

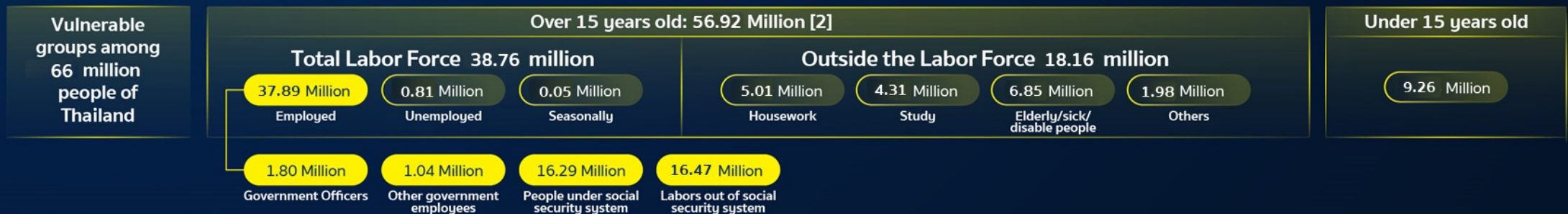
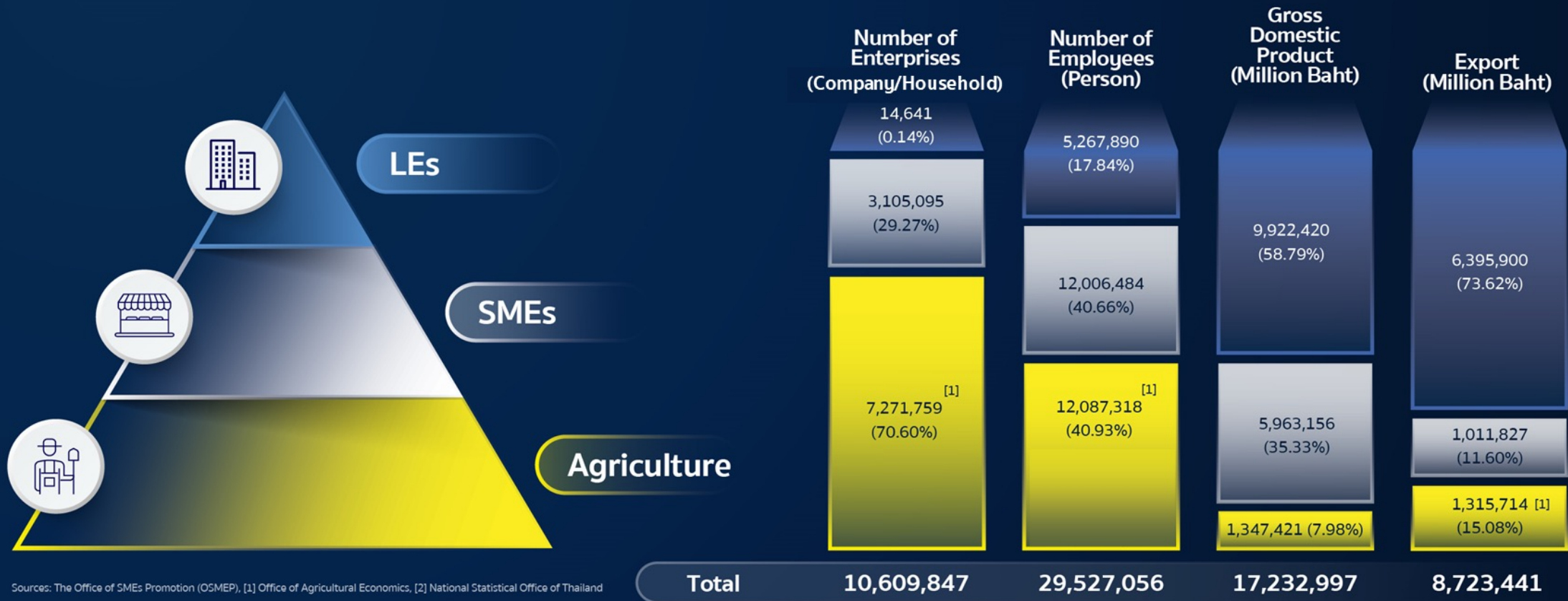
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# Emerging Business Models AI/ML and IoTs Power Digital Enterprise

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Supakorn Siddhichai

# Thailand's economic structure



## depa Reinforcement

- รวมพลัง 6 Tech
- กิจกรรมพัฒนา เช่น hackathon
- กองทุน Digital Startup

## depa Collaboration

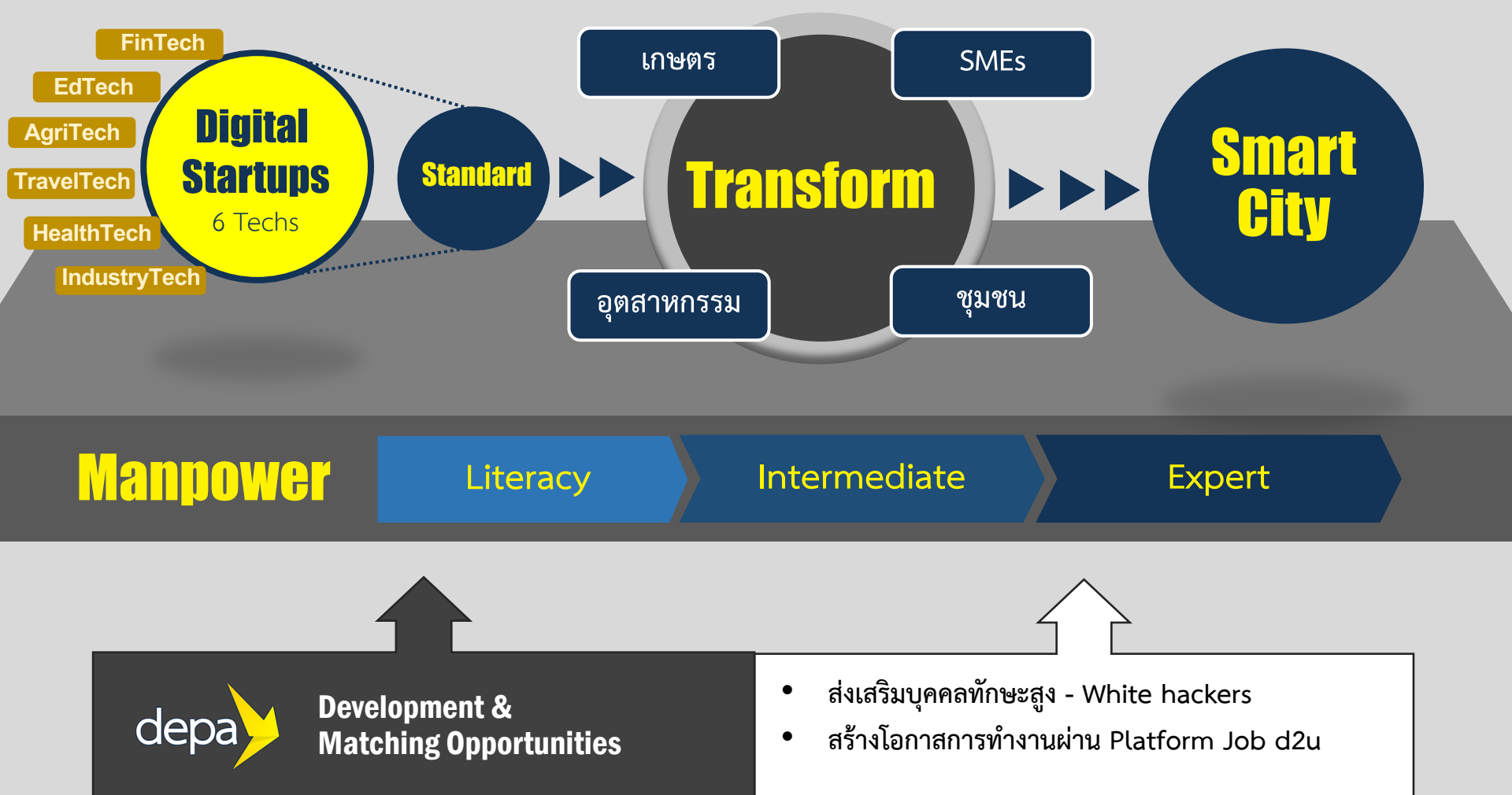
ร่วมมือกับ Partner ส่งเสริมการ Transform

