

**Regional Development Forum for  
the Asia Pacific Region**  
“NGN and Broadband, Opportunities and Challenges”  
Yogyakarta, Indonesia, 27 – 29 July 2009

**NGN for Developing Countries**

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# ICT in Asia Pacific

## ■ Within-region complexity in Asia Pacific

- Most Populous, highest share of ICTs in the world
- Mixed with 7 advanced countries, China and India, 13 LDCs, 12 SIDS, 10 Low-income countries

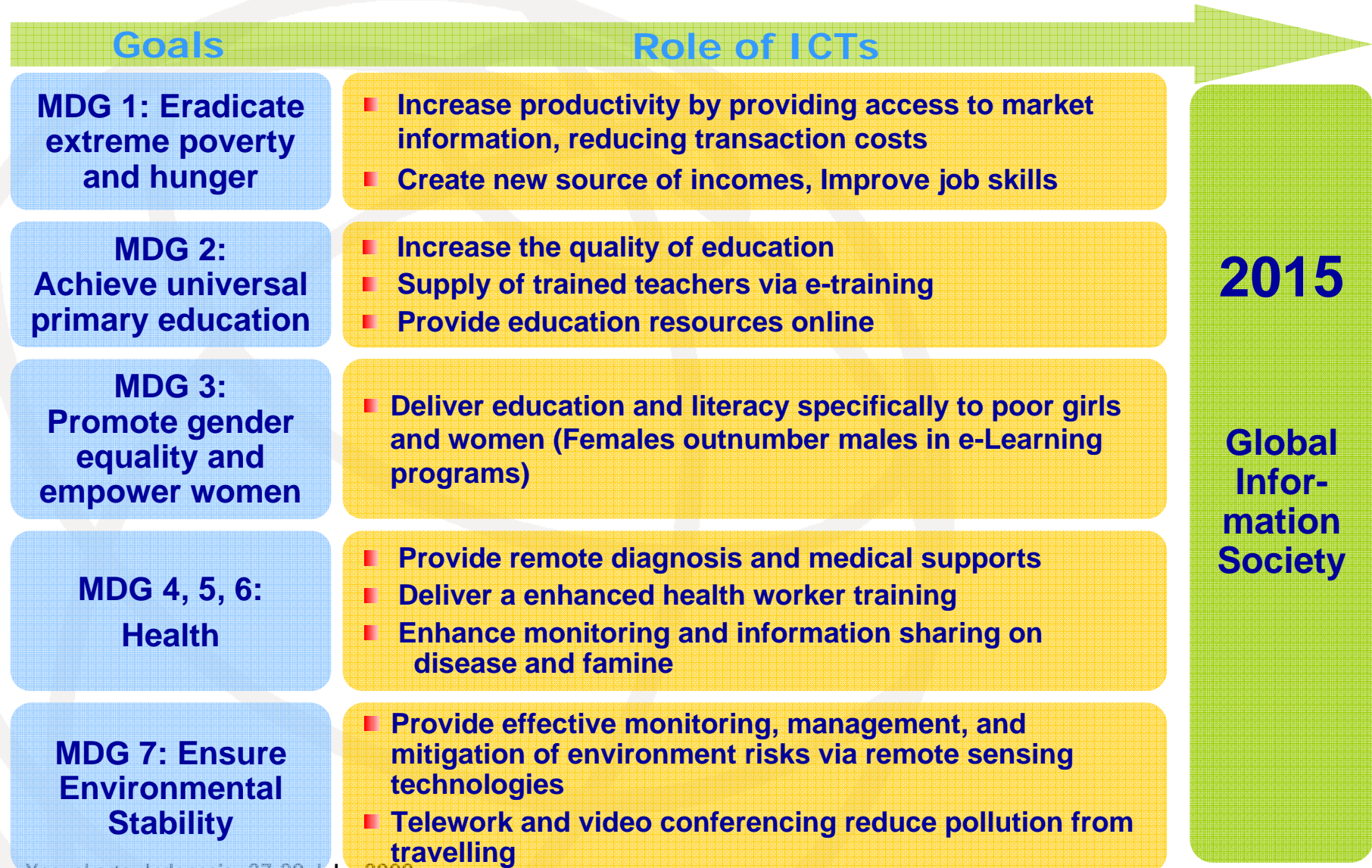
Fixed Broadband Subscribers in Asia Pacific, 2007



