ICT R&D IN INDONESIA TOWARDS INDUSTRY 4.0

Invited talk delivered during ASEAN IVO FORUM 2018

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DIGITAL DISRUPTION

DISRUPT THE EXISTING JOBS

DISRUPT THE EXISTING BUSINESS MODEL

- In USA, the biggest job gained: Trade (retail and wholeshale) 12.8%, biggest job lost: Agriculture 55.9%
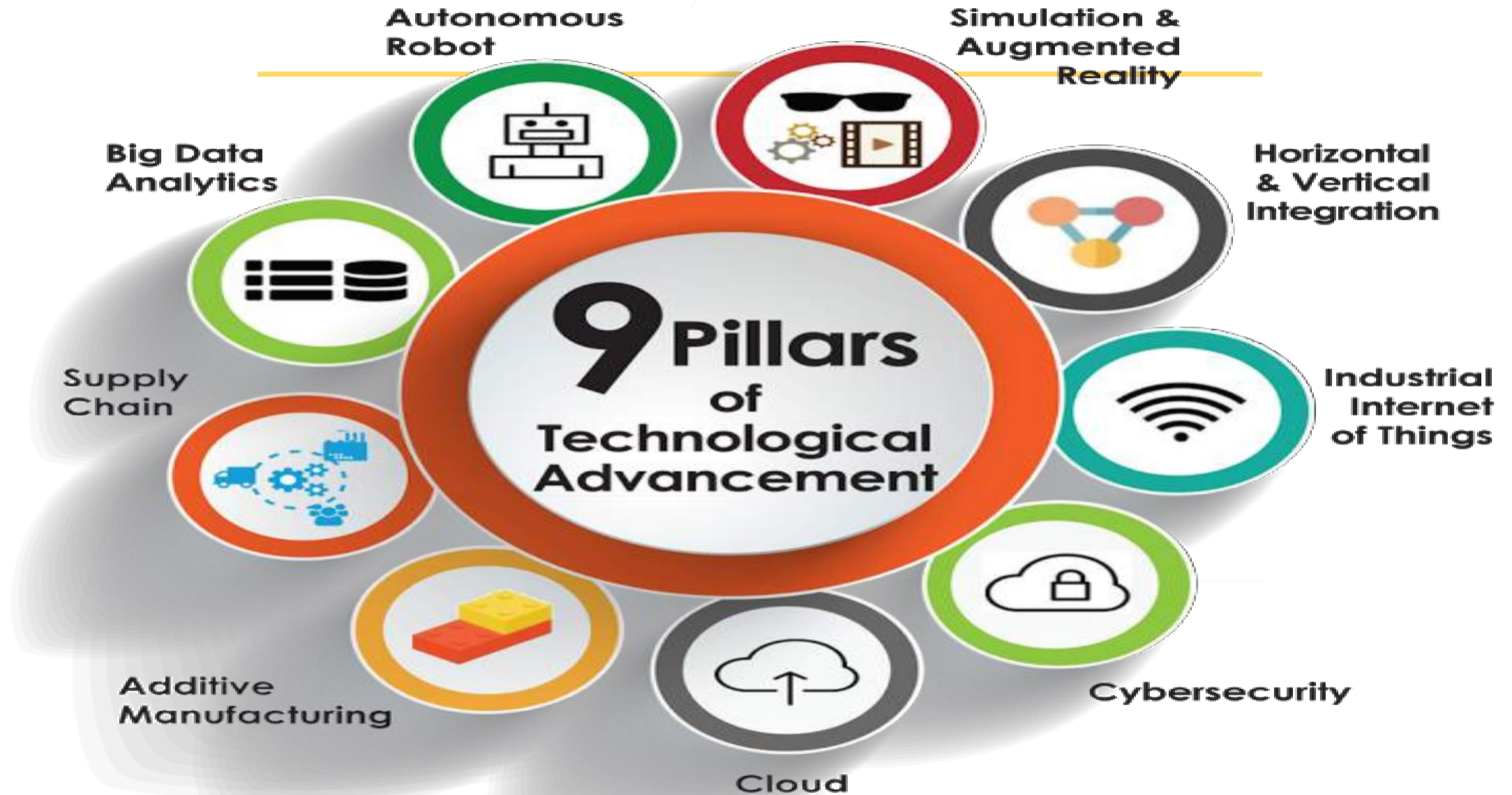- In Indonesia, job lost cause of automation is around 12.5%
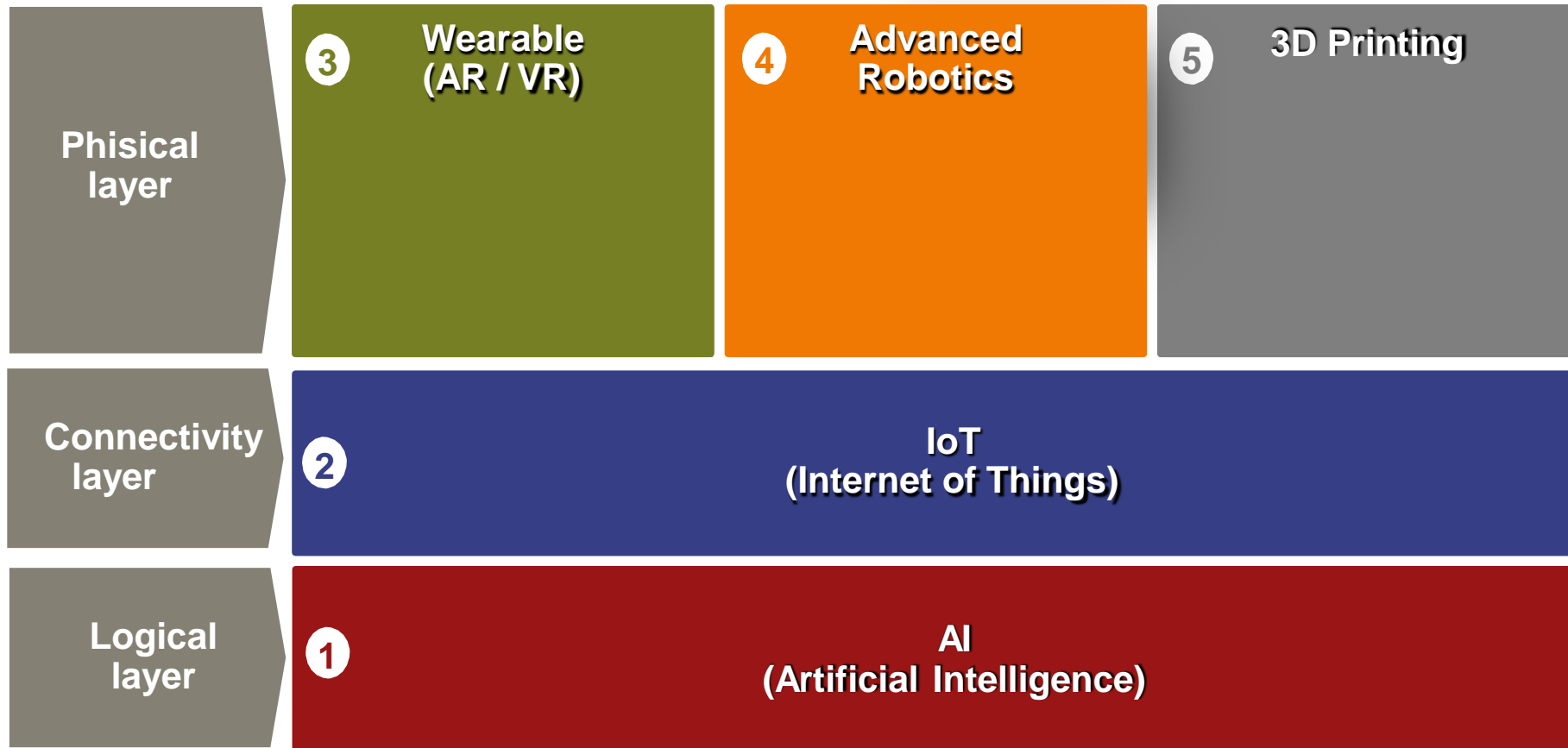

