

**NTT DOCOMO Driving Digital Transformation in 5G era**  
**- Co-create new values with partners -**

**NTT**  
**docomo**

**January 17<sup>th</sup>, 2019**

**EVP & CTO**  
**Hiroshi Nakamura**

# Sharing our future around 202x

5G is just around the corner 2020

Here is our image of a little far future



# Promotion of Digital Transformation

## Driving Digital Transformation with 5G/AI

New value creation for customers

Resolution of social issues

Drastic improvement  
of UI/UX

Creation of innovative  
services

Productivity  
improvement

**DX: Digital Transformation**

IoT

**AI**

**5G**

AR/VR

Cloud

HERE COMES

»»5G

JAPAN 2020

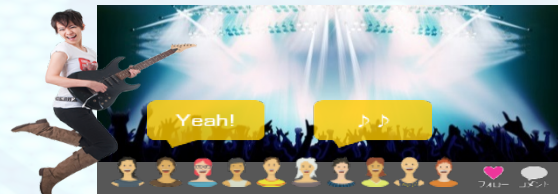
# Examples of major 5G services

## Provide a variety of services taking advantage of 5G features



Peak rate **20Gbps**※

High speed/High capacity



Only with 5G



Low latency

Transmission delay in radio segment **1ms**※



More convenient with 5G



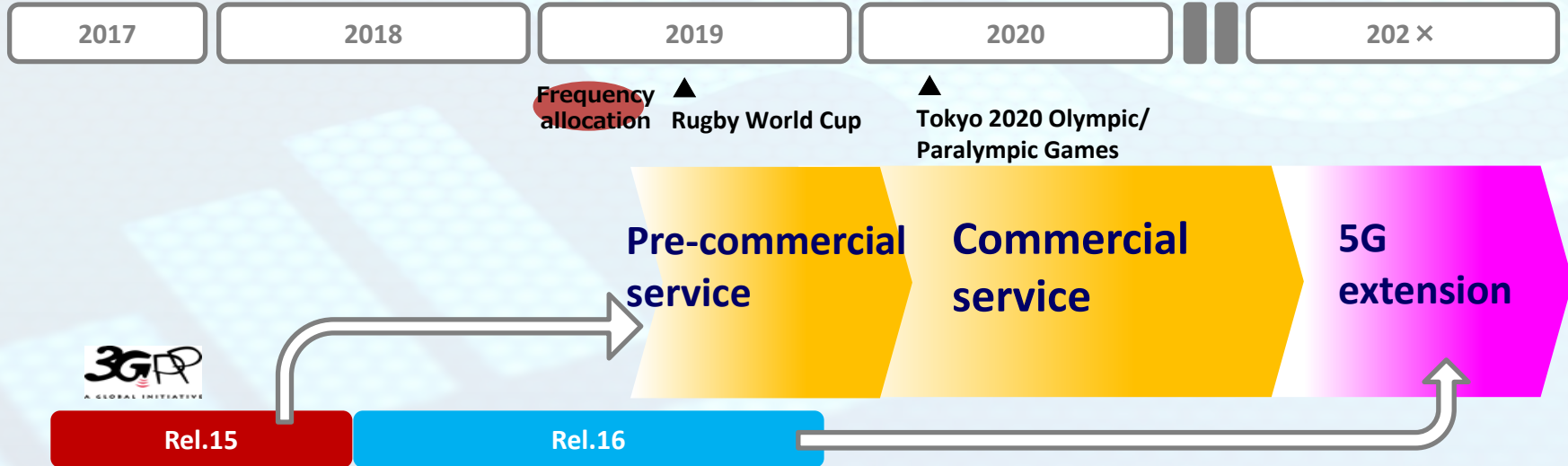
Massive device connectivity

Concurrent connections **10<sup>6</sup> devices/Km<sup>2</sup>**※



# 5G rollout plan

**September 2019 : "Pre-commercial Service"**  
**Spring 2020 : "Commercial Service"**



※NTT DOCOMO, INC is a Gold Partner (telecommunications services) for Tokyo 2020 Olympic and Paralympic Games.

