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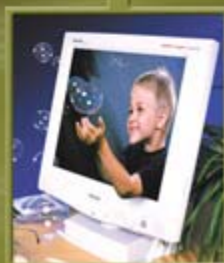
# ITU NEWS

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*Special Edition for World Telecommunication and Information Society Day*

## Connecting the young

- ▶ Key messages
- ▶ Interview with Intel's Chairman
- ▶ Giving youth a voice



International  
Telecommunication  
Union





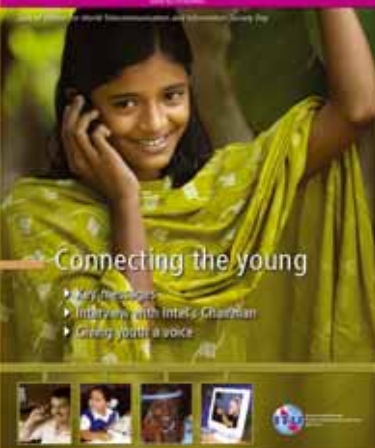
# Connecting *the young*



*the opportunities of information  
and communication technologies*

*Theme for World Telecommunication and Information Society Day, 17 May 2007*





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► WSIS events mark World Telecommunication and Information Society Day



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# ITU at a glance

## WSIS events mark World Telecommunication and Information Society Day

The 17th of May marks World Telecommunication and Information Society Day, representing not only the anniversary of ITU's foundation in 1865, but also its future work in connecting the world. A major part of that effort is implementing the outcomes of the World Summit on the Information Society (WSIS), including the Action Lines in the Geneva Plan of Action. ITU is playing the leading facilitating role in this work, alongside the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the United Nations Development Programme (UNDP). To review progress and consider the issues, a cluster of events (see table) have been scheduled in May this year that are associated with WSIS implementation.

### Date

### Organizer

### Event

### Venue

UN headquarters  
in Geneva

ITU headquarters  
in Geneva

### 14–15 May

ITU

2nd Facilitation Meeting on Action Line  
C5: Building confidence and security in the  
use of ICT

### 15 May

Council of Europe

Special session on the Convention on  
Cybercrime

### 16 May

ITU and the United Nations Development  
Programme (UNDP)

Joint Facilitation Meeting on Action Lines  
C2: Information and communication infra-  
structure; C4: Capacity building, and C6:  
Enabling environment

ITU

World Telecommunication and Information  
Society Day 2007 Ceremony

### 18 May

ITU and the Conference of NGOs in  
Consultative Relationship with the United  
Nations (CONGO)

Informal consultation between ITU and  
civil society on the participation of all  
relevant stakeholders

### 21–25 May

UN-CSTD

Tenth Session of the UN Commission on  
Science and Technology for Development  
(CSTD)

### 21 May

United Nations Economic Commissions for  
Europe (ECE), Africa (ECA), Latin America  
and the Caribbean (ECLAC), Asia and the  
Pacific (ESCAP), and Western Asia (ESCWA)

"The Information Society, from Declaration  
to Implementation: What UN Economic  
Commissions are doing to achieve the  
Information Society"



## 22 May

### UN-CSTD

Joint meeting of CSTD and the Global Alliance for ICT and Development (GAID)

Instituto del Tercer Mundo (ITeM);  
Association for Progressive  
Communications (APC)

Global Information Society Watch: Launch  
of 2007 Report

## 23 May

United Nations Educational, Scientific and  
Cultural Organization (UNESCO)

2nd Facilitation Meeting on Action Line  
C3: Access to information and knowledge

### UNESCO

2nd Facilitation Meeting on Action Line  
C7: ICT Applications (E-learning)

UN Department of Economic and Social  
Affairs (DESA)

Ambassadors' briefing on "Success,  
Failure, and Management of E-governance  
Initiatives"

### IGF Secretariat

Internet Governance Forum (IGF) consulta-  
tion meeting

## »» 24 May

United Nations Conference on Trade  
and Development (UNCTAD), and the  
International Labour Organization (ILO)

2nd Joint Facilitation Meeting on Action  
Lines C7: ICT Applications (E-business and  
E-employment)

### DESA

Joint Facilitation Meeting on Action  
Lines C1: The role of public governance  
authorities and all stakeholders in the  
promotion of ICT for development; C7:  
ICT Applications (E-government), and C11:  
International and regional cooperation

DESA; UN Division for Public  
Administration and Development  
Management (DPADM);  
Inter-Parliamentary Union (IPU)

Facilitation Meeting on Action Line C1:  
The role of public governance authorities  
and all stakeholders in the promotion of  
ICT for development. "ICT and Parliaments  
in the Information Age: mobilizing stake-  
holders around concrete initiatives"

## 24 May »»

### UNESCO

2nd Facilitation Meeting on Action Line  
C8: Cultural diversity and identity, linguistic  
diversity and local content

### UNESCO

2nd Facilitation Meeting on Action Line  
C9: Media

## 25 May

### UNESCO

2nd Facilitation Meeting on Action Line  
C10: Ethical dimensions of the Information  
Society

### ITU, UNESCO and UNDP

2nd Action Lines Facilitators Meeting: All  
Action Lines

ITU/J. Burgess

*Palais des Nations, the United  
Nations' headquarters in  
Geneva*

ITU

*ITU headquarters in Geneva*



## Connecting the young:



### Message from ITU Secretary-General Dr Hamadoun I. Touré

**I**n an increasingly networked world, the young are not only the beneficiaries but often the driving force behind the latest innovations and

practices, and for many, the dependence on information and communication technologies (ICT) has come to determine their choice of lifestyle. It is clearly our duty today to provide the opportunities of ICT to all children and youth, particularly to those who remain unconnected from the ongoing digital revolution.

The World Summit on the Information Society (WSIS) recognized young people as the future workforce and earliest adopters of ICT and called for their empowerment. In order to achieve this critical objective, national e-strategies must address the special requirements of children and youth, especially the disadvantaged and marginalized, and ensure their full inclusion in the information society. ICT are powerful tools to empower young people and vulnerable groups with information and knowledge

and act as a catalyst in ensuring their rights within the comity of nations.

Marking its inception on 17 May 1865, ITU is the oldest international organization in existence. Yet the Union is young at heart and remains at the cutting edge of global communications. As world leaders declared at WSIS, ITU is committed to developing ICT infrastructure and facilitating interoperability, interconnection and global connectivity of networks and services, strengthening the development of an enabling environment, and instilling confidence in the use of ICT by promoting cybersecurity. The Union is also committed to extending the benefits of ICT to people any time, anywhere.

On World Telecommunication and Information Society Day this year, we focus on integrating youth issues into ITU's development activities as a means of offering the young more opportunities and better choice of options for the future. On the one hand, ICT must be utilized to enhance capacity building among the young by improved e-learning and education. On the other

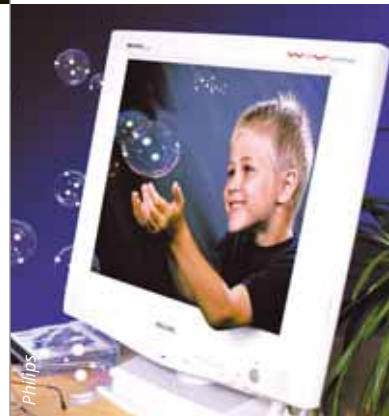
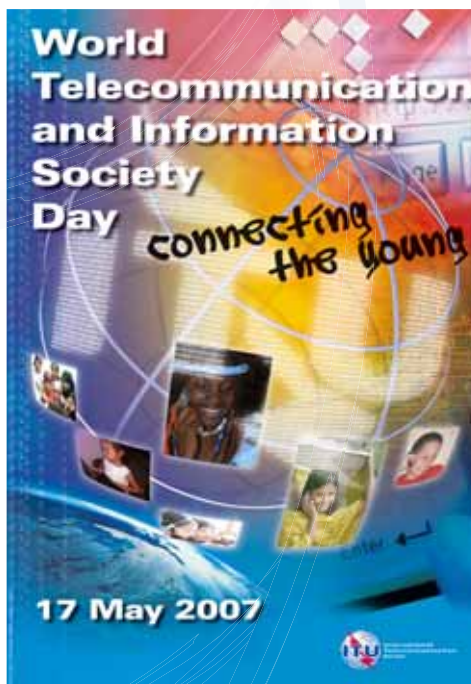


## the opportunities of ICT

hand, we are committed to promoting their capabilities in utilizing ICT towards the advancement of a better, more peaceful and productive world.

As we celebrate this special day, we invite all our stakeholders, as well as international organizations, non-governmental organizations and public policy-makers, to give children and young people around the world every assistance possible in accessing ICT. This is critical for the young as a means of learning, sharing information and knowledge, improving their health and nutrition, and communicating with other young people.

The key to achieving the development aspirations of the world's inhabitants lies in investing in the future generation, especially by improving access to communication among today's children and enhancing their capacities.







