

5G Technology for Developing Countries Challenges and Possible Solutions

Prof. Konstantinos Masselos
President Hellenic Telecommunications and Post Commission



Applications

- 5G promises to connect people and multiple devices through intelligent networks and applications
- 5G applications are expected to:
 - enable progressive integration of different economic sectors leading to major socio-economic changes
 - encourage new market business models in both private and public sectors
 - allow developing countries to further develop local business initiatives through enhanced connectivity
 - accelerate economic growth and help bridge infrastructure investments gaps

Financing Issues

- High capital expenditures and increased operating expenses to invest and maintain new infrastructure
 - Spectrum
 - Radio Access Network
 - Backhaul network
- IoT will also require extended investments in hardware, software, maintenance and connectivity fees by both businesses and consumers
 - Return on investment remains uncertain: estimated to be double than 4G upgrade, 10-12 yrs
- Subscribers' base is at full capacity



Financing Answers

- Public sector and regulatory authorities'
 - Make contiguous spectrum available in a timely manner
 - Contribute in efficient network deployment tactics
 - Fostering co-investments or wholesale models
 - Co-funding infrastructure in remote areas with low economic significance
 - Create use cases (public service, security, safety, etc.) to foster demand
- Operators need to expand their business and logic
 - Form strategic partnerships with financial institutions or Industrial leaders
 - Be flexible and eager to offer tailor-made network solutions to multiple industries and sectors, both private and public



Is 5G suitable for developing & rural communities?

- 5G is expected to evolve gradually, creating new services, fostering innovation and stimulating economic growth
- New high speed interconnection applications can benefit remote rural areas via multiple applications and use cases*:
 - Increase economic output and productivity
 - Offer more efficient services to citizens
 - Healthcare
- Developing countries stand to gain a lot from new application uses and bridge technology and infrastructure gaps with developed countries



Implementation Challenges

- Developing countries face multiple challenges when they try to climb their ladder of investment in mobile communications infrastructures
- **Demand for Mobile broadband services:**
 - Limited urban population vs. rural areas
 - lower demand in rural areas
 - reduced rate of usage of mobile broadband services
 - Delayed implementation of 3G and 4G deployment mobile networks
- **5G technology network deployment** - cost effective and timely manner?
 - Transfer of massive amounts of data from large number of devices and sensors
 - High cellular speeds (10 Gbps) with extremely low latency
 - Increased needs in antennae densification and backhaul design
- **Different / higher-band spectrum** to be utilized for 5G use cases means additional investment in both fees and equipment



5G Leapfrogging for developing countries

- Limited or no existing 3G or 4G network can go both ways:

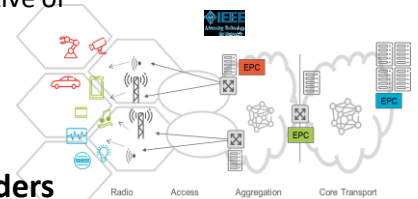


- Decreased burden of maintaining outdated legacy infrastructure and equipment
 - Operators can focus directly on investing in future proof infrastructure
 - Inadequate infrastructure (access and backhauling) in most rural and urban areas
 - Difficult and costly to support a transition from voice to data driven network
- **NEED:** to invest in flexible infrastructure, i.e. build on existing infrastructure (e.g. 4G backhauling) while gradually transitioning to new generation network
 - Capitalize on experience from pioneering countries in 5G network deployment to save time and cost



Flexible Infrastructure

- Interconnection and backhauling design converging both wireless networks with fiber deployment
 - **Optical fiber** is one of the preferred medium for mobile backhauling networks, as multiple data streams are permitted to be combined in a single fiber
 - **Fixed Wireless Access** may serve as a flexible economic alternative or complementary to Fibers
- **Network sharing:** joint building of new 5G networks
- Explore new business models of **Wholesale service providers** where one provider undertakes the 5G network rollout providing service to all operators



Thank you for your attention !