# 5G ratio communication experiment in ultra high-speed moving

## Succeeded in 5G communication in the world's first ultra high-speed mobile environment at 300km/h in April 2018



基地局 2 アンテナ

5G

基地局 1 アンテナ

Download throughput

1Gbps

Hand Over

TIME

293 km/h

290km/hでハンドオーバーに成功  
293km/hで1.1Gbpsを達成

# New value creation via Co-creation with partners

## Co-creating new services for 5G era with partners from a wide range of industries

Since Feb 2018

»5G

DOCOMO 5G  
Open Partner  
Program

5G workshops

5G technological verification environment  
"DOCOMO 5G Open Lab"

Tokyo (Apr), Osaka (Sep), Okinawa (Jan)

Provision of latest 5G information

Joined by **2,000** companies  
and organizations

Since May 2017

### 5G Trial Sites

#### 5G X SPORTS

AR/multi-view demonstration



#### 5G X GAME

VR games/VR game watching



**106 trials underway for new service  
co-creation with partners**

### Deployment of 5G services





# 5G Co-creation platform

## Providing open environments/technological assets to accelerate co-creation of 5G solutions

### DOCOMO 5G Open Lab™



#### 4K video transmission system

Comparison between raw data images of 4K high-definition video and images via 5G transmission path and encoder/decoder

»5G X



#### High definition VR system

Experience of 5G high-speed high-capacity features in high-definition VR images (8K/4K, live feed images, etc.)

»5G X



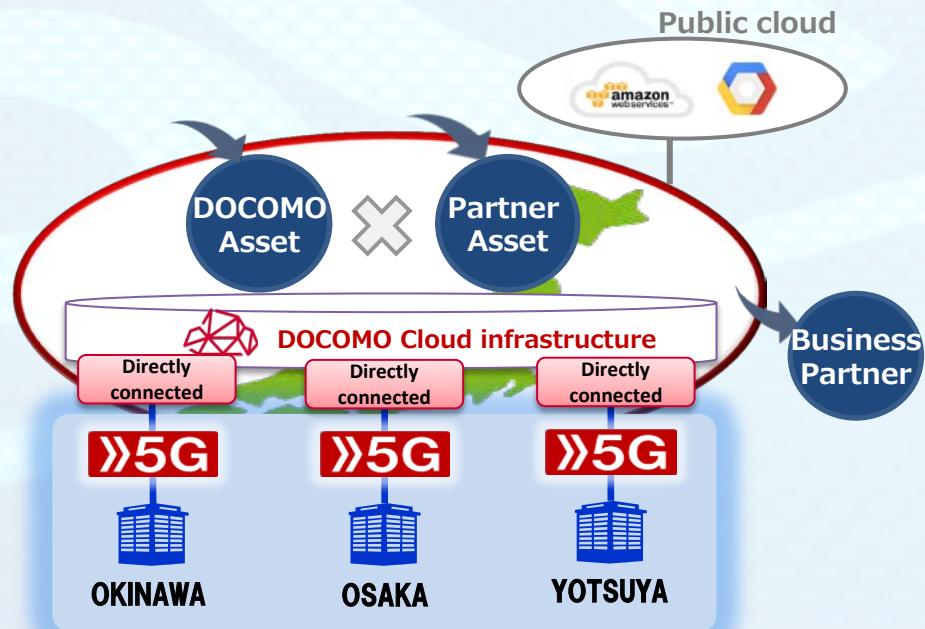
DOCOMO 5G Open Lab™  
Yotsuya



DOCOMO 5G Open Lab™  
OSAKA



### DOCOMO 5G Open Cloud™



# Companies participating in 5G Open Partnership

We are promoting new business co-creation with business partners from a wide range of industries

5 % Others

3 % Medical

3 % Infrastructure

4 % Transportation

4 % Construction

4 % Local governments

5 % Finance/Insurance

12 % Media



1,966

partners

As of December 3

24% Service

21% Retail/Restaurant

15% Manufacturing

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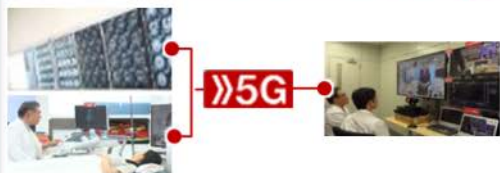
### Deployment of 5G services



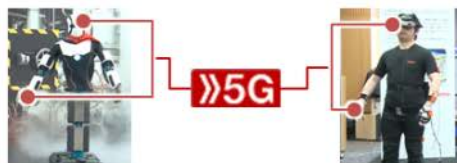
# Examples of co-created solutions

We have already created 106 business cases through co-creation with various partners !