## Message from United Nations Secretary-General Ban Ki-moon

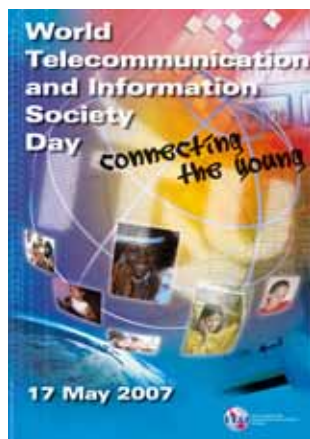
Since the advent of the telegraph in the mid-19th century, the International Telecommunication Union has been among the key players in helping the world to communicate. Today, from traditional telecommunications to the latest advances in cyberspace, ITU continues to provide governments, the private sector and civil society with expert guidance and assistance in addressing issues related to information and communication technologies (ICT). Following the successful conclusion of the two phases of the World Summit on the Information Society (WSIS), the entire United Nations system is committed to the Plan of Action strongly linking ICT with development.

The theme of this year's observance of World Telecommunication and Information Society Day is "connecting the young". Young people are among the most prolific and knowledgeable users of ICT. But the digital revolution is out of reach for many of them, especially girls and women, and people living in remote and underserved regions.

I therefore urge policy-makers and industry leaders to put their heads together, and to work cooperatively with children and youth to produce suitable technologies, ap-

plications and services to facilitate access to ICT. Young people with access to ICT often surge ahead in their quest for knowledge, and find it possible to "leapfrog" communication barriers with considerable ease. In many instances, young people are the driving force behind innovation in the development and use of new technologies. But the digital chasm leaves others out of this picture, and unable to capitalize fully on the benefits of globalization. Young people everywhere must have equal opportunities to rise out of poverty and illiteracy and to realize their full potential.

So let us promote visionary public policies, innovative business models and creative technological solutions that will empower young people and engage them in the global effort to achieve the Millennium Development Goals. Let us use to maximum effect the Global Alliance for ICT and Development, the Internet Governance Forum, the Digital Solidarity Fund, ITU's Doha Action Plan and other important mechanisms for carrying forward the results of WSIS. On this World Day, I encourage all stakeholders to do their part to connect young people and to create a truly open, inclusive and development-oriented information society. //



# Innovating for the information society

## Interview with Craig R. Barrett, Chairman of the Board of Intel Corporation



/// The theme of this year's World Telecommunication and Information Society Day is connecting the young. A leading advocate for the improvement of education worldwide, and for the power of technology to raise social and economic standards, is Craig R. Barrett, Chairman of the Board of Intel Corporation, the world's largest manufacturer of semiconductors.

Dr Barrett was a keynote speaker at the opening of the second phase of the World Summit on the Information Society (WSIS) in Tunis in November 2005. In 2006, he was appointed Chairman of the United Nations Global Alliance for ICT and Development (GAID). He has been Chairman of Intel since May 2005.

Before joining Intel in 1974, Dr Barrett was an Associate Professor at Stanford University in the United States. He was elected to Intel's Board of Directors in 1992 and served as Chief Operating Officer from 1993 to 1997. He became the company's President in 1997 and Chief Executive Officer in 1998.

ITU News recently interviewed Dr Barrett about Intel's plans, and his personal views, concerning ways to create an information society to which everyone can belong.

« Every child with access to computing and communications infrastructure has the potential for success. The challenge facing governments around the world is relatively straightforward. Provide your young citizens with the opportunity to succeed. Provide them with quality teachers and access to technology. »

Craig R. Barrett,  
WSIS, Tunis,  
November 2005





*A student at the Maope Secondary School in Bela Bela, South Africa, shows Craig Barrett how she's using the area's first computer laboratory with wireless, high-speed Internet access*

*Dr Barrett, what is your vision of a universal and inclusive information society?*

**CB** You're asking the easy questions first! If you look at the goals of the United Nations Global Alliance, they're relatively simple and they focus on four areas where information and communication technologies (ICT) can impact the lives of individuals. These are the areas of education, health care, economic development and communicating with one's government.

In the simplest form, all citizens — irrespective of the country that they live in — should have access to the technology that gives access to those four things. If you take any one of them as an example, it's very clear that technology has a great capacity to impact the lives of ordinary people in those four general areas. And we're just trying to level the playing field, if you will, to give every citizen of every country equal access.

Taking it a step further, look at just the children around the world. You need to try to give every child access to education, so that they can compete and lead a productive, professional life, and not be frozen in place if they live in a rural area or an agricultural area without economic development. You try to give every child an equal opportunity, but also give every citizen an equal opportunity in those four general areas that I mentioned.

*Intel is committed to continuously developing innovative technologies and products that change the way we work and live. What must global companies do to make a real difference in improving access to ICT everywhere?*

**CB** Well, there's a wide variation in the opportunities that citizens in low per capita income countries have compared to the developed countries. What companies like my own can do — and others such as Microsoft, Cisco or many, many other companies — is to first of all continue to develop the necessary technologies and make them more cost effective; that is, bring more capability at lower prices. That's what the electronics and computer technology industries are all about.

We can combine our efforts with those of local governments to bring technology to people, at either special prices or special configurations. And there are a number of these examples around the world where computer, communication and software companies, as well as governments, get together to arrange special programmes to allow individuals access to technology at reduced cost, without taxes, and at prices that they can afford. These are wonderful examples of public-private partnerships!

Companies can also, through their philanthropy or their corporate social responsibility, engage in projects to bring technology to relatively remote areas. If you look at many of the major technology companies, this is precisely what they're doing. Intel, for example, is very heavily involved in education and in training teachers and bringing technology to remote areas. Cisco does similar things through their academies, and



Microsoft does very similar projects with donations or software. Companies can be philanthropic, but I think the most effective solutions here are probably those of private-public partnerships, where the private sector works with the public sector to bring the capability to the local people, demonstrate how effectively it can be used, and then help the people to solve their local problems.

Just giving people technology or tools without education, without local content, without applications, is really not particularly effective. I think the public and private sectors working together can absolutely solve problems at the local level and show people the utility of a technology.

*What are the key projects that Intel has undertaken, or is implementing, through public-private partnerships as a way to help bridge the digital divide?*

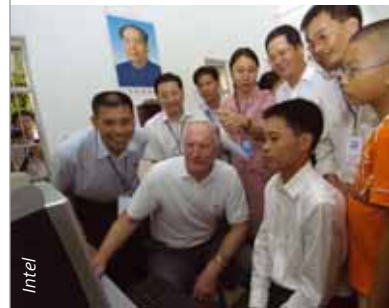
**CB** If you just look at the education side, we spend about 100 million dollars a year supporting teacher training and research activities around the world. The teacher training activities are all done in conjunction with governments at either state or national level. We announced at the World Economic Forum in Davos, Switzerland, a year ago that over the next five years we would train 10 million teachers around the world, having already trained about four million at that time. That's a big, major programme that we have.

But we also work with local governments to demonstrate what can be done with a technology. For example, in the last few months I've visited a remote location in Brazil, a village in southern China, a vil-

lage in southern India, a remote village in South Africa, and a village outside Cairo in Egypt. Basically, we're demonstrating the impact of broadband connectivity, computers and Internet connections for community centres, schools, health clinics; the availability of local content, and the importance of training teachers how to use and teach the technology.

We picked those five areas of the world because they're all remote and typical, perhaps, of the billions of people who live in very much of an agricultural setting. We wanted to demonstrate that technology is useful to solve problems: health care, education, promoting economic development and also increasing the efficiency with which governments communicate with their citizens. These are demonstration projects, which can then be followed up by larger public-private partnerships, as well as larger funding by the various development banks and governments from around the world. What we've tried to do is not just talk about the technology, but go on the ground and implement the technology, and then measure the impact it has on ordinary people.

In addition to that, we do many other programmes around the world with other technology companies and local governments to make technology more affordable, such as computer clubhouses and what we call government-assisted PC purchasing programmes. We also do demonstrations of new, long-range broadband wireless capability. So we have a whole range of activities, but what we try to do is not just talk about what can be done. Rather, we implement the capability and then demonstrate to the local people and to the government what the impact can be. It's a practical approach, not just a hypothetical discussion. For in-



*In Shijingwei Village near the city of Zhan Jiang, China, Craig Barrett sees how farmer Wang Huaping uses a computer to watch weather patterns and find new ways to sell his crops*



*In South Africa, wood carver Robert Hlongwane plans to create a website to market his wares. Intel and local technology companies provided a laptop computer, Internet connectivity and training to help the craftsman expand his business*



*A boat transporting donated desktop computers to Parintins, Brazil to help improve health care and education. Located on an island in the Amazon, the city can only be reached by boat or plane*



*With this WiMAX tower, Intel helped to improve high-speed Internet access in Parintins*

stance, when you hook up a health clinic in a remote Amazon village with a research hospital 1000 miles away, you see the impact it can have on the diagnosis of trauma and disease at the local level. Once you do those demonstrations, it's no longer an academic issue. Instead it's "Gee! this really improves people's lives, why aren't we doing more of it?" Then you can take it to the next level of more microscopic financing.

*What are the challenges that you face on the ground in countries you visit, especially in villages or remote areas, most of which probably have no electricity or other energy sources that make connectivity possible?*

**CB** We face a number of challenges on the ground everywhere. The first is accessibility to technology — the hardware and software. The second is connectivity to the Internet, because if we're talking about using the Internet as a communication and information medium, unless you have broadband connectivity, it's not particularly useful. We're also talking about the availability of local content, because farmers in rural India or China, or anywhere in the world, want local information and solutions to their problems. They're looking for information about what the weather will be, about diseases and fertilizers, and they want electronic marketplaces where they can sell their products at the right time and at the best price to get the maximum return. So the development of local content in their language is very important. Then the last issue is one of education. Technology, whether it's hardware, software or communications, is basically a tool. What is impor-

tant is how effectively you use that tool, and that always involves education, especially in schools. As I often say, computers are not magic, teachers are magic. And all around the world, we should all be focusing as much attention on quality teaching as we do on technology access.