เช่น การให้สินเชื่อ  
ผ่านสถาบันการเงิน



## depa Build Ecosystem

ขับเคลื่อนเมืองอัจฉริยะ  
สร้างตลาด / ระบบนิเวศเติบโต



## Digital Thailand

- ▲ Employment Rate
- ▲ Purchasing Power
- ▲ Quality of Life
- ▲ Strong Community
- ▲ Civil Society
- ▲ Sustainable Economic Growth

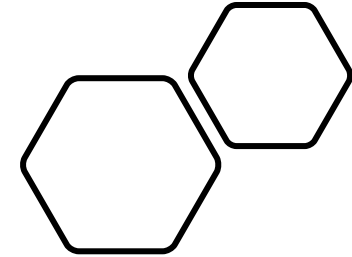
Agriculture

SMEs

Industry

Community





# Global Mega Trends & Technology Linkages





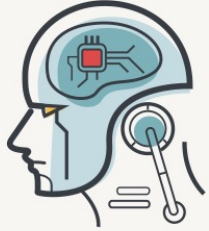


# Linkage between Mega Trends to Technologies

MEGATREND \ TECHNOLOGY													
	AI	AR/VR	Automation	Cloud Comput	Data Analytics	DLT	IoT	Nanotechnolog	Networking	Security	Quantum Com	3D Printing	5G
Explosive Generation and Use of Data	●		●		●		●			●			●
The Fourth Industrial Revolution	●	●	●	●	●		●	●				●	●
Growth of Smart City and other Smart Ecosystems	●		●	●	●		●	●	●	●			●
Rise of E-Commerce and Convenience Stores	●	●	●	●	●	●	●			●	●		●
Urbanization and Rise of Megacities	●		●	●	●		●	●	●	●			●
Increasing Connectedness and decreasing privacy	●			●	●	●	●			●	●		●
Transformation of Workplace	●		●	●	●		●				●		
Shift in global economic power	●		●	●	●	●	●			●		●	
Climate change			●		●	●	●						
Scarcity of natural resources	●		●		●		●						

7





# ARTIFICIAL INTELLIGENCE

## Powering recommendations and predictions

Artificial intelligence (AI) enables automated decision making with very high accuracy and speed based on data-driven intelligence, coupled with self-learning abilities from deducing patterns on raw data.

### USE CASES

#### Cyber Security

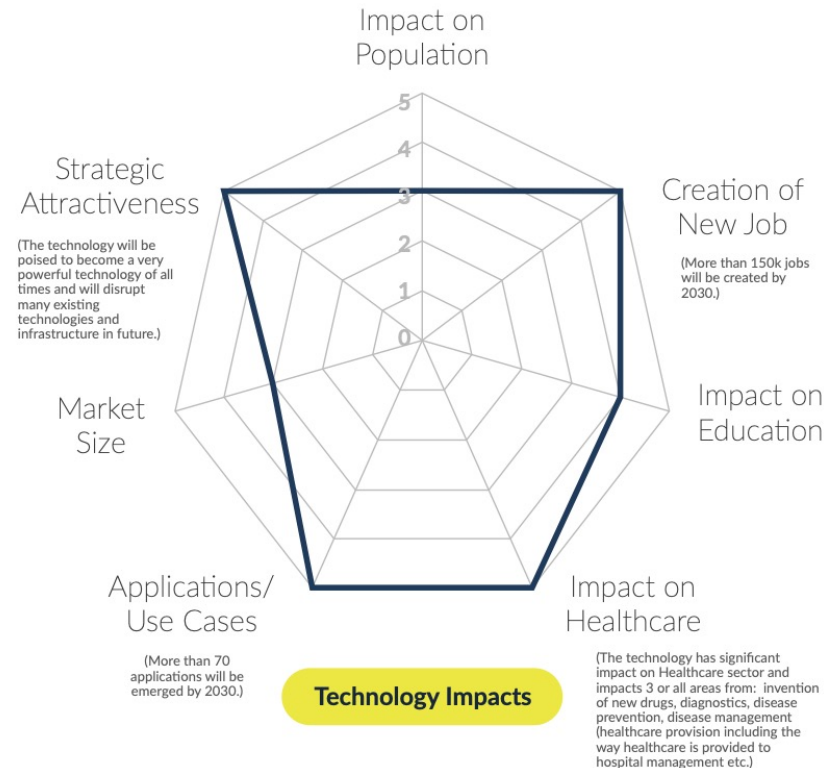
Intelligent self-learning algorithms are enabling proactive security solutions that can identify and prevent cyber-attacks.

#### Engineering & Manufacturing

IBM Watson uses AI image recognition algorithm to determine the cause of any fault.

#### Healthcare

AI in healthcare has helped to massively review data related to serious illness.



