Developing the Network for Growth and Equality of Opportunity

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Billions of the world's citizens, their governments, and the organizations that employ them would not be able to work without networks. The half-imaginary "information superhighway" of the 1980s has actually become a critical element of national and global infrastructure.[1] As noted by the US Department of Homeland Security in its Communications Sector overview, "Over the last 25 years, the sector has evolved from predominantly a provider of voice services into a diverse, competitive, and interconnected industry using terrestrial, satellite, and wireless transmission systems."[2]

The importance of this infrastructure is widely acknowledged.[3] There is a correlation between network uptake and national economic performance, measured by annual GDP. The World Economic Forum has developed the highly respected Networked Readiness Index (NRI)[4]—and it is no coincidence that economies that score high in the NRI regularly achieve excellent results in terms of GDP.[5]

BRINGING THE EXTRAORDINARY TO EVERYONE, EVERYWHERE

Access to global networks is undoubtedly a catalyst for growth and opportunity.[6] One of the great challenges we now face is how to make sure growth is fair, even, and inclusive. It should not favor any single economic block, social group, or profile of enterprise. The World Summit on the Information Society's Declaration of Principles put it this way:

> A well-developed information and communication network infrastructure and applications, adapted to regional, national and local conditions, easily-accessible and affordable, and making greater use of broadband and other innovative technologies where possible, can accelerate the social and economic progress of countries, and the well-being of all individuals, communities and peoples.[7]

The information superhighway vision was egalitarian—a two-way street where everybody could access opportunity.[8] Can that vision of inclusiveness survive? We believe it can.

This chapter looks at some specific examples of ways network infrastructure and information technology (IT) services stimulate inclusive economic activity. It presents a case for selective investment in information and communication technologies (ICTs) to produce inclusive growth, pointing to numerous examples of ways in which network access can be selectively applied to provide economic, social, and humanitarian benefit where it is most needed.

The target for this selective investment varies. It may be a town lagging behind in economic development,

a small local community where a surgical injection of support can help social leveling, an ethnic minority wanting its fair share of a prosperous nation's wealth, an impoverished slum, the aged, the orphaned. The list includes all communities and stakeholders who are in a situation of inequity and who would benefit from a level playing field. Selective, targeted distribution of digital access can help promote economic and social inclusion precisely where it is needed most.

This chapter considers some of the regulatory issues involved in developing an effective market for network infrastructure and concludes by describing a vision for leveraging networks to boost economic activity and social benefit selectively throughout the world.

STIMULATING SELECTIVE ECONOMIC ACTIVITY IN THE DEVELOPING WORLD

In India, people who know their way around a computer and the Internet might have a bright future. But for those living in a Delhi slum, even school looks out of reach and IT skills must seem like mission impossible. The Katha Information Technology and E-Commerce School (KITES) in the heart of the capital has set out to change that.

India has a thriving software and services industry. But, with a third of the population below the poverty line, computer literacy and a career in IT are beyond the reach of many. Of Delhi's 5 million school-aged children, 40 percent never complete their education. Others drop out to work in low-income jobs with no hope of a better future.

But Katha, a not-for-profit publishing and teaching organization based in Delhi, is out to break down those barriers through a three-pronged approach. It wants to empower people through education in interactive, technology-based classrooms. It wants to open up the world to individuals via the internet. And it wants IT to be an essential part of everyday life for everyone through online chats, email exchanges, blogs, and online stories and essays.

Schools are at the heart of the Katha transformation program. It launched its first in 1990 with just five pupils. Today, it provides education in 39 schools and 41 reading programs across 72 slums and in 50 government-run schools. In 2001, it opened the Katha Information Technology and E-Commerce School (KITES) in Govindpuri, the most deprived area of Delhi.

KITES has already transformed the lives of thousands.[9] Children as young as three years old can try out the computer, mouse, and keyboard. Once they are 14 or older, they can study for an IT certificate; KITES has already awarded more than 19,000 of these certificates. In 2012–13, 1,350 students attended KITES courses. More than half were girls and women. There were also people from non-literate families, shopkeepers, and community teachers. There is solid proof that those classroom studies translate well into the world of work:

an astonishing 80 percent of certificate holders find jobs.[10]

It can be easy to say "we must give poor people in the developing world Internet access." But when most of the population does not have a landline in their home, how can you actually reach them?

