1. **Transform** – Using ICT to transform service delivery across sectors
   - Transformation of service delivery **across all sectors of the economy**, using mobile phone and broadband networks.
   - Promotion of **e-government, open data, and interoperability and cybersecurity** initiatives through the financing of ICT applications for public administration, collection of citizen feedbacks, improved service delivery, etc.

2. **Connect** – Accelerating access to high speed internet
   - Supporting institutional & regulation reforms and improving legislative environment for Telecoms **to further promote competition** through greater infrastructure sharing and open access models.
   - Financing broadband **infrastructure development** (international connectivity, backbone, backhaul, access network) through **PPPs** to increase **coverage and affordability** of services.

3. **Innovate** – Supporting ICT innovation for jobs and competitiveness
   - Supporting development of ICT innovations to foster industry development and innovation; and shift to service-oriented knowledge economy (Mexico1st, Infodev Incubator Net)
   - Increasing **skills development and jobs creation** through technology parks, microwork, ITES. Ghana: 8700 Digital Jobs. Now Bangladesh, Morocco, Armenia, Kenya, Peru
The pace of diffusion of digital technologies has been unprecedented by historical standards.

Note: ICT and infrastructure indicators (mobile phone and mobile broadband subscriptions, internet users, improved water and sanitation) are per 100 individuals. Net secondary school enrollment is the percent of the relevant age group.

Sources: WDR Team based on World Development Indicators and ITU data.
One billion Mobiles > Fixed lines

2001

One billion Internet users

2002

Open Street Map

2003

Facebook

2004

iPhone

2005

Android

2006

mPesa launched

2007

70% of country’s online transactions through mPesa

2008

Open Street Map reaches 300,000

2009

One billion smartphones

2010

Wearable devices $1.5bn market

2011

One billion FB users

2012

Android

2013

Google Glass launched

2014

IOT

Open Street Map

Encyclopedia Britannica

Twitter

Wikipedia

Wikipedia surpasses Encyclopedia Britannica

$1.5bn market

2001
Mobile Phone Networks 6.8 B users
Largest Delivery Platform Ever known to Humans

Rapid spread of mobile phone networks

Largest Ever Delivery Platform with Multi-Sector Impacts

Chile: Taxes online (from 25 days to 12 hours)

Botswana: Quality reporting and m-payment of energy bills

India: interstate check posts for trucks (from 3 hrs to 2 min)

Kenya: m-payments (m-Banking 250 Million users)

Lebanon Mobile-based Innovation ecosystem

Philippines: customs online (8 days to 1 day)

Rwanda: eSoko AGR mobile market place Reaching HIV/Aid patients (from <30% to over 70% treated at early stage)

India: Land Title Certificate (from 3-30 days to 5-30 min) Maternal health MobileApp

> 4.5 Billion Mobile Phones in Developing Countries
There are millions of reasons to like the internet

### A typical day in the life of the internet

<table>
<thead>
<tr>
<th>Activity</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emails sent</td>
<td>70,628</td>
</tr>
<tr>
<td>Youtube videos viewed</td>
<td>5,400,000</td>
</tr>
<tr>
<td>Google searches</td>
<td>148,089,600</td>
</tr>
<tr>
<td>Internet traffic data (GB)</td>
<td>160,444,800</td>
</tr>
<tr>
<td>Tweets sent</td>
<td>168,393,600</td>
</tr>
<tr>
<td>Instagram photos uploaded</td>
<td>148,089,600</td>
</tr>
<tr>
<td>Tumblr posts</td>
<td>160,444,800</td>
</tr>
<tr>
<td>Skype calls</td>
<td>148,089,600</td>
</tr>
<tr>
<td>Blogs posted</td>
<td>5,400,000</td>
</tr>
<tr>
<td>Websites hacked</td>
<td>70,628</td>
</tr>
<tr>
<td>Internet traffic data (GB)</td>
<td>160,444,800</td>
</tr>
</tbody>
</table>

**Is accelerating development one of them?**

### The internet can be transformative: Digital Identity

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Framework</th>
<th>Risks</th>
<th>Why</th>
<th>Policy</th>
</tr>
</thead>
</table>

**Indians with digital identity: 850 millions and counting**

The internet can be transformative: Digital Marketplace

Number of small and medium enterprises on Ten cent (Alibaba’s digital bazaar): 5 million+

Source: http://www.alizila.com/chinas-online-cowboy-rounds-buyers
How the internet affects development

- **Internet**
  - Overcomes information barriers
  - Augments existing factors
  - Generates economies of scale

- **Benefits**
  - Inclusion
  - Efficiency
  - Innovation
How the internet affects development

Transactions, arranged from high to low cost

Inclusion | Efficiency | Scale

Pre-internet | Post-internet

A broad measure of transaction costs including production of services

Benefits | Framework | Risks | Why | Policy

DRAFT: NOT FOR QUOTATION OR CIRCULATION
Getting on the Innovation Curve
In an analogue world, policy dictates delivery. In a digital world, delivery informs policy