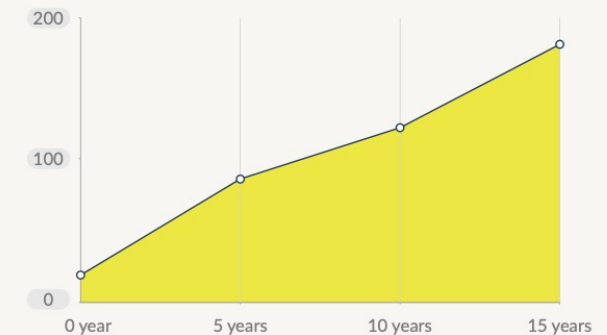
### How AI is Transforming Thailand

- Digital economy in Thailand is already using AI for forecasting, roiling data, recommendations and predicting churns.

### Trends in Thailand

The Thai economy is likely to grow more than 5% with the advent of digital technology and AI.

### Outlook for Thailand in 5, 10, 15 Yrs (Billion THB)



# AI and ML





# DATA ANALYTICS

## Producing high-value insights and decision making

Data Analytics is the process of analyzing data to explore patterns to find valuable and timely correlations, resulting in actionable insights that drive business and impactful decisions for public and private sectors.

### USE CASES

#### Retail

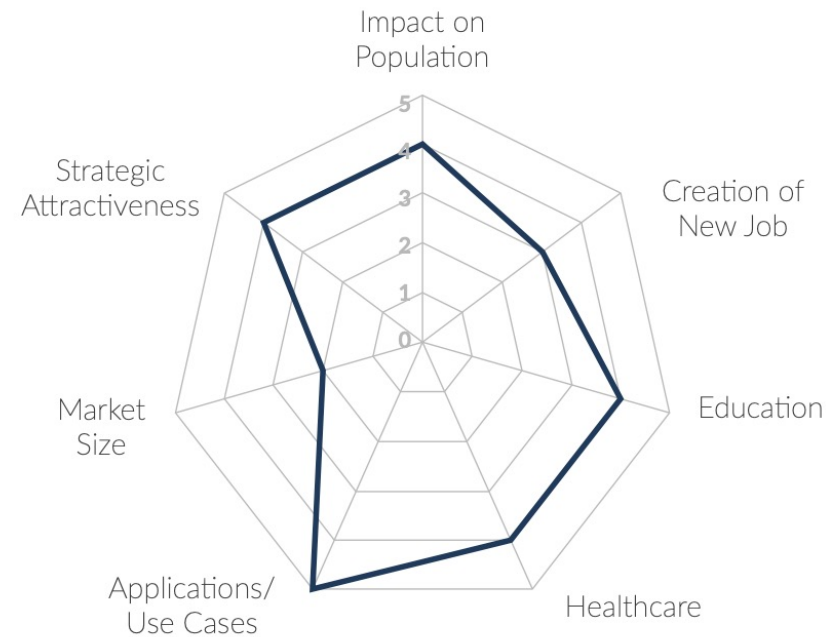
Retailers can get a better understanding of supply chains and product distribution to reduce costs.

#### Telecommunications

Data analytics enables telcos to manage, and forecast network capacity and plan effectively.

#### Financial Services and Banking

Financial services firms will accurately detect fraud to reduce costs and improve customer satisfaction.



(More than 70 applications will be emerged by 2030.)

### Technology Impacts

### How Data Analysis is Transforming Thailand

- Data will serve as a backbone of Thailand's economy that helps entrepreneurs to better understand market scenario and customers' behavior, while all government agencies can analyze data and better implement policies and facilitate the country's digital transformation.

### Trends in Thailand

- Thailand is expected to see 80% of private sector using big data to gain business insights.
- The initiative of big data utilization will be used in 3 main areas: public health, tourism and meteorology to protect natural resources

### Outlook for Thailand in 5, 10, 15 Yrs (Billion THB)





# NEXT GENERATION TELECOM

## Leveling up connectivity and use cases

5G sets to offer higher bandwidth, greater capacity, security, and lower latency and create new opportunities for people, businesses and society in Thailand with novel use cases involving Internet of Things (IoT) and driverless car. Moreover, there will be 6G and 7G coming in the future.

### USE CASES



#### Manufacturing

5G will reduce system setup time, increase productivity and minimize machine downtime in factory.



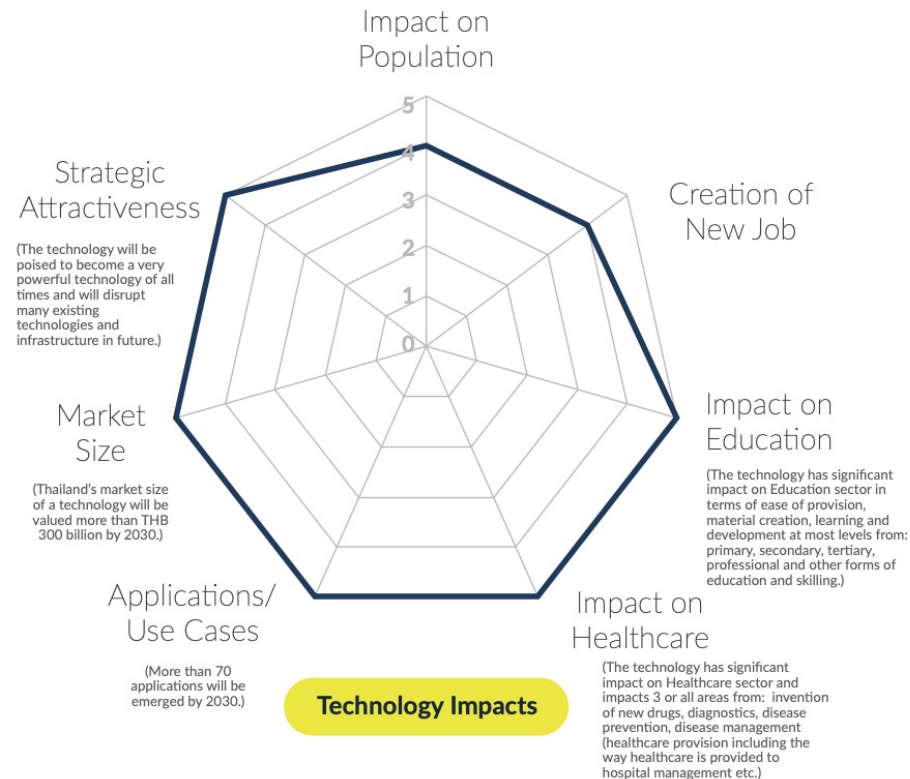
#### Consumer

End users can enjoy a range of high-speed broadband services including 4K movies, and AR/VR gaming.



