

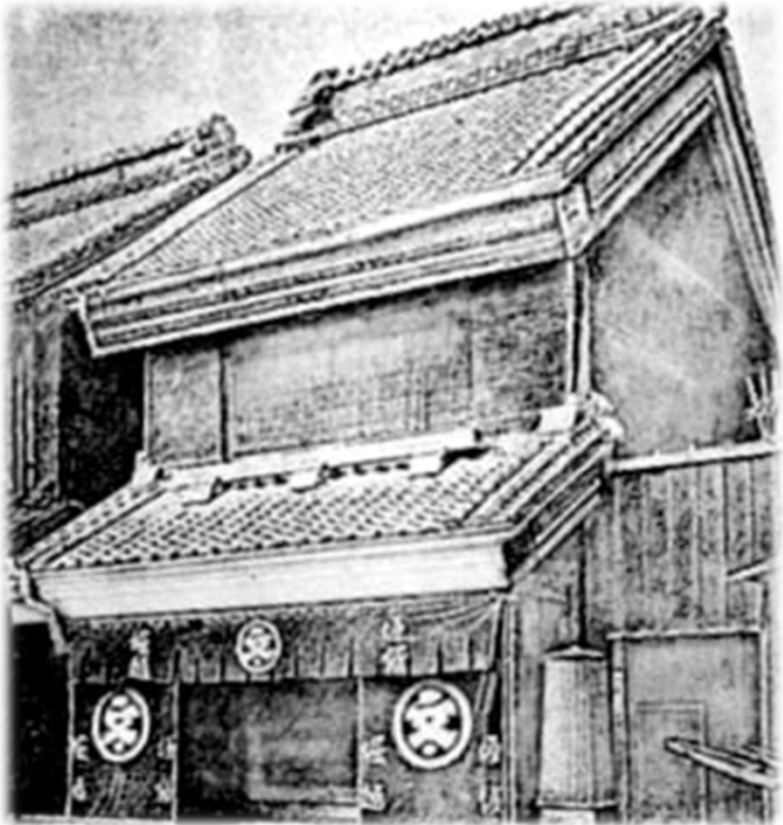
Local 5G - Japan Perspective

June 9, 2023
Takaya Murakami
Deputy Director, Iris Company, Entrepreneur Business Div.
Marubun Corporation

IRIS
COMPANY



Our Headquarters in 100+ years ago



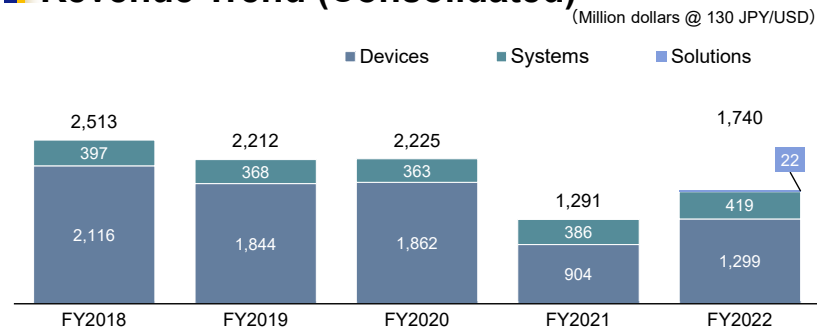
Profile

Founded	1844
Incorporated	July 1947
Head Office	8-1, Niihonbashi Odenmachi, Chuo-ku, Tokyo
Capital	6,214 million yen
Fiscal Year	Apr.1-Mar.31
CEO	Toru Iino
Revenue	Consolidated : 1,740 million dollars (FY22) Non-consolidated : 1,347 million dollars (FY22)
Employees	Consolidated : 1,117 (end of Mar.2023) Non-consolidated : 588 (end of Mar.2023)
Listed	Tokyo Stock Exchange Prime Market (Code: 7537)

