



Interface to the Future
- Solution by Smart Connectivity -

THine Electronics, Inc. (TSE: 6769) FY2022 Business Results and Opportunities

2023.02.03

Mid-term Strategy from 2022 to 2024

5G&Beyond-NE

TODAY'S AGENDA

- Corporate outline
- Business results in FY2022
- Future opportunities under mid-term strategy, “5G&Beyond-NE”

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Corporate outline

- Company Name THine Electronics, Inc.
(listed on Tokyo Stock Exchange, code: 6769)
- Founder & CEO Tetsuya Iizuka, Ph. D
- President & COO Yoichiro Minami
- Capital 1,175 million Yen
- Founded May, 1991
- Incorporated June, 1992
- Business Area Planning, Designing and Sales of Mixed Signal LSI and
Providing AI & IoT devices and solutions
- Employees 128 (as of December 31, 2022)



THine teams



Korea

THine Electronics Korea, Inc.
Seoul, Korea
Established in Mar. 2010

United States

THine Solutions, Inc.
Santa Clara, CA USA
Established in Feb. 2018

China

賽恩電子香港股份有限公司
THine Electronics Hong Kong, Co., Ltd.
Established in Nov.2012
前海賽恩电子(深圳)有限公司
THine Electronics Shenzhen, Co., Ltd.
Established in May 2013
上海分公司
Established in Oct.2013



Tokyo – Headquarters –



Tokyo, Japan
Start-up in May 1991

Cathay Tri-Tech

Yokohama, Japan
Acquired in Dec., 2018

Taiwan

哉英電子股份有限公司
THine Electronics Taiwan, Inc.
Taipei, Taiwan
Established in Sep. 2000



Business area

Product and solution

Application market

LSI
Biz.

<High-speed interface LSI>

V-by-One[®] HS plus

V-by-One[®] HS

V-by-One[®]

LVDS

High Speed Redriver

<Image signal processing>

Image Signal Processor

Camera Development Kit Solution



- Camera solution: automotive cameras, security cameras, AR/VR, recognition camera, medical cameras, etc.
- Display solution: high-resolution displays such as 8K / 4K, gaming monitors with high refresh rate, automotive CID, etc.
- Mobile, PC, and single board computers
- OA (multi-function printers)
- Industrial equipment
- Amusement



AI
&
IoT
Biz.

<Wireless modules>

5G/LTE/NB-IoT

<AI&IoT devices and solution>

IoT Gateway / Router

Edge AI Processor / Module

AI & IoT Solution



- Mobile terminals
- AI thermography with facial recognition to prevent from COVID-19 risks
- Smart parking system (recognition and wireless communication)
- IP transceivers, GPS tracker
- AED monitoring modules
- Remote monitoring module for vending machines and cashless payment terminals
- Drive recorders with wireless modules



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Financial performance in FY2022

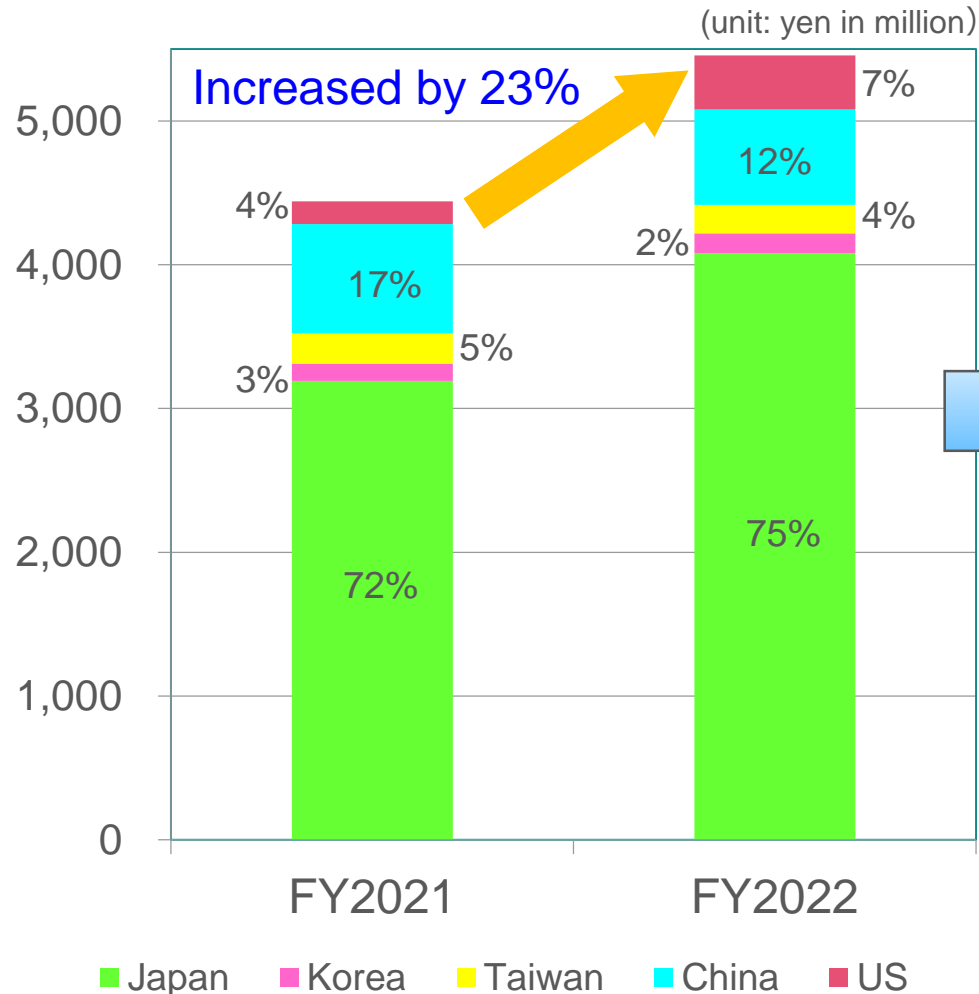
► Consolidated financial results

(yen in million)

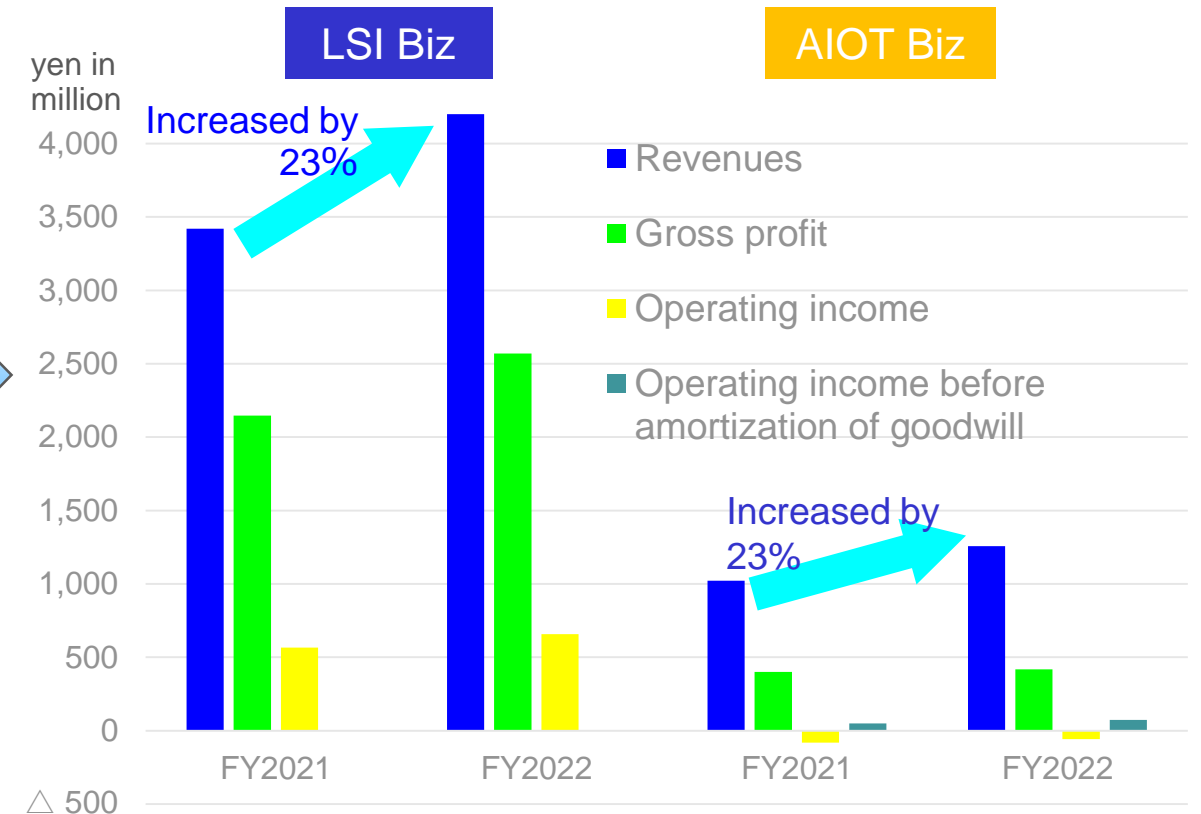
	FY2022			FY2021	
		Portion%	YoY		YoY
Revenues	5,456	100.0	122.9	4,441	100.0
Gross Profit	2,987	54.8	117.2	2,549	57.4
SG&A	2,386	43.7	115.7	2,063	46.4
(R&D expenses)	1,009	18.5	126.0	801	18.1
Operating Income	601	11.0	123.7	485	10.9
Ordinary Income	906	16.6	129.8	698	15.7
Net Income Attributable to Owners of the Parent	820	15.0	112.7	727	16.4