One creative answer is to make the drinks dispenser in their community an Internet access point. Modern vending machines are Internet-connected so they can report on stock levels and automatically send replenishment orders. They can therefore easily be adapted as Wi-Fi hotspots. A pilot partnership between a soft drinks manufacturer and a telecommunications company is doing this in Umtata and Nelspruit in South Africa.[11] At present it is only a small-scale pilot in its early stages, but the organizations involved expect there to be a commercial return from hotspot users buying soft drinks.

Commercial organizations have a vital role to play, but they are not charities. There usually *is* a payback of some sort, though it might come from an unexpected direction.

A second possibility for commercial benefit (and thus providing incentive to private enterprise) is that providing Internet access may come as a by-product of achieving greater operational efficiency for the organization. In Africa, for example, a global telecommunications company has partnered with the aid group SOS Children's Villages to install broadband satellite connectivity in 20 villages across 12 countries.[12] This has helped the vulnerable children and families living in these villages to access online services, including the group's own e-learning and online mentoring service. Broadband connectivity helps it maintain better operational communications into the villages, allowing video conferences and web-training sessions, as well as providing a lifeline in emergencies. Donors can also see online photos and videos uploaded by the families they sponsor.

GLOBAL BUSINESSES CAN MAKE A DIFFERENCE AT THE MICRO LEVEL

Global businesses use networked IT services to create new wealth. Of course, they do this as part of their commercial agenda. But they also engage and energize at the local, micro level. Local businesses, their customers, their partners, and their communities all benefit. Providing this benefit is often central to the corporate mission.

For the benefits of global growth to be transformed into equitable outcomes for the most-needy sectors of society, barriers to entering spheres of business influence have to be removed. For many physically remote businesses, "building networks" has a double meaning. It is both informational *and* social. Through the Internet, they can access information and socialize

virtually as global business networkers, even from the most isolated locations.

Message Stick is an Australian initiative that enables indigenous peoples—some of their prosperous country's most marginalized citizens—to access economic success through entrepreneurship and business community networking.[13] It is still highly unusual for indigenous Australian suppliers to compete for corporate business. Niche technology service provider Message Stick has broken this mold, building a customer base that includes some of the country's top organizations. Message Stick now sells audio conferencing and web services to leading corporations and government agencies, and has rapidly become a multimillion dollar business.[14]

Instant and secure exchange of financial information enables even the most remote communities to take part in 21st-century economic models, contributing to the progressive fall in the numbers of the unbanked and the unwaged.[15] Access to financial infrastructure is becoming secure, easy, prolific, and culturally accepted. In any rapidly developing economy, however, some delay exists between macroeconomic progress and individual involvement with the financial infrastructure. This involvement can be stimulated by network-based services in situations where conventional branch banking access is physically difficult.

In Brazil, for example, the famous CAIXA lottery is more than a game—it is a national financial institution. Lottery outlets also provide banking in remote locations. The role of network technology is key to its smooth operation. A combination of satellite, broadband, and radio unites the country in a network that, in one year, securely and swiftly processed around 3.8 billion transactions. One-third of these transactions are pure financial services rather than lottery wagers. The network provides the physical means for millions of rural Brazilians to plug in to their country's progress toward financial inclusion.

Network access quickly becomes central to business innovation and ambitious growth. A South American meat producer and distributor, with processing plants spread across five remote rural areas, is gaining new access to global markets. Using a cloud solution, the company can securely store and distribute data and match stringent compliance requirements. From Colombia it now exports to Bolivia, Chile, Ecuador, Peru, Russia, and Venezuela, among others.[16] It may be a global business, but its use of IT is delivering selective inclusive benefit to its employees in the poor rural communities where they live.

SELECTIVE DIGITAL ACCESS HELPS SMALL, LOCAL, COMMUNITY-BASED PROJECTS IN DEVELOPED NATIONS TOO

In an economically depressed region of South Wales in the United Kingdom, Citizens Online is orchestrating a community development approach to digital inclusion called Get IT Together.[17] Unemployed people volunteer to give basic IT classes to others who lack the skills to benefit from online curriculum vitae (CV) or resume-writing and job-hunting services. The volunteers get work experience that can add to their CVs and the trainees learn skills that can help them advance.