So, we face challenges in all of those areas and have different programmes around the world for them. But obviously, if you go to a remote village that does not have electricity, as you said, then you're faced with the prospect of what kind of hardware can we use? Does it run off of a truck battery, or some other auxiliary electrical power source? Systems have to be designed to operate off alternative power sources. Also, you may not have the moisture and dust protection for the hardware, so you have to have more rugged design. And for broadband connectivity, you may have to do some form of a satellite downlink and then a broadband wireless solution. There are a whole variety of challenges you face, and they're always dependent on the particular circumstances of a region.

*Among all the projects around the world that have reached a point where they can be easily replicated, which one would you choose as an example?*

**CB** I would say some of the work going on in India today with regard to bringing technology to remote villages. There are thousands of villages in India, many of them very remote from a technology standpoint. It's the work to establish in these villages self-sustaining centres of connectivity or accessibility, such as telecentres.

There are some very substantial expansion plans in India to expand the number of telecentres. These are not philanthropic activities. In fact, the telecentre is self-sustaining. It creates local jobs and provides services to the citizenry as well. This type of application of technology is a wonderful example of how you can start to impact the lives of millions and millions and millions of people, just by demonstrating what can be done.

Many other countries are trying to do similar activities; for example, Egypt and Mexico. That is a wonderful example of not just the public sector doing something, but doing it so that it's an economically self-sustaining job creation scheme that also provides a service back to the citizenry. And then there are the education examples. If you go in and bring hardware and software into schools, train the teachers in how to effectively integrate that into the curriculum and then come back in the space of just a few days and see what children are capable of doing and how you've opened up their eyes to the rest of the world — it's astounding! And every time you see that, you feel wonderful and you want to do a lot more.

*What is the role and what are the main priorities of the Global Alliance in relation to WSIS implementation and the United Nations Millennium Development Goals?*

**CB** The goals of the Global Alliance are the effective use of technology to foster and promote better education, health care, economic development and governance at the local level. I think that all four of those issues are very closely aligned with the Millennium Goals. But there are re-

ally two main specific project areas that the Global Alliance is working on in its first year. One is the issue of telecentres — which is really a code word for local accessibility to the Internet. How do you look around to find examples, such as the one I just gave about India, of how to implement a telecentre at the local level and replicate it in an economically self-sustaining fashion? How do you then take that model and spread it around the world, and make every government aware of what can be done? How do you help them to begin these centres or to get the financing from development banks to implement such activities?

The second area of focus is recognizing that it's not just a hardware and software problem, but also a connectivity problem. Quite often, the connectivity is more expensive than the hardware and the software. So how do you efficiently and cost effectively provide people with broadband connectivity? This is probably the area that is most closely associated with ITU from the standpoint of some of the recent developments in broadband wireless connectivity. If you look at WiMAX technology, there are probably about 200 trials going on around the world, and maybe 50 commercial applications or implementations. That technology is relatively inexpensive, but delivering it to people is the key to linking them up to the Internet and to the rest of the world.

So for now, the Global Alliance is working on telecentres and broadband connectivity, with a particular focus on Africa as perhaps the biggest challenge. But we'll also be looking at the reach of that broadband wireless technology in Latin America, Asia, Eastern Europe, and other areas that do not have a strong communication infrastructure in place today.



*Children watch the installation of a WiMAX antenna at their school, connecting the students of Parintins to the rest of Brazil and the world*





*Dr Osama El-Gamil shows Craig Barrett the first telemedicine system available in Oseem, Egypt. A WiMAX network provides Internet access to a mobile clinic. Medical records can be transmitted and specialists can diagnose patients hundreds of kilometres away*

*Is that where the next billion Internet users will come from — emerging markets?*


**CB** Everyone in the high-tech industry now recognizes that our first billion customers are more or less in the developed world — Western Europe, the United States, and the big urban centres in China and Japan. But the next billion users are going to be much more from agricultural, poorer areas of the world. Recognizing that, you have to go back and always look at the four things that are necessary to make this technology work for individuals.

The first is accessibility; people don't have to own the technology, but they have to have access to it. Second, you have to have inexpensive connectivity — that is where broadband wireless comes in. Next, you have to have local content. And this is also an economic opportunity at the local level, because it has to be created in the local language and solve local problems if people are going to use it. Then there's also the issue of educational capability — how do you use these tools effectively?

We're all looking for the next billion customers. But we recognize that to get them, we, the industry, have to work with governments to solve these four issues of accessibility, connectivity, content and education. That is why we always come back to public-private partnerships. They are so important because no one company can do this by itself — and it is very difficult for any one country to do it by itself.

*Do you see any overlapping interests between the Global Alliance and ITU? What will be the areas of collaboration and cooperation?*

**CB** I think there are some obvious areas of collaboration and cooperation. Over its entire history, ITU has been interested in bringing communication technology to more and more people around the world. This is directly in line with one of the mainstays or backbones of the Global Alliance. There are always challenges in getting various interests totally aligned. Probably, one challenge is going to be the fact that ITU is looking at including WiMAX in the IMT-2000 family as an ITU-sanctioned broadband wireless technology. But I think the basic charters of ITU and the Global Alliance are very similar. That is, to bring this connection capability to more and more people around the world.

And the way that this usually happens is you have international standards which, by their own nature, create a volume of production which drives costs down, and that then makes connectivity more reachable by more people. I think there's a huge opportunity for the Global Alliance to work with ITU in these standardization activities. In a sense, we are promoting competition, because competition always promotes value to the customer and offers more capability and lower cost. Usually it's accepted standards which drive that process. 

## ITU gives youth a voice

Young people not only account for half the world's population but also represent the future; therefore, ITU carries out work that is targeted specifically at their needs. The aim is to support young people (especially in developing and transitional economies) to access information and communication technologies (ICT) and acquire the skills needed to bridge the digital divide.

### The Youth Forum

The ITU Youth Forum was launched at ITU TELECOM AFRICA 2001, held in Johannesburg, South Africa. The country's President Thabo Mbeki told participants "I would encourage all of you young people to make use of the technology available to you today, to surf the net, and to make yourselves totally computer-literate."

The Youth Forum brings together talented students from institutions of higher education to take part in a programme of talks, debates and interactive panel discussions with government and industry representatives attending ITU TELECOM events. Following the launch in South Africa, the second Youth Forum took place in 2002 in Hong Kong, alongside TELECOM ASIA. Then, in 2003, the event became global with the Youth Forum held at TELECOM WORLD in Geneva. Further regional Youth Forums took place at TELECOM AFRICA and TELECOM ASIA in 2004, while the most recent gathering was at TELECOM WORLD 2006, in December in Hong Kong.

In total, some 900 young people have so far participated in ITU Youth Forums. A gender balance is ensured by selecting one man and one woman to take part from each country.

« I would encourage all of you young people to make use of the technology available to you today, to surf the net, and to make yourselves totally computer-literate. »

President Thabo Mbeki



### Youth Forum in the running for an award

A committee of the Global Association of the Exhibition Industry has chosen the ITU Youth Forum as a finalist for the UFI Marketing Award 2007 competition. It was selected under the category "Best Events Supporting Exhibitions". The winner will be announced at the 2007 UFI Open Seminar, to be held in Bilbao, Spain, on 18–20 June. UFI stands for Union des Foires Internationales or "Union of International Fairs", which was established in Milan, Italy, in 1925. It changed its name to the Global Association of the Exhibition Industry in 2003.

South Africa's President Thabo Mbeki (front row, second left) and former ITU Secretary-General Yoshio Utsumi (front row, fourth left) during the first Youth Forum in 2001

« We, the Youth Fellows of the ITU TELECOM WORLD 2006, recognize that you can wait for change or you can initiate change. We are committed to initiating change. »



ITU/M. Ferré

## Sponsors

Since their launch in 2001, Youth Forums have been supported by financial contributions and sponsorship by governments, public organizations and companies in the telecommunication and ICT industries. Sponsors who have demonstrated commitment and appreciation of the Youth Forum over the years include:

- ▶ African Development Bank
- ▶ Alcatel-Lucent
- ▶ People's Republic of China
- ▶ Cisco Systems
- ▶ Development Gateway (World Bank)
- ▶ State of Geneva (Switzerland)
- ▶ Hutchison 3G Group
- ▶ InfoDev (World Bank)
- ▶ Intelsat
- ▶ NEC (Nigeria)
- ▶ NTT DoCoMo
- ▶ PCCW (Hong Kong, China)
- ▶ PTT Norway
- ▶ Siemens
- ▶ SK Telecom
- ▶ United Arab Emirates (Telecommunication Regulatory Authority)
- ▶ Vodafone (UK)
- ▶ Worldspace

## The goals

The goal of each Youth Forum is to build skills in ICT and cultivate leaders of tomorrow. Young people are introduced to the work of ITU and the industry, and have the opportunity to learn about the variety of career opportunities within the sector. Through its programme and follow-up activities, the Youth Forum helps to create the next generation of dedicated professionals in ICT development.