#### Transport and Logistics

5G is capable of powering autonomous driving to a specific target in real traffic without the intervention of a human driver.



### How Next Generation Telecom is Transforming Thailand

- The combination of speed, responsiveness and reach could unlock the full capabilities of other hot trends in technology, offering a boost to self-driving cars, drones, virtual reality and the internet of things.
- Technologies such as 5G and artificial intelligence are key battlegrounds, so the large operators in many countries are making advanced bets.

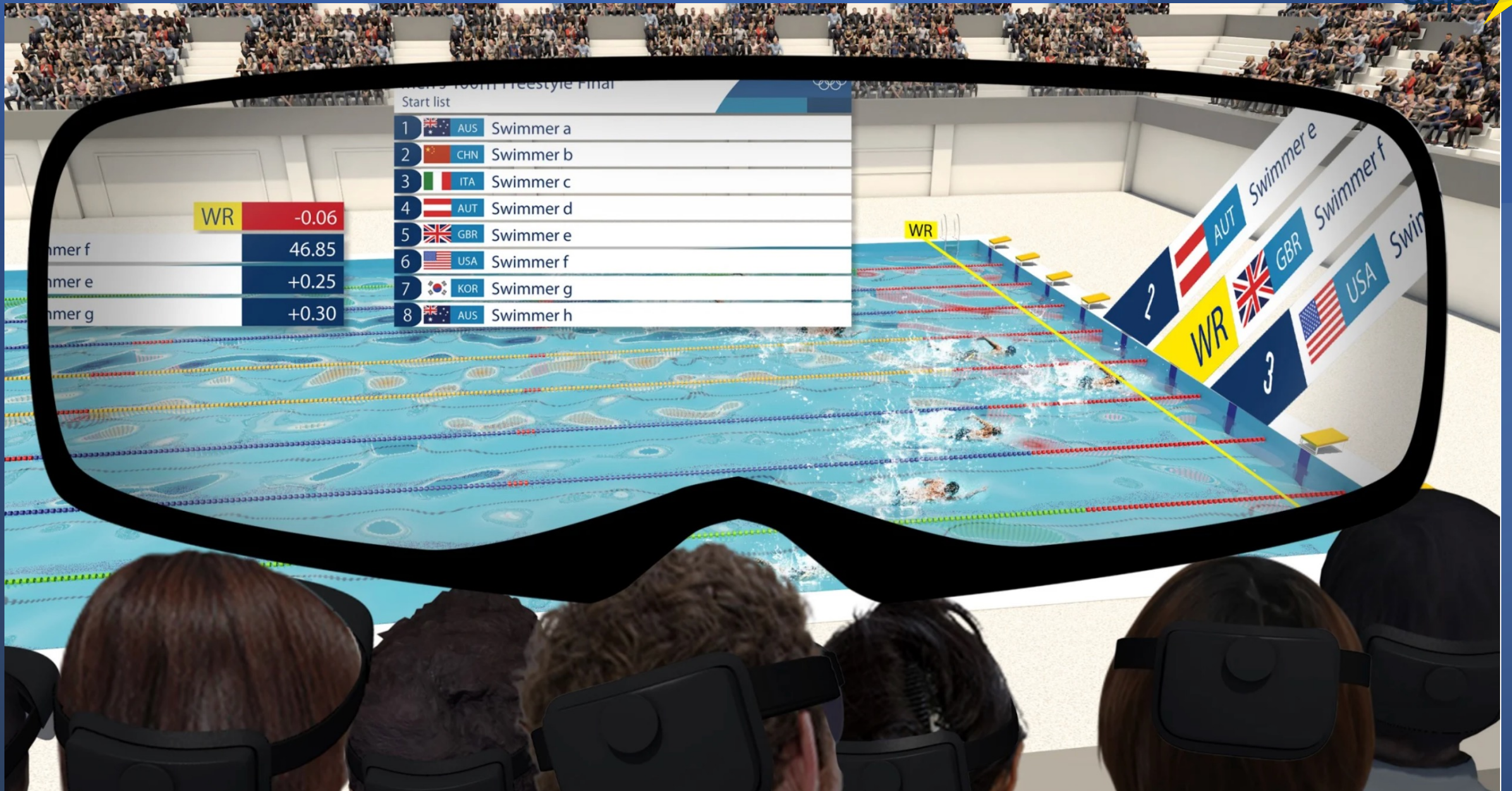
### Trends in Thailand

- Thailand aims to be the first ASEAN country to adopt 5G, having conducted a 5G demonstration in January 2017.
- NBTC targeted Thailand to launch 5G by October 2020.
- Many telecommunication companies are gearing up infrastructure to support 5G.

### Outlook for Thailand in 5, 10, 15 Yrs (Billion THB)













# 12K resolution video using 5G network







# DISTRIBUTED LEDGER TECHNOLOGY (DLT)

## Fueling digital currency, next-level security and transparency

Distributed ledger technology is a digital ledger behaving based on the aggregate of the decisions of the individual nodes spread across a peer-to-peer network, uniquely making them apart from centralized and decentralized networks. The most prominent examples of DLT is blockchain, famously applied by cryptocurrency bitcoin. Other forms of DLT e.g. DAG, Hashgraph, Holochain and Tempo will drive DLT to be adopted in various industries

### USE CASES



#### Manufacturing

DLT offers low-cost, distributed and assured integrity for contracts, product histories, production processes etc.



