

OpenAirInterface

Approach to Commercial Use of OAI

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Fujitsu's vision for the 5G network

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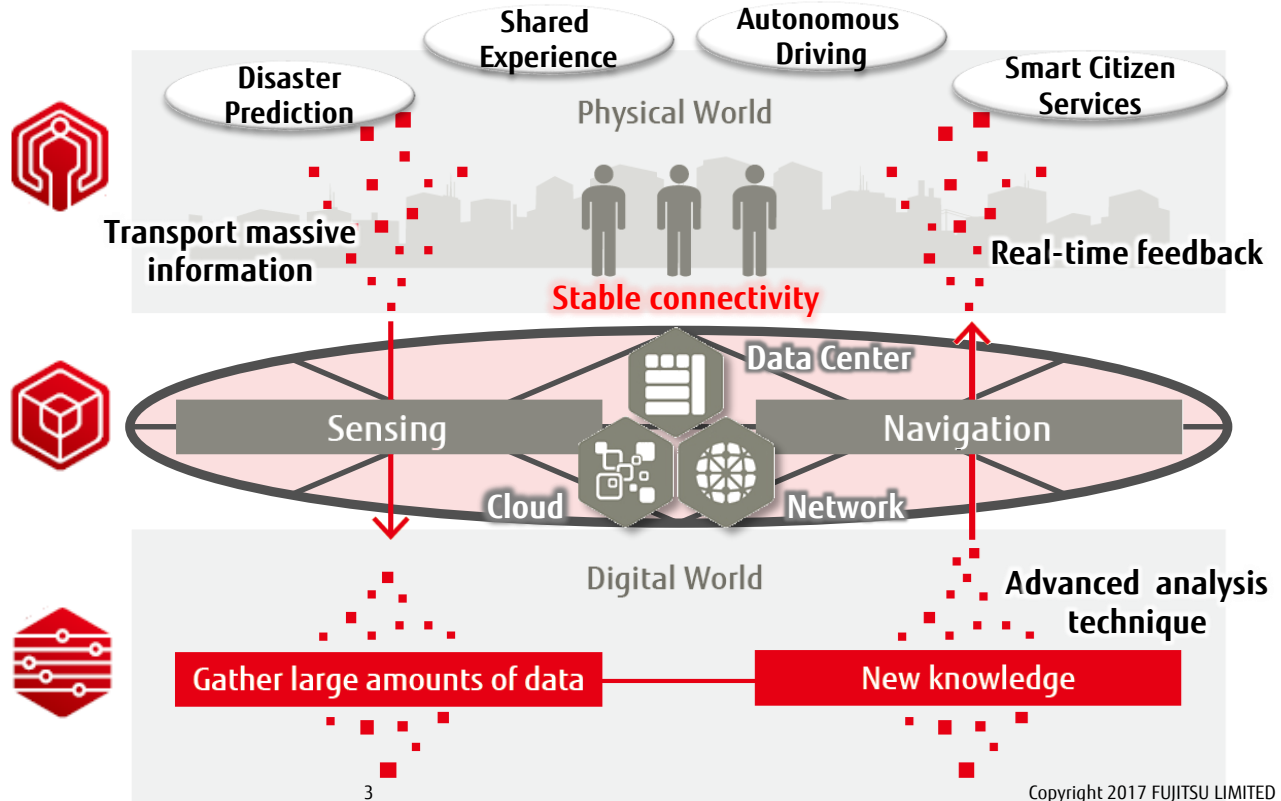
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5G changes the world

