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Overview of 5G System Trial Concept & Plan in Japan

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Leader of 5G Trial Promotion Group in 5GMF

The 3rd Global 5G Event
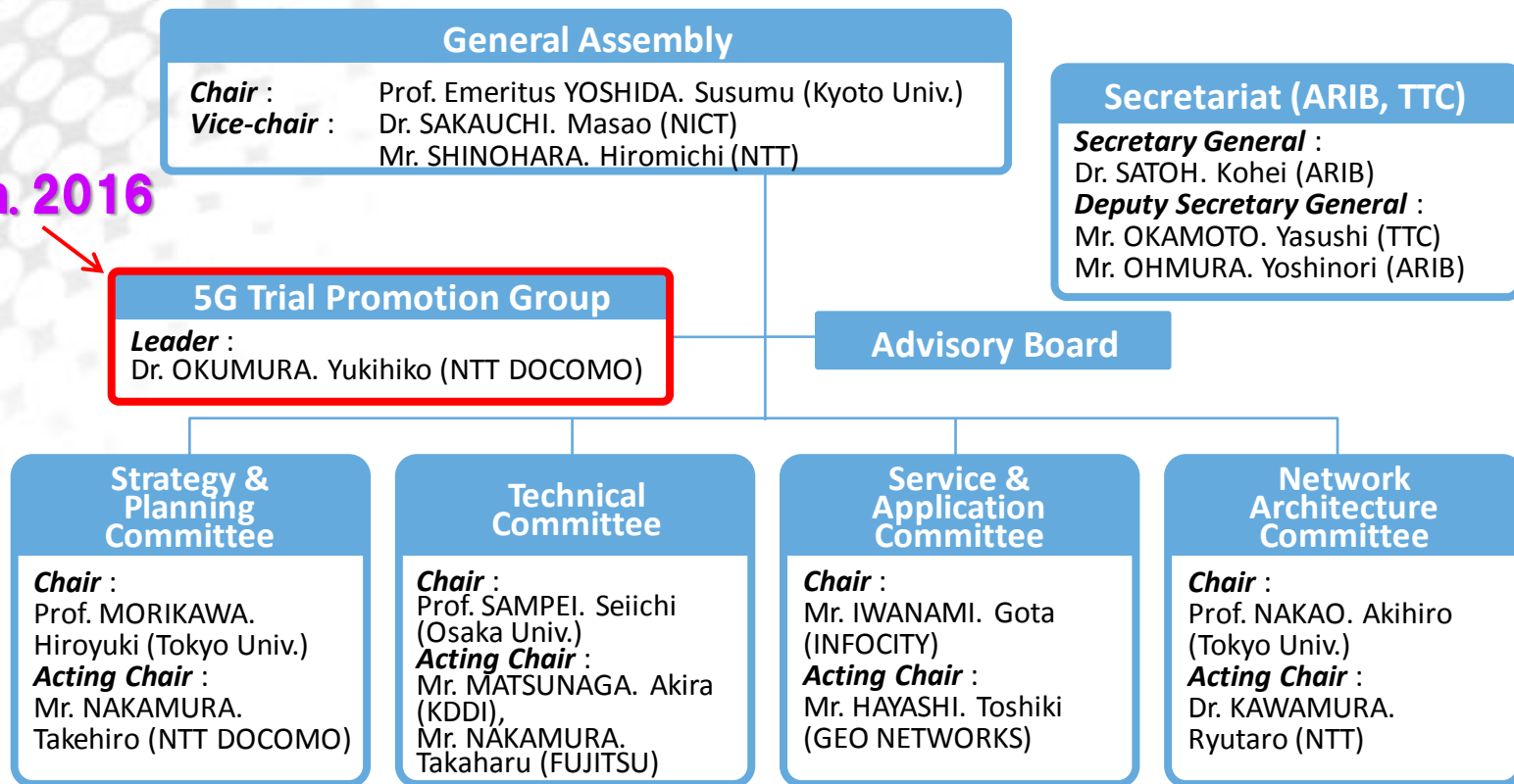Hilton Tokyo Odaiba, Japan, 25 May 2017

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3. 5G System Trial Plan in Japan

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Overview of 5G-TPG

Organizational Structure of Japanese 5GMF

General Assembly

Chair : Prof. Emeritus YOSHIDA. Susumu (Kyoto Univ.)
Vice-chair : Dr. SAKAUCHI. Masao (NICT)
Mr. SHINOHARA. Hiromichi (NTT)