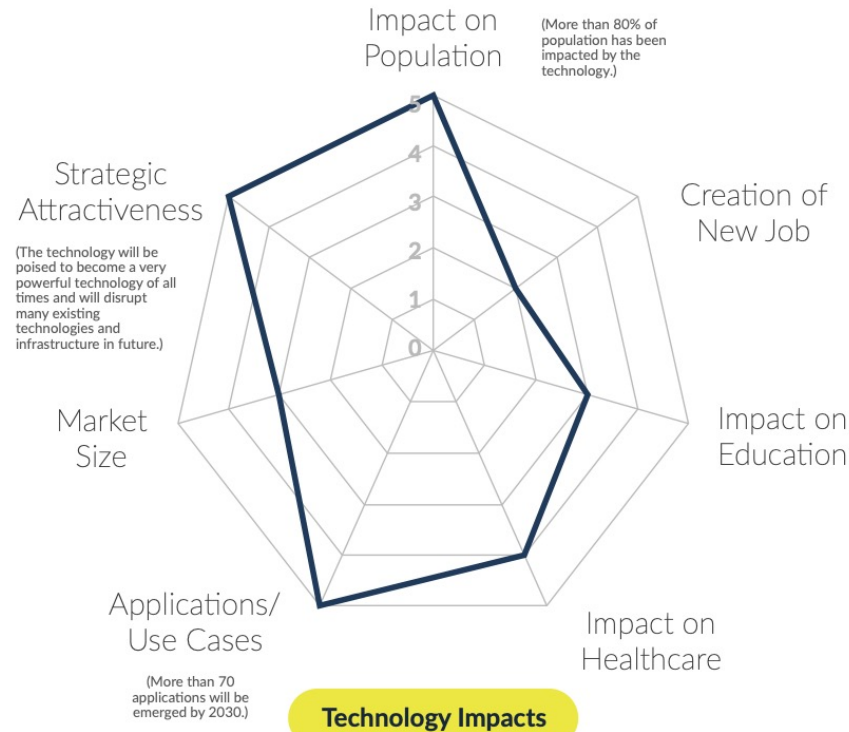
#### Law Regulation

A company can provide regulators with an immutable, trustworthy record on demand, with complete audit capability built in.



#### Election

DLT will ensure proper voter registration, identification and streamlines a process of vote counting.



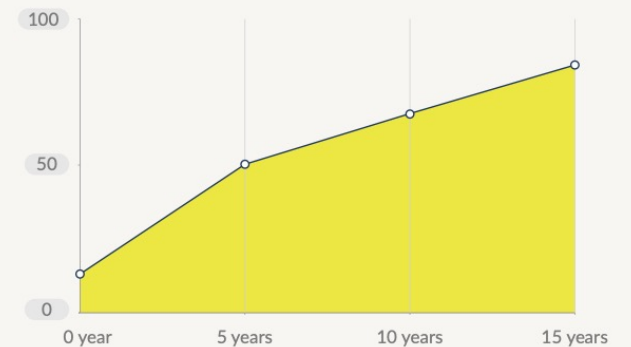
## How DLT is Transforming Thailand

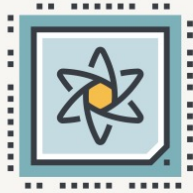
- Bank of Thailand (BoT) is currently using R3's Corda blockchain to support transactions in the organization with smart contracts ensuring the highest levels of privacy and security.
- Smart contracts can push the transparency of the transaction in Thailand 4.0 and enhancing the efficiency of the work process.

## Trends in Thailand

The applications of DLT in Thailand will not be limited to only financial industries, but will expand to various industries such as logistics, retails, healthcare, manufacturing, and government.

### Outlook for Thailand in 5, 10, 15 Yrs (Billion THB)





# QUANTUM COMPUTING

## Enhancing new level processing power and calculation

Quantum computing is capable of undertaking calculations that are either impossible with a classic supercomputer or would take an unreasonable amount of time by using subatomic particles known as quantum bits or 'qubits', possessing ability of superposition and entanglement. Due to these superior properties, the difference in processing power between a 'two bit' classical computer and a two qubit' quantum computer is vast; therefore the potential for Quantum computing is tremendous.

### USE CASES

#### Chemicals and Materials

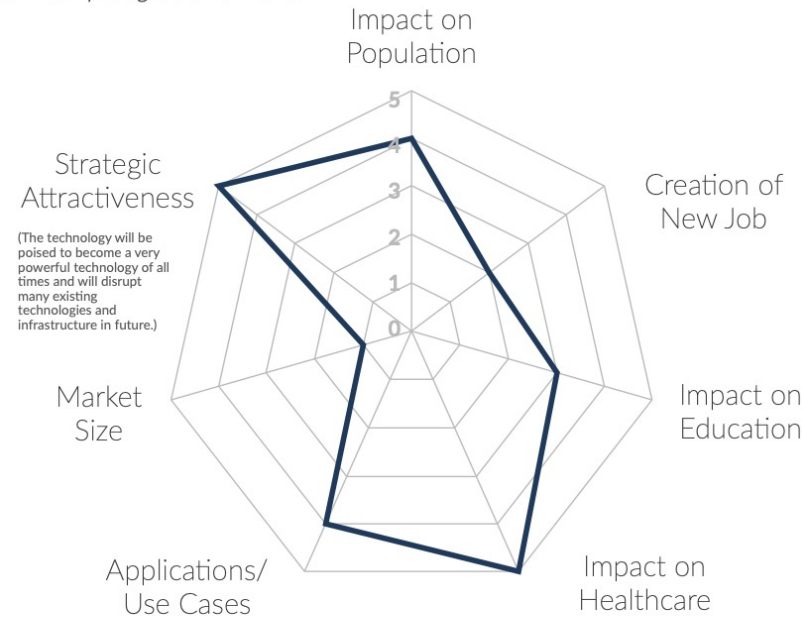
Molecular structure simulation, dramatically speeding up processes and finding cures will be done by QC.

#### Financial

Major use cases will be in trading strategies, optimizing portfolio, asset pricing, analyzing risk and detecting fraud.

#### High Tech Industries

Quantum computing would be seen in collaboration with simulations, optimizations, machine learning and AI.



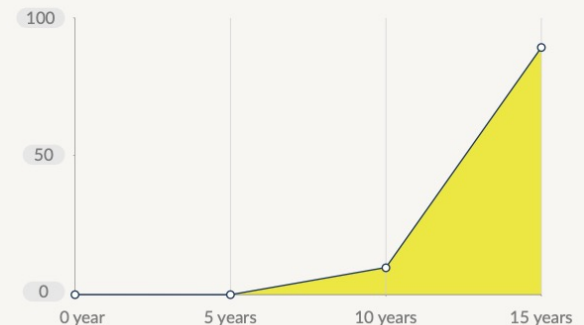
### How Quantum Computing is Transforming Thailand

- Quantum Computing will be supporting Society 5.0, a concept which will connect everything both human and things through the Internet.
- Quantum computing will enhance the level of processing with faster speed and also create new solution for human, especially in chemical, materials and pharmaceutical sectors.

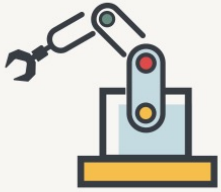
### Trends in Thailand

Thailand will see progress in Quantum supremacy or Quantum superiority by 2028, as forecasted by Frost & Sullivan experts. Even in 2030, the smartphones, computers, tablets, lower level enterprise computing devices will be quantum powered, but they may be use Quantum computing via cloud in Thailand.