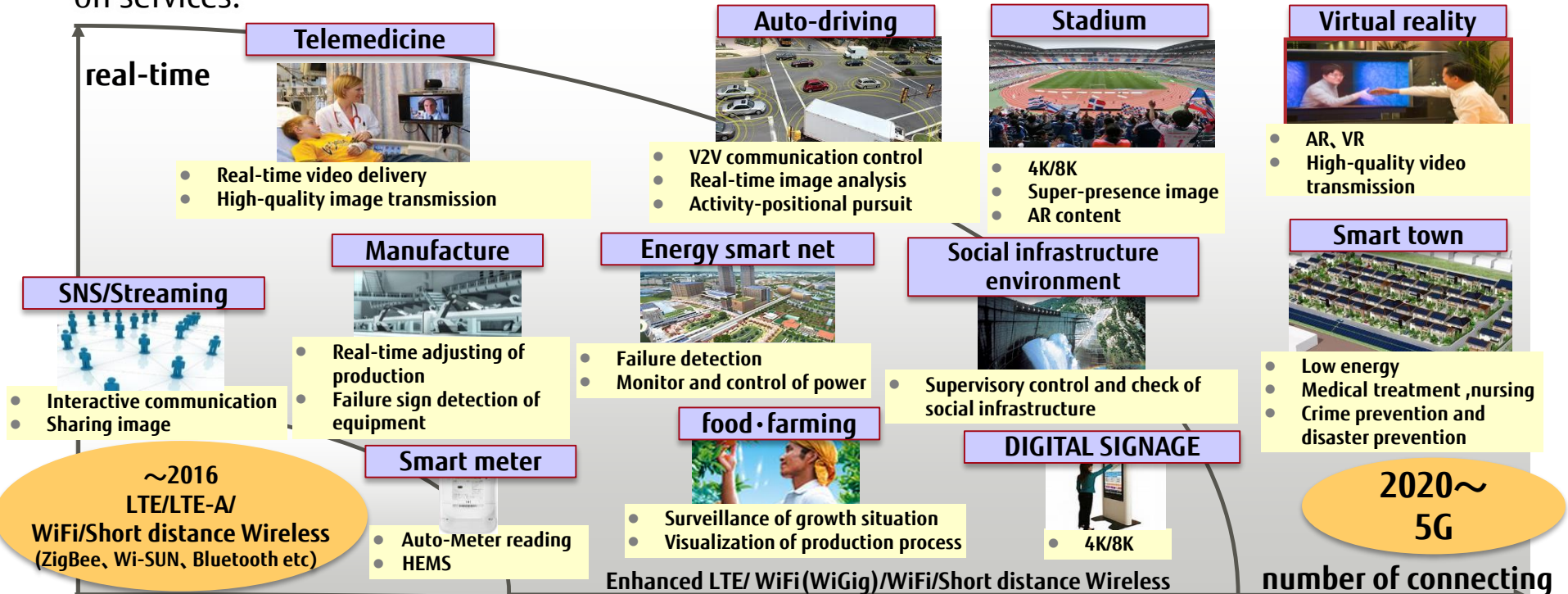
5G : The basic technology connecting the Physical world and the digital world

5G is the most important foundation which supports social development in future world and essential baseline for human centric intelligent society which sustains human centric world.



IoT : Spreading New World

- A wide variety of things connects to the network, and new service is created by the combination.
- Network is required to transmit various data by appropriate format, time and connection depending on services.





Global Mobility Growth

Mobile Broadband Drives More Connected Subscribers and Connected Things

The Internet of Things will make
connected wearable devices,
sensors, vehicles and industrial equipment
an everyday reality.