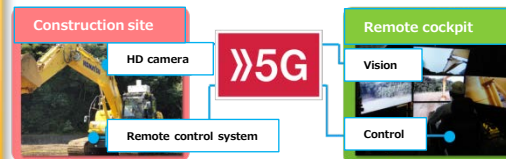
## Health disparities



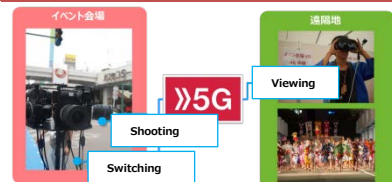
## Factory/Hazardous work



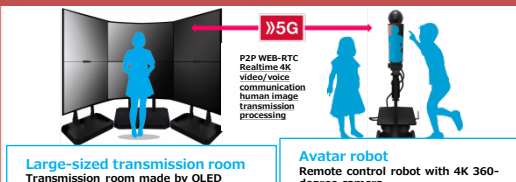
## Workstyle reform



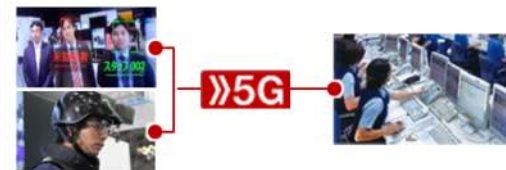
## Regional vitalization



## Tourism



## Disaster preparedness



## Education



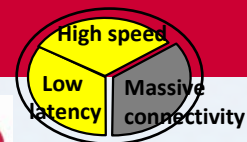
## Mobility



## Sports



# Service example (1): Resolution of labor shortage



KOMATSU

## Remote control of construction equipment

NTT docomo

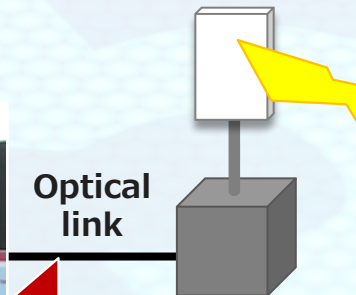


<Office, etc.>

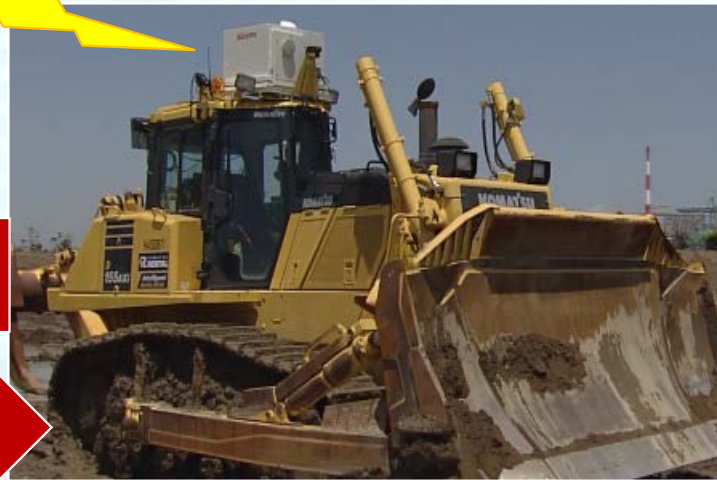


Remote operation cockpit

5 G Base Station



<Construction site>

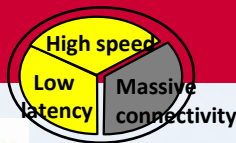


Bulldozer

High-definition video transmission

Remote control

# Service example (2): Elimination of health disparities



NTT Medical  
Center Tokyo

## Medical examination of women in pregnancy using next-gen examination vehicle

NTT  
**docomo**



<General hospital>

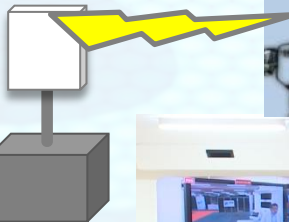
5G Base Station

<Next-gen examination vehicle>



Obstetrician and Gynecologist  
(medical specialist)

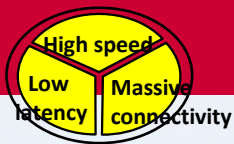
Optical  
link



General physician  
(in a disaster site/doctorless area/)