### Outlook for Thailand in 5, 10, 15 Yrs (Billion THB)







# AUTOMATION

Automation has been replacing mundane tasks in various sectors including, manufacturing, technology, retail, therefore reducing fatigue and errors, implying the integration of machines into a self-governing system and support human labor. The automation has mainly 3 sub-classifications, which are Robotics Process Automation, Smart Process Automation, and Collaborative Robots, driving adoption's growth.

## USE CASES

### Manufacturing

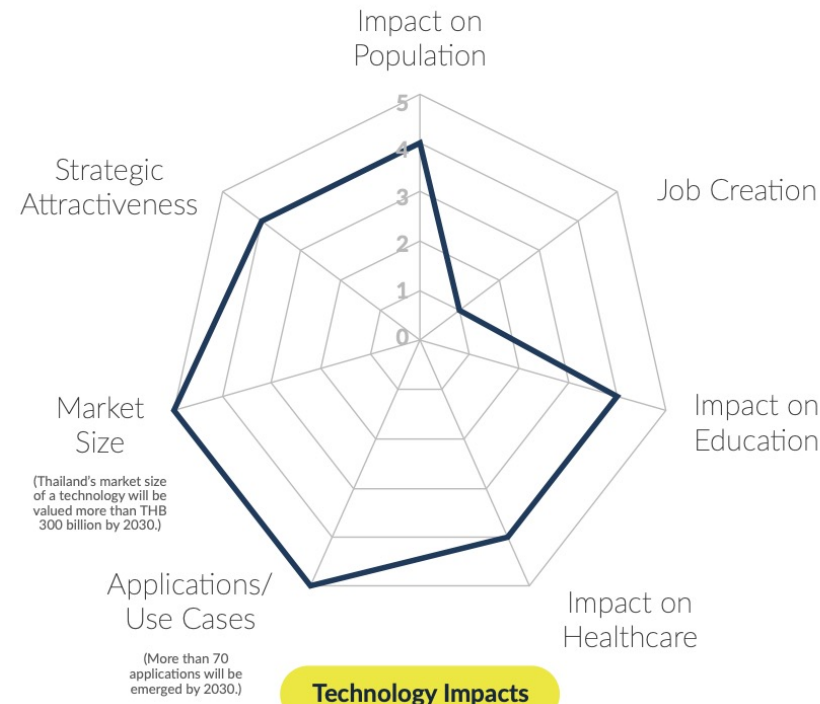
Automation will contribute to quality inspection, assembly, machine tending, dispensing, pick and place, welding, packaging, palletizing, or injection molding.

### Healthcare

Surgical robots, nursing assistance, elderly care, supporting to disabled, therapy, rehabilitation, training, telepresence robot, and physiotherapy.

### Agriculture

Automation could be in autonomous tractors, crop seeding, crop monitoring, fertilizing and irrigation, weed control, thinning, pruning, picking and harvesting, and herding.



## How Automation is Transforming Thailand

- The benefits of automation in term of effectiveness and efficiency will drive digital economy in Thailand to achieve increase in productivity and cost reduction.

## Trends in Thailand

- Automation and robotics have been set as one of the new S-curve industries that will help accelerate Thailand to the value-based, innovation-driven economy of Thailand 4.0.
- Almost 85% of the manufacturing industry in Thailand can benefit from adopting automation but today less than 30% are ready to implement it.

## Outlook for Thailand in 5, 10, 15 Yrs (Billion THB)





# INTERNET OF THINGS (IoT)

## Enabling digitization of Thai businesses

Internet of Things (IoT) – a connection of objects, sensors, and devices into an internet-like structure and organization – enabling the virtualization of everyday objects with a digital identity, and generating data needed to draw insights and facilitate decision making.

### USE CASES

#### Manufacturing

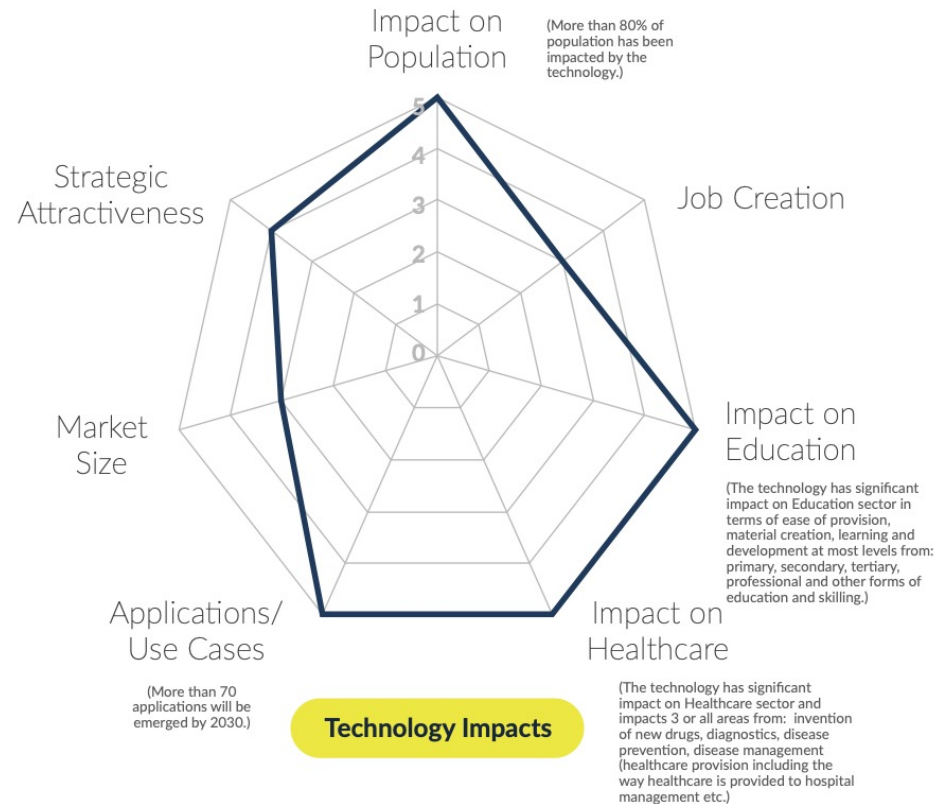
Increasing automation efforts to the factory floors.

#### Consumer

Automatic lighting systems, advanced locking systems, and connected surveillance systems in smart home.

#### Transport and Logistics

Extract insights from IoT data to improves safety, asset utilization, and increase on-time delivery.



### How IoT is Transforming Thailand

- IoT pushes the country towards the Digital Thailand vision as it enables digitization of businesses.
- With the use of the IoT, connected devices can generate real-time data from different data types.