Secretariat (ARIB, TTC)

Secretary General :
Dr. SATOH. Kohei (ARIB)
Deputy Secretary General :
Mr. OKAMOTO. Yasushi (TTC)
Mr. OHMURA. Yoshinori (ARIB)

Jan. 2016

5G Trial Promotion Group

Leader :
Dr. OKUMURA. Yukihiko (NTT DOCOMO)

Advisory Board

Strategy & Planning Committee

Chair :
Prof. MORIKAWA. Hiroyuki (Tokyo Univ.)
Acting Chair :
Mr. NAKAMURA. Takehiro (NTT DOCOMO)

Technical Committee

Chair :
Prof. SAMPEI. Seiichi (Osaka Univ.)
Acting Chair :
Mr. MATSUNAGA. Akira (KDDI),
Mr. NAKAMURA. Takaharu (FUJITSU)

Service & Application Committee

Chair :
Mr. IWANAMI. Gota (INFOCITY)
Acting Chair :
Mr. HAYASHI. Toshiki (GEO NETWORKS)

Network Architecture Committee

Chair :
Prof. NAKAO. Akihiro (Tokyo Univ.)
Acting Chair :
Dr. KAWAMURA. Ryutaro (NTT)
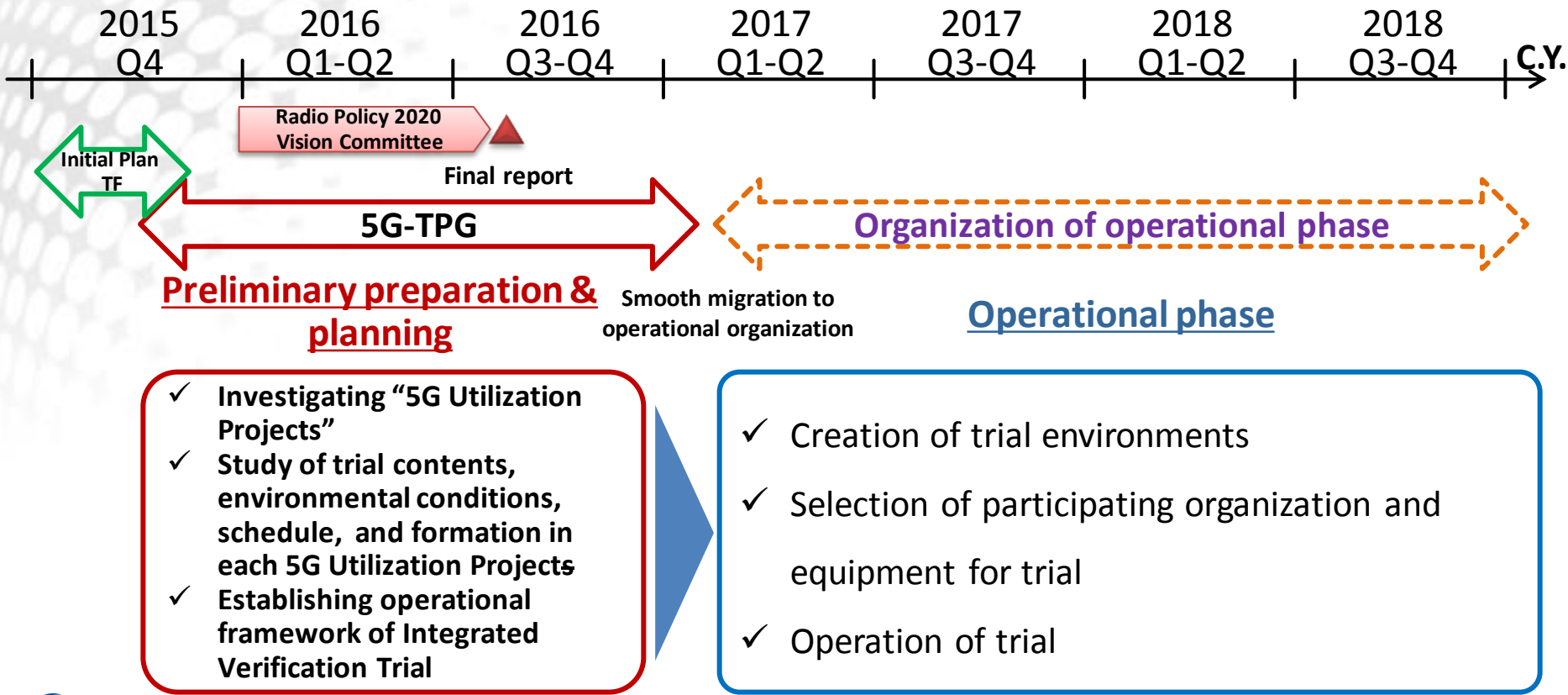
THE 3rd GLOBAL 5G EVENT

