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## The UN Broadband Commission for Digital Development

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### Abstract

High-speed broadband networks are an essential element in today's society, and access should be available on an equitable basis, worldwide. The infrastructure should have the same fundamental importance as the infrastructure associated with transport, power and water supply. This paper explores how that goal can be achieved, and describes the work being done by the UN Broadband Commission for Digital Development. The Commission is working towards making broadband cost-effective and affordable to all, and towards increasing Internet user penetration in developing, as well as developed, countries. It is currently leading a trans-sectoral project aimed at the worldwide eradication of malaria, which will use digital technology such as smartphones to enable cohesive, trans-sector communications.

Introduction

With the support of United Nations Secretary-General Ban Ki-moon, the Broadband Commission for Digital Development was launched on 10 May 2010 by the International Telecommunication Union (ITU) and the United Nations Educational, Scientific and Cultural Organization (UNESCO).

It is chaired jointly by President Paul Kagame of Rwanda and Mr Carlos Slim H?lu, Honorary Lifetime Chairman of Grupo Carso, with ITU Secretary-General Hamadoun I Tour? and UNESCO Director-General Irina Bokova as vice-chairs. They are joined by top-level figures from government, industry and international agencies, as well as those concerned with the content that will be delivered through broadband networks, from education to entertainment.

The job of the Commissioners is to define practical ways in which countries ? at all stages of development ? can provide access to broadband networks for their citizens, in cooperation with the private sector. They reported their findings to the UN Secretary-General in September 2010, immediately before the summit held in New York that reviewed the work on achieving the Millennium Development Goals [5] by the target date of 2015. With only five years left before 2015, broadband networks were viewed as an essential and uniquely powerful tool for achieving those goals and lifting people out of poverty worldwide.

The author assisted the ITU in setting up the Broadband Commission and was the lead author of the report: ?Broadband: a Platform for Progress [6]? (UN Broadband Commission 2011 [7]). This report provides definitions and outlines the key policy and technology areas that need to be addressed, as well as the trans-sector approach that should be taken in relation to broadband developments.

## The connected society

Broadband connections to the Internet are an essential element in modern society, with wide economic and social benefits. In every nation (not just the richest) these networks should be seen as having the same fundamental importance as transport, power or water networks. This is the message of the Broadband Commission for Digital Development.

According to ITU statistics, more than a quarter of the world?s population now uses the Internet, and that number is rising fast. Many of us have become used to going online for information, entertainment, commerce and social contact. But the Internet delivers much more than that. High-speed, high-capacity networks ? what we know as ?broadband? ? can be used to carry data and services that can significantly widen horizons and opportunities for people everywhere. They can do so across all sectors, and they can do so very cost-effectively.

How does broadband achieve this? There are three main areas where these networks are having a growing impact: services that are visible to individual Internet users; services that enable professionals to provide communities with a better quality of life, and services that control industrial and other processes in the essential infrastructure of society. Here are just a few examples:

- **Infrastructure and industry:** In the electricity industry, broadband networks can show consumers and suppliers how much power is being used in real time, and where. This means that demand and supply can be stabilised as power is delivered or stored on ?smart grids?. And in ?smart buildings? energy is saved through constant monitoring of heating and lighting. The manufacture and distribution of goods can be constantly tracked using broadband networks, which are also the foundation for cloud computing that offers rapid scalability of resources for businesses ? as well as flexible access for individuals;
- **Education:** Through e-learning, broadband improves access to digital resources, extending education to more people, of all ages and at all levels of need, and reaching out to previously

deprived communities. It also helps in training teachers and linking databases to improve administration;

- **Research:** Using broadband it is now possible for universities and research institutes to share vast amounts of data worldwide, and for students to read books in libraries on the other side of the world. This speeds up work in countless fields, including areas like medicine and agriculture that have an especially important impact on the lives of people in the poorest regions;
- **Environment and emergencies:** One particularly important area of research involves monitoring the world's environment, through sensors on the ground or data collected by satellite. Broadband networks ensure that data are transmitted swiftly to show, for example, the effects of climate change, crop shortages, or impending natural disasters. Broadband helps again by supporting emergency communications and medical assistance.
- **Transport:** Safety on the roads is improved by broadband delivering real-time information to traffic control systems and individual drivers. It helps to streamline traffic flows, cut fuel consumption and minimise accidents, making it much easier to integrate all types of transport safely and efficiently;
- **Lifestyle:** At the same time, videoconferencing removes the need for travel, and with a broadband connection, people will increasingly be able to work away from the office and while on the move. Whether through a mobile device or at home, they can also enjoy a huge range of content produced by the publishing, music and video industries, for which broadband networks have become a leading delivery channel;
- **Healthcare:** Network-based monitoring of chronic medical conditions and low-cost remote consultation and intervention will be increasingly favoured by medical professionals, particularly those serving remote communities or ageing populations. Telemedicine, as it is known, will give many more people a better chance of health;
- **Democracy and culture:** By putting information online, local and national governments can not only keep citizens up to date with what is happening; they can also offer immediate and interactive access to services, such as applying for licences or registering to vote. Citizens themselves have a powerful platform on which to create spaces for sharing ideas and for expressing the creativity of their particular cultures.