Realtime communication  
via 4K video conference

# Service example (3): Stadium solution



## Provide new sports viewing experience

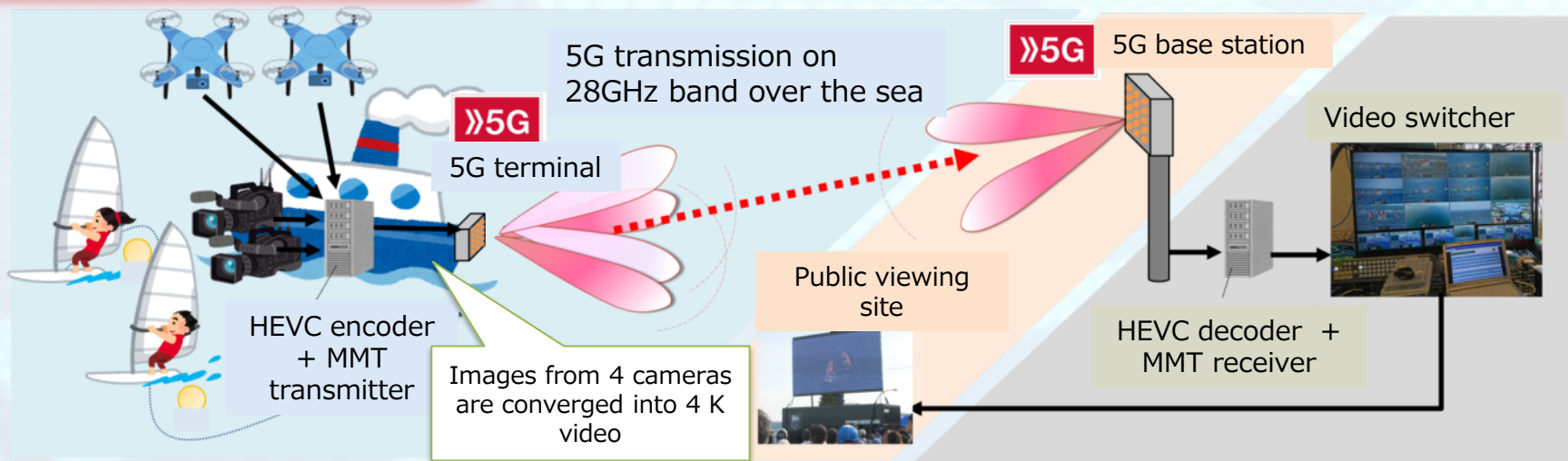
Successful 4K public viewing in the Windsurfing World Cup