Ojek dan Taksi Konvensional   *GO-Jek, Grab, dll.*

INDUSTRY 4.0

INDUSTRY 4.0

| Phisical layer | ③ Wearable (AR / VR) | ④ Advanced Robotics | ⑤ 3D Printing |

Phisical layer

③ **Wearable (AR / VR)**

④ **Advanced Robotics**

⑤ **3D Printing**

Connectivity layer

② **IoT (Internet of Things)**

Logical layer

① **AI (Artificial Intelligence)**
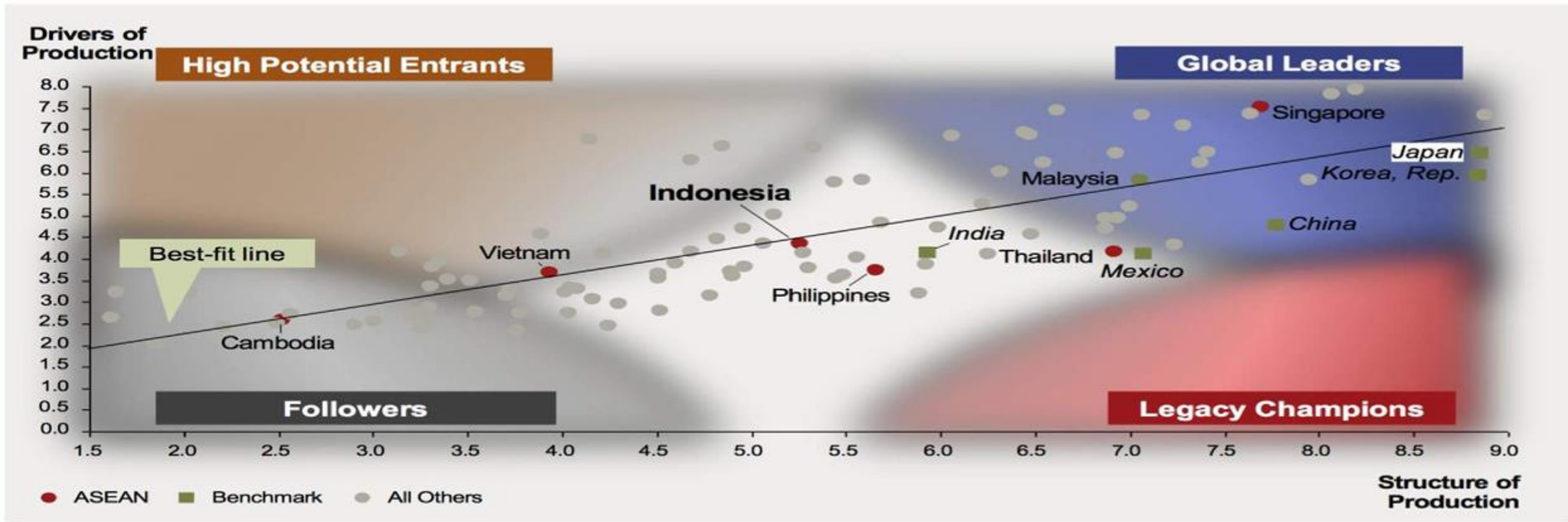
Based on the preliminary evaluation of Country Readiness to IR 4.0, Indonesia is considered as one of the high potential entrants
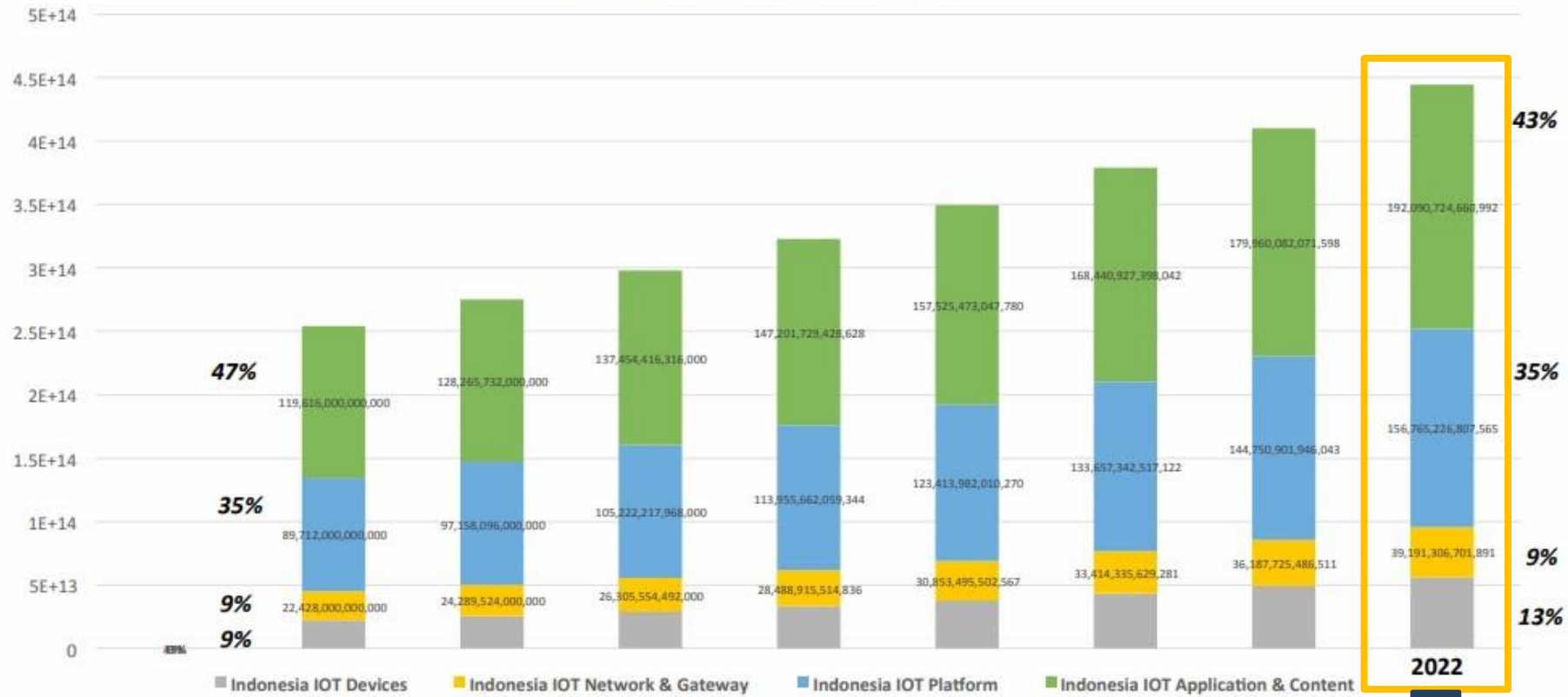
TOWARDS INDUSTRY 4.0