# ICT for Development

- **ICTs play an important role in enabling social and economic development**
  - Disseminating *information and knowledge* to anyone regardless time and distance
  - Improve *productivity* and contribute to *GDP Growth*
  - Improve *quality of life* through cost-efficient delivery of key services such as health, education, social programs etc.
- **UN Millennium Development Goal 8** states:  
*“In cooperation with the private sector, make available the benefits of new technologies, especially information and communications by 2015”*
- **World Summit of Information Society** declared its goal for *“Common Vision for inclusive information society”*

# The Role of ICTs for MDG



# World Summit of Information Society

*"Towards an inclusive information Society"*

## WSIS Geneva in 2003

- To connect villages with ICT and establish community access points
- To connect University, schools, research centers, public libraries, cultural centers, health centers and hospitals
- To connect all local governments and establish websites
- To adapt all schools curricula to meet the challenges of information society
- To ensure complete access to TV/Radio
- To encourage the development of content in all languages
- To ensure more than half of the world's inhabitants have access to ICTs within their reach by 2015

## WSIS Tunis in 2005

- Connecting all communities by 2015
- Reaffirmation of 2003 Declaration and action plans
- To build ICT networks and develop application that are; affordable, accessible to all, available anywhere, anytime, to anyone and any device

# NGN Benefits for Developing countries

## ■ **Cost-effective system**

- Optimal network elements
- Common network for many services
- Lower operational and maintenance cost
- Promoting innovation in service creation

## ■ **Leap-frog with the latest technologies**

- Fewer legacy networks
- Lessons from countries which deployed NGN
- Choose from various options



# NGN Activities in Developing Countries

## Malaysia

- Target to achieve 50% broadband penetration by 2010

### Zone 1

**High Speed Broadband**  
(10 Mbps - 1 Gbps)  
for Selected high  
impact areas

### Zone 2

**Broadband for General  
Population (BBGP)**  
(up to 2 Mbps)  
via ADSL, WiMAX,  
WiFi, HSDPA

### Zone 3

**Universal  
Service Funds**  
for rural areas

- Government and Telekom Malaysia agreed to deploy Phase 1 of High Speed Broadband Network in Zone 1 in Sep 2008
- Government co-invest RM2.4 billion in RM11.3 billion project over 10 years covering 1.3 million premises

# NGN Activities in Developing Countries

## Bangladesh

- Target to achieve
  - **30%** broadband penetration, **80%** teledensity by **2015**
  - **40%** broadband penetration, **90%** teledensity by **2018**
- NGN as the main technology option
- Softswitch deployed by three international and two domestic gateway operators
- Government-owned operators, BTCL (PSTN) and TeleTalk (mobile), plan to install more NGN-based gateways, Toll Switches, and access switches
- Migration towards NGN as planned

# NGN Challenges for Developing Countries

## For Industry

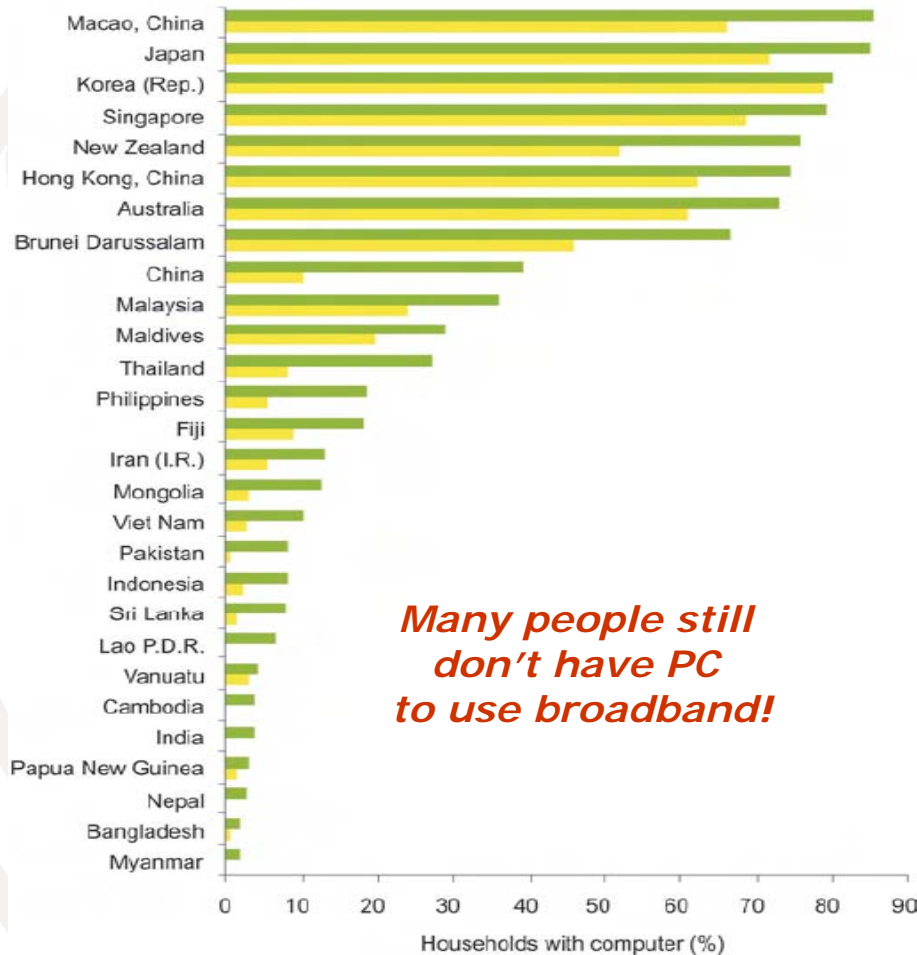
- High CAPEX for building infrastructure
- Decreasing PSTN revenue and uncertain new revenue streams
- Large under-developed rural and remote areas with sparse population

