversion, can be constructed globally. International fora already started to discuss this framework. Global collaboration among different regions is very important, especially with regards to interoperability.

More global collaboration in R&D is required in order to identify real needs and solutions for the combination of PKI-based smart card management systems and identity management as well as other "killer" applications and federated communities.

Senator Pierre Laffitte, President of the Sophia Antipolis Foundation, France, thanked the participants of the Global Forum 2005 for having been in Brussels and encouraged everyone to participate in the preparatory discussions of the Global Forum 2006, which will start soon.

Before closing the Global Forum 2005, **Sylviane Toporkoff**, President of the Global Forum & Associate Partner of ITEMS International, France, warmly thanked the participants, chairpersons and moderators for their excellent work. Special thank was given to the Global Forum's sponsors and in particular the Belgium government for having provided these great facilities.

CONTACT

The conference programme, presentations and slides, speakers' profiles, participant's testimonials, and related information on the Global Forum 2005 are made available on the website of ITEMS International www.items-int.com.

Please do not hesitate to contact ITEMS International if you need any help to get in touch with the participants of the Global Forum 2005.

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Your feedback is important to us and we would be pleased to receive your comments on this year's Global Forum as well as suggestions for the Global Forum 2006.

The team of ITEMS International will be pleased to answer any question and to provide you with more information about the upcoming Global Forum 2006. Please make sure to check our website regularly for valuable updates.

ACRONYMS & ABBREVIATIONS

ARPU	Average Revenue per User
BITP	Belgium Institute for Post and Telecommunication
CapEx	Capital Expenditures
CATV	Cable TV
ccTLD	Country-Code Top-Level Domain
CEN	European Committee for Standardization,
CNES	Centre National d'Etudes Spatiales
CPU	Central Processing Unit
DG	Directorate General
DG SANCO	Directorate General for Health and Consumer Affairs
DNS	Domain Name System
DRM	Digital Rights Management
DSL	Digital Subscriber Line
DVB-H	Digital Video Broadcasting - Handheld
DVB-RCS	Digital Video Broadcasting Return Channel via Satellite
DVB-S2	Digital Video Broadcasting - Satellite 2
DVD	Digital Versatile Disc
DVR	Digital Video Recorder
EC	European Commission
ECG	Electrocardiogram
ENUM	Electronic Numbering
EPR	Electronic Personal Records
ETSI	European Telecommunications Standards Institute
EU	European Union
EvDO	Evolution Data Only
FCC	Federal Communications Commission
FET	Future and Emerging Technologies
FiOS	Fibre Optic Based Service
FP6	6th Framework Programme of the EC
FRAND	Fair, Reasonable, and Non-Discriminatory
FTP	File Transfer Protocol
FTTH	Fibre to the Home
GDP	Gross Domestic Product
GSM	Global System for Mobile Communications
ICT	Information and Communication Technologies
IDNs	Internationalised Domain Names
iDTV	Interactive Digital Television
IMS	IP Multimedia Subsystem
IAP	Internet Access Provider
IPR	Intellectual Property Rights
IP	Internet Protocol
IPTV	Internet Protocol Television
IPv6	Internet Protocol version 6
ISP	Internet Service Provider
IT	Information Technologies
ITU	International Telecommunication Union
LAN	Local Area Network
LCD	Liquid Crystal Display