## A cost-effective platform for progress

At present, millions of people cannot enjoy these benefits because broadband networks are seen as expensive and unprofitable to construct. Even where they do exist access is often prohibitively expensive. Broadband subscriptions cost less than 2.5 % of Gross National Income (GNI) per capita in the 40 most connected nations. But at the other end of the scale, in the 30 countries with the lowest level of broadband penetration, subscriptions cost over 100% of per-capita GNI.

And yet a report issued by the OECD in December 2009 (Network Developments in Support of Innovation and User Needs) suggests that broadband networks can pay for themselves within ten years, because of the savings made in delivering services. In Australia, for example, it has been estimated that cost savings in health care alone could pay twice over for the country's national broadband network. For developing countries, the solution is likely to be found in mobile broadband ? using a mobile phone, of which there are now some five billion worldwide, to connect to the information society. By improving education, medical services, trade and more, broadband Internet access can make a tremendous difference. High-speed networks can lead to high-speed growth.

In the same way that the construction of electricity grids and transport links spurred innovation far beyond the dreams of their builders, high-speed broadband networks stimulate greater efficiency and the creation of new businesses. For society as a whole they are a platform for progress, and the Broadband Commission for Digital Development will do its best to encourage government and industry leaders to take action on installing broadband for all.

## Broadband targets for 2015

The Broadband Commission has set four clear, new targets for making broadband policy universal and for boosting affordability and broadband uptake:

- **Target 1: Making broadband policy universal.** By 2015, all countries should have a national broadband plan or strategy or include broadband in their Universal Access / Service Definitions.
- **Target 2: Making broadband affordable.** By 2015, entry-level broadband services should be made affordable in developing countries through adequate regulation and market forces (for example, should amount to less than 5% of average monthly income).
- **Target 3: Connecting homes to broadband.** By 2015, 40% of households in developing countries should have Internet access.
- **Target 4: Getting people online.** By 2015, Internet user penetration should reach 60% worldwide, 50% in developing countries and 15% in the least developed countries (LDCs).

The Commission will report on these targets on an annual basis. The first report was published in 2012: *The State of Broadband in 2012, achieving digital inclusion for all*<sup>[8]</sup>. The ITU also contributes its own extensive data-gathering and analytic resources for this purpose.

## Example of an important initiative taken by the Commission

Applying mobile broadband to eradicate malaria

In September 2012 UN Broadband Commission for Digital Development decided to support initiatives that would lead to the building a truly trans-sectoral project aimed at the worldwide eradication of malaria. In the meantime this initiative has been expanded to cover a wider range of health initiatives aimed at accelerating community health worker programs in sub-Saharan African countries, scaling them up to district, regional, and national levels to meet the health-related Millennium Development Goals. With the use of the latest communications technology and diagnostic testing materials, these frontline workers link the rural poor to the broader healthcare system of doctors, nurses, hospitals and clinics.

The project was launched in January 2013.

**Malaria** is one of the biggest killers of children in Africa. A dozen years ago, all seemed lost ? the standard medicine had lost its efficacy as the parasite became resistant; insecticide-treated bed nets were little-used because they had to be regularly re-treated with the insecticide, a practical burden that poor villages could not manage; and diagnosis required that the mother and sick child trek to a distant clinic in the desperate hope the clinic had a functioning laboratory.

Progress in eradication has stalled. There were one million deaths in 1990 but very little further progress has been made over the last decade. Clearly a new approach ? driven by broadband and smart technologies ? is required.

The lack of proper communication systems in the areas affected by malaria ? particularly in the Sub-Saharan ? and the need for quick action are critical elements in the fight against malaria. These elements are the main reason there are still 750,000 deaths from malaria every year, mainly children. The disease is not preventable but if diagnosed within 24 hours it can be treated. The medicine itself costs 80 cents and the blood test needed to diagnose the disease also costs 80 cents, so these are no longer factors that prevent society from tackling the disease.

What makes the Broadband Commission an ideal platform to address this issue is the fact that broadband technology can be a catalyst in solving the communication problem, and that the Commission takes a holistic approach towards broadband as a facility to solve problems in relation to healthcare, the environment, energy saving, education and the digital economy. Current efforts towards the UN Millennium Development Goals have been fragmented and silo-based, which stops the upscaling of projects, while many of the issues the Broadband Commission is advocating can be addressed by effective broadband policies.

