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## To order the Forum EKS proceedings

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Information Technology (or Information and Communication Technology) cannot be seen as a separate entity. Its application should support human development and this application has to be engineered. What has to be taken into account when engineering the Knowledge Society? The Conference will address: Lifelong Learning and education, e-inclusion, ethics and social impact, engineering profession, developing e-society, economy and e-Society.

What actions have to be undertaken to realize a human centered Knowledge Society? The presentations in this World Summit parallel event will reflect the active stance towards human development supported by ICT expressed in its title. A Round Table session will provide concrete proposals for action.

**Forum International Programme Committee**

- Jean-Claude Badoux (WFEO, SATW)
- Leszek J. Bialy (WFEO)
- Pierre-André Bobillier (IFIP, SFI, SI, SISR)
- Fulvio Caccia (SATW)
- Louis-Joseph Fleury (SATW)
- Raymond Morel (IFIP, SATW, SFI, SI, SISR)
- Andreas Schweizer (SATW)
- Tom van Weert (IFIP, SATW)

Website of the Forum «Engineering the Knowledge Society» [http://ict.satw.ch](http://ict.satw.ch)
Forum EKS

« Engineering the Knowledge Society »
« Information technology supporting human development »

Program

Thursday December 11th afternoon (first part)

14h00 Room O – Session 1

Opening Session
PIERRE-ANDRE BOBILLIER (IFIP) (Moderator)

10’ Welcome address
KAMEL AYADI (President-elect of WFEO)

10’ Welcome address
KLAUS BRUNNSTEIN (President IFIP)

10’ Welcome address
FULVIO CACCIA (Vice-President SATW)
Thursday December 11th afternoon (second part)

Room O (Session 2)

**Life long learning and education**
*Chairman: JEAN MICHEL (WFEO)*

A comprehensive Synthesis on Research into Information Technology in Education
*Niki Davis – UK-USA*

Debate

Lifelong Learning in the Knowledge Society
*Tom J. Van Weert – Netherlands*

Debate

Collective intelligence and Capacity building in the Information Society
*Bernard Cornu – France*

Debate

Room N (Session 3)

**e-inclusion**
*Chairman: Raymond Morel (SATW)*

e-Tampere – Social Engineering of the Knowledge Society
*Jarmo Viteli – Finland*

Debate

The e-Society Repository: An Open Tool to Build a Human Information Society
*Jean-Marie Leclerc – Switzerland*

Debate

Preserving Information – Orality, Writing and Memory in a Human Society
*André Hurst – Switzerland*

Debate

Break

Room O (Session 4)

**Ethics and Social Impact**
*Chairman: Tom J. Van Weert*

Towards an indigenous Vision for the Information Society
*Kenneth Deer – Canada*

Debate

Vulnerabilities of Information Technologies and their impact on the Information Society
*Klaus Brunnstein – Germany*

Debate

Professional Deontology, self regulation and ethics in the Information Society
*Jacques Berleur – Belgium*

Debate

Room N (Session 5)

**Engineering Profession**
*Chairman: Mikko Ruohonen*

Development in the Field Software Engineering Professionalism, standards and Best Practice
*J. Barrie Thomson – United Kingdom*

Debate

The Role of Professional Society in the Information Age
*Willis King – USA*

Debate

Managing ICT Skills Profiles
*Anneke E.N. Hacquebard – Netherlands*

Debate

End at 18h00

Special event
Friday December 12th morning (first part)

9h00

Room O – (Session 6)

Round Table

Moderators: KAMEL AYADI (WFEO) & KLAUS BRUNNSTEIN (IFIP)

5’

Introduction

by the Moderators

5’

Project 1: The « four pillars » and e-Education for all

BERNARD CORNU – France

5’

Project 2: e-solidarity, a means of fighting against FGM (Female Genital Mutilation)

ANNIE CORSINI-KARAGOUNI – Switzerland

5’

Project 3: Towards an Indigenous Approach on Bridging the Digital Divide –

A Roadmap to Tunis and beyond

KENNETH DEER – Canada

5’

Project 4: « e-well »: ICT-enabled integrated, multisectorial development of rural areas in the least developed countries

ANTOINE GEISSBUHLER, OUSMANE LY – Switzerland, Mali

5’

Project 5: CyberTroc – A Barter System for the Information Society

COLIN HARRISON – UK-Switzerland

5’

Project 6: Cyber-Inclusion through activity

JEAN-MARIE LECLERC – Switzerland

5’

Project 7: Exploring dilemmas – ethics, social values and e-society

DERYN WATSON – United Kingdom

5’

Project 8: Network-blended education of tomorrow

TOM J. VAN WEERT – Netherlands

40’

Debate

Break at 10h30
**Room O (Session 7)***

**Developing e-Society**  
*Chairman: Bernard Cornu*

**Enabling ICT Adoption in Developing Knowledge Societies**  
*Collin Harrison – UK-Switzerland*

Debate

**The Impact of Future Technology on Society**  
*John Gage – USA*

Debate

« Engineering the Knowledge Society »  
« Information technology supporting human development »  
*René Longet – Switzerland*

Debate

The « e-well »: ICT-enabled integrated, multisectorial development of rural areas in the least developed countries  
*Antoine Geissbühler – Switzerland*

Debate

**Room N (Session 8)***

**Economy and e-Society**  
*Chairman: Fulvio Caccia (SATW)*

**Networked Economy – effects on organisational development and the role of education**  
*Mikko J. Ruohonen – Finland*

Debate

**Understanding and Interpreting the Drivers of the Knowledge Economy**  
*Mohan R. Gurubatham – Malaysia*

Debate

Beyond Technology:  
Man as end or the End of Man!  
*André-Yves Portnoff – France*

Debate

**Social Engineering of the Internet in Developing Areas**  
*Wesley Shrum – USA*

Debate

End

**Friday December 12th morning (second part)**

11h00
The World Summit on the Information Society will gather together number of individuals, representatives of different stakeholders and governmental delegations. This occasion will allow to address many important issues related to the present and future of the Information Society.

The forum « Engineering the Knowledge Society » (EKS) as a common effort of collaboration between WFEO and IFIP, SATW and SVI FSI seeks to answer the questions related to future visions of the Information Society from an engineering point of view.

We hope that EKS as a Forum will consolidate the action oriented events organised within the framework of the Summit on the Information Society. WFEO believes that the WSIS is a unique opportunity to highlight the role of the engineering and scientific community in building an inclusive and sustainable information society.

The WFEO has been active since the very beginning of the WSIS preparatory process. WFEO organised on October 2003 the World Engineering Congress on the Digital Divide in Tunis. This event that was organised within the framework of the WSIS witnessed the participation of more than 160 scientific and technological organisations.

WFEO is committed to contributing to the WSIS through a continuing process. The EKS is an important step of this process. We are pleased to have the opportunity to work in partnership with IFIP, SATW, SVI FSI and other partners that significantly contribute to this forum.

Kamel Ayadi
WFEO President – elect
To: The participants of the Forum EKS during WSIS in Geneva

Within United Nations « World Summit on the Information Society » (WSIS-2003), the Forum « Engineering the Knowledge Society » (EKS) addresses major and important issues related to technical and educational aspects of the Knowledge Society.

Within this forum, renown experts address essential technical aspects such as: requirements for engineering of Knowledge Systems and content, as well as the vulnerability of related systems. Concerning applications, the concept of a networked economy and an example of telemedicine (in Mali) are presented, and aspects of sustainable development are discussed, thus linking the Rio to the Geneva project. More general, very basic aspects of Knowledge-based systems are addressed: roles and the preservation of information, education and life-long learning, the development of ICT skills and professionalism, social engineering, as well as questions related to Ethics in the Information Society.

With such details, forum EKS builds an essential basis for understanding the relation between the concept of « The Information Society » – as being the major heading of the United Nation project WSIS 2003/2005 – and the « Knowledge Society » as discussed in areas related to education as well as in recent UNESCO General Conference 2003 with special reference to the need for development of Knowledge Societies supporting information access for all as well as the preservation of the digital heritage.

For IFIP, the International Federation for Information Processing, it is a great honor and privilege to support Forum EKS and to help in building an understanding about basic requirements under which « The Information and Knowledge Society » may best be developed to support the goals of mankind in best possible ways. Indeed, this forum is an ideal ground where IFIP may realize several of its missions:

– to help promoting international cooperation,
– to pay special attention to the needs of developing countries,
– to provide a vehicle for work on the international aspects of IT development and application, and
– to contribute to the formulation of the education and training needed by IT practitioners, users and the public at large.

We sincerely hope that forum EKS succeeds in becoming a major contribution on the way of United Nations to shape « Information and Knowledge Society » with a broadly acceptable human face, to the benefit of mankind. We wish Forum EKS all success.

Prof. Dr. Klaus Brunnstein, President of IFIP

IFIP Secretariat: Hofstrasse 3, A-2361 Laxenburg, Austria; Tel. +43 2236 73616, Fax: +43 2236 736169; e-mail: ifip@ifip.or.at
URL: http://www.ifip.or.at/ DVR: 0825590
To the participants of the Forum EKS
During the WSIS in Geneva

Zurich, November 8, 2003

In the framework of WSIS, the Swiss Academy of Engineering Sciences (SATW) is delighted to support you in your efforts to anticipate impacts on the new information and communication technologies (ICT) in the Information Society.

Due to the obstinacy, dynamism and enthusiasm of the SATW’s ICT Committee, our Academy was successfully putting together an impressive team of important and strategic partners (WFEO, IFIP, SUN, SWITCH, Hasler Stiftung, SVI-FSI, ICT Switzerland, SI and SISR), and was also able to prepare, in cooperation with them, a Forum EKS (Engineering the Knowledge Society, ICT supporting human developments) as a Summit Event. The Forum EKS’s objectives converge completely with those of WSIS. 20 world-wide experts will exchange with you their last reflections and share their knowledge. They will create stimulations and solicitations to empower and implement the WSIS’s declaration and action plan immediately after the Geneva Summit.

The Forum EKS together with the other Summit events is without any doubt a real starting point for a decade of fundamental efforts to transform the actual Information Society into a Human Knowledge Society. The presentations at the Round Table on Friday, December 12, will coincide with the beginning of the « Escalade » (symbolic festival in Geneva) – a perfect omen for your endeavours.

The participants will be provided with the abstracts including the four declarations (Montreal, Vilnius, Carthage and Vienna), which indicate and support the universality of your discussions.

The proceedings, published by the first semester 2004 will encourage you to continue in your efforts.

It’s now your turn, dear participants, to contribute with your competences and your enthusiasm. The SATW and its partners will do their best to encourage your actions and proposals.

Enjoy the Forum EKS! Good luck and Happy « Escalade ».

Best regards

Willi ROOS
SATW Chairman
People for Telecommunications for People

Considering that:

• All the information of an Information Society can only be brought to use if **information is communicated**:
  – be it communicated between machines,
  – be it (more important) as the content of interaction between human beings and machines,
  – be it (most important) when information is exchanged between human beings;
• Telecommunication is both a high-technology affair as well as one of the major vehicles for human interaction over more than the acoustic range of the individual;
• Human interaction overcoming distances is a key element for economic, social and cultural deployment and development of societies;
• Mastering telecommunications **multiplies the possibilities of evolution** of mankind;

considering also that:

• Mastering telecommunications **requires substantial knowledge** about its technologies, processes, maintenance and for its further development,
• Further development of telecommunications requires an active participation in research and development projects,
• Technology can be imported, but the know-how to put it to use must be learned, trained and developed,

It becomes obvious, that:

It takes **people** educated and trained in **telecommunications** to bring telecommunications within reach of more **people**.

With this conclusion in mind, more than 50 years ago Mr. Gustav Hasler of Bern, Switzerland, founded the Hasler Foundation for the support of telecommunication research and education in Switzerland and by his will had most of his wealth be given to the foundation.

We welcome the Forum Engineering the Knowledge Society within the context of the World Summit for the Information Society 2003 in Geneva and are pleased to help to **divulge the proceedings of this forum**.

Hasler Foundation, Dr. Placidus A. Jaeger, managing director
Bern, November 2003
Welcome at WSIS

Dear participant,

It is a great pleasure to welcome you to the World Summit on the Information Society in Geneva, from December 10-12, 2003.

We are happy to contribute to this unique opportunity and would like to strengthen our commitment to the Information Society and to open standards. With the unique vision «The Network Is The Computer™» – Sun Microsystems, Inc., has become the leading provider of high-quality hardware, software products and first-level services. Long before the market recognized and understood the significance of network computing, Sun was developing pioneering network technologies. Today, approximately 30'000 employees are working for our customers worldwide in more than 100 countries.

In this Internet age, forward thinking solutions are generated based on open standards, and the term «Anyone, Anywhere, Anytime, on Any Device» is where Sun’s solutions are precisely targeted. These include competent architecture consulting, our platform-independent Java™ based technologies, robust UNIX® operating environments, ingenious software solutions, highly available server systems, intelligent storage solutions and high-performance workstations.

Since its inception in 1982 Sun Microsystems has always been a leader for open standards and a pioneer for information availability for anybody, anywhere and at anytime. In the fast growing information society of today it is one of the key factors in developing open solutions.

I would like to wish you an interesting, constructive and fruitful conference. Enjoy the three days in Geneva!

Yours sincerely,

Sun Microsystems (Switzerland) AG

Andreas Knoepfli
Managing Director

Jean-Paul Tomasi
Sales Manager

To whom it may concern

Volketswil, November 17, 2003 / ntn
Towards a Virtual Community within the Knowledge Society

More than fifteen years ago, in 1987, the SWITCH foundation was established by the Swiss Confederation and eight university cantons to promote modern methods of data transmission and to set up and run an academic and research network in Switzerland. In the earlier days, SWITCH planned, built and actually engineered the Internet in this country. This also provided the technological basis for operating the registration office for domain names ending in .ch and .li.

Today, SWITCH plays a vital role in the Information Society of Switzerland, ensuring development, security and stability of the Internet.

SWITCH supports the vision of e-Academia, the Internet community of students, researchers and lecturers, and the «digital exchange» between students in Switzerland and those elsewhere in the world. SWITCH already offers the Swiss Universities Internet-based services suitably tailored to the needs of the virtual community. The optical backbone SWITCHlambda supplies the technical prerequisites for academia in Switzerland to participate in the information society of the future.

SWITCH is committed to take academia in Switzerland one step further – into the Virtual Community of tomorrow. We are proud to support the EKS forum at the World Summit on the Information Society in Geneva and would like to extend our best wishes for a great success.

SWITCH

Thomas Brunner
Managing Director

Zurich, 11 November 2003
Madam, Sir:

Since decades Switzerland is one of the leading countries in computer applications. However, also our society has still a long way to go from simply using new equipment and technical opportunities toward a Knowledge Society. Structural and – even more important – human obstacles have to be overcome.

The World Summit on Information Society provides the frame for the Forum EKS. This forum is an important step forward to better understanding the problems of the Knowledge Society and methods to become a responsible member in it.

SVI/FSI is proud to be one of the professional societies who made EKS possible.

 Truly yours

C.A. Zehnder
President SVI/FSI
To the participants of the Forum EKS
during WSIS in Geneva

Berne, October 31, 2003

Forum EKS: This subject concerns us all!

Dear Madam, Dear Sir,

We are very pleased to participate in the success of the forum « Engineering the Knowledge Society ».

It is a great honour to be involved in an event that does not see the information and communication technology as a separate entity, but clearly sees the need to adopt it for further human development. Whether this would be in education, in its application or the improvement of the needed skills. Please be assured of our total sympathy for the topics you prepared for this Forum.

Information society is a subject that concerns us all. ICTsuisse, too. We are a co-operation project of the most important Swiss ICT associations and organisations, and one of our aims is to improve information society.

We wish all of you and the Forum itself great success!

Yours truly,

Maya Lalive d’Epinay
President ICTsuisse
Zurich, 6 November 2003

To the participants of the Forum EKS during WSIS in Geneva

Forum « Engineering the Knowledge Society »

The Swiss Informatics Society (SI, Swiss Member of Council of European Professional Informatics Societies, (CEPIS) is proud to be one of the professional societies who made the Forum « Engineering the Knowledge Society » (EKS) possible.