Financial performance in FY2022 by region and segment

▶ Revenues by region



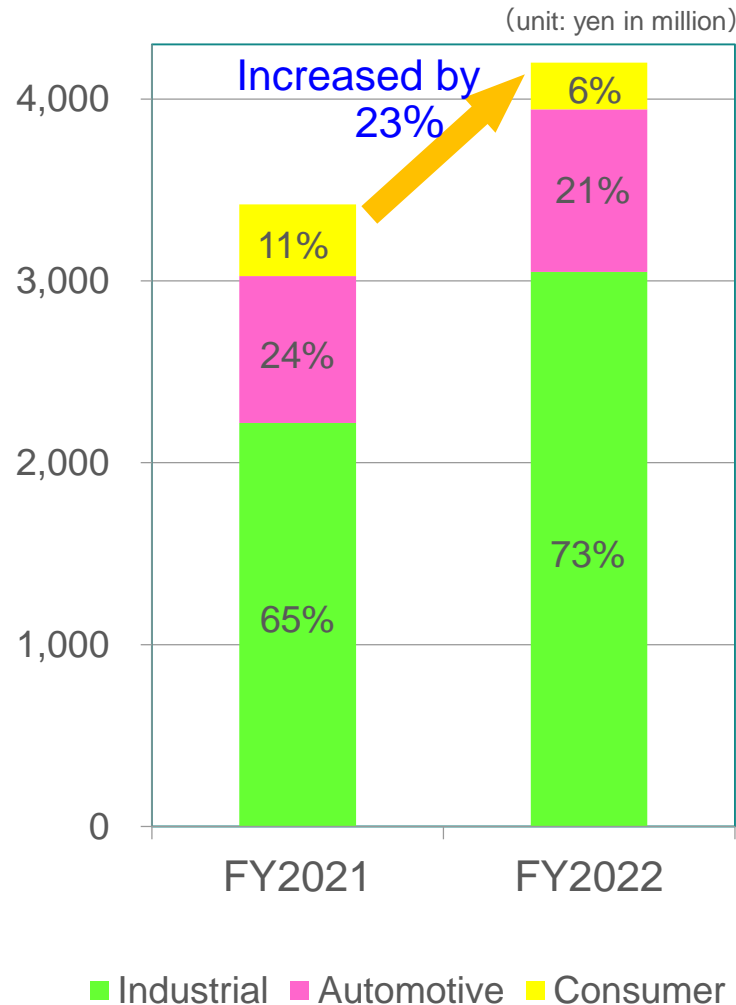
▶ Revenues by segment



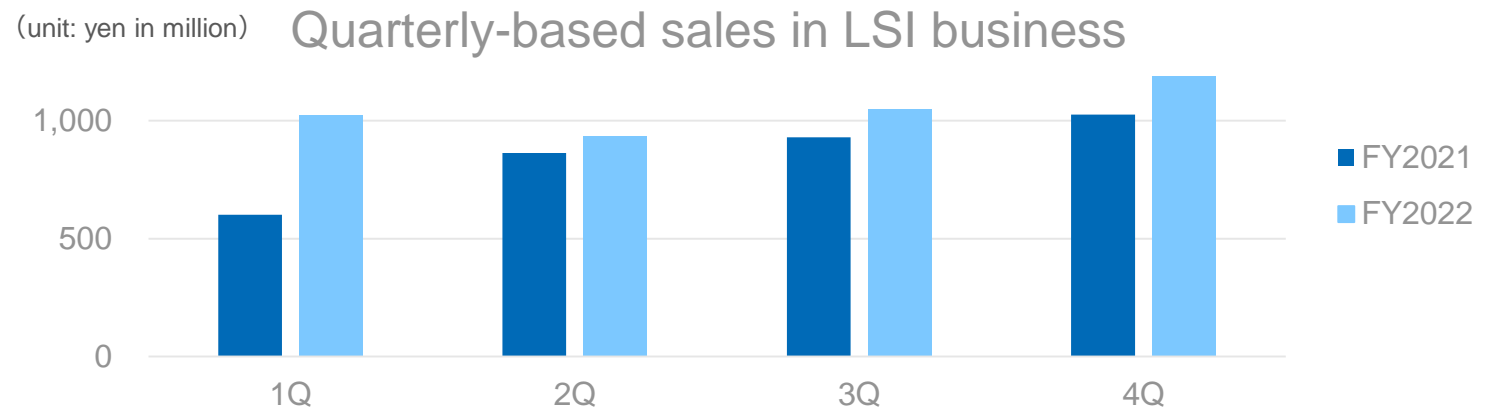
- ▶ Both of LSI and AIOT Biz achieved increase in sales and gross profit.
- ▶ LSI Biz made continuous growth especially in Japan and US.
- ▶ AIOT Biz made successful achievement in 2H while struggled in 1H.

Financial performance of LSI business by application markets

► Revenues of LSI business by application

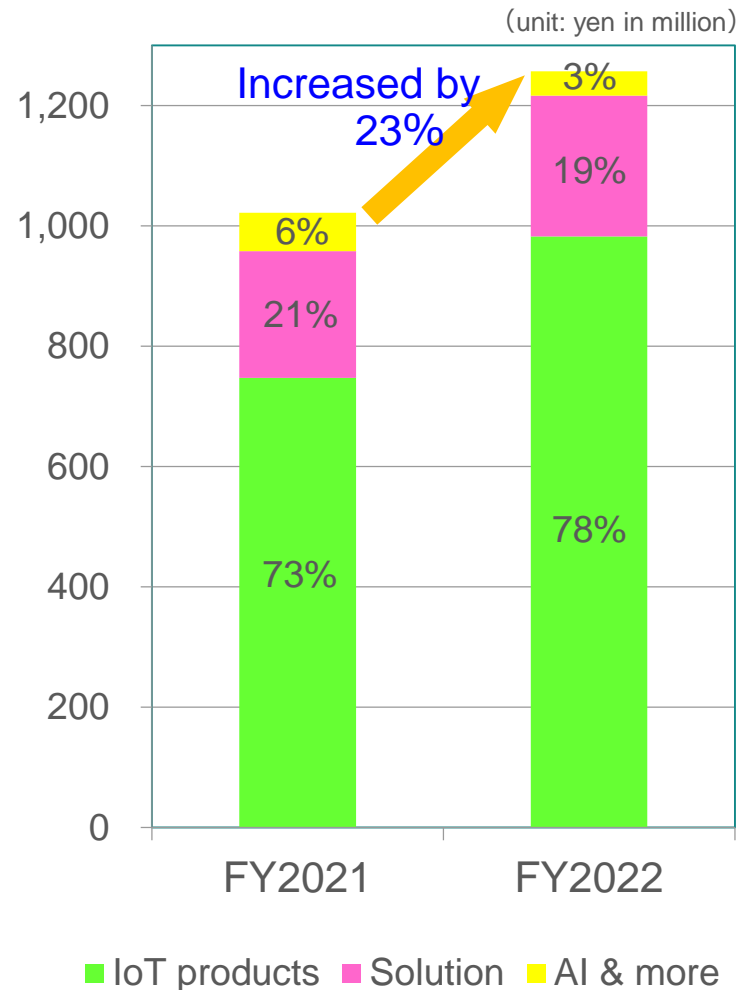


Analysis	
Industrial (73%)	<ul style="list-style-type: none"> • Successful achievement of sales amounts in OA and amusement with good business increase by +17% and +38% respectively • Rest of industrial application made great sales increase by +28%
Automotive (21%)	<ul style="list-style-type: none"> • In US market, achieved extraordinary increase by +185% • In China market, faced relatively struggling situation • Totally achieved good increase by +11%
Consumer (6%)	<ul style="list-style-type: none"> • YoY-based decrease by 35%



