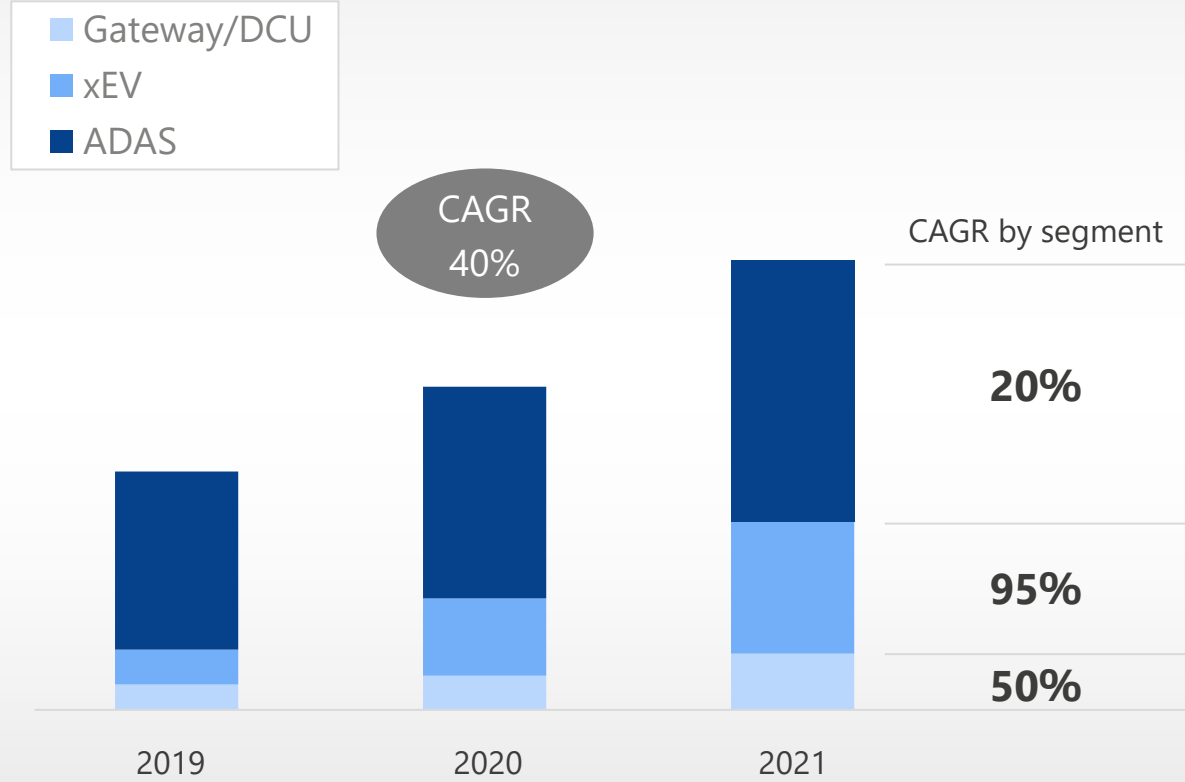


AUTOMOTIVE STRATEGY

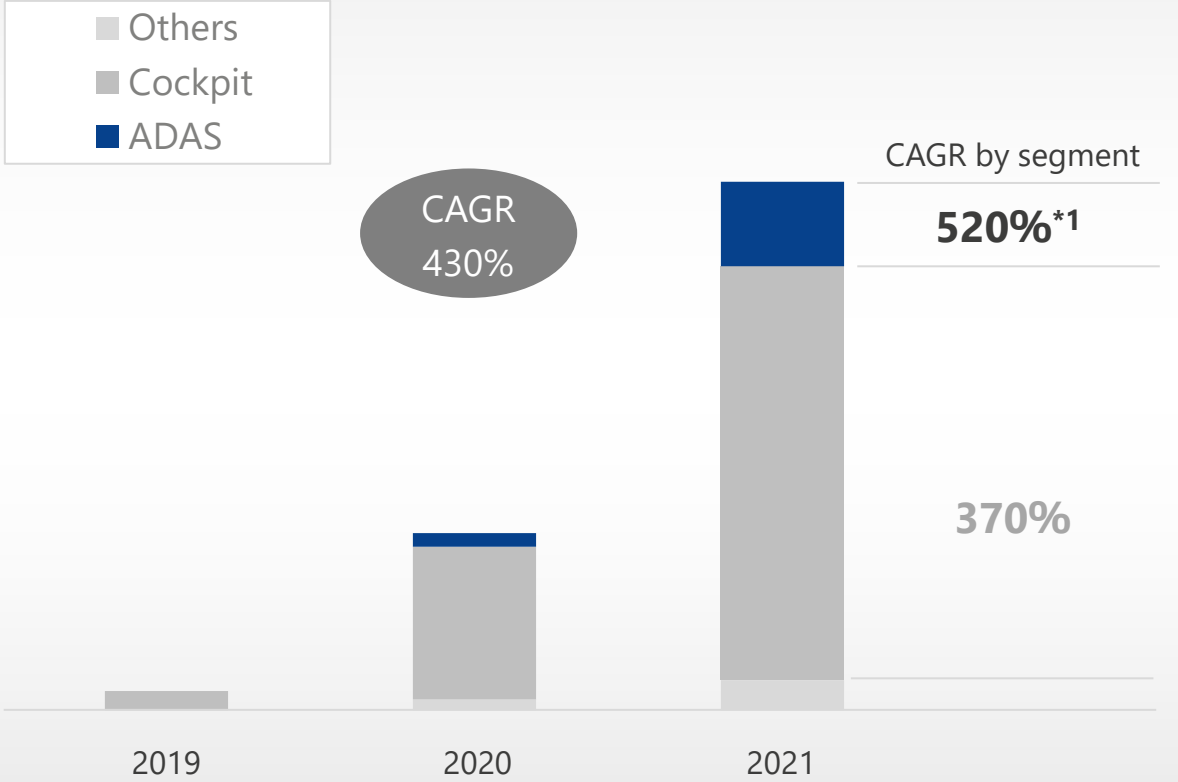
MARCH 3, 2022
TAKESHI KATAOKA / VIVEK BHAN
SENIOR VICE PRESIDENT
AUTOMOTIVE SOLUTION BUSINESS UNIT
RENESAS ELECTRONICS CORPORATION

