

Digital Economy in ASEAN

Opportunities Context

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Digital Economy Development key to Future Prosperity

Digital demand addressed by Intelligent Connectivity



Common Digital Paradigm

Intelligent Connectivity Fundamental



All Things Connected

Data goes online to power machine intelligence
Ubiquitous connection, wide connections, multiple connections, and deep connections



All Things Sensing

Sensing the physical world, mapping it to digital signals
Connecting from Consumer Internet to Industrial Internet to Internet of Everything



All Things Intelligent

Big data and AI power new applications
Digital twin
Digital survival

Growth Enabler




170+
Countries and regions


194,000
Employees


105,000+
R&D employees

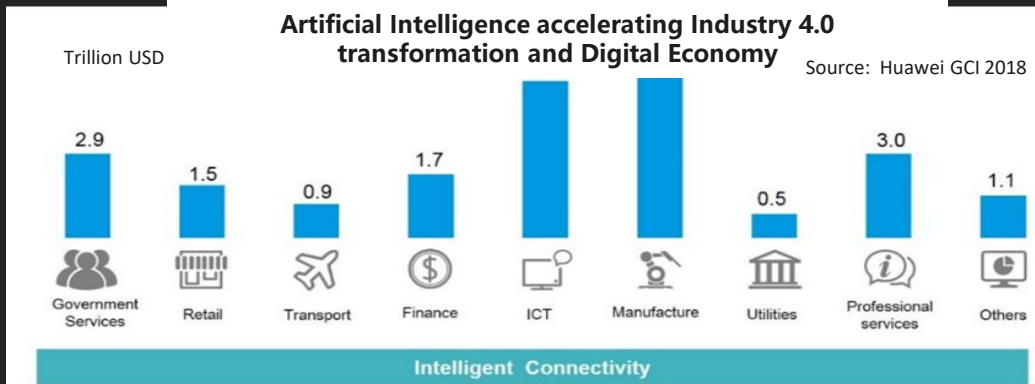
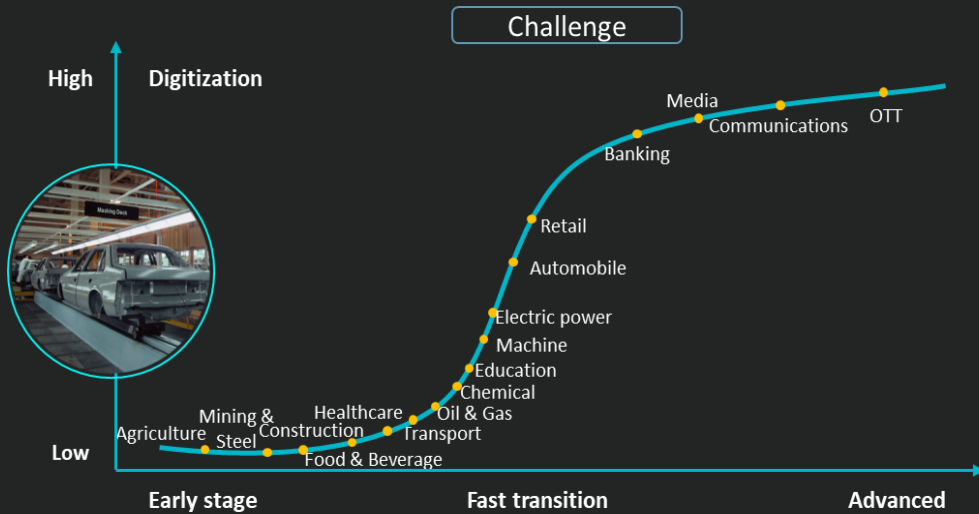

720 billion CNY
Accumulated R&D Investment


Patents 100K+
till end 2020



Digital Economy as the New Growth Engine

What do we digitalize?



Is it worth it?