### Trends in Thailand

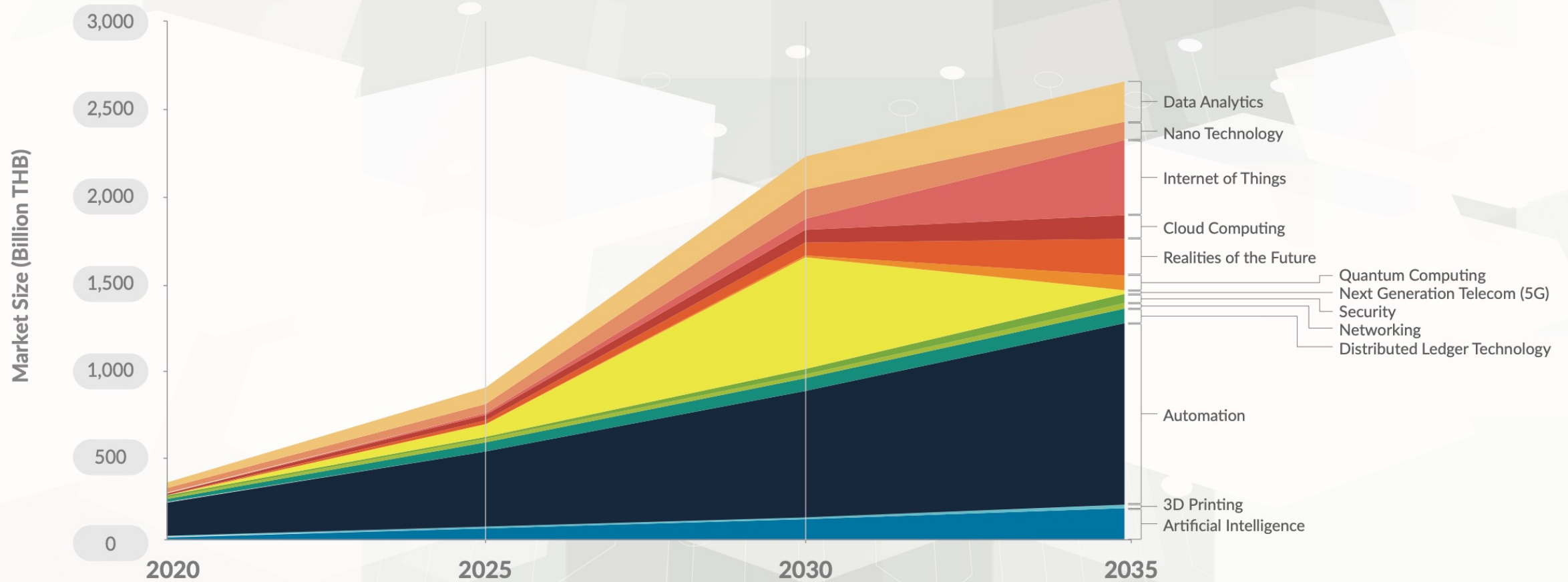
IoT adoption in Thailand has been growing fast in both consumer and business segments. The supporting initiatives and projects from Thailand's government; as well as the growing demand for IoT technologies in various industries are driving IoT adoption in Thailand.

### Outlook for Thailand in 5, 10, 15 Yrs (Billion THB)



# MARKET POTENTIAL OF DIGITAL TECHNOLOGIES

## IN THAILAND





# Thailand **Digital Valley**



digitize



interact



nature  
connected



# 5G EIC Opening Ceremony

21<sup>st</sup> September 2021



Bangkok Post Bangkok Post



## Huawei invests B475m in 5G research hub at Depa

SUCHIT LEESA-NGUANSUK

Huawei Thailand is investing 475 million baht to establish a 5G ecosystem innovation centre at the Digital Economy Promotion Agency's (Depa) headquarters to research 5G use cases and incubate 100 local small and medium-sized enterprises and startups for three years.

The centre is a partnership with the Digital Economy and Society (DES) Ministry and Depa to find new ways to use 5G across industries. "This is an important milestone demonstrating the readiness of Thailand to be a digital hub in Asean by utilising 5G technologies to improve economic and social development," DES minister Buddhapongse Punnakanta said yesterday at the opening ceremony.

"The pandemic is a turning point for the digital economy globally and Thailand plays a role in the social and economic development of countries' recovery."

Mr Buddhapongse said 5G commercial service will be available nationwide in the next few months.

Prime Minister Prayut Chan-o-cha also assigned the DES to make 5G services available to everyone to reduce inequality and create equal opportunity. 5G-enabled smartphones currently cost upwards of 31,000 baht.

"This is why we asked CAT and TOT to participate in 5G bidding," Mr Buddhapongse said.

In October the national 5G committee led by the prime minister is scheduled to hold a meeting to encourage state agencies to embrace 5G use cases.

"We are considering a roll-out of smart agriculture in the Northeast and South after deactivating 5G in Chiang Mai

and Chiang Rai, as well as considering privileges for various sectors to adopt 5G to reduce expenses," he said. "Thailand is open to other technology leaders in every area, not just from China."

Abel Deng, chief executive of Huawei Thailand, said Huawei is continuing to drive Thailand 4.0 by investing in the innovation centre, which includes equipment and expert training.

"The 5G ecosystem innovation centre in Thailand is the first such launch in Asean," he said.

The centre will serve as a sandbox for development of digital innovations and proof of concepts for 5G applications and services across various industries in Thailand. It is also expected to incubate 100 startups in three years.

The centre features smart healthcare, agriculture, education, smart poles, smart ports, smart homes, smart security and an RF shield room (for developers to work in a 5G signal environment).

"Innovation in 5G can help fight against pandemics, boosting the economy and long-term growth for Thailand," Mr Deng said.

Nattapong Nimsamphatharin, president and chief executive of Depa, said the agency is open to collaborating with mobile operators and technology vendors to support innovation in Thailand's startup ecosystem.

Huawei's 5G ecosystem innovation centre will support testbed, technology transfer and training to leverage use of the 5G ecosystem. Depa aims to do business matching with startups, train 500 workers per year and develop at least 20 innovations, said Mr Nattapong.

"5G is a digital infrastructure, but it will be more useful to leverage artificial intelligence, big data and the Internet of Things," he said.