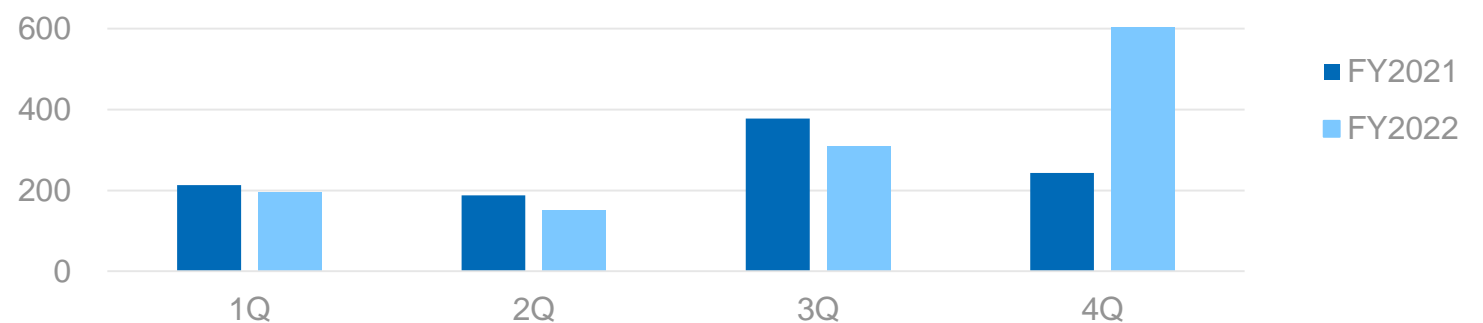
Financial performance of AIOT Business by segment

► Revenues of AIOT business segments



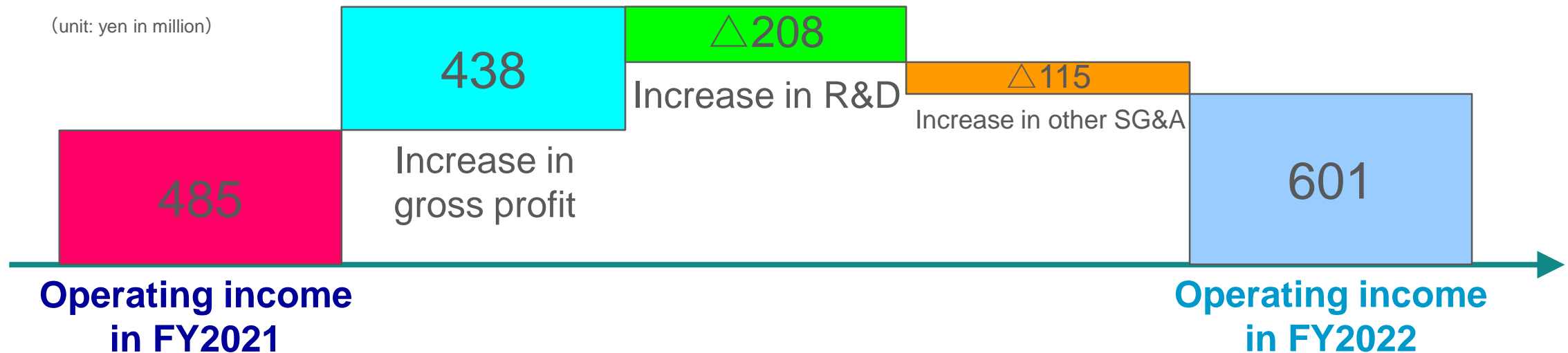
Analysis	
IoT products (78%)	<ul style="list-style-type: none"> Achieved great increase in wireless communication modules by +39% Started sales for another large-amount customer from 4Q Business situation recovered from 3Q drastically while struggled by lockdown effects in China until 2Q
Solution (19%)	<ul style="list-style-type: none"> Achieved healthy increase by +11% while some customers while some customers delayed their business
AI & more (3%)	<ul style="list-style-type: none"> YoY-based decrease by 37% Exit from COVID-19 affected demands in AI-based thermometers

(unit: yen in million) Quarterly-based sales of AIOT business



Financial performance in FY2022

- ▶ Reason of changes in operating income
 - Achieved another great increase of gross profit by +17%, consequently after great increase in FY2021
Gross profit of LSI business made consequent and great increase by +17%
Gross profit of AIOT business also made healthy increase by +4% while struggled until 2Q affected by lockdown in Shanghai, China
 - Made intensive investment in research and development (R&D) with JPY1,009M, increased by +26%:
enhanced V-by-One[®]HS line-ups for camera applications and developed kit-based V-by-One[®]HS solution, high-speed serial transceiver products, advanced redriver products, modules for edge AI, gateway products supporting voice communication, etc.
 - ※ Also continued government-contracted R&D project using 300GHz communication mostly at the cost of MIAC



Financial performance in FY2022

- ▶ Intensive investment in R&D
- R&D investment plan in FY2022: JPY1,175M

R&D plan in FY22



Actual R&D investment in FY22

- JPY1,009M
- compared to the plan: 86%
- compared to FY21: 126%



- MIPI-support V-by-One[®]HS products for 4K cameras
- Redriver technology
- High-speed serial transceiver products
- Voice-communication-support drive recorder products
- Modules for edge AI processing
- Voice-communication-support gateway products
- High-speed wireless communication technology applicable to 1000Gbps data transmission (beyond 5G), etc.

Financial performance in FY2022

► Outline of Balance Sheet as of the end of December, 2022

(unit: yen in million)

Assets			Liabilities and Net Assets		
	End of FY22	End of FY21		End of FY22	End of FY21
Cash and Cash Equivalent	7,302	7,743	Account Payable	282	286
Account Receivables	1,058	618	Other Current Liabilities	515	391
Inventories	1,048	555	Non-current Liabilities	136	131
Other Current Assets	358	319	Shareholders' Equity	9,494	8,764
Property, Plant and Equipment	206	92	Accumulated Other Comprehensive Income	59	58
Intangible Assets	148	266	Deferred Stock-based Compensation	128	193
Investments and Others	547	271	Non-controlling Interests	52	40
Total Assets	10,669	9,867	Total Liabilities and Net Assets	10,669	9,867

► US-dollar-based cash as of the end of FY22 is approximately US\$7M.

► Goodwill by acquisition of Cathay Tri-Tech (AIOT business) is JPY130M in intangible assets. The amortization of goodwill will be completed in

Financial performance in FY2022

▶ Outline of Cash Flow Statements

(unit: yen in million)

	FY2022	FY2021
CF from Operating activity	△191	357
CF from Investing activity	△423	513
CF from Financing activity	△100	△89
Effect of Exchange Rate Changes	273	228
CCE at the beginning of year	7,743	6,732
CCE at the end of year	7,302	7,743

- ▶ increase in net income before tax, AR and inventories
- ▶ investment in Terra Drone and acquisition of PPE
- ▶ Dividend payment and exercise of stock options
- ▶ Exchange rate
JPY115/USD as of the end 2021
JPY133/USD as of the end 2022

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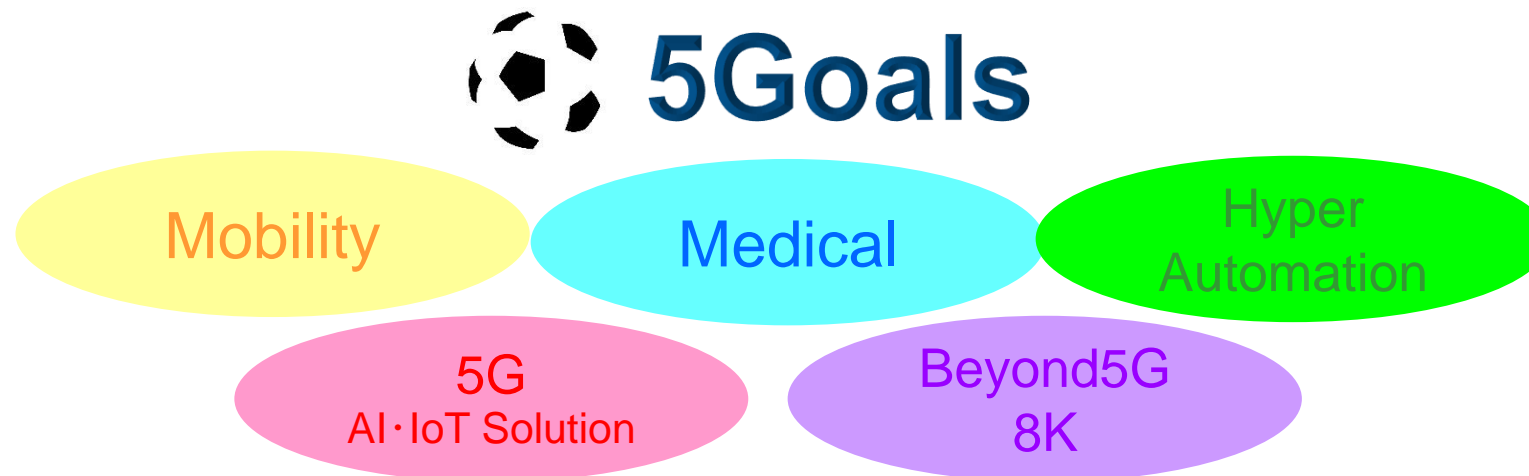
5G&Beyond-NE, the mid-term strategy from 2022 to 2024

▶ Outline of “5G&Beyond-NE”

<Basic strategy>

THine provides differentiated values for customers based on the prior mid-term strategy, “5G&Beyond,” corresponding to business environment, and contribute to customers’ innovation.

THine re-defines “**Strategic 5 Goals**”, focuses on growing application markets, and aims to achieve x3 operating income in FY2024, compared to FY2021.