5G-TPG Members

These members are listed in random order and further new members has been joined.

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Recent Activities of 5G-TPG

Schedule toward Starting System Trials

2015 Q4 | 2016 Q1-Q2 | 2016 Q3-Q4 | 2017 Q1-Q2 | 2017 Q3-Q4 | 2018 Q1-Q2 | 2018 Q3-Q4 | C.Y.

Radio Policy 2020 Vision Committee

Initial Plan TF

Final report

5G-TPG

Organization of operational phase

Preliminary preparation & planning

Smooth migration to operational organization

Operational phase

- ✓ **Investigating "5G Utilization Projects"**
- ✓ **Study of trial contents, environmental conditions, schedule, and formation in each 5G Utilization Projects**
- ✓ **Establishing operational framework of Integrated Verification Trial**

- ✓ Creation of trial environments
- ✓ Selection of participating organization and equipment for trial
- ✓ Operation of trial

5G-TPG Report

- As a latest major outcome from TPG activities, a TPG report had been edited from 2nd half of 2016 to beginning of 2017.

- The report presents 5G trial concepts, contents, and plans of "5G Utilization Projects" addressed in 5G System Trial.

- Report ver. 1.0 was published in March 2017 (Japanese version only)

  http://5gmf.jp/wp/wp-content/uploads/2017/03/5g-tpg_report_ver_1_0_public.pdf

Contents of 5G-TPG Report v.1.0

Report of 5G System Trial Concept & Plan **-5G Utilization Project Planning part -**	
Chapter 1	Introduction
Chapter 2	5G Utilization Projects
2.1	Entertainment
2.2	Security and Disaster Defense to realize Safe and Secure
2.3	Logistics, Agriculture, Office, and Factory
2.4	Remote Control and Surveillance of Robot and Drone, etc.
2.5	Remote Control and Surveillance of Connected Car and Vehicles, and Automated Driving
2.6	High Data-Rate and Reliable Communications for High-Speed Moving Vehicles

6 Use Cases

5G Utilization Projects in System Trial

■ **More than 40** 5G Utilization Projects have been proposed by members of 5G-TPG and respective committees in 5GMF.

■ 5G-TPG summarizes the 5G Utilization Projects by dividing them into **6 Use Cases** mentioned in previous slide. Detailed contents are shown in Chapter 2.

■ In the future, 5G ideathon and hackathon can be held for 5G new applications and services from Verticals

"Use case 1: Entertainment"

■ **Entertainment exploiting 5G for stadium, event site, theme park, sightseeing area, etc.**

- ✓ User-oriented entertainment by ultra high definition, multi angle, 3D videos, wearable terminal, and VR

- ✓ Realistic sensation remote virtual experiences in festival, concert, circus, and museums