Smartphones and mobile coverage are needed to address these issues. Already an application has been developed that allows you to put a drop of blood from a possibly infected child onto a smartphone screen, which sends an electronic sample to a laboratory for testing. The results can be delivered back electronically within an hour.

This would, of course, make immediate life-saving treatment possible.

What is needed is for local community workers to be trained (this takes approximately one day) and to obtain a smartphone. Then, as long as there is mobile coverage, the disease can be attacked and basically eradicated.

The Broadband Commission accepted the challenge and it has committed to actions aimed at supplying, within three years, the necessary smartphones ? approximately one million of them ? and connecting malaria-infested areas to mobile communication networks.

Connecting one million community health workers

Across the central belt of sub-Saharan Africa, community health workers (CHWs) deliver life-saving health care services where it's needed most, in poor rural communities. In this region, 10 to 20% of children die before reaching the age of five. Maternal death rates are high. Many people suffer unnecessarily from preventable and treatable diseases, from malaria and diarrhoea to tuberculosis and HIV/AIDS. Many of these residents would otherwise have little or no access to the most fundamental aspects of modern medicine. Many countries are struggling to make progress toward the health related MDGs partly because so many people are poor and live in rural areas beyond the reach of modern health care.

Community health workers have been recognised for their success in reducing morbidity and averting mortality in mothers, newborns and children. These workers are most effective when supported by a clinically skilled health workforce, and deployed within the context of an appropriately financed primary health care system. However, they have proven crucial in settings where the overall primary health care system is weak. They also represent a strategic solution to address the growing realization that shortages of highly skilled health workers will not meet the growing demands of the rural population. And, they are a vital part of primary health systems that will last well into the post-Millennium Development Goals period for other health issues like non-communicable diseases.

As we approach 2015, many nations are working towards achieving the health-related Millennium Development Goals. Community health worker programs have been in place for a number of years, through government health programs and other non-governmental initiatives, like the Millennium Villages Project. In addition to providing basic treatment and preventative care, CHWs help keep track of disease outbreaks and overall public health, and offer a vital link between underserved residents and the primary health care system.

### The action plan

The effort begins with the training of national core groups who would be equipped to train others on the regional level, on down to the actual community health workers. While they have limited clinical training, the frontline workers would be supervised by more clinically-skilled members of the health care system. Scaling in this way allows an opportunity to tailor the program to each nation's particular needs and systems.

At the same time existing community health worker programs operating in countries such as Ethiopia, Kenya, Malawi, Nigeria, Rwanda, Senegal and Tanzania, should be upgraded to become national systems, including deployment of standardised protocols and use of mobile devices such as smartphones to integrate community health practices with national health information systems.

The systems should include ways to monitor progress on key metrics, such as maternal and child mortality, antenatal care rates, fever detection, HIV prevention, tuberculosis and malaria control, and nutrition. They should also include databases of community health workers to help track the program's progress in spreading better health care to rural areas.

### The cost

The new campaign will work with governments and aid agencies to finance and train the cadre of health workers, each of whom would serve an average of 650 rural inhabitants, at an estimated cost of US\$6.58 per patient per year. This adds up to an estimated US\$2.5 billion, which includes funding already being spent by NGOs and governments on these programs. These estimates fall within projected governmental health budgetary constraints and are within the boundaries of donor assistance already pledged and anticipated.

### Smart technologies

Biomedical technology has now produced rapid home test kits for malaria and HIV diagnosis, sputum collection for the detection of tuberculosis by genetic amplification, and pregnancy tests. These innovative instruments have enormous potential for impacting healthcare provision in the developing world, especially at the periphery of the health system and in rural areas.

Broadband access and smartphones can link community health workers to the national health system and allow for real-time disease surveillance, child and maternal health monitoring, mobile training, supply chain management and capturing of vital events.

Arming lay health workers with consistent supplies of life-saving medicines and easy-to-follow treatment protocols guarantees a minimum quality of services delivered to these clients. Active care and disease detection according to rigorous guidelines has greater benefit to the formal health system than the usual passive case detection and referrals to upper levels of care.

## Key contributors to the malaria eradication project

The initiator of the malaria eradication project is Broadband Commissioner Professor Jeffrey Sachs, an American economist and Special Adviser to UN Secretary-General Ban Ki-Moon on the Millennium Development Goals. He is co-founder and Chief Strategist of Millennium Promise Alliance, a non-profit organisation dedicated to ending extreme poverty and hunger. From 2002 to 2006 he was Director of the UN Millennium Project's work on the Millennium Development Goals ? eight internationally-sanctioned objectives to reduce extreme poverty, hunger, and disease by the year 2015. Since 2010 he has also served as a Commissioner with the Broadband Commission, from which he is now leveraging broadband technologies as a key enabler for the malaria project.