There is an urgent need to improve such human resources in many countries, given the increasing importance of ICT in the global economy. The Youth Forum is thus in line with ITU's long-term commitment to support capacity building in developing countries in order to equip them with the necessary skills to take full advantage of the social and economic benefits of ICT.

"Mentoring youth is a partnership of the best kind," says ITU Secretary-General Hamadoun I. Touré. "It is an investment as we prepare for the future. The return on such investment is measured in opportunities and improved lives, not only of the young people who will have benefited, but also their communities and our telecommunication sector."

## Selecting Youth Fellows

ITU invites each Member State to nominate young people to take part in the Youth Forum at either a regional or World event. This invitation is passed on to the country's universities or institutions of higher education, which submit possible candidates who must be students aged between 18 and 23. They must write a short essay on a topic chosen by ITU.

Each university or institute evaluates the students' applications and sends those it recommends to the national government, which selects two male and two female candidates to put forward to ITU. A special committee appointed by ITU makes a final selection of one man and one woman from each country. These become "Youth Fellows", whose travel, accommodation and subsistence costs are met by ITU, in cooperation with Youth Forum sponsors, ranging from large ICT companies to governments (see box).



## Taking part

Youth Fellows elect their own leadership at each event and draft and present a Declaration and Action Plan conveying their global vision for expanding the benefits of ICT.

They also take part in many other TELECOM activities, such as exploring the latest technologies on the exhibition floor, and participating in workshops and discussions. In addition, Youth Fellows have opportunities to interact and develop

mentor relationships with senior members of the ICT sector — government officials, industry executives, technology leaders, content providers and strategists.

Since 2001, participants in the Youth Forum have discussed topics ranging from “enabling technologies and their applications” to “policy and regulation” and “finance and business”. It is a place where ideas can be developed, evaluated and disseminated.



*A Youth Fellow shows the certificate that he received at the end of the Forum*

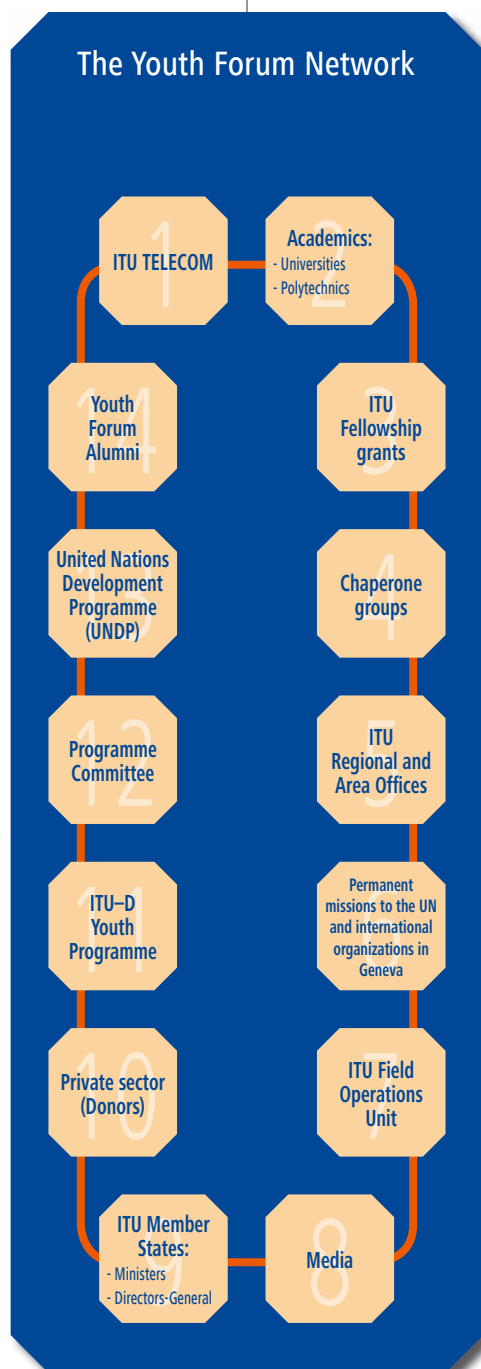
## Declarations and Action Plans

At the end of each Youth Forum, participants issue a Declaration on what they see as priorities for action on bridging the digital divide. At the most recent event, the Declaration stated:

“We, the Youth Fellows of the ITU TELECOM WORLD 2006, recognize that you can wait for change or you can initiate change. We are committed to initiating change. We will start with realizable actions that can be implemented in our home countries and regions in partnership with the ITU, governments, universities, companies and other bodies.”

Typically, participants in Youth Forums find their experience to be extremely valuable in helping them to understand the global communications industry. Many are encouraged to embark upon careers as engineers, policy-makers and business people in the field of ICT. After each event, ITU works with Youth Fellows to help ensure that proposals outlined during the forum become a reality. These activities are followed up by the Special Initiatives Unit within ITU’s Telecommunication Development Sector (ITU-D).

## The Youth Forum Network





ITU-M. Zouhri



ITU-M. Zouhri



ITU-M. Zouhri

## Alumni success stories

### Postal Portals combine telecommunications and microfinance

Under the banner of the Youth Forum in 2006 alongside TELECOM WORLD in Hong Kong (China), a Youth Fellow from the Netherlands gave a presentation on the project he had helped to set up in Ecuador to combat poverty in rural areas.

Tim Anten, aged 23, was studying for a Master's degree in Electrical Engineering (specializing in telecommunications) from the Delft University of Technology, when in the summer of 2006 he helped to set up the Postal Portals project. He was joined in this work by Jan Middelburg, a Master of Financial Economics student at Erasmus University, Rotterdam. The project was inspired by the success of the Grameen Bank and Grameen Phone projects, launched in Bangladesh by Nobel Peace Prize winner, Professor Muhammad Yunus.

Postal Portals was carried out in Ecuador's provinces of Chimborazo and Tungurahua, in the Andes. Mr Anten and Mr Middelburg created a wireless infrastructure to provide Internet connections to branches of a microfinance institution, Accion Rural. This meant that services could be expanded and transaction costs reduced, ensuring sustainability of operations. Also, because information could be sent via secure connections, clients could be linked to the national banking system. This made it easier, for example, for people to receive payments from relatives living abroad — an important element of many families' incomes.


The project is financially self-sustaining, and the wireless infrastructure was shared

with other parties to create a community network. Two agricultural information centres, three educational computer centres and two local community radio stations have been connected to the Internet.

### Young Leaders in ICT Network

The Young Leaders in ICT Network is a follow-up project of the Youth Forum at ITU TELECOM WORLD 2003, where participants requested support to help them stay in touch with all Youth Forum alumni. They also asked to be kept updated on ITU events and ICT opportunities worldwide. The network offers details of educational opportunities, recruitment, links, and contact information of administrations, regulatory bodies and companies dealing with ICT in each country. More information is available at [www.itu.int/YLinICTs](http://www.itu.int/YLinICTs).

### Internet access in a local language

The aim of this follow-up project from the 2004 Youth Forum at ITU TELECOM AFRICA is to establish a Swahili language environment on the web. In their Declaration and Action Plan, Youth Fellows highlighted illiteracy and lack of access to ICT as a particular challenge in Africa, and proposed that promoting the use of local languages in e-learning and Internet access would offer a solution. The project targeted countries where Swahili is spoken, mainly in East Africa. In collaboration with the Tanzania Commission for Science and Technology (COSTECH), the ITU-D Special Initiatives Unit supported the development of software to translate English into Swahili. This has been installed at all ITU telecentres in East Africa, and made freely available for the entire region. 

## The YES programme



Arun Sarin, Vodafone's Chief Executive, presented 2003 YES scholarships to Perseverance Jeyachya from Zimbabwe (left) and Ola Oduyuye from Nigeria (right)

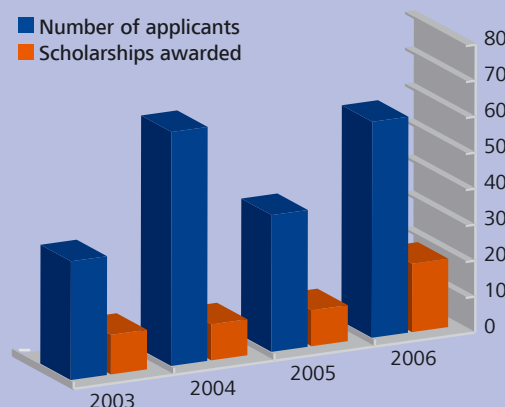
**The Youth Education Scheme (YES) project** is a way in which ITU offers concrete help to young people seeking to continue their university studies in the field of ICT. In partnership with leading companies, ITU provides scholarships to talented but needy students from developing countries who wish to complete their tertiary education in ICT, and who aim to use their knowledge to help progress in their communities and countries. Assistance is usually given in the form of tuition fees.

YES was launched in 2003 as part of the Youth Programme of ITU's Telecommunication Development Sector (ITU-D). The initiative is funded through sponsorship and voluntary contributions, and ITU Member States and Sector Members are encouraged to help selected students from developing and least developed countries. In the scheme's first four years, such sponsorships have been provided by Vodafone UK; ANACOM Portugal; NTI Egypt; THALES Communications SA; Alcatel-Lucent, and Nokia.