## For Users

- Currently demand for Broadband Services is low or latent *because...*
  - Low PC Penetration
  - High Prices for end-users
  - Lack of local contents

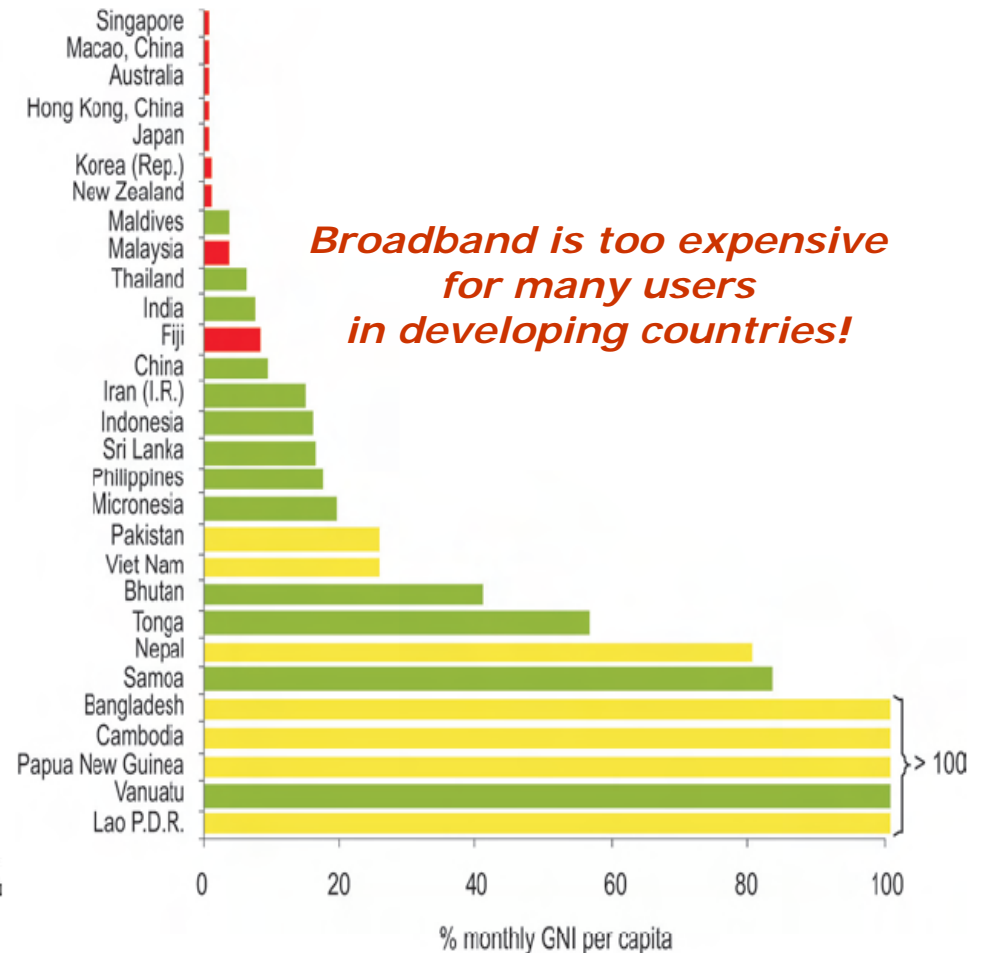
# User barriers to access NGN

Households with Computers in Asia Pacific, 2002 and 2007



*Many people still don't have PC to use broadband!*

Fixed Broadband prices as a percentage of monthly GNI per capita, 2008



*Broadband is too expensive for many users in developing countries!*

Yogyakarta, Indonesia, 27-29 July 2009

# Possible Solutions

## NGN Network Provision

- Active expansion of international and domestic backbone network
- Encouraging competition and innovation
- Universal service funding to promote broadband access
- Private-Public partnership to encourage ICT access in rural and remote areas
- Infrastructure sharing to reduce deployment costs
- Strategic use of technologies:
  - FTTH for urban, wireless broadband for rural areas
  - Multimedia services (IPTV) for new revenue opportunity