Thai Rath

## 'ดีอีเอส-ดีป้า-หัวเว่ย' จับมือเปิดศูนย์ 5 จี ขับเคลื่อนประเทศไทยสู่เศรษฐกิจดิจิทัล

นายพุทธิพงษ์ ปุณณันท์ รองนายกรัฐมนตรีและรัฐมนตรีว่าการกระทรวงดิจิทัลเพื่อเศรษฐกิจและสังคม (ดีอีเอส) เปิดศูนย์นวัตกรรม 5G EIC (ประเทศไทย) จำกัด เพื่อผลักดันการพัฒนาประเทศไทยสู่สังคมดิจิทัล 5 จี เศรษฐกิจดิจิทัล

ซึ่งจะสร้างโอกาสใหม่ๆ ให้ภาคธุรกิจที่วิสาหกิจขนาดกลางและขนาดย่อม (เอสเอ็มอี) ธุรกิจการแพทย์และอุตสาหกรรมบริการศึกษา ซึ่งจะขับเคลื่อนประเทศไทยสู่สังคมดิจิทัลเป็นศูนย์กลางด้านดิจิทัลแห่งภูมิภาคอาเซียน

"ศูนย์ 5G EIC แห่งนี้ นับเป็นอีกก้าวสำคัญที่จะช่วยประเทศไทยในการนำเทคโนโลยี 5G ไปประยุกต์ใช้ได้อย่างเป็นรูปธรรม เพื่อเร่งการเปลี่ยนแปลงอุตสาหกรรมต่างๆ ให้เป็นดิจิทัล มุ่งสู่ไทยแลนด์ 4.0 อย่างสมบูรณ์แบบด้วยการร่วมมือกัน โอกาสและการเติบโตใหม่ๆ พร้อมเพิ่มขีดความสามารถของประเทศไทยในฐานะผู้นำการพัฒนาประเทศไทยสู่สังคมดิจิทัล"

นายพุทธิพงษ์กล่าวว่า ศูนย์ 5G EIC แห่งนี้ตั้งอยู่ ณ สำนักงาน ดีป้า 4 ชั้นอาคารหรรษา โดยจะเป็นพื้นที่ทดลองการนำเทคโนโลยี 5G ไปใช้ในด้านธุรกิจและบริการต่างๆ เช่น บริการทางการแพทย์ การเกษตรอัจฉริยะ ระบบท่าเรืออัจฉริยะ การศึกษาทางไกล ระบบการรักษาความปลอดภัยอัจฉริยะ เป็นต้นและศูนย์แห่งนี้จะช่วยขับเคลื่อนการลงทุนมูลค่า 475 ล้านบาท เพื่อพัฒนาศูนย์ 5G EIC ขับเคลื่อนทางโซลูชัน 5G แบบครบวงจร, ที่เชื่อมต่อและกระจายข้อมูลให้เทคโนโลยี 5G ซึ่งจะช่วยพัฒนาคุณภาพชีวิตของสังคมและยกระดับของประเทศไทยกว่า 100 ราย โดยนำเทคโนโลยี 5G ไปประยุกต์ใช้ในหลากหลายอุตสาหกรรมในอีก 3 ปีข้างหน้า เพื่อกระตุ้นและขับเคลื่อนให้บุคลากรด้านไอซีที ของประเทศไทยให้พร้อมต่อยอดในระดับสากล.





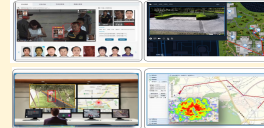
# Thailand 5G EIC Layout



5G INTELLIGENT ACCESS CONTROL



5G SMART POLE



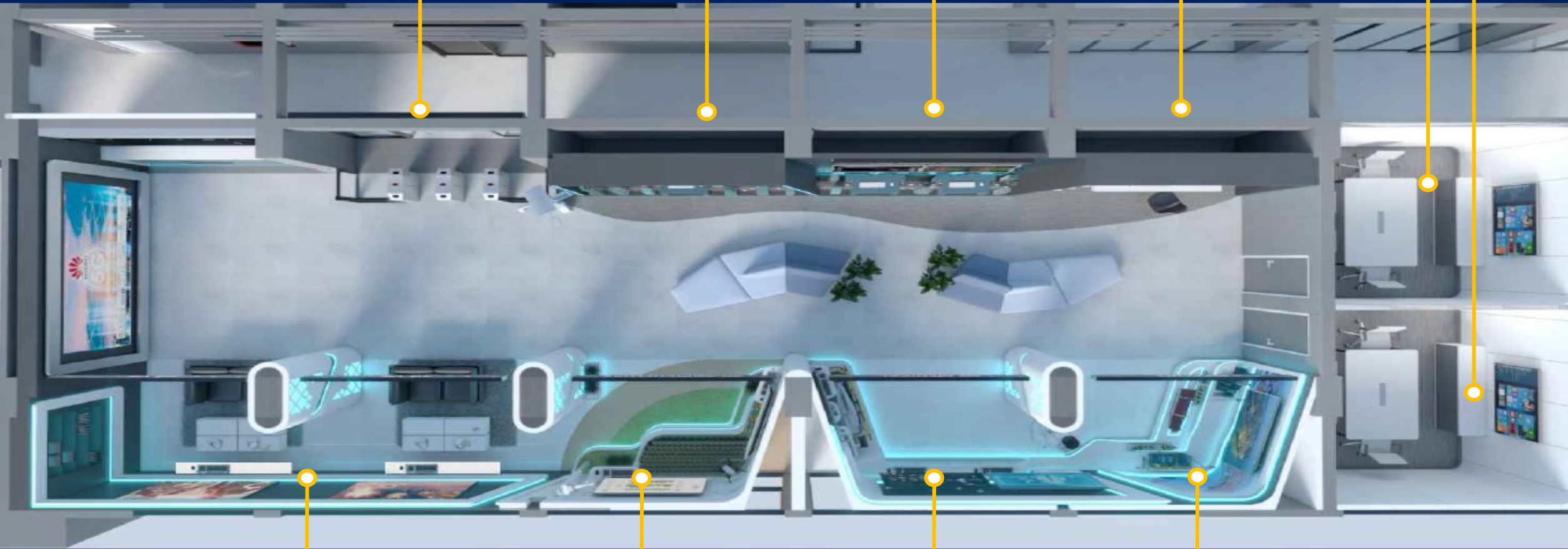
5G SMART SECURITY



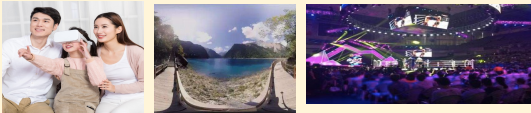
5G REMOTE EDUCATION



5G SHIELDING ROOM



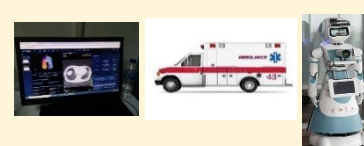
5G VR / CLOUD GAME / LIVE BOARDCAST



5G SMART AGRICCCUTURAL



5G MEDICAL CARE



5G PORT