Another small community of just 138 residents in a deprived Glasgow housing association block is benefitting in the form of affordable Wi-Fi.[18] Their previous lack of Internet access cut them off from many services that could help them improve the quality of their lives. Telehealth services, welfare services, education, training, and job-seeking services are all now as accessible to these disenfranchised people as to their more affluent neighbors down the road.

The rollout of modern Internet access has the potential to erode the margin between wealth and poverty where they exist side by side. In the holiday region of southwest England there is a sharp economic divide between the coastal and inland areas. The coast has more employment, much of it related to the leisure and tourism industry, and includes many second homes and holiday cottages. By contrast, the inland regions have fallen into decline since the demise of traditional industries such as mining for copper, tin, granite, and slate. So imagine what fast Internet access is doing for a small, family-run toy shop in Bodmin, whose main competition is the global online giants.[19] They can upgrade their e-commerce site with pictures, videos, and faster response times to help bring a little more prosperity to their struggling inland community.

Age can be another barrier to the economic and social benefits of digital inclusion—and one that disregards all geographical boundaries. Some 60 percent of people in developed nations over the age of 65 have never been online, compared with 18 percent of all adults. The Age UK Digital Inclusion Network has 178 member organizations throughout the United Kingdom delivering computer skills training to older people.[20] The program has repeatedly shown that imaginative partnerships between government, industry, and the voluntary sector are key to bringing about digital equality. That equality allows the older generation to be included in the economic and social benefits of the online world.

Even apparently lucrative sectors in developed economies need selective help from IT. Financial services providers are not all multinational—many are small and local. Independent financial advisors (IFAs) are an important part of a diverse financial services ecosystem. They are the preferred contact point for many consumers who want a human face to help them make key financial decisions. Yet the increasing regulatory and cost burdens confronted by IFAs mean that many have been unable to continue trading, or are struggling. Networked IT services provide secure, accredited access to the portals of the larger financial

services providers they represent. [21] For many IFAs, this has proven vital to survival.

IMAGINATIVE USE OF NETWORKING CAN HELP GOVERNMENTS TRANSFORM CITIZEN SERVICES

Governments need to drive scarce resources into frontline service delivery and avoid having those resources consumed by back office processes. They need to deliver better public-sector value through more, and more selective, use of digital channels to deliver more effective and efficient services. They need to be digital by default.

Pressure on public funds creates corresponding pressures to reduce the scale of the public sector. But there are many regions where the public sector accounts for a substantial proportion of the total economy. Here, the ideal is to continue to deliver as much—or preferably more—with less.

In one post-industrial area of the United Kingdom, networked IT services in the public sector are enabling process efficiencies and delivering cost reductions.[22] This is happening even though *more people* are being employed: the public sector is measurably stimulating the local economy. And in a heavily public sector–dependent environment, a regional administration has shown that the machinery of government can continue to function while associated costs are reduced through process transparency and efficiency.[23]

Government is also able to leverage networked IT to promote selective growth on a town-by-town basis. In one UK economic development area, government is actively contributing to the knowledge and planning required to create sustainable economic growth.[24] This growth is in the context of improved quality of life for residents and workers in a particular town.

The heart of the project is a data hub. The hub, using cloud and big data technology, will collate a variety of information from a range of sources. This will include energy, transport, and water usage data; satellite-based weather and pollution data; societal and economic datasets; and data crowd-sourced from social media. The hub will make it possible to design and implement radical new solutions that provide for projected 64 percent economic growth in the region by 2026. The project will help the planning of a sustainable way forward that includes improved built environment management, 50 percent reduction in traffic congestion, and major savings in water and other key resources consumption.

A REGULATORY LEVEL PLAYING FIELD IS NECESSARY FOR HIGH-QUALITY, LOW-COST GLOBAL NETWORK ACCESS

Equitable growth through equality of opportunity is one of the many positive outputs of global network access.[25] For such equal opportunity to be delivered consistently, the right input—equality of access to highest possible quality, lowest possible cost network services—is essential. This is not just a question of overcoming technical issues and physical environments. It also requires a regulatory environment that encourages constructive competition, one that is consistent in its rules across geographies and technologies (e.g., that applies equally to both fixed and mobile technologies).