Public viewing

Spectator support

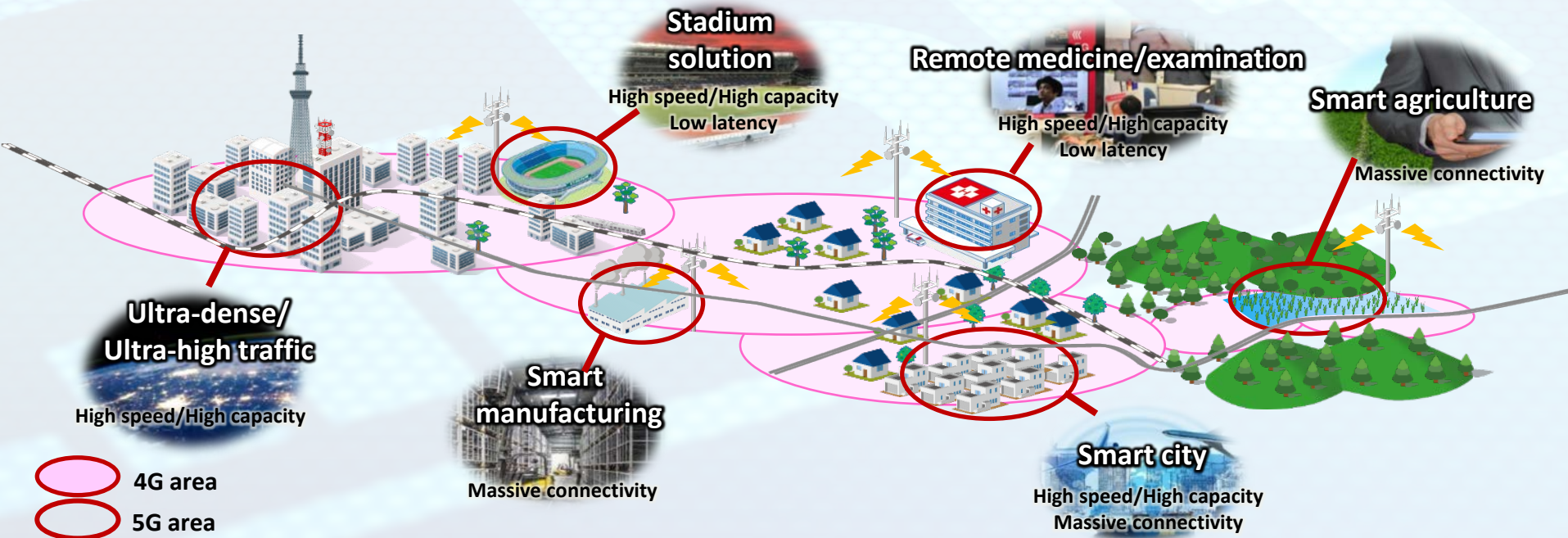
User data sharing



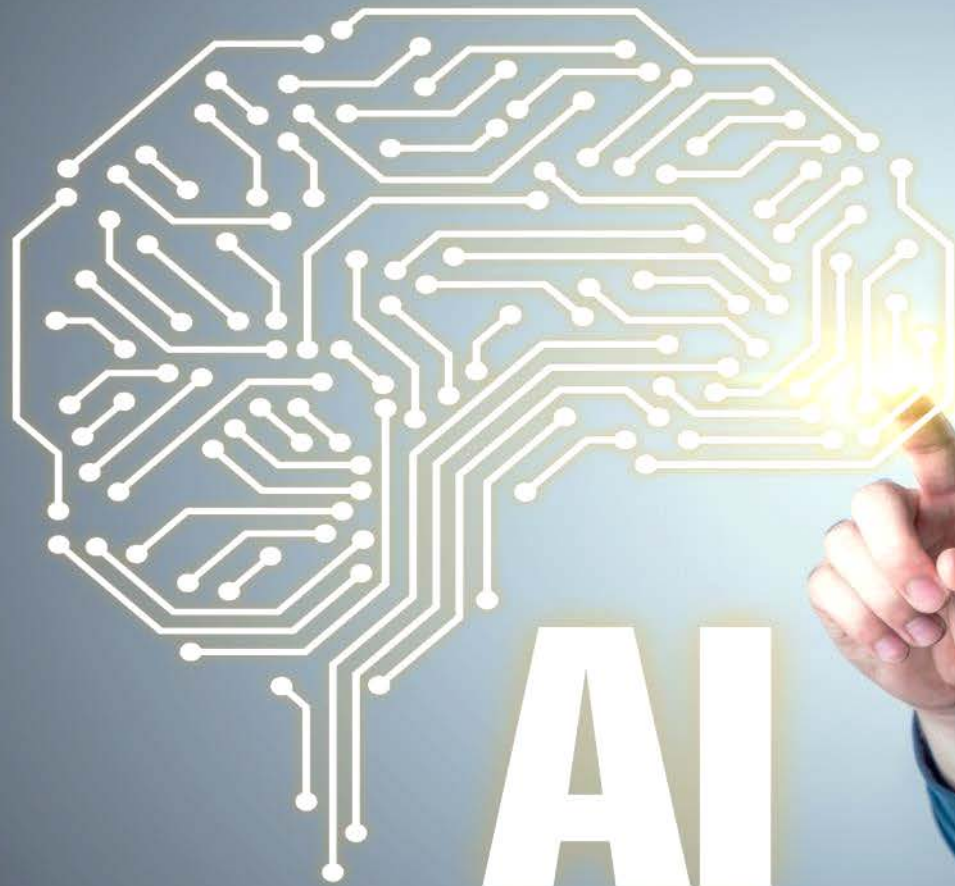
HEVC: High Efficiency Video Coding, MMT: MPEG Media Transport