Business Domains

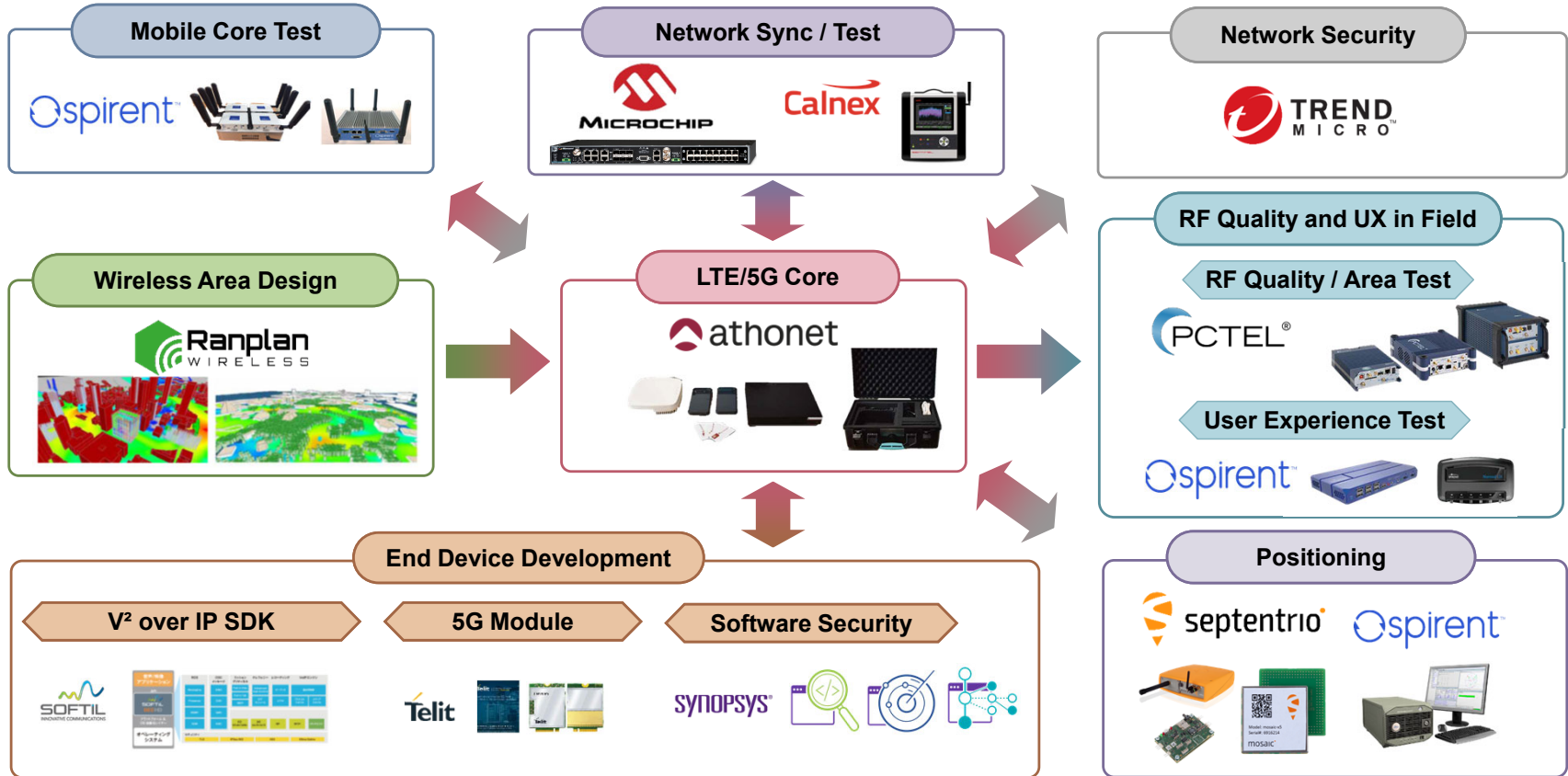
Devices Business	Systems Business	Solutions Business
<ul style="list-style-type: none"> Semiconductors Electronic Components 	<ul style="list-style-type: none"> Space & Defense Electronics Industrial Equipment Laser Equipment Medical Equipment 	<ul style="list-style-type: none"> ICT Solution AI & Robotics

Revenue Trend (Consolidated)



Provide the products and services from more than 800 suppliers to over 3,000 customers