The ideal situation is one with no marked regulatory differences between fixed line and mobile communications networks. Customer expectations for best-quality service would be met at the lowest price through the most cost-effective route to the user's device. In an age of ever-increasing network convergence (between fixed and mobile), neither mode should be at a regulatory disadvantage. And customer expectations of convenient, consistent service provision would be met. These are the preconditions for healthy network expansion, technology innovation, and continuing spread of digital access to those who need it most.

Achieving this ideal does not involve removing regulation and encouraging a market free-for-all. Instead, it requires *alignment* of regulatory strategies across the world. Regulation also needs to focus on the bottlenecks at points of access and across all networks. These bottlenecks typically occur at the final connection point of the customer to the network. Ideally, this should be a single, simple point. Under a positive regulatory regime, access to that point should be possible for many competing suppliers, thus driving healthy market competition.

Emphatically, the following two scenarios must both be avoided. We must prevent fragmenting competition that leads to the creation of multiple "last mile" access points—this is hugely inefficient and leads inevitably to rising service costs. We must also prevent a scenario of lack of competition, where just one service provider or a limited number of providers establish a monopoly of access. As far as network access points are concerned, "built by one, shared by many" needs to be the approach fostered by consistent and constructive regulation.

The most beneficial outcome will be providing equivalent access for all customers to the full range of networks and service options in the market. This will create a consistent environment—the necessary foundation of an effective market. It will encourage a stronger pan-European (and global) communications sector, yielding greater benefits for consumers, industry, and the economy.

This is not an inward-looking, industry-specific wish list. Its beneficial impacts can result in selective, targeted advantages for individuals, business, and economies. A regulatory level playing field is a necessary prerequisite for low cost—and therefore low price—network access. This benefits everyone, including the target groups, communities, and regions that need differential benefit to lift their economic and social engagement. Without

equality of network access, equality of digital opportunity will remain limited.

BRINGING IT ALL TOGETHER: SUSTAINING DIGITAL, ECONOMIC, AND SOCIAL INCLUSION

Global network access has been shown to be able to deliver significant increases in productivity, growth, revenue, and profit. The resulting economic stimulus is being shared among a growing network of employees, suppliers, distributors, and consumers. This economic benefit translates into a greater ability among communities and societies to plan and develop. Dependencies are reduced. Independence and self-reliance increase.

Through network access, in key aspects of individual and national life, positive transformation is occurring. Distance and time zones are overcome. Social inclusion is growing as the instant exchange of information enables even very remote communities to take part in 21st-century economic models. Financial inclusion is growing as a range of services—including the ability to transfer funds remotely—becomes available reliably and securely. In every case, without network access, the transformation would be impossible.

The networked economy can shape a desirable, equitable future. How can we help ensure this future? BT Global Services' "art of connecting" describes how the imaginative use of global networks and network-enabled technology can deliver stunning business outcomes— and equitable personal outcomes—for all global citizens.

Of course, network availability and network technology will have a fundamental role to play. But progress will not be about technology alone. Technology needs to be developed and applied in the context of government policy (including regulation that stimulates high-quality, low-cost network access) and, of course, a sustainable approach to wealth creation.

CORPORATIONS MUST COMMIT TO SELECTIVE DIGITAL INCLUSION

What is the way forward? How can we target the social and economic benefit of digital inclusion where it is most needed?

A pattern is evolving. Many of the successful projects noted above have an impact at the local, grassroots level. But they are supported by governments, international nongovernmental organizations, and multinational corporations. Planned globally but delivered locally, these projects are all highly focused on delivering a particular benefit to a specific group. They provide selective benefit by including groups that were previously excluded from the digital world.

These targeted digital inclusion projects all feature a synergy between the desired outcomes of their stakeholders. Communities get online, governments and nongovernmental organizations receive operational

benefits, and corporations achieve more sales. For anyone to win, everyone has to win.

Models are changing. E-commerce, entertainment, mobile micro payments, telehealth—everywhere you look, in all sectors, in developed as well as developing geographies, the ways we create and distribute economic wealth and social well-being are changing. But one thing is consistent: in every one of these models there is a digital delivery channel.