2.5X Digital Economy vs Traditional Economy Growth

6.7X Digital Investment ROI to Non-Digital Investment

20% Digital tech investment >> 1% rise in GDP

(Avg. of last 3 decades)

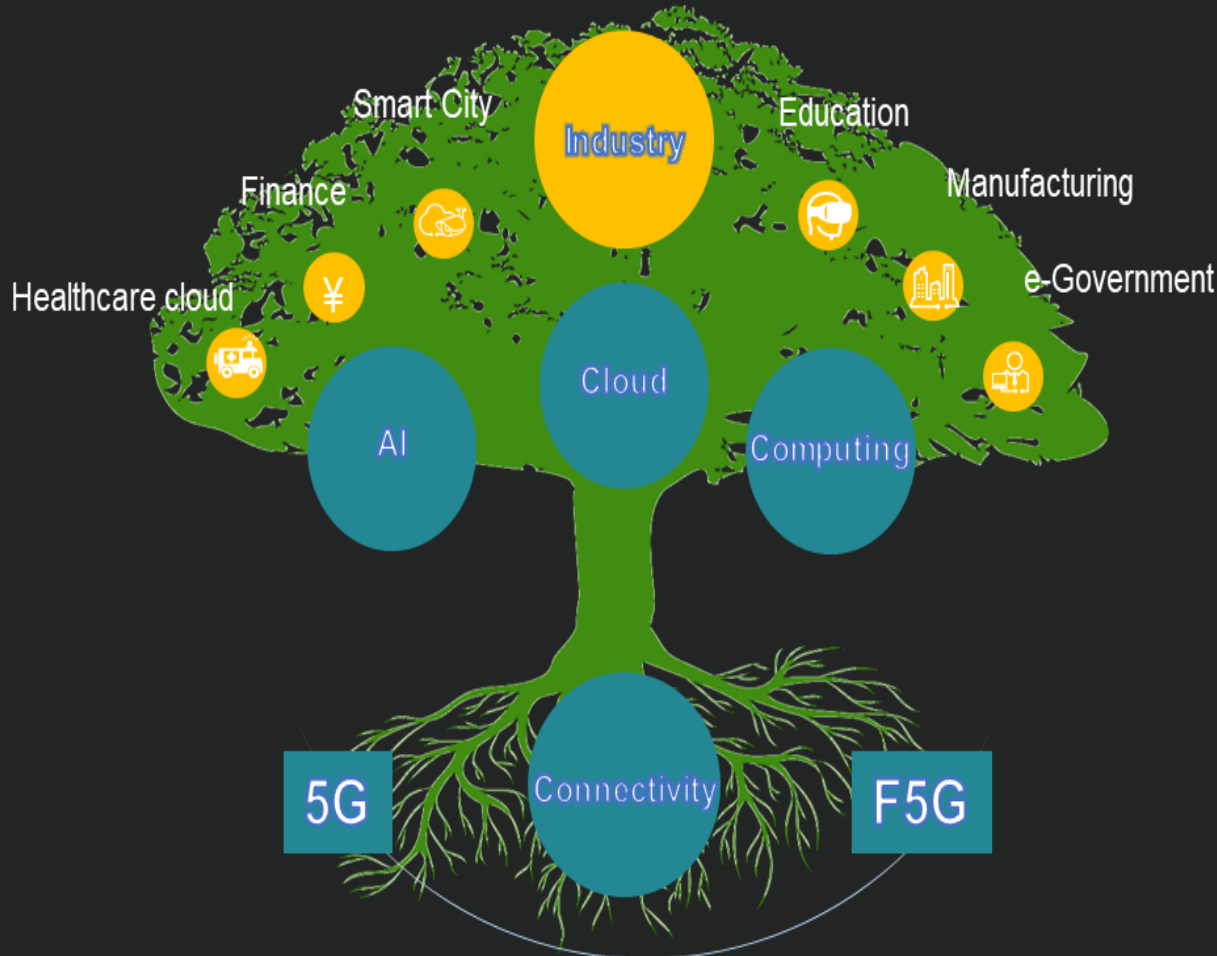


Countries have Digital Growth as National Priority

ICT infrastructure the foundation to the Digital Transformation Priority



ICT Value Creation for Digital Economy Growth

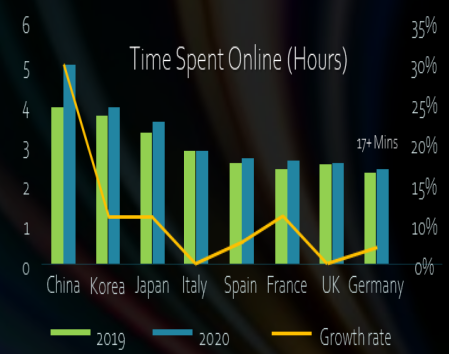


- ICT Infrastructure for Value Creation
 - Industrial Value
 - Social Value
- Outside-In Development
- Problem identification before solution
- Affordability
- Business Models
- Scalability
- Trust and Transparency

While Digital Economy landscape shaping up organically....

Pandemic prompts OnlineX to become the new normal