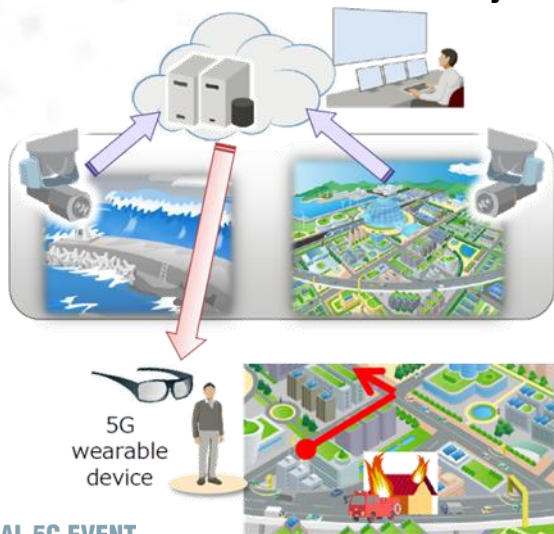- ✓ Enhanced mobile broadband（eMBB）

CHANGING HOW WE ENJOY SPORTS
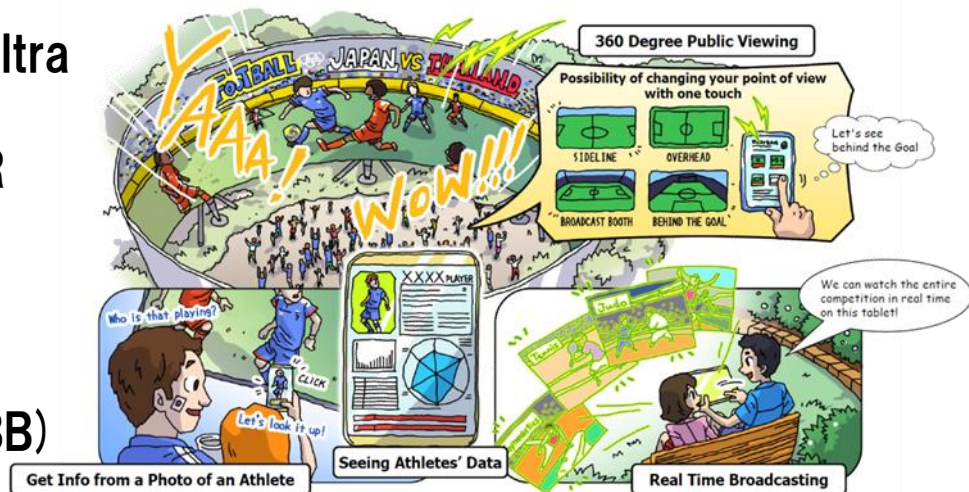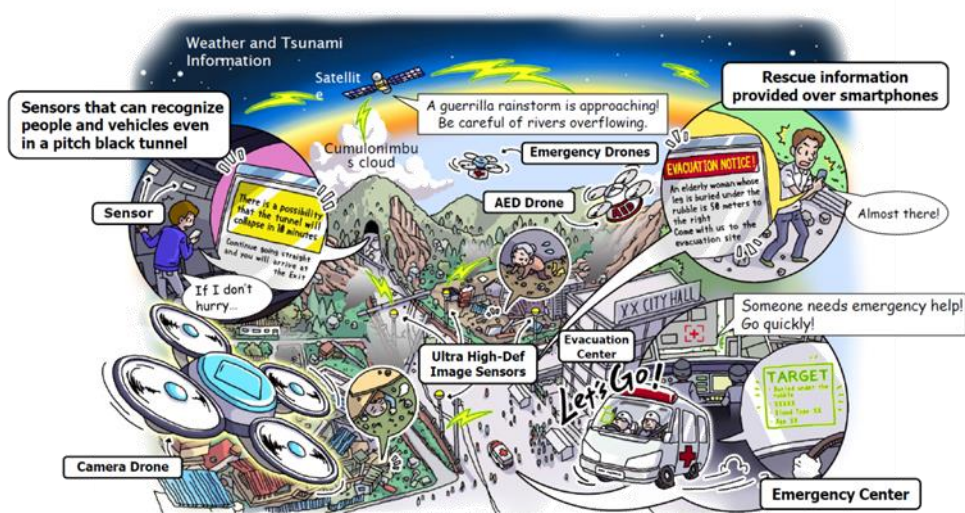
Remote virtual experiences in museum and casino

"Use case 2: Security and Disaster Defense"

