通訊事務管理局辦公室
OFFICE OF THE COMMUNICATIONS AUTHORITY

TRAAC Paper No. 3/2017

ITU Telecom World 2016

Telecommunications Regulatory Affairs Advisory Committee
13 April 2017

ITU Telecom World

- **International Telecommunication Union (ITU)** is a specialized agency under the United Nations responsible for Information and Communication Technologies (ICT)

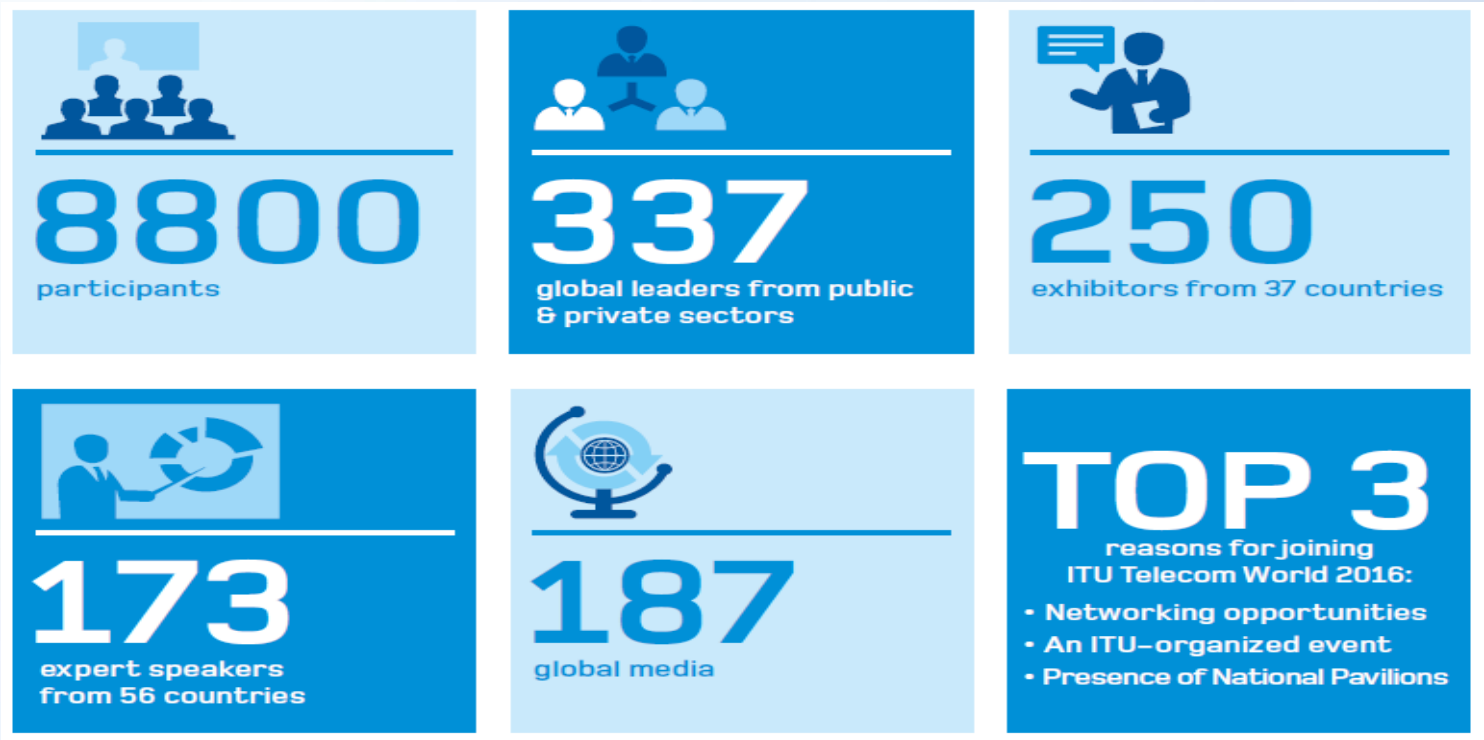
- **ITU Telecom World** provides a global platform to accelerate ICT innovations for social and economic development, through exchange among policy makers and regulators, industry experts, investors, small and medium enterprises (SMEs), entrepreneurs and innovators