5G&Beyond-NE, the mid-term strategy from 2022 to 2024



Beyond5G/8K
(contribution to emerging use cases)
Beyond5G technology applicable to
1000Gbps communication and 8K videos



5G/AI•IoT Solution
(contribution to IoT communication)
5G wireless communication
face recognizing solution
smart meters

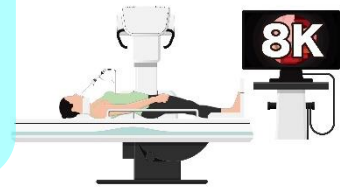
Mobility
(contribution to automotive evolution)
Automotive high-resolution /
multiple cameras and displays



5Goals
&
Beyond

Hyper Automation
(contribution to industrial IoT)
Serialize various IoT sensing data

Medical
(contribution to health care)
Medical cameras (endoscopes)
and high-resolution monitors



5G&Beyond-NE, the mid-term strategy from 2022 to 2024

▶ Action in FY2023

- ① Enhance growing business in **automotive and industrial markets**, contributing to support new use cases of autonomous, unmanned, and remoted situation
- ② Continuously launch new LSI products for **automotive cameras and displays**, targeting automotive markets in China
- ③ Promote products and solutions for **smart IoT communication, including drive recorders and smart meters**
- ④ Cultivate future growing opportunities in **5G, AI&IoT, medical**
- ⑤ Positively invest in **research and development** as well as **talented HR** to create value from new products
- ⑥ Achieve operational excellence in **highly-collaborative sales and production functions**, to meet customers' demand under extremely tight situation in fabrication capacities

5G&Beyond-NE, the mid-term strategy from 2022 to 2024

- ▶ Contribution to high-resolution cameras

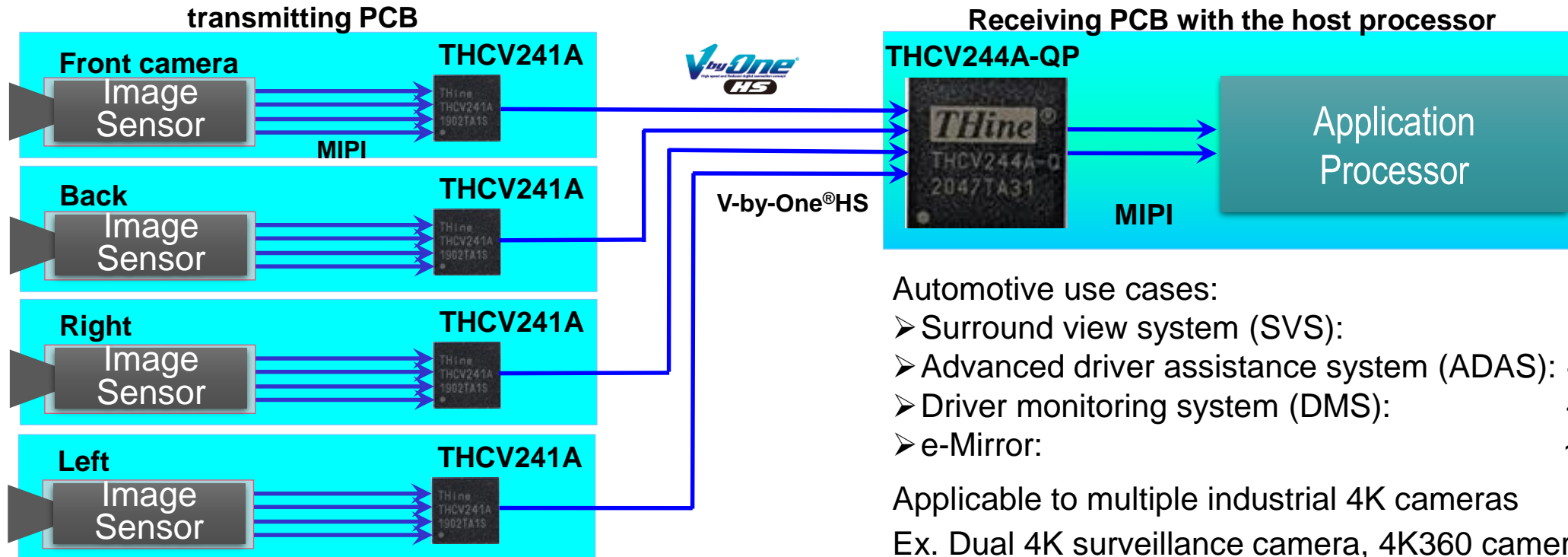
Mobility

Medical

Hyper Automation

4-camera-supporting V-by-One[®]HS

- Receiving max.4-camera images of full-HD60fps
- The lowest power consumption in the industry with enhanced noise tolerance



Automotive use cases:

- Surround view system (SVS): 4 cameras
- Advanced driver assistance system (ADAS): ~ 3 cameras
- Driver monitoring system (DMS): ~ 3 cameras
- e-Mirror: ~ 3 cameras

Applicable to multiple industrial 4K cameras

Ex. Dual 4K surveillance camera, 4K360 camera, dual 4K drone camera, dual unmanned cash register camera

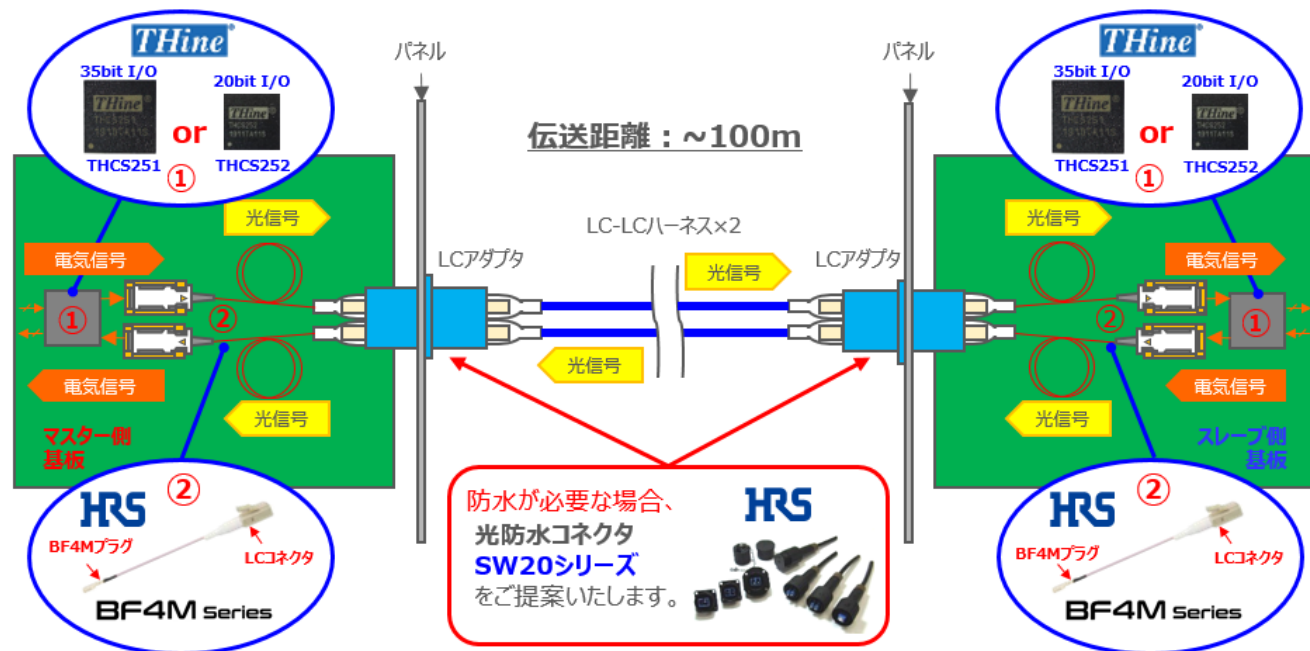
5G&Beyond-NE, the mid-term strategy from 2022 to 2024

- ▶ Contribution to industrial IoT by achieving flexible fabrication change

Hyper Automation

Serial Transceiver **IOHA:B** solution THCS25x can serialize max.35-bit I/O into 2-pair data transmission

- Enabling to add new sensing modules to manufacturing process or distribution warehouse process afterward
- No need of expert knowledge in signal wiring, reducing re-design period, designing costs, number of cables, achieving longer-distance data transmission
- Active cable solution to simplify the complicated IoT sensing and controlling can be available



Collaboration with Hirose Electric:

- 1) High-speed data transmission with less cables for longer distance as well as with electric isolation
 - ✓ Camera
 - ✓ Inspection equipment for large-sized displays
 - ✓ Industrial robotics, etc.
- 2) High-speed data transmission with less cables and electric isolation
 - ✓ Measuring equipment
 - ✓ Inspection equipment for semiconductors, etc.