Corporations, the public sector, and third-sector organizations all have to take a long view, to work together, and to experiment. There will be short-term benefits for the target communities themselves and the charities. For corporations, the short-term benefits may be educational and reputational rather than purely commercial. But the longer-term benefit for us all will be greater inclusion in greater economic and social wealth.

NOTES

1 The Centre for the Protection of National Infrastructure in the United Kingdom categorizes national infrastructure into nine sectors: communications, emergency services, energy, financial services, food, government, health, transport, water. See www.cpni.gov.uk/about/cni/.

2 DHS 2014.

3 The US Department of Homeland Security views networks as part of their critical national infrastructure: "The Nation's critical infrastructure provides the essential services that underpin American society. Proactive and coordinated efforts are necessary to strengthen and maintain secure, functioning, and resilient critical infrastructure—including assets, networks, and systems— that are vital to public confidence and the Nation's safety, prosperity, and well-being" (White House 2013).

4 See Chapter 1.1 for details.

5 The NRI 2015 measures how successful 143 economies are at applying ICTs to boost competitiveness and well-being. In 2015, the top 10 most successful economies in the NRI were, in ranking order, Singapore, Finland, Sweden, the Netherlands, Norway, Switzerland, the United States, the United Kingdom, Luxembourg, and Japan.

6 The Boston Consulting Group estimates that by 2016 the Internet economy will reach $4.2 trillion in the G-20 economies alone (Dean et al. 2012).

7 WSIS 2003.

8 For example, the Clinton-Gore administration in the United States stressed the importance of "access for all" to emerging electronic communication networks.

9 Through its Connected Society program, BT runs a number of projects around the world to help people get online and develop the skills and confidence needed to use the Internet. BT supports KITES with funding, fundraising, and volunteering activities.

10 BT 2007.

11 BT is working in partnership with Coca-Cola South Africa and bottling partner Coca-Cola Fortune to bring Wi-Fi–connected Coca-Cola dispensing machines to two impoverished areas of South Africa (BT 2014a).

12 BT's Connecting Africa project is bringing broadband satellite technology to help young people fulfill their potential in 20 SOS Children's Villages across Africa by bringing the Internet to their fingertips (BT 2014b).

13 In one of the highest-value agreements BT has made in the Asia Pacific region, Message Stick signed a three-year contract to re-sell BT One Collaborate services in Australia (BT 2014c).

14 BT 2014c.

15 Center for Financial Inclusion 2013.

16 BT Cloud Compute helps Columbian meat processor and distributor Friogan—which has five processing plants located in rural areas across Colombia—minimize costs and adapt its IT infrastructure quickly and easily to rapidly changing operational needs (BT 2013a).

17 Get IT Together is a consortium of Rhondda Cynon Taf (RCT), BT, Nominet Trust, Communities 2.0, RCT Council, and Citizens Online working together to deliver a community development approach to digital inclusion in South Wales, United Kingdom (BT 2014d).

18 The Glasgow Housing Association Wi-Fi project is a collaboration between BT's Connected Society program and the Scottish government. See BT 2013b.

19 BT is working with Cornwall Council on a £132 million project to make superfast fiber optic broadband available to around 95 percent of homes and more than 10,000 businesses in Cornwall and the Isles of Scilly by the end of 2014 (See Superfast Cornwall at www.superfastcornwall.org/).

20 BT has been working with the Age UK charity (formerly Help the Aged and Age Concern) since 2005, supporting the Age UK Digital Inclusion Network, which trains older people in computer skills (see http://www.ageuk.org.uk/professional-resources-home/services-and-practice/computers-and-technology/).

21 Unipass, from the digital security services firm Origo, allows financial services providers to authenticate independent financial advisors (IFAs) who sell their products, and effectively acts as an IFA registration authority. During the development of Unipass, the company approached BT to provide a managed digital certification service. Rather than having to build and implement the platform, Origo simply plugged in to the existing shared BT Assure Public Key Infrastructure (BT 2013c).

22 BT's partnership with South Tyneside Metropolitan Council has helped to drive efficiencies in service provision, and has also safeguarded 400 existing jobs and created an additional 750 jobs (BT 2013d).

23 The Northern Ireland Civil Service Department of Finance and Personnel worked with BT to develop and implement a new financial processing center using a shared services model and ensuring the visibility of all purchasing and a transparent review of spending and improvements in procurement efficiency (BT 2010).

