

RENESAS INDUSTRIAL BUSINESS OVERVIEW

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BIG IDEAS
FOR EVERY SPACE

AGENDA

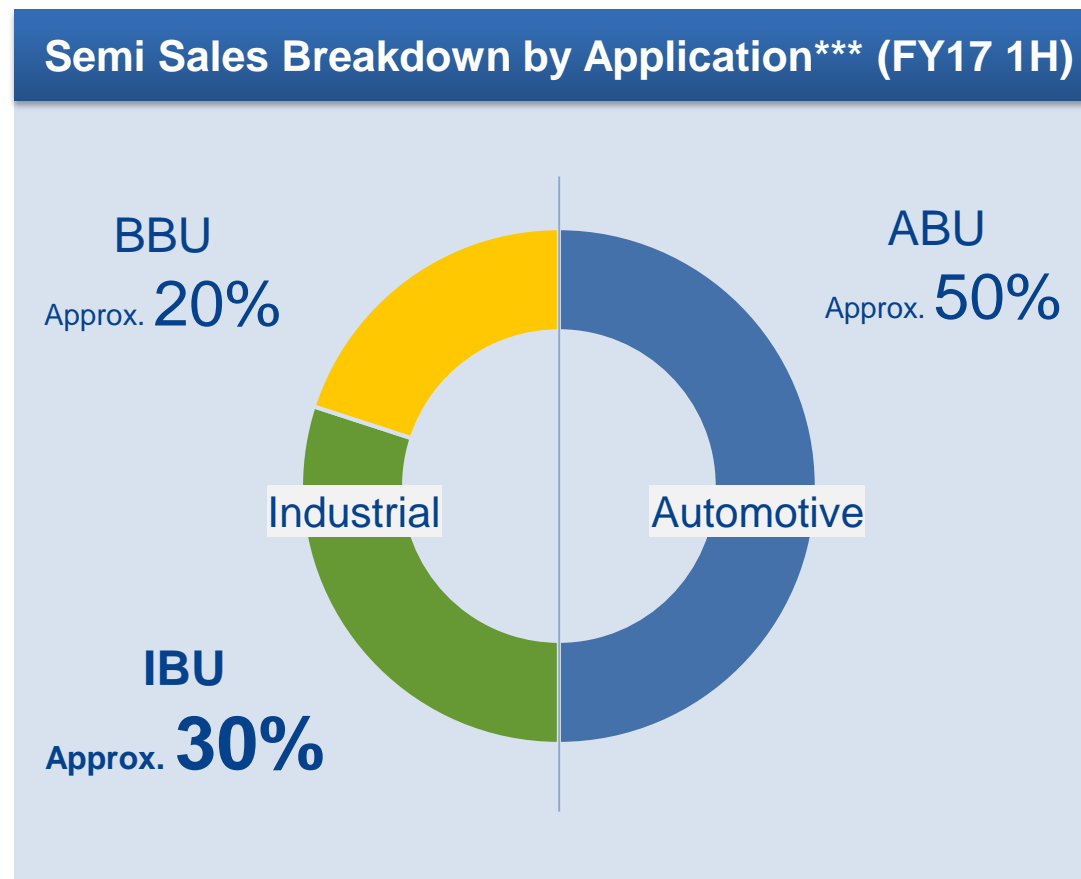
- Corporate Business Overview
- Industrial Business
 - Business Status
 - Real-Time embedded Artificial Intelligence (e-AI)
 - Future Spark – Silicon on Thin Buried Oxide (SOTB)
- Take Away

CORPORATE OVERVIEW

Financials Overview* (FY17 1H)		
	B yen	Margin
Net Sales	376	
Semi Sales	367	
Gross Profit	171	45.6%
Operating Income	58	15.5%
EBITDA**	94	24.9%
Depreciation and Amortization	35	
Net Income Attributable to Shareholders of Parent Company	61	

* Non-GAAP item

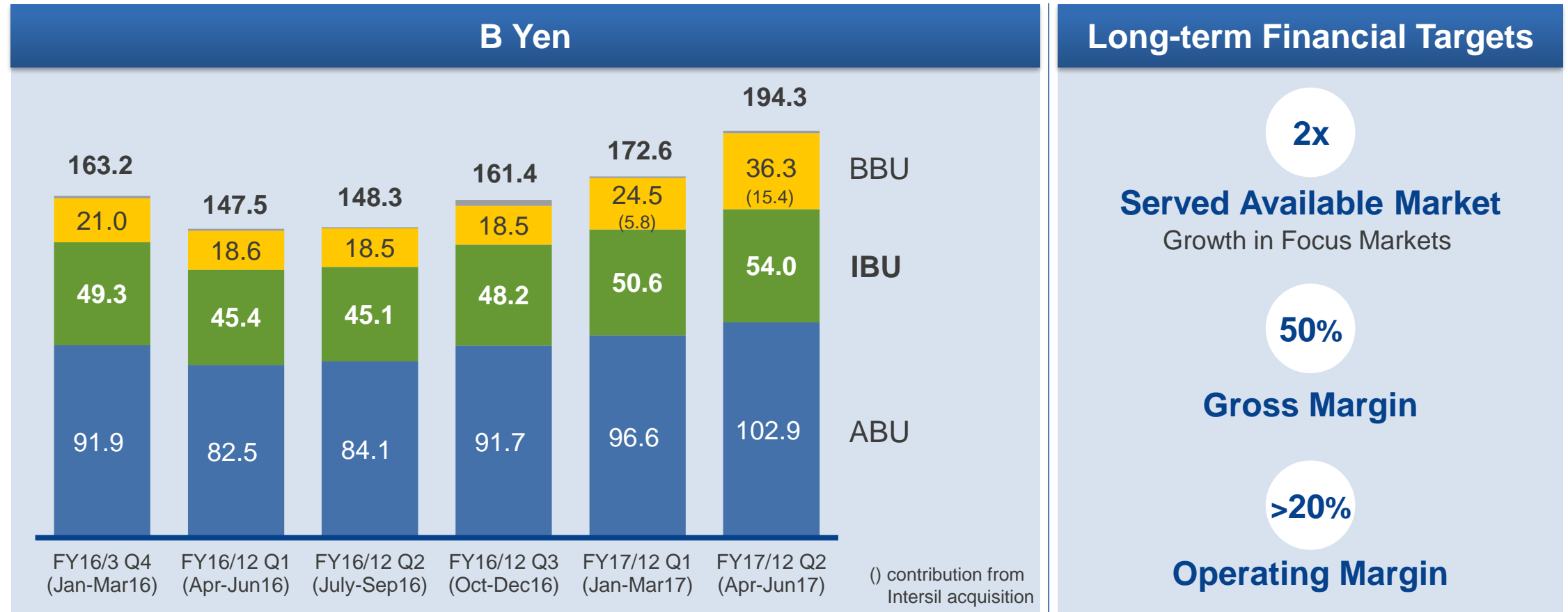
**EBITDA: Operating income + depreciation and amortization + amortization of long-term period expenses



