Overcome COVID-19 Challenge
Case Sharing
Agenda

2. ICT Policies Measures Post Pandemic
Governments of various countries have issued a variety of policy tools to ensure telco networks playing as the cornerstones in competing against Covid-19

**National Milestone**
- **China**: US$40 trillion investment in new infrastructure
- **South Korea**: Urgently adding 5G investment
- **Thailand**: State subsidies for carriers.

**Spectrum Policy**
- **USA**: Enhance coverage and capacity
- **Ireland**: Release temp spectrum and expand spectrum usage scope
- **Saudi Arabia**: Availed 5–10 MHz spectrum for each operator.

**Tax Reduction**
- **Japan**: Large-scale tax cuts
- **South Korea**: 5G tax credit policy
- **Thailand**: Increase tax credits for businesses and individuals.

**Infra. Openness**
- **Italy**: Support TIM’s Open Fiber project and build national broadband
- **Germany**: DT launched the “We hunt dead spots” initiative, which will cover 100 white spots.

**Ecosystem Innovation**
- **South Korea**: Invested 600 billion won to support 5G, including 15 domains.
**19 Countries Took Fast Actions for Spectrums, Allocated Temporary/Officially Spectrums and Quick Expansion**

**Spectrum Strategy for epidemic:**
- Idle spectrums should be allocated as soon as possible or neutral.
- Turn the spectrums into official spectrums with the aim of fighting against epidemics, restoring the economy, and restoring employment.
- Regarding economic and employment recession after the epidemic, new infrastructure in China and the US QE model have emerged, investment can be driven by spectrum