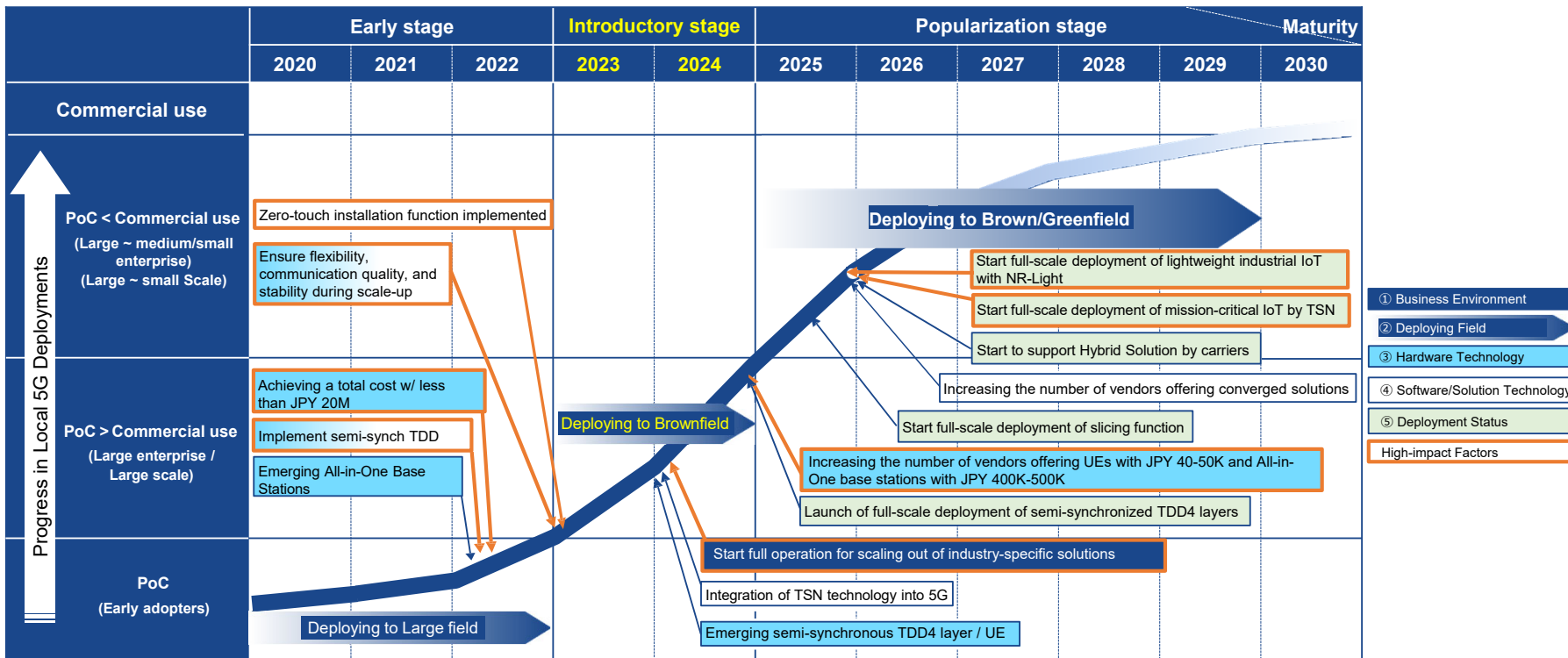
Local 5G Line up



Local 5G spread roadmap by 5G-driven Social Design Consortium

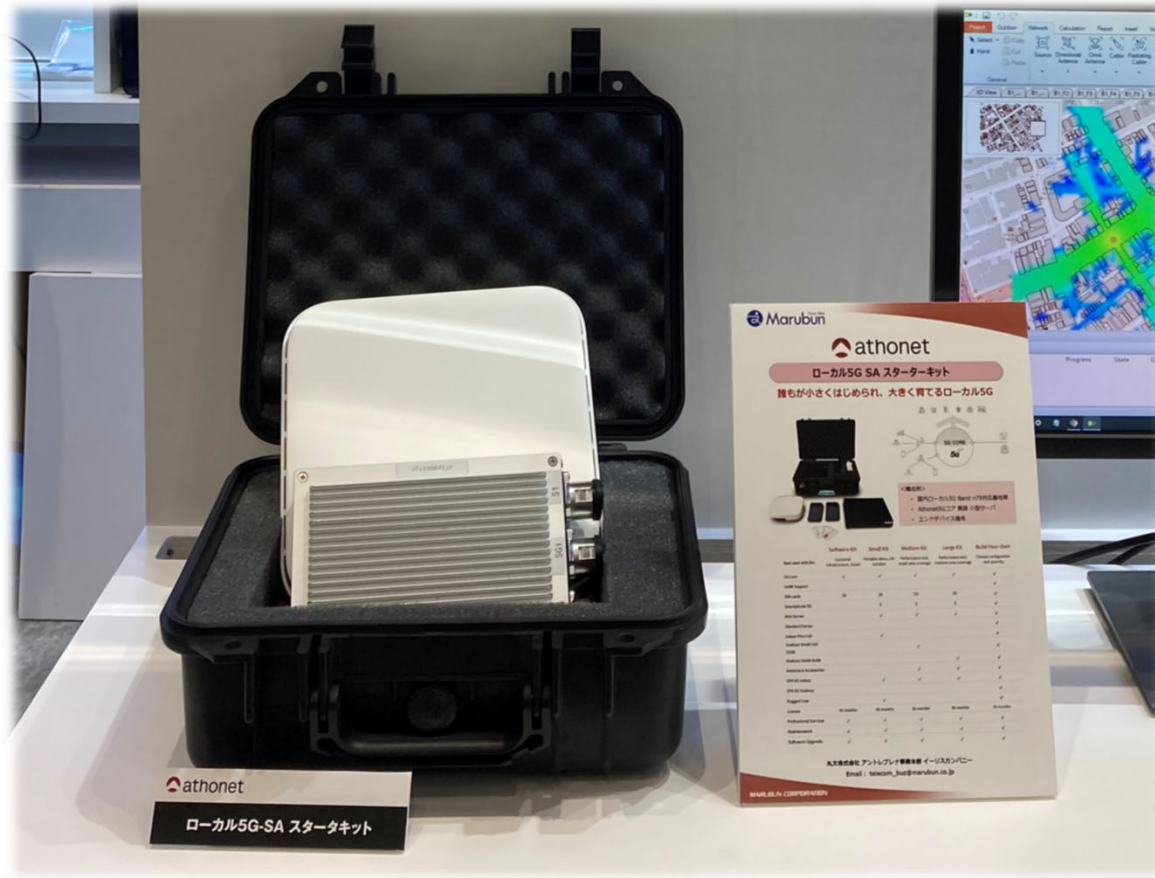
The local 5G market in Japan has passed through the introductory stage, where the focus to scale out of industry-specific solutions, to the popularization stage, driven by a variety of industrial IoT.