Change Way of Life



Outdoor to Indoor, Offline to Online

Change Work Location



CBDs to Homes, Increasing Daily

Impact : Government Interventions, Economic slowdown and Societal well being prioritized

Government Interventions

80+ countries declared State of Emergency

- Lockdowns
- Travel bans, Restrictions
- Curfews / Controlled movement orders

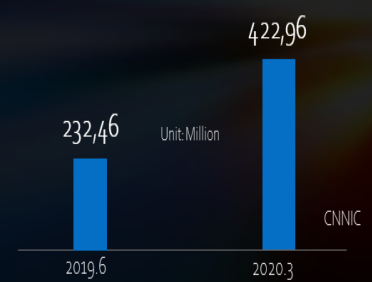
Financial changes

- **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

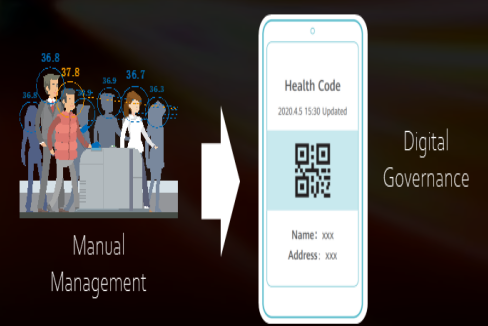
- **5 billion people** start online life, network traffic grows rapidly: China: IP +70%, Spain: wireless + 50% Europe: Data +50%
- Accelerates Social information infra, digitalization, 5G + cloud + AI, to address situation now and ensure readiness for the future