# Concept of 5G service deployment

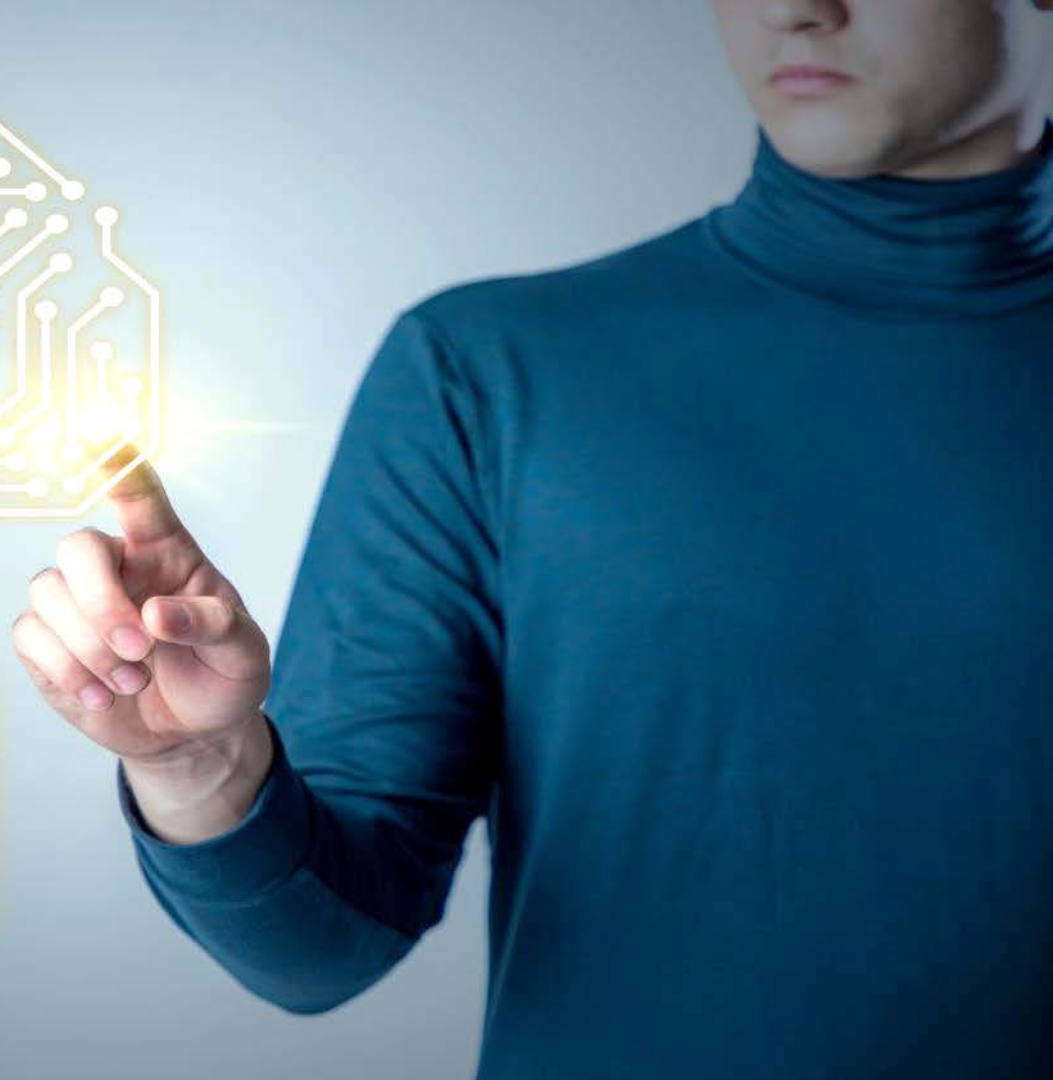
Deployment in rural and urban areas on frequency bands available to provide specific 5G features needed in each area







**AI**





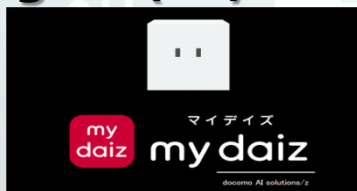
# AI for Individuals and Society/Industry

AI for "Individuals"  
Realizing ultimate  
personal agent



Realize a "must-have" item  
for **our daily life**

【AI services】  
AI agent (May 30<sup>th</sup> 2018)



AI for "Society/Industry"  
Resolving social issues/  
Getting high efficiency in industry

Partners



Domain knowledge  
Industry-specific data

+d

NTT docomo



Technological/data assets  
Data scientists

Creating new values using assets  
of **Partners** and **DOCOMO**

【AI services】

AI Taxi (Feb. 2018)  
AI Bus (Mar. 2018)  
AI Call Center (Sep. 2017)

⋮



## We are utilizing AI for “operational efficiency” and “service quality improvement”

### Frontline operations

Utilization of AI for natural language dialogue to replace simple customer service operations