As computer science professionals we recognise the growing importance of information technologies in affecting the quality of almost every aspect of our life and commit ourselves to the highest ethical and professional conduct. We accept therefore our responsibility in making engineering decisions consistent with the safety, health and welfare of the public and disclose promptly factors that might endanger the public or the environment. Engineering the Knowledge Society taking in account the principles of sustainability has to seek answers to the challenge of social justice and equality of opportunity in using knowledge and information, and advocate the preservation and promotion of cultural and media diversity as a condition for individual and democratic development and the promotion of peace.

We estimate the Forum EKS within the frame of the World Summit on the information society as an important step to defining human centered engineering principles for the Knowledge Society.

Truly yours

K. Dittrich
President Swiss Informatics Society
The president of SISR,
Mr. Francis BAUD

SISR
5, Rue Liotard
1202 Geneva
Switzerland

To the participants of the Forum EKS during WSIS in Geneva

Geneva, 10 November 2003

Forum « Engineering the Knowledge Society »
In the name of all computer science professionals of Swiss French speaking region, the Swiss Informatics Society French Section (SISR) welcomes the Forum « Engineering the Knowledge Society » (EKS).

We are proud to contribute and to promote this first time event, as a major event helping to develop information technologies and ethics for everyone.

The modern world is undergoing a fundamental transformation as the industrial society that marked the 20th century rapidly gives way to the information society of the 21st century. We are indeed in the midst of a revolution, perhaps the greatest that humanity has ever experienced. To benefit the world community, the successful and continued growth of this new dynamic requires global discussion.

The goal of EKS forum is to address the broad range of themes concerning the Information Society and adopt a Declaration of Principles and Plan of Action, addressing the whole range of issues related to the Information Society.

We hope that the conclusion of the Geneva phase of WSIS will be positive and generate a better communication between countries for Information Technology.

As delegate of computer science engineers for French part of Switzerland, SISR wishes plenty of success to EKS forum and to the World Summit on Information Society.

Truly yours,

F. Baud
President of SISR
francis.baud@ntconsulting.ch
Abstract

Views on the educational and social potential of new technologies are peppered with cyber-utopias and cyber-dystopias, but research evidence is hard to pin down. My contribution will pull multiple perspectives from a collection of reviews of research from around the world to synthesize a view for today’s information society. Threads will include the ways in which information technology appears to enhance traditional education; and new modes of ‘distance’ education made possible with communication technologies; and the preparation of teachers to use information technology effectively. These will be woven across the phases of education and extended into education that reaches into the community to serve social and economic purposes. Perspectives will be interpreted using a variety of educational theories, curricula and change frameworks. We will see enormous challenges of research in the complex and rapidly changing contexts of education where new generations of information technology continue to permeate and influence new generations of learners and those who support them. Old issues also reemerge, including that of social justice and equity. The contribution will end with a call to increase systematic and purposeful research and its dissemination, including the identification of pressing questions for our information society in technology-rich and technology-poor communities of our world.

Curriculum Vitae

Niki Davis is Director of Iowa State University Center of Technology in Learning where she leads the graduate program in Curriculum and Instructional Technology that is well known for its emphasis in teacher education. She also holds a Chair in ICT in Education at the Institute of Education, University of London, where she is a member of the London Knowledge Lab. Before this she held a chair in Educational Telematics in the University of Exeter in the UK where she set up the Telematics Centre.

Niki has researched information technologies extensively, particularly in teacher education and in flexible and distance learning. She is currently the President of the international Society of Information Technology in Teacher Education and Chair of the International Federation of Information Processing Technical Committee 3 on Education’s Working Group on Research. She is also an invited expert of UNESCO on ICT teacher education.
Abstract
The growing importance of Lifelong Learning must be seen against the background of profound changes, reflected in all aspects of our living environment. These changes concern the global environment, but also our personal, economic, social, cultural and political environments. Knowledge creation drives innovation in the emerging Knowledge Society. Working and learning come together; just as living and learning. This Knowledge Society is an «enterprising» society in which own initiative and personal fulfillment are important driving forces. ICT is integrated in all aspects of this Knowledge society.

Lifelong Learning is a «must» in the real-life context of the Knowledge Society and covers «all purposeful learning from the cradle to the grave» of very diverse groups of learners in professional, community or individual context. The Lifelong Learning environment has specific characteristics and is strongly supported by Information and Communication Technology.

If Higher Education wants to play a significant role in Lifelong Learning its educational institutions will have to change. Lifelong Learning is not going to an educational institution all your life. Educational institutions will have to open up to the knowledge society where it is happening.

Curriculum Vitae
Tom J. van Weert holds the chair «ICT and Higher Education» of the Hogeschool van Utrecht, University of Professional Education and Applied Science, The Netherlands. His main research interest is in Lifelong Learning of professionals and its implementation in Higher Education. Tom has been managing director of Cetis, Expert Centre for ICT-based Innovations in Higher Education of the same university. Before this he was director of the School of Informatics (Computing Science) of the Faculty of Mathematics and Informatics of the University of Nijmegen, The Netherlands.

Tom has studied applied mathematics and computing science starting his career in teacher education. He has been chair of the International Federation for Information Processing (IFIP) Working Groups on Secondary Education and Higher Education. Currently he is vice-chair of IFIP Technical Committee 3 on Education with special responsibility for TC3 Working Groups. He also is invited expert of the Swiss Academy of Technical Sciences (SATW).
Collective intelligence and capacity building in a networked Society

Prof. Bernard CORNU
Director of La Villa Media
La Villa Media, 22 avenue Doyen Louis Weil,
F-38000 GRENOBLE, France
e-mail : bernard.cornu@lavillamedia.org
http://www.lavillamedia.org

Abstract
The Information Society has new and specific characteristics. Information is digitalized, and therefore interactive, processable, transportable, accessible in new ways. Information is changing more quickly and new information appears. The Information Society is a networked society, and it is a society where collective capacities are more and more needed, in addition to individual ones.

Capacity building in the Information Society is not only an extension of usual capacity building. New competencies, new capacities appear and become necessary. They are not only technological competencies, but more profoundly competencies linked with new concepts; they are not only competencies linked to new knowledge, but competencies linked to new accesses to knowledge.

In my contribution I will analyse three aspects of capacity building in the Information Society:
− Accessing and processing knowledge in a networked world;
− Collective intelligence and collective capacity;
− A new citizenship in the Information Society.
We will see that new capacities cannot be acquired through old ways of education; capacity building needs new contents and methods.

Curriculum Vitae
Prof. Bernard CORNU is the director of La Villa Media (the European Residence for Educational Multimedia), Grenoble, France, and a Professor at the IUFM of Grenoble, France (University Institute for Teacher Education).

He is a Professor (applied Mathematics) at IUFM (Institut Universitaire de Formation des Maîtres – University Institute for Teacher Education) of Grenoble, France. For ten years (1990-2000) he has been the Director of the IUFM of Grenoble. Until 1994, Bernard Cornu was the Chairman of the 29 IUFMs in France. He was (2000-2002) an Advisor for Teacher Education at the French Ministry of Education.

Prof. Bernard Cornu is a mathematician at Grenoble University. He studied the influence of computers and informatics on mathematics and its teaching, and also worked in didactics of mathematics. He has been the Director of the Institute of Research on Mathematics Teaching (IREM) of Grenoble, and then the Head at the in-service teacher training office for the Academy of Grenoble. His scientific specialty is now the Integration of Information and Communication Technologies into Education, and its influence on the Teaching Profession and on Educational Policies.

As a member of IFIP (International Federation for Information Processing), he has been (1995-2000) the chairman of Working Group 3.1 (« Informatics Education at the Secondary Education Level »), and he is now the secretary of the IFIP TC3 (Technical Committee for Education).

Prof. Bernard Cornu is a Member of the French National Commission for UNESCO, and the vice-chair of the Education Committee. He is also the Vice-Chair of the Governing Board of IITE, the UNESCO Institute for Information Technologies in education, located in Moscow. He has been (1998-2002) the President of the French Commission for Mathematics Education.
Abstract
The objective of the eTampere knowledge society programme is to make Tampere the spearhead city of knowledge society development by strengthening the knowledge base, by creating new business and by developing new public online services that ease the daily life of all citizens. eTampere has recognized that the technology-oriented stage is over. Citizens want information and applications that make their lives simpler and better. Here and now, not just in the future. eTampere promotes cooperation between enterprise, research, education and the public sector so that the information society will become a natural part of everyday life for all citizens, without discrimination.

The programme is implemented by six independent subprogrammes, which cooperate with each other and various other players. These subprogrammes represent the technical, economical, cultural and social dimensions of information society. They are Research & Evaluation Laboratory (RELab), Technology engine programmes, eAccelerator, eBusiness Research Centre (eBRC), Information Society Institute (ISI) and Infocity. Each of them are runned by the City of Tampere, University of Tampere, Tampere University of Technology, Tampere Technology Centre Ltd or Technical Research Centre of Finland.

The general achievements consist of projects, international conferences, educational programmes, new companies, venture capital for accelerated companies, new public on-line services but also new models of cooperation, new networks, etc. The programme advances according to plan (project portfolio 35,6 million euros, realization rate 114 % by 30.6.2003). The proportion of finance from enterprises and international sources has increased in total funding. Ca. 450 researchers and more than 150 enterprises participate in over 150 eTampere projects. 11 of them are international projects.

Areas of emphasis for the near future are active, participating and influential citizenship (increasing opportunities for influence and participation..), developing expertise and business development (eBusiness service..), development of service innovations (support for and development of service processes with information and communication technologies..), more in-depth international cooperation.

The purpose in my presentation is to describe the challenge of socially led knowledge society engineering. How engineers and social sciences can work together with city administration, business people and academics? How to reach common understanding of the needs of the ordinary citizens and how to serve them with new services and processes? This eTampere approach has now been implementing three years and both success stories as well as biggest failures will be described and analysed.

Curriculum Vitae
Jarmo Viteli has been professor since 1999 at the Hypermedialaboratory, University of Tampere. Since 2001 he has been director of eTampere-programme. Prof. Viteli is actively involved in many academic activities in the area of information society and new forms knowledge construction and education.
Abstract
Through the development of technologies of information and communication, administrations are naturally brought about making two important changes as far as management is concerned: not only to deal with information as a new resource but also to reconsider the place of citizens as clients.
Contrary to private sector, where fast decisions are easily taken in order to eliminate non cost-effective products and to rationalize on profits bases, inclusion and a comprehensive approach of benefits are nowadays to be permanently taken into account by administrations.
In order to face this current complex issue, the State of Geneva has set up an e-society repository, containing 15 dimensions, from technological to ethical factors, through interoperability and cyber-inclusion. Cyber-inclusion is achieved by the combination of three indicators: integration, appropriation of technologies and finally, emergence of new potentialities. These indicators will be illustrated by three practical cases.
The first case to be presented is the integration of a birth-blind woman in a regular activity. Thanks to a computer expert education, a young blind web-master integrated our team so as to update Internet websites, especially dedicated to a blind public. Indeed, the benefit is double. Not only definitely opened to everyone, the field of technologies also benefits from a better ergonomic due to her particular contribution notably with respect to access to email account and also to analysis of textual propositions.
As far as the second case is concerned, appropriation of technologies allows the extension of activities, especially when those are obstructed by handicap. Indeed, after an education in computer sciences, a father of an autistic daughter managed to install an interface permitting her to finally express herself at the age of 43 years old, for the very first time and for the indescribable pride and emotion of the whole family.
The last case to be introduced is the forum of teenagers struggling with society. As a matter of fact, this forum is the emergence of new potentialities. Indeed the teenagers appropriated themselves this media in order to express their image of society, restoring thus the communication and the dialogue between them and the qualified administration receiving their messages.
In conclusion, these concrete cases demonstrate how developments on technological level may allow the creation of new potential as well as social integration, functional appropriation and local improvements.
Naturally, even though those cases remain isolated, they express nevertheless the importance of positioning individuals in the centre of any system of analysis. Individuals, as citizen, must remain the common denominator in any issues both related to access to technologies of the whole population and an equal North/South development of technologies.

Curriculum Vitae
• Director of the Centre of Information’s Technologies (CTI) in the State of Geneva (Etat de Genève) since March 2001.
• PhD, University of Compiègne, Paris, France
• Thesis dedicated to the conception of information’s systems in decentralized and pluridisciplinary environments.
• International mandates, particularly in the field of development of information science, related to health systems.
• Lecturer at the Neuchâtel’s University and various Schools of engineer in Telecommunication and Management, Switzerland
• Development of multilateral exchanges among public administrations, especially in the region of Neuchâtel (inter-administration project), Switzerland
Abstract

The decipherment of linear B writing in 1952 by Michael Ventris has thrown light on a very interesting problem: in the second millenium B.C., the Greeks had a writing system, but the amount of information they put into writing was limited. Other civilisations, including the Celts, made the same choice. Between what you memorize and what you write down, the choice must be made, and the reasons for the choice can be political and religious.

In the course of history, there was often a great resistance to writing, a resistance which ordinarily arose out of a form of respect for the human memory, and a strong diffidence towards storing important information outside the human brain.

This resistance is certainly to be connected with the status of sacred object that writing in itself has often received, as has been recently shown even for our own alphabet.

It is interesting and curious to observe how the problem of preserving information outside of human memory has appeared again with the introduction of computers.

Curriculum Vitae

André Hurst is professor of Greek and current Rector of the University of Geneva, Switzerland. His field of research and teaching includes mycenaean Greek, ancient epics (Homeric poems, hellenistic poetry, early Christian greek poetry), ancient theater and papyrology.

A.H. has studied in Geneva, Rome, München. He was a visiting professor at McGill University (Montréal, Canada), Université de Lausanne (Switzerland), Universitatea Babes-Bolyai (Cluj-Napoca, Romania), Ecole Normale Supérieure, rue d’Ulm (Paris, France), and a member of the Senior common room of St John’s College, Oxford. He was several times chairman of the Board of Trustees of Conservatory of Geneva, dean of the Faculté des lettres at the University of Geneva from 1986 to 1992, and he presided the commission of postgraduate studies of the faculties of arts of the French speaking Swiss universities until 2003.
Towards an Indigenous Vision for the Information Society

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Abstract
The very concept of the «Information Society» is in itself a cultural expression, developed in the context of the evolution of the industrial world into a «post-industrial» world. Also, its core elements – knowledge, information, communication and Information and Communication Technologies (ICTs) – are in fact culturally defined practices.

Societies with a different cultural, social and/or economic background, such as many Indigenous Peoples around the globe, are already affected by the dynamics of the emerging Information Society. So far, this is largely happening without them being part of developing its visions and philosophies, its implementations and applications. To become truly global, and to avoid a new level of assimilation, colonization and marginalization of Indigenous Peoples, the definition of what is to become the Information Society will also have to embrace and acknowledge Indigenous concepts and ideas.

In my contribution I will examine, how this goal can be reached. The analysis will be guided by some key questions:

– What is the special approach of Indigenous Peoples regarding the concepts of the terms «knowledge», «information», «communication» and «ICTs»?
– Which aspects of their philosophies, practices and realities do Indigenous Peoples consider relevant for building and enriching the global Information Society, thus protecting and promoting its cultural diversity?
– What do Indigenous Peoples view as challenges and potentials of the evolving Information Society towards their survival as Indigenous Peoples?
– What kind of framework is needed to enable the participation of Indigenous Peoples in the Information Society on their own terms?
– What are the parameters of Indigenous participation to ensure that utilization of new ICTs can take place in a way to enrich their cultures, strengthen their identities and improve their quality of life?
– How can Indigenous Peoples develop their own approaches to bridge the digital divide?

The paper will present a preliminary Indigenous approach for a policy on Indigenous Peoples and the Information Society together with some concrete steps for implementation, that will allow Indigenous Peoples to not only benefit from participation in the Information Society, but also to contribute their own visions and concepts to its evolution.

Curriculum Vitae
Kenneth Deer is co-founder, editing director and WSIS focal point of the Indigenous Media Network, an international organization of Indigenous media workers. He is the owner, publisher and editor of the weekly Mohawk community newspaper The Eastern Door, which he founded in 1992.


Kenneth Deer has a university education as a social councilor. From 1971-1987 he worked in Indigenous education, partly as the director of the Kahnawake Survival School. He is founding member of the First Nations Education Council of Quebec and the National Indian Education Council.