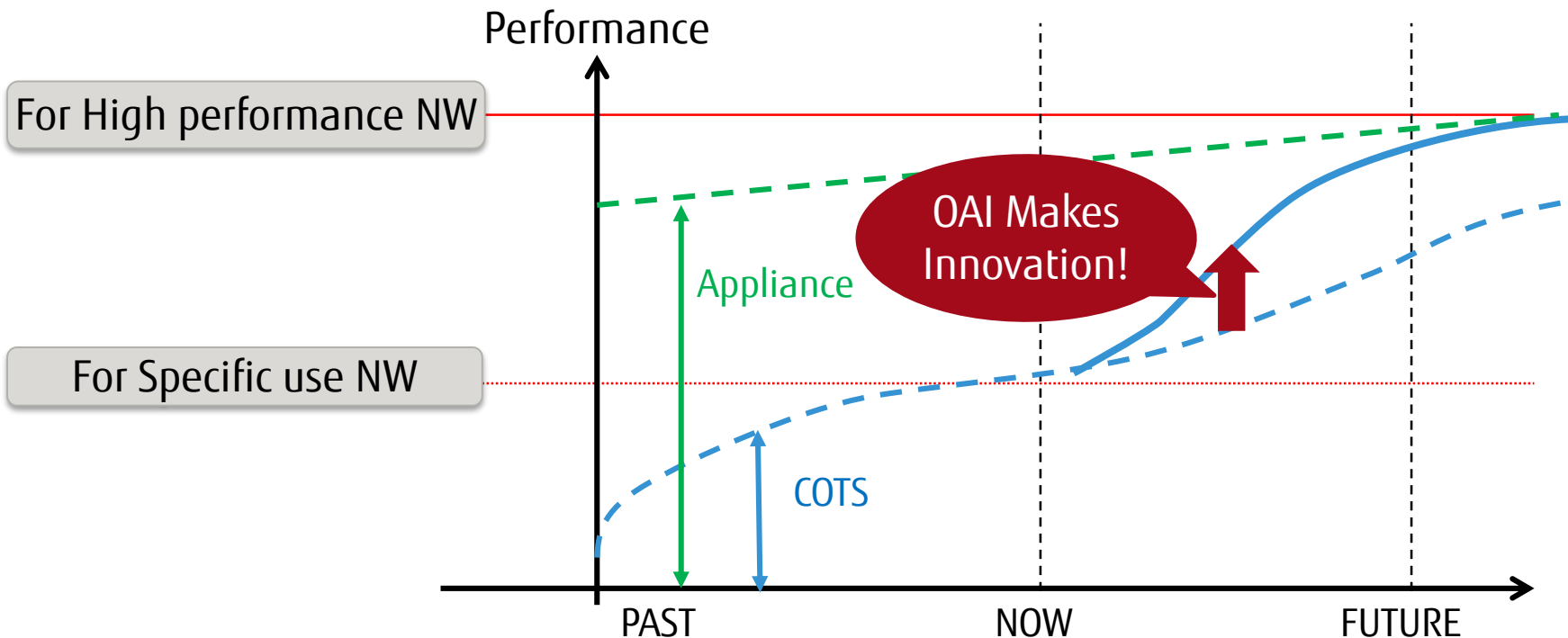
OAI community and Fujitsu

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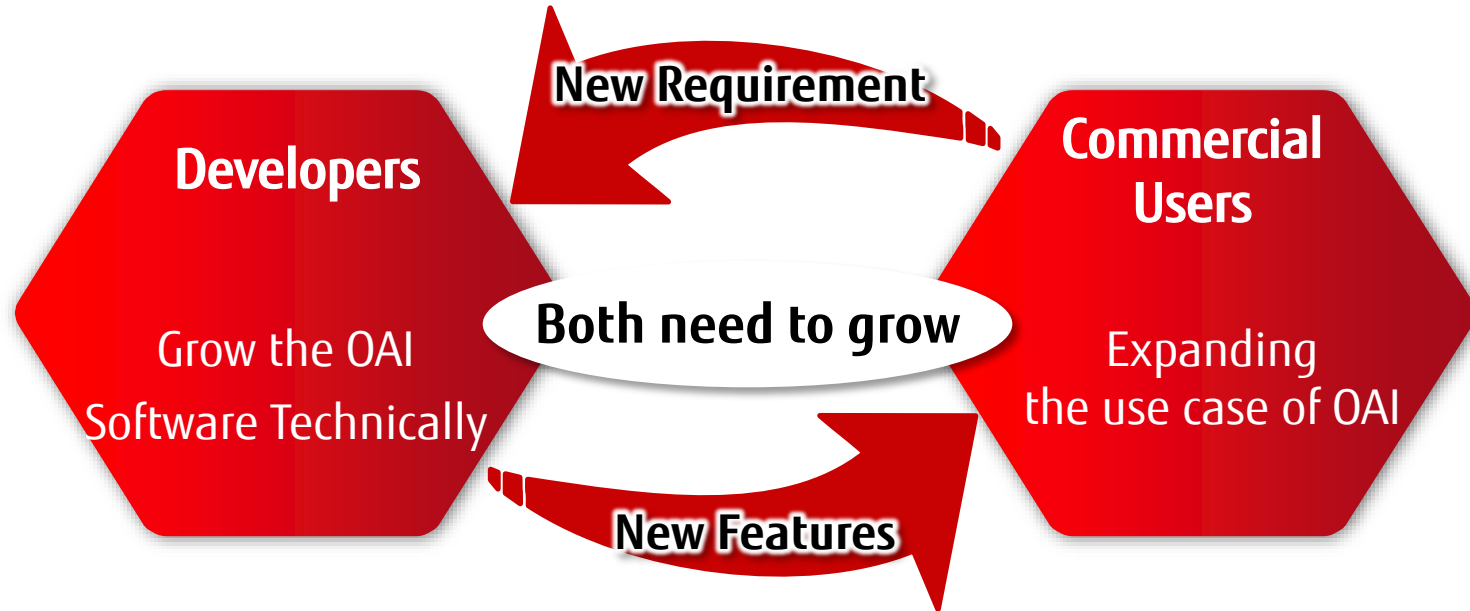
Transformation "Appliance" to "COTS"