Mike Bracken
**Dimensions and indicators of ICT: Diffuse, Fragmented, Ubiquitous**

**ICT Dimensions**
- **ICT Affordability**
  - Prepaid mobile cellular tariffs
  - Fixed broadband Internet tariffs
  - Internet and telephony sectors competition index

- **ICT Infrastructure Availability, Service and Maintenance**
  - Electricity production
  - Mobile network coverage
  - International Internet bandwidth
  - Secure Internet servers
  - Accessibility of digital content

- **Human Capital and Skill Development Innovation Jobs**
  - Quality of educational system
  - Quality of math and science education
  - Secondary education gross enrollment
  - Adult literacy rate
  - Tertiary education gross enrollment rate

- **ICT Sector Status ICT led innovation ICT Industry**
  - ICT service exports
  - ICT goods imports
  - ICT goods exports

- **ICT Usage Service and maintenance industry**
  - Mobile phone subscriptions
  - Individuals using the Internet
  - Households with computer
  - Households with Internet access
  - Fixed broadband Internet subscriptions
  - Mobile broadband Internet subscriptions
  - Use of virtual social networks

- **Policy Framework and Business Environment**
  - Laws relating to ICTs
    - Efficiency of legal system in settling disputes
    - Efficiency of legal system in regulations
    - Intellectual property protection
    - Number of procedures to enforce contract
    - Number of days to enforce a contract
    - Availability of latest technologies
    - Venture capital availability

*Some select indicators have been listed*

Details of sources for these dimensions and indicators:
ITU, UNCTAD, ESCWA, WEF, UNDP, EIU, GITR, GII
Gov: Need holistic approach to what is today a fragmented space

Framework for Government Service Delivery and Innovation

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Health &amp; Welfare Social Svc</th>
<th>Education &amp; Learning</th>
<th>Citizen/Business Transactions</th>
<th>Revenue &amp; Trade Facilitation</th>
<th>Finances Banking Regional Int</th>
<th>Public Works Utilities Transport</th>
</tr>
</thead>
</table>

Addressing information and Service needs for the verticals Shared Services—Registries (DiD), Maps (GIS), Standards, Inter-Operability, Data, Digital Skills

B4A- Infrastructure (EN), Cloud, Data Centers, Mobile Platforms, CyberSecurity, Laws, Regulations, Governance of ICTs in Administrations/Agencies
It can be done: WB Clients Rankings (UN eGovernment Surveys)

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sri Lanka</td>
<td>Sep-04</td>
<td>94</td>
<td>101</td>
<td>111</td>
<td>115</td>
<td>74</td>
<td>20</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Sep-05</td>
<td>105</td>
<td>91</td>
<td>90</td>
<td>83</td>
<td>99</td>
<td>6</td>
</tr>
<tr>
<td>Ghana</td>
<td>Aug-06</td>
<td>133</td>
<td>138</td>
<td>147</td>
<td>145</td>
<td>123</td>
<td>10</td>
</tr>
<tr>
<td>Rwanda</td>
<td>Sep-06</td>
<td>143</td>
<td>141</td>
<td>148</td>
<td>140</td>
<td>125</td>
<td>18</td>
</tr>
<tr>
<td>Kenya</td>
<td>Mar-07</td>
<td>122</td>
<td>122</td>
<td>124</td>
<td>119</td>
<td>119</td>
<td>3</td>
</tr>
<tr>
<td>Armenia</td>
<td>Oct-10</td>
<td>106</td>
<td>103</td>
<td>110</td>
<td>94</td>
<td>61</td>
<td>45</td>
</tr>
<tr>
<td>Moldova</td>
<td>Jun-11</td>
<td>109</td>
<td>93</td>
<td>80</td>
<td>69</td>
<td>66</td>
<td>43</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>Sep-12</td>
<td>162</td>
<td>142</td>
<td>134</td>
<td>150</td>
<td>148</td>
<td>14</td>
</tr>
<tr>
<td>Mongolia</td>
<td>Sep-14</td>
<td>93</td>
<td>82</td>
<td>53</td>
<td>76</td>
<td>65</td>
<td>28</td>
</tr>
</tbody>
</table>

The WBG has a key role in enabling the creation and usage of local Internet content for its clients’ development, in all the major sectors the institution is funding (eGovernment, Trade, eLearning, eHealth, Inclusion, SP, etc.) while building the digital skills.
Still a Significant digital divide

World: The internet is yet to reach most of the poor

Africa: Digital divide along income, age, geography and gender dimensions (% of individuals)

Raising Internet penetration from the current level of approximately 35% of the population to 75% would add $2 trillion to global GDP and create more than 140 million jobs.