From 1987-1990 he was Coordinator of the Mohawk Nation Office in Kahnawake, a secretariat of the People of the Longhouse (part of the Six Nations Iroquois Confederacy). From 1990 to 1992 he served as Traditional Chief of his community.
Vulnerabilities of Information Technologies and their Impact on the Information Society

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Abstract
Faster than any technology before, Information and Communication technologies (ICTs) continue to change economies and societies in ways affecting many aspects of human life. After short times of usage of these technologies, organisations and individuals have become so dependant upon proper functioning of highly complex and hardly understandable systems that any deviation from « normal » behaviour may have adversary if not damaging effects.

In many cases, contemporary technologies have been designed and implemented without adequate provisions for safe and secure working. Contemporary systems contain conceptual faults and programming errors which may be « exploited » with negative impact on usability of programs and content of data. Moreover, today's system technologies can easily be attacked even by experimenting pubertarian boys e.g. by injecting viruses and worms into The Internet which then rapidly propagates these malicious gifts (in some cases even in epidemic amounts of up to 100 million emailed worms per 24 hours) into enterprises, offices, schools as well as into PCs of everybody. Moreover, Internet communication protocols are weakly designed, and it is easy to « spoof » ones email adress, to « sniff » and to intercept messages and content such as transfer of electronic funds. In order to protect the yet overly complex systems from such attacks, the usual solution is to add more complexity: firewalls, antivirus software, encryption. In longer prospective, concepts of safety and security should be embedded into the systems to protect themselves without foreign help.

Concerning the impact of ICT related vulnerabilities, two kinds of reaction can be observed. Aware of these risks, some users follow a « dont care » strategy. This applies esp. to young people which leave many data related to their personal behaviour when surfing websites with potentially interesting economic or sociological content. On the other side, some users wishing to exclude such risks follow a strategy of « don't use ». As both reactions imply many risks in the Information Society, education to work with unsafe and insecure systems may help to protect users from unwished side-effects of ICT work.

Curriculum Vitae
Klaus Brunstein teaches Security of Information and Communication technologies at Hamburg university, Germany. Among others, he founded the Virus Test Center (VTC) for the analysis of malicious software (viruses, worms, Trojan horses, backdoors, spyware).

Klaus has studied Physics where he received his diploma (in 1964) in High Energy Physics with a work on nucleon structures. He received his doctor degree (1967) with a first hydrodynamic computer model of ships. At German Electron Accelerator (DESY) in Hamburg, he worked as system engineer esp. about networks of experiment computers connected to large mainframes computers for evaluation of data. He also developed « High Energy Physics Index » (HEP) which classified and distributed, as an early Library Information system, new articles related to their innovative contributions to High Energy Physics. During his work at DESY, Klaus supported the preparation of the Institute (now Faculty) for Informatics where he (in 1973) became the 1st professor for application of Informatics.
Abstract
IFIP (International Federation for Information Processing) has been working on professional codes of deontology for the last 10 years. Lessons have been derived from that experience and most probably are applicable in the general field of engineering, especially when the pending question is related to the information society. (Jacques BERLEUR and Marie d’UDEKEM-GEVERS, Codes of Ethics/Conduct for Computer Societies: The Experience of IFIP, in: Goujon Philippe, Heriard Dubreuil Bertrand, eds. Technology and Ethics, A European Quest for Responsible Engineering, European Ethics Network, Peeters, Leuven, 2001, pp. 327-350)

Today there is an emphasis on instruments of self-regulation in a society where it is said that legal instruments are territorial and not global. IFIP-SIG9.2.2 has proposed a classification of some of those instruments and made their analysis:
www.info.fundp.ac.be/~jbl/IFIP/sig922/selfreg.html

From those professional deontological statements and those self-regulating instruments, specific domains appear as a general preoccupation for building a framework for regulating the information society. Most of the time, it is considered as an ethical preoccupation. The question may be raised if it is not more a self-protecting attitude than a protection of the customers, clients or citizen.

How to introduce ethical consideration in those statements and instruments remains a challenge to be examined in the agenda of the World Summit on the Information Society.

Curriculum Vitae
Professor at the Informatics Faculty of the University of Namur (Belgium) since 1972: «Computers and Rationality – Epistemological Questions», «Computers and Society», and «Ethics of Computing».

Director of CITA (Cellule Interfacultaire de Technology Assessment), an interdisciplinary research group specialized in the assessment of the Information and Communication Technology.

President (Rector) of his University, 1984-1993.

Member of the Belgian Privacy Protection Commission, (1984–…)

Corresponding Member of the European Academy of Sciences, Arts and Letters, Paris, (1993–…).

Active in the International Federation for Information Processing (IFIP):

Belgian expert at the Commission of the European Communities for several programmes, among which the COST A4 Programme and the FAST Programme (Forecasting and Assessment for Science and Technology).

Editor, co-editor or author of 15 books, among which:
– Ethics of Computing: Codes, Spaces for Discussion and Law, Chapman and Hall, 1996
– An Ethical Global Information Society: Culture and Democracy Revisited, Chapman & Hall, 1997
– Ethics and the Governance of the Internet, IFIP Press, 1999
– Perspectives and Policies on ICT in Society, (in preparation)

Further information at: www.info.fundp.ac.be/~jbl

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Professor at the Informatics Faculty of the University of Namur (Belgium) since 1972: «Computers and Rationality – Epistemological Questions», «Computers and Society», and «Ethics of Computing».

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– Ethics of Computing: Codes, Spaces for Discussion and Law, Chapman and Hall, 1996
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– Ethics and the Governance of the Internet, IFIP Press, 1999
– Perspectives and Policies on ICT in Society, (in preparation)

Further information at: www.info.fundp.ac.be/~jbl
Abstract
It is widely recognised that Information Technology (IT) is a major force in the world and that it plays an important part in transforming the economy of many countries and society in general. In Europe the IT sector has an annual turnover of EUR 2000 billion and provides employment for more than 12 million. Yet despite massive investment in IT across the world there are still too many problems associated with software projects. The case is made that in IT there will be an expanding key role for Software Engineers and that they are a major force for countering the sector’s problems. However, Software Engineering needs to be seen as a professional discipline and for this to occur there needs to be both educational and professional infrastructures which reflect a true « engineering » ethos. A summary of recent movements in the fields of Software Engineering education and professionalism is given and this is followed by more in depth analysis of four particularly significant projects/activities. These are the project concerned with the Software Engineering Code of Ethics and Professional Practice, the Guide to the Software Engineering Body of Knowledge (SWEBOK) project, the Production of the Software Engineering volume as part of the CC2001 effort, and the work associated with the International Federation for Information Processing’s proposals regarding the Harmonization of Professional Standards in information technology and how this relates to Software Engineering. Finally conclusions are presented along with details of further work that needs to be undertaken.

Curriculum Vitae
J. Barrie Thompson is Professor in Applied Software Engineering in the School of Computing and Technology at the University of Sunderland where he co-leads the University’s Software Engineering research group. His major areas of expertise are:
- Educational, professional and ethical aspects associated with area of Software Engineering.
- The use of methods and Software Engineering principles in the development of commercial/administrative computer based information systems.
- The development and use of software tools and quality assurance approaches to support commercial software development.
- Trust in the field of Electronic Commerce.
- The development of innovative teaching approaches which are relevant to the needs of industry and promote technology transfer.
- Distance education in the field of computing.

Professor Thompson’s recent prime international activities relevant to the Software Engineering discipline and profession, and the educational provision needed to support it have been:

a) Member of the Steering Committee which is overseeing a joint task force of the IEEE Computer Society and the ACM who are currently engaged in producing the Software Engineering Volume of the International Curricula for Computing. On the Steering Committee Professor Thompson represents the IEEE Computer Society’s Technical Committee for Software Engineering.

b) Vice Chair of Working Group 3.4 (Professional and Vocational Education and Training) within the International Federation for Information Processing (IFIP). W.G. 3.4 is a Working Group whose brief is education and training for IT professionals and advanced end-users.

c) Development and operation of international interactive workshops and similar events relevant to Software Engineering education and professionalism. These have included International Summits co-located with the 2002 and 2003 International Conferences on Software Engineering (ICSE).

d) Over ten years involvement with IEEE Computer Society’s Computer Software and Applications Conferences (compsac). Compsac is a major international conference related to Software Engineering and is one of the premier conferences supported by IEEE Computer Society.
The Role of IEEE Computer Society in the Information Age

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Abstract
One of the commissions listed in the Vilnius Declaration is education. The role of education to achieve the goals of the Declaration is self-evident. Finding a practical, affordable way to promote education is the key to its success. The IEEE Computer Society pioneered the use of the ICT technology to deliver continuing education to its members at an affordable cost. Through the use of the internet, our members can learn at their leisure basic elements in many popular programming languages, operating systems, data base and network systems and project management, among others. They can also take a course to study elements of software engineering to help them prepare for an examination that would certify them as a qualified software engineer. The digital library provides practicing engineers and researchers key developments in the entire computing field in the last 15 years.

Based on the success in the last five years, the Computer Society plans to expand this service to cover even more ground. Members have free access to 100 Web-based training courses and in 2004 will have free access to 100 online reference books through our new Online Books program. The society plans to make its software certification the brand name recognized by industry and will expand the self-study guides and course materials to support candidates studying for the exam. Long-term plans include additional certification programs, such as a credential for software project management. The same technology and data base is accessible worldwide and can be used to help engineers and scientists in the developing countries to acquire new knowledge. With the help and cooperation of organizations such as UNESCO, we believe the IEEE Computer Society can play an important role in bridging the digital divide.

Curriculum Vitae
Willis King has been an active volunteer in IEEE Computer Society for more than 30 years. He was the president of the society in 2002 and serves currently as the past president and the representative of IFIPS TC3. He served as vice president for area activities from 1987 to 1988 and as vice president for educational activities in 1997 and 1998. In 1999 and 2000, he was elected respectively the second and the first vice president and chaired the conferences and tutorials board of the IEEE Computer Society. He was elected and served as president-elect in 2001. Other volunteer positions he held included the local chapter chair from 1970-1975; the general chair of the second International Symposium on Computer Architecture in 1975, the IEEE Computer Society Southwestern Regional chair from 1976 to 1982, and the chair of the Distinguished Visitor’s Program from 1980 to 1986. As the vice president in educational activities, he launched the model curricula project, which generated the Curricula 2001 report.

An active volunteer in computer science accreditation activities since the early 1980s, he served as an officer of the Computing Sciences Accreditation Board (CSAB) from 1985 to 1997, including as its president from 1993 to 1995.

King received the Outstanding Contribution Award from the IEEE Computer Society in 1988, the Distinguish Service Award from the Computing Science Accreditation Board in 1991 and 1993, and the Meritorious Achievement Award from the Educational Activities Board of the IEEE in 1994. In 2003, he was elected fellow of CSAB.
Managing ICT skills profiles

Drs. Anneke HACQUEBARD, Steven DIJKXHOORN, Anita ERKELENS B.Sc.
Consultancy and Research
Bureau for Informatics and Education,
Hummelo, The Netherlands

Curriculum vitae

Drs. Anneke E.N. HACQUEBARD has been working on reference modelling of skills profiles since 1996. She has been project manager and researcher on the project «GRIP (Generic Referential ICT Profiles)», an initiative of IP-HOB, a national platform for business and education in The Netherlands.

Anneke Hacquebard graduated in mathematics at Leiden University and several post doc courses on informatics. She used to teach mathematics and informatics at a University for Professional Education, since 1986 she is director of the Consultancy and Research Bureau for Informatics and Education.

She participated in several boards and committees concerning ICT and Education and is contributing to a review of a set of Dutch professional ICT profiles.

Anneke Hacquebard is a member of IFIP’s Technical Committee 3 on Education and Working Group 3.2 on Higher Education. She participates in the CEN/ISSS workshop on ICT skills and curricula. Together with colleagues from the Open University of the Netherlands she is going to contribute to an ACM project dedicated to the development of a curriculum framework.

Steven P. DIJKXHOORN is an ICT specialist and is studying Educational Science and Arts at the University of Nijmegen. In developing GRIP, his concern has been the application of text analysis and modelling.

Anita ERKELENS B.Sc. graduated from Larenstein University of Professional Education, Velp. She spent several years working on international projects performed by Arcadis Euroconsult and the FAO and was involved in research and vocational training. She specialized in Geographical Information Systems and Tropical. In developing GRIP, she contributed to the design of classification schemes and modelling.

Abstract

Skills and knowledge will be main economic resources in a Knowledge Society. Parties involved want to exchange information about quality and content of knowledge and skills resources. The development of a protocol for communication about skills and knowledge requires a strong international commitment, cooperation and effort on research and development, e.g. on text analysis, modelling, structuring and unified classification schemes for main domains of knowledge.

As an example, ICT professionals from all over the world have been asking for a generic description of ICT skills and knowledge. Because of the great variety in definitions, terminology and conceptual constructs, ambiguity and misunderstandings occur while trying to connect national and international educational and professional descriptions of ICT skills and knowledge. As far as we observed, nobody succeeded in defining such a global standard. However, it does not seem to be possible to develop one generic standard for ICT skills and knowledge either on a national scale, or on the scale of an international region or on a global scale. This is based on the notion that every description of ICT skills and knowledge has its own professional, social and cultural background and stands in its own rights. A solution asks for a new approach, like the development and application of referential models and tools.

A recent initiative is the development of GRIP (Generic Referential ICT Profiles), a method presented as a «common language» approach, to be used to characterize and analyse existing ICT skills profiles. GRIP can be used for different purposes and with different levels of detail. This approach, originally meant for ICT profiles, seems to have a broad range of application in other domains. It is a challenge for international cooperation to gather expertise and initiatives towards developing a protocol in order to enable the managing of ICT – and other – knowledge and skills profiles.
Abstract
The deployment of ICT in its present form requires simultaneously mastering many skills and having a developed infrastructure of human and technical resources. These are frequently lacking in regions remote from the affluent neighbourhoods of major cities, whether in developed or developing economies. Moreover, potential users in these developing Knowledge Societies may have different needs or a different balance of needs from the established user base. Such neighbourhoods of major cities already provide an ICT ecology and their users’ needs are heavily pre-determined by the prevailing Internet culture. In developing Knowledge Societies, however, the introduction of ICT – like any major infrastructure investment – is likely to be a communal decision, prioritized against other needs, and conditioned by local values.

So the introduction of ICT into such a community needs to consider
1) what needs do we wish to meet,
2) what ICT infrastructure can meet those needs, and
3) how can we bootstrap the ICT ecology that will enable the deployment to become rapidly self-sustaining.

The technology selection and deployment process thus requires a much broader assessment and the choices may – paradoxically – be wider than for an established Knowledge Society.

In my contribution, I will propose a framework for preparing for the creation of a new Knowledge Society that is based in part on current experiments in developing economies and in part on a view of the evolution of the underlying technologies.

Curriculum Vitae
Colin Harrison joined IBM in San Jose, California in 1979 and has held many technical leadership positions in IBM's product businesses, in IBM's Research Division, and currently in IBM's IT services business. In 2001 he established IBM's Institute for Advanced Learning. Following his university studies, he spent several years at CERN developing the SPS accelerator. He then returned to EMI Central Research Laboratories in London, and lead the development of the world's first commercial MRI system. With IBM he has enjoyed a career leading from micromagnetics to medical imaging, parallel computing, mobile networking, intelligent agents, telecommunications services, and knowledge management.

Colin Harrison studied Electrical Engineering at the Imperial College of Science and Technology and earned a PhD in Materials Science. He also studied Physics at the University of Munich. He is a Fellow of the Institution of Electrical Engineers (UK) and a Senior Member of the Institution of Electronic and Electrical Engineers (USA). He is a Chartered Engineer (C.Eng.) and a European Engineer (Eu Ing). He was a founder member of the Society of Magnetic Resonance in Medicine (USA). He is also an expert advisor to the Swiss Academy of Technical Sciences. He has been a visiting scientist at MIT, Harvard Medical School, and Lawrence Berkeley Laboratory.