### A call to sponsors

*Young people are our greatest resource for the future. In the realm of ICT, there can be no better investment than in youth training. More and more young people are applying for the YES programme; unfortunately, only a small proportion can benefit because of the limited number of sponsorships (see chart).*

*ITU calls on industry to help create the ICT innovators of tomorrow, and in so doing, help society as a whole. Please join us by saying "yes" to the YES Programme!*







*Mu Hairong volunteered to work as an intern with ITU's Youth Programme*

So far, the YES programme has supported 50 young people from different countries. Here are some examples of those who benefited from the scholarships:

### China

Mu Hairong was studying economics at the University of Southampton, United Kingdom, when she applied for a scholarship under the YES programme in 2003. Ms Mu planned to complete a doctorate on the topic of telecommunications and China's entry into the World Trade Organization, but found her tuition fees a burden. With a YES scholarship sponsored by Vodafone UK, she continued her research, with the eventual aim of contributing to the development of telecommunications policy in China.

To give something in return for what she had gained from the YES initiative, Ms Mu volunteered to work as an intern with ITU's Youth Programme. She carried out a survey that revealed how the YES programme provides a life-changing opportunity for young people who have a strong desire to continue their studies and contribute to the development of ICT in their home countries.

### Argentina


Juan Pablo Cosentino received a scholarship under the YES programme in 2004, following his participation in the 2003 Youth Forum at ITU TELECOM WORLD. At the time, he was studying Electronics Engineering, (specializing in telecommunications) at the University of Belgrano, Argentina. Through the support of the YES programme and

the sponsorship of ANACOM Portugal, Mr Cosentino was able to continue his studies and obtain a Master's degree in mobile communications from the Polytechnic University of Catalonia in Barcelona, Spain. He later returned to his home country to work for a mobile telephone company.

Commenting on his experience, Mr Cosentino said "I am very much grateful to ITU, who created, through a dedicated Youth Programme, such wonderful opportunities for the young people like me. I believe that the young people are able to generate great changes for the future of ICT."

### Cameroon

Catherine Nki-mbirh Makochi was awarded a YES scholarship in 2005, with the sponsorship of Vodafone UK. She had been pursuing a telecommunications career since 2001, when she entered Cameroon's National Advanced School of Posts and Telecommunications. Unfortunately, in May 2003, her dreams were shattered when her father died. Before she had finished training to become a telecommunications technician, she had lost her source of both finance and inspiration.

However, the YES programme came to the rescue. She was able to continue her studies, with the goal of becoming an engineer specializing in computers and networking. Ms Makochi also became a founder of the Association of Student Engineers, whose aim is to create better opportunities and improve the ICT industry in Cameroon. 



*For further information, and an application form, e-mail [youth@itu.int](mailto:youth@itu.int), or visit:*

*[www.itu.int/ITU-D/youth/yes/youth\\_education\\_scheme.html](http://www.itu.int/ITU-D/youth/yes/youth_education_scheme.html)*



*For the 2007 Youth Education Scheme, the deadline for applications is 20 May 2007*

## The Young Minds programme

ITU's Strategy and Policy Unit launched its Young Minds in Telecoms scheme in 2005, with the aim of making ITU's activities better known and attracting new talent into the world of ICT. Every year, a competition is held for current students or recent graduates in economics, political science, law, literature, telecommunications, computer science, information systems and related fields. Candidates have to submit their curricula vitae and a 1000-word essay on a topic chosen by ITU.

A selection of the essays that are contributed are posted on the programme's website. For the winners each year, comes the opportunity of a three-month research contract in the Strategy and Policy Unit at ITU headquarters in Geneva, as well as help with their travel costs and expenses. So far, winners have come from the Russian Federation; Kazakhstan; the United Kingdom and Hong Kong, China.



### Winning work at ITU

One of the first winners of the Young Minds in Telecoms competition in 2005 was Svetlana Skvortsova. She graduated from Moscow State Lomonosov University as a linguist and specialist in intercultural communications, and also obtained a Diploma in Information Systems Management from the University of California in Riverside, United States. After graduating, she worked for Ericsson AB in Moscow.

"It was by a mere chance that I saw the competition announcement," Ms Skvortsova said, "but the moment I saw the topic, *Making the Internet mobile*, I had no doubt. This is the area that has long fascinated me and I thought why not give it a try?" During her time at ITU, she helped with the report

*The Internet of Things*, and found her work "exciting and gratifying" as it dealt with the emerging technologies of the future. Ms Skvortsova said that she found these topics highly relevant to her professional life, and that the ITU programme exceeded her expectations. "I do not yet fully appreciate how much I have gained here, but I have a feeling that it will be of consequence for years and years to come," she said.



*Svetlana Skvortsova was especially interested in the topic of the mobile Internet*



Ericsson



Chin Yung Lu and Lucy Yu helped to compile this ITU policy report



In 2006, the two winners were Chin Yung Lu, a citizen of Hong Kong, China, and Lucy Yu of the United Kingdom. Mr Lu graduated from the Hong Kong University of Science and Technology with a Master of Science degree in Telecommunications. He was particularly interested in the topic of Internet governance, as well as voice over Internet protocol (VoIP) and related issues. While at the Strategy and Policy Unit, Mr Lu contributed to the *ITU Internet Report 2006: digital.life*, including research, analysis and collection of data about the telecommunication industry on a global scale. "It was a rewarding experience for me as I had mostly technical knowledge... and this job allowed me to look at it from the business and regulatory perspectives," said Mr Lu. When his period with ITU was finished, he returned to Hong Kong to become a graduate trainee CASCADE Limited, a subsidiary of telecommunication operator Pacific Century CyberWorks (PCCW).

« I have thoroughly enjoyed my time at ITU. The work has been stimulating and at times very demanding, and I have learnt a huge amount in a relatively short space of time. »

Lucy Yu studied chemistry at Imperial College

London, specializing in molecular electronics and micro-electro-mechanical systems. After graduating, she spent a year working on science and technology policy for one of the United Kingdom government's Chief Scientific Advisers. For her candidate essay, Ms Yu chose to analyse how the interests of end users in the information society can be balanced with the interests of business. At ITU, her work included researching the global telecommunications market and collecting and analysing data. The results were used in a number of areas of ITU's work.

At the end of her stay, Ms Yu said: "I have thoroughly enjoyed my time at ITU. The work has been stimulating and at times very demanding, and I have learnt a huge amount in a relatively short space of time. I have expanded my knowledge about policy and regulatory models in the telecommunications industry and communicating with the private sector has taught me about the business and financial side, which has been particularly useful in the collection and analysis of data."

» More information about the Young Minds Programme can be found at

[www.itu.int/youngminds/](http://www.itu.int/youngminds/)







## Agents for change

### UN bodies promote ICT for young people

According to United Nations statistics, more than a billion people are aged between 15 and 25, while almost another 2 billion are children younger than this. In total, this is almost half the world's population. Clearly, bringing information and communication technologies (ICT) to the young has tremendous social, economic and cultural implications for the future.

#### GAID examines the issues

This has been recognized by many international agencies, including ITU. It was one of the priorities identified at the World Summit on the Information Society (WSIS), which also emphasized the role of young people as agents for positive social change. In this context, ITU is organizing a *Global Forum on Youth and ICT for Development* jointly with the Global Alliance for ICT and Development (GAID) — a multi-stakeholder partnership supported by the United Nations. The aim of the event, to be held in September, is to engage young people in discussions with their peers, policy-makers, technology leaders and others, to explore ways to access and use the benefits of ICT.

Ahead of the event, a paper prepared by GAID examines four issues which are seen as having a direct bearing on the achievement of the UN's Millennium Development Goals. Those areas are education, health,

economic issues and governance. (See also the interview on pages 7–12 with Intel Chairman Craig Barrett, who is also Chairman of GAID).

#### Regional concerns

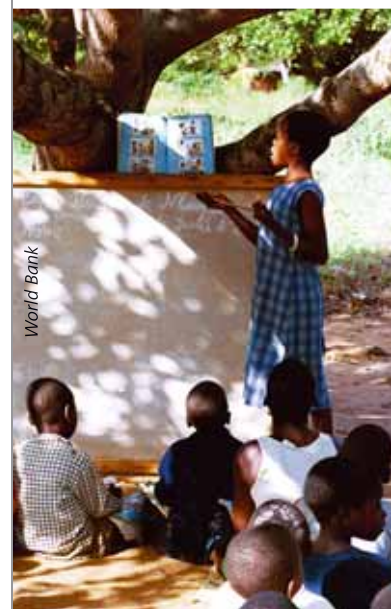
The GAID paper also looks at the concerns of young people in some of the world's regions, which differ widely in terms of economic growth, technological progress and access to ICT.

##### Africa

This is the world's most youthful continent, with half the population below the age of 18. It is also mainly on the wrong side of the digital divide, and lacks a comprehensive educational infrastructure. ICT could help significantly to overcome these obstacles and provide young people with ways to increase and express their potential.

##### Asia

The largest continent also has the biggest population and these numbers can place "a significant strain on public-sector resources for the delivery of basic services, such as in education and health," the GAID paper says. Some countries have achieved remarkable economic growth, but youth unemployment is still a major concern, while access to ICT varies greatly across the region.





World Bank



World Bank

### Latin America

The GAID paper quotes the World Bank's view that, in Latin America, "the situation in most countries is characterized by lack of economic opportunities, slow rates of poverty reduction and less than optimal economic growth." However, hopeful signs are being produced with the help of ICT, such as through new information networks known as "schoolnets." These provide distance learning, giving educational opportunities to young people who have missed out.