Change Education Mode



Online Education Users in China

Change Public Governance



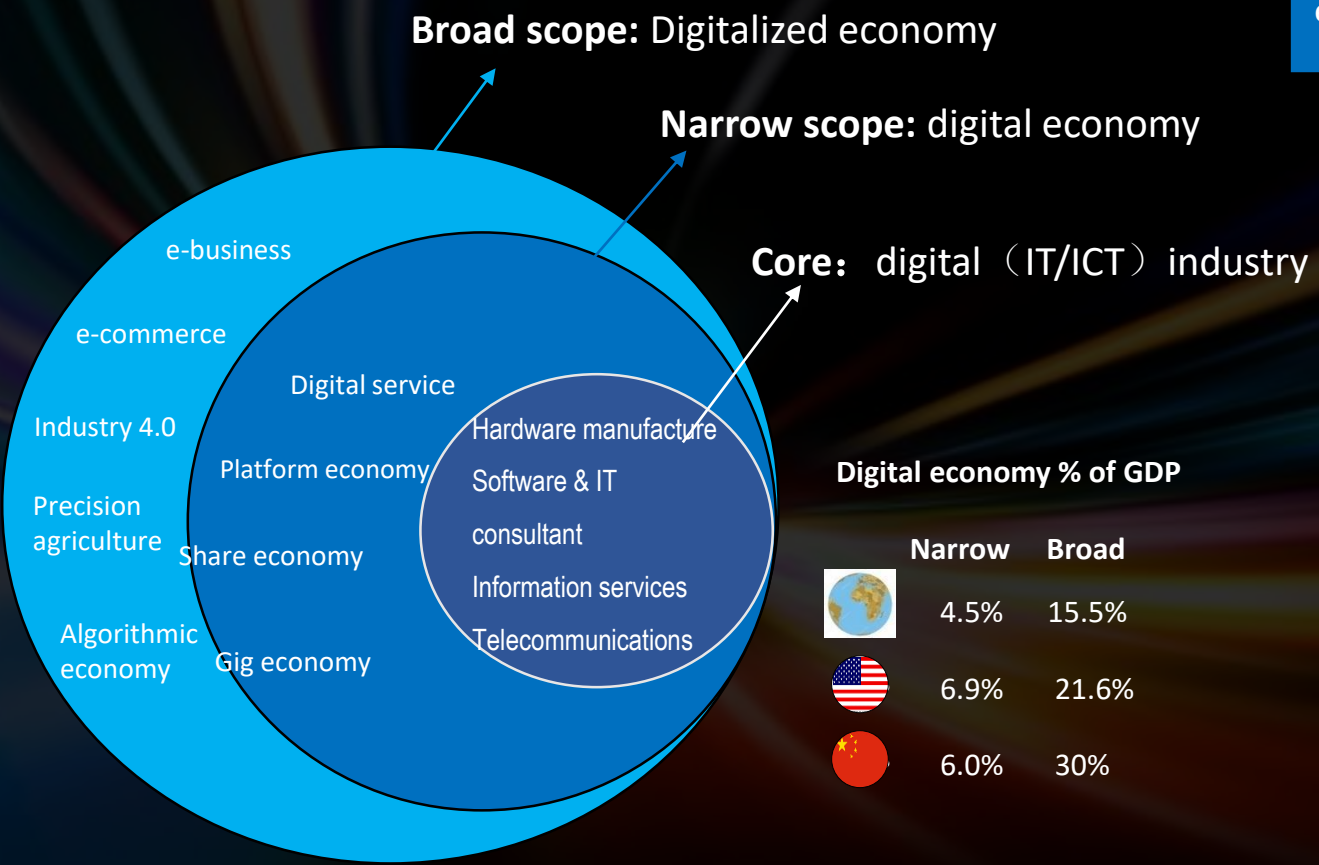
Accelerated New demand for Digital connectivity