Colin Harrison has been awarded 26 patents. He has published some 40 scientific and technical papers and talks and a successful book on Intelligent Agents. He is an invited speaker at European universities on the impact of information technology on the nature of work, business organization, and industries.
The Impact of Future Technology on Society

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Abstract
The growing application of information technology in society, in both biological and computer networks, challenges us to understand a core issue in deciding future directions for our lives, our societies, and our environment: the relationship between identity and control.

Information technologies are technologies of control. In biological systems, growth, repair and reproduction are controlled by exchanging information about identity, in the form of encoded instructions for protein synthesis. In human and technological networks, identity is central to decide what will happen, when, among whom, including and excluding whom, drawing upon named and unnamed resources, exchanging value among named and unnamed entities. In economic systems, based increasingly on computer networks as the infrastructure of exchange, the central issues turn on establishing identity, then trust, then exchange, then audit and reporting. How we understand these issues will determine the impact of future information technology on society.

Curriculum Vitae
John Gage is the Chief Researcher for Sun Microsystems, an international information technology company based in California. He was one of the founders of Sun, in 1982, when a group of students and professors from Stanford and the University of California, Berkeley joined to create open systems in hardware and software. He has served on the Boards of Trustees of the United States National Library of Medicine, FermiLabs, the Mathematical Sciences Research Institute, NetDay, Schools On Line, and other scientific and educational groups.

He serves on the Markle Foundation Task Force on National Security, the Board of Advisors of the United States Institute of Peace, and the International Advisory Board of the Malaysian Multimedia Corridor.

He attended the University of California, Berkeley, Harvard Business School, and the Harvard Kennedy School of Government.
Sustainable Development and Information Society, from Rio to Geneva

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Abstract
Our world is facing very strong challenges and needs:
– Globalisation divides as well as it unites the world.
– The natural resources and heritage are to be preserved for the purposes of the whole mankind and for the coming generations, and cannot be reserved to a minority and for the needs of the present time only.
– Equity in access of these resources is to be established among humans.

A better world is not only possible, it is absolutely necessary. The World Summit on Sustainable Development, held in September 2002 in Johannesburg, called strongly for « fundamental changes in the way societies produce and consume ». We must use our technological, scientifical, social, administrative capacities to face the needs of billions of people staying behind, to manage in a sustainable way the natural resources. We all know these necessities. But why are our actions so shy, so slow, so tiny?

This is the real question, and this question leads us to our personal responsibility. Today we discuss about the possibilities and the issues of the Information Society, i.e. one society with very dense, very efficient connexions between its members. My question is to ask ourselves: are we sure to contribute to narrowing the gap between what should be done on earth or will our technology contribute to widen it?

This is the fundamental question underlying this Summit. The only answer is to think about the needs of our time and prevent misemployment of new technologies. Sustainability gives us a goal for the introduction and the use of new technologies.

Sustainability asks for public awareness, capacity building, education (and not global soap opera), free exchange of information and opinion, monitoring, ethical guidance, social justice in access to information and tools, to define limits of abuse also. Every new possibility opening to mankind is morally acceptable only if we get closer to solutions and humanity. In all other cases we have to oppose to it.

So the issue is to discuss about the regulations on diffusion, use and production of information and information technologies. The lesson of our recent history is clear: first we shall have the question (the needs of humanity) and only in a second time the answer (the new technology). Too often we have practiced in the other way. The central question is to ensure the good use of each new means we give to ourselves.

Curriculum Vitae
Rene Longet was born in Geneva in 1951. He achieved the grade of « Licence en lettres » at the University of Geneva. He was engaged in education, politics and publications. Since 2001 he is President of Equiterre, a Swiss NGO whose purpose is the promotion of sustainability in society and politics. He was member of the Swiss Delegation at the World Summit on Sustainable Development held in Johannesburg in 2002, and is member of many committees and boards, such the steering committee of the Centre for Technology Assessment at the Swiss Science and Technology Council. He is also Mayor of the city of Onex nearby Geneva (17'000 inhabitants) and has contributed to many publications within the field of sustainability.
Abstract

ICT has the potential to improve the quality and efficiency of cooperation and development efforts. However, the risk of ICT-enabled development projects is to further the digital divide between urban and rural areas. It is therefore crucial to involve rural areas early in these efforts, to make sure that these specific needs are addressed in national projects.

In our experience in the deployment of telemedicine applications in rural Mali as a component of the national telemedicine network, one of the key challenges is the economic sustainability of such technologies. Sustainability can be improved through the potentiation of simultaneous development activities in multiple sectors (education, health, economy, culture), enabled by an internet-connected telecentre, the « e-well ». This requires a significant effort, geographically-focused but involving most of the stakeholders of the community, in order to reach a significant increase in development, compatible with long-term sustainability of the process and results.

Key aspects of the « e-well » project:
– Evaluation of the impact and sustainability of integrated, multisectoral approaches to the development of rural areas in the least advanced countries. The development approaches include, but are not limited to, the usage of multi-purpose telecentres and the formalization and publication of local, collective knowledge.
– Reduction of the Digital Divide, particularly obvious in rural areas of developing countries.
– Focus on sustainability through the potentiation of simultaneous development activities in multiple sectors (education, health, economy, culture) based on the assessment of local needs.

The « e-well » project plans to include 6 different sites with four-year development plans, and various coordination, evaluation and sharing activities between the local coordinators of each site. The project is designed to run over 7 years (2004-2010), for a total budget of €6’500’000, under the coordination of the AGENTIS, a UNITAR agency dedicated to exploit the potential of information and communication technologies for development and social initiatives.

Curriculum Vitae

Antoine Geissbuhler is a Professor of Medical Informatics at Geneva University School of Medicine, and Director of the Division of the Medical Informatics at Geneva University Hospitals. A Philips European Young Scientist first award laureate, he graduated from Geneva University School of Medicine in 1991 and received his doctorate for work on tri-dimensional reconstruction of positron emission tomography images. He then trained in internal medicine at Geneva University Hospitals under the direction of Prof. Francis Waldvogel. After a postdoctoral fellowship in medical informatics at the University of Pittsburgh and Vanderbilt University, he became associate professor of biomedical informatics and vice-chairman of the Division of Biomedical Informatics at Vanderbilt University Medical Center, under the mentorship of Prof. Randolph Miller and Prof. William Stead, working primarily on the development of clinical information systems and knowledge-management tools. In 1999, he returned to Geneva to head the Division of Medical Informatics in Geneva University Hospitals and School of Medicine, following in the steps of Prof. Jean-Raoul Scherrer who founded this world-renowned group.

His current research focuses on the development of innovative computer-based tools for improving the quality and efficiency of care processes, at the local level of the hospital, the regional level of a community healthcare informatics network, and at the global level with the development of a south-south telemedicine network in Western Africa.
Abstract

Networked economy pressures many organisations to rethink their way to add value for customers and other stakeholders. It seems that organisations need collaborative design of business processes, joint management of shared resources and interest in keeping up their core competencies.

This will create a need for interorganisational learning which needs to be interactive and a two-way process. Many of the recent electronic portals have not succeeded due to simplistic way of producing just electronic crossroads. Knowledge creation, use and maintenance in networked economy shift us to the evolution of knowledge business phase.

In knowledge business phase competitive advantage of knowledge networks is created through the clustering process in which two or more organizations with complementary competencies begin to compete against other competitors’ clusters having similar interests. Therefore organisations need to evolve according to that competition. Learning clusters are here to gather resources and differentiate themselves from business environment whether these are either public or private players.

Key issues to be successful in this endeavour are reviewed according to latest network theories and industry experiences. Special emphasis will be given on organizational development and education.

Curriculum Vitae

Dr (Econ) Mikko J. Ruohonen holds professorship at the University of Tampere and docentship at the Turku School of Economics and Business Administration in Finland. He has worked in the field of information resources strategy since 1984. Besides his teaching and research on information strategies, electronic business, knowledge management and interorganisational learning he is active in several management executive programs such as Executive MBA, TIJO Program for CIOs and Port Management Development Program by the Tampere University of Technology. He has published four textbooks, over 100 articles and lately prepared an e-business strategy report for the Finnish technology industry. He is the Chairman of International Federation of Information Processing (IFIP) Working Group 3.4. and Chairman of the Board of the Center for Extension Studies at the University of Tampere.
Understanding and Interpreting the Drivers of the Knowledge Economy

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Abstract
The Knowledge Economy (K-economy) is much heralded as enabling the death of distance, the opportunities and promise of human capital development via life long learning and e-learning, the development of learning communities and knowledge enrichment of communities through community portals, to mention a few implications.

It is certainly quite obvious that the K-economy is much more than just technological software or hardware. The enablement of knowledge acquisition and utilisation so that information can be effectively, efficiently and meaningfully transformed into wisdom is examined along two fronts:

1. What are the drivers that induce and necessitate the diffusion and adoption of information ICT globally? Relatedly, what attitudes and competencies facilitate or impede the adoption process? The notion of cognitive literacy will be examined in this context.

2. What are the needs and wants of knowledge societies that can be facilitated as design features for learning by understanding the subtleties of the dimensions of culture both from national and organisational perspectives?

An eco-textural paradigm is used to frame the discussion of the integral role of enabling technologies, in learning, personal and cultural enrichment. It is envisaged that both affective and cognitive dimensions will be validated in wisdom attainment as the fulfilment of the Knowledge Society.

Curriculum Vitae
Dr. Mohan Raj GURUBATHAM is an Associate Professor of Strategy at the International Business School, University Technology Malaysia, in Kuala Lumpur.

Mohan has a PhD in learning sciences, and organisational behaviour from the University of Iowa, an MBA from Maharishi University of Management, Iowa and an MA in Mass Communications from the University of Leicester International Centre for Mass Communications Research. Prior to returning to academe he had several years of consulting experience in global consulting firms such as Accenture, SAP-Ag, and the Brand Lab with Leo Burnett. In technology and change projects and an e-learning start up for a major Malaysian university.
Beyond Technology: Man as end or the End of Man!

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Abstract
What has to be taken into account when engineering the Knowledge Society?
The Society of Information, that is to say our society transformed by Information Technology, can support human development respecting our humanist values, if two conditions are fulfilled:
• First we must want it! It is a philosophical and political option,
• Second, we have to understand the real nature of the transformations that we experience and what are the options that they open.
The digital revolution only accelerates a deeper mutation, begun fifty years ago, with Hiroshima: the passage of the industrial revolution to the era of the non tangible assets.
Since then the critical resources are not physical or financial anymore, they are intangible. Knowledge alone is not a resource. It becomes effective when humans assimilate it, transform it into skill and decide to do some-thing concrete with it. And efficiency requires that many people exploit their different and complementary skills together. The development depends therefore on the passions, aspirations, confidence, knowledge, mental models, intelligence, imagination of every human, alone and in interaction. It depends on the quality of their exchanges because only exchanges create human and economic value.
Internet is important because it facilitates and amplifies all these exchanges, but the essential element is the liberty that can prevent exchange even where digital networks exist. Humans are the only source of creativity and creativity is destroyed when one destroys liberty, not only economical liberty, but the liberty of free citizens, fundamental human rights. If we use Information Technology to reinforce centralised organization and Big Brother, our development will not be sustainable but suicidal; it will ruin economy and finally destroy humanity. Here is the choice: « man as an end or the end of man! »

What concrete actions should be undertaken?
– We must transform the system of education to diffuse a global way of thinking enabling use to understand the complexity of our modern problems, to reduce the influence of the neoclassic economy, to bring closer economy, human sciences and technology.
– We must explain to the economic and political leaders what are the real assets of organisations and society. Human respect and honesty are essential economical values!
– We must use implementation of digital networks against old centralised management and promote non-centralised networks in organizations.

Curriculum Vitae
André-Yves Portnoff is doctor in metallurgic sciences and director of the Observatoire de la Révolution de l’Intelligence at Futuribles International. Journalist and consultant at the same time, he is co-author of La Révolution de l’Intelligence (1983-1985), the first report that introduced the concept of the intangible revolution in France. He developed at Futuribles a tool for the evaluation and strategic guidance of organizations based on intangible assets.

• Xavier Dalloz and André-Yves Portnoff, La prolifération numérique: ressorts et impacts, Le-novation des entreprises, Futuribles, juillet-août 2001, n° 266, pp. 23-60
• André-Yves Portnoff, Uomo fine o fine del uomo, arcVision, n° 9, giugno 2003, (in Italian and English), Italcementi Group Ed.
Abstract
Communication among researchers is fundamental to the development of knowledge in both developed and developing areas. Internet connectivity is now a precondition for participation in research communication.

Establishing reliable and efficient connectivity at reasonable bandwidth is a task that is assumed to be relatively easy and straightforward in developed countries, but is surprisingly difficult in developing areas. The Louisiana Internet Project has sought to establish connectivity for university departments and government research institutes in India, Ghana, and Kenya for several years. The technical phase of the project were, at the outset an ‘unproblematic’ followup to a long term study of research communication.

What we found surprised us. We have yet to experience an unqualified ‘success’ for a variety of institutional and relational reasons. The concept of ‘reagency’ is used in preference to ‘development’ to explain the priority of personal relations introducing significant constraints that must be faced directly to establish connectivity in developing areas.

Curriculum Vitae
Wesley Shrum has been Professor of Sociology at Louisiana State University since 1982. Since 1987 he has been Secretary of the Society for Social Studies of Science, an international and interdisciplinary association for the study of science and technology with over 1200 members worldwide. The basic aims of the society are to bring together those interested in understanding the social dimensions of science, technology, engineering, and medicine through annual meetings and publications.

Professor Shrum has been studying the social networks and communication practices of scientists and engineers since the 1970s. His first book, Organized Technology: Networks and Innovation in Technical Systems (Purdue University Press, 1985), examined the social networks of researchers involved in nuclear waste and solar photovoltaic research in the U.S. In the early 1990s his primary interest shifted to the developing world, still focused on communication and collaboration in the research process. For the past ten years he has focused on Ghana, Kenya, and the state of Kerala in southwestern India. In 1994, Prof. Shrum directed comprehensive studies of the research institutions in these areas. His current studies examine the impact of the Internet on communication patterns with particular emphasize on international relations.
Managing ICT skills profiles

Beyond Technology: Man as end or the End of Man!

The Role of IEEE Computer Society in the Information Age

Understanding and Interpreting the Drivers of the Knowledge Economy

Networked Economy – effects on organisational development and the role of education

Developments in the Fields Software Engineering Professionalism, Standards, and Best Practice

Preserving Information – Orality, Writing and Memory in a Human Society

Towards an Indigenous Vision for the Information Society

Social Engineering of the Internet in Developing Areas

Lifelong Learning in the Knowledge Society
Cyber-Inclusion

eTampere – Social Engineering of Knowledge Society

Collective intelligence and capacity building in a networked Society

Professional Deontology, Self-regulation and Ethics in the Information Society

Vulnerabilities of Information Technologies and their Impact on the Information Society

The «e-well»: ICT-enabled integrated, multisectorial development of rural areas in the least developed countries

A comprehensive synthesis of research into Information Technology in education

Sustainable Development and Information Society, from Rio to Geneva

Enabling ICT Adoption in Developing Knowledge Societies

The Impact of Future Technology on Society
UNESCO has stated as an essential priority the aim of “Education for All”. This ambition is double: it means ensuring access to Education to everyone, and especially the most disadvantaged; and it also means ensuring access to quality in Education for all. Improving access to and quality of education is a major challenge for preparing the future.

Education is not only a matter of content an subject transmission. A report to UNESCO by the Commission for Education in the XXIst century noted that education should include four main dimensions, “four pillars”:

- Learning to know,
- learning to do,
- learning to live together,
- learning to be.

Information and communication technologies bring new tools, new concepts, new resources, new pedagogies for teaching and learning. These new possibilities must not be reduced to technological tools. It must take into account all the dimensions of education.

The “e-Society”, the society changed by information and communication technologies, needs a new kind of education. This new kind of education, the “e-education”, must be made accessible for all, and must be a quality education for all. The four pillars are concerned in this vision of Education. The particularity of the project is to take into account that information and communication technologies do not only bring technological changes, but more social, global and fundamental ones. It is therefore important to relate information and communication technologies to the aims of “education for all” and to the “four pillars” of education.

**The “four pillars” and e-Education for all**

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**e-Education for all**

The aim of this project is to take into account the wide set of possibilities of information and communication technologies, in order to promote and improve e-Education for All, addressing each of the “four pillars” of education.