The key points to move to the next stage will be **low-cost All-in-One base stations/zero-touch installation** to expand the user base.





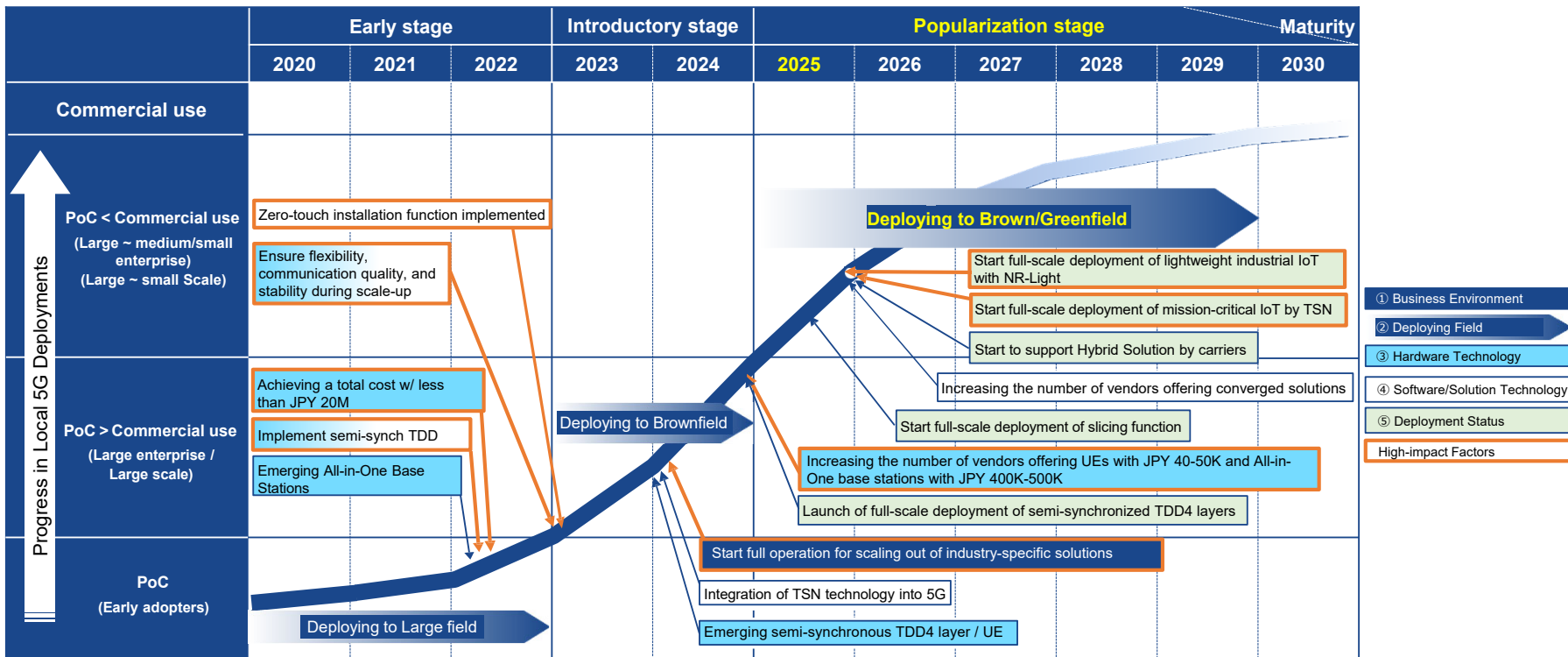
Athonet Local 5G Starter Kit