Economic recovery led by ICT Industry

COVID-19 hits all sectors, but recoveries take different trajectories

ICT as Foundation to Support Digital Economy

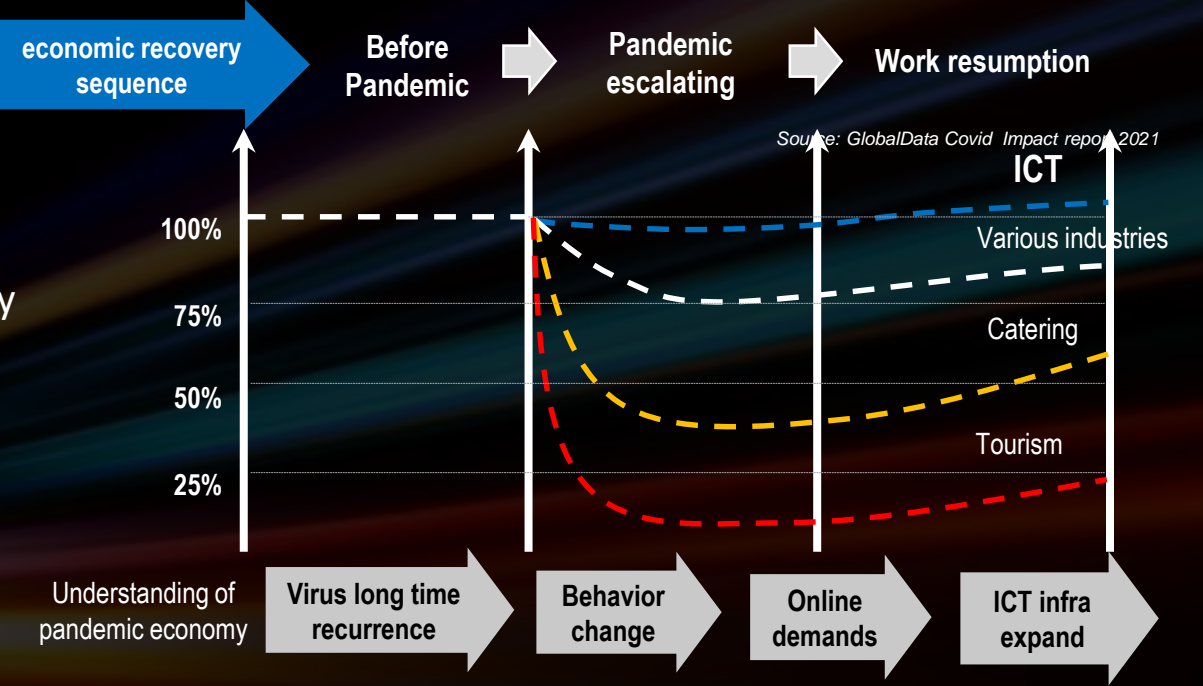


Source: Bukht and Heeks, 2017

Digital economy % of GDP

| | Narrow | Broad |
|--|--------|-------|
| | 4.5% | 15.5% |
| | 6.9% | 21.6% |
| | 6.0% | 30% |

Pandemic Accelerate the Social Digitalization



Source: GlobalData Covid Impact report 2021

"COVID-19 pandemic has significantly **accelerated the digital transformation** in China.

This kind of transformation towards **Intelligent social governance**, **Digitalization of all economic sectors**, **Online consumption**, All-on-line will be a non-stop trend of changes.

We must **embrace this challenge and opportunity** while fast adapting and improving ourselves in this mission"



Wang Xiaochu, Chairman of China Unicom

Enabling the need to accelerate investment in Digital developments



Europe: Digital Infrastructure & Industry Digitalization are the Major Recovery Pillars

EU Restart Green, Digital, Resilience Economy



The European Recovery Plan (new Marshall-plan)



Ursula von der Leyen
President of EU Commission

May 27, 2020,

the European Commission has proposed a **€750 billion** package of grants and loans to aid the EU's recovery from Covid-19.

Focus on Green Deal, digitalization, the resilience of societies and the health of environment to boost jobs & growth.

June 4, 2020



Germany Stimulus Package

Germany announce a post-coronavirus stimulus package of extra spending, tax cuts and help for business, worth **€130bn**.