At this stage, concrete ideas and actions must be defined more precisely:

**Main aims:**
- Create new pedagogical strategies, tools and resources in order to promote e-education for all.
- Create pedagogical strategies oriented towards the four pillars of education: learning to know, learning to do, learning to live together, learning to be.
- Create “e-educational services”, especially for developing countries.
- Create tools and resources for teachers, aiming at the development of e-education for all:
  - Tools and resources for e-education
  - Using e-education for enhancing education for all
  - Using e-education for implementing the spirit of the four pillars of education.
- Create international communities around e-education strategies.
- Create knowledge building and exchange processes within the local community.

**Key principles**

- Created knowledge should support the attainment of social goals, such as those stated in the UN Millenium Declaration, and should support shared understanding.
- Participation of several of the following actors: governments, UN organs and agencies, international/ national/regional organisations, international professional organisations, business sector, civil society, academic institutions, and so forth.
- Projects will be directed at practical, real-world
contributions to the creation of instances of e-Education, e-Health, and e-Society, especially in developing countries, and not to academic or industrial research or development. The latter may, however, be required for the execution of the projects.

• The ICT used to implement these capabilities/facilities/services must be based on the experience and finances of the sponsoring organization(s).

• The ICT used to implement these capabilities/facilities/services and the businesses established to develop the local economy must recognize the lack of a strong electrical supply and of a robust communication infrastructure in many developing areas and the need to develop commerce based on dematerialized or virtual activities.

• Project execution will include a reciprocal goal of enriching the developed nations with the created knowledge of the culture, languages, and value systems of the local community.

**Needs Addressed**

• Contribute to the aims of the Dakar Forum « Education for all », particularly in the field of e-Education.

• Ensure access for all to the benefits of new technologies, methods, contents, resources to improve Education.

• Provide resources, methods, tools, ICT-based, in order to enhance the balance between the « four pillars » of Education : learning to know, learning to do, learning to live together, learning to be.

**Plan of activities**

• Designing and experimenting educational tools integrating the « four pillars » and usable in developed and developing countries.

• Producing recommendations for developing e-Education for all.

• Promote concrete actions and experiments for « e-Education for all ». For example:
  – 2 or 3 local actions in schools or universities in developing countries
  – a distance-action through Internet about e-Education for all and the four pillars
  – a more global action at a policy-makers and decision-makers level.

• These actions should be focused on concepts such as:
  – networking for all
  – enhancing collective intelligence.

**Expected Outcomes**

• Concrete tools, resources, recommendations, web-resources, should be developed and produced.

• The results of the experiments, the recommendations, the tools and resources produced should be generalisable and disseminated.

• The outcomes should provide basis for « e-Educational policies ». For example, following the Dakar Forum, provide an « e-Education for all Framework for Action », based on some designed and experimented actions.

**Critical Success Factors**

• Real cooperation between developed and developing countries

• Meeting the actual needs of learners and educational systems.

• Real international dimension.

• Precise contribution to the aims of the Dakar Framework for Action.

**Key Measures of Success**

• Local success of the first experiments

• Possibility of generalization and dissemination

**Scientific Results Expected**

• New elements about the articulation of the four pillars in Education

• Technological, pedagogical, political, social, ethical principles and statements for developing « e-Education for all ».

**Outline Timetable**

• **Phase 1**: Establishing principles and aims for the international project.

• **Phase 2**: Describing a concrete list of possible actions to be carried out in the framework of this project.

• **Phase 3**: Designing a « road-map » for each action and for the global project.

• **Phase 4**: Selecting the appropriate partners and places for experiment.

• **Phase 5**: Carrying out the different actions.

• **Phase 6**: Gathering the results and outputs; evaluating.
• **Phase 7**: Stating principles for dissemination
• **Phase 8**: From the results and outputs, design recommendations and possible actions to be stated and carried out officially as a follow up of the Dakar Framework for Action, by international bodies (UNESCO, OECD, Countries having participated in the WSIS, …).

**Human Resources**

• A coordinating board
• Teachers and professors
• Researchers
• Technologists and implementers
• Experimenters

**Material and financial Resources**

• Such a project needs resources for developing tools and methods, resources for experimenting them in some places, resources for establishing definite and permanent follow up in some places.
• Resources include: human power, computers, technology and development, resources for people to meet and cooperate.

**Potential actors**

• Private companies to be specified
• International bodies
• European Commission
• La Villa Media could be the focal point of such a project, in partnership with
  – SAWT
  – international bodies
  – universities and schools
  – private partners
  – etc.

**Curriculum Vitae**

Prof. Bernard CORNU is the director of La Villa Media (the European Residence for Educational Multimedia), Grenoble, France, and a Professor at the IUFM of Grenoble, France (University Institute for Teacher Education).

He is a Professor (applied Mathematics) at IUFM (Institut Universitaire de Formation des Maîtres – University Institute for Teacher Education) of Grenoble, France. For ten years (1990-2000) he has been the Director of the IUFM of Grenoble. Until 1994, Bernard Cornu was the Chairman of the 29 IUFMs in France. He was (2000-2002) an Advisor for Teacher Education at the French Ministry of Education.

Prof. Bernard Cornu is a mathematician at Grenoble University. He studied the influence of computers and informatics on mathematics and its teaching, and also worked in didactics of mathematics. He has been the Director of the Institute of Research on Mathematics Teaching (IREM) of Grenoble, and then the Head at the in-service teacher training office for the Academy of Grenoble. His scientific specialty is now the Integration of Information and Communication Technologies into Education, and its influence on the Teaching Profession and on Educational Policies.

As a member of IFIP (International Federation for Information Processing), he has been (1995-2000) the chairman of Working Group 3.1 (Informatics Education at the Secondary Education Level), and he is now the secretary of the IFIP TC3 (Technical Committee for Education).

Prof. Bernard Cornu is a Member of the French National Commission for UNESCO, and the vice-chair of the Education Committee. He is also the Vice-Chair of the Governing Board of IITE, the UNESCO Institute for Information Technologies in education, located in Moscow. He has been (1998-2002) the President of the French Commission for Mathematics Education.
The project main objective is:

to contribute to the eradication of the practice of FGM throughout the Maasailand in Kenya. This is in agreement with the WHO's (World Health Organization) policy, which targets complete worldwide eradication of FGM (African countries being of high priority) as of 2015.

Specific objectives are:

- Large-scale distribution of specific information to the remote Maasai village population. This essential information is centred on women's health, reproductive health, human rights, and the legal status of FGM.
- The creation of awareness among the Maasai community (Narok district has an estimated 365,750 people, in last population count of 1999) on this issue, while preserving to the utmost Maasai culture and identity.
- The proposition of alternative rituals to mark the rite-of-passage from childhood to adulthood of young girls (14 to 16 years old).
- The improvement of the social (and economic) status of women by generating income based on traditional handicraft production.
- The encouragement of Maasai families to send female children to school to get an education.
- Creating an understanding that progress and development through e-society are not in opposition to preserving tradition and ethnic identity.

The following initial conditions should be taken into account

- The Maasai community in rural areas is a pastoral and semi-nomadic one. Living conditions are harsh; there is a chronic lack of water, sanitation, and education. ICT is an unheard-of dream in these remote areas that lack electricity, communication facilities, and roads.
- Other NGOs have tried to combat FGM in the past, giving seminars in the central town and inviting people to participate. This method is partially efficient, as the most vitally concerned segment of the population never receives this information.
- However, from a legal point of view, the Constitution and the Penal Code of Kenya prohibit FGM. And even though education is compulsory, it is not a practical reality in this pastoral semi-nomadic society.
- Without any doubt, strengthening the woman's social role inside the traditional Maasai family is a key step in this project. The way to achieve this is by developing and promoting the economic activity of women.

The e-solidarity project includes 3 phases of action:

Phase I

Information sessions given by health professional, volunteers and social workers in both town (Narok, the Maasailand capital in Kenya) and remote rural areas. Access isolated villages that are off the beaten track and without electricity – areas where, to this day, e-society has no meaning! Only personal, first-hand contact is valuable and reliable. Our visits are highly appreciated by the rural population.
Phase II
Maasai women – after having been given information about FGM, related health issues, and being made aware of the considerable social and cultural commitment that such a decision involves – organize themselves into small cooperatives. They will produce traditional handicraft and Maasai beadwork such as bracelets. The MED and project leader would meanwhile find worldwide partner web sites, which by hosting our web page would promote the anti-FGM campaign.

« Buy a Maasai bracelet and help women to say NO to FGM » will be the project identification slogan.

Phase III
ICT becomes the connecting tool between developed and developing countries. Internet would attract and consolidate international help and propagate solidarity (by emails addressed via MED to women’s groups and by selling the solidarity bracelets via the web to the international public.)

To achieve the above phases of implementation, the project needs resources such as :

- Social workers and health specialists to hold open-air seminars throughout the rural villages.
- Logistic means (a 4x4 rental car to reach remote areas), educational material (the WHO provides us with this regularly), audiovisual means (TV, DVD or laptops) to show educational films and documentation.
- A MED local coordinator must keep in touch with rural women and coordinate the promotion of the Maasai women’s group’s beadwork production.
- A web master, to designing the web page of the project.
- Concerted fundraising from UNESCO, UNIFEM or other human right’s institutions or governmental bodies, for the large scale kick-off (over the whole Maasailand) of the implementation of the project.

Our partners

- The MED centre in Narok will play a pivotal role in the project. Solidarity e-mails will be received through the web and centralised there. These will then be spread (read – as the women are completely illiterate) throughout the rural community.
- The MED centre will gather international orders received from web (« solidarity Maasai bracelets ») then will distribute these orders among the « women’s groups against FGM », and finally it will collect and ship the goods to the clients.
- MED’s project coordinator will distribute the production benefit back to the rural women’s groups, in order to allow them to launch a new, local and sustainable economic activity. He/she also will decide the start and end point of the assistance stage.
- A list of international web sites, considered as possible partners, able to host a web page advertising our project is already established and some agreements passed :

  - www.eziba.com (this site has already supported the « Peace baskets project » in Rwanda)
  - www.fgmnetwork.org (« education and networking projects »)
  - www.feminist.org (site of « Feminist majority Foundation »)
  - www.soroptimist.org (International Club of mutual aid)
  - www.bpw.ch (Business and professional Women)
  - www.cwf.ch (Carrier Women Forum)
  - www.un.org/womenwatch (UN’s women)
  - www.cybersolidaires.org (idea)
  - femmesfrancophones.free.fr (Women Human Rights Net)
  - www.rotary.belux.org (Rotary club) etc.

The project will have the following expected outputs

- Break the wall of isolation wall surrounding the rural Maasai community.
- Strengthen the local economy through women’s activities.
- Connect the western public with social development in the remote Maasai community
- Develop awareness about FGM and contribute to its complete eradication.
- Encourage the education of Maasai children (the emphasis being given to girls, victims of FGM).
Key factors in the project success are

- Good local co-ordination (MED's responsibility).
- Sufficient uptake of the project by international organizations and associations having web sites.
- Sufficient funds to implement Phase I (education).
- Mutual trust between the local Maasai community committed to giving up the practice of FGM (and at the same time improving their social and economic conditions) and western society sensitive to and concerned by the infringement of human rights.

Outline Time table

- Phase I has already been started on a small-scale voluntary basis.
- Phase II is in progress. Three women’s groups (totalling 80 women) against FGM have already been formed and are preparing to sell Maasai jewellery (bracelets).
- Phase III will be soon in place as many contacts have been made in order to establish a worldwide partnership.

Budget/financial resources

- The education phase I must find external financial resources (sponsors). The project period has therefore been projected at 3 years. The project will be implemented at Mau division first (77'686 people spread among 16'704 households). With a budget of 100'000 Euro/year, we plan to visit and sensitize 1500 households by year, employing 10 social workers or nurses. We are expecting a reduction in the prevalence of FGM and forced marriages among the target group by 50% at least within the first 6 months.
- The sale of « Maasai bracelets of solidarity » is a cyclic sustainable process, having a variable time life (this is the period during which a women’s group against FGM will be financially assisted) and variable extent (the area covered by our campaign will be proportional to our financial resources).
- We hope to receive funds from UNESCO, UNIFEM, WHO or other international bodies.

Curriculum Vitae

Annie Corsini-Karagouni obtained a license in mathematics at the University of Athens in 1976, after which she moved to Switzerland for post-graduate studies. Annie received a third cycle diploma in Astronomy and Astrophysics in 1982 at the Geneva Observatory in Sauverny. She worked in IT domain for different financial institutions in Switzerland. Over the last 12 years, Annie has been working as a database administrator in IS departments. In parallel, Annie is active in various human rights and social organizations as a volunteer. She is a committee member of Business and Professional Women club (BPW) in Geneva, and she helps in the « Association Bleu Ciel » working in Rwanda and « Sentinelles », a children rescuing Foundation in Lausanne. She is a MED's director since two years and has a good contact with representatives of maasai community.
Towards an Indigenous Approach on Bridging the Digital Divide –
A Roadmap to Tunis and beyond

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Project Description

Knowledge, information and communication are at the
core of the emerging global Information Society.
Knowledge, information and communication, however,
are culturally defined concepts and expressions. Also,
Information and Communication Technologies (ICTs) – the
medium for disseminating and communicating
knowledge and information – are cultural products of
the society that has developed them.

Indigenous Peoples have their own concepts of
knowledge, information and communication and have
developed their own forms of information
communication. Therefore Indigenous Peoples need to
take part in the Information Society on their own terms
and on the basis of their cultural backgrounds, to be able
to shape their future without risking to lose their
cultures and identities.

Indigenous research projects are an important tool to
assist in reaching these goals. They can support the
development of Indigenous approaches, strategies and
visions for the evolution and implementation of the
Information Society – and thus protecting and
promoting its cultural diversity.

The project presented here, aims to contribute to this
process by addressing four major aspects:
1. The identification and development of culturally
appropriate ICT applications by Indigenous Peoples
2. The elaboration of Indigenous approaches and
strategies to bridge the digital divide
3. The design of culturally appropriate capacity-building
tools for Indigenous Peoples on ICTs and their range
of possible uses
4. The elaboration of culturally appropriate
development strategies for utilization of ICTs for
poverty reduction.

Research is envisioned to be carried out in all cultural-
geographic Indigenous regions, namely: the Arctic
Region, Central America, South America, North
America, the Pacific Region, Asia, Africa and Russia.
Research activities will be conducted in various steps:

1. Development of models for culturally
appropriate capacity-building and
information « workshops »
for Indigenous Peoples.

These programs will be elaborated in close co-operation
with Indigenous ICT experts and using Indigenous ICT
experiences in this particular region. The workshops will
serve to inform Indigenous Peoples on the basics of what
are ICTs and how do they function as well as on the various
possibilities of their application.

2. Conducting initial surveys during
these workshops

These workshops will be organised for each region in
close co-operation with local Indigenous partners and
organisations. They will also provide a platform to carry
out first surveys among participants, supplemented by
an analysis of workshop discussions, on the following
issues:
– the possible ICT needs of Indigenous Peoples of this
regions
– their views on cultural appropriateness of ICT
applications
– their views on culturally appropriate ways of equal
participation in the Information Society on their
own terms
– local problems of connectivity
– other obstacles towards participation in the Information Society, e.g. the question of literacy
– their views on culturally appropriate strategies and approaches to overcome the digital divide in their regions.

3. In-depth surveys in selected communities

The results of these initial surveys will be used as a starting point to carry out in-depth community surveys on the above mentioned issues. These surveys will be carried out in close collaboration with local Indigenous partners.

4. Elaboration of survey summaries

The analysis and evaluation of these surveys will serve as a basis to identify:
– preliminary strategies and visions of Indigenous Peoples of the various regions towards the evolution and implementation of the Information Society in their areas
– perceived challenges and potentials of the developing Information Society with regard to the survival of their cultures and identities
– approaches to the establishment of an equal partnership between Indigenous and non-Indigenous actors in the Information Society
– Indigenous « plans of action » to bridge the digital divide in their regions on their own terms

Research activities will be presented during a Conference on « Indigenous Peoples and the Digital Divide », which could take place as a parallel event to the Tunis part of the World Summit on the Information Society in 2005. This Conference should bring together Indigenous Peoples from the regions, who have participated in the workshops and/or the surveys, Indigenous and non-Indigenous researchers and the scientific community, Indigenous and non-Indigenous ICT experts and practitioners, Indigenous and non-Indigenous development practitioners, donors and the private sector.