OAI drives transformation from Appliance to COTS



Growth of OAI Software and Community

Both Developers & Commercial Users are necessary



What we can do

In order to expand OAI use cases, we can utilize Fujitsu's various ICT solutions

Systems Product

- Hardware (Server, storage)
- Software (operating system, middleware)



FUJITSU Supercomputer
PRIMEHPC FX10



FUJITSU Server
PRIMERGY



FUJITSU Storage
ETERNUS

Infrastructure Services

- Data Center, SaaS
- Network Service



Network Products

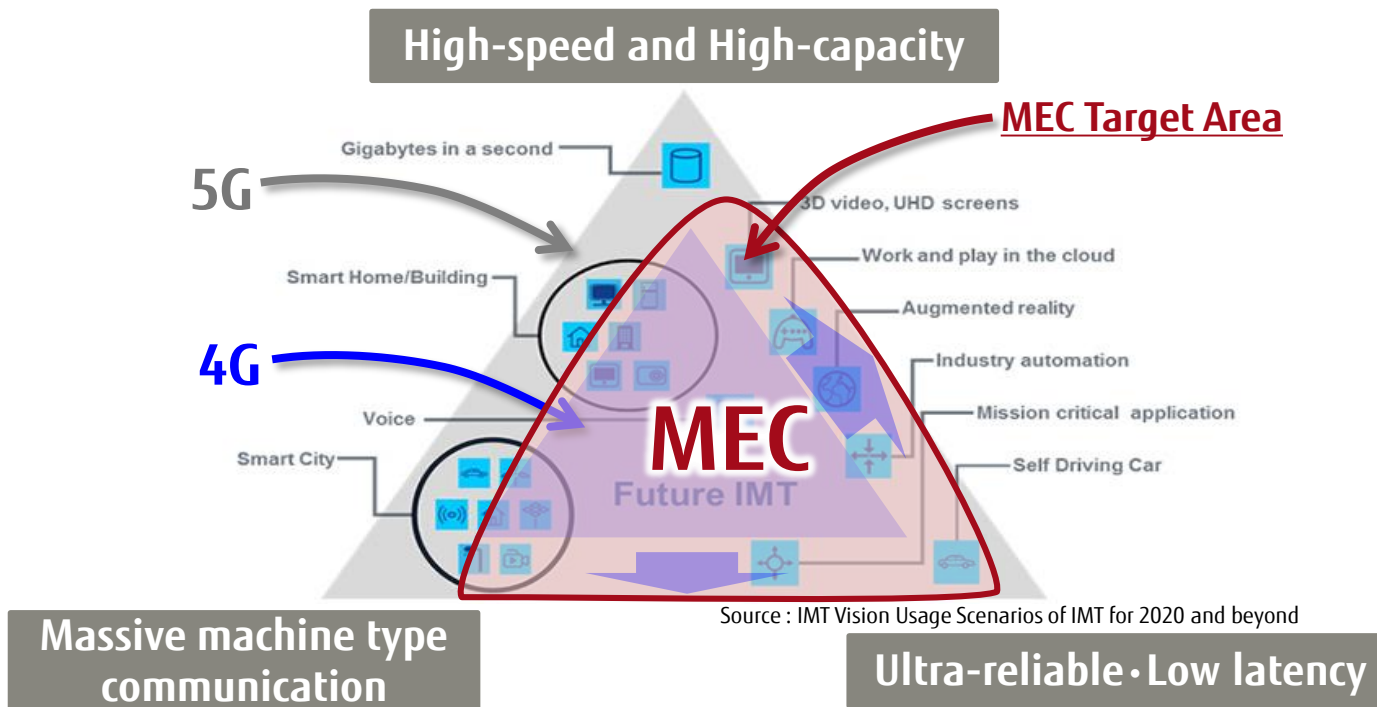
- Network Management Systems
- Optical Transmission Systems
- Mobile Phone Base Stations