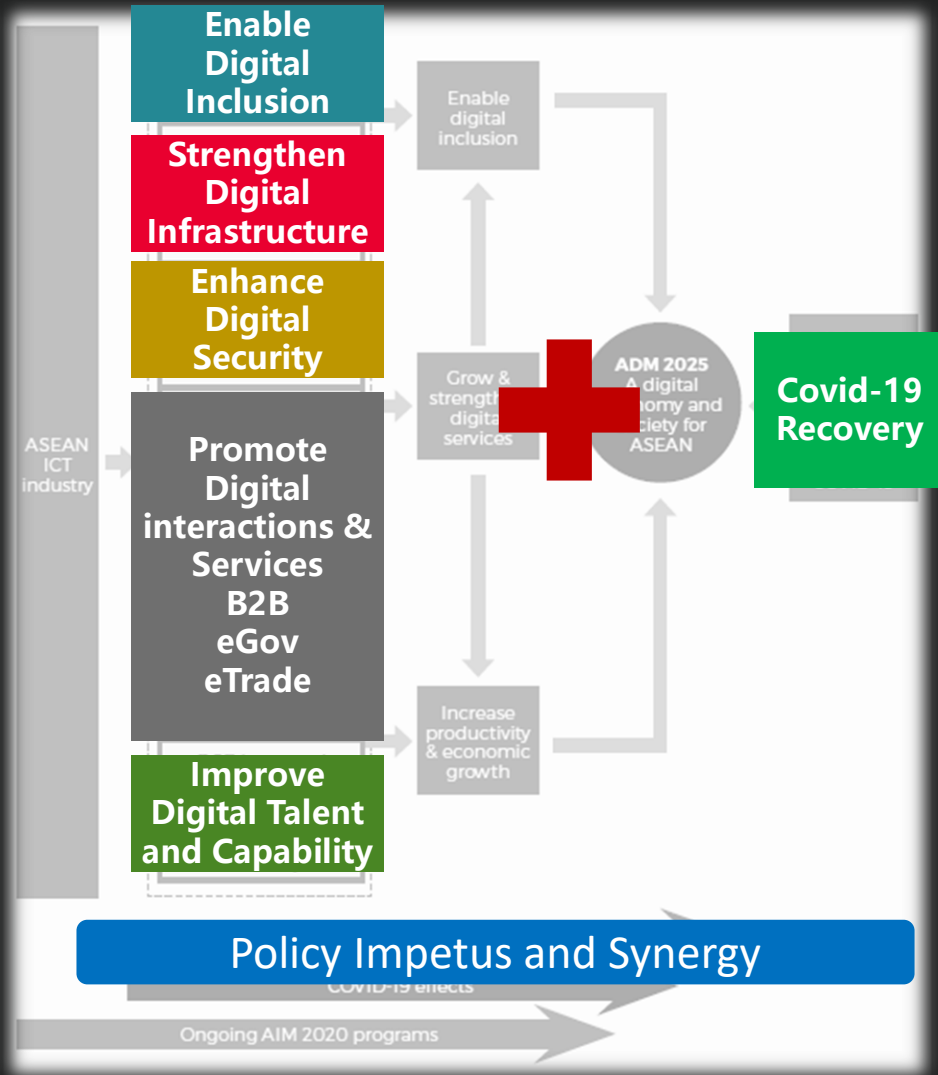
Federal Council has list 57 key projects scope. ICT related up to **€ 34bn**.