***ABU: Automotive Solution Business Unit

IBU: Industrial Solution Business Unit, BBU: Broad-based Solution Business Unit

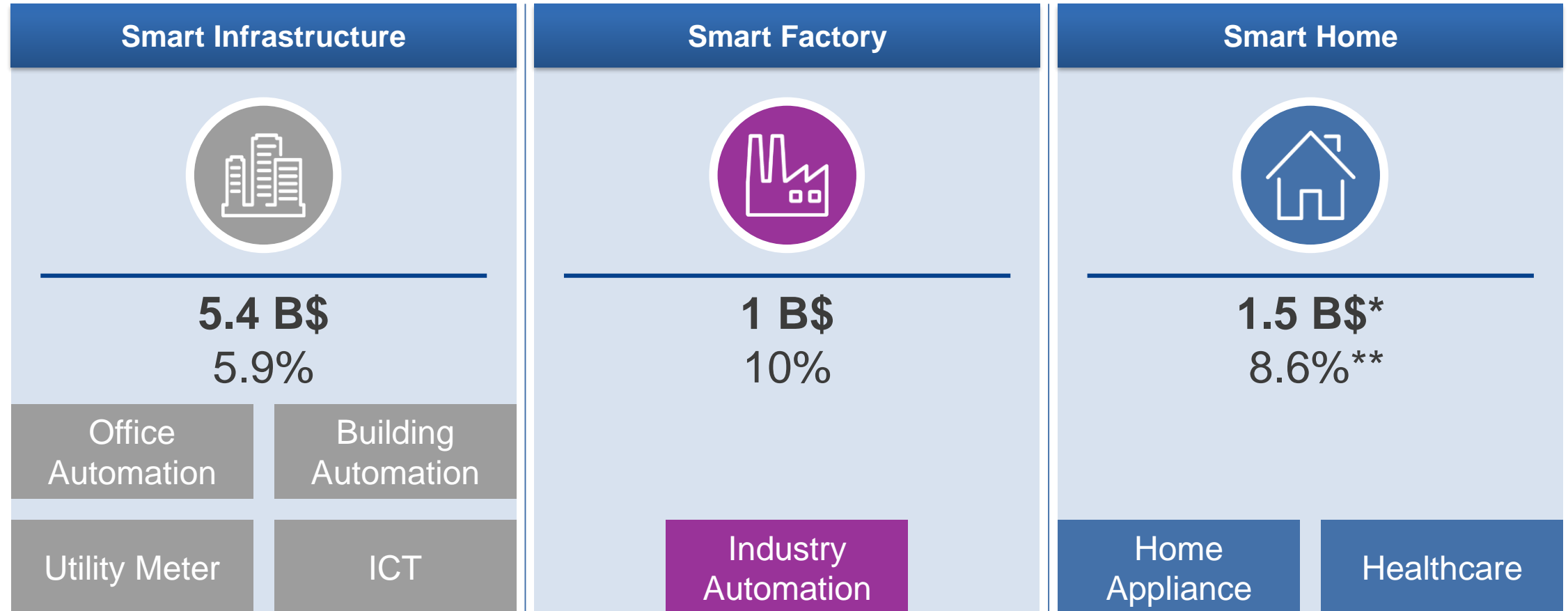
SEMICONDUCTOR SALES TREND & TARGETS



INDUSTRIAL BUSINESS

The background of the slide is a deep blue with a subtle grid pattern. On the left, there are concentric circular lines, resembling a stylized eye or a technical drawing. A bright, glowing light source in the center creates a lens flare effect, with numerous small, bright white and yellow spots scattered across the right side of the image.