Solution / System Integration

- Systems Integration
(system construction, business applications)
- Consulting
- Front-end Technologies
(ATMs, POS systems etc.)

Advancement of OAI use case by MEC

OAI & MEC provide the 5G services in advance



Approach of Fujitsu

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Performance meas. of OAI

Testing is ongoing to determine which configuration is the best for target use case

w/o Virtualization

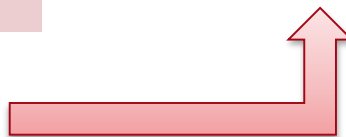
Configuration	HW Spec	Throughput(5M BW)	Throughput(10M BW)
OAI-eNB	CPU:E5-2667v4	15.0Mbps(1UE)	34.5Mbps(1UE)
OS(Ubuntu)	Clock:3.2GHz	16.0Mbps(2UE)	34.2Mbps(2UE)
Xeon	# of Core:16		
OAI-eNB	CPU:D-1521	15.0Mbps(1UE)	34.1Mbps(1UE)
OS(Ubuntu)	Clock:2.4GHz	15.9Mbps(2UE)	35.0Mbps(2UE)
Xeon-D	# of Core:4		

with Virtualization

Configuration	HW Spec	# of core	Throughput(20M BW)/CPU Utilization
OAI-eNB	CPU:E5-2667v4	16 core	51.6Mbps / 30.6% (Required # of CPU core estimated from CPU utilization: 4.9core)
OS(Ubuntu)	Clock:3.2GHz		
KVM	# of Core:16		
Xeon			
OAI-eNB	CPU:E5-2667v4	4 core	61.7Mbps / 22.1% (Required # of CPU core estimated from CPU utilization: 0.9core)
OS(Ubuntu)	Clock:3.2GHz		
Fujitsu HyperV	# of Core:16		
Xeon			

First Target

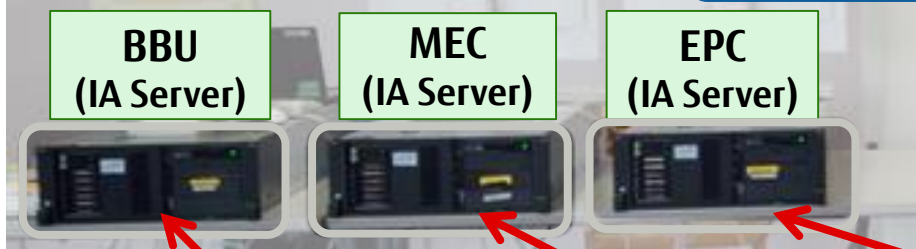
Feature	Mar. 2018
Duplex	FDD
BW	5/10/20MHz
DL T-put	75Mbps@20M BW
# of UEs	128
Mobility	~15km/h



OAI/MEC testbed configuration

MEC Demo System (Software Based)