This conference should be a platform to identify a plan of action to be carried out beyond 2005 to assist Indigenous Peoples to bridge the digital divide on their own terms.

Curriculum Vitae

Kenneth Deer is co-founder, editing director and WSIS focal point of the Indigenous Media Network, an international organization of Indigenous media workers. He is the owner, publisher and editor of the weekly Mohawk community newspaper The Eastern Door, which he founded in 1992.


Kenneth Deer has a university education as a social councilor. From 1971-1987 he worked in Indigenous education, partly as the director of the Kahnawake Survival School. He is founding member of the First Nations Education Council of Quebec and the National Indian Education Council (NIEC). From 1983 to 1989 he was NIEC co-chairman. In this context, he took part in overseeing a $4 million study on Native education in Canada as member of the supervisory body (1985-1988).

From 1987-1990 Kenneth Deer was Coordinator of the Mohawk Nation Office in Kahnawake, a secretariat of the People of the Longhouse (part of the Six Nations Iroquois Confederacy). From 1990 to 1992 he served as Traditional Chief of his community.
Key aspects of the « e-well » project:

– Evaluation of the impact and sustainability of integrated, multisectorial approaches to the development of rural areas in the least advanced countries. The development approaches include, but are not limited to, the usage of multi-purpose telecentres and the formalization and publication of local, collective knowledge.

– Reduction of the Digital Divide, particularly obvious in rural areas of developing countries.

– Focus on sustainability through the potentiation of simultaneous development activities in multiple sectors (education, health, economy, culture) based on the assessment of local needs.

ICT has the potential to improve the quality and efficiency of cooperation and development efforts. However, the risk of ICT-enabled development projects is to further the digital divide between urban and rural areas. It is therefore crucial to involve rural areas early in these efforts, to make sure that these specific needs are addressed in national projects.

In our experience in the deployment of telemedicine applications in rural Mali as a component of the national telemedicine network (www.sim.hcuge.ch/telemed.html, www.keneya.net), one of the key challenges is the economic sustainability of such technologies. Sustainability can be improved through the potentiation of simultaneous development activities in multiple sectors (education, health, economy, culture), enabled by an internet-connected telecentre, the « e-well ». This requires a significant effort, geographically-focused but involving most of the stakeholders of the community, in order to reach a significant increase in development, compatible with long-term sustainability of the process and results.

Based on the assessment of needs by the local authorities, a four-year, multisectorial development project has been designed for the community of Dimmbal, a community of 24 villages and 30'000 inhabitants (http://www.dimmbal.ch). Activities include: capacity building for local project coordination, implementation of a telecentre, development of traditional medicine and its integration in the practice of the rural hospital, development of telemedicine activities with Bamako, valorization of local history and culture, development of a museum with archeological findings, revitalization of traditions including the Sacred Wood, and development of the local industry and forestry. The budget for this development project is evaluated at € 600'000, over four years, from 2004 to 2007.

It is likely that success factors and obstacles in such projects will be educative to similar projects in other settings. The goal of the « e-well » project is to run several development projects in different rural settings in developing countries, and to evaluate, compare and share results in order to learn collectively from the various experiments. The expected outcome is a better understanding of the potential, success factors, impact and sustainability, of integrated, multisectorial approaches to the development of rural areas in different settings.

The « e-well » project plans to include 6 different sites with four-year development plans, and various coordination, evaluation and sharing activities between the local coordinators of each site. The project is designed to run over 7 years (2004-2010), for a total budget of € 6'500'000, under the coordination of the AGENTIS, a UNITAR agency dedicated to exploit the potential of information and communication technologies for development and social initiatives.
Curriculum Vitae

Antoine Geissbuhler is a Professor of Medical Informatics at Geneva University School of Medicine, and Director of the Division of the Medical Informatics at Geneva University Hospitals.

A Philips European Young Scientist first award laureate, he graduated from Geneva University School of Medicine in 1991 and received his doctorate for work on tri-dimensional reconstruction of positron emission tomography images. He then trained in internal medicine at Geneva University Hospitals under the direction of Prof. Francis Waldvogel. After a post-doctoral fellowship in medical informatics at the University of Pittsburgh and Vanderbilt University, he became associate professor of biomedical informatics and vice-chairman of the Division of Biomedical Informatics at Vanderbilt University Medical Center, under the mentorship of Prof. Randolph Miller and Prof. William Stead, working primarily on the development of clinical information systems and knowledge-management tools. In 1999, he returned to Geneva to head the Division of Medical Informatics in Geneva University Hospitals and School of Medicine, following in the steps of Prof. Jean-Raoul Scherrer who founded this world-renowned group.

His current research focuses on the development of innovative computer-based tools for improving the quality and efficiency of care processes, at the local level of the hospital, the regional level of a community healthcare informatics network, and at the global level with the development of a south-south telemedicine network in Western Africa.
Abstract

Barter – or *troc* in French – is the exchange of goods or services for other goods or services. It is the oldest form of commerce and continues to have an important role in even the most highly developed societies. Not least it is highly valuable for developing social capital among a community. The Information Society brings to barter both a new meaning for «community» and new mechanisms for exchange. In particular it may be a key motivator for bridging the digital divide, but providing a tangible, understandable purpose for joining the Information Society.

The goal of CyberTroc – or Internet-based barter – is to connect people with needs to other capable of satisfying these needs. The exchange may be mutual – the two parties to a barter directly exchange goods or services of comparable value – or communal – each member of the barter community is required to maintain a personal balance of trade. The Internet is a ideal means for facilitating barter, since it can provide a transactional capability at extremely low cost and since it can bring together communities that may be highly localized or may be very scattered.

One could imagine trading many goods and services and indeed commercial bartering, for example, for the disposal of unsold lots of goods (http://barterwww.com/) or for the exchange of timeshare holiday accommodation (http://www.i-barter.com), is already well established. However we see CyberTroc as a person-to-person activity, a core activity of the Information Society. In particular we have considered the application of CyberTroc to ride-sharing.

An efficient mechanism for on-demand ride sharing in both urban and rural areas would have many benefits. It would promote the mobility of those who are unable to drive themselves to their destination or who are unable to afford a taxi or for whom public transportation is unavailable or ineffective. It could reduce the number and use of polluting vehicles. It could serve to develop social capital within a community and it would provide an Information Society service of direct value even to those who are otherwise uninterested. It is sufficiently simple that it could be accessible not only via a personal computer, but also via SMS or voice access. In return for the transportation, the passenger offers some good or service to the driver; since the imposition is small, the compensation need not be onerous.

A would-be traveller enters a request for a journey between a starting point and a destination and an approximate time of departure or arrival. Others who are capable of providing transportation can view these requests, possibly as visualizations on a map, or may be identified automatically by fuzzy matching to journeys that they regularly make. The technical challenge comes from the need to make fuzzy matches between requests and offers, possibly exploiting public transportation for some segments of the journeys.

Software to implement such a CyberTroc system is available and indeed during the transportation strikes in France earlier in 2003, such a system was spontaneously created to help workers to get to their jobs (www.goclicktravel.com/cgi-bin/gct.pl?language=uk).
Curriculum Vitae

Colin Harrison joined IBM in San Jose, California in 1979 and has held many technical leadership positions in IBM’s product businesses, in IBM’s Research Division, and currently in IBM’s IT services business. In 2001 he established IBM’s Institute for Advanced Learning. Following his university studies, he spent several years at CERN developing the SPS accelerator. He then returned to EMI Central Research Laboratories in London, and lead the development of the world’s first commercial MRI system. With IBM he has enjoyed a career leading from micromagnetics to medical imaging, parallel computing, mobile networking, intelligent agents, telecommunications services, and knowledge management.

Colin Harrison studied Electrical Engineering at the Imperial College of Science and Technology and earned a PhD in Materials Science. He also studied Physics at the University of Munich. He is a Fellow of the Institution of Electrical Engineers (UK) and a Senior Member of the Institution of Electronic and Electrical Engineers (USA). He is a Chartered Engineer (C.Eng.) and a European Engineer (Eu Ing). He was a founder member of the Society of Magnetic Resonance in Medicine (USA). He is also an expert advisor to the Swiss Academy of Technical Sciences. He has been a visiting scientist at MIT, Harvard Medical School, and Lawrence Berkeley Laboratory.

Colin Harrison has been awarded 26 patents. He has published some 40 scientific and technical papers and talks and a successful book on Intelligent Agents. He is an invited speaker at European universities on the impact of information technology on the nature of work, business organization, and industries.
Every individual has the right to express oneself through an activity, in which one's potential can be developed and recognized. In counterpart, everyone should contribute to the generalization and to the recognition of this particular right. Accordingly, the cyber-inclusion project, introduced by the Centre of Information's Technologies (CTI), challenges in parallel technological development and inclusion of minorities, in particular handicapped people and marginalized lifestyles.

This project consists mainly in searching the appropriate environment to the target population, based on their established potentials, and then, to support the emergence of networks.

Three fundamentals principles are assisting the process. Firstly, integration must remain a foremost concern. Secondly, a three-dimensional approach of activity harmonizes its implementation: requested, necessary and feasible activities. Indeed, nowadays, 60% of the work related to utilization of technologies of information and communication is not yet requested, although necessary and feasible! Thirdly, to support and to come along with development must be translated into action through adequate structures, promoting cyber-inclusion as well as flexibility of networks.

Firstly, a blind employee joined our team working on information's technology. She currently realizes specific tasks requesting particular skills. Her contribution increases considerably the quality of our services. Indeed, adjusting the Internet websites of the State of Geneva to the blind citizen, this employee also contributes to enlighten the criteria of accessibility of computer science and technical structures to the blind population.

The second example to be introduced is the active role played by the CTI at the side of the UNCSTD. Indeed, the CTI assists the creation of a dynamic which will capitalize experiences and pilot projects in respect with «e-society» and least developed countries (LDC). Defending a strategy based on a vision emerged from experience and a reflection translated into action, the CTI, and particularly the technological observatory (OT) appears to be a strong and reliable partner for the UNCSTD.

Cyber-inclusion of individuals into the «e-society»

To move on to an «e-society» involves developing specific networks, which allow the enforcement of governance favouring human sustainable development. Moreover, it is fundamental not to raise these systems based on a so-called standardized representation of individuals, but rather on human factors including therefore a maximum of individualities and thus preventing a new category of exclusion: «the cyber-excluded».

The definition of exclusion is logically connected to the one of inclusion. Indeed, criteria of inclusion define de facto the reasons for exclusion. But this approach is not sufficient to tackle the issue. Powerful majorities, by

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Fig.1 : Three-dimensional approach
lobby or by consensus also play a role in the delimitation of that vague framework. However, besides economical and social criteria, moral and ethics also enlarge the number of constraints in that system. Nevertheless, every society, by its integrating power, logically produces exclusion as well. Unfortunately, among this society, according to one's education, history, believes and moral code, everyone reproduces these exclusions. Modern society does not escape this perverse cycle: barbarous exclusions are to be encountered on account of race, health abilities, sexual orientation, nationalism, employment, etc.

If no reaction is to be undertaken, our modern life, based on technologies and information science, will have a dividing power in two different directions: firstly numeric and secondly economical exclusion.

The current challenge is not to suddenly eradicate exclusion and injustices on the world, but rather to benefit from the enlargement of world wide communication and networks to bring certain patterns to awareness. “E-society”, as a sub-ensemble of the common society is therefore submitted to the same rules: human being is so that injustice will go on. But nowadays, the main concern is that the emergence of this new type of society does not add a new type of exclusion, but rather allows a new type of inclusion for those excluded by other criteria of other sub-ensembles. This task is divided into three axes of action as follows:

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**Technological cyber-inclusion (TIC)**

Sufficient technological devices (computers, software, Internet networks, etc.) as well as legal structures are the gate keeper to access to “e-society” for individuals and more general actors.

The illustration of the integrating power of the TIC is limpid under the light of handicap. Indeed, as well as technologies extend our potentialities in communication, calculation, programming, and simulation, equal execution of tasks and an interconnected teamwork are thus possible for all, through simple adaptations on the logistic level. A Braille line connected to the computer is an example of how simple the criteria for inclusion may be enlarged to blind population.

**Cyber-inclusion through knowledge**

Quoting the Organisation for Economic Co-operation and Development (OCDE), human capital is defined as follows: “knowledge, qualifications, skills and other qualities possessed by an individual”. Therefore, the more individuals can enlarge their human capital, the broader and the richer will be developed the “e-society”. Contrary to some tendencies to certain actors of our society to keep back information and competencies, the “e-society’s dynamic” is totally turned around. The first skills to be universally distributed must be information and human capital management. Flexibility in dealing with information and abstract material is one of the fundamental requested competences to participate to the “e-society’s activities”. The issue of such qualifications is the practice of an activity among the economic sphere and/or civil society.

**The three-dimensional approach applied to activity**

Following the principles previously introduced, three types of activities are to be encountered:

1) Necessary activity: the whole activities which are needed by social and economic spheres in order to be reliable.
2) Requested activity: outcome of demands expressed by potential clients, ready to entrust with a mandate.
3) Feasible activity: the human capital operational to respond to the requested activity. These human profiles provide efficient performances to realize entrusted mandates.
Human concerns also integrate economical constraints, as trade represents one major key to sustainable development. Thus, extension of human capital, through networks and using a cyber-inclusion approach, should not be perceived as a «charitable attitude» but rather the only rational cold approach to remain competitive in e-business and e-trade.

**Curriculum Vitae**


- PhD, University of Compiègne, Paris, France,
- Thesis dedicated to the conception of information's systems in decentralized and pluridisciplinary environments.
- International mandates, particularly in the field of development of information science, related to health systems.
- Lecturer at the Neuchâtel's University and various Schools of engineer in Telecommunication and Management, Switzerland
- Development of multilateral exchanges among public administrations, especially in the region of Neuchâtel (inter-administration project), Switzerland.

**Human being as main concern**

Social cohesion as well as social capital can result of this cyber-inclusion approach only if networks are developed and empowered. Indeed, they appear to be the best environment to let emerge human capital through activities and exchange of knowledge and skills.

Networks, as booster of human capital, are the answer to subdivided and centralized power related problems. The classical pyramidal (hierarchic) organization slows down initiative and reduces autonomy. Quite the contrary, network's organization privileges transversal relationships, and especially vertical and transversal circulation of information. Retained information is therefore a loss of potential. The e-approach prevents subsidiary circulation of information, which divides the monitoring process from the activity process. The raw material of e-society can therefore be defined as knowledge and skills. Thus, a human and reticular structure delimits the framework of action for e-activities. Inside this framework, autonomy is highly recommended and interdependency is preserved by interconnection and exchange of information.
Dilemmas for knowledge societies

Society has been following a heady route into the ‘information age’, but has only recently become aware of its limitations and dangers as well as its value and potential. All agents for change come with a baggage – and there is now an uneasy balance between technological imperatives and opportunities on the one hand, and social and ethical values on the other. One of the strongest drivers of the information age has been the technological world itself coupled with business and commercial interests. It is up to all stakeholders in society to accept the responsibility of ensuring that this e-world is informed by a range of perspectives and societal values. In particular we need to find a balance between technology shaping social events and vice-versa.

One example of the problem of balance has been the identification of digital divides. But not all divides are between the developed and developing worlds, the advantaged or disadvantaged. Because the complex reality of societal values are driven by the different histories, politics, cultures and traditions in which our societies are grounded. In some ways, all societies and their members are currently made vulnerable by this e-world – threatened by concerns such as privacy, crime, security, surveillance, legality, control, discrimination and rights. Engineering a knowledge society that supports human development demands that such vulnerabilities and related ethical dilemmas are addressed. And yet there will be differing means of addressing these vulnerabilities depending on how they are experienced in local contexts.