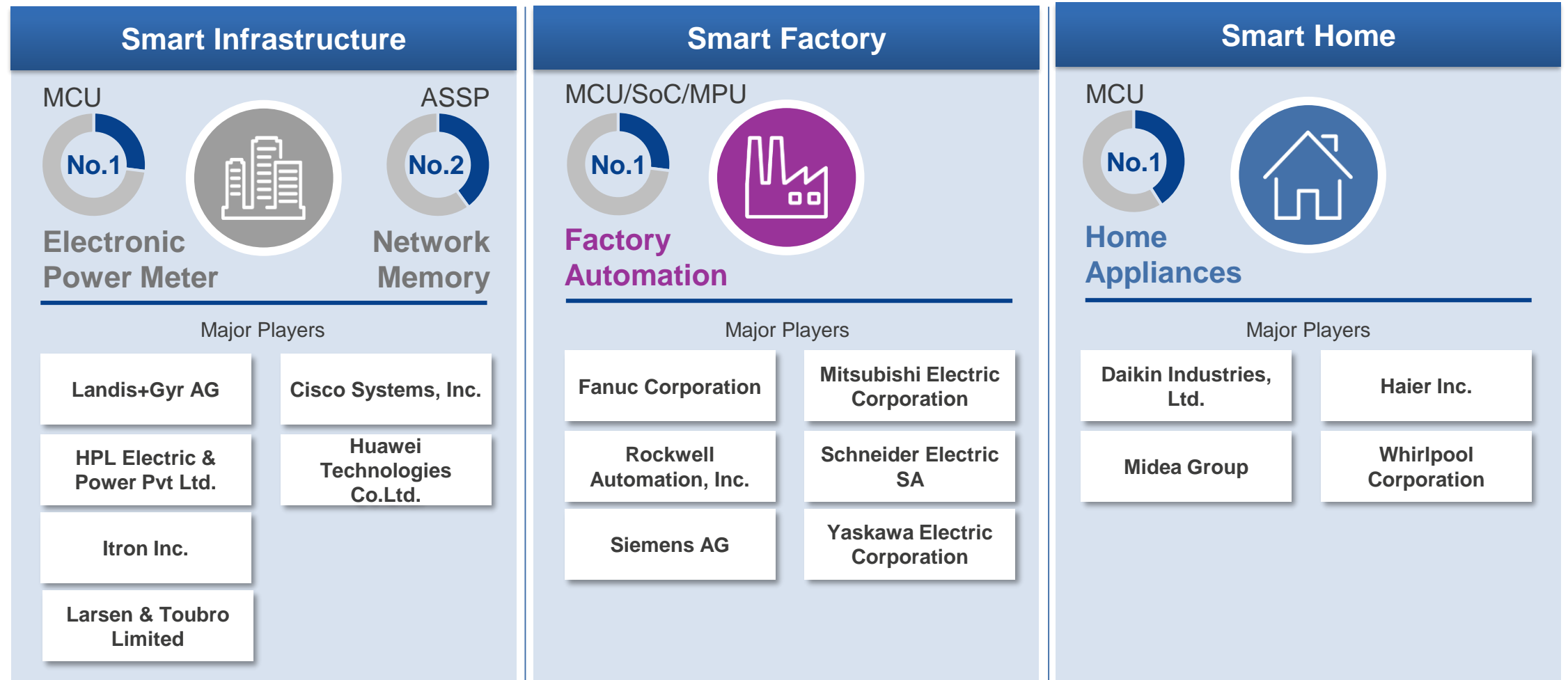
INVESTMENT FOCUS TO 7 SEGMENTS



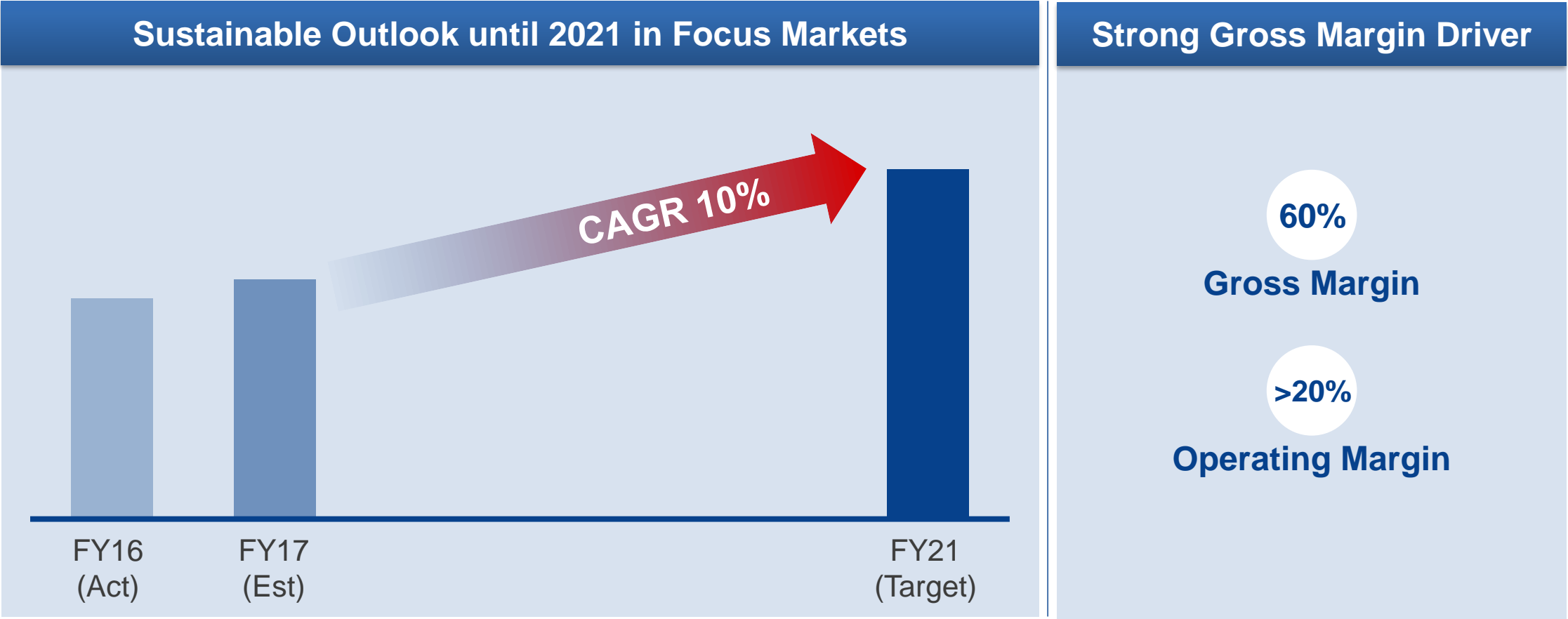
*Served Available Market (SAM)