5G&Beyond-NE, the mid-term strategy from 2022 to 2024

▶ Contribution to high resolution cameras

Mobility

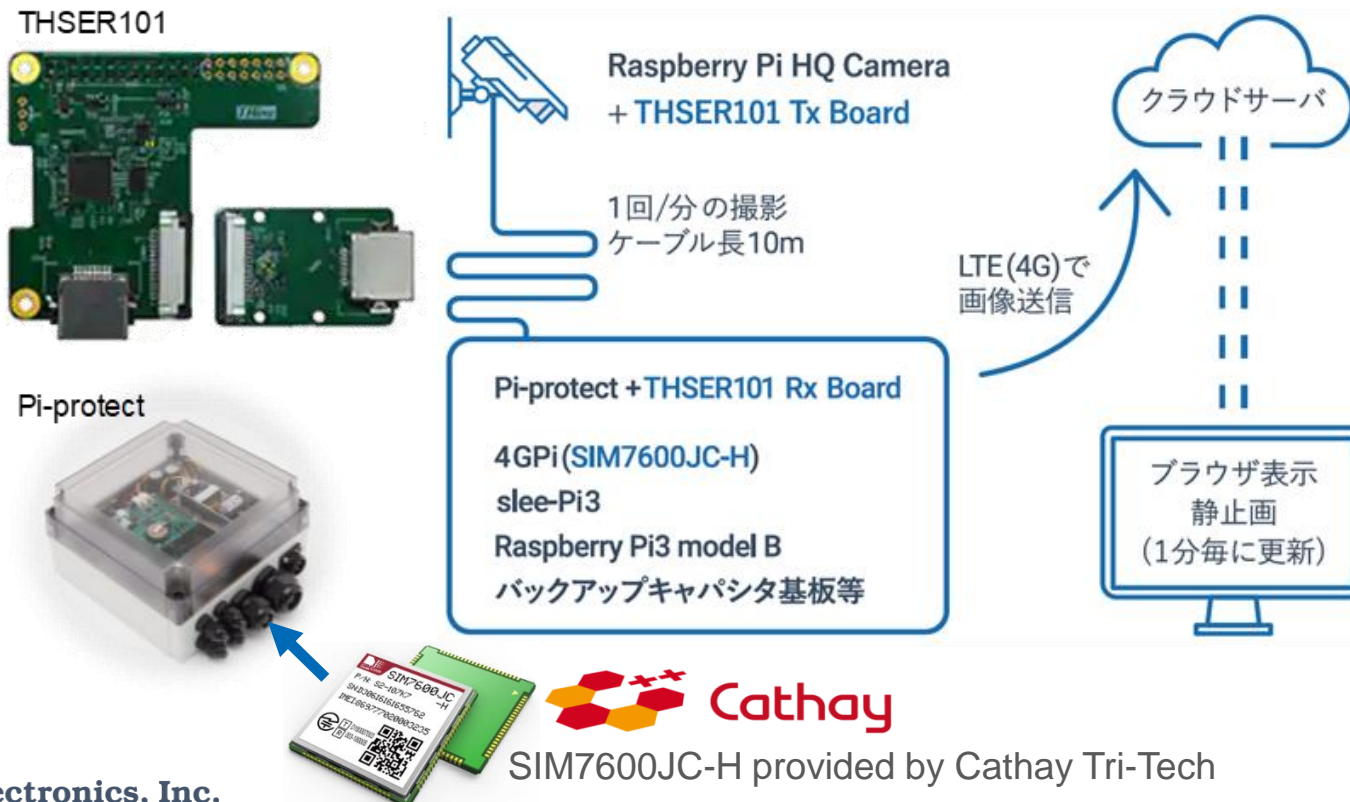
Medical

Hyper Automation

5G AI/IoT

Wireless camera solution with Raspberry Pi[®]

Combination of THine's THSER101 that enables to extend Raspberry Pi[®]-based camera data and Mechatrax's Pi-protect with LTE module provided by Cathay Tri-Tech achieves ready-to-use wireless camera data transmission flexibly.



Application:

- ✓ Wireless monitoring in factory, farm, distribution warehouse, etc.
- ✓ drone
- ✓ Unmanned vehicle, robotics
- ✓ Wearable body camera, etc.

5G&Beyond-NE, the mid-term strategy from 2022 to 2024

▶ Contribution to industrial DX cameras

Mobility

Medical

Hyper Automation

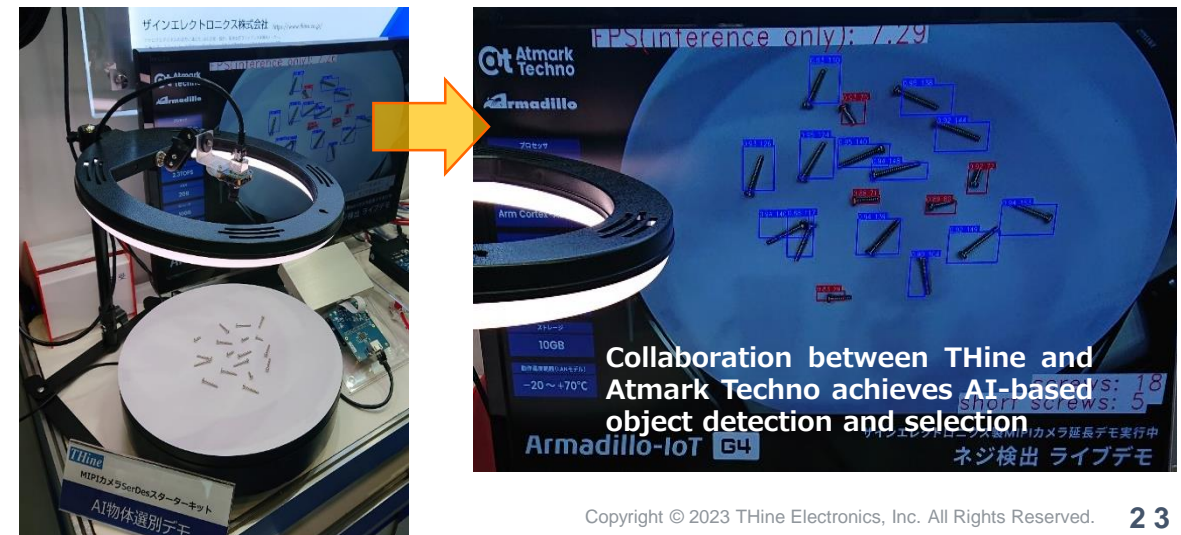
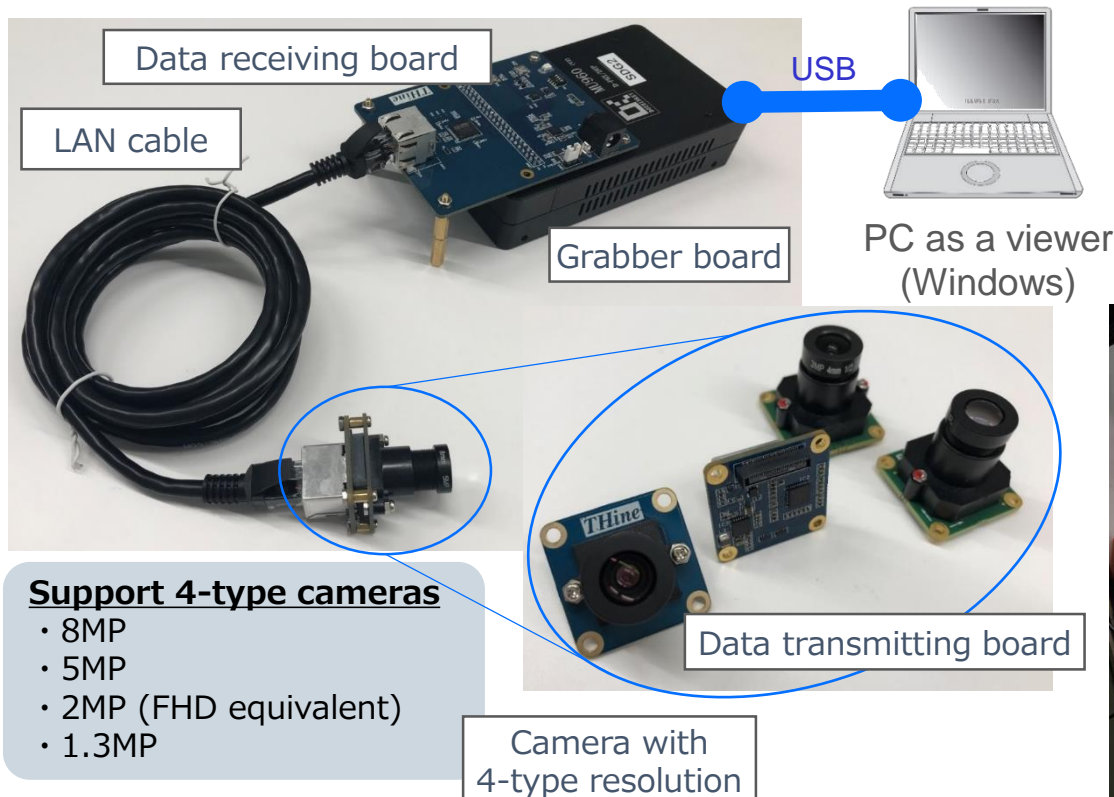
5G AI/IoT

Starter Kit to build SerDes system for MIPI cameras

- Enable camera data transmission for max. 15 m
- Shorten designing period of camera system drastically

Application:

- Monitoring manufacturing lines
- AI-camera-based inspection
- Monitoring distribution warehouse, conveying lines
- Monitoring growth of agricultural products
- In-vehicle cameras of trains, buses, and large vehicles
- Monitoring infrastructure, fuel storage facilities, etc.