- **Hong Kong, China** actively participates in ITU's events to keep abreast of the latest development in telecommunications and to demonstrate our support to works of the ITU

ITU Telecom World 2016 : Key Facts

Bangkok

14 - 17 November 2016



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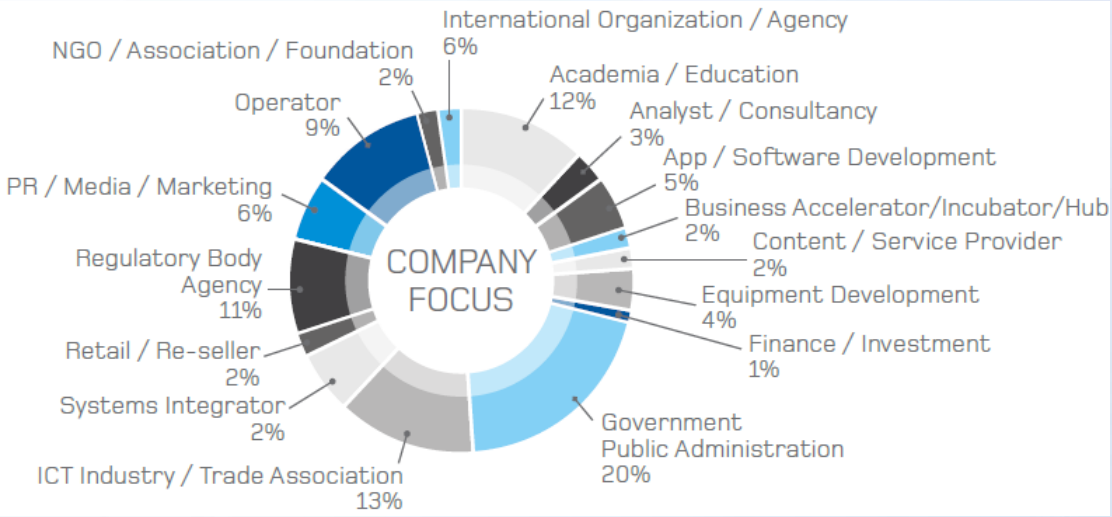
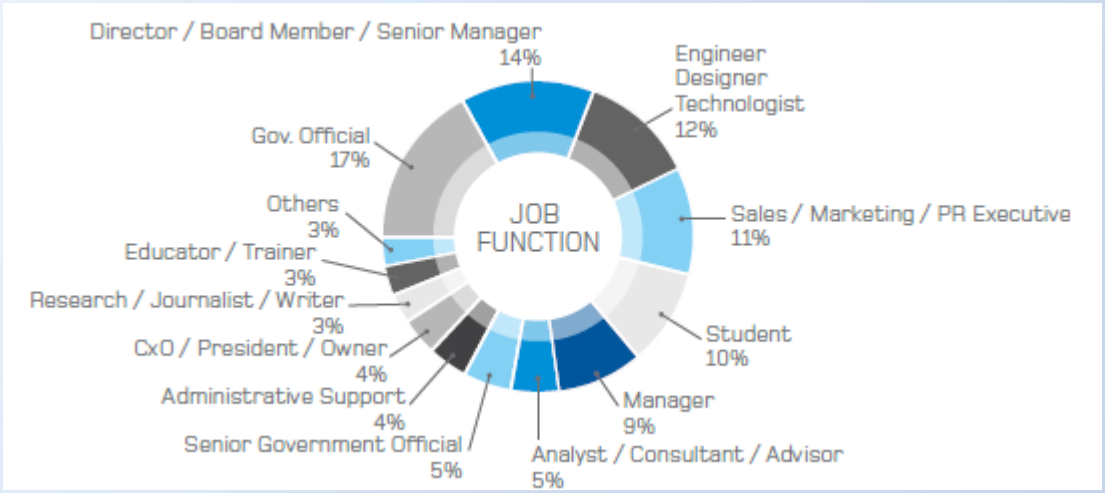
ITU Telecom World 2016 : Key Facts