INDONESIA IOT MARKET 2015-2022

Legend:
- Indonesia IOT Devices
- Indonesia IOT Network & Gateway
- Indonesia IOT Platform
- Indonesia IOT Application & Content

Data labels (2022): 192,090,724,660,992 — 43%; 156,765,226,807,565 — 35%; 39,191,306,701,891 — 9%; 13%

Other year labels: 119,616,000,000,000 (47%); 89,712,000,000,000 (35%); 22,428,000,000,000 (9%); 128,265,732,000,000; 97,158,096,000,000; 24,289,524,000,000; 137,454,416,316,000; 105,222,217,968,000; 26,305,554,492,000; 147,201,729,428,628; 113,955,662,059,344; 28,488,915,514,836; 157,525,473,047,780; 123,413,982,010,270; 30,853,495,502,567; 168,440,927,398,042; 133,657,342,517,122; 33,414,335,629,281; 179,960,082,071,598; 144,750,901,946,043; 36,187,725,486,511

Mencapai Rp444T Pada 2022

SMART CITY

The Local Government create Command Center (IoT + Spasial + Big Data + 5G + AI)

JAKARTA CITY

TEGAL CITY

TANGERANG CITY

BANDUNG CITY

ICT R&D

Presidential Regulation 38/2018 about National Research Master Plan (RIRN) 2017 – 2045

4 Focuses of ICT Research up to 2019 are:

- ICT devices for network system
- ICT devices for customer premises equipment (CPE)
- Policies and social humaniora to support ICT

2. Pengembangan Sistem/ Platform berbasis Open Source

- Technology 5G (broadband)
- Telecommunication Internet Protocol (IP) based
- Digital multimedia broadcasting
- IT Security

1. Pengembangan Infrastruktur TIK

TEKNOLOGI INFORMASI DAN KOMUNIKASI

3. Teknologi untuk Peningkatan Konten TIK

- ICT system for e-Government
- ICT system for e-Business
- Framework/Platform supporting creative industry and control

4. Teknologi Piranti TIK dan Pendukung TIK

- Technology and content of data information geospatial and senses
- development of technology big data

