

Conditions and financial instruments for BB development in rural and low-income areas

Dmitry Laryushin
Director, Technical Policy in
Russia/CIS
John Roman
Director, Broadband and
Regulatory Policy

Intel Corporation

Goal: Social and Economic Objectives

ECONOMIC



- National GDP
- GDP per Cap
- Productivity
- Innovation Intensity

SOCIAL



- Better Access to Public Services
- More informed/engaged citizen
- Quality of Life
- Community

Many socio-economic impacts of communications are: long-term, indirect,
intangible, collective

Why Broadband?

- **Economic growth:** Increasing broadband penetration boosts economic growth ~ 1% or more.¹
- **Jobs:** In Latin America, increasing penetration 5.5% to 7.7% would generate estimated 378,000 new jobs.²
- **Health care:** Telemedicine provides better access to care, reduces travel, and facilitates rapid diagnosis and treatment.³
- **Education:** Household Internet access is associated with better educational performance.⁴
- **SME's:** Studies show that Broadband is essential to the success of small and medium enterprises.⁵

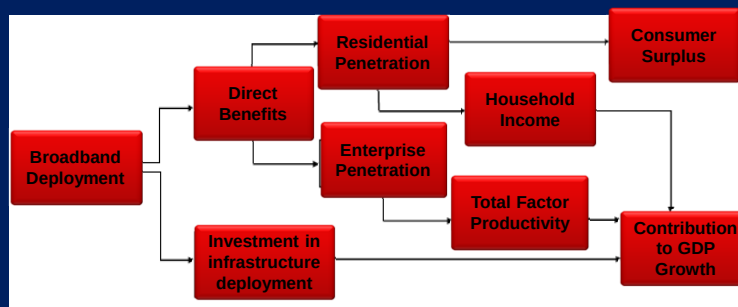
Objective: Broadband Adoption: Subscription, Device, and know how

¹ Building broadband: Strategies and policies for the developing world
Yongsoo Kim, Tim Kelly, and Siddhartha Raja, Global Information and Communication Technologies (GICT) Department
World Bank January 2010
² Dr. Raul L. Katz, "Estimating broadband demand and its economic impact in Latin America," Sept. 4, 2009
³ Dutta, Soumitra, and Irene Mia. 2008. The Global Information Technology Report 2008-2009:
Connecting to the Networked Economy, Basingstoke, U.K.: Palgrave Macmillan.
⁴ ITU, Measuring the Information Society, 2010.
⁵ <http://www.sba.gov/economic-policy/11401>, <http://www.broadband.gov/plan/13-economic-opportunity/>

Economic Effects of Broadband

- The economic impact of broadband manifests itself through four types of effects (see Figure 1)

Figure 1. Broadband Economic Impact



DATA REQUIREMENTS TO MEASURE THE ECONOMIC IMPACT OF
BROADBAND
By Dr. Raul L. Katz (*) - 2010 ITU WICT conference

Current State of Broadband¹

	Mature markets	Emerging markets
Internet penetration	74%	27%
Broadband penetration	26%f-58%m	5%f-9%m
% income spent on ICT	1.5%	17.5%

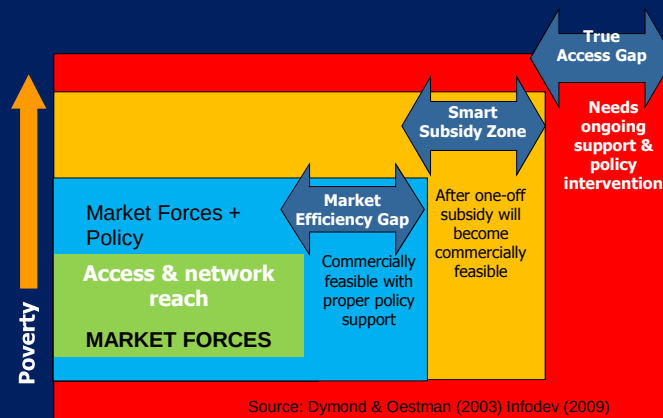
End game - Adoption

Deterrents:	Availability	High cost	Relevance/Value
Experience	Infrastructure	Robust competition	Training/content
Solutions:	Services	Subsidy "investment"	Options

¹International Telecommunication Union (ITU),
"Measuring the Information Society," 2011

Market Efficiency Gap vs Real Access Gap

- Market forces are able to provide services to some markets segments without support
- Other segments and services need subsidisation
- Subsidisation may vary
 - May need a single subsidy for infrastructure rollout
 - May need ongoing subsidisation due to poverty or other vulnerable groups



First rectangle where access is provided today. The next rectangle shows where access would be provided if markets were allowed to act efficiently, without any market barriers. The third rectangle shows those areas, whether due to poverty or geographic isolation or both, that may need further intervention to achieve rural access. The relative size of each of these areas would vary country by country, depending on a variety of factors, including the state of market liberalization, wealth, etc.