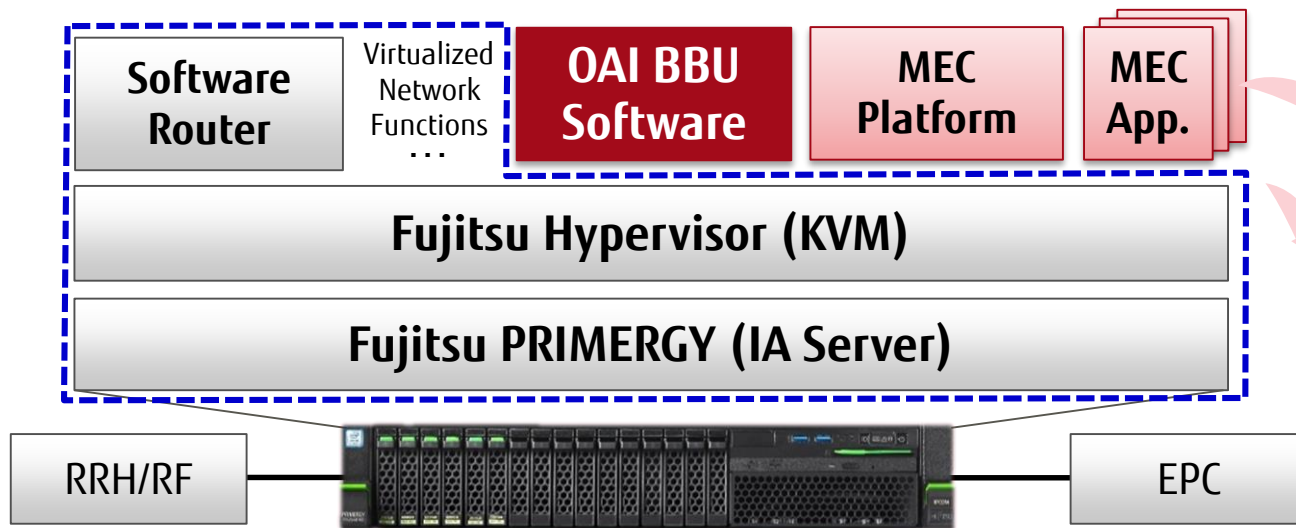
The following equipment + General RF devices can make LTE/MEC demo system



	BBU	MEC	EPC
IA Server	PRIMERGY RX2560 M2	PRIMERGY RX2560 M2	PRIMERGY RX2560 M2
CPU	Xeon E5-2667v4 (3.20GHz/8Core/25MB)x2	Xeon E5-2690v4 (2.6GHz/14Core/35MB)x2	Xeon E5-2667v4 (3.20GHz/8Core/25MB)x2
Memory	64GB	64GB	64GB
HDD	600GB	3000GB	600GB
10GBASE / 1000BASE-T	4 Port / 2 Port	6 Port / 2 Port	4 Port / 2 Port

Virtualized configuration

Flexible relationship between software and hardware,
in order to have the scalability of network performance



Challenges to use in commercials

- What is the best configuration for target use cases?
- How to realize Operation and Management?
- Which UEs performed the interoperability test?
- How to maintain the stability of software?



Field trial is effective!

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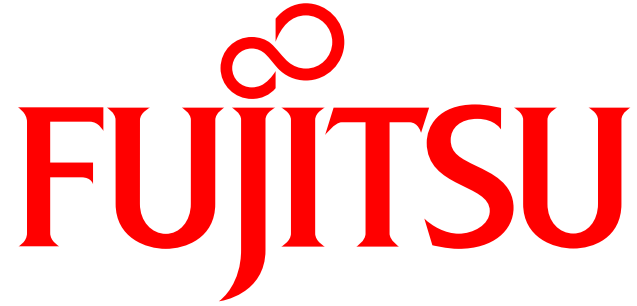


0AI can be the center of network innovation toward 5G

FUJITSU supports to make the community more active

**Technical point of view
and
Commercial point of view**

Bridging 'Digital World' and 'Physical World' by '5G' and '0AI'



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