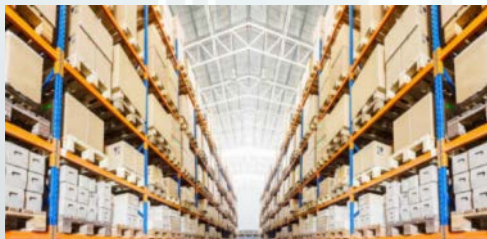
### Digital marketing

Recommendation/micromarketing based on the understanding of users



### Internal work process

Digitalization & optimization of work process



### Network operation

Network area quality improvement based on big data



Launched on May 30<sup>th</sup>, 2018!

AI

×

スマホ  
Smartphone

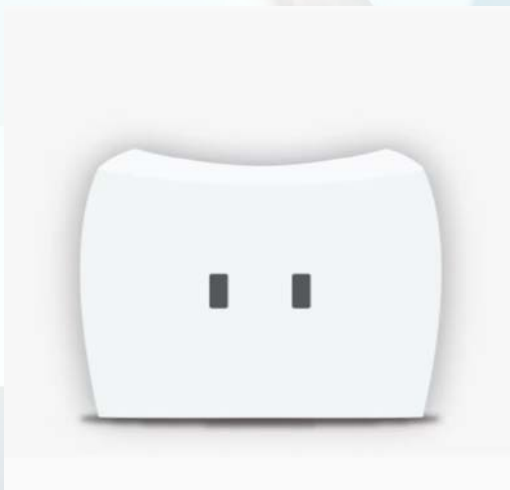
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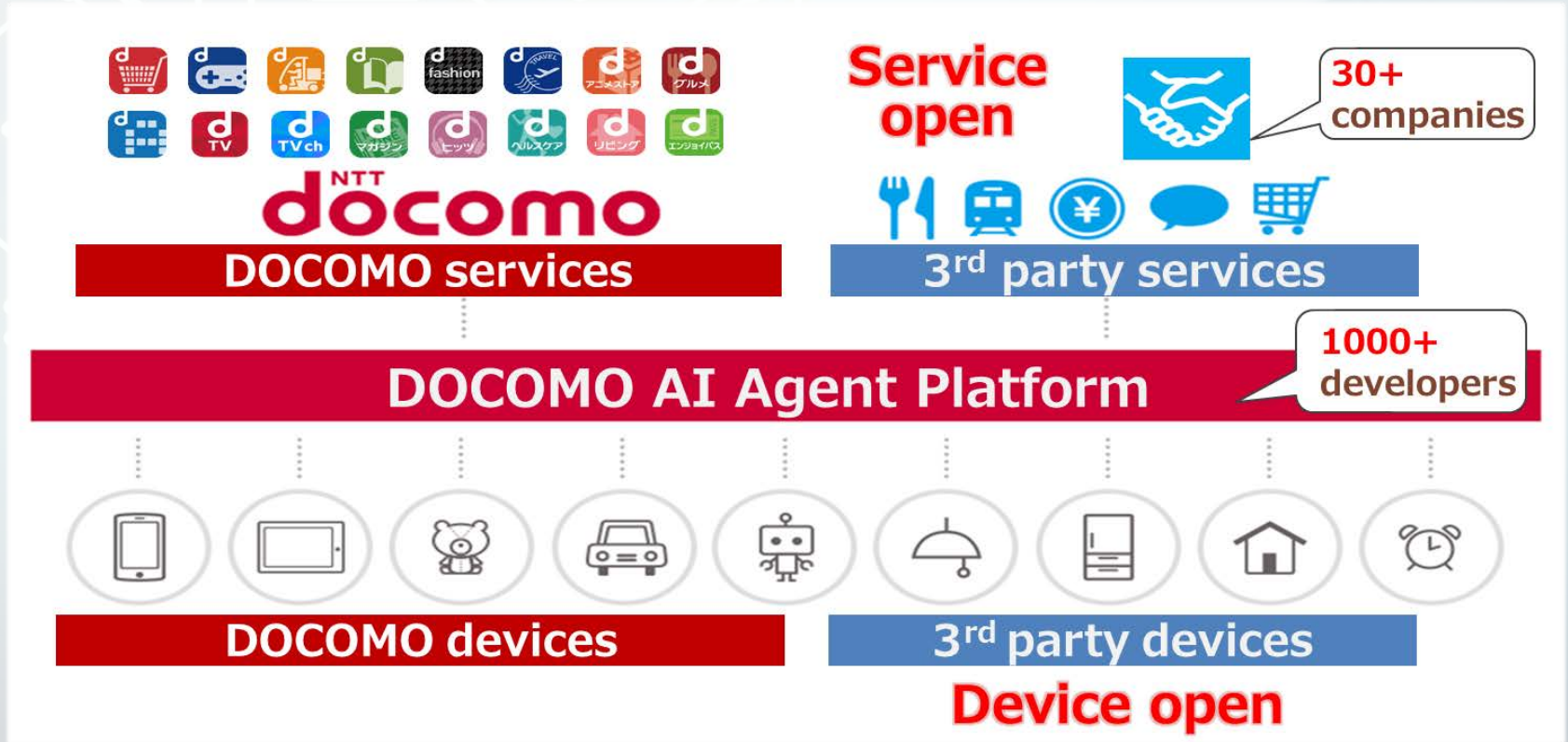
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[docomo AI solutions/z](https://docomo.ai/solutions/z)