<table>
<thead>
<tr>
<th>Country</th>
<th>Progress</th>
<th>Category</th>
<th>Initiate</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>Dish, a large operator, borrows 600 MHz, 700 MHz, and AWS spectrum resources from the three major operators.</td>
<td>Temporary spectrum</td>
<td>Initiated by the carrier and coordinated by the FCC</td>
<td>Mar20</td>
</tr>
<tr>
<td>Ireland</td>
<td>Three operators obtain 700 MHz/2.8 GHz new spectrum, 2.1 GHz spectrum neutrality, 3+3 months</td>
<td>Temporary spectrum</td>
<td>Initiated by the operator</td>
<td>Mar20</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>Operators add 10 MHz spectrum (700 MHz and 800 MHz).</td>
<td>Temporary spectrum</td>
<td>Initiated by the operator</td>
<td>Mar20</td>
</tr>
<tr>
<td>Jordan</td>
<td>The 900 MHz neutralized. 3 operators obtain new spectrums on the 900 MHz, 1.8 GHz, 2.6 GHz, and 3.5 GHz</td>
<td>Temporary spectrum</td>
<td>Initiated by the operator</td>
<td>Mar20</td>
</tr>
<tr>
<td>Tunisia</td>
<td>All IMT-specified spectrum will be technology neutral.</td>
<td>Temporary spectrum (spectrum neutrality)</td>
<td>Initiated by the operator</td>
<td>Mar20</td>
</tr>
<tr>
<td>Oman</td>
<td>Provision idle 1.8 GHz+2.3 GHz (50 MHz in total).</td>
<td>Temporary spectrum</td>
<td>Initiated by the operator</td>
<td>Mar20</td>
</tr>
<tr>
<td>Kuwait</td>
<td>Allocate the remaining 25 MHz spectrum of 1800 MHz.</td>
<td>Temporary spectrum</td>
<td>Initiated by the operator</td>
<td>Mar20</td>
</tr>
<tr>
<td>Cambodia</td>
<td>Temporary issuance of 5G pre-commercial licenses to connect two ministries and hospitals for 5G healthcare</td>
<td>Temporary spectrum</td>
<td>Initiated by the operator</td>
<td>Mar20</td>
</tr>
<tr>
<td>South Africa</td>
<td>Opened the 700/800/2.6GHz/C-BAND frequency bands for operators in non-interference areas.</td>
<td>Temporary spectrum</td>
<td>Initiated by the operator</td>
<td>Mar20</td>
</tr>
<tr>
<td>Panama</td>
<td>The government has provided AWS 70 MHz spectrum to operators for 90 days free of charge to cope with the epidemic.</td>
<td>Temporary spectrum</td>
<td>Initiated by the operator</td>
<td>Mar20</td>
</tr>
<tr>
<td>Lesotho</td>
<td>Two operators use the 10 MHz and 1900 MHz frequency bands for two months free of charge.</td>
<td>Temporary spectrum</td>
<td>Initiated by the operator</td>
<td>Apr20</td>
</tr>
<tr>
<td>Ghana</td>
<td>900 MHz frequency band Neutral and temporarily spectrum allocation</td>
<td>Temporary spectrum</td>
<td>Initiated by the regulatory authority</td>
<td>Mars 20</td>
</tr>
<tr>
<td>Jamaica</td>
<td>Two operators use the 10 MHz and 1900 MHz frequency bands for free for three months.</td>
<td>Temporary spectrum</td>
<td>Initiated by the operator</td>
<td>Apr20</td>
</tr>
<tr>
<td>Haiti</td>
<td>Diggicel: 2100 MHz, 10 MHz, six-month temporary use</td>
<td>Temporary spectrum</td>
<td>Initiated by the operator</td>
<td>Apr20</td>
</tr>
<tr>
<td>Hungary</td>
<td>Supports epidemic fighting and accelerates the issuance of 3.5+700+2.1 spectrum and licenses during epidemics.</td>
<td>Official release</td>
<td>Initiated by the regulatory authority</td>
<td>Mar20</td>
</tr>
<tr>
<td>Algeria</td>
<td>The committee formally approved the 5 MHz spectrum applications for ATM and OTA respectively.</td>
<td>Official release</td>
<td>Initiated by the operator</td>
<td>Apr20</td>
</tr>
<tr>
<td>Czech</td>
<td>900 MHz refarming</td>
<td>Official release</td>
<td>Initiated by the operator</td>
<td>Apr20</td>
</tr>
<tr>
<td>Japan</td>
<td>Officially approved the first vertical network, which is mainly used for facial recognition. Related medical scenario research: 5G: 28.2 GHz to 28.3 GHz; LTE: 2575 MHz to 2595 MHz</td>
<td>Spectrum are officially released for vertical industries</td>
<td>Initiated by the regulatory authority</td>
<td>Apr20</td>
</tr>
<tr>
<td>China</td>
<td>Adjust the 700 MHz frequency band plan and officially provision services to accelerate the deployment of 700 MHz applications.</td>
<td>Spectrum acceleration deployment</td>
<td>Initiated by the regulatory authority</td>
<td>Feb20</td>
</tr>
</tbody>
</table>
Ghana’s Spectrum Response to COVID-19 is Global Best Practice

Phase I: Africa, LATAM, ME
- South Africa
- Large-scale temporary spectrum allocation
- Three weeks Lockdown

Phase II: Euro, USA, Japan
- Spain
- Italy
- Gov. request operators to Ensure network stability.
- Italy: Issued new regulatory policy.
- Japan: Gov. request operators to Ensure network stability.

Phase III: China, South Korea
- China
- South Korea
- Increase investment in 5G
- Accelerated 5G new infrastructure

Additional Spectrum
- USA
- Ireland
- Saudi Arabia
- Jordan
- Jamaica
- South Africa
- Kuwait
- Algeria
- Japan
- China

Spectrum Neutrality
- Czech Republic
- Ireland
- Jordan
- Tunisia
Key areas requiring services guarantee

Government Anti-Pandemic Command centers

Key areas identified by the government (area list)
1. Xxx
2. Xxx
3. Xxx
4. Xxx
5. ...