Intel confidential

Universal Service Policy The Strategic Enabler for Proactive ICT Development Strategies/Objectives

Old View

ICT for Communities

Cable in the ground,



=
service equity
rural-metro

Service led USF policy
for social inclusion

- Services: eGov', SMB, Education, Healthcare, Agriculture, Tourism
- The Connected Community
- Wide Business Model
- Access-devices
- Content
- Facility
- Training

Expanding USF Policies towards wide spread & non discriminatory access to ICT

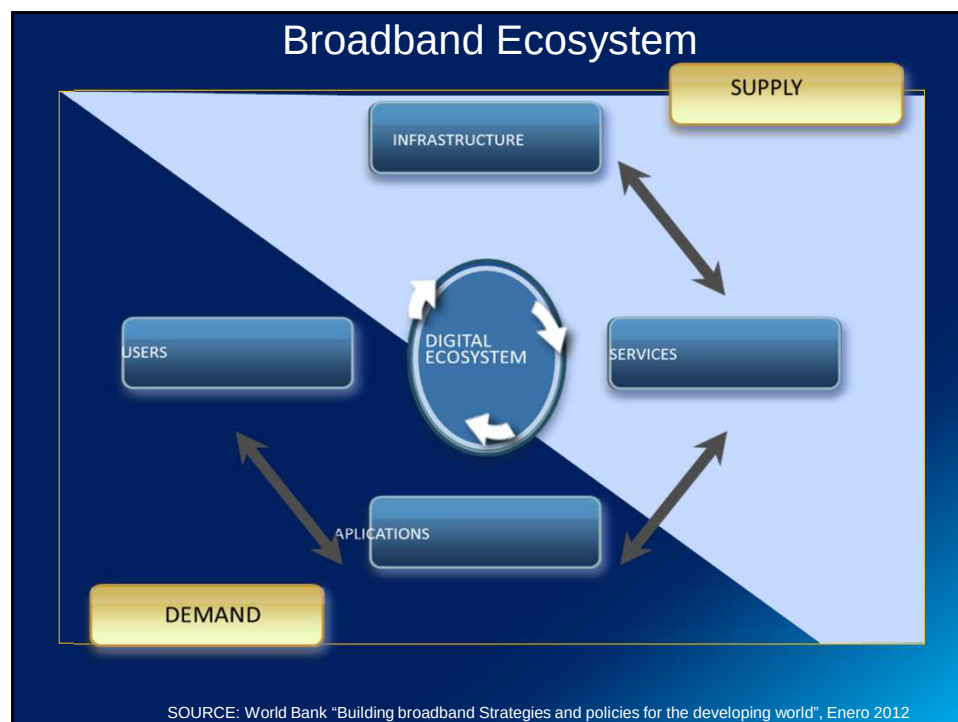
The Changing Dynamics of Universal Access History and Evolution of Universal Access/Service

- "Universal Service" term was first used by AT&T CEO 1910 annual report.
 - "The telephone system should be universal, independent ,intercommunicating affordable opportunity for x-subscriber communication"
- Early USO approaches involved mandatory service obligations or cross-subsidy in monopoly environments(incumbent)
 - Not transparent, compliance circumvented
- Thru Technology changes, regulation experience of developed nations, liberalization, competition accompanied by USFs debunks previous non competitive and early USO approaches.
- Approach: Subsidy from incumbent and/or new entrants, distributed via Fund, competitive bidding – Targeted Funds
- At first funds went for pay phones in remote areas, then Telecentres, some cell towers
- Shift toward "sustainability", focusing on uneconomic "Access Gap"