Any knowledge society should be giving its citizens a sophisticated digital literacy that enables them to understand the e-world. Those responsible for education must ensure that all citizens, young and old, understand the structures, concepts and organising norms of the e-world, in order to use it critically and be knowledgeable enough to make informed decisions. But these structures, concepts and organising norms are not simple. Indeed even digitalisation itself is an extreme form of abstraction. It may be insufficient for citizens to simply have the practical skills of using information technologies. Without a sophisticated understanding of the concepts and values embedded in these technologies, they will be unable to participate in deliberations about the dilemmas they bring, and be subject to pressures exerted on them by interested parties.

A knowledge society would include a critical understanding of both the dilemmas that societies and individuals now face in this new e-world, and the different ways in which they might seek to address them. A knowledge society would not be one which simply imposed one group’s values on others, but one which understood and tolerated differing solutions for differing societies. And finally, a knowledge society would find ways to harness the e-world to suit its aims and values.

A «Dilemmas» project

This «Dilemmas» project is rooted in the epistemologies of the social sciences – here learning is often contexted in problems with no single correct answer, or definite route for arriving at a solution. Thus the project aims to help expose the multiplicity of perspectives and routes towards understanding issues associated with societal values in an e-world. The process of learning, discussion and collaboration generated, is as valuable as ‘finding an answer’. This is particularly important when social values are both culturally determined and contested.

The project seeks to use a range of contexts, settings and cases to identify paradigm dilemmas posed by information technologies for social values, explore how
different groups are tackling these dilemmas, and reflect on the differing responses offered by different communities. The framework of relevant themes to be addressed in the project will include:

– how far does technology create or limit choices?
– can individual rights and informed choice be protected within frames of social control?
– how can technology both empower and disempower?
– how can there be an acceptable balance between censorship and individual rights?
– how to balance the advantages and threat of digital surveillance?
– how to protect the vulnerable from predators?

The project would select a range of contrasting international contexts and settings, for example an educational institution (school, university), a community (commune or village, city authority) large organisation (professional, business, charity) and government department (regional, national). The selection would be on the basis of a range of differences regarding scale, nature of an organisation and cultural environment, rather than perceptions of advantaged or disadvantaged. Thus the contrasts between cases would reflect histories, politics, cultures and societal values.

The purpose of the project would be that project participants would identify dilemmas in their own terms. The way dilemmas are discussed, responses to the dilemmas, and the constraints participants felt they were under, would be used as a basis for exploring comparable processes for others. This analysis would clarify and elaborate the paradigm dilemmas in this field. This would form a basis for developing concrete strategies and tools for others to use.

This analysis of dilemmas, and the different ways societies deal with them would have two outcomes. Firstly it would bring into the open the very real dilemmas that the e-world creates for human society, and the processes which groups and individuals use to seek compromises or solutions to address these dilemmas. Secondly it would provide rich and real examples of how societies, and individuals within them, interact; providing these grounded insights is itself an important part of social science education and understanding.

Indeed, knowing how to recognise and explore these dilemmas broadens our definition of e-literacy.

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**Curriculum Vitae**

Deryn Watson, Professor of Information Technologies and Education, and Head of the Department of Education and Professional Studies at King’s College London, studied Geography at Cambridge. After teaching in London schools, she became Humanities Director of the Computers in the Curriculum project (Chelsea College), developing computer assisted learning materials in the humanities, their potential for interactive learning, and exploring models of software development. She then researched the impact of IT on children’s achievements, factors influencing the adoption of IT use in teaching (her doctorate, London University), and ICT and change in teacher education. Current research interests include issues which influence the use of ICT in education, professional development and change, and the social and ethical issues of the ‘Information Age’.

Deryn Watson is a member of the Education Committee (TC3) of the International Federation of Information Processing (IFIP), and Chair of the working group of ICT and Informatics in secondary education (WG 3.1). She has served on committees of a many international conferences, recently Social, Ethical and Cognitive Issues in Informatics and ICT (Dortmund 2002). She has given keynote addresses at conferences in Canada, Australia, Taiwan, and the Caribbean, is Editor-in-Chief of the international journal, Education and Information Technologies (Kluwer Academic), and an invited expert of the Swiss Academy of Technical Sciences.
Tension between educational systems and the outside world

The introduction of ICTs is causing considerable tension between systems like those of education, health and democracy and what is happening outside those systems. Therefore one of the major challenges of the Information Society is institutional change. Institutions are the building blocks of society and, as such, the future of society depends on our ability to adapt and/or develop institutions that structure and give sense to our lives. Much important learning takes place outside the educational systems. This situation fundamentally challenges the pertinence of institutional based learning. Educational institutions have considerable difficulties reconsidering their relationship with learning taking place outside their own limits.

Redefinition of educational goals

The tension described in the preceding section has to be resolved. Therefore educational goals need to be redefined. In redefining the goals of education changes need to be directly related to competencies and how the acquisition of these competencies can be integrated into the curriculum and the evaluation system. This area represents one of the major axes of work for the future: defining goals, devising new structures, identifying competences, elaborating ways of developing these competencies, creating suitable forms of evaluation.

Project aims

- Creation of new pedagogical strategies, especially in developed countries, but also sustainable in developing countries
- Creation of international communities around these new strategies
- Primary target groups: higher education and upper secondary education
- Creation of new principles and methods for the exploitation by the members of an educational community, irrespective of age, of the skills, resources, facilities, and so forth.
- Creation of knowledge building and exchange processes within the local community.

Answers to questions are sometimes available elsewhere but are not always accessible. The reference here is to the barriers between particular areas of activity when it comes to the flow of information. This is particularly the case between research and teaching practice. The dynamics of the research context are often such that there is little incentive to communicate results to anyone other than fellow researchers. This situation is unacceptably wasteful. We need a more « ecological » approach to knowledge and its development. There are often fundamental differences in perspective between researchers and those working in the field, like teachers requiring a considerable effort to establish exchange of knowledge and experience between these actors. A possible answer might lie in some form of « co-learning ».

Key principles

- Participation of several of the following actors: governments, UN organs and agencies, international/national/regional organisations, international professional organisations, business sector, civil society, academic institutions, and so forth.
- Projects will be directed at practical, real-world contributions to the creation of instances of e-Education, e-Health, and e-Society, especially in developing countries, and not to academic or
industrial research or development. The latter may, however, be required for the execution of the projects.

- The « local community » must include balanced representation of all segments of the community, including advocates for the old and wise, the young adults, and the next generation.

**Needs Addressed**

- Improving the fitness of graduates for 21C society.
- Lifelong learning.

**Approach**

- Networking of knowledge, access to knowledge, human beings, and objects.
- Blending of ICT with other educational resources by integrating the abstractions of ICT with the principles of pedagogy.

The first step to shaping the modern world is developing a shared vision based on a clear idea of what is happening. The idea of developing a « vision » is the first step towards launching appropriate activities in the so-called « Information Society », in particular as far as the digital divide is concerned. Note that there is not one « digital divide », but many. For example North/South, East/West, poor/rich, men/women, young/old, town/countryside, trained/untrained, … The aim of having a « shared » vision is above all to promote the transparent discussion of values and goals in a world where much of the driving motivation behind action goes unchallenged and undiscussed.

**Expected Outcomes**

- New model for the role of the teacher.
- New model for the organization and operation of education.
- New basis for the application of ICT in education.

**Critical Success Factors**

- Access to a number of real institutions willing to undertake this experiment.
- Ability to engage both ICT and teachers to work as a community in these institutions.
- Willingness of educational authorities to recognize the students’ achievement for graduation.

- Willingness of educational authorities and teachers to recognize the value of the new approach.

**Key Measures of Success**

- Recognition by employers that these students are better prepared for entering the workforce.
- Ability of the new model to be reproduced spontaneously.
- Achieving better than the Hawthorne effect.

**Scientific Results Expected**

- Validated theoretical model for the integration of ICT in networked education.

The project should be based on the idea of action research: Integrating development, content, research and use. Following on from the conclusion of the European eWatch project, it is argued that all activities in the education should be organised around « research communities » involving software developers, content developers, teachers, supporting staff and research workers. From the research perspective this would be called « action research ».

**Outline Timetable**

**Year 1** Establishing working arrangements with a number of institutions.

**Year 2** In vitro, small-scale experiments on networked-education and deployment of ICT and other infrastructure; evaluation

**Year 3** Small-scale application and development of syllabus for a small number of grades; staff development; creation of international communities.

**Year 4** Initial deployment and continued development of syllabus; staff development; international community involvement.

**Year 5** Continued deployment and development of syllabus; international community involvement.

**Year 6** Continued deployment and development of syllabus; initial assessment of overall results; international community involvement.

**Year 7** Continued deployment and development of syllabus; final assessment of overall results; international community involvement.

**Year 8** Continued deployment and expansion; international community involvement.

… and so forth.
Human Resources

- 5 researchers in pedagogy (5 academic institutions)
- 5 researchers in ICT and other media technologies (5 academic institutions).
- 5 implementers (5 academic institutions).
- 4 technology operators per educational institution (10 institutions).
- 10 teachers (half time) per institution (10 institutions)

A core group of universities be set up who agree to evolve such a global vision and implement it in institutional strategy and practice. To give body to these ideas and to translate them into concrete actions a North-South twinning of schools using ICTs may be developed with a view to developing a relationship that seeks to avoid «neo-colonialism». That is to say, the setting up of two-way exchange of ideas and knowledge that not only respects diversity but considers it as an immense source of richness. Another action concerns mobilising universities to implement the propositions given here. Universities were chosen because they represent a key step in providing skills and knowledge for professional activities and are relatively close to the professional world. One could argue that the whole education system should be concerned, but universities have greater freedom than schools or colleges in determining their policies and obtaining additional funding and as such are more able to implement the necessary changes. The major question is going to be to what extent existing academic culture and the related ways of working can be modified through a process designed to elaborate a shared vision.

Material Resources

- Network facilities per year ($100k/academic-year).
- ICT and media infrastructure per institution ($100k/institution).
- Face-to-face community meetings (2/year) ($1M/year).

Acknowledgement

In the text use has been made of a vision document prepared by Alan McCluskey, Berne, after a SATW-meeting in Gwatt, Switzerland.

Curriculum Vitae

Tom J. van Weert holds the chair «ICT and Higher Education» of the Hogeschool van Utrecht, University of Professional Education and Applied Science, The Netherlands. His main research interest is in Lifelong Learning of professionals and its implementation in Higher Education. Tom has been managing director of Cetis, Expert Centre for ICT-based Innovations in Higher Education of the same university. Before this he was director of the School of Informatics (Computing Science) of the Faculty of Mathematics and Informatics of the University of Nijmegen, The Netherlands.

Tom has studied applied mathematics and computing science starting his career in teacher education. He has been chair of the International Federation for Information Processing (IFIP) Working Groups on Secondary Education and Higher Education. Currently he is vice-chair of IFIP Technical Committee 3 on Education with special responsibility for TC3 Working Groups. He also is invited expert of the Swiss Academy of Technical Sciences (SATW).
We, participants in the IFIP World Computer Congress 2002 «Information Technology for our Times: ideas, research and application in an inclusive world», held from 25 to 29 August 2002, in Montreal, Canada,

Having examined the theme of «Youth and Information and Communication Technologies – Policies and Challenges in the Information Age», have adopted the present Declaration:

Taking into account UNESCO's commitment to enhancing the participation of all in the global information society, and IFIP's role in analysing and shaping future development of Information and Communication Technologies (ICTs);

Noting the substantial impact of ICTs in today's world and convinced that ICTs are central to bolstering the emerging global knowledge information society;

Considering that, beyond their role in economic development, ICTs can contribute significantly to building new partnerships and interactions and spreading innovative lifelong learning opportunities;

Further considering that the universal access to information and human interaction, by means of ICTs is essential for achieving goals of social cohesion, and economic and cultural empowerment;

Recognizing the need to promote digital inclusion in an environment preserving cultural diversity and heritage and promoting the respect for democratic values, human rights and tolerance;

Realizing that some young people are at the forefront of technological innovation and development;

Concerned about the continued deterioration of the status of youth worldwide (particularly of young women and youth with disabilities), who are among the most vulnerable and affected by difficult social and economic conditions, and who face, among others, a growing rate of functional illiteracy and unemployment, poverty and conflicts, epidemic diseases, substance abuse and HIV/AIDS pandemic, etc.;

HIGHLIGHT the importance to sensitize governmental authorities, national and international institutions, the private sector and the civil society about the necessity to include the development of information and communication technology infrastructures and the ICT skills for young people as a high priority in their national ICT policies and respective agendas, as well as to take proactive measures in order to encourage the formulation of policies and regulatory frameworks determining the future of the information society,

AFFIRM our commitment to contribute to ensuring a youth oriented digital inclusion specifically in the fields of education, science, culture and communication,

STRONGLY recommend the following measures for empowering youth in the information age:

– promote the global access to information and knowledge sources of young people as a prerequisite to their competent social choice, behaviour and participation; disseminate information about issues having a practical impact on the every day life of young people;

– improve access to education and train young people in ICT skills enabling them to enter empowered into the information and knowledge society; improve network access at affordable cost, especially in underdeveloped urban, rural and remote areas, and expand information infrastructure for human development through the establishment of vocational schools at a community level, the creation of internet access points, distance learning and community multimedia centres, etc.;
– provide for the equitable expansion of the information society by promoting ethics in cyberspace through the involvement of young people in the elaboration of guidelines for the activities of information and content producers, users and service providers;

– strengthen the capacity to generate knowledge and indigenous production of freely accessible contents, while using local languages and thus expanding the existing information accumulated in the public domain;

– facilitate the production and dissemination of high quality free and open source software for education and training as well as scientific and cultural purposes;

– enhance the co-ordination of youth information related programmes and resource mobilising efforts of governments, specialised agencies, intergovernmental and non-governmental organisations, and invite international and national institutions and the private sector to design and implement specific funding schemes and programmes such as fellowships, competitions and contests, that would help improving the meaningful access of young people to ICTs especially in the developing countries;

– promote through the use of ICTs, specific measures and modules for enabling disabled and handicapped youth to participate more actively in society;

– cultivate creativity, open life-long learning opportunities for young people and promote their access to careers dealing with ICTs;

– support the efforts of youth to foster a culture of peace, tolerance, sustainable development and quality of life by using global information and communication means;

and

Commit ourselves to strive according to the spirit and letter of this declaration for the implementation of the above recommendations.

Montreal, 29 August 2002
Vilnius Declaration

We, the participants from 68 countries at The First World Information Technology Forum (WITFOR), organised by IFIP under the auspices of UNESCO and hosted by the Government of Lithuania, gathered in Vilnius, Lithuania, 27-29 August 2003, address through the Forum the following major goals:

- **Bridging** the digital divide between rich and poor in the world; urban and rural societies; men and women; and different generations
- **Ensuring** the freedom of expression enshrined in Article 19 of the universal declaration of human rights and other such instruments
- **Reducing** poverty through the use of education and Information and Communications Technology (ICT)
- **Facilitating** the social integration of excluded segments of societies
- **Respecting** linguistic and cultural diversity
- **Fostering** the creation of public domains with full respect of intellectual property rights
- **Supporting** communities in fighting illiteracy
- **Encouraging** e-governance and e-democracy initiatives
- **Improving** the quality of life through effective health service systems
- **Protecting** the local and global environment for future generations.