5G&Beyond-NE, the mid-term strategy from 2022 to 2024

► TVS for high-speed data transmission

Mobility

Medical

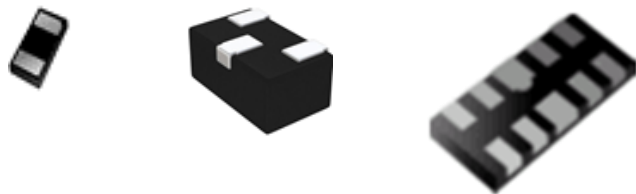
Hyper Automation

5G AI/IoT

Protect costly processors using advanced miniaturized manufacturing process

THine’s TVS (Transient Voltage Suppressor) solution suitable for protecting processors with high-speed data communication

- Protect processors and SoCs from static electricity and power fluctuation
- Keep high-speed signal integrity
- Small package, suitable for data line of HDMI, DisplayPort, USB3.0 Type-C, CML, Ethernet, LVDS, MIPI, etc.



Line-ups of TVS products
(from the left, THTVS411, THTVS312, THTVS514)

Product number	THTVS411 Small package	THTVS312 Small-sized 2ch product, suitable for differential lanes	THTVS514 Standard 10-pin package, suitable for differential 2 lanes
Package	0603 (0.6x0.3x0.25mm)	1006 (1.0x0.6x0.4mm)	2510 (2.5x1.0x0.55mm)
Frequency	DC ~ 8GHz	DC ~ 6GHz	DC ~ 6GHz
V _{rw} Max	4V	3.6V	5.5V
IEC6100-4-2 test results			
Contact	±20kV	±17kV	±12kV
Air	±25kV	±20kV	±17kV

5G&Beyond-NE, the mid-term strategy from 2022 to 2024

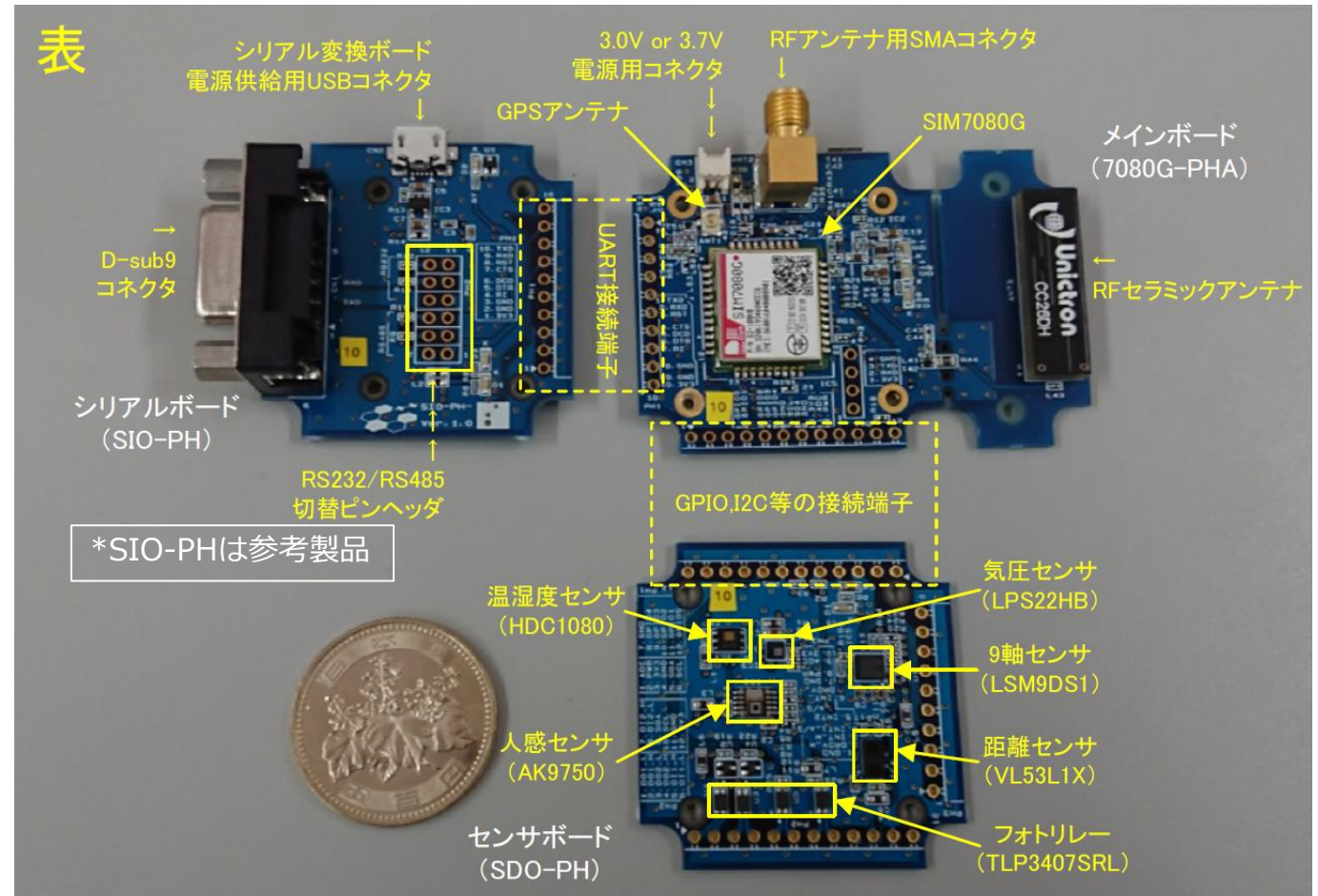
▶ contribution to sensing IoT

5G AI/IoT

IoT modem board product: 7080G-PHA

◆ specification :

- ❑ Supporting Rel.14-based Cat-M1/NB1/NB2 with global module applicable to Japanese 3 carriers as well as abroad carriers
- ❑ Loading various sensors and building IoT system readily on small-sized PCB with cellular and GPS antenna
- ❑ Extension board available to support serial port of RS232C/485
- ❑ Direct connect pin available to each functional port on the module
- ❑ Ultra-low voltage designing suitable for dry batteries
- ❑ Supporting MicroSIM card (3FF), eSIM (inside / outside), and SoftSIM
- ❑ Loading RTOS(TX3.0) to support Edge-based processing or outside-based control with using memory area of modules



5G&Beyond-NE, the mid-term strategy from 2022 to 2024

► Contribution to various IoT use cases

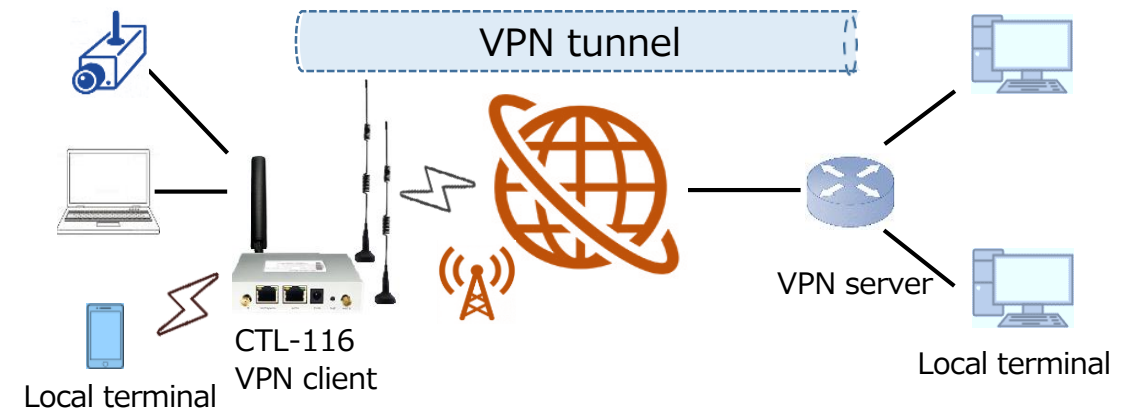
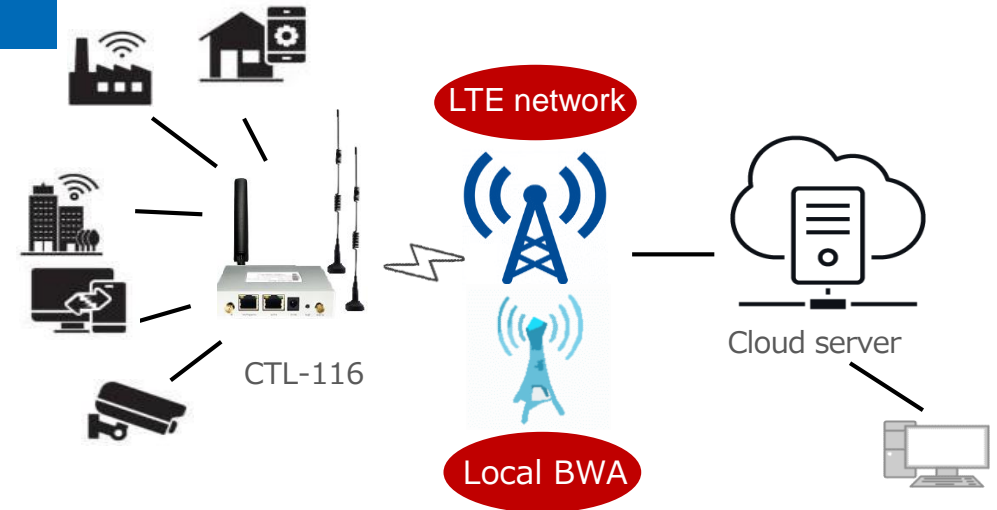
5G AI/IoT