ICT R&D

Proposed research topics for National Research Priority 2020-2024

No.	Theme	Topic
1	ICT Infrastucture and Access Development	Network technology (a) Satellite, (b) Terestrial, (c) Fibre Optics
		Receiver dan Transmitter tech
		Smart Antenna and Access tech
		Server tech, High Performance Computing
		Network and Access Supporting Component
2	ICT Application development towards digital economy	E-Learning
		E-Business & Industry
		E-Government & Cyber Security
		Smart City, Smart Nation
		ICT Based Start Up Company

No.	Theme	Topic
3	ICT Technology development to support industry 4.0	Big Data and Cloud Computing
		IoT & Security System
		Artificial Intelligent
		5-G
		Smart Devices
4	ICT based Content Development	Multimedia
		Geographic Information System (GIS)
		Game and Animation
		Image, Audio and Video Processing, Augmented Reality, Virtual Reality
		Social Media
5	Policy research of ICT development	ICT Human resource development
		Energy development for ICT, Green ICT
		ICT National Standard development
		Development of ICT innovation system
		Data Sharing among government

Source: Meeting of ICT Technical Commission of Indonesia National Research Council, 28 September 2018

CHALLENGES IN R&D

Research Institutional
Need accreditation

Relevancy and productivity
Not relevant to market
Low productivity

Research Management
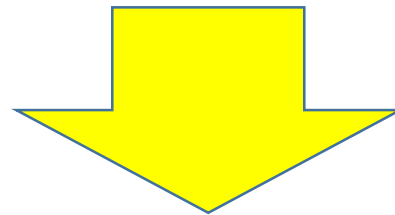Mismatch research institution & industry

Budget for research
Limited

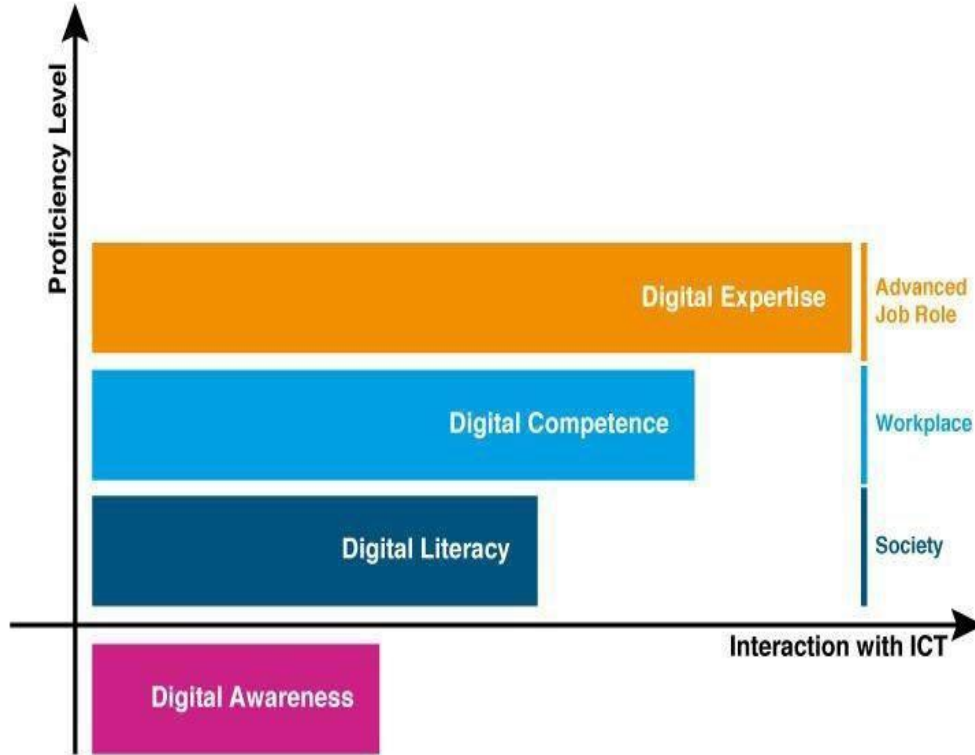Human Resources
Limited

RESEARCH TRANSFORMATION

❑ RUU (Proposed Regulation) INNOVATION

❑ Roadmap R&D

❑ Output based research

❑ RUU (Proposed Regulation) National System of Science and Technology

HUMAN CAPITAL

Thank you