**Application CAGR FY15-21 both estimated by Renesas

EXCELLENT MARKET POSITION

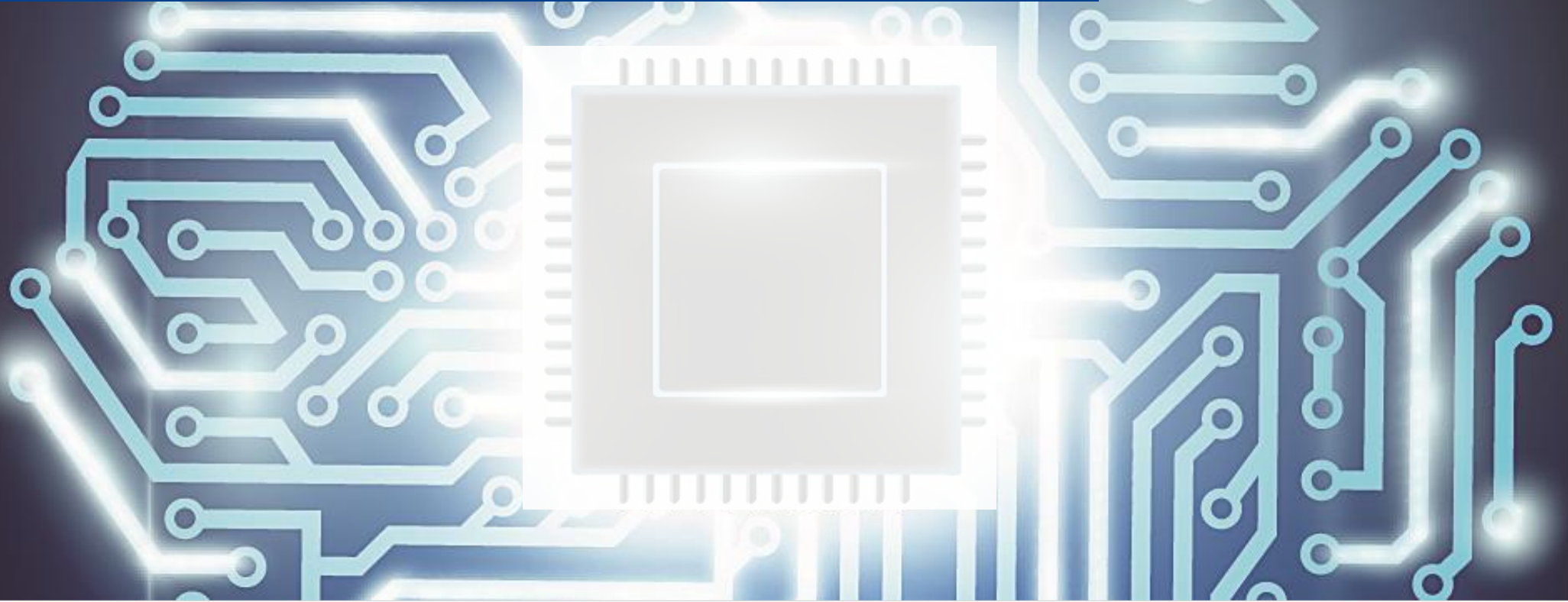


INDUSTRIAL - BUSINESS OUTLOOK

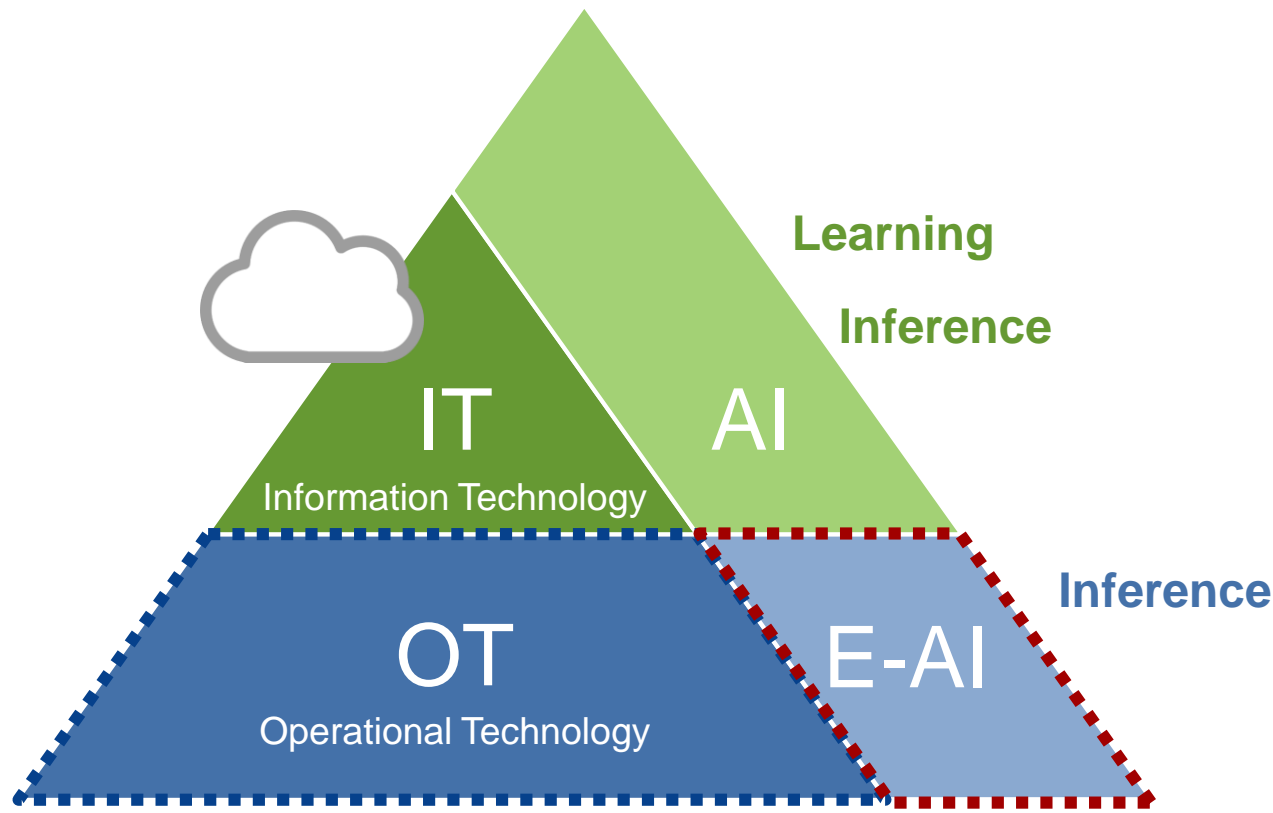


REAL TIME e-AI

EMBEDDED ARTIFICIAL INTELLIGENCE



RENESAS e-AI – FOCUS ON REAL TIME EMBEDDED SYSTEMS



Core competencies in OT

- Real-time system (efficiency)
- End-point control (reality)
- Safety and robustness
- **AI on embedded system** ✓

RENESAS e-AI – INFERENCE IN OT BY MCU EDGE COMPUTING

Learning in IT



Inference in OT



Neural
Network
Algorithm

Code Size
300 **MB**

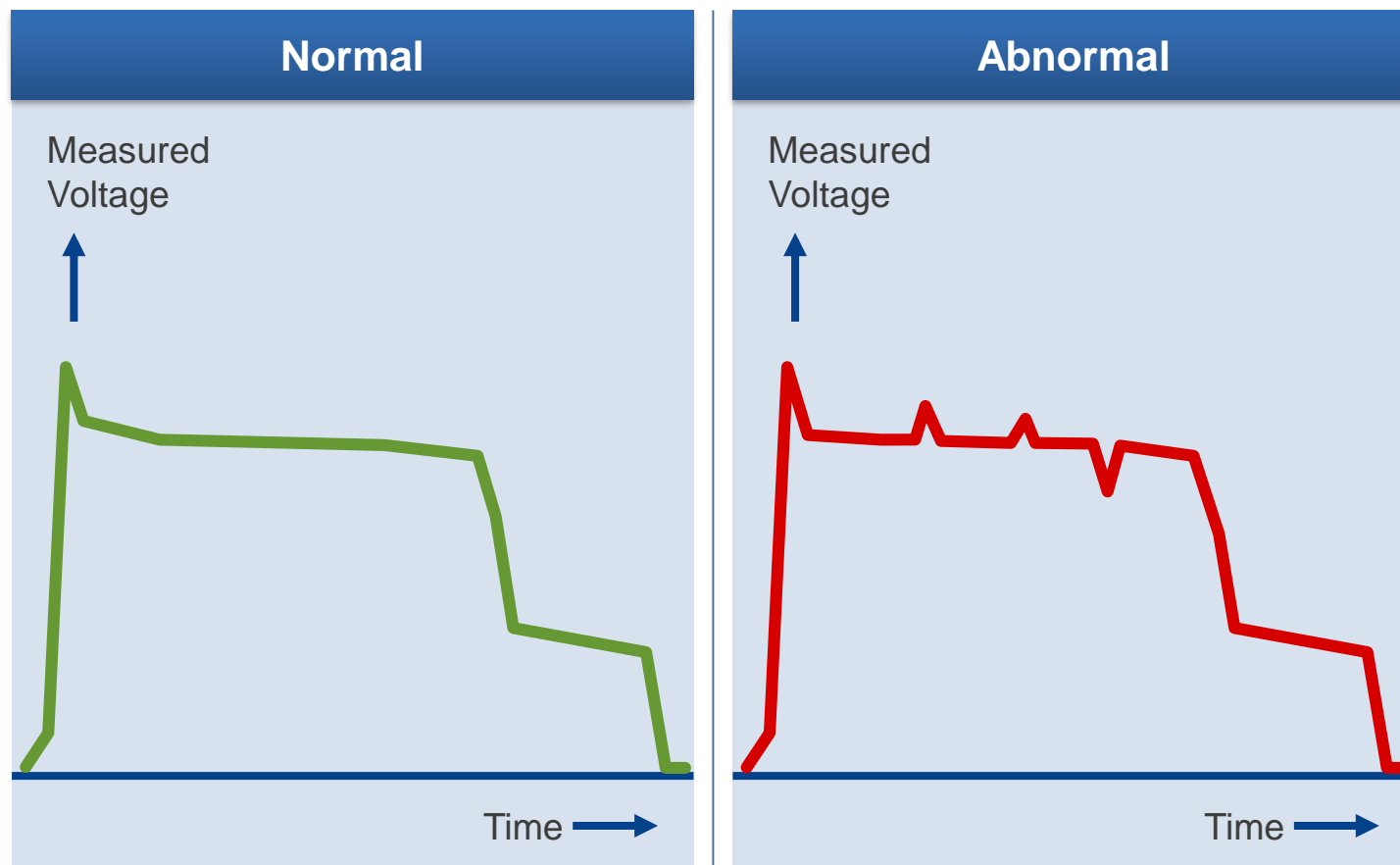
Renesas
Translation



Code Size
300 **KB**



EXPERIMENT RESULT AT NAKA FACTORY



Abnormality Detection realized by e-AI

- 6x better abnormality detection rate
- Almost no pseudo alarms in factory
- Less maintenance efforts