- **5G surveillance and security system to realize safe and secure society**
  - ✓ Finding a suspicious person by exploiting information gathered from a lot of security cameras and sensors in public areas
  - ✓ Occurrence prediction of disasters and crimes by using the sensor information and prompt action using MEC after disasters and crimes
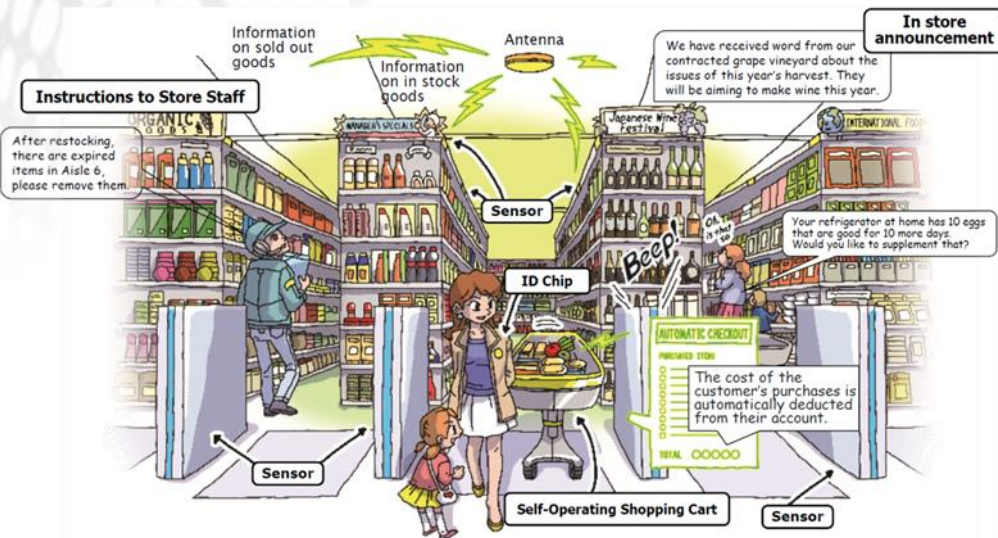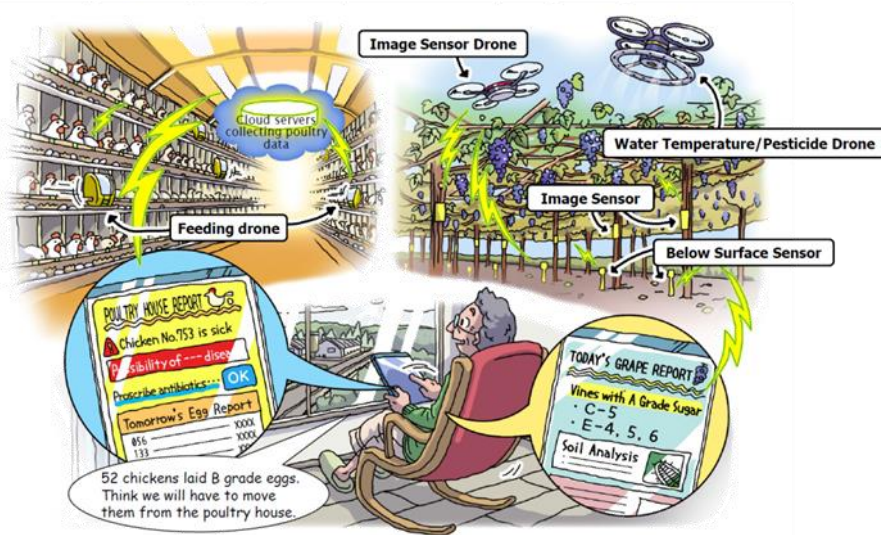
Realization of secure and safety society

5G wearable device

CHANGING RESPONSES TO DISASTERS

- **Efficient logistics supported by 5G massive connectivity（IoT）**

- **Same communication environment provided anywhere for future new work style by exploiting Heterogeneous Network**


CHANGING HOW WE SHOP (THE IOT SUPERMARKET)

CHANGING THE WAY WE DO WORK 1

■ **Remote control of drone, robot, machine, etc. and surveillance by machine with camera**