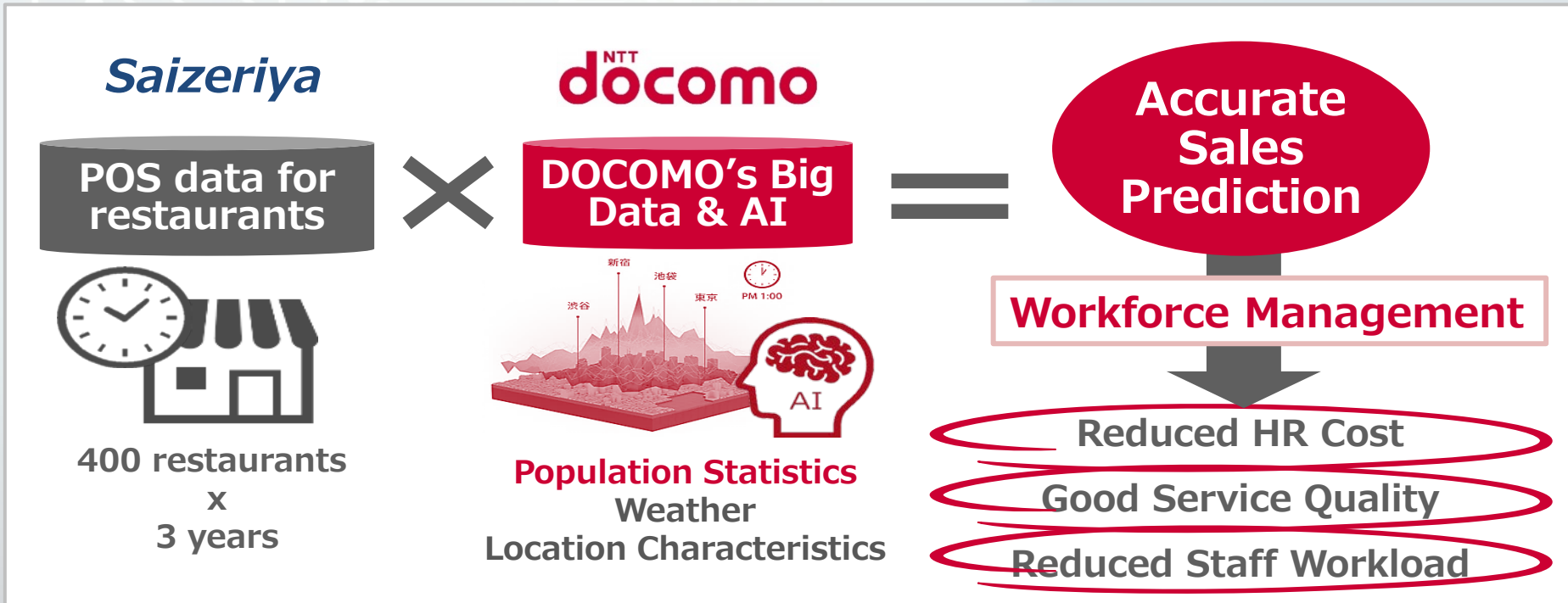


## “Open” to 3rd party Services and Devices





## Our AI predicts sales for each restaurant as accurately as skilled managers.



HERE COMES

»»5G

JAPAN 2020