Commissioner Sachs sees this as a commercial project, not a hand-out, but hopes that the industry will work at cost rather than on a for-profit basis. The funding of the project can be done through combining available investments from the many organisations already involved in the various elements of this initiative.

From his senior international position Jeffrey has agreed to organise the effort with the countries where the project will be launched, together with the World Health Organisation, the World Bank, the African Union, national governments and local and regional health organisations. This will include recruiting and training approximately one million local health workers.

He already has secured the political support of the African Union, as well as that of the Millennium Development Goals Advocacy Group, which is co-chaired by the Prime Minister of Australia, Julia Gillard, and President Paul Kagame of Rwanda. President Kagame is also the co-chair of the UN Broadband Commission and Stephen Conroy the Minister for Broadband in Australia is a Commissioner of the Broadband Commission.

Broadband Commissioner Denis O'Brien, the CEO of Digicel, has taken a leadership role within both the Commission and the broader telecoms industry. His company operates in the Caribbean and the South Pacific, and he also agreed to look after the projects in Papua New Guinea and Haiti, two other countries where malaria is still widespread.

Other critical partners represented by CEOs and Secretary-Generals in the Commission are UNICEF, the United Nations Foundation and, through them, also USAID and the mHealth Alliance. The last two joined forces to form a three-year public-private partnership called mPowering Frontline Health Workers. This public-private partnership is specifically designed to improve child health by accelerating the use of mobile technology by millions of health workers around the world.

The mHealth Alliance, serving as the partnership secretariat, will coordinate and amplify the resources and expertise of ten founding members: USAID, UNICEF, Frontline Health Workers Coalition, Qualcomm, Vodafone, Intel, MDG Health Alliance, GlaxoSmithKline, Praekelt Foundation and Absolute Return for Kids. They are all going to play a key role in the overall project.

All of these close links are making it possible to cut through the bureaucracy and get the project off the ground. Also critical, of course, is leadership from the industry, and Denis O'Brian is clearly on a mission ? talking to his colleagues in Africa as well as to the vendors (most of the larger ones are also represented by their CEOs in the Commission).

## Progress by the Commission to date

The outcomes so far are very encouraging, especially the momentum behind the use of ubiquitous broadband to eradicate malaria. The Commission does not wish to take credit for this success, but it certainly is providing global leadership, especially to those countries and organisations associated with the 4.5 billion people who are currently not yet connected.

The Commissioners are also actively involved in projects and other initiatives aimed at reaching the targets, as indicated in the example below.

Furthermore, the Commissioners act individually as ambassadors to advise, inform and educate governments and international organisations, such as those involved in the UN's Millennium Development Goals (MDGs).

The role of the Commission is reviewed annually and it is most unlikely that it will continue long-term if it cannot deliver a positive contribution to global digital developments. In principle its role will end if broadband and ICT in general are successfully incorporated into national government policies and in the strategies of the various international organisations with which the Commission works.

If the Commission continues beyond 2015 it will most likely be in a different format, depending on the rapidly changing developments in the broadband and ICT markets.

## Conclusions

Australia was instrumental in the original set-up of the UN Broadband Commission, and the international lead it has taken in national broadband infrastructure rollout and related digital economy initiatives have been a catalyst to this UN process. It is great to see this United Nations initiative now moving into such important global issues as eradicating epidemics; and the Commission's work also shows the power of broadband in sectors such as healthcare, education and e-commerce.

The UN Broadband Commission has identified practical ways in which all countries ? at all stages of development ? can, with cooperation between government and the private sector, provide their citizens with access to broadband networks. Broadband networks are an essential and uniquely powerful tool for achieving the Millennium Development Goals, aimed at lifting people out of poverty worldwide. The Commission has introduced its manifesto and set ambitious targets for 2015.

The Commission has seen a trans-sector approach to infrastructure as being essential, for creating synergies between infrastructure projects and application sectors, to achieve important national goals.



It can be said that the Commission has already helped achieve some notable policy successes. For example, it has succeeded in boosting ICTs and broadband on the global policy agenda, as well as contributing to the outcomes of proceedings at the Fourth United Nations Conference on the Least Developed Countries in Istanbul. It has also inspired enthusiasm for greater engagement with the UN among key business figures and provided the model for the World Health Organization's Commission on Information and Accountability for Women's and Children's Health. At its latest conference in September 2012 the Broadband Commission launched work groups on empowering women and girls with the help of broadband, plus a malaria eradication project using mobile networks and smartphones. These practical projects augur well for the future.

## References

UN Broadband Commission. 2011. 'Broadband: a platform for progress?', June 2011, available at <http://www.broadbandcommission.org/work/documents.aspx> [9]

## Endnotes

1. See also: <http://www.broadbandcommission.org/> [10]; and Youtube channel at: <http://www.youtube.com/broadbandcommission> [11].

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