24 The Milton Keynes Smart City Programme, with BT as its major IT partner, collaborates with government agencies in order to use the latest technologies to resolve the constraints to growth for the city and improve quality of life for its citizens.

25 "Utilizing Information and Communications Technologies (ICT) as a catalyst for social and economic progress is an opportunity long held in high regard by the international development community. Impacting society at both the micro and macro levels, the tools of ICT equip us to help address our greatest social, economic and environmental challenges" (World Economic Forum 2010).

REFERENCES

BT (British Telecommunications). 2007. "BT Environment and Climate Change Case Studies: Asia." London: BT. Available at https://www.btplc.com/Betterfuture/BetterBusiness/Casestudies/lib/swf/pdfs/Asia_case_studies.pdf.

——. 2010. "Account NI: Success in Public Sector Transformation." Case Study. London: BT. Available at http://www.globalservices.bt.com/uk/en/casestudy/account_ni.

——. 2013a. "Friogan: Colombian Meat Processing Giant Uses BT Cloud Compute to Support Growth and Compliance." Case Study. London: BT. Available at http://www.globalservices.bt.com/uk/en/casestudy/friogan.

——. 2013b. "Ingenious: Revolutionary Broadband Initiative Brings Affordable Wi-Fi Access to Glasgow." Innovation News, November 14. Available at http://www.btplc.com/Innovation/Innovationnews/Revolutionarybroadbandinitiativebringsaffordablewi-fiaccesstoGlasgow/index.htm.

——. 2013c. "Origo Secure Internet Services: Secure Independent Financial Advisor Authentication." Case Study. London: BT. Available at http://www.globalservices.bt.com/uk/en/casestudy/origo_secure_internet_services.

——. 2013d. "South Tyneside Council: Tyneside Transformation Attracts 21st Century Talent." Case Study. London: BT. Available at http://www.globalservices.bt.com/uk/en/casestudy/south_tyneside_council.

——. 2014a. "BT and Coca-Cola Join Hands for Connecting Communities in South Africa." Press Release, September 22. Available at http://www.btplc.com/Betterfuture/news/South_Africa.htm.

——. 2014b. "BT, Better Future, Connected Society, Global Projects." Available at http://www.btplc.com/Betterfuture/ConnectedSociety/Globalprojects/index.htm.

——. 2014c. "Message Stick: A Beacon for Aboriginal People." Case Study. London: BT. Available at http://www.globalservices.bt.com/uk/en/casestudy/message_stick.

——. 2014d. "Get IT Together." Connected Society program, Digital Skills. Available at http://www.btplc.com/Betterfuture/ConnectedSociety/Creatingpossibilities/GetITTogetherregionalprogramme/index.htm.

Center for Financial Inclusion. 2013. Financial Inclusion 2020: Mapping the Invisible Market. Available at http://www.centerforfinancialinclusion.org/fi2020/mapping-the-invisible-market.

CPNI (Centre for the Protection of National Infrastructure). No date. The National Infrastructure. Available at http://www.cpni.gov.uk/about/cni/.

Dean, D., S. DiGrande, D. Field, A. Lundmark, J. O'Day, J. Pineda, and P. Zwillenberg. 2012. "The Internet Economy in the G-20: The $4.2Trillion Growth Opportunity." *bcg perspectives,* March 19. The Boston Consulting Group. Available at https://www.bcgperspectives.com/content/articles/media_entertainment_strategic_planning_4_2_trillion_opportunity_internet_economy_g20/.

DHS (US Department of Homeland Security). 2014. Homeland Security, Communications Sector, Sector Overview. June 12. Available at http://www.dhs.gov/communications-sector.

White House. 2013. "Presidential Policy Directive: Critical Infrastructure Security and Resilience," Press Release, February 12. Available at http://www.whitehouse.gov/the-press-office/2013/02/12/presidential-policy-directive-critical-infrastructure-security-and-resil.

World Economic Forum. 2010. *Scaling Opportunity: Information and Communications Technology for Social Inclusion.* Geneva: World Economic Forum.

WSIS (World Summit on the Information Society). 2003. Declaration of Principles, Document WSIS-03/GENEVA/DOC/4-E, December 12. Available at http://www.itu.int/wsis/docs/geneva/official/dop.html.