Hospital, key medical connectivity solutions

School institution area to ensure continuous online teaching and learning

Operators emergency expansion and bandwidth guarantee

Residential area, economically sustainable
Ensure working and study from home
Network Speed enhancement to 10Mbps-25Mbps to Guarantee Experience during the outbreak

Various services with different network demands

- Guarantee speed for > 25Mbps in Urban areas
  - HD Video conference
  - Tele medicine
  - video Streaming
  - AR/VR
- Guarantee Speed >10Mbps for Rural areas
  - Tele Education
  - SD Video Conferencing
  - Video gaming
  - Video Streaming

Countries and Organizations Have Adopted this network Standard from Day 1

- African Union: Sets 6Mbps as minimum mobile broadband Speed
- Nigeria: new NBP Sets 25Mbps in urban area and 10Mbps for Rural
- KENYA: Sets 10 Mbps for Mobile broadband subscriber
- South Africa: COVID-19 10Mbps in 104 districts schools

- Improving network capability and agility to address the new requirements for working/studying at home
- Improve Online Streaming Service Experience
- Guarantee smooth services experience in specific scenarios (Hospitals, Government Offices, Homes etc.)
- Increased network speed to meet Entertainment Demand.
Strengthen network capability, use ICT connection: Governments and regulators release new policy for ICT to combat COVID-19

Strengthen network

- National stimulus package for telecom
- Bank supports industry without any reduction & impact on telecom
- Subsidy for new technology deployment, like 5G

Special Policy

- Special authorization to apply exceptional traffic management to prevent congestion
- Special pass for telecom engineer, operator channels
- Power plant decreases price to support telecommunication

Temporary spectrum

- USA: Grant 600M and AWS spectrum
- Saudi: Additional 30MHz spectrum (700M, 800M)
- South Africa: 90 days temporary spectrum

Use ICT

Keep Connected

- Strengthen national internet availability, capacity, quality.
- No termination of services for low-income families and SMEs
- “Stay Connected” to reduce pressure on network, recommend 7 tips for users.

Tariff Down & Speed Up

- Reduce internet wholesale charges and strengthen cooperation between operators
- FBB and MBB experience upgrade
- Free or discounted content a common response to help those in self-isolation...

Digital Assistor

- Surveillance, detection, investigation, and early warning of pandemic
- Remote Work/education/medical...
Overview of Asia and Africa practice

Thailand
- Mobile users receive free 10GB per month.
- Wireline BB free upgrade to 100Mbps.
- Subsidy 3~400mil USD to operators.

Malaysia
RM250bil ($57bil) stimulus package announced, initiatives including:
- Subsidy low income household & student.
- Request TNB further electricity prices discount.
- Request Operators 1GB per day free from 1Apr until end.
- Announcement of subsidy RM600mil ($138mil) for telecom connectivity – though still to confirm how this will be facilitated.

Philippines
- Authorized telecom engineers can work outside after cities lockdown.

Pakistan
- Operators ensure that subscribers have access to their services, function of franchises, top up outlets and networks in affected areas
- PTA suspends blocking of mobile devices from 60 days to 90 days.
- Create SMS alerts center, replace RBT to awareness message, Short code 1166 has been allocated and is being used by NEC, tracking suspected/vulnerable cases.
- PTA has issued a wide ranging advisory to licensees.

Saudi Arabia
- Saudi Arabia releases 10Mhz@700Mhz frequency award to STC, 10Mhz@800Mhz award to Mobility, Zain within 90 days.

Jordan
- TRC assign additional 30 Mhz freq to Operators for COVID-19:
- Zain 5M@900Mhz, Orange10M @ 2.6Ghz, 5M @1.8Ghz, Umniah 10M @1.8Ghz.

South Africa
- ICASA plan to do so & ask free tariff.
- Request operators to provide high quality network & reduce tariff.

Algeria
- Foreign expenditure reduced $10B due to COVID-19 & Oil war
- But investment in telecoms, bank industry sustained without any reductions & impact.
South Africa: Successfully Relaxed ICT Regulations

- Detailed interventions around the “dissemination of information” in the country.
- Facilitate the availability and use of digital technologies to combat the spread of COVID-19 in South Africa.
- Guidelines aimed at ensuring the smooth operations of telecoms networks and disseminating COVID-19 information to citizens.