MIC	Japanese Ministry of Internal Affairs and Communications
MIT	Massachusetts Institute of Technology
MP3	Moving Picture Experts Group (MPEG) Audio Layer 3
MPEG 4	Moving Picture Experts Group 4
MSN	Microsoft Service Network
NDP	Net Domestic Product
NESSI	Networked European Software and Services Initiative
NGN	Next Generation Network
NHS	National Health Service
OECD	Organisation for Economic Co-operation and Development
ONS	Object Naming Service
OSS	Open Source Software
Q&A	Questions & Answers
PC	Personal Computer
PDA	Personal Digital Assistant
PIN	Personal Identification Number
PKI	Public Key Infrastructure
PLC	Powerline Communication
PPP	Public Private Partnership
PSTN	Public Switched Telephone Network
RAM	Random Access Memory
RDT	Research and Technological Development Activities
R&D	Research and Development
RFID	Radio Frequency Identification
PVR	Personal Video Recorder
S-DMB	Digital Multimedia Broadcasting via Satellite
SIP	Session Initiated Protocol
SME	Small and Medium Sized Enterprise
SMP	Significant Market Power
T-DAB	Terrestrial Digital Audio Broadcasting
TLD	Top Level Domain
TV	Television
UN	United Nations
US	United States
VGA	Video Graphics Array
VoIP	Voice over IP
VR	Virtual Reality
WAN	Wide Area Network
WAI	Web Accessibility Initiative
WEEE	Waste Electrical and Electronic Equipment
WiMax	Worldwide Interoperability for Microwave Access
WiFi	Wireless Fidelity
W-LAN	Wireless Local Area Networks
WSIS	World Summit on the Information Society
W3C	World Wide Web Consortium
XML	Extensible Markup Language
3D	3 dimensional
3G	3rd Generation
3GPP	3rd Generation Partnership Project
3GPP2	3rd Generation Partnership Project 2

ANNEX 1: PRESS REVIEW

By Huw Jones Mon Nov 7, 6:02 PM ET REUTERS AT THE GLOBAL FORUM 2005 Palais D'Egmont

BRUSSELS (Reuters) -

European Commission hopes a meeting next week will come up with an agreement to allow governments more direct influence over the domain name system that guides traffic around the Internet.

A U.N. report has put forward a more multi-national approach to running the Internet which serves a billion users worldwide, saying this would be more democratic and transparent, a view the 25-nation

European Union shares.
Day-to-day handling of domain names is done by the Internet Corporation for Assigned Names and Numbers (**ICANN**), a California-based non-profit organisation created by the U.S.

Commerce Department.

ICANN's governments committee has only an advisory role.

A final round of diplomatic talks on the report is due on Saturday ahead of the World Summit on the Information Society in Tunis on November 16-18.

Internet governance is seen by many outside the United States as being too heavily skewed in favour of America, though David Gross, the U.S. State Department ambassador who is heading the U.S. delegation in Tunis, told Reuters last month that it was the private sector that leads in running the Internet.

The Commission said it has made much progress with its aims.

"We are entering into the final phase of negotiations with quite an optimistic point of view," Jean-Francois Soupizet, deputy head of international relations at the Commission said.

"We have already the elements for an agreement, notably a workable definition of Internet governance," Soupizet told a forum on convergence in the media.

Software and Internet firms fear that wide government involvement will mean more regulation and taxes.

Soupizet said the EU was against setting up a new U.N. mechanism to intervene in developing the Internet infrastructure, which the EU says should be left to current operators on a day-to-day basis.

"Only when this is not working properly, then we could consider intervention. This point is now widely shared by all parties at WSIS ... and will be reflected in the Tunis agenda for action," Soupizet said.

Some 80 to 90 percent of plan of action to be signed off in Tunis has already been agreed, he added.

The U.N. report has raised hackles among U.S. politicians. "We cannot allow the U.N. to control the Internet," Republican senator Norm Coleman has said.

Other politicians have called for the U.S. role in Internet governance to be maintained, with the Commerce Department still overseeing ICANN.

Theresa Swinehart, a general manager at ICANN, told the conference that ICANN did not "run or control or govern the Internet, but coordinates."

Wider representation of countries and other interested parties is already emerging but was not perfect yet, she said. "The WSIS process needs to make sure it does not put at risk the 35 years to develop the Internet to date."

Bernard Benhamou, director of Internet governance in the French Prime Minister's office, said more democratic governance of the Internet was needed as its power to intrude into people's lives increases, and the need to tackle civil liberties issues such as identity theft and spam.