PROGRESS UPDATE : RH850 / R-CAR GEN3 REVENUE

RH850



R-Car Gen3



*1: CAGR:2020-2021

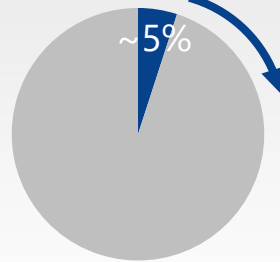
3 PILLARS FOR GROWTH

Revenue portfolio

Emerging customer/region



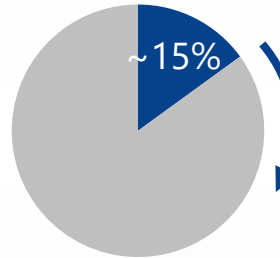
- Emerging OEM
- IT platformer
- China/India/SEA



Emerging application



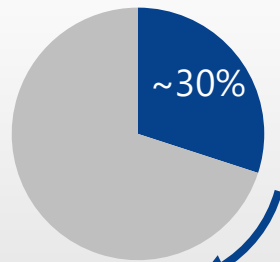
- E/E architecture
- ADAS/Auto Drive
- xEV



Analog & Power

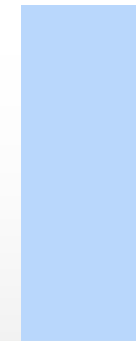


- Analog product
 - PMIC/BMIC/GDU/MMIC/BLE
- Power product
 - IGBT/ SiC

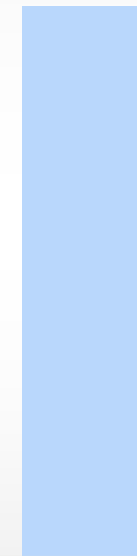


Revenue

Grow @SAM

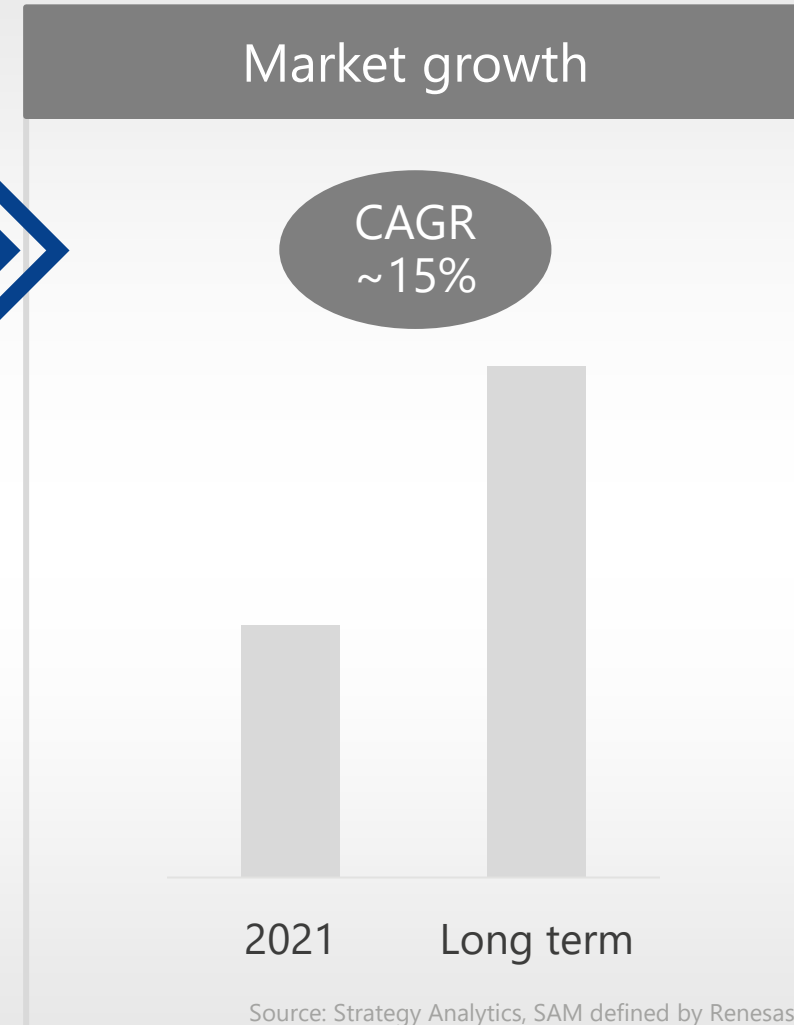
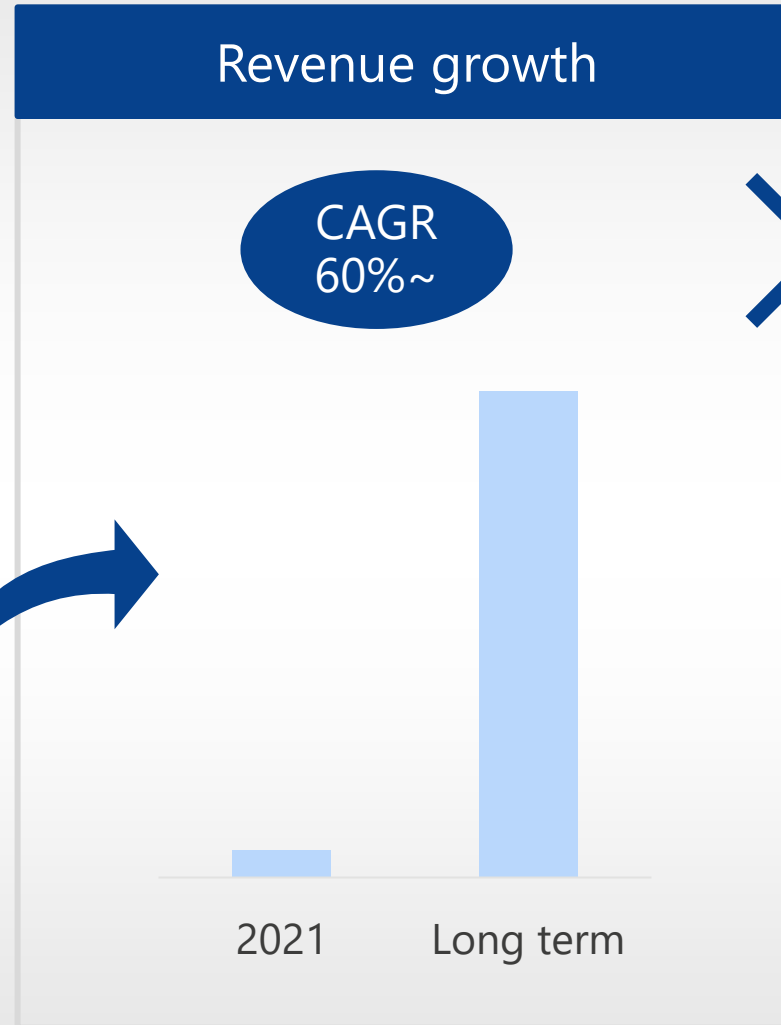
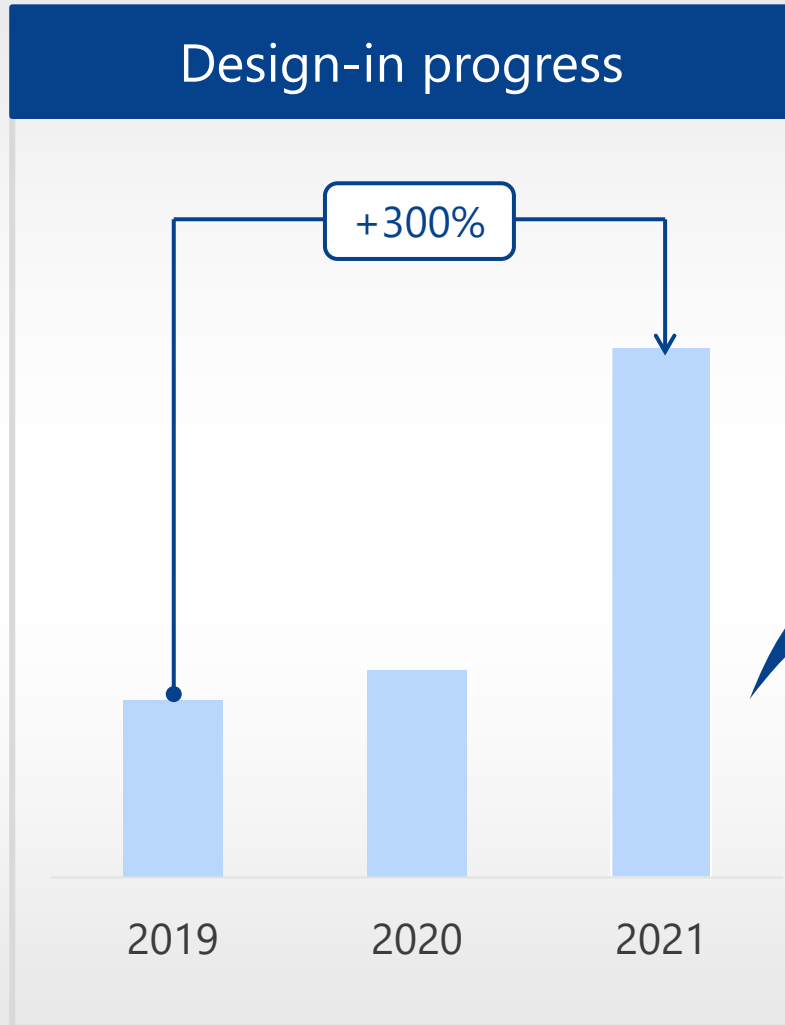