Wireless LAN router with LTE module: CTL-116



■ Features of CTL-116

- 1) Supporting domestic communication carriers (NTT DoCoMo, KDDI, KDDI, SoftBank, and Rakuten Mobile*) and MVNO with loading SIM7600JC-HG
* Supporting Rakuten Mobile is a future plan.
- 2) Supporting local BWA, private LTE
- 3) Supporting wireless LAN (IEEE802.11b/g/n)
- 4) Supporting VPN
- 5) Supporting VRRP, enabling redundancy (switchable from master in back up mode)
- 6) Supporting SNMP, enabling to monitor and control routers remotely
- 7) Small and light design: 99.7x98.7x23.4 mm with approx. 250g
- 8) Wide temperature support: -30°C~75°C



5G&Beyond-NE, the mid-term strategy from 2022 to 2024

- ▶ Contribution real time air traffic control of drones and eVTOLs

Mobility

5G AI/IoT

Capital and business alliance with Terra Drone

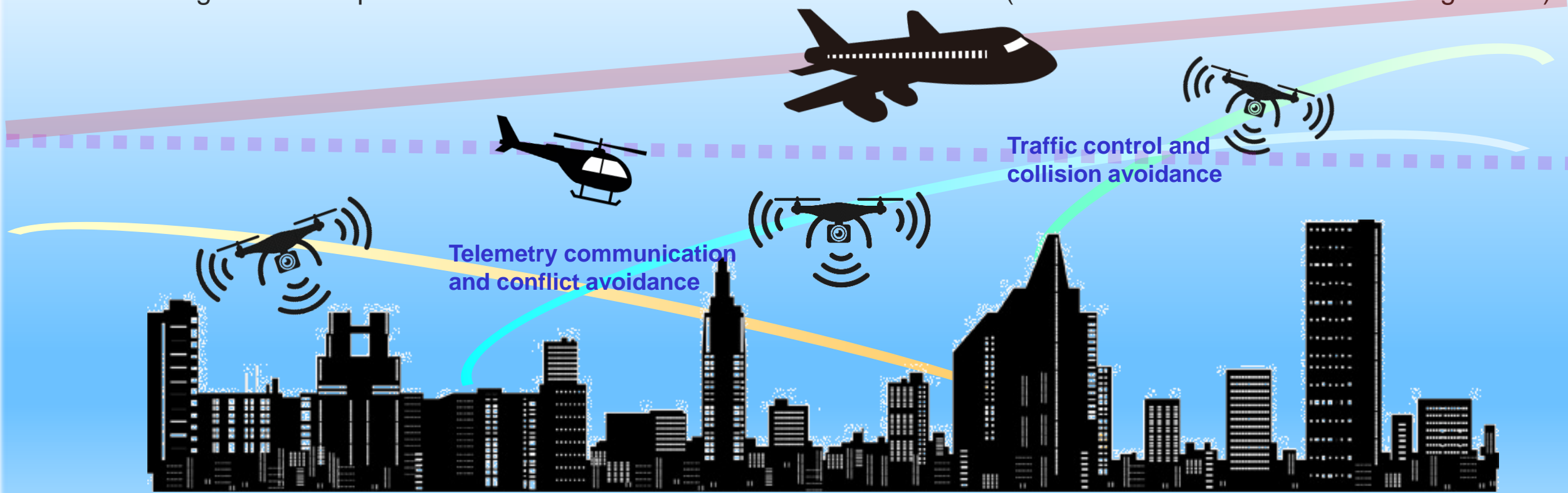


TERRA DRONE



Cathay

Jointly developing transponder communication modules for UTM (Unmanned Aerial System Traffic Management), aiming to achieve platform of air traffic control of drones and eVTOLs (Electric Vertical Take-Off and Landing aircraft)



5G&Beyond-NE, the mid-term strategy from 2022 to 2024

▶ Solution for Beyond 5G

Beyond 5G/8K

Develop beyond5G technology applicable to high-speed communication at 1000Gbps

the National Institute
of Information and
Communications
Technology (NICT)

国立研究開発法人
情報通信研究機構

Hiroshima University

国立大学法人
広島大学

Ministry of Internal
Affairs and
Communications

総務省

Tokyo University
of Science

学校法人
東京理科大学

THine[®]

8K TV, remote medical diagnosis,
eSports, etc.

Nagoya Institute
of Technology

国立大学法人
名古屋工業大学

5G&Beyond-NE, the mid-term strategy from 2022 to 2024

► Contribution to SDGs

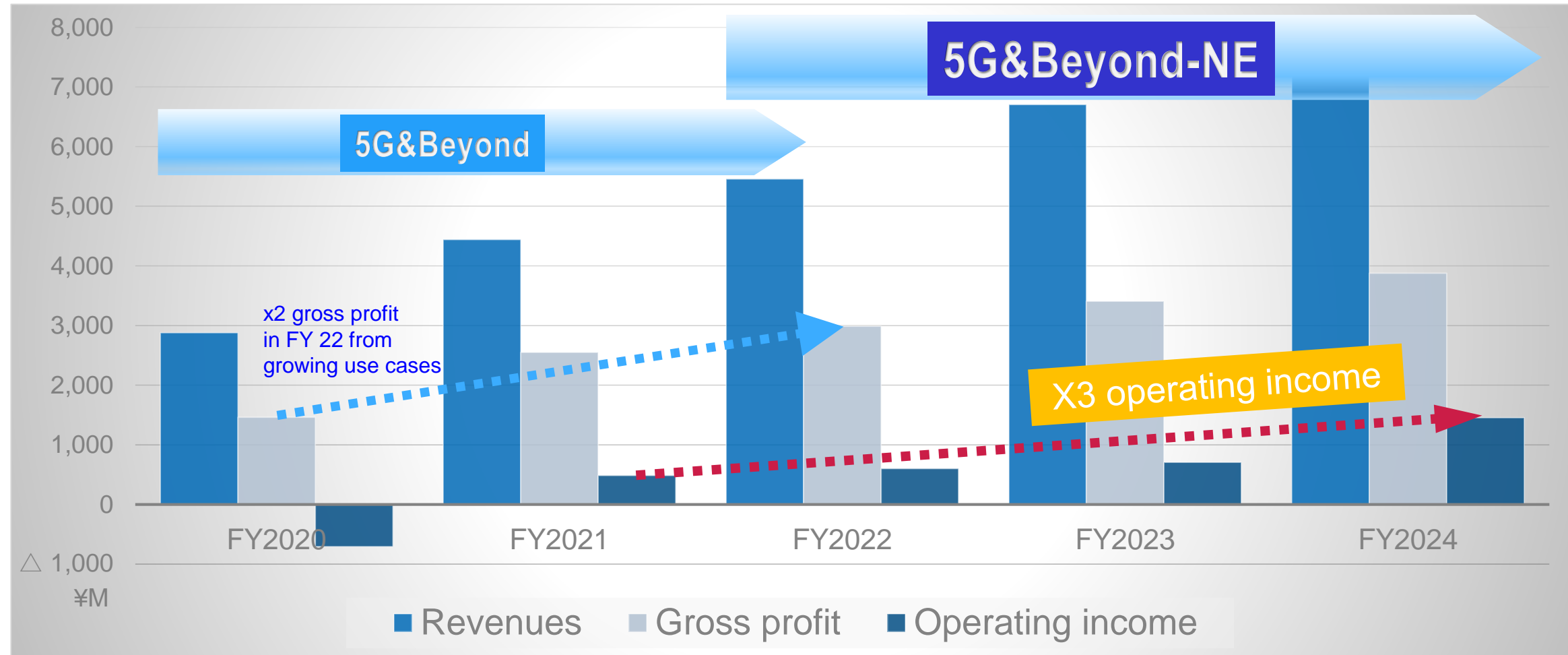
Interface to the Future - Solution by Smart Connectivity -



- ✓ Smarter data transmission in automotive sensing
- ✓ Reducing number of cables by high-speed data transmission technology
- ✓ Reducing energy consumptions by achieving low power consumption and by achieving heat efficiency in power system
- ✓ Reducing energy consumptions in transporting and delivering through AI and IoT technology

5G&Beyond-NE, the mid-term strategy from 2022 to 2024

- ▶ Focusing on growing markets, achieving strategic 5Goals, aiming to achieve **x3 operating income** in FY2024, compared to FY2021



5G&Beyond-NE, the mid-term strategy from 2022 to 2024

► Forecast in FY2023

FY2023 is the second year of the mid-term strategy, “5G&Beyond-NE”

Forecasting increase in sales and operating income through consequent 3 fiscal years.