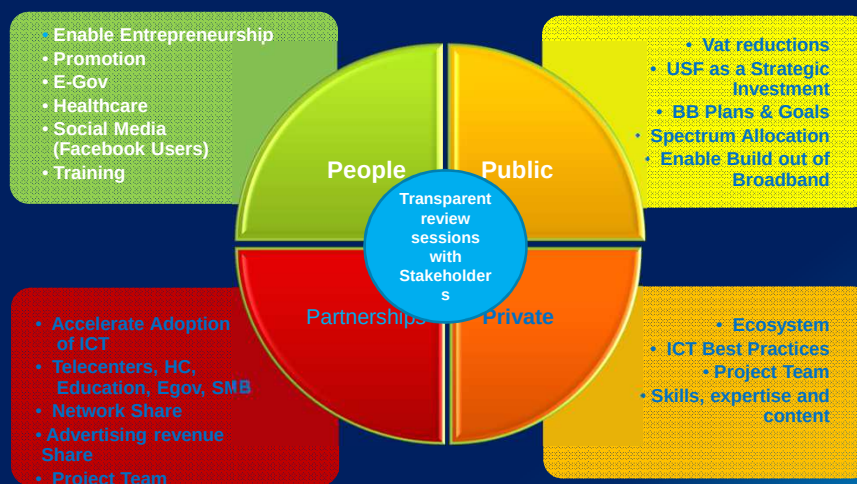
Intel confidential

The Role of Government 2.0

- Governments should create policies that enable technology innovation, competition and foreign investment
 - This includes assigning abundant spectrum in a technology and service neutral manner, and creating national broadband plans with time bound goals
- Governments should also create targeted subsidies for broadband and ICT adoption, to kick start the market, and create an enabling environment for the operators to invest where they otherwise would not
- Additionally, governments can play a role in promoting demand, via e government services, which not only saves money, introduces more beneficial services to more citizens,



The 4 P's essential of a sustainable Program



Intel confidential

ITU Targets

- **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 (amounting 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 LDCs.

Broadband/ICT Plans - Essential

To realize the benefits of broadband and ICT, comprehensive national plans are needed.

- Plans provide the vision, organization and support necessary to:
 - Increase broadband penetration rates quickly
 - Deliver broadband services to most or all citizens
 - Reduce costs – targets needs
 - Ensure continued broadband expansion and improvement



Recommended Plan Structure

Phase 1: Assessment

- **Evaluate** - ICT and economic status
 - Use data such as basic demographics, GDP, ICT spending, etc.
- **Examine** - the regulatory environment
 - Consider policies, Available spectrum, USF, tariffs/costs, etc.
- **Assess** - the country infrastructure
 - Evaluate international and last-mile connectivity, in-country backbone, etc.
- **Conduct** - a user vs. needs analysis
 - Develop a "needs roadmap" to pinpoint needs of each segment

Phase 2: Development

- **Define** - broadband
 - Include desired broadband performance levels over time, and allow options
- **Develop** - a national vision for broadband
 - Vision should be specific, measurable, attainable, relevant and time-bound (SMART)
- **Identify** - funding resources
 - Consider spectrum reallocation, dedicated USF, gov't subsidies, etc.
- **Collaborate** - stakeholders
 - Work with network resellers, software developers, etc. - consultations

Phase 3: Implementation

- **Develop** - an implementation strategy
 - Create a strategy to generate public and private support for plan
- **Utilize** - a variety of funding strategies
 - Aggressively pursue best funding strategies identified in Phase 2
- **Implement** - demand-side programs
 - Gov't and/or other stakeholders should lead variety of programs
- **Measure** - progress
 - Continually track, evaluate and update programs to improve results

Globally Recognized Metrics⁷

Infrastructure and Access

- Fixed and mobile broadband subscriptions
- International bandwidth per population
- Fixed broadband tariffs
- Public Internet access centers (PIACs) per locality by pop.

Education

- Student-to-computer ratio
- % of schools with broadband
- % of ICT-qualified teachers

Business

- % of businesses using computers and type of connectivity
- % of persons employed routinely using computers and Internet
- % of businesses placing/receiving orders over Internet
- % of businesses using Internet and type of connectivity

Households

- % of households with computer, Internet access
- % of households with broadband access and type of connectivity

Health (Intel's recommendation)

- % of hospitals and health centers with access to broadband
- % of hospitals and health centers with digitalized patient records

⁷ ITU, Measuring the Information Society, 2010.

Best Practices

- 1. Form public/private partnerships**
 - Engage a broad ecosystem (banks, teachers, NGOs, SMBs, etc.)
- 2. Encourage competition**
 - Adopt variety of strategies to expand the BB market and encourage investment, remove regulatory impediments
- 3. Release spectrum**
 - Support technology-neutral, service-flexible spectrum policies
- 4. Apply Universal Service Funds**
 - Move beyond traditional telecommunications to BB and correct USF inefficiencies, create fund for BB adoption
 - 1 unified Organization Addressing all elements for service adoption
- 5. Implement a variety of demand-side programs**
 - Generate investments and public interest through programs such as tax reductions and digital literacy programs, applicable content
- 6. Adopt metrics to measure plan success**
 - Include SMART metrics, using ITU suggestions as starting point⁶

Policy Principles

Policy

- Ensure Economic Efficiency
 - Competitively Neutral Funding Model, enable new entrants
 - Market based, competitive and technology neutral distributions or “investments”
 - Rigorous analysis for projects
- Fair and Transparent process
 - Open, clearly defined RFQ process
 - Annual reports