2021



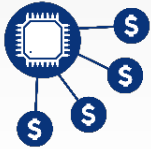
Long term

EMERGING CUSTOMER/REGION GROWTH



CAPTURING DEMAND OF EMERGING CUSTOMER/REGION

Winning Combo / Embedded processor leadership



- Reference design
 - Electric vehicle
 - 2-wheeler EV

New business model, service and product

- RISC-V based product
- Cloud based software service



New Business Creation



- Going broader
- New customer acquisition

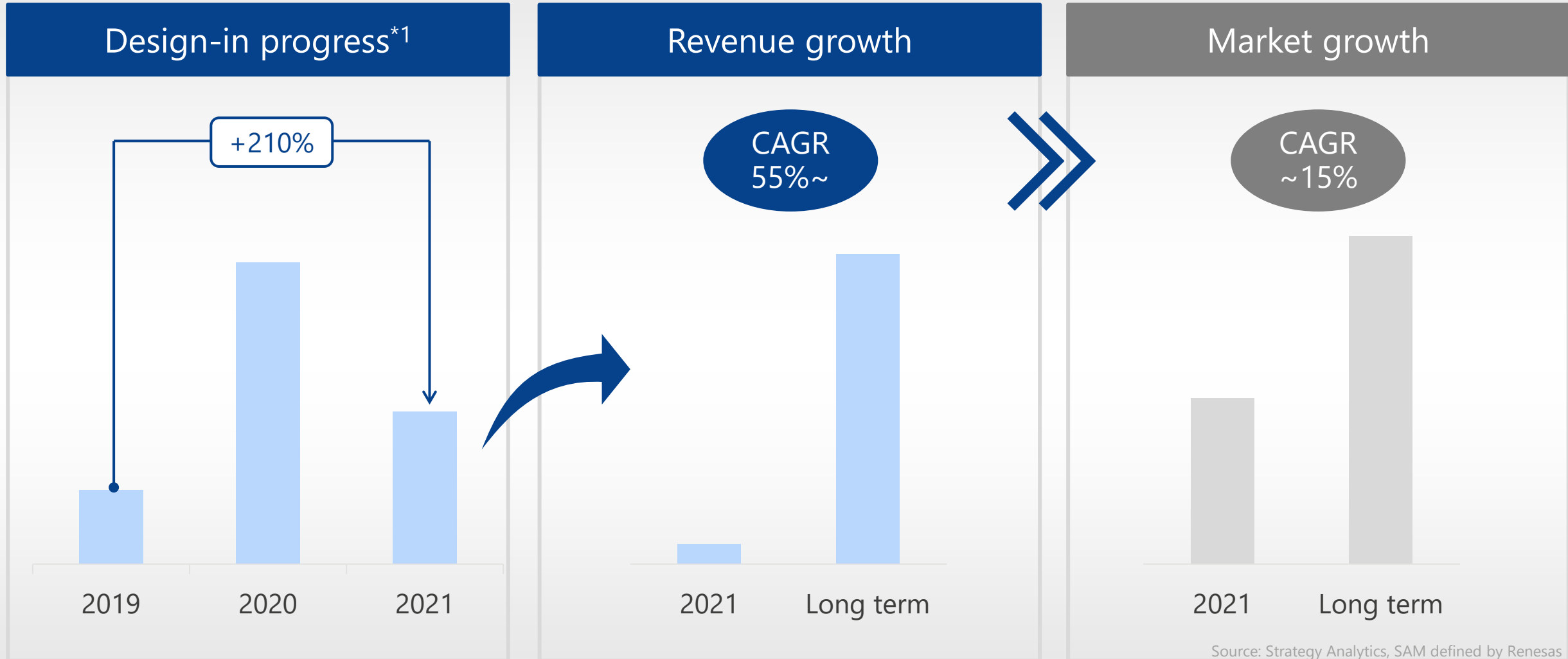
Emerging OEM / IT platformer / China, India and SEA