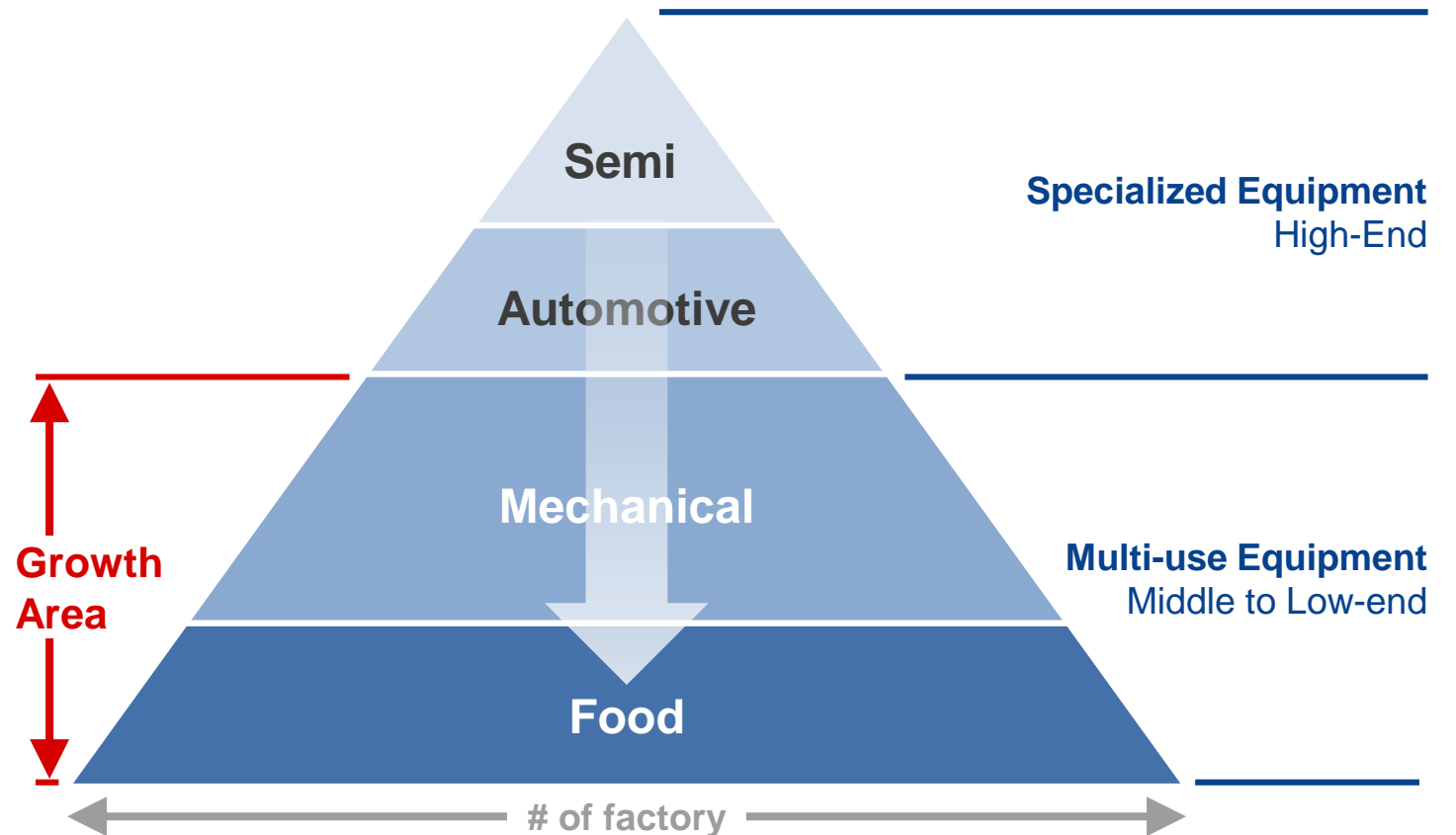
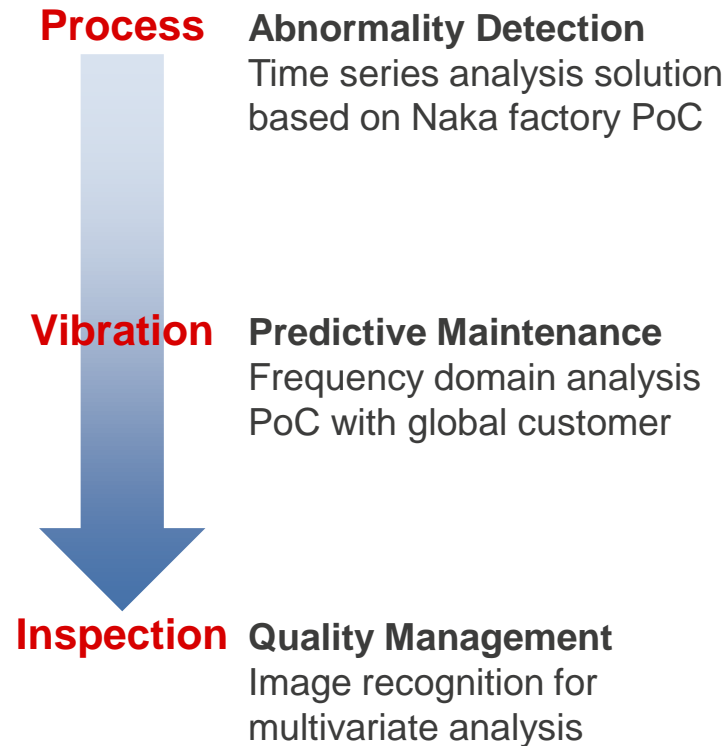
Effects

- Cost reduction by earlier detection
- Less human interactions
- Significantly increased production efficiency