*However, the problem still remains in **low demand** for NGN services among low-income and rural users*

**→ Need to create demand!**

# Shifting Paradigms 1

- **User demands drives NGN services designs**

*Technology innovation  
will be appreciated and  
naturally diffused...*



*Services are designed  
to meet user needs  
for the initial stage!*

- Users increasingly in demand for faster speed broadband, rich multimedia contents, extensive mobility, converged and ubiquitous access that increases convenience  
→ ***NGN is the answer to meet those needs***

# Shifting Paradigms 2

- Demand exists among the poor and the new market can be created if services can meet the demand
  - Bottom of Pyramid (C.K Prahalad, 2004; Stuart Hart, 2005)
  - Mutual benefits for both 5 billion BoP users and industry
- What BoP users want?

*Affordability*

+

*Accessibility*

+

*Relative  
Usefulness*

+

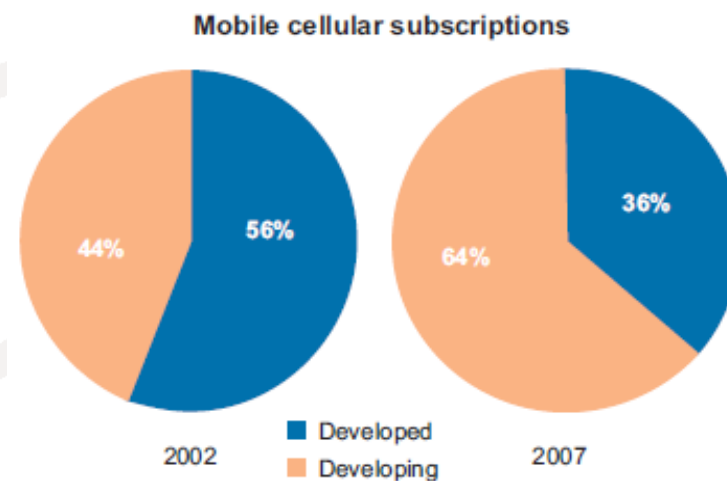
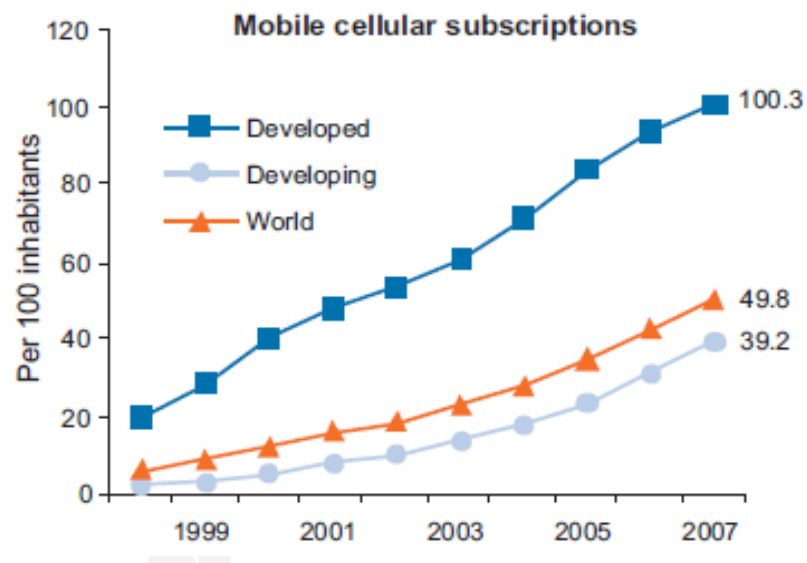
*Innovation*

# Creating New Demand:

## Case 1) Mobile Voice Service

- **Mobile communications**
  - Pervasive diffusion even among low-income and rural people
- **Success Factors**
  - Cost-Effective networks
  - Affordable devices
  - Flexible pricing (i.e. pre-paid, cost tracking)
  - Latent demand for telephony

- **Implication for NGN services**
  - *Affordable device is crucial*
  - *Give users a choice in prices*