- Agile approach / process
- Local discretionary



Dedicated organization with start-up mindset

RENESAS GROWTH IN E/E ARCHITECTURE MARKET



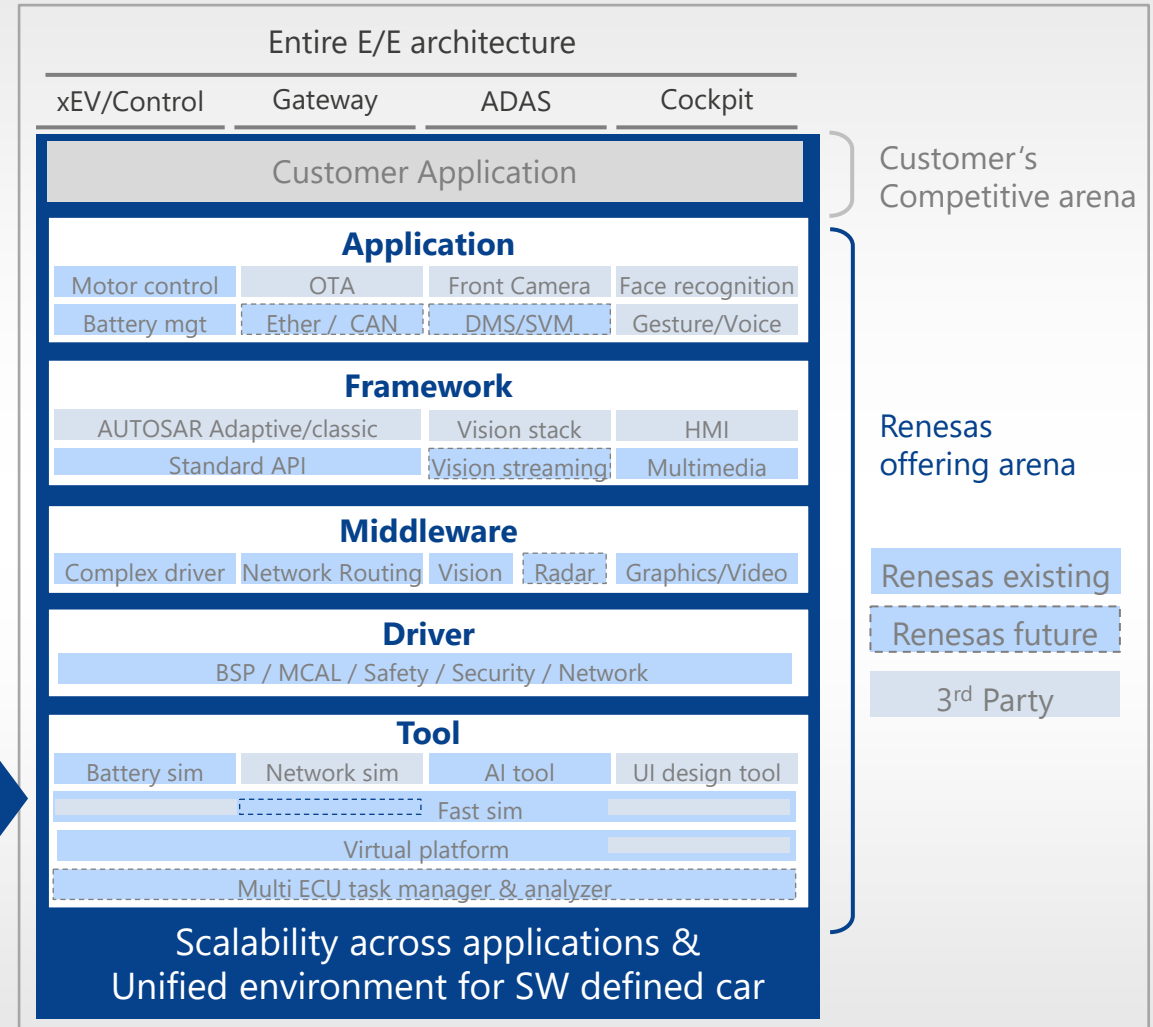
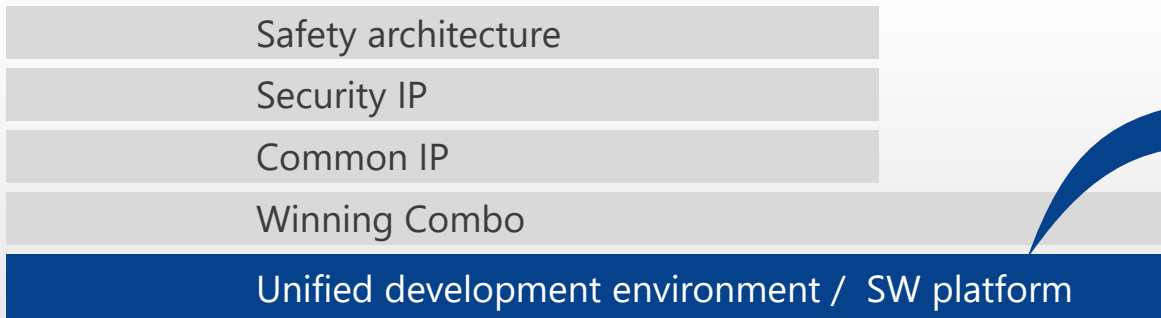
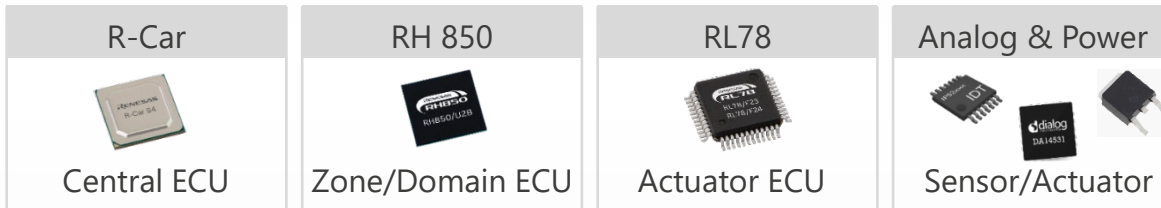
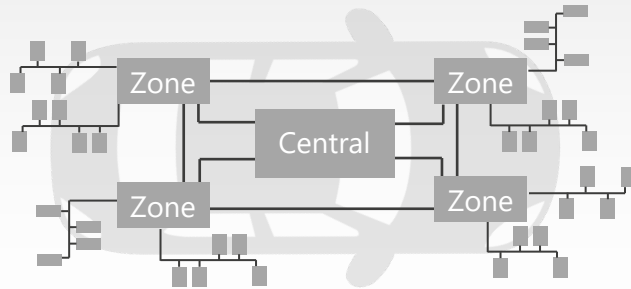
*1: Including large SoC PF Design-in in 2020