We, the participants,

- **Aware** of the complexity facing national governments in developing reliable and affordable ICT
- **Further aware** of the importance and need of safe and secure ICTs as the foundation of global, regional and local Information and Communication services supporting governments, organizations, enterprises and individuals
- **Convinced** that governments need to build upon ICT-related achievements and independently evaluate existing pilot projects from the perspective of beneficiaries
- **Subscribing** to the importance of safeguarding the economic, social, environmental and cultural rights of all peoples, with special attention to the protection of traditional societies and indigenous people
- **Believing** in the equitable and ethical sharing of the benefits of ICT and the minimization of any negative impacts
- **Fully accepting** the realities facing often demanding partners, especially in the sector of economic investment required to set up the physical infrastructure
- **Conscious** that most of the discussions on the future of the information society is being driven by technology push more than by citizens’ needs

call upon national governments, civil societies and other partners to commit themselves to the implementation of the above stated objectives and to translate their commitment to the development of ICT through the creation of a favourable environment for partnership and economic investment. We resolve to work closely with all the above-mentioned partners and commit ourselves to the following strategic actions:

- **Inviting** national governments to give priorities to national socio-economic development plans for the creation of ICT infrastructures through
  - International co-operation among central governments and through international development agencies
  - The establishment of public and private partnerships as the cornerstone of the deployment of ICT at the local and national levels
  - Facilitating investments in the physical infrastructure by international and regional financial institutions
  - Supporting the development of new ICT tools and contributing to international programmes for ICT advancement
• Ensuring affordable and equitable accessibility to ICT between urban and rural communities and between men and women, taking into consideration the existing generation gap

- **URGING** national governments to guarantee the application of the principles of freedom of expression and privacy through appropriate legislation that will

  • Implement these principles as they apply to traditional media, also to the Internet, and satellite broadcast
  • Promote public access to data and information of public interest which is held by governments, private organizations or companies

- **ENSURING** a continuous process of education on the rights of citizens as a fundamental element of poverty alleviation by

  • Facilitating affordable universal access to the Internet and encouraging networking and dialogue between the diverse communities of interest

- **FACILITATING** knowledge and information sharing (especially as it affects the rights of the poor and the excluded) and facilitating their progressive integration into the fabric of cities, towns and societies to reduce existing social tensions and conflicts

- **ENCOURAGING** international cooperation for the provision of safe and secure information and communication networks and systems

- **SUPPORTING** the development and adoption of Free and Open Source solutions wherever it is more affordable and/or suitable than proprietary solutions

- **PROMOTING** a harmonious society within the cultural diversity of countries, convinced that national languages must never be seen as an obstacle to access to ICT

- **FACILITATING** an environment and a physical and legal infrastructure for the establishment of public domains where

  • Universal access to content is guaranteed as an essential part of the freedom of expression with due respect to legislation governing the rights to intellectual property

- **EMPOWERING** all communities, especially grass roots communities, through systematic programmes aimed at developing literacy, including ICT literacy, which progressively involve community members in cooperative actions

- **ENCOURAGING** the use of new ICT tools, especially with regard to the new development paradigm in e-governance and e-democracy

  • Giving due regard to social and ethical aspects and the special needs of different groups in society
  • Empowering them to benefit from the digital revolution

- **PROMOTING** the use of ICTs to address the basic needs of communities, particularly by creating a modern social health system that would improve their quality of life with special emphasis on

  • Targeting major health problems in developing countries notably HIV/AIDS, TB, Malaria and mother and child health care, through effective health management information systems

  • Optimizing the use of free and open source software, models and component specifications in future health information systems

  • Intensifying training and education in local adaptation, maintenance and use of health related information systems

- **IMPROVING** the use and application of ICTs in projects aimed at protecting the local and global environment for future generations, and in developing systems for monitoring potentially environment-threatening process and systems that will ensure a continued healthy environment.

We, the participants, representing national governments, business communities, NGOs, IGOs, academia and international organisations invite all partners to translate the above strategic actions into implementable action plans. We call upon all national, regional and international financial institutions to be involved in the implementation of these action plans by investing in the necessary development of ICTs at local, regional and national levels.
The Forum conducted its work through 8 commissions. These commissions stated the following:

**Commission 1. Preparing the ground for ICT**

Availability and use of ICTs across a spectrum of public and business domains is rightly highlighted as a crucial area of government action for development. To date, however, there has been a depressingly low rate of success in such efforts, largely due to an overly technocratic approach to the problem. ICT policies for the diffusion of technology must be made in the context of development priorities and be accompanied by actions to create socio-economic conditions that enable local communities to appropriate ICTs for the improvement of their lives. To prepare for ICT and successful participation in the Information Society, there needs to be sustained government action in understanding and responding social demand, reshaping national education, building indigenous science/technology/engineering capabilities, and effecting economic and social reform.

**Understanding and responding to social demand** includes: creating awareness regarding opportunities offered by ICT for socio-economic change, as well as the effort involved in such change; use of ICT in government organisations; interventions to empower socially excluded groups.

**Reshaping national education** includes tackling illiteracy; development of computer and information skills; professional engineering and management capabilities; development of critical abilities.

**Building indigenous science/technology/engineering** capabilities includes cultivating a socio-economic context of innovation; tertiary education curricula for engineering and management; local R&D balancing export opportunities and local needs, international R&D.

**Effecting economic and social reform** measures for appropriate economic liberalization and the development of an effective market socio-economic regime; support of entrepreneurial activities, social policies to alleviate the destructive effects of socioeconomic innovation; legal framework for the information economy; political mechanisms enabling citizens to participate in local and global socio-economic change and negotiate their preferred life conditions.

**Commission 2. Building the infrastructure**

There are three themes for ICT development:

1. Connectivity referred to communications infrastructure;
2. Capacity to make effective use of ICTs;
3. Content of information and knowledge stored on and transmitted by the ICT networks.

Infrastructure should not be considered as only equipments, but it should be understood as: Technology, Services, Human resources, Legal and regulatory framework and Economy.

Some recommended actions for building a sustainable ICT infrastructure follows.

1. Adherence to International standards should be encouraged and when appropriate enforced.
2. Operation and maintenance should be considered from the very beginning of any ICT project to ensure project success and sustainability. «Do not invest in what you can not maintain».
3. Promotion of universal Internet access should be supported to minimize the risk of widening the digital divide.
4. Implementation of new ICT services should be encouraged.
5. On-going education at three different levels: executive awareness level, user skills level and professional technical level.
6. Governments should formulate a long-term vision, set policies, regulate, protect the users and control the quality of services.
7. Regulatory authorities should be in charge of a comprehensive regulatory framework to enforce efficiency, competition, transparency and universal access.

**Commission 3. Economic opportunities**

Developed and developing countries are divided by a multitude of economic, social, cultural and other issues, but arguably the most significant divide at present is digital. Combined with globalization of trade, new digital technologies are presenting economic opportunities and creating wealth at a rate that threatens to increase the divide.

The level of developing countries’ involvement use of ICT slowly improves but many countries are unable to make real progress in economic development without assistance.
A comprehensive set of national policies and strategies prepared by WITFOR’s Economic Opportunity Commission provides clear paths to bridge the digital divide. Timing is a key factor. If developing countries are delayed in their digital development then the rapid growth of the developed world may leave them impossibly far behind.

**Commission 4. Empowerment and participation**

With ICT governments is able to improve the quality and expand the reach and accessibility of the services they offer to their citizens. In that way good governance is the goal and e-Government is the way. Building up modern governance in the information society has to go in such directions as citizen-centred, cooperative, seamless, polycentric.

There are four postulates that have to be stated for achieving good practice (according to the 2003 eEurope Awards Conference):

- e-Government is the key to good governance in the information society.
- e-Government is impossible without having a vision.
- e-Government is not just about technology but a change in culture.
- e-Government is not just about service delivery but a way of life.

Up to now low take up of public e-services is a big problem. For improving some requests have to be met:

- Services must become less bureaucratic and citizens have to get economic and individual benefits.
- The needs of specific target groups must be addressed.
- A multi-channel access mix is necessary with a diversity of contact points: home and mobile, kiosk, citizen office and multifunctional service shops.
- A single-window access for all services regardless of government level and agency.
- Interweaving knowledge enhancement into service processes.
- Special promotions concentrate on individual groups of addressees: rural and traditionally underserved communities, the younger.
- Democratic decision-making has to stress citizen participation. For this the interaction between individuals and organizations has to be sustained by electronic services.

**Commission 5. Health**

IT strategies in health care should target the major health problems in developing countries, such as HIV/AIDS, TB, Malaria and mother and child health. Therefore:

Developing countries should prioritise Health Management Information Systems, using multiple sources of aggregated and anonymised data from different related sectors in society, aiming at strengthening health management and primary health care delivery including a basic hospital structure. Integration within and between health care establishments requires the specification of data sets and terminology to be consistent.

Future health information systems should optimally use Free and Open Source Software, models and component specifications characterised by: Scalability and flexibility through a component-based architecture enabling free combination of relevant services allowing for incremental development; portability separating logical and technological specifications; fine-grained architecture to reduce complexity.

Sustainable systems must be based on: training and institutional development enabling local adaptation, maintenance and use; leadership of health professionals and other domain experts in systems development; focus on local use of information for action.

**Commission 6. Education**

1. Nature of education: The nature of education is to improve a person’s relation to the world. The organization, methods, structures and objectives of education should be brought into alignment with the knowledge society.
2. Lifelong learning: ICT can allow education to be spread around many communities, and promote lifelong learning and capacity building for the whole community.
3. E-inclusion: ICT should be used to reduce the education inequalities. Women, unemployed and disadvantaged people (refugees, disabled, etc.) should receive special attention on this process. National contents must be developed in local languages.
4. Computer literacy: At all levels of education, computer literacy and ICT competence for knowledge society should be achieved, adapted to local conditions.
5. **Teacher education**: Any educational system reform should start with teacher inservice and pre-service education. Teachers should be encouraged to acquire and use ICT equipment and skills.

### Commission 7. Environment

1. **Needs identification and capacity building**:
   i) Identification of special needs of Least Developed Countries (LDCs) and indigenous people, safeguarding of their local culture.
   ii) Capacity building efforts leading to self-sufficiency in all aspects of training and supporting programs and technologies in ICT for the environment.

2. **Public policy and access**:
   i) Development and implementation of equitable strategies for ICT including access to affordable systems and connectivity.
   ii) Decreasing non-tariff barriers on ICT and environment.
   iii) Promotion and establishment of policy alternatives that provide for equitable growth and development.
   iv) Promotion and establishment of policies that promote the links between environmental knowledge, data and quality and human health, environmental degradation, natural disasters, climate change, food security, water supply and quality, and other related issues.
   v) Improvement of public accessibility and understanding of ICT and environmental issues. This includes the roles of public data access and data sharing between organizations, regions and countries.

3. **Monitoring and regulatory issues**
   i) Identification, development and promotion of the role of ICT in environmental monitoring processes and the regulation of environmental issues. This includes local or regional monitoring for regulatory processes and monitoring as part of regional or global networks (for example, global climate change monitoring networks).
   ii) Establishment of networks for monitoring that provide equitable access to facilities, equipment, training and communications so that there is both data sharing and technology transfer.

### Commission 8. Social and ethical aspects of the information society

Most of the discussions on the future of the information society suggest that it is being determined by technical feasibility and driven by technology push more than by users' and customers' needs. Little attention is paid to social impact and ethics – except in the field of education and culture.

Among the social and ethical concerns we strongly suggest a focus on professional ethics; access to content and technology for all; education, literacy and public awareness; multilingualism, cultural concerns; influence of globalization; regulation, self-regulation, governance and democratic participation; intellectual property rights; specific digital policies such as e-Health, e-Work, e-Government …; privacy; protection of human and civil rights; protection of the individual against surveillance; develop quality of life and well-being; combating social exclusion; computer crime, cyber-attacks and security; employment and participative design at work; risk and vulnerabilities.

WITFOR Commission 8 on Social and Ethical Aspects of the Information Society recommends establishing national or regional social and ethical committees to assess these issues and develop social and ethical benchmarks, to ensure that the balance between technical and social aspects is maintained. If we are to enter an information and knowledge society we must remain critical and human.
We, the representatives of the engineering and technology community gathered in Tunis October 14-16, 2003 as part of the preparatory process for the World Summit on the Information Society by the World Federation of Engineering Organizations, with the active participation of representatives from:

- The Tunisian, Swiss and Senegalese governments;
- The International Telecommunications Union;
- UNESCO, the World Bank, the United Nations Economic Commissions for Africa and western Asia, The International Satellite Organization, the Technical Park of Trieste, the World Innovation Foundation;

have agreed upon the following principles:

- **Information and Communication Technologies (ICTs)** offer enormous potential to generate and distribute wealth and contribute to the United Nations Millennium Development Goals and World Summit for Sustainable Development Plan of Action.

- It is essential that the digital gap between the « info rich » and the « info poor » be closed. The digital gap contributes to the widening of the economic gap and aggravates exclusion and marginalization.

- **We express our strong concerns** regarding the growing disparities of network access. The disparities extend beyond the North-South and exist within countries, between generations, and different social classes.

- We are convinced of the potential importance of the World Summit on the Information Society as a forum for debating the issues and advancing viable solutions by engaging the public/private sector in partnerships.

- We emphasize the proven ability of innovation and research-development to find solutions to problems generated by the new Information Society.

- The development of technology must not be guided solely by profit; science, engineering and technology must serve the needs of people.

- We affirm our determination to actively work as partners to reduce the Digital Divide. Engineers are on the front lines, their fundamental role is to adapt science for the benefit of people, in particular the poor.

- We affirm our vision of the Information Society: a society which is open and inclusive promotes the diffusion of knowledge and facilitates the sharing of information. A society that values the development of human beings above all else, one that respects cultural and linguistic diversity.

- We call on governments to agree to commit resources to create a vehicle for financing low cost high speed network access that enables the sharing of knowledge and technologies meeting basic human needs for water, food, energy and health. We also call for using the Solidarity Fund created by United Nations in order to meet above mentioned goals.
Vienna, October 13, 2003: Today the European Academy, together with Oesterreichische Nationalbank, held a conference on Security in Wireless LANs, chaired by Dr. Hellmuth Broda, EASA/Sun Microsystems. During this conference, speakers, members of the audience and organisers agreed upon the following recommendations regarding WLAN usage and implementation. In light of the rapidly increasing acceptance and use of WLANs, the European Academy of Sciences and Arts seeks to ensure that security risks arising from these open networks and the lack of security standards do not increase accordingly (for details on individual presentations see the «Downloads» link at http://www.european-academy.at).

1. Technological Security

i. New security standards will have to be defined by the industry (see standards set by personal area networks such as Bluetooth).

ii. Before a wireless network is implemented, its necessity should be questioned due to today’s security issues. Upon its implementation, accurate event log files are vital to security and for tracing security gaps.

iii. For the user, seamless connectivity irrespective of the connection protocol (e.g. WLAN and UMTS) is desirable.

iv. Ease of use: researchers and developers are called upon to make their products as easily accessible and understandable for their users as possible, without sacrificing security.

v. Users should be encouraged to acquire a certain degree of technical competence and knowledge of the underlying physics (e.g. optimal positioning of antennae) in order to be able to make informed security decisions. A European Security Certificate for users would be worth considering.

2. Security Management

i. Security is achieved through products; security is a continuous management process. The entire communication/data path needs to be made secure; the security of a system is determined by its weakest link.

ii. Trust management builds upon security management. Both need to be seen as ongoing, continuous processes, and approached in a methodical, inclusive way. Transparent policies on data protection and handling will add to users’ trust. Audits and quality seals can play an important role in this process.

iii. The awareness of both users and providers regarding security concerns must be heightened, and a sustained framework for quality created.

iv. Management concepts must be inclusive, taking behavioural, legal, social, organisational, technical and economic aspects into account.
3. Legal Security

i. A comprehensive analysis of the legal aspects and implications of WiFi based on requirements (e.g., Basel II) regarding IT infrastructure is urged.

ii. Legislative reforms should not be made without careful consideration. Should they be necessary at all, new regulations should be created in a minimalist fashion.

iii. Laws concerning network and data security must be clarified and interpreted, and should converge on a European level.

4. Privacy and Awareness

i. Management of authentication and confidentiality should be seen as key factors for overall security. In order to more effectively protect privacy and confidentiality, further research with the goal of heightening security must be encouraged and supported by the private and public sector (e.g., by the European Commission).

ii. Education in security know-how and awareness should be incorporated into school and university curricula.

iii. Widespread acceptance of WLANs depends in part on the cost structure for usage, which today is often prohibitive.

iv. Ethical behaviour should be promoted and integrated into everyday use. Legal stopgaps and regulations are not sufficient.

The conference agreed that only a comprehensive approach and ongoing interdisciplinary co-operation will enable us to build trust and confidence in wireless network technology.
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Abstract
This book presents a cross-section of implications of the Knowledge Society (Information Society) in which Information and Communication Technology plays an important role. The book addresses: Lifelong Learning and education, e-inclusion, ethics and social impact, engineering profession, developing e-society, economy and e-Society. It also includes concrete project proposals to address these issues.


Target groups
The book is of value for professionals from education:
I. Educationalists, researchers and practitioners
II. Educational designers
III. Technologists
IV. Business leaders
V. Policy makers and educational managers
VI. Community learning organizers

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