# Creating New Demand: Case 2) Mobile Banking

## ■ Mobile Banking

- Person-to-Person money transfer or SMS-based mobile banking is increasingly popular in some developing countries (Kenya's M-PESA, Philippines's G-Cash/Smart, South Africa's Wizzit)

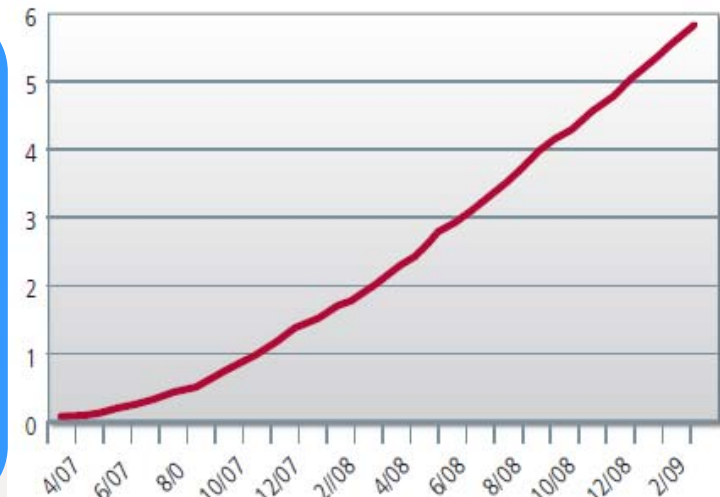
Deposit cash  
at local agencies  
(i.e. kiosk)

Send SMS  
to payee

Payee receives  
SMS

Show it  
to the agency  
and cash it out

- 6 million M-PESA users in 2 years
- Expected growth of '*Banking the unbanked*' movement
- New revenue for mobile operators
- Using mobile other than talking  
: basis for further data services



Growth of M-PESA Customers, GSMA 2009

# Creating New Demand: Case 2) Mobile Banking

## ■ Success Factors

- Mobile phone is an accessible and familiar platform
- Latent demand (Lack of banking service)
- Cheaper and easier than alternatives
- Service is relevant to their everyday life activities

Source: World Bank 2008 ITU, 2009	Bank Branch per 100,000 People	ATM Per 100,000 People	Mobile subscriptio n per100 inhabitant (ITU, 07)
<b>Bangladesh</b>	4.47	0.06	21.7
<b>Fiji</b>	5.51	12.46	63.2
<b>Indonesia</b>	8.44	4.84	35.3
<b>Iran</b>	8.39	1.25	41.8
<b>Japan</b>	9.98	113.75	83.9
<b>Korea</b>	13.40	90.03	90.2
<b>Malaysia</b>	9.80	16.44	87.9
<b>Nepal</b>	1.72	0.09	11.6
<b>Philippines</b>	7.83	5.31	58.9

## ■ Implication for NGN services

- Customized services can fill the gap of non-ICT infrastructure and create new demand among the poor
- Catalyst for further demand for advanced NGN services

# Creating New Demand:

## Case 3) Affordable Hardware

### ■ Internet Cafes and Telecenters

- Internet cafes are increasing in urban areas while telecenters have been established in rural areas
- Provide end-user sharing of hardware and affordable access to internet/broadband services
- Experiences can trigger home adoption

### ■ Affordable Devices

- Low-Cost PC (i.e. OLPC, Intel, Simputer, IQ PC)
- Low-Cost Smartphone (i.e. Sirius, VillagePDA, FonePlus)
- Shared OS (i.e. HP 441, Microsoft's Shared PC project),  
Low-power, solar-powered PC

### ■ Implication for NGN services

- Provision of affordable hardware prerequisite to universal NGN and it requires innovation!

# Creating New Demand:

## Case 4) Local Contents

- **Contents and services relevant to everyday life**
  - Local language contents and local-specific services are essential to drive the demand for broadband
- **Specifically designed ICT for Development programs can provide the initial experiences with ICTs**
  - ITU e-health activities: connecting 13 remote village clinics with hospital in Nepal
  - e-agriculture: delivering price information, farmer training

### ■ **Implication for NGN services**

- Developmental programs can create requisite impetus for NGN adoption among digitally disadvantaged group

# Summary

*The migration to NGN needs to consider:*

- 1) Provide inclusive services to all citizens
- 2) Trigger user demands for NGN services in developing countries
- 3) Provide affordable end-user devices (i.e. affordable PCs, shared access, use of mobile phones)
- 4) Develop services and applications meaningful and relevant to users, particularly digitally disadvantaged groups

# THANK YOU!

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