 **Increased Production Efficiency**

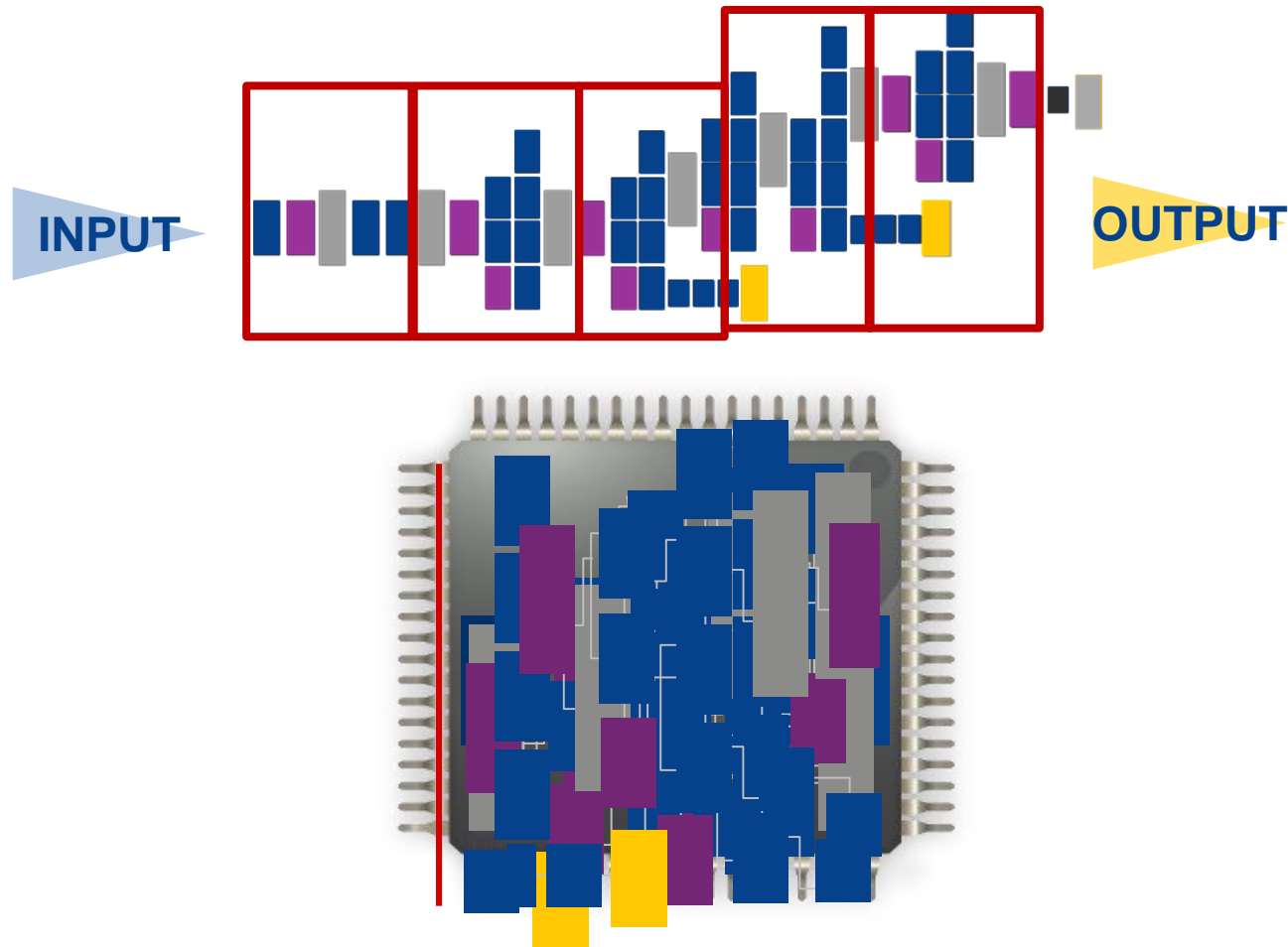
EXPANSION OF E-AI

EXCELLENT MARKET POTENTIAL IN RENESAS' FOOTPRINT



OFFLOAD ENGINE DRP - FOR REAL TIME EDGE COMPUTING

EXECUTING e-AI WITH HIGH SPEED AT LOW POWER



DRP*: Key Differentiator

Introduce e-AI into embedded world

10x

Faster than GPU

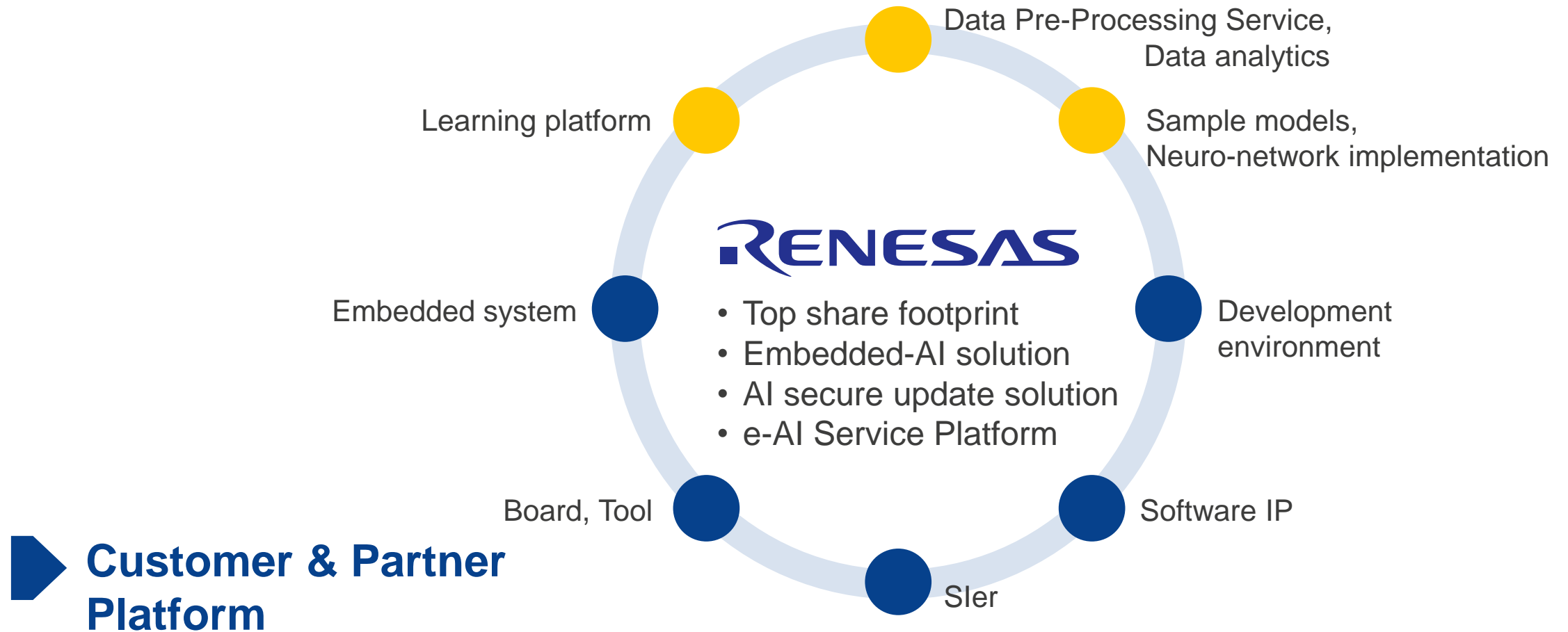