E/E ARCHITECTURE : UNIFIED ENVIRONMENT/SW PLATFORM

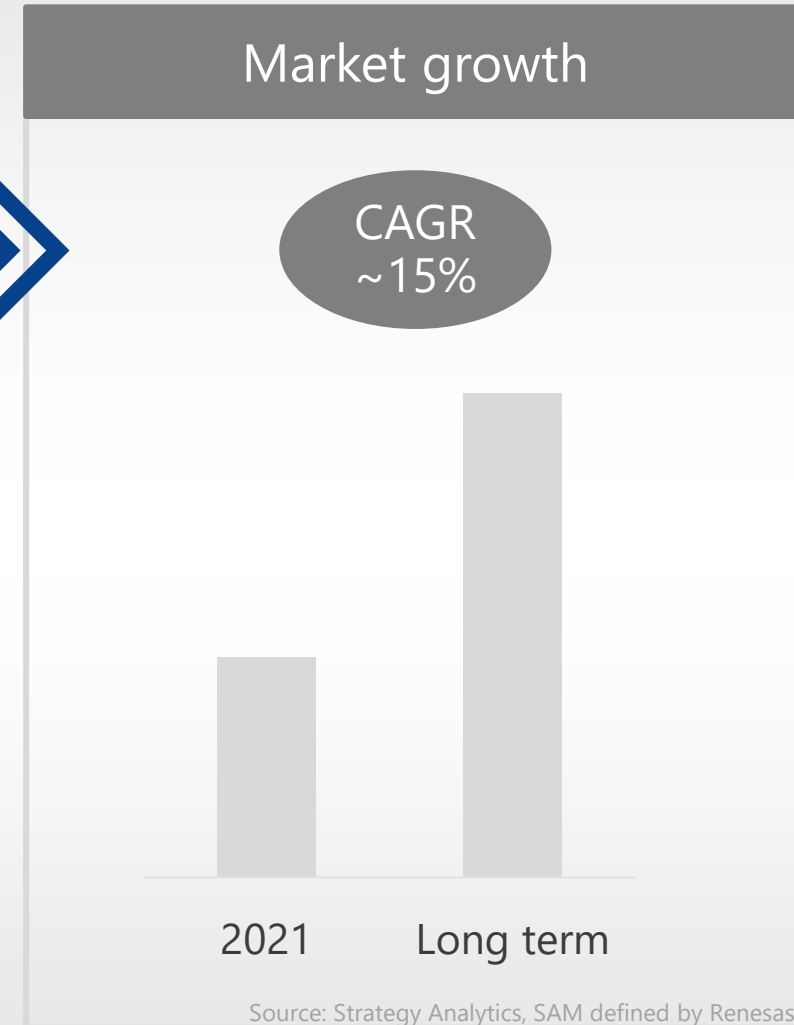