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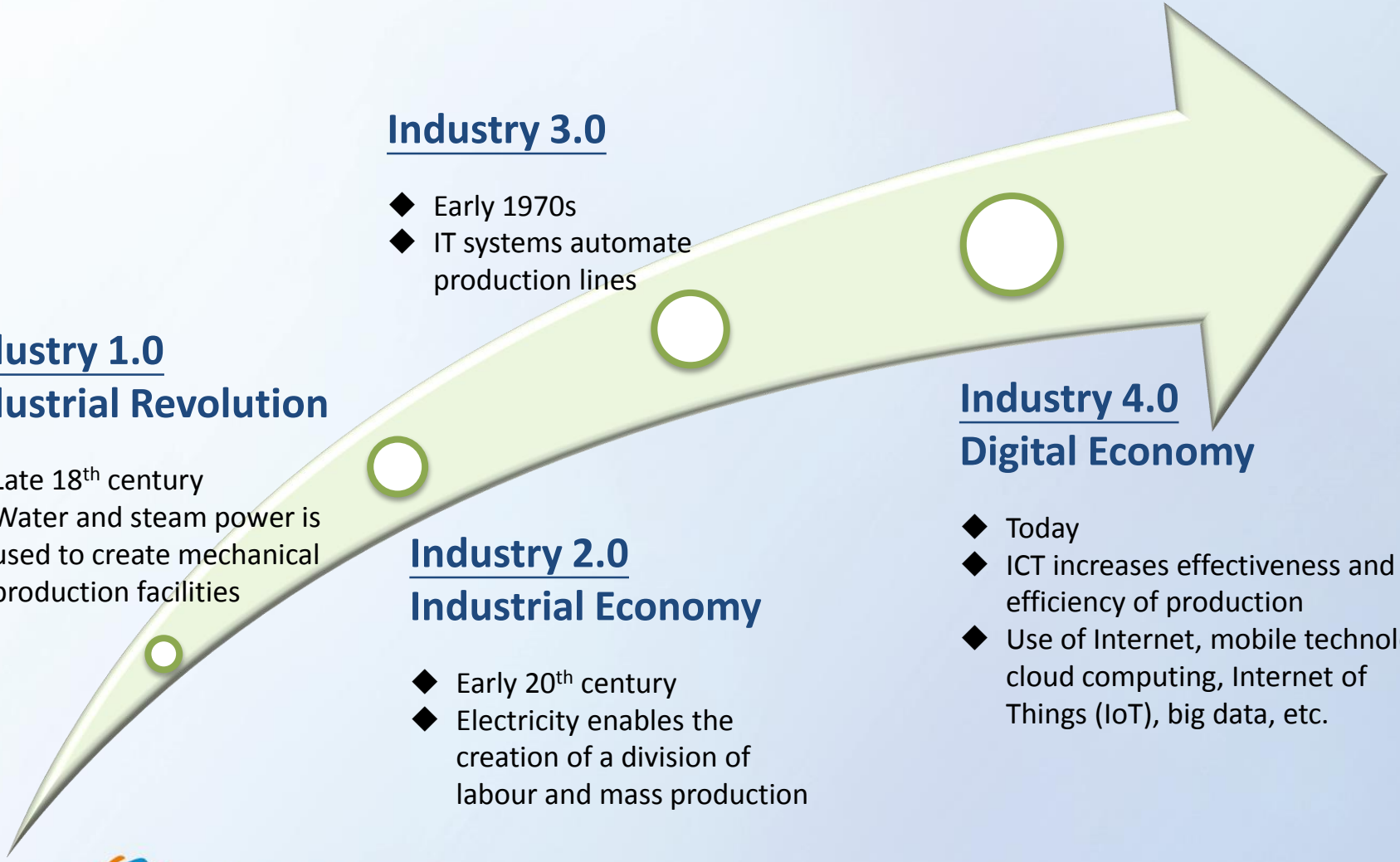
ITU Telecom 2016 : Key Messages