Source: WDR 2016 team, based on Gallup World Poll, Research ICT Africa and ITU data
Challenges

• Availability: Only about 35% of the population in developing countries has access to the (slow) Internet

• Affordability: The cost of a fixed (wired) broadband subscription in the developing world averages about 30% of per capita income (versus less than 2% in advanced economies).

• ICT seen as a gadget not as a driver of development

• Fragmented approach to Infra investments (transport, energy, water, urban, ICTs) and to application development for the public sector by agencies, donors and vendors.

• Reforming Education, from early childhood to higher education

• Is Innovation really encouraged in education systems? culture?

• We need to work differently together otherwise the Internet will only accentuate the existing disparities: Rural/Urban, Rich/Poor; North/South etc.
## ICT empowers knowledge workers

<table>
<thead>
<tr>
<th>Microwork</th>
<th>Online contracting</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1 billion estimated market size and could grow to about $5 billion in 5 years (Odesk, SamaSource, CrowdFlower)</td>
<td>70% of businesses hire freelancers to fill a temporary talent gap in their organization - Elance -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job matching</th>
<th>Impact (out)sourcing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users (job seekers) 1 million Employers 60,000 - Babajob -</td>
<td>Helps increase employees’ incomes between 40% and 200% - Accenture – Amazon-CloudFactory</td>
</tr>
</tbody>
</table>
What is online outsourcing? – list of available jobs

Browse freelance jobs by category

Web Development
- All Web Development
- Web Design
- Web Programming
- Ecommerce
- UI Design
- Website QA
- Website Project Management
- Other - Web Development

Writing & Translation
- All Writing & Translation
- Technical Writing
- Website Content
- Blog & Article Writing
- Copywriting
- Translation
- Creative Writing
- Other - Writing & Translation

Customer Service
- All Customer Service
- Customer Service & Support
- Technical Support
- Phone Support
- Order Processing
- Other - Customer Service

Software Development
- All Software Development
- Desktop Applications
- Game Development
- Scripts & Utilities
- Software Plug-ins
- Mobile Apps
- Application Interface Design
- Software Project Management

Administrative Support
- All Administrative Support
- Data Entry
- Personal Assistant
- Web Research
- Email Response Handling
- Transcription
- Other - Administrative Support

Sales & Marketing
- All Sales & Marketing
- Advertising
- Email Marketing
- SEO - Search Engine Optimization
- SEM - Search Engine Marketing
- SMM - Social Media Marketing
- PR - Public Relations
- Telemarketing & Telesales
- Business Plans & Marketing Strategy
- Market Research & Surveys
What is online outsourcing? – list of available jobs

All Software Development
Desktop Applications
Game Development
Scripts & Utilities
Software Plugins
Mobile Apps
Application Interface Design
Software Project Management
Software QA
VOIP
Other - Software Development

Networking & Information Systems
All Networking & Information Systems
Network Administration
DBA - Database Administration
Server Administration
ERP / CRM Implementation
Other - Networking & Information Systems

Design & Multimedia
All Design & Multimedia
Graphic Design
Logo Design
Illustration
Print Design
3D Modeling & CAD
Audio Production
Video Production
Voice Talent
Animation
Presentations
Engineering & Technical Design
Other - Design & Multimedia

Business Services
All Business Services
Accounting
Bookkeeping
HR / Payroll
Financial Services & Planning
Payment Processing
Legal
Project Management
Business Consulting
Recruiting
Statistical Analysis
Other - Business Services
No digital transformation without strong analog foundations

Benefits | Framework | Risks | Why | Policy
---|---|---|---|---

- Internet
  - Information w/o accountability
    - Control
  - Automation without skills
    - Inequality
  - Scale without competition
    - Concentration
Analog foundations for a digital economy

**Regulations to** promote competition and entry
- Remove barriers to adoption
- Competition regulation and enforcement
- Innovation, creativity, content and ICT service industry

**Skills** to leverage digital opportunities
- Foundational skills and basic ICT literacy
- Prepare for a career and not jobs
- Facilitate life long learning for all adults
- Include teachers, families, the elderly

Capable and accountable **institutions**
- Mobile phone based services and monitoring
- e-government delivery and citizen engagement
- Participatory policymaking and digital engagement
- Encourage investment, FDI, and knowledge exchange

The internet can help improve these complements
Recommendations

• Modernize, simplify and digitize Government services to increase governance, transparency, and trust.
• Share & open data publish accurate information daily
• Hire young qualified public servants to facilitate reform and bring new ideas to public sector service delivery
• Use ICTs for massive distribution of quality education content (MOOCs) targeting youth, teachers, parents.
• Re-use quality content at scale (nat/reg) thru social media
• Foster with private sector, a “can do” attitude, strong work ethics, scientific education, internships, role models.

Governments, donors, private sector and society need to work differently, and together.
Thank you for listening!

Samia Melhem,

Global Lead, Mainstreaming ICTs
World Bank Group
smelhem@worldbank.org