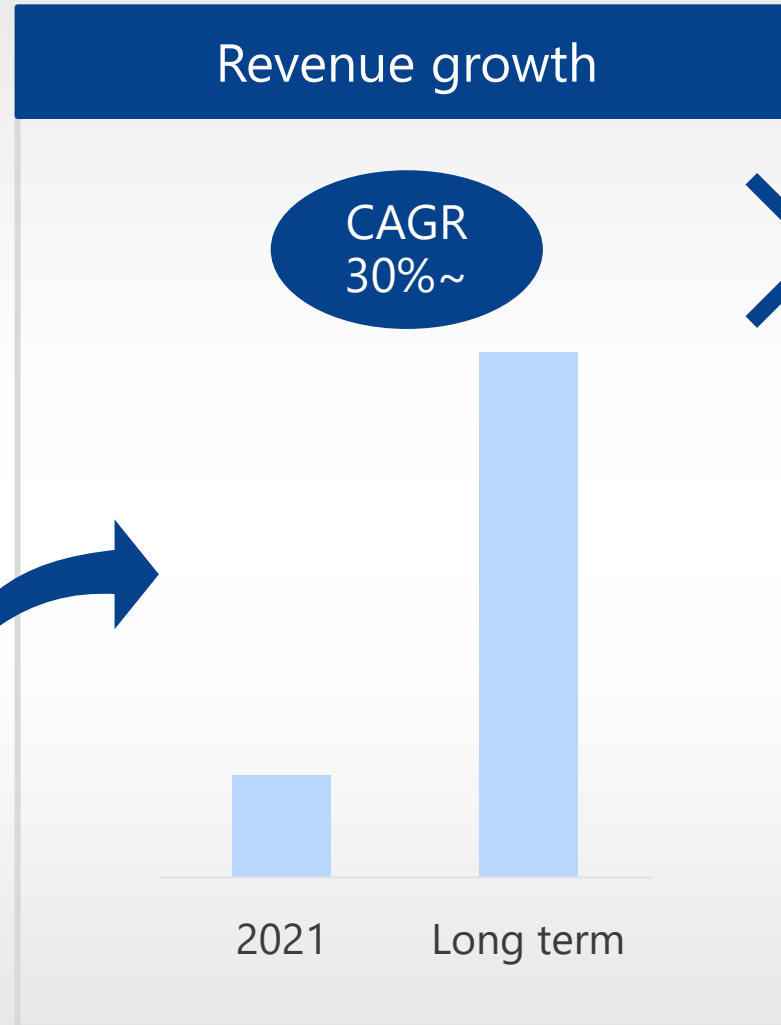
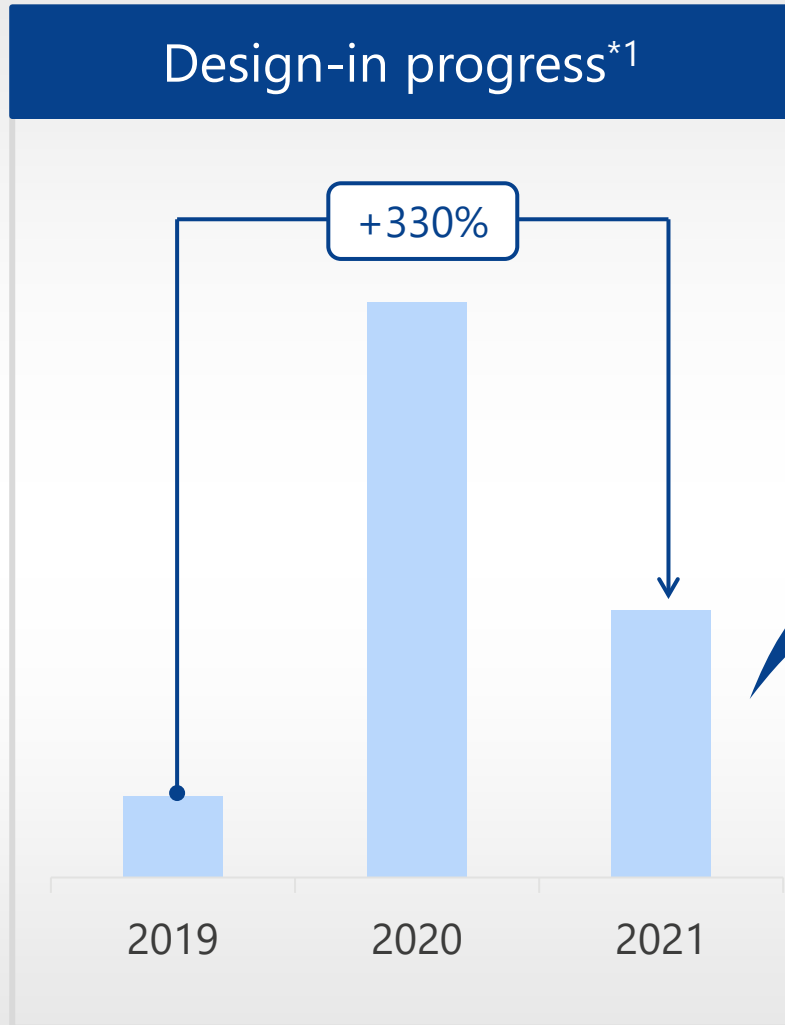
Offering for new architecture