Local 5G spread roadmap by 5G-driven Social Design Consortium

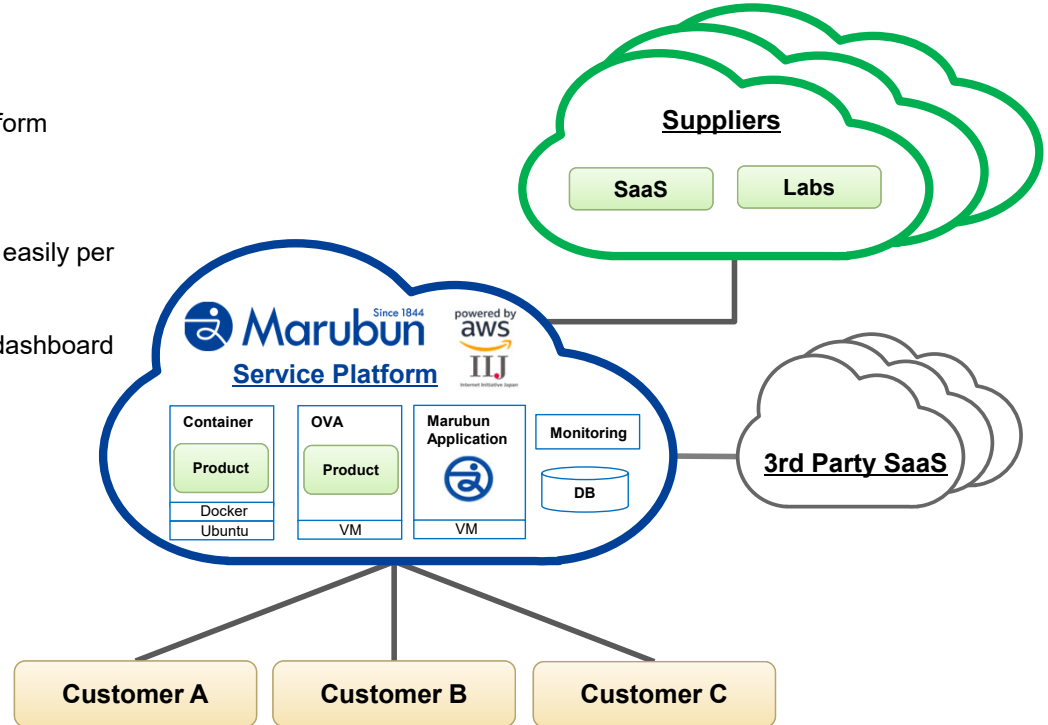
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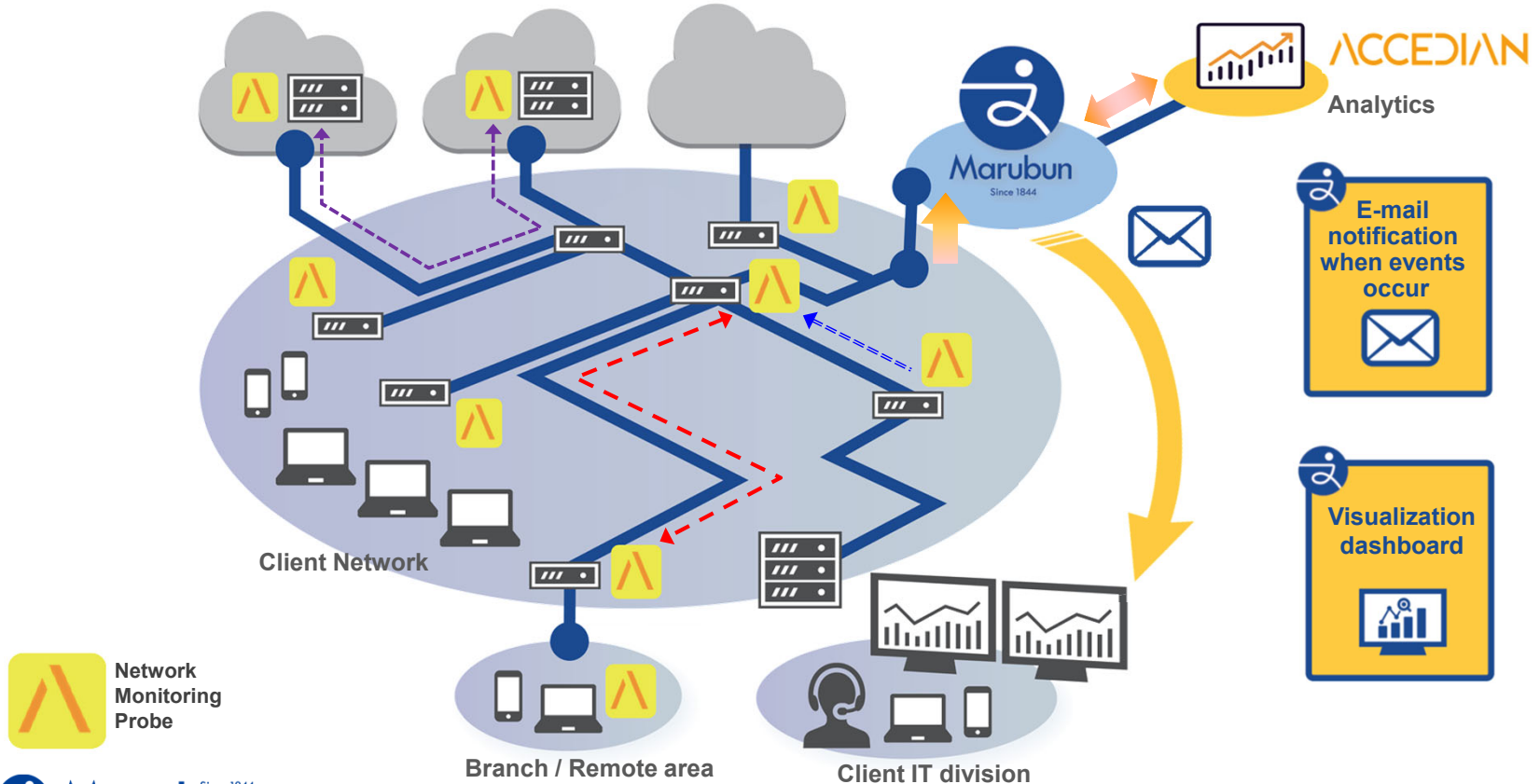