✓ **Remote control of drone and robot**

✓ **Surveillance by drone and robot with camera**

✓ **Autonomous decentralized and cooperative control of connected machine**

CHANGING THE WAY WE DO WORK 2

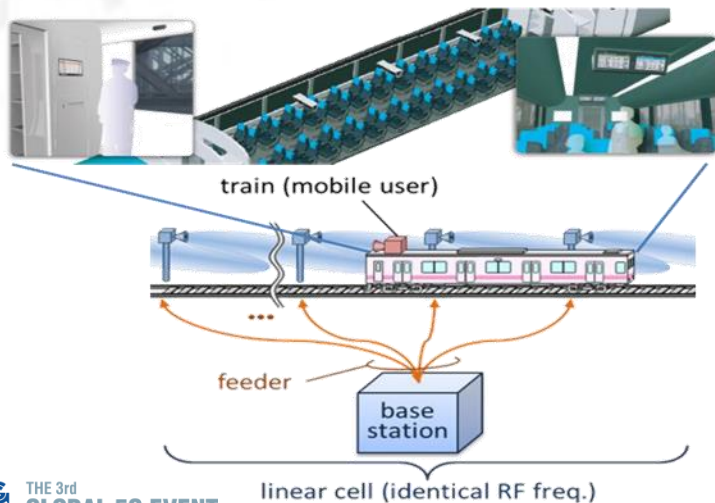

CHANGING RESPONSES TO DISASTERS

THE 3rd GLOBAL 5G EVENT
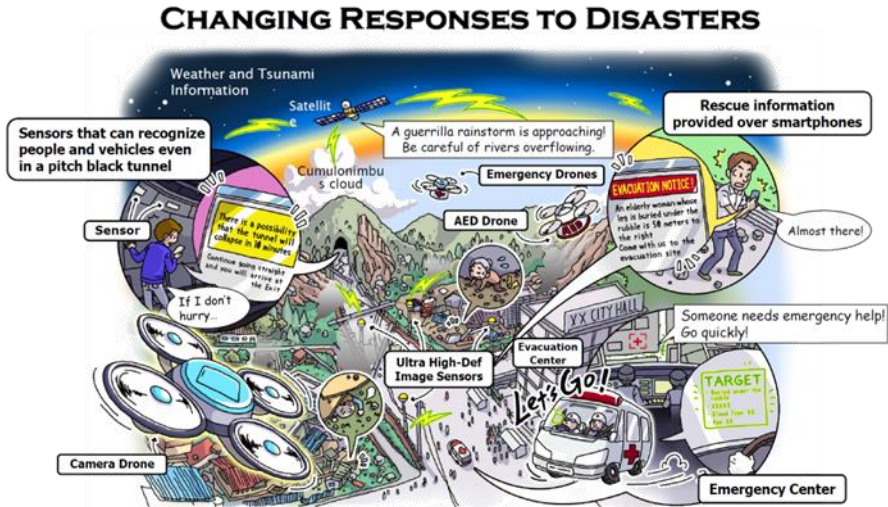
■ **Remote control and surveillance using 5G for connected car and vehicles, and support of automated driving**

✓ Remote control, operation, and surveillance for construction machinery, autonomous car, etc. by real-time and reliable communications

✓ Support of automated driving: avoidance of car crash and dynamic map

CHANGING AUTOMOBILE NAVIGATION AND ENDING ACCIDENTS 1   CHANGING AUTOMOBILE NAVIGATION AND ENDING ACCIDENTS 2
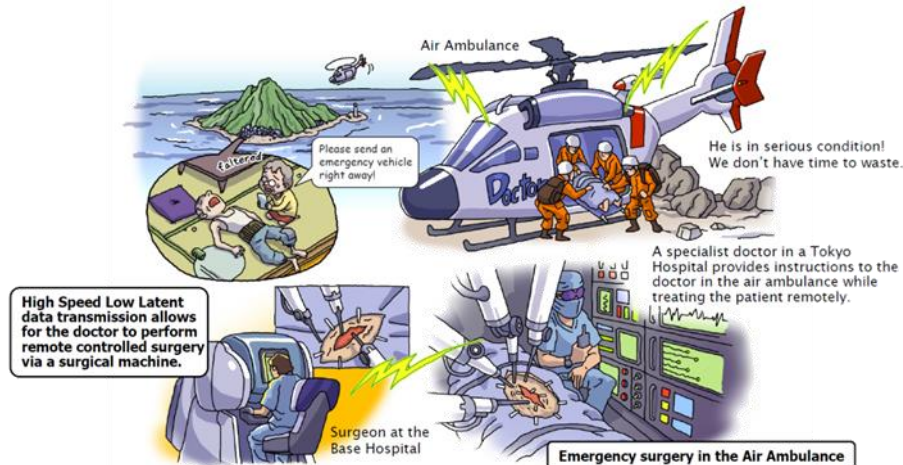
■ **5G high data-rate and reliable communications for high-speed moving vehicles such as train, bus, and helicopter**

  ✓ **Establishment of moving network for high-speed moving vehicles crowded with people and terminals**

  ✓ **Delivery of high-quality contents to the high-speed moving vehicles and remote medicine in emergency service**


train (mobile user)

feeder

base station

linear cell (identical RF freq.)