Funding Methods

- Fixed charge on end user (example Japan, US)
 - General Tax Revenue
 - % of operator Revenue
 - International Donors
 - Spectrum Auction Fees
 - Regulatory fines

Broadband/ICT Planning

- Many countries have or are creating national ICT/broadband plans
 - USA <http://www.broadband.gov/>
 - EU digital agenda (includes call for all countries to establish a national plan) <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/10/1142>
- Plans consistently contain specific time bound objectives for broadband adoption
- US (4 mbps 100% avail by 2020, at least 100 million U.S. homes should have affordable access to actual download speeds of at least 100 megabits per second), Columbia (100% of schools connected by 2019, will be updated), Bangladesh (schools connected by 2012), Vietnam (70% BB coverage by 2015), Malaysia (50 % HH BB penetration by Dec 2010); planning in process in many other countries

Morocco: Broadband Access for 50,000 Teachers

- Morocco's USF supports numerous educational efforts nationwide. ICT/broadband programs are targeted at distributing subsidized PCs and broadband service to thousands of teachers as well as students.
- The goal is to improve the quality of education and prepare students to compete in the global economy.
- NAFID@ Program
- Gives teachers access to laptops and broadband
- Over 150,000 teachers have subscribed to broadband service
- Teachers have purchased 50,000 laptops at subsidized price, with built-in local content
- INJAZ ("Achievement") Program
- Subsidizes cost of ICT for engineering and science students
- Over 40,000 science and engineering students have purchased their own laptops and broadband service
- Goal is to provide a laptop to every student (80,000 in all)



India: USF Connects 2.6 Million People

- India has used universal service funds to establish more than 2.6 million affordable broadband connections—giving millions of people in rural and remote areas affordable access to the Internet.
- The programs have led to business growth as well as improvements in education, healthcare, and other social services. Broadband network for rural/remote areas
- Over 2.6 million broadband connections established
- Over 2,500 Internet kiosks established
- Digital device subsidies
- Over 100,000 digital devices sold to people in rural/remote areas
- Designed to subsidize sales of up to 900,000 devices by 2014



Turkey: 620,000 Connected Classrooms

- Since 2005, Turkey's USF has been used to support a wide array of ICT/broadband programs.
- These programs are extending broadband services to 15 million students and have supported creation of community centers that have made Internet access affordable for thousands of citizens.



Turkey: 620,000 Connected Classrooms



- **Fatih Program**
- Digital devices and broadband to be provided to 620,000 classrooms, serving 15 million students
- Rollout underway of broadband service and ICT infrastructure to every school in the country
- **Public Internet Access Centers**
- Over 4,500 PIACs now in operation
- PIACs include over 75,000 digital devices

Malaysia's Goal: 1 Million PCs with Broadband

- For over a decade, Malaysia's Universal Service and Provision Fund has supported ICT and broadband expansion nationwide—with the goal of distributing 1 million PCs and one year of broadband access to citizens nationwide.
- Subsidized programs target rural, remote, and underserved communities, and have introduced hundreds of thousands of citizens to the benefits of modern technology.



Malaysia's Goal: 1 Million PCs with Broadband



- **PCs and broadband for underserved communities**
- 127,000 PCs distributed so far, with goal of 1 million
- Second phase underway (300,000 units)
- Household broadband penetration rate up from 20% (2008) to 53% (2011)
- **Broadband community centers**
- Hundreds of centers built, with training provided
- Some centers extend connectivity to nearby locations via Wi-Fi
- Sustainable funding methods developed, such as requiring payment for services

Summary

- ✓ One unified national broadband/ICT plan needed with specific time bound goals to enable broadband adoption
- ✓ USF for broadband adoption as well as deployment key to promoting optimal benefits to all citizens
- ✓ Entry level Broadband prices required for next strata
- ✓ Actions required for bridging the Digital Literacy Divide

Intel your sponsor of tomorrow

Intel confidential

Intel Ukraine Broadband USF Leaders Workshop 2011
7-9 December 2011



Highlights

- 55 Attendees from over 12 Countries (Ukraine, Russia, Azerbaijan, Belarus, Moldova, Egypt, Colombia, Pakistan, Turkey, Japan, Kazakhstan, Kyrgyzstan)
- 33 Ukraine attendees and several USAID, observers in attendance, including the CEO of the Ukraine ISP association (representing 100+ industry members)
- Main theme of event was to enable new USFs and expand USF disbursements towards ICT BB Based projects – starting with Education first
- Digital literacy was a highlight of importance from a majority of attendees, further supporting our plan for a digital literacy event in 2012

Sustainability of USF programs is the "next big thing"