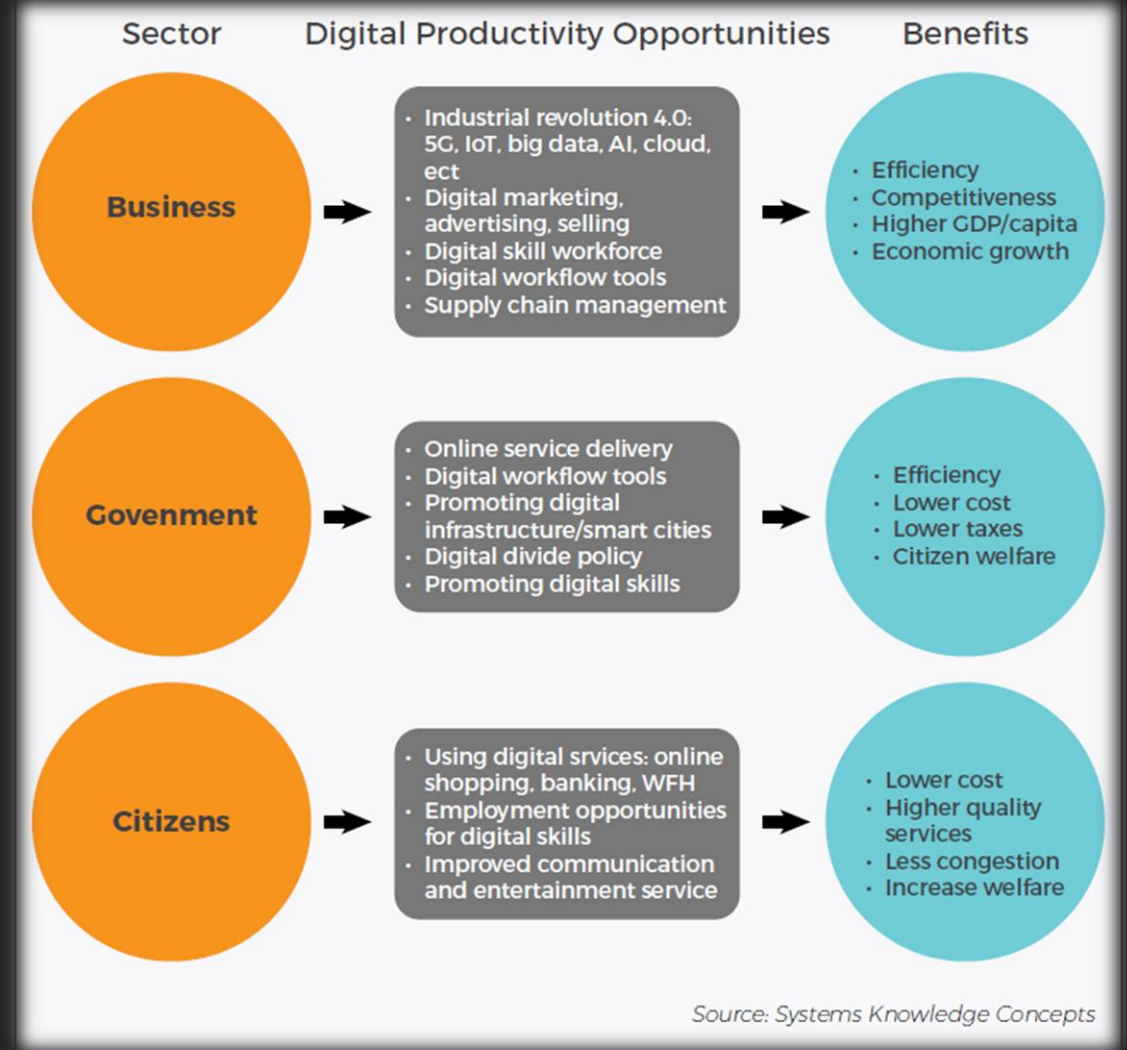
| category | No | Germany ICT related stimulus Plan | Budget |
|-------------------------|------|--|----------|
| Industry digitalization | 42 | its necessary to promote digitalization especially in public administration, strength SEMs digitalization, accelerate digital economy.... | € 1 B |
| | 43 | Increase the budget for AI from 3bn to 5bn up to 2025, establish EU AI network & make in EU AI competitive. | € 2 B |
| Digital sovereignty | 44 | Support Quantum computing, communication, sensor technology, quantum cryptography are economically and technologically competitive. | € 2 B |
| | 45 | Support innovation , test software define new network tech, support EU standard Open RAN development. | € 2 B |
| | 46 | Fiber expansion in the non-economic zone, we will eliminate bureaucracy and further upgrade the system, and provide the necessary funds | - |
| Digital infrastructure | 47 | accelerate the development of 5G on a large scale coverage in Germany by 2025 . Once the operators determine the area where its expansion commitment will be realized, the remaining gaps will use these funds for coverage by the Federal Gov's new infrastructure company (MIG) . | € 5 B |
| | 48 | Continue to implement the smart city plan and add 500 million euros to it, so that city and municipal projects that have not yet been implemented can obtain another financing opportunity | € 0.5 B |
| | 35-h | In 2020~2021, the federal gov will provide greater support for the necessary help of 450 licensed railway transport companies to improve the mobile coverage of 39,000 kilometers of railways in Germany | € 0.15 B |
| cyber security | 49 | Establish a digitalization and technology research center in the German Bundeswehr to research digital and technological innovations availability in the public and private sectors in a safe environment | € 0.5 B |
| Medical digitization | 50 | Health authorities receive support in technology and digital equipment. These funds can be used to improve hardware and software equipment reporting and crisis response, information and communication technology, and necessary training for employees | € 4 B |
| | 51 | the future hospital will not only improve modern emergency capabilities, but also improve the digital infrastructure of the building to improve (internal & across sectoral) supply, organization, communication, telemedicine, robotics, high-tech medicine and documentation. Investments in IT and cybersecurity in the healthcare system (especially in times of crisis) are more important. | € 3 B |

ASEAN approach and priorities – ADM 2025

Digital infrastructure foundation to catalyze Digital Economy engine



Productivity and competitiveness for GDP growth



Enhanced Productivity and Competitiveness key to realizing Digital Economy Objectives



ASEAN Digital Economy Drivers – Where do we stand today?