Provide “Service” by Marubun

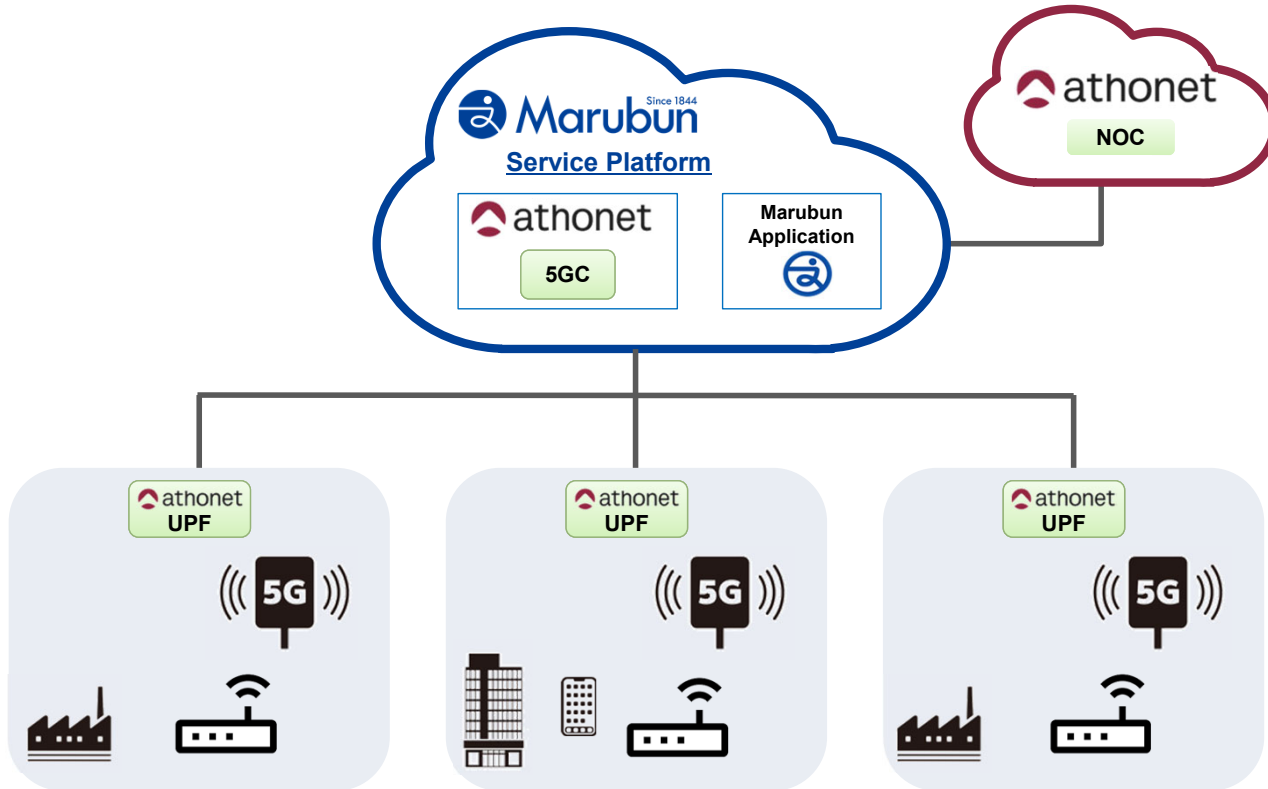
- Flexible to deploy Supplier’s products
 - Docker and/or OVA image can be installed on our platform
 - Multi-cloud connection (e.g., AWS, Azure, GCP)
- Marubun Application & Relational database
 - Scratch build application so that we can add functions easily per customer/supplier’s request
 - Online maintenance service (e.g., F/W Upgrade)
 - Data collection and processing for Visualization on dashboard
 - Alert service
 - and more..
- 24/365 Operation & Maintenance
 - Co-work with AWS premier tier service partner
- Higher quality customer success
 - Linked to 3rd party SaaS
 - FAQ system
 - Manual database
 - Knowledgebase
 - Provide several services via customer portal



Network Monitoring Service “Net Predy”



Local 5G Infrastructure as a Service (Under Consideration)



DX Solution for Manufacturing and Logistics Sites

AI Training, Verification & Analysis



Cross Compass

Network Visualization & Monitoring



Process Management



Synapse innovation



UMSaaS Cloud

Human Authentication & Object Detection AI



IoT Platform

DENSO
DENSO WAVE



Sensing + AI Condition monitoring/preventive maintenance



Leading EDGE COMPUTING



DENSO
DENSO WAVE



Auto-ID

DENSO
DENSO WAVE



Rewritable Laser System

RICOH



Automatic Guided Vehicle



Edge PC

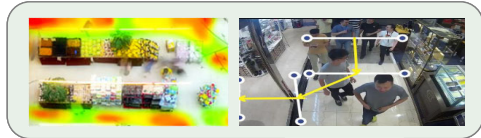


Leading EDGE COMPUTING



Collaborating DX Solution with L5G IaaS Service (Under Consideration)