(yen in million)

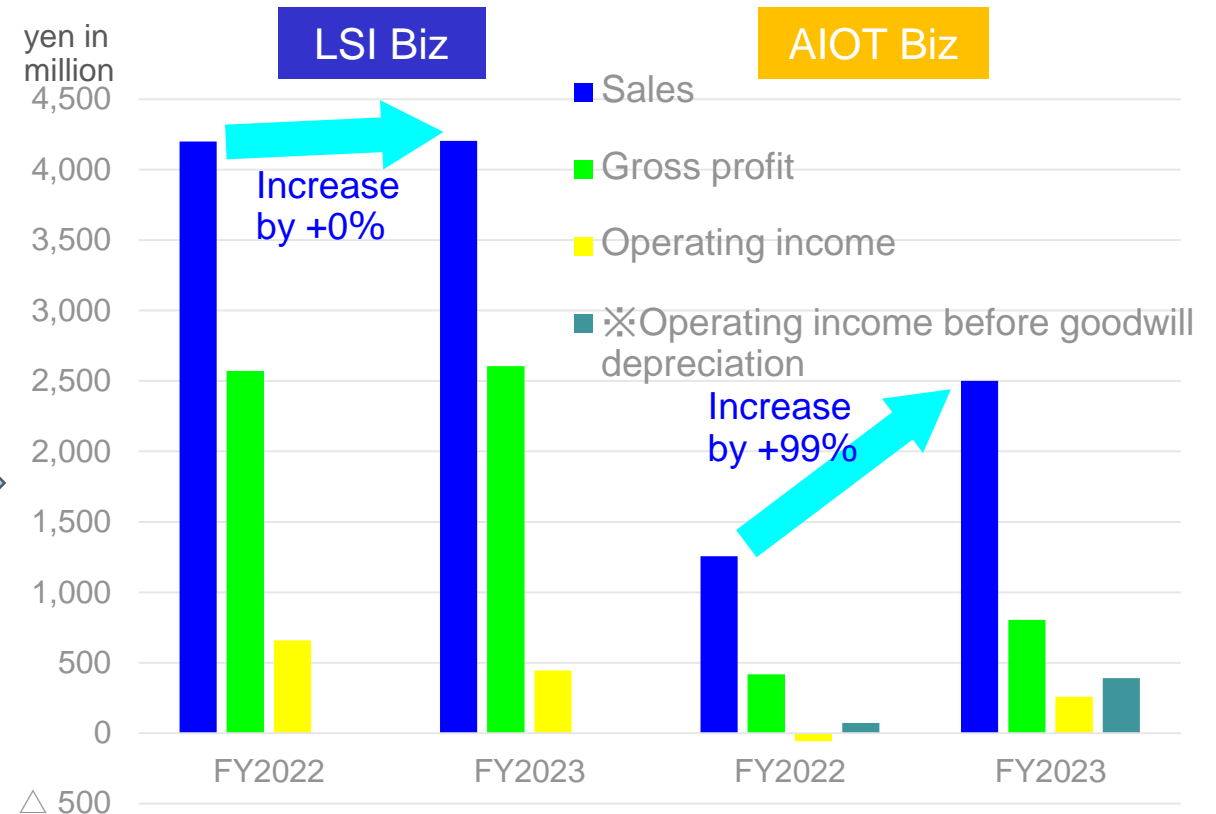
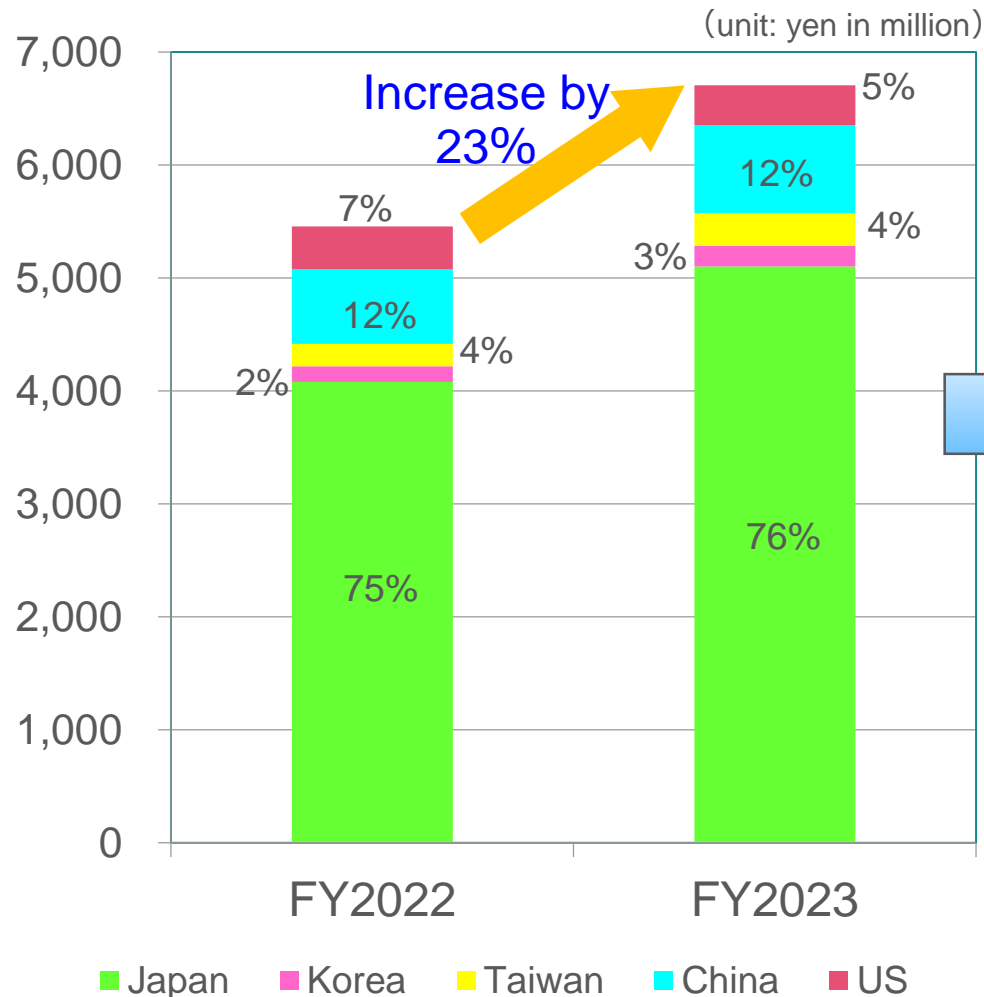
	Forecast in FY2023			FY2022 results		FY2021 results	
		Portion%	YoY		Portion%		Portion%
Revenues	6,705	100.0	123.1	5,456	100.0	4,441	100.0
Gross Profit	3,408	50.8	114.8	2,987	54.8	2,549	57.4
SG&A	2,701	40.3	113.2	2,386	43.7	2,063	46.5
(R&D expenses)	1,210	18.0	119.8	1,009	18.5	801	18.1
Operating Income	706	10.5	117.4	601	11.0	485	10.9
Operating Income before Amortization of Goodwill	836	12.5	114.3	731	13.4	616	13.9
Ordinary Income	707	10.6	78.1	906	16.6	698	15.7
(Ordinary Income* without foreign currency exchange gain or loss)	707	10.6	111.2	636	11.7	491	11.1
Net income attributable to Owner of the Parent	479	7.2	59.5	820	15.0	727	16.4

※Assumed JPY/USD rate in FY2023: JPY130/1USD. The forecast above does not include exchange gain/loss of JPY/USD forecast.

cf. Exchange gain in JPY/USD : JPY270M (FY2022) / JPY207M(FY2021)

5G&Beyond-NE, the mid-term strategy from 2022 to 2024

Forecast in FY2023 by region and segment



- In FY2023 AIOT Biz highly contributes to achieve sales growth by +23%, promoting automotive business (drive recorders, etc.) and IoT solutions for infrastructure markets.
- For LSI Biz THine focuses on automotive and industrial markets and positively invests in R&D, increased by +22%, to capture future growth opportunities after FY2024.

Interface to the Future

- Solution by Smart Connectivity -

URL <https://www.thine.co.jp/>

Contact: IR Team, General Dept.

mail: investors@thine.co.jp phone: +81-3-5217-6660

9-1, Kanda-mitoshiro-cho, Chiyoda-ku, Tokyo, 101-0013 Japan

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