- ***To Achieve Digital Economy***

  - ***Digital economy*** is a crucial engine for sustainable and inclusive growth to overcome the middle income trap and increase country competitiveness in the global arena

  - ***Telecommunications*** plays a key role in the digital economy

Digital Economy: Driving Industry 4.0



Industry 1.0
Industrial Revolution

- Late 18th century
- Water and steam power is used to create mechanical production facilities

Industry 2.0
Industrial Economy

- Early 20th century
- Electricity enables the creation of a division of labour and mass production

Industry 3.0

- Early 1970s
- IT systems automate production lines

Industry 4.0
Digital Economy

- Today
- ICT increases effectiveness and efficiency of production
- Use of Internet, mobile technology, cloud computing, Internet of Things (IoT), big data, etc.

Digital Economy: Driving Industry 4.0

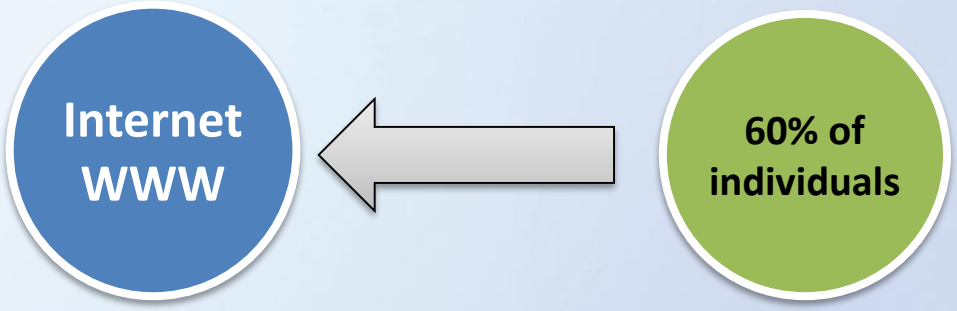
- The current trend is to integrate manufacturing with cutting-edge ICT
- Bringi[illegible]ial servic[illegible] ecosy[illegible]
- Creating what has been called “Smart Factory”
- Creating lower-entry barriers for SMEs and young entrepreneurs
- Upending established business models and creating entire new markets

Get Connected

ITU's Goal : Get Connected

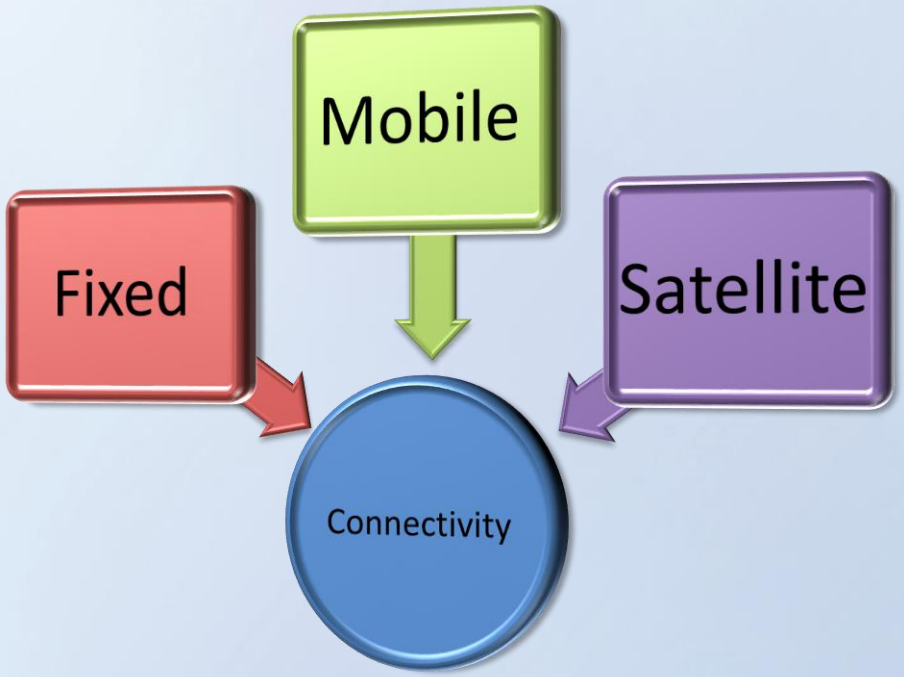
- To-date 53% of the world's population is still offline, with the majority located in Africa and Asia-Pacific

