IOT WITH IOT-ENGINE

IOT-ENGINE & IOT-AGGREGATOR

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FOR GREEN, SECURE, AND COMFORTABLE SOCIETY

RENESAS' ADVANCED SEMI TECHNOLOGIES LEAD THE EVOLVING SMART SOCIETY

SMART HOME

SMART FACTORY

SMART INFRASTRUCTURE

e-AI materializes the potential of the expanding smart society with IoT

Connectivity

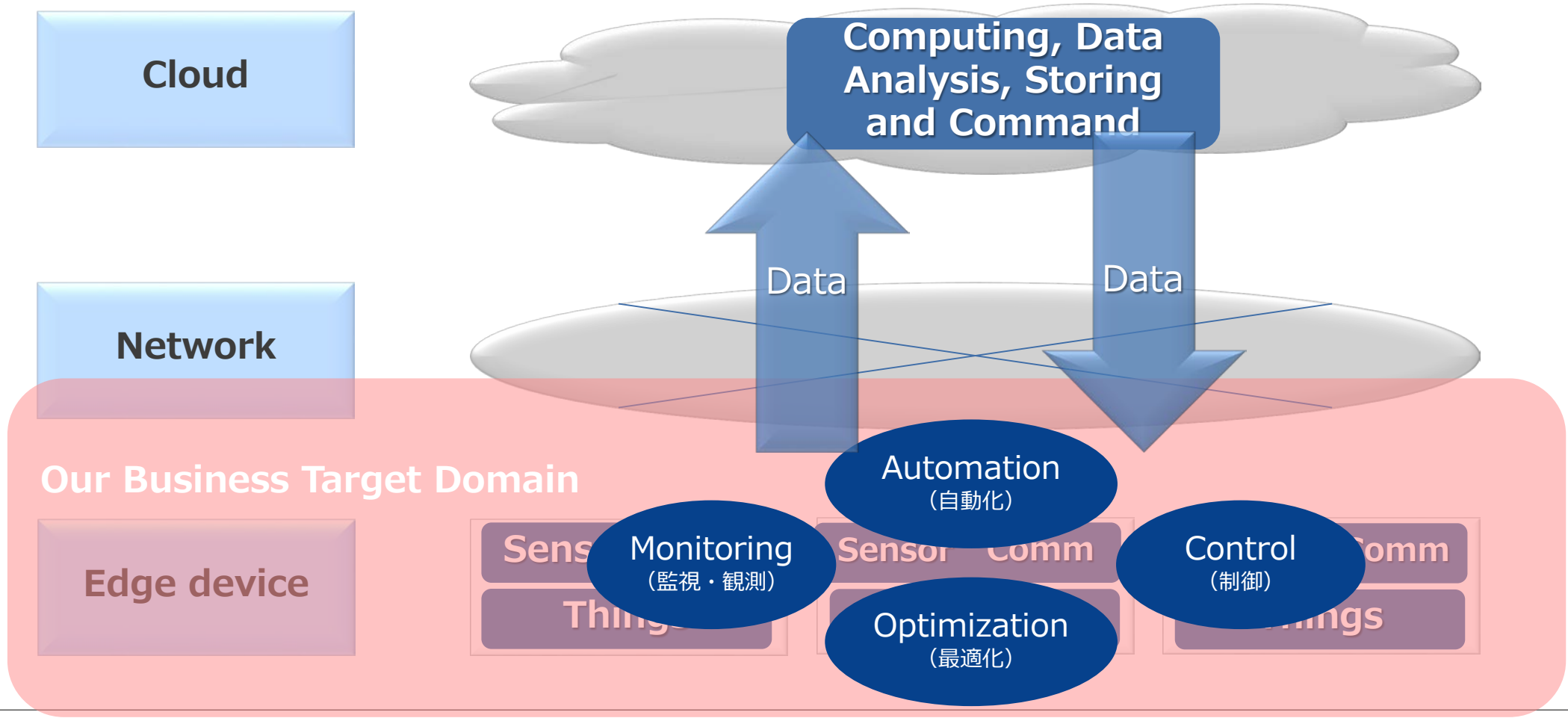
Security・Safety

Intelligence

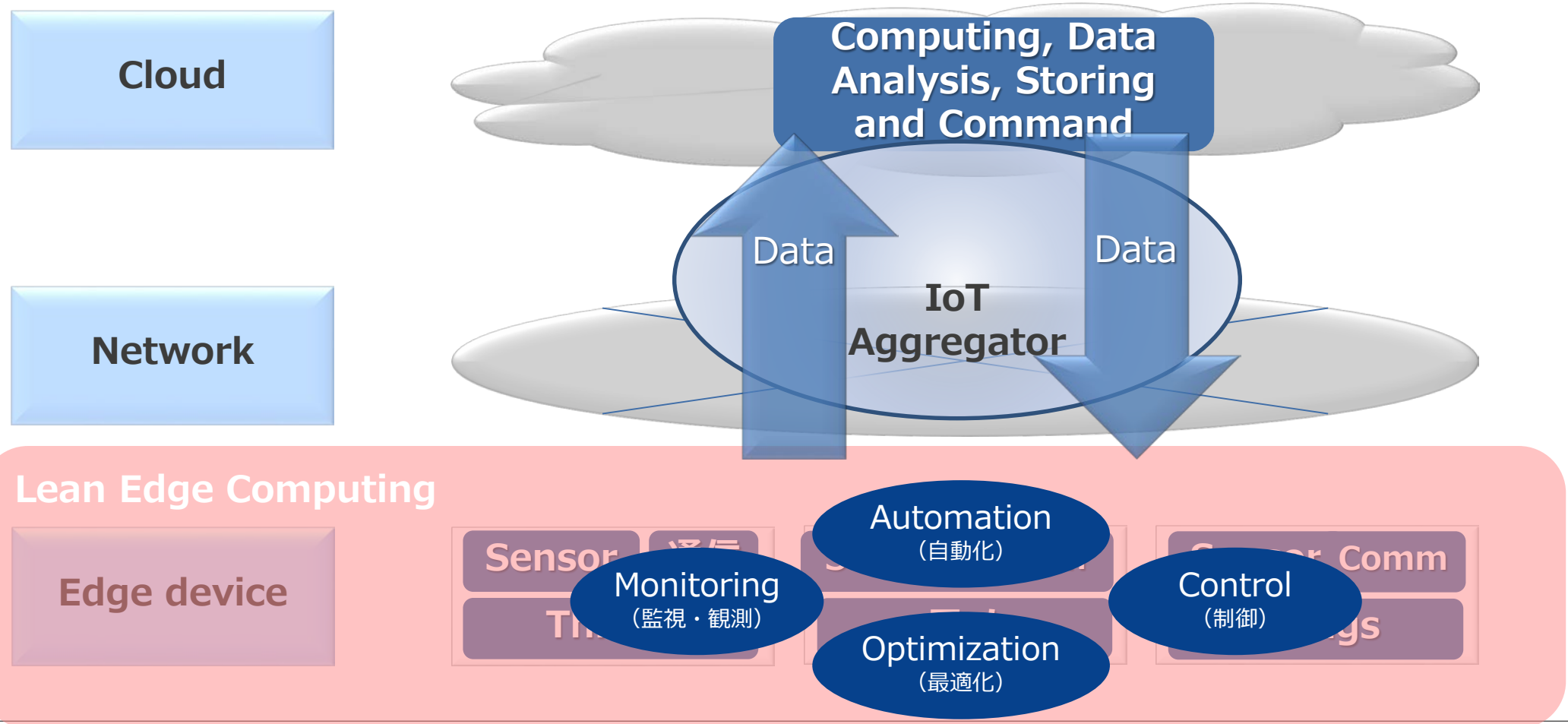
Sustainability

e-AI: embedded Artificial Intelligence
IoT: Internet of Things

IoT Layer Structure & Our Business Domain



IoT Layer Structure with Aggregator



IoT-Engine (Realization of IoT solution)

RXv2 54MHz
FPU MPU

Clock
- HOCO (32/54MHz)(*3)
- LOCO (4MHz)
- ILOCO (15kHz)
- Main-clock (1 – 20MHz)
- Sub-clock(32.768kHz)
- PLL (up to 54MHz)
- USBPLL (48MHz)

Bus control
- 16bit External Bus I/F
- DMAx4 | DTC

Serial I/F
- SCI | IrDA
- RSPI | RIIC
- USB2.0 FS Host/Func. | I2S
- CAN

option

Security
- TSIP
- AES(GCM) | RNG

Memory
- Flash memory 128KB – 512MB
- RAM 32K – 64KB
- E2 Data Flash 8KB