The new rules include:

New ICT Regulations to fight against COVID-19:
- 26 March 2020: Government Gazette 43164_26-3
- 06 April 2020: Government Gazette, ICASA ICT Regulation No. 43207
- 17 April 2020: ICASA issues temporary radio frequency spectrum to qualifying applicants

- Those with access to high demand spectrum must make available connectivity for up to 10Mbps to 104 district virtual teaching
- Automatic, type approval of network Equipment and handset devices (online real time)
- Licensees must provide zero-rated access to local educational content websites.
- Disseminate public information related to the national effort to combat the spread of COVID-19
South Africa: Covid-19 pushes the GOV to solve network impact, and telcos successfully lobbied the rapid spectrum allocation

SA President:
Implemented biggest curfew ever, except for health, safety, food production and telecoms practitioners.

SA invests 10% of GDP to stimulate the economy
- South Africa's president signed $26.3 billion economic stimulus plan to subsidize health care, education, and manufacturing
- Operators enter remote-education, and support government decision-making by cutting package prices.
- The government and related organizations raised $100 million to invest in the virus fund by cutting salaries.

ICASA turns radical:
The "full spectrum" release plan is quickly executed.
- More than 90% of spectrum licenses have been approved, and all spectrums in South Africa have been temporarily allocated.
- On May 5, Vodacom launched 5G services in Johannesburg, Pretoria, and Cape Town, accelerating 5G development.

"Telecom Industry Raises to the Position of National Economy and People's Livelihood for the First Time":
1. Vodacom in South Africa quickly launched $27mn to increase network capacity;
2. Vodacom, Telkom, MTN driven by policies, competition is intensified, and 5G deployment and commercial use are accelerated.

Operator action: Initiated the "35 temporary high-demand spectrum license applications" plan and promoted the government to execute the plan.
- Operators and governments cooperate more quickly in face of epidemic

Operators and governments cooperate more quickly in face of epidemic
- 10 years no action VS 1 month, 330M launch
- 5G delay VS 5.5, commercial launch
- Strict supervision VS More independent packages

More explorations and continuous
- Temporary frequency VS Long-term
- Taxation VS Reduction
- Poor network VS Promoting national investment
Duties Reforms in Telecom Sector for Smart Phone

To provide affordable Smartphone during outbreak period

Many Countries in Sub-Saharan Africa that have higher levels of sector-specific taxes and fees tend to have a higher total tax burden. Countries have embarked in Sector-specific tax reforms.

Drop of import tax on smart phones, from 20% to 10% which will lead to:
- Higher demand for devices
- Increasing market penetration.
- Increase handset purchases by 3 million by end 2020, with almost 1 million of these handsets being 3G-enabled.
- If half of these new devices represent new connections, rather than upgrades to existing devices, an additional 1.5 million connections would be enabled.

In Togo the Import tax on smart phones is completely abolished (0% import duties), yielding to more access to devices for the poor and minimizing the Digital Divide between Urban and Rural.

Policy to make low-end smartphone (<$30) more affordable:
- Abolish custom duty;
- Reduce the VAT;
- Subsidy to very poor population and
- Permit store to sell low-end handset during lockdown
Agenda

1. Global Insights on the COVID-19 Pandemic management
2. ICT Policies Measures for Post Pandemic
Global Covid-19 Pandemic, causing on Policy, Finance & Society Uncertainties

Impact: strong policy control, increased exchange rate risks and high security risks

**Government policies changes**
- 80+ countries declared State of Emergency
  - Boarder Closure: Italy, Spain, and Czech, etc.
  - Quarantine: Belgium, France, Switzerland, etc.
  - Curbew: France in “a state of war”; Germany’s ban on travel...