### Middle East and North Africa

Again quoting the World Bank, the paper says that population growth in this region has outpaced that of its economies, and so there has been slow progress in reducing poverty. On the other hand, considerable gains have been made in the delivery of health services and education. More investment needs to be made to provide young people with entrepreneurial opportunities.

### Eastern Europe

In contrast to other regions, the number of young people in Eastern Europe is set to decline. However, "opportunities for youth in education, employment, and civic participation still require considerable attention," the GAID paper says, with youth unemployment as high as 60 per cent in some countries. Many young people also have limited access to ICT.

### Global culture

Despite regional variations, the GAID paper points to the global nature of today's youth culture that is expressed through ICT. It says that young people today "are simultaneously living lives at multiple levels, i.e. global, regional and local, because they are adept at using ICT for their specific needs."

Even in areas of limited ICT penetration, low-cost devices and systems are increasingly being developed to satisfy youth demand, while around the world this group represents a substantial market for the ICT industry. In addition, familiarity with ICT is enabling young people to produce and disseminate their own content, and it allows them to become socially and politically active on a global level.

Young people are not only consumers of information, but also its creators. As avid users of new technology whenever it is available, the youth of today are far more aware of their environment and able to share their experience to help make a better future.

### International agencies focus on youth

In addition to ITU, other world bodies have focused on the concerns of young people. Among the broad range of issues considered by these organizations, ICT is seen as playing a significant role.

### United Nations' World Youth Report 2007

Implementing a 1995 resolution by the United Nations General Assembly to begin a World Programme of Action for Youth, the UN Secretary-General has issued a report on the topic every two years. The last of these



in 2005 called for a renewed commitment to the programme's goals, noting that over 200 million young people (aged from 15 to 24) were living in poverty, 130 million were illiterate, 88 million were unemployed and 10 million were living with HIV/AIDS.

On 12 August (International Youth Day), the 2007 World Youth Report will be released. It will provide an overview of youth development trends and explore major issues of concern, such as employment, education, health, poverty, and violence. These are among the 15 priority areas for action that are identified by the World Programme of Action for Youth. Also included is "use of, and access to, information and technologies", which can have an impact in every field of endeavour.

### World Bank's World Development Report 2007: Development and the Next Generation

Every year, the World Bank produces a World Development Report that analyses a specific aspect of development. Past reports have considered such topics as the role of the state, transition economies, health, and the environment.

The theme of the 2007 report (issued in September 2006) is young people between the ages of 12 and 24. It notes that if developing countries invest in better education, health care and job training for their record numbers of young people, they could produce surging economic growth. It is an opportunity which must be seized as a "demographic dividend", declares the report, but young people need to be properly equipped to take advantage. Basic educa-


tion is required to tackle illiteracy, and there also needs to be access to ICT and training in how to use it.

### UNESCO's information network

Among its programmes in ICT, the United Nations Educational, Scientific and Cultural Organization (UNESCO) has projects that support youth media, facilitate the creation of youth communication networks, and provide technology to youth organizations. One initiative is *Infoyouth*, a worldwide information network of government authorities, relevant agencies and youth organizations. By gathering together information and providing training, this network helps to meet the growing needs of young people for education and development. *Infoyouth* also supports the global fight against HIV/AIDS.

### UNICEF's Voices of Youth

The United Nations Children's Fund (UNICEF) is using ICT to help young people discover more about important issues that affect them. The *Voices of Youth* website provides "a safe and supportive global cyberspace" within which topics can be explored and discussed, and where views can be shared with decision makers. It includes, for example, a section of "Digital Diaries", where you can listen to audio reports from young people around the globe.

UNICEF also hosts a website called Magic (media activities and good ideas by, with and for children). It helps children and teenagers worldwide to contribute to various types of media, getting their voices heard and putting their hopes and concerns into the public arena. 



## ICT success stories

/// This time, we take a look at how information and communication technologies (ICT) can harness the power of young people by creating job and educational opportunities, ensuring development for all. Through ICT, the younger generation is also being asked to help decide the future of historic and natural sites.

### Networking to promote leadership

*YouthActionNet* is an initiative within the framework of ITU's *Connect the World* partnership that aims to promote and sustain youth leadership and engagement in the community. With the support of mobile phone manufacturer Nokia, it was launched in 2001 by the International Youth Foundation, a global non-profit organization supporting youth development programmes in nearly 70 countries.

*YouthActionNet* is a web-based platform for exchanges among young entrepreneurs around the world. The resources available are focused on building employability and leadership skills for young people and creating opportunities for cross-cultural collaboration on various projects in the fields of conflict resolution, decision-making support, fundraising and working with media.

The initiative's Internet portal showcases young leaders' projects and provides them with toolkits, facts and articles to support them in their efforts to lead positive social change. Through *YouthActionNet*, young visionaries in over 40 countries are engaged in mobilizing their peers for the social development of their communities.

### Ghana focuses on global exchanges

Another networking project is being undertaken by *Global Teenager Ghana*. To encourage intercultural awareness and understanding, ICT is used to connect students and teachers locally and internationally. The project is the result of cooperation between School Net South Africa and the International Institute for Communication and Development (IICD). It was established in 1998 following a pilot Internet exchange between schools in South Africa and the Netherlands.



Young people in Ghana can contact their peers in other countries through *Global Teenager Ghana*



Building entrepreneurial skills is one aim of *YouthActionNet*

The aim of *Global Teenager Ghana* is to develop educational content, promote cultural exchange and increase ICT literacy among young people. It is expected to help develop human resources at a grassroots level. It should also help to improve the quality of educational content in Ghanaian schools, forming a basis for the inclusion of ICT in secondary school curricula.

The project uses interactive Internet and e-mail platforms called "learning circles", through which students and teachers liaise to research, discuss and exchange ideas. These learning circles provide interfaces in English, French, and Spanish to make international contacts easier. Another factor that has contributed to the popularity of *Global Teenager Ghana* is the website competition. In each contestant school, students and a teacher receive training in web development and, at the end of the selection process, each school has its own website.


## World heritage in young hands


What do young people think about preserving the past? The *World Heritage in Young Hands* project of the United Nations Educational, Scientific and Cultural Organization (UNESCO) enables the young in 130 countries to voice their concerns about

the conservation and promotion of cultural and natural heritage sites, at a local level and around the world. They can also become directly involved in relevant projects.

The main aim is to mobilize young people to help save world heritage sites in many different ways. Complementing activities in the field involving youth from around the world, an online learning community has been launched to facilitate networking and collaboration among young people on preservation projects led by UNESCO and other stakeholders. This web resource also helps to create new information channels to exchange best practices on how old and new forms of information technology can be used to educate people about the importance of cultural and natural heritage.

One initiative within this framework is the establishment of a network of "World Heritage schools". The links to schools provided through the online portal offer a new way for teachers, decision-makers and heritage experts to cooperate in their work.

Through the development of educational and participatory activities, this project seeks to encourage and enable tomorrow's leaders to respond to the continuing threats facing the World Heritage sites and give young people a chance to shape their future. 

 To discover many more ICT Success Stories and to contribute your own, visit [www.itu.int/ict\\_stories](http://www.itu.int/ict_stories)

The website is managed by ITU's Strategy and Policy Unit. 



Rainer Schmied

A showcase of unique species, in 1978 the Galápagos Islands were one of the first natural places to be listed as a UNESCO World Heritage site



Rainer Schmied

ITU Secretary-General  
Dr. Hamadoun I. Touré

« In today's interconnected world of networks, threats can originate anywhere. Our collective cybersecurity depends on the security practices of every connected country, business, and citizen. We need national and international cooperation among those who seek to promote, develop and implement initiatives for a global culture of cybersecurity. »

ITU Secretary-General  
Dr Hamadoun I. Touré

## Developing an international road map for cybersecurity

Our societies are increasingly dependent on information and communication technologies (ICT) that are linked through modern communication networks. These networks are responsible for a growing share of national wealth, and they provide potential for greater prosperity. However, threats have emerged that can seriously damage vital networks. More and more, electronic networks are being used for criminal purposes, or for objectives that can harm the integrity of critical infrastructure and create barriers for extending the benefits of ICT. To address these threats and protect infrastructure, each country needs a comprehensive action plan that addresses technical, legal and policy issues, combined with regional and international cooperation.

What form should these national strategies take, and how can we develop an international road map to promote global cybersecurity? Countries hold various views on the exact nature and scope of cybersecurity, making any debate on this topic complicated. For example, various countries see cybersecurity primarily as:

- ▶ a technical, network or information technology issue, or
- ▶ a developmental issue because ICT services need secure and reliable networks, or

- ▶ an economic issue relating to maintaining business continuity or economic advantage, or
- ▶ a law and enforcement issue to deal with cybercrime, or
- ▶ a national security issue relating to critical information infrastructure protection (CIIP).

Any international road map for cybersecurity must address all these different national perspectives. And all stakeholder groups have a role to play in promoting a global culture of cybersecurity.

### The role of government

National governments have the responsibility of ensuring that their citizens are protected, particularly as public policy on information and network security has a major impact on a country's global competitiveness. The State has the central task of coordinating and implementing a national cybersecurity strategy.

ITU Member States are at widely differing levels in the development and implementation of their national policies and strategies. Some have developed comprehensive plans, while others are just beginning to consider the issues. A useful set of national case studies can be found in the "International CIIP Handbook" published by the Centre for Security Studies, a research institute in Zurich, Switzerland.