CHANGING EMERGENCY HEALTH SERVICES

Air Ambulance

Please send an emergency vehicle right away!

He is in serious condition! We don't have time to waste.

A specialist doctor in a Tokyo Hospital provides instructions to the doctor in the air ambulance while treating the patient remotely.

High Speed Low Latent data transmission allows for the doctor to perform remote controlled surgery via a surgical machine.

Surgeon at the Base Hospital

Emergency surgery in the Air Ambulance

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5G System Trial Plan in Japan

Action Plan of 5GMF towards 2020

**Accelerate practical implementations of 5G towards 2020.**
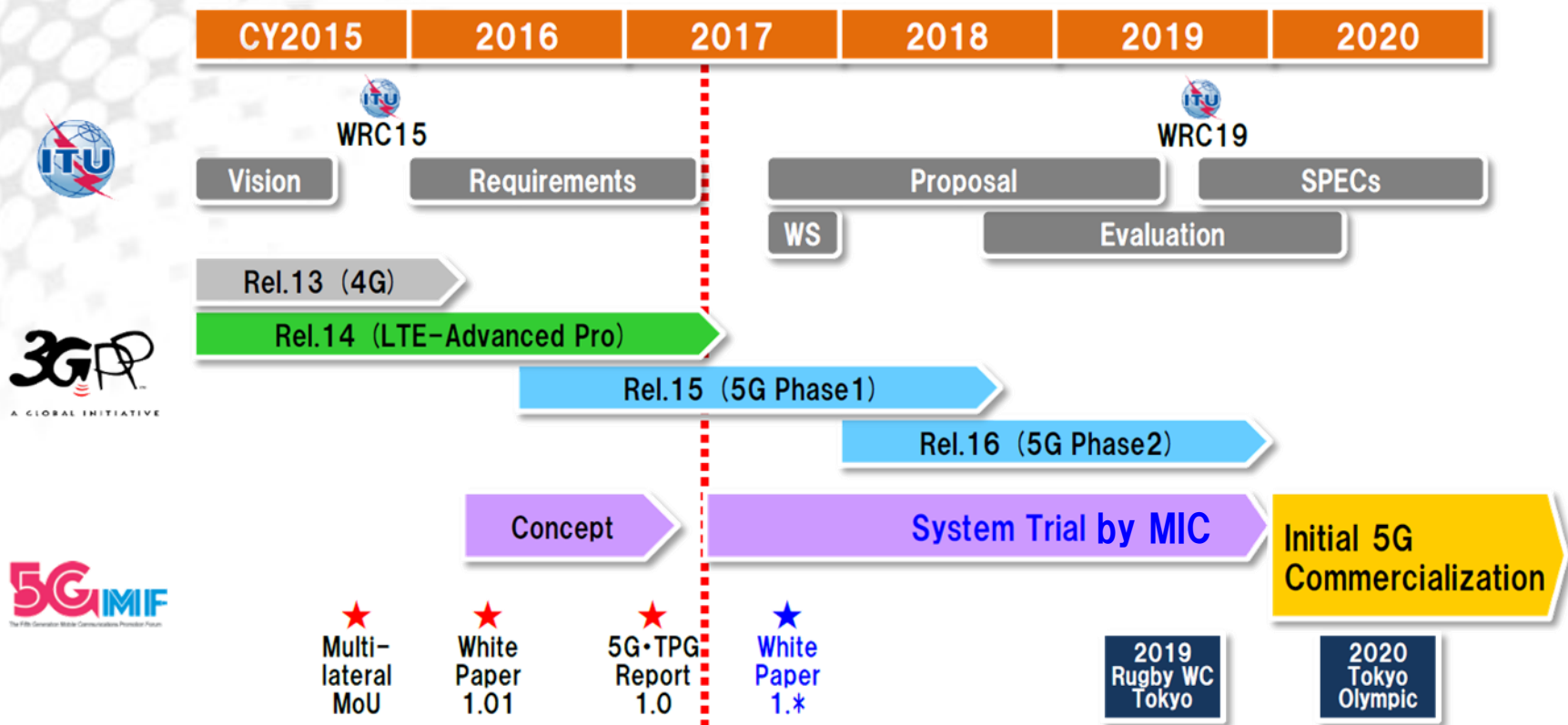
5G System Trial Plan

- **MIC**（Ministry of Internal Affairs and Communications in Japan） has started 5G System Trials *referring 5G-TPG Report* in Tokyo and rural areas in Japan this month.