100x

Faster than CPU

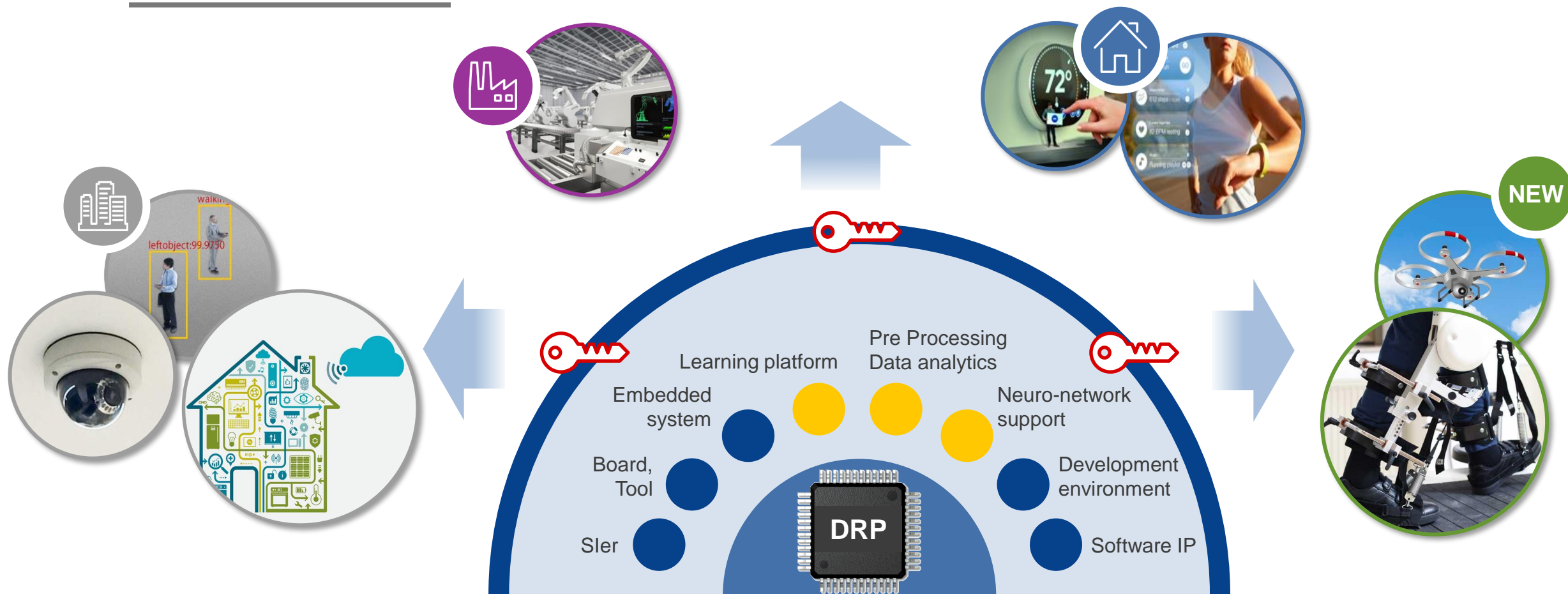
► Real Time Edge Computing on MCU at Low Power

*DRP; Dynamically Reconfigurable Processor

EXPANSION OF ECOSYSTEM TOWARDS OPEN e-AI PLATFORM



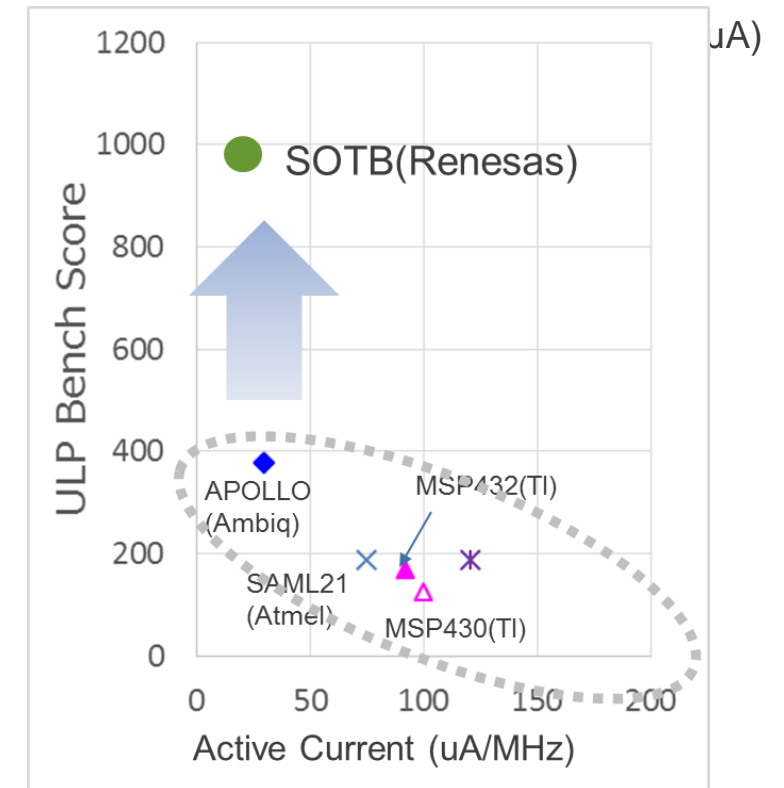
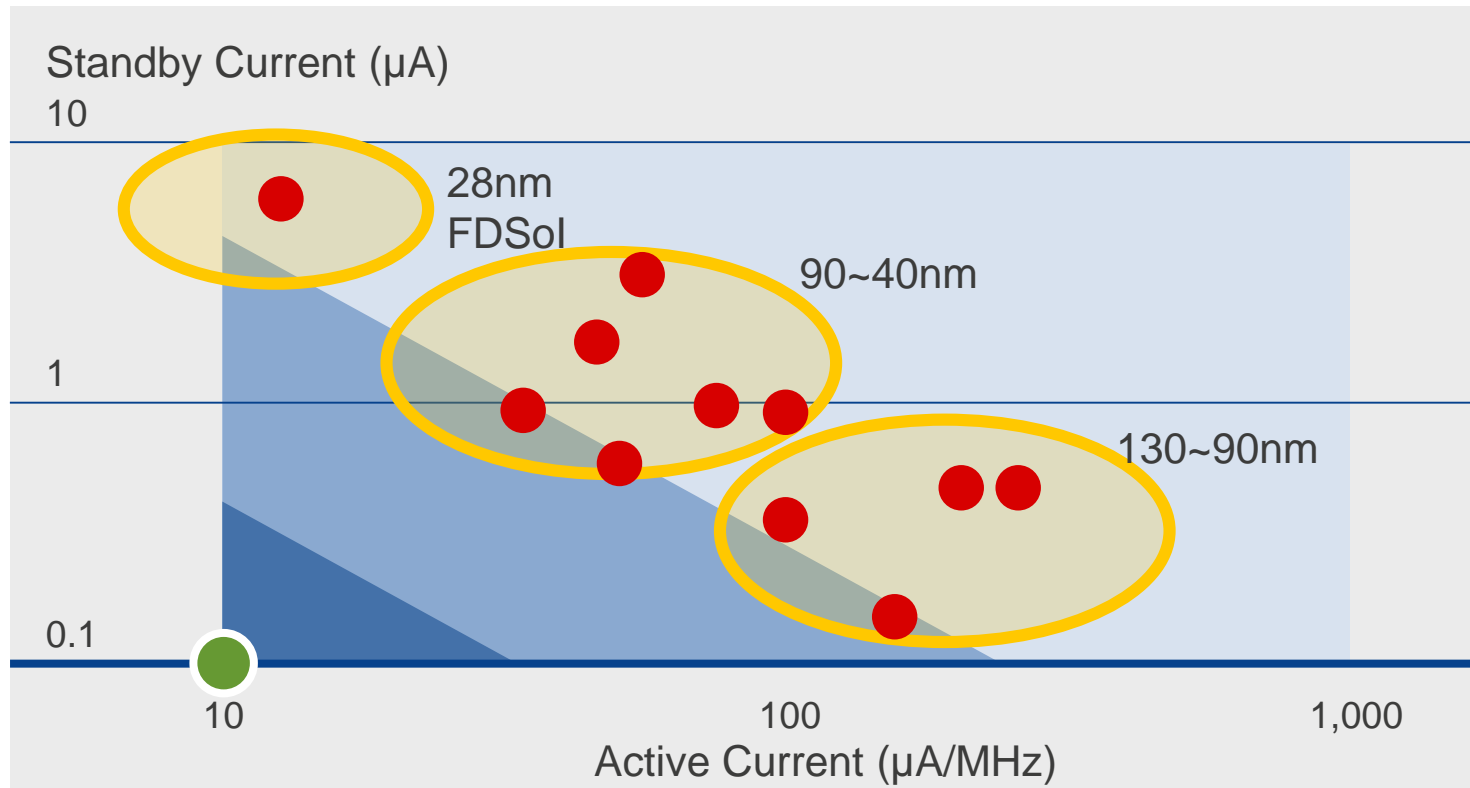
DRIVE SMART SOCIETY AND CREATE NEW MARKETS