Timer
- MTU2 x 6 | TMR x 4
- TPU x 6 | CMT x4
- RTC | LPT

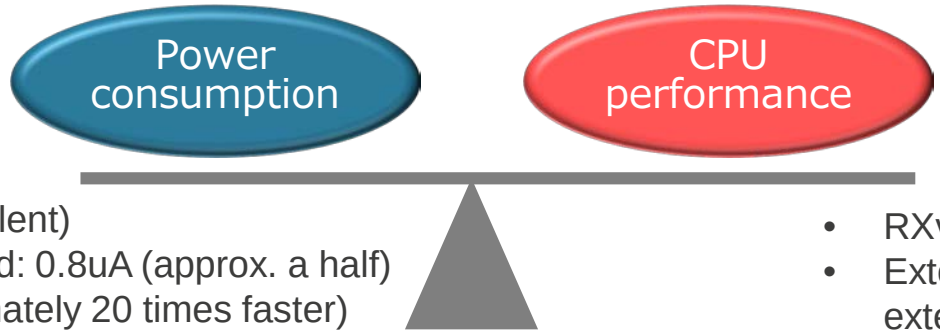
Analogue
- 12bit ADC
- 12-bit DAC
- TEMPS | COMP x 4

Other function
- POR | LVD
- ELC | MPC
- CAP touch

Safety function
- IWDT | POE2
- CAC | AD check
- CRC | DOC

Small size, Low power, enough performance, connectivity, Sensor interface, (Security)

CONCEPT OF RX231



Just good enough for edge

- 0.2mA/MHz in run mode (equivalent)
- In standby mode w/RAM retained: 0.8uA (approx. a half)
- Fast wakeup: min.5us (approximately 20 times faster)

( ): Comparison with RX210

①High code efficiency

- RXv2 core 4.16Coremark/MHz (35% higher)
- Extended DSP/FPU instruction (2 to 4 times extended)

( ): Comparison with RX210

- TSIP, AES, RNG, Unique ID (Encription, robust key management)
- MPU

Basic function of security

③High security

- SDHI/CAN/USB wireless communication module and communication of FA equipment supported
- CapTouch with high sensitivity and high noise immunity

②Various comm. and UI

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