- **ITU's Connect 2020 Agenda**
  - 55% of households worldwide should have access to the Internet by 2020
  - 60% of individuals worldwide should be using the Internet by 2020
  - Telecom/ICT should be 40% more affordable by 2020



Increasing Connectivity

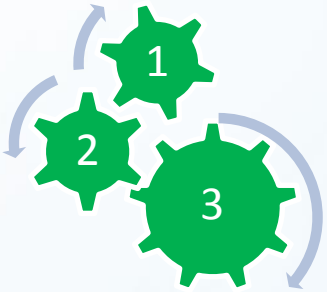
- Network expansion and upgrade
- Develop large scale cost effective rural solution
- Provide backhaul in combination of fixed wired and wireless solution
- Develop new last miles technologies, etc.
- Share use of support infrastructure increases international connectivity



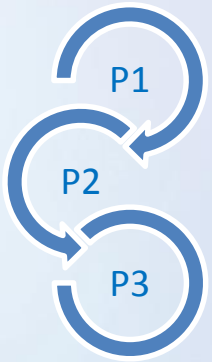
Mobile Connectivity: 5G

Enhanced mobile broadband	• Gbps data rates for applications like virtual reality and the ability to support extensive data traffic growth
Ultra-reliable communications	• Very low latency and very high availability, reliability and security to support services such as autonomous vehicles and mobile healthcare
Massive machine-type communications	• Ability to support a massive number of low cost IoT connections with very long battery life and wide coverage including inside buildings

Mobile Connectivity: Applications of 5G



Process Automation:
Monitoring & diagnostic function in long distance & harsh environment



Factory Automation:
Remote control of manufactory processes

Virtual reality in product design and simulation

Autonomous transport/cargo unit, robots with mobile connectivity, etc.

IoT, product identification and tracking of assets

Mobile Connectivity: 5G Developments

Japan

- Founded the 5G Mobile Promotion Forum
- Planned to launch 5G services before 2020 Tokyo Olympic Games

South Korea

- Launched the 5G national strategy
- Planned to offer 5G services in Pyeongchang Winter Olympic Games in 2018

China

- Set up the IMT-2020 (5G) Promotion Group (supported by the Chinese government) in February 2013
- Enterprises are actively participating in 5G technology researches and patent portfolios

Major member countries already planned for launch of 5G services and participated in technological forum, research, standard development, etc.

United States

- Published 5G technology standard in June 2016
- Verizon established 5G technology forums

European Union

- Launched the projects of 5G PPP (Public-Private Partnership) and METIS (Mobile and wireless communications Enablers for Twenty-twenty Information Society)
- Established 5G IPR Forum for 5G patent assessment and patent pool building

Facilitating 5G Development in Hong Kong

700 MHz

Working target of switching off the analogue terrestrial television service (ASO) by end 2020
Re-allocation to mobile service post ASO subject to frequency coordination with the Mainland Authorities

3.5 GHz

Public consultation in 2nd half of 2017 on the proposed re-allocation from fixed satellite service to mobile service
Technical consultancy study in 2nd half of 2017 to advise on the feasible mitigation measures

26 & 28 GHz

Vacation of the 26 GHz band to be implemented
Assignment for 5G services in 2019 at the earliest subject to availability of the harmonised band plans