FUTURE SPARK – SOTB SILICON ON THIN BURIED OXIDE

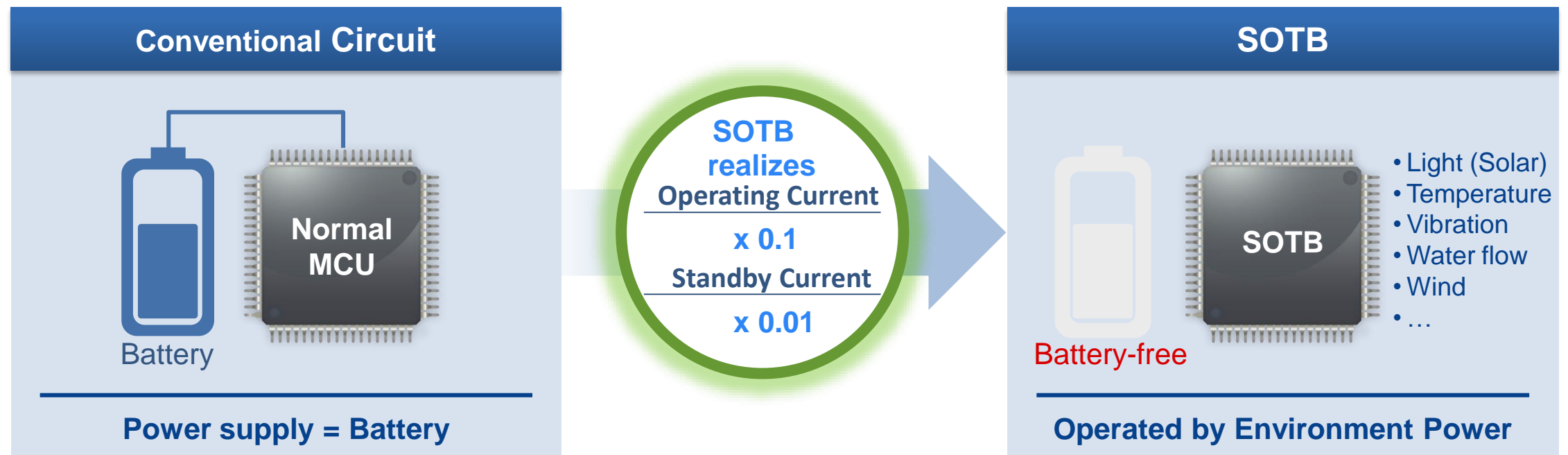


FUTURE SPARK – SOTB



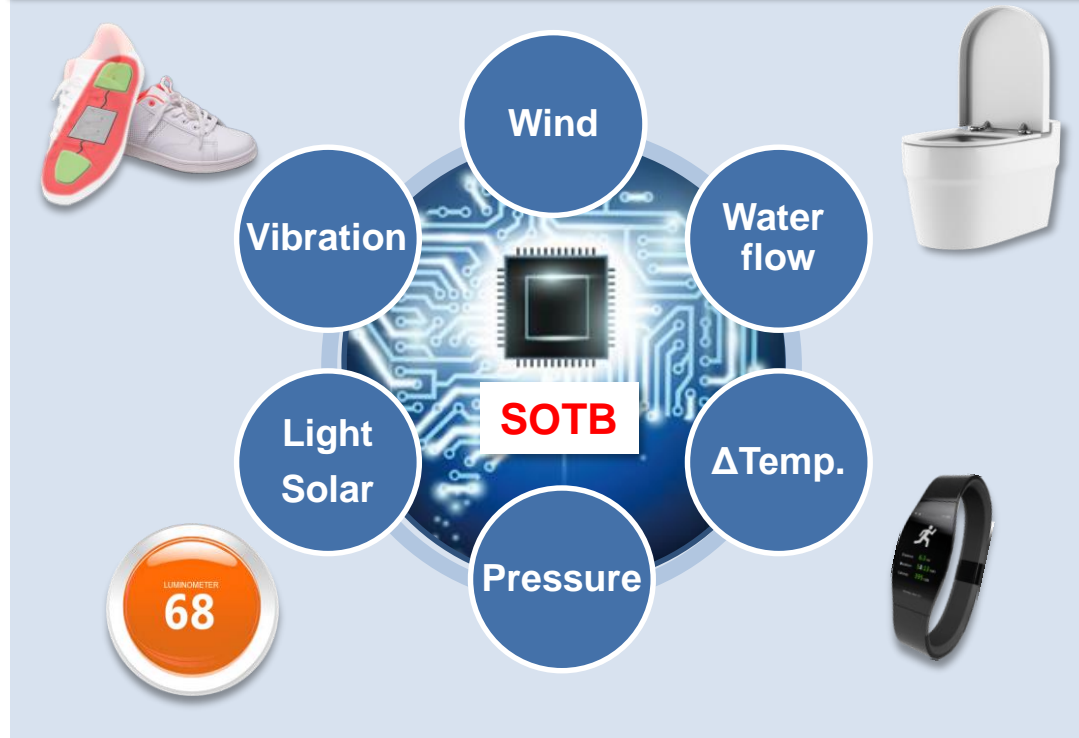
FUTURE SPARK – SOTB

Disruptive Ultra Low Power Performance of SOTB



SOTB – A TECHNOLOGY WHICH CAN CHANGE OUR LIFE

Realize Battery-less system with Energy Harvesting Solution



Maintenance free device enables Autonomous World



TAKE AWAY

Strong
Industrial
Customer Footprint

Sustainable
high profit growth

Real Time e-AI
As future growth
driver

SOTB
Can change our life



Renesas creates leading semiconductor solutions
that spark innovation for a connected world,
building a trusted brand we can be proud of.