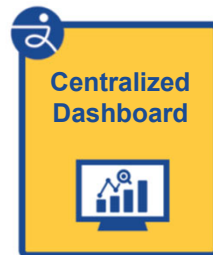
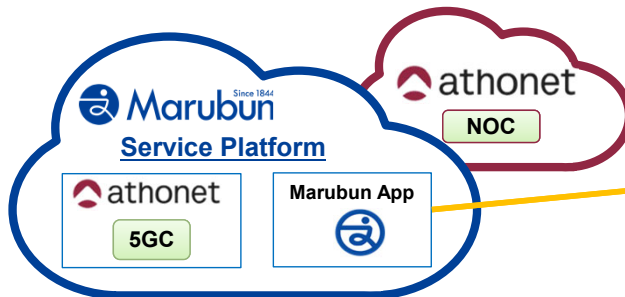
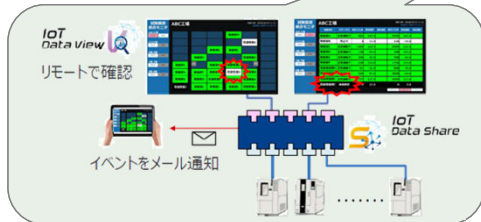
Monitoring of People Flow, Flow Lines & Stagnation



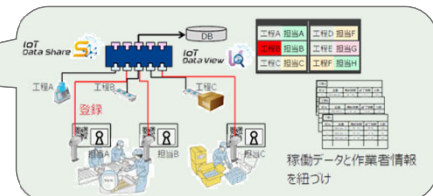
Energy Monitoring



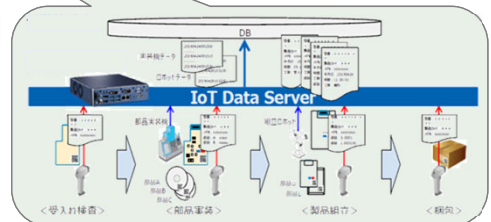
Monitoring of Facility Operation

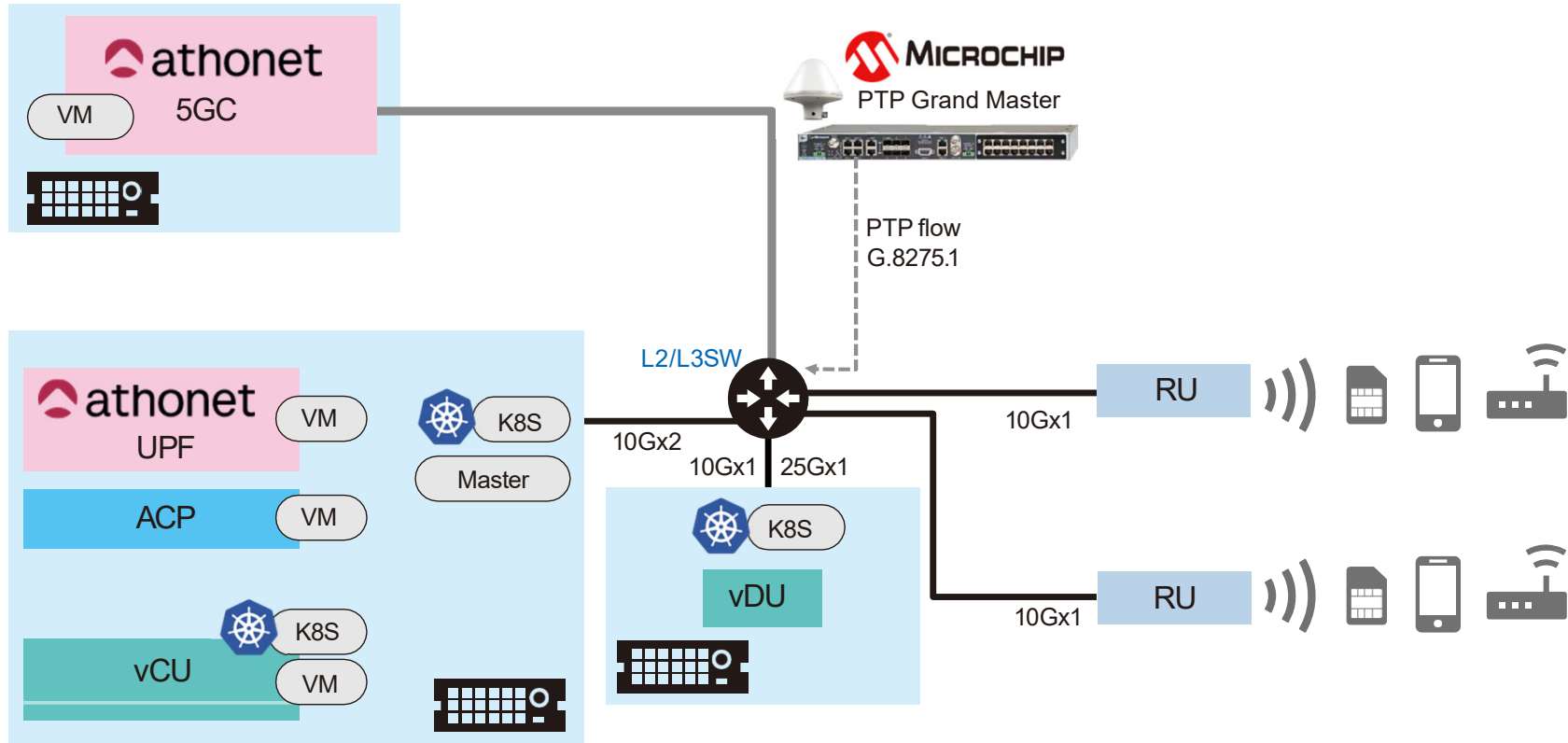


Working Data Linkage



Data Time Synchronization





Field Testing

OutdoorLayout_Src3

Marubun Since 1844

OutdoorLayout_Src1

OutdoorLayout_Src2

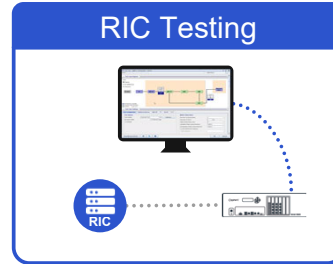
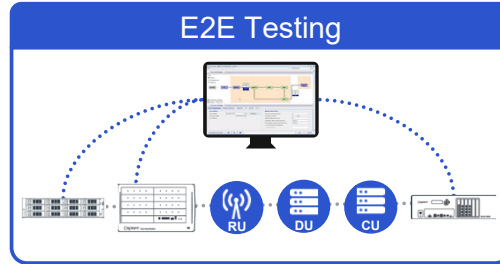
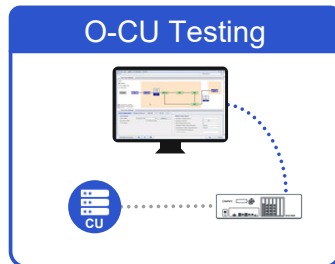
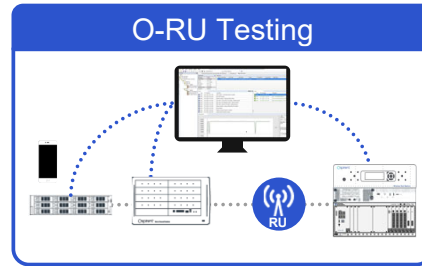
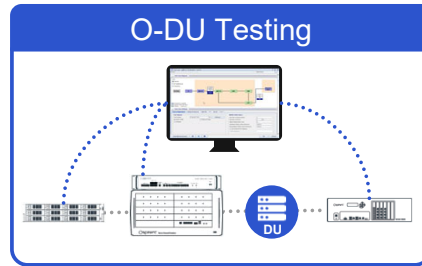
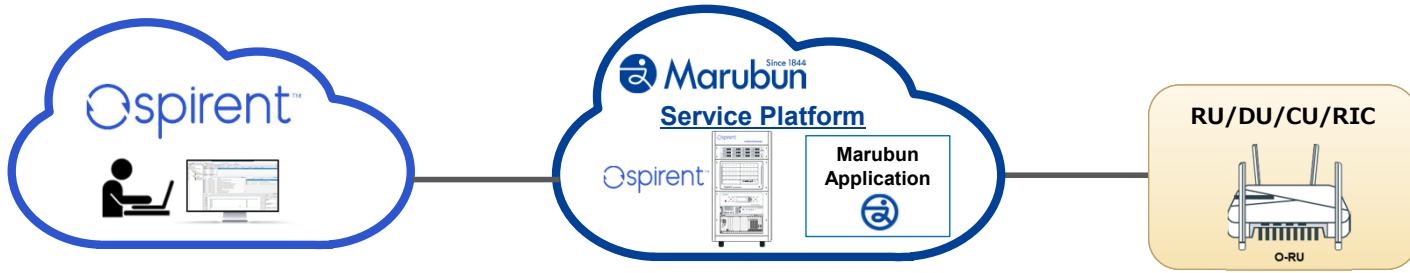
Ranplan
WIRELESS

PCTEL
Three hardware devices: a laptop with a PCTEL card, a rack-mounted unit, and a smaller unit.

Spirent
Two hardware devices: a rack-mounted unit and a smaller unit.

Two software screenshots showing signal strength graphs and maps.

Local 5G & O-RAN Test as a Service (Under Consideration)



■ 2000-2022: Early Stage

- PoC is more than commercial use
- Meets one target of total cost under JPY 20M per site.
- “Semi-synchronous TDD2 layer” was implemented at terminal side to ensure 0.5 Gbps for uplink of video transmission.

■ 2023-2024: Introductory Stage

- Commercial use is getting increase, but PoC is still more than it.
- The key point is to overcome the challenges of "flexibility when scaling up" and "assurance of communication quality and stability," which were pointed out by many users.
- “low-cost All-in-One base stations” and “zero-touch installation” is also the key point for spreading industry.

■ 2025-: Popularization Stage

- Marubun is open to discuss about business model with anyone who plan to enter L5G market in Japan.

IRIS COMPANY



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