Armin Hanisch



PhotoDisc

*Today's global ICT infrastructure means that attacks can be launched from anywhere in the world and affect any country across the globe. Your computer might even become part of these attacks without your knowledge.*

As threats to cybersecurity are constantly evolving, any national policy must be flexible and adaptive. Typically, implementing a national strategy requires coordinating the work of multiple authorities and government departments, who have various perspectives on the problem. For some countries, an important task is to evaluate national

vulnerabilities and match this to the roles of different government institutions and their relevant responsibilities. In a number of least developed countries, building the required human and institutional capacities and putting in place the necessary infrastructure, legislation and policies are priorities.

Another task for governments is to create new (or adapt existing) legislation to criminalize the misuse of ICT, to curb abuses and to protect consumer rights. Governments, with other stakeholders, are also responsible for raising awareness through public education about security risks, targeted at individuals and businesses, especially small firms.

Today's global ICT infrastructure means that attacks can be launched from anywhere in the world and affect any country across the globe. Your computer might even become part of these attacks without your knowledge. For example, in 2004 criminals used viruses to take over personal computers and turn them into "zombies" (also called "drones"), which then generated a deluge of bogus data traffic that crippled WorldPay, the online payment processing service owned by the Royal Bank of Scotland. A com-

plete breakdown of financial transactions is said to have affected some 30 000 shops in 70 countries.

Critical, national infrastructure can also be a target and put lives in danger. For example, in January 2003, the "slammer" computer virus penetrated the Davis-Besse Nuclear Power Plant in the United States and

crashed its safety monitoring system. Many critical services have come to rely on the stability of communication networks — from emergency services to navigation systems for shipping and air traffic, and from electric power grids to water control systems. Protecting a country means protecting its ICT infrastructure.

To protect national infrastructure effectively, national strategies must be matched with an international approach. It is also essential to create frameworks for cooperation across national jurisdictions, with the sharing of skills, knowledge, and experience. The Council of Europe's Convention on Cybercrime is one such framework. It requires signatories "to cooperate to the widest extent possible" and provide "mutual assistance" within a constantly available system. It also provides the possibility for extradition for serious offences in the area of cybersecurity. Legislation requires effective enforcement through direct bilateral cooperation between countries, as well as by such agencies as the International Criminal Police Organization (Interpol), which carries out a number of activities to help in the fight against cybercrime.



PhotoDisc

Getty Images

*The purpose of this new column "Cybersecurity Watch" is to share information on ITU activities and initiatives related to cybersecurity and countering spam. It will be published once every quarter. ITU welcomes contributions from its membership for publication in Cybersecurity Watch. For more information, contact*

[cybersecurity@itu.int](mailto:cybersecurity@itu.int)

### The role of the private sector

As hackers become more sophisticated, the time is shrinking between their discovering a vulnerability and developing a malicious code to exploit the weakness. Early warning and rapid response are key to protecting business assets, and in many countries, the private sector is typically the first to assess technological changes and threats. Also, through taking part in relevant forums or standards-development organizations, industry plays a critical role in agreeing technical standards to protect security.

What happened to the WorldPay system demonstrates the dramatic effects that insecure ICT systems can have on business and consumers. And because ICT infrastructure is, for the most part, owned and operated by the private sector, its involvement in promoting a national and global culture of cybersecurity is crucial. Since effective cybersecurity needs an in-depth understanding of the various aspects of ICT networks, the private sector's expertise and involvement are paramount in the development and implementation of national cybersecurity strategies.

### The role of individuals

In addition, it is important to educate individual users of ICT about the importance of cybersecurity, particularly given the open nature of the Internet and the need to implement security measures at the edges of the network on personal computers in the home. Unfortunately, users are often unaware of the various threats and how to keep their machines safe. At the same time, ICT systems are increasingly complex and peo-

ple may have to maintain systems that they do not fully understand.

For example, surveys have shown that a large percentage of personal computers are infected with viruses that have been unwittingly installed by users. As one result, hundreds of thousands of these computers have become zombies controlled by criminal gangs to create robot networks, or "botnets". These are used to send spam or launch denial of service attacks for blackmail purposes, as in the case of WorldPay.

Due to the interconnected nature of ICT, genuine security can only be promoted when every user is aware of the threats and dangers. Governments and businesses both must help people obtain information on how to protect themselves — and thus also the community at large.

### ITU's work on cybersecurity

Since cyberspace does not respect national borders, and because no country alone can solve the world's cybersecurity problems, we must find new methods for regional and international cooperation. This would encourage such key activities as the development of international standards, the coordination of legal systems, the halting of cyber-attacks in progress, and providing assistance to developing countries. As a unique forum of 191 Member States, private-sector members and other stakeholders, ITU has a clear role in promoting safety in cyberspace.

At the second phase of the World Summit on the Information Society (WSIS) in Tunis in 2005, ITU was named the facilitator and moderator for WSIS Action Line C5 on



Getty Images



“building confidence and security in the use of ICT”. To stress the importance of a multi-stakeholder approach, ITU named its work in this domain the Partnerships for Global Cybersecurity initiative. The next meeting on WSIS Action Line C5 takes place on 14–15 May 2007. It will assess progress achieved since the May 2006 meeting and develop future work programmes in areas relevant to addressing current and future threats.

The Plenipotentiary Conference in Antalya in November 2006 instructed ITU to focus on initiatives to assist developing economies in adopting the technology and processes needed to maintain cybersecurity. ITU’s Telecommunication Development Sector (ITU-D) conducts programmes and study group activities related to this mandate. The objectives of these initiatives include extending ICT applications and services and contributing to building security and trust in the use of ICT; increasing basic awareness and building human and institutional capacities; developing sound national policies and enforceable legislation; monitoring progress at national levels; expanding watch, warning and incident response capabilities, and coordinating peer-to-peer sharing of experience between developing and developed countries.

An important tool developed in ITU’s Telecommunication Standardization Sector (ITU-T) is its recently released ICT Security Standards Roadmap. It covers the work of not only ITU-T, but also of the International Organization for Standardization (ISO), the International Electrotechnical Commission (IEC), the Internet Engineering Task Force (IETF), and various consortia. The road map includes general guidance documents and management and security standards. It lists work in progress, as well proposals for new tasks.

For more information on the *ITU Cybersecurity Watch*, please contact [cybersecurity@itu.int](mailto:cybersecurity@itu.int)

- ▶ Details of the activities undertaken by ITU in the area of cybersecurity can be found at [www.itu.int/cybersecurity/itu\\_activities.html](http://www.itu.int/cybersecurity/itu_activities.html)
- ▶ More information on WSIS Action Line C5 and the Partnerships for Global Cybersecurity initiative can be found at [www.itu.int/pgc/](http://www.itu.int/pgc/)
- ▶ ITU Plenipotentiary Resolution 130: “Strengthening the role of ITU in building confidence and security in the use of information and communication technologies” (Antalya, 2006), can be found at [www.itu.int/osg/spu/cybersecurity/pgc/2007/docs/security-related-extracts-pp-06.pdf](http://www.itu.int/osg/spu/cybersecurity/pgc/2007/docs/security-related-extracts-pp-06.pdf)
- ▶ The ICT Security Standards Roadmap produced by ITU-T, is accessible at [www.itu.int/ITU-T/studygroups/com17/ict/](http://www.itu.int/ITU-T/studygroups/com17/ict/)
- ▶ ITU Cybersecurity Guide for Developing Countries, can be found at [www.itu.int/ITU-D/e-strategies/publications-articles/](http://www.itu.int/ITU-D/e-strategies/publications-articles/)
- ▶ ITU has created a Cybersecurity Gateway at [www.itu.int/cybersecurity/](http://www.itu.int/cybersecurity/) It is an easy-to-use information portal on national and international initiatives worldwide.
- ▶ The International CIIP Handbook: An Inventory and Analysis of National Protection Policies, is available at [www.crn.ethz.ch/publications/crn\\_team/detail.cfm?id=250](http://www.crn.ethz.ch/publications/crn_team/detail.cfm?id=250)
- ▶ The Council of Europe’s Convention on Cybercrime, is available at [www.coe.int/economiccrime/](http://www.coe.int/economiccrime/)





IET Archives

Alexander Bain (1811–1877)

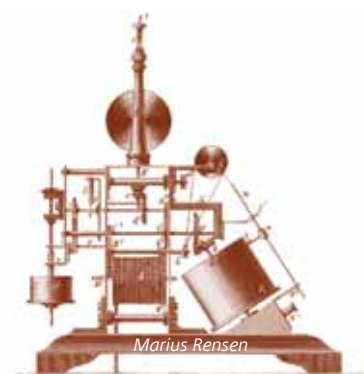


Illustration of Bain's machine in 1850

## Pictures via a pendulum

### The invention of the fax machine

Sending images through telephone lines to be reconstructed at the receiver's end as a facsimile of the original — or fax — is nowadays being overtaken by other forms of electronic communication. But remotely printed paper messages still have many uses, and have done for more than 150 years. It might surprise you to know that the fax machine was invented decades before the telephone.

#### The Scottish shepherd

Sending a message by wire became possible with the start of telegraphy. But what about the amazing prospect of sending a signature or picture? In answer to the question in last month's Pioneers' Page, this technique was first demonstrated in the 1840s by a Scotsman, Alexander Bain.