**Financial changes**
- Non-US currency devaluation (1 month): 15 currencies depreciated by 10%+ vs. US$, Colombian peso, rouble 20%+
- US stocks circuit-broken 4 times, and world crew oil prices slashed down as low as to US$25/barre

**Society changes**
- 5 billion people start online life, network traffic grows rapidly: China: IP +70%, Spanish: wireless + 50%, VDF: Data +50%
- The epidemic accelerates 5G + cloud + AI, social information and digitalization will enter the fast lane

**When Will The Novel Coronavirus Pandemic Be Over?**
Past pandemics have typically lasted 12 to 36 months.
EU: Sets up €540bn fund to restart economy, green and digital are the focus

EU: Restarting the Economy, Focusing on Green and Digitalization

- Von der Leyen: We now need to build a resilient, green and digital Europe, and the European Green Pact will be our driving force for the recovery.
- On 9 April, European Union finance ministers agreed on a package of 540 billion euros to address the severe economic impact of the Covid-19 crisis and to lay the groundwork for the region's economic recovery.

TIM & EU's "Digital Risorgimento" to Build Digital Knowledge & Skills

Digital Risorgimento campaign is initiated by TIM Italy and European Commission, and 26 players, including Google, Cisco, Hewlett-Packard Enterprise, and Huawei, participate in the campaign with the support of the government. The initiative is also supported by industry associations, third parties and key actors in social innovation.

BEREC in Europe: Deregulation and Legalization of Data Sharing

- BEREC: Carriers are authorized to take special traffic management measures, especially to prevent the coming network congestion and mitigate impact of special or temporary network congestion, and to treat the traffic of the same type equally.
- Giovanni Buttarelli, European Director of Data Protection: Data sharing to combat the epidemic is legal.
- Eight European operators, including DT, Orange and Vodafone, have agreed to share telephone location data with European Commission to help measure the coronavirus’s coverage.
- Italy, Spain, Russia, Ireland, Austria, and Belgium provide temporary spectrum licenses for operators.

Germany calls for legislation as home office becomes "the new normal"

German Labor Minister Hubertus Heil: Employees should have the right to work at home. A bill to make working from home a legal entitlement is planned for the fall. "Employees who want to work at home, and the workplace allows them, should be able to work at home, even after the epidemic is over," he said.

An estimated 8 million people in 16 German oblasts, or 25% of the country’s workforce, were working from home, well above the 12 per cent prior to the outbreak.

[Accelerate the construction of stable and high-quality home broadband]
The government promotes the acceleration of 5G applications in the 2B field

("5G +" 5 core industries): immersive content, smart factories, smart cities, autonomous vehicles, digital healthcare

The government promotes the first use of 5G technology in the public domain to promote the maturity of technology and applications

- **Immersive content**: cultural tourism in museums, art galleries, etc.
- **Smart factory**: 5G robots are used in manufacturing, nursing, medical, administrative, logistics
- **Smart City**: Smart CCTV (Social Security), 5G UAV (Disaster and Disaster)
- **Autonomous driving**: sightseeing, public security
- **Digital healthcare**: 5G + AI medical software commercial verification

**Traction through 5-year strategic goals (2020 ~ 2024)**

**Immersive content**: Will produce more than 100 leading VR / AR companies

**Smart factory**: 1,000 SMEs introduce 5G smart factory solutions

**Smart City**: 1 million 5G robots are used in homes, hospitals, etc.

**Self-Driving**: 5G V2X terminal, remote control platform, slicing and other core technologies are leading

**Digital healthcare**: The penetration rate of 5G emergency medical services reaches 30%

---

Operators dominate 5G application innovation industry chain cooperation

Government encourages, operators / large companies to lead, and joint SMEs to promote 5G application innovation

<table>
<thead>
<tr>
<th>Cases</th>
<th>Chips/Devices</th>
<th>Network</th>
<th>Software</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR Studio</td>
<td>AR Collaborative work solution</td>
<td>LG U+</td>
<td>LG U+</td>
<td>Spatial Systems</td>
</tr>
<tr>
<td>MR Studio</td>
<td>Invest in 5G remote control</td>
<td>LG U+</td>
<td>LG U+</td>
<td>LGU+ &amp; Kakao Mobility Intelligent Transportation</td>
</tr>
</tbody>
</table>