- 5G System Trial has just started in this month and under a current plan the trials continue for three years.

- 5GMF has also started to collaborate with 5G System Trial and will promote the results in the world.

Action Plan of 5GMF towards 2020

Accelerate practical implementations of 5G towards 2020.
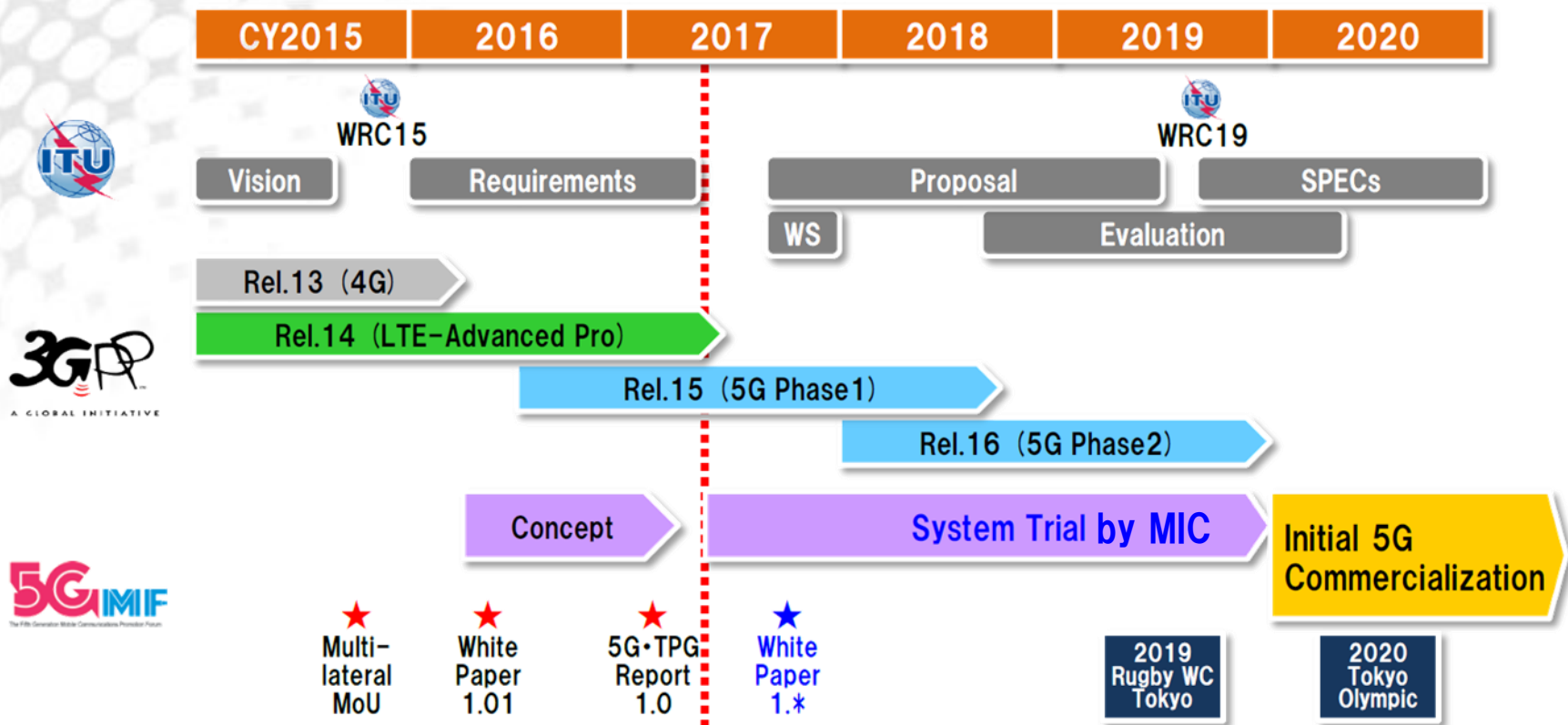
The Tour will be started from Hilton at 3 p.m. today.

*You can experience "Totally New World"
by 5G mobile solutions!*

Thank you for your kind attention.