Bain was born in 1811 in Caithness, in the far north of Scotland, one of 13 children of a crofter. As a boy, he helped to look after the sheep, but on leaving home he trained as a clockmaker, eventually moving to London in 1837 to pursue his trade. As well as mechanical devices, Bain was fascinated by electricity. In 1841, he patented the world's first electric clock, which worked with a pendulum moved by electromagnetic impulses; this was to be an important step on the road towards the fax machine, which became Bain's next invention.

A vital element of his "recording telegraph" was synchronization of the pendulums of two clocks which, for the scientist's initial experiments, were about 70 kilometres apart in Edinburgh and Glasgow. Whenever the Edinburgh pendulum moved, a pulse of electricity went along a telegraph wire to a solenoid on the Glasgow pendulum that moved it simultaneously. Attached to each pendulum was a metal stylus. At Edinburgh, this swept backwards and forwards across a picture etched in copper (or, later, printer's type), and when it met a line in the drawing an electrical contact was made. The signal made the Glasgow pendulum move across paper soaked in potassium iodide, which changes colour when an electrical current passes through it.

#### Scanning line-by-line

A crucial feature of the recording telegraph was its use of scanning. The copper picture that was being transmitted was moved along by tiny amounts with each sweep of the pendulum; at the receiving end, the sensitive paper was on a roll that advanced with each stroke. Thus, a facsimile image was gradually constructed, line by line.

## Question for next time

Printing words mechanically was another way to send writing by telegraph. In what year was the typewriter first patented?

Bain was granted a British patent on his device in 1843. His invention was later improved by another Briton, Frederick Bakewell, whose system used revolving drums covered with tin foil. The image was drawn onto the transmitting drum with a non-conductive material. The drum was then scanned, while at the receiving end, an image was produced on chemically treated paper wrapped around the second drum. Bakewell gave the first public demonstration of a fax transmission in 1851 at the Great Exhibition in London.

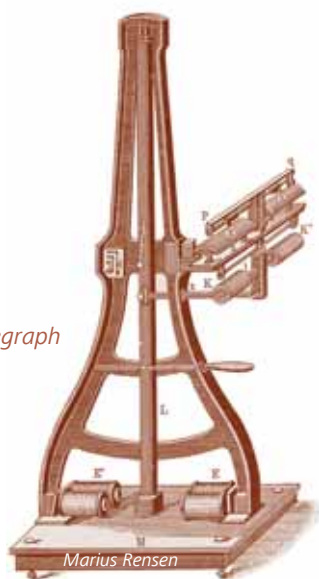
### The Italian priest

Despite these successes, it remained a problem to achieve perfect synchronization of the transmitting and receiving ends of the first fax systems. The challenge was taken up by an Italian priest, Giovanni Caselli (1815–1891), who researched into the telegraphic transmission of images while teaching physics at the University of Florence. In 1860, working in Paris, he built a machine that he named a “pantelegraph”. Essentially a giant, 2-metre-tall version of the earlier devices, it overcame the synchronization problem by triggering pendulum movements with extremely accurate clocks that operated independently of the electric current sent down the telegraph line.

The pantelegraph was widely acclaimed, and France’s Emperor Napoleon III gave it his backing. Caselli was allowed to use a telegraph line between Paris and Amiens to test the device, which he patented in 1861. A commercial fax service was started in 1863 between Paris and Marseille, followed in 1865 by one between Paris and Lyon. Thousands of faxes were now being sent across France by pantelegraph.

However, the pantelegraph failed to become a long-term success. It was not promoted well enough, and more simple forms of telegraphic transmission ultimately prevailed. It serves as an example of a technology that did not find a niche because it was ahead of its time. Nevertheless, four years before the birth in Scotland of Alexander Graham Bell who patented the telephone, Scotsman Alexander Bain had arrived at the concept of image scanning that was to be the basis of not only the fax technology of the future, but also of a fundamental technique of television.

Caselli's pantelegraph



*In 1902, Arthur Korn, of Germany, demonstrated the first photoelectric fax system, and in 1922 one based on radio signals. Faxes became widely used for transmitting newspaper content and weather maps. ITU played an important role by approving the first international standards for fax machines (Group 1) in 1968, followed by Group 2 standards in 1972 and Group 3 in 1980. The time needed to transmit a page was reduced from six minutes to less than one, and the standards were essential factors behind the boom in fax technology of the 1980s.*



*Giovanni Caselli was reportedly given the task of constructing the famous pendulum of French physicist J.B. Léon Foucault, which was used to demonstrate the rotation of the Earth*

# Official Visits

During April 2007, courtesy visits were made to ITU Secretary-General Dr Hamadoun I. Touré by the following dignitaries: a deputy minister, ambassadors to the United Nations Office and international organizations in Geneva and a director-general of a telecommunications administration.



Kenya's Ambassador  
Maria Nzomoy



The Republic of Korea's  
Ambassador Choi Hyuck



Mozambique's Ambassador  
Frances Rodrigues



Ghana's Ambassador  
Kwabena Baah-Duodu



Albania's Deputy Minister of  
Public Works, Transport and  
Telecommunications Nikolin Jaka



Comoros's Ambassador to France  
(Paris), Mohamed Soulaïmana



Egypt's Ambassador  
Sameh Shoukry

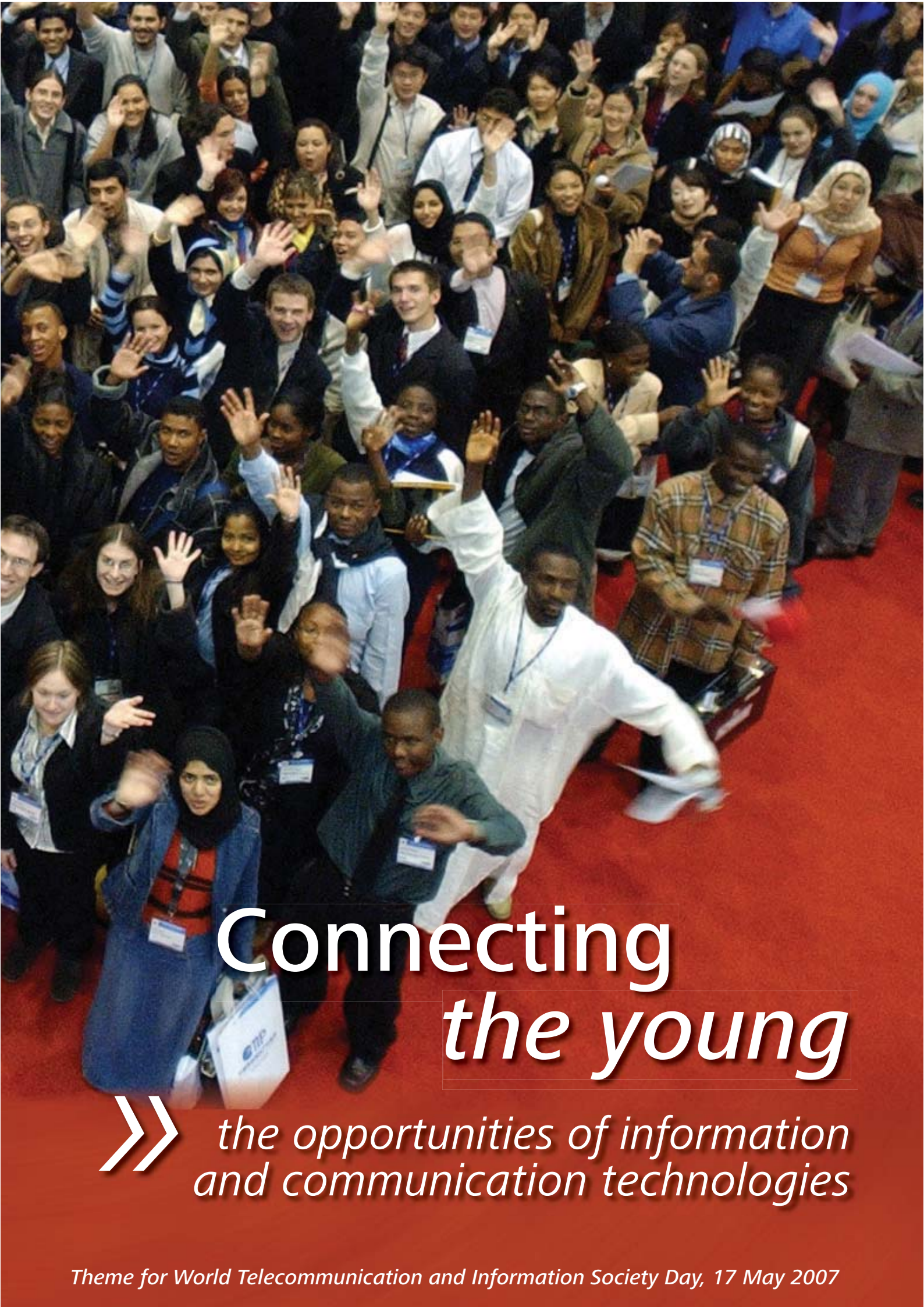


Director-General of the  
Principality of Andorra's Servei de  
Telecomunicacions d'Andorra (STA)  
Jaume Salvat



Kyrgyzstan's Ambassador  
Muktar Djumaliev





# Connecting *the young*



*the opportunities of information  
and communication technologies*

*Theme for World Telecommunication and Information Society Day, 17 May 2007*





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