Digital Connectivity and Readiness

| |  |  |  |  |  |  |  |  |  |  |
|---------------------------|---|---|---|---|---|---|---|--|---|---|
| | Singapore | Malaysia | Thailand | Indonesia | Vietnam | Philippines | Brunei | Laos | Cambodia | Myanmar |
| Global Connectivity Index | 4 th | 30 th | 54 th | 59 th | 57 th | 62 nd | | | | |
| Digital Readiness Index | 1 st | 38 th | 55 th | 62 nd | 62 nd | 73 rd | | 107 th | 102 nd | 111 th |

Sources: Huawei's Global Connectivity Index 2019; Cisco's Global Digital Readiness Index 2019;

Digital Security

| |  |  |  |  |  |  |  |  |  |  |
|----------------------------|---|---|---|---|---|---|---|--|---|---|
| | Singapore | Malaysia | Thailand | Indonesia | Vietnam | Philippines | Brunei | Laos | Cambodia | Myanmar |
| Global Cybersecurity index | 6 th | 8 th | 35 th | 41 th | 50 th | 58 th | 64 th | 120 th | 131 st | 128 th |











Sources: Global Cybersecurity Index 2018; Global Risk Report 2019

Digital Talent

| Indicators (1–100 best) |  |  |  |  |  |  |  |  |  |  |
|--|---|---|---|---|---|---|---|--|---|---|
| | Singapore | Malaysia | Thailand | Indonesia | Vietnam | Philippines | Brunei | Laos | Cambodia | Myanmar |
| Digital Skills Among Active Population | 76.4 | 72.8 | 54.3 | 61.5 | 46.1 | 67.7 | 64.3 | 52.3 | 42.8 | |

Source: The Global Competitiveness Report 2019

Digital Competitiveness

| |  |  |  |  |  |  |  |  |  |  |
|-----------------------|---|---|---|---|---|---|---|---|---|---|
| | Singapore | Malaysia | Thailand | Indonesia | Vietnam | Philippines | Brunei | Laos | Cambodia | Myanmar |
| Financial System | 91.3 | 85.3 | 85.1 | 64 | 63.9 | 68.3 | 55.1 | 55.2 | 56.4 | |
| Business Dynamism | 75.6 | 74.6 | 72 | 69.6 | 56.5 | 65.7 | 61.8 | 36.8 | 46.6 | |
| Innovation capability | 75.2 | 55 | 43.9 | 37.7 | 36.8 | 38 | 43.8 | 28 | 30.9 | |

Source: Global Digital Readiness Index 2019

ASEAN Opportunities:

- Decoding National Strengths
- Prioritizing Digital developments
- Vertical Industry digitalization
- Leveraging Best Practices
- Measurements and transparency
- Collaborations

Digital Economy development requires us to collaborate

This cannot be done alone.....



| | | |
|------------------------------------|--|--|
| Policy | Enable Service Focus and Differentiation | Spectrum Economics Sharing Approach Disruptions Management |
| | Enable Infrastructure Development | Cost Transformation Digital Inclusion for all |
| | New Technologies Adoption | 5G Video IoT AI VR AR Security |
| | Operational | M&A MVNO Site Access Energy |
| Services | Technology Transformation | Virtualization Cloudification IT commoditization Security |
| | Operational Transformation | Cost GTM Experience Management |
| Service/Content Providers, Devices | Inclusive Partner to the Ecosystem | Collaboration Business Models |
| Industry Ecosystem Elements | New Roles | Industry – Engagements Standards Economic Government - Enabler |

“To run Fast, run alone; To run Far, run together”

Thank You