**Equity Investment QuoPin**
Scope of application: heavy equipment such as unmanned driving, drones, automobiles, robot control and other 5G B2B services

**SKT Incheon Free Economic Zone 5G map application**

**MR Studio**
SKT and Microsoft cooperate to set up MR production studio “Jump Studio”
Malaysia: Increase ICT investment to save economy and to strengthen “Digital ASEAN Heart” vision

**Economic Supporting Package**
- 20 billion ringgit (US$4.58 billion) in Feb 27th
- 250 billion ringgit ($58 billion) in Mar 27th
- Tax relief for hard industry

**“Digital ASEAN heart”**

“Malaysia's potential as the heart of Digital ASEAN”

(Note: The MDEC is a state-owned institution responsible for industry and business digitalization)

**ICT investment**

- **Fiber Investment**
  Plans to implement projects related to the national fiber-optic and connectivity programme, worth RM3 billion (US$690 million)

- **Special-free Internet services**
  With the slogan "Nobody is behind the times," and MDEC will cooperate with carriers to provide free Internet services worth US$138 million to all people.

- **Extra network investment**
  US$92 million additional investment to increase network coverage and capabilities

- **Digital financial assistance**
  Cooperated with the MDEC and National Bank of Malaysia to provide US$1 billion in additional assistance to SMEs in digitalization.

**Minister of Communications and Multimedia**
Saifuddin Abdullah

Malaysia Digital Economy Corporation
Africa: Improving digital response and developing the digital economy are key to fighting against Covid-19

Digital transformation in Africa is very necessary

"I think a digital response to the coronavirus epidemic is so important for Africa," Kelly said. "It's an area where Africa can learn from the rest of the world, and an area where Africa has the chance to leapfrog through its digital transformation."

World Bank, Africa CIO: Kelly

Africa faces a huge digital divide. Currently, only 7% of the 770 million mobile connections are 4G, which means that there are challenges and potential.

North Africa: infrastructure network promotes COVID-19 information sharing. Stimulate the positive cycle of operators' operation and social responsibility through policies

Egypt: policy
- The Internet consumption increases by 87 percent
- Prime Minister: Focus on Telecom and Digital Transformation in new capital
- Gov. to subsidize 200 million Egyptian pounds for people's Internet tariffs

Morocco: Network Prefect
- increased by 4% in Q1, $150 million donated to fight COVID-19
- Government "Digital 2025" and operators lead
- 5G coverage in a virtuous circle

Others
- Algeria: 15M spectrum to operators
- Tunisia: Strengthen online payment and provide 5 discounts
National Strategy: Countries with advanced ICT infrastructure and high level of digitalization can respond more effectively to fight against the pandemic.

- **Strength of national strategy**
  - **Weak strategic investment and ICT infrastructure**: Be prepared and accelerate digital awakening.
  - **Increased strategic strength, accelerated digitalization, more effective anti-epidemic**: Strong strategic investment, leading digitalization, efficient anti-epidemic and economy recovery.
  - **Strong strategic investment, leading digitalization, efficient anti-epidemic and economy recovery**

**Countries**:
- Nigeria
- South Africa
- Philippines
- India
- Malaysia
- Brazil
- Saudi Arabia
- China
- South Korea
- USA
- Germany
- Saudi Arabia
- Brazil
- Malaysia
- India
- South Africa
- Philippines
- Nigeria

**Strategies**:
- "5G + Leading Strategy"
- "New Infrastructure" Strategy
- "Restart Economic Plan"
- "Digital ASEAN Strategy"
- Speed up the "2030 Strategy"
- Leading Countries in the "Digital EU Strategy"

**Sources**: BCG, BG MI etc.
Summary

• Five dimensions of MSTIE (Milestone, Spectrum, Tax, Infrastructure, Ecosystem): upgrading regulatory policies to lead the healthy development ICT

• Redefine connections and ICT which are the lifeline during Covid-19 and the growth engine during economic recovery post-pandemic.

• Leading the industry, best partner for digitalization, and investment philosophy in crisis (counter-cyclical investing)
Thank you.