Any parties interested in conducting 5G trials using the above bands are welcome to approach OFCA for application of trial permits

Mobile Connectivity: ITU's Work

ITU allocates global radio spectrum → World Radio-communication Conference 2019 (WRC-19)

Agenda Item 1.13 of ITU WRC-19 will consider the identification of frequency bands for the future development of IMT, including possible additional allocations to mobile service on a primary basis in frequency range between 24.25 to 86.0 GHz

Fixed Connectivity: Developments in Some Countries

In China, broadband access in cities and rural areas will reach up to 50 Mbps and 12 Mbps respectively and FTTH households in most cities will achieve 1 Gbps by 2020

South Korea KT launched the fixed broadband service named "GiGA Internet" in 2014 at the speed of more than 1 Gbps with FTTH and FTTB technologies

The United Kingdom government targets for 100 Mbps broadband for all citizens and invested US$2.13 billion for fibre networks. By 2017 about 95% of the UK will be covered by ultrafast broadband

In Singapore, the Next Generation Nationwide Broadband Network provides ultra-high speed broadband access of 1Gbps and more

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Fixed Connectivity: Developments in Hong Kong

Broadband rollout to rural and remote areas

2 existing Fixed Network Operators actively **upgrading / expanding their networks** to provide high speed fixed broadband services in these areas

2 new Fixed Network Operators **target at rollout in rural & remote areas**

Wireless Fixed Technology

Plan to provide wireless broadband connection to 110+ villages

Fibre Network

Plan to provide fibre coverage to 500+ villages in 10 years

High speed broadband already reached nearly half of 700+ villages in HK

Overall fixed broadband penetration in HK: **93%**

Typical speeds: **10 Mbps to 1 Gbps** (83% using ≥10 Mbps)

Fixed Connectivity: ITU's View

- Access to the Internet is not enough. Policy-makers must address broader socio-economic inequalities and help people acquire the necessary skills to take full advantage of the Internet

- The full potential of the Internet remains untapped. Many people are yet to benefit fully from the opportunities brought by the Internet

- Fixed-broadband prices continued to drop significantly in 2015 but still remain high – and clearly unaffordable in a number of least developed countries

Satellite Connectivity

Disaster Management

- Disaster assessment
- Providing emergency support where existing systems are overloaded or out of service

Automobile

- Satellite navigation service
- Autonomous vehicle driving
- Vehicle position reporting system, etc.

Satellite Connectivity

Energy (oil and gas)

- Energy companies manage equipment and machines in remote places
- Use the satellite communications when mobile network is not available

Transportation and logistics

- Shipping companies use the satellite to track inventory across the ocean and over land

Facilitating Digital Economy

- To facilitate collaboration between the ICT industry and other sectors as well as between all stakeholders and new players for the development of the digital economy
- To facilitate innovation and socio-economic development whilst ensuring open, fair competition and consumer security
- To attract foreign investment and create enabling, flexible regulatory and policy environment
- To innovate and lead with an entrepreneurial mind set in extending services to people and businesses
- To promote educating its citizens on the use and application of technology

Facilitating Digital Economy: Examples (1)

- In Thailand, the national digital programme would improve broadband networks and the use of digital technology for social and economic development in a sustainable and inclusive way, through public-private-people-partnership
- In Japan, the country is committed to promoting public-private partnership initiatives, investing in quality infrastructure development, capacity building and technology transfer
- Increasing digital bandwidth and connecting communities in remote and rural areas are paramount for Malaysia, which is working together with various private sector companies and has earmarked USD30M for government spending on rural infrastructure development

Facilitating Digital Economy: Examples (2)

- MasterCard is committed to developing global industry standards for the electronic payment system, collaborating on strategic data security initiatives with industry stakeholders through global and regional fraud advisory councils

- Toyota and Microsoft join forces to work on smart cars, examining how to best apply analytics tools and artificial intelligence to data gathered from connected car's systems, etc. The goal is to use the data to create a better and more personalized driving experience

Thank You

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