Customer pain points

- Car system level integration
- Software compatibility



RENESAS GROWTH IN ADAS MARKET



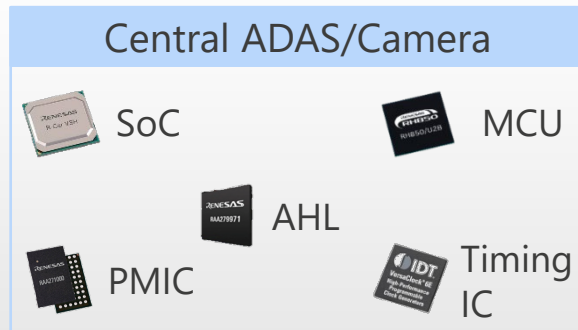
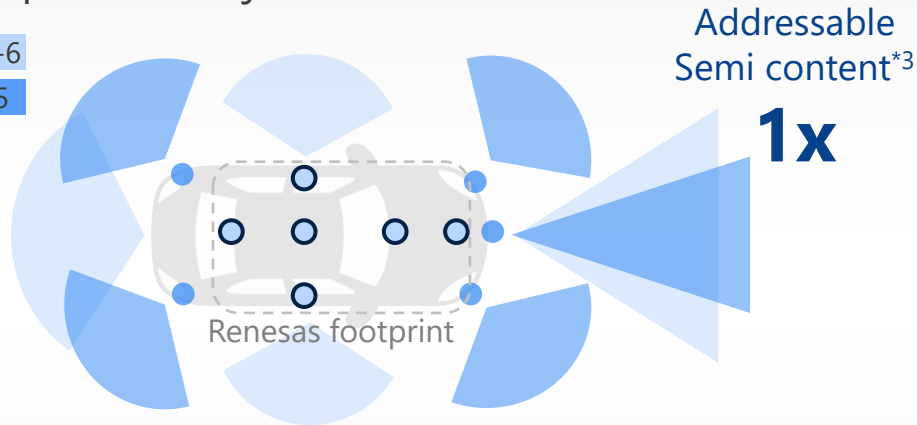
*1: Including large SoC PF Design-in in 2020

ADAS : CONTENT EXPANSION WITH RADAR

Existing solution*1 – Central ADAS/Camera

- Best in class SoC for camera with power consumption
- Strong footprint for major Tier1s/OEMs

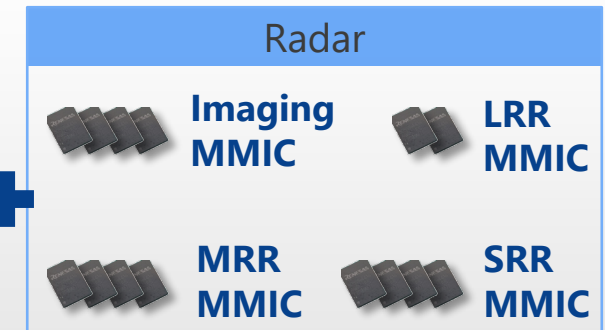
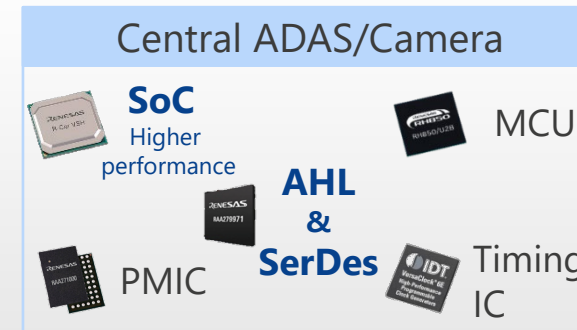
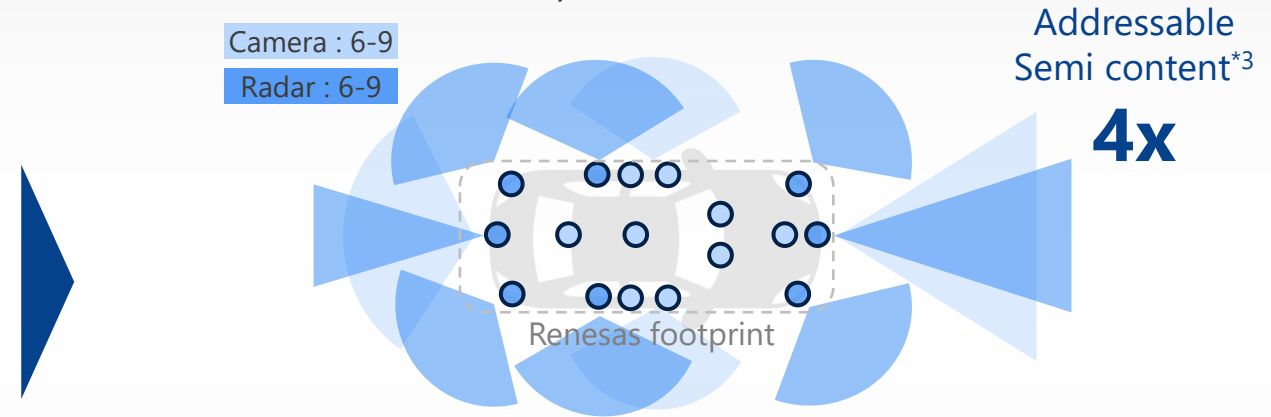
Camera : 2-6
Radar : 3-5



Next solution*2 – Central ADAS/Camera + Radar

- Best in class Radar MMIC with advanced 28nm RFCMOS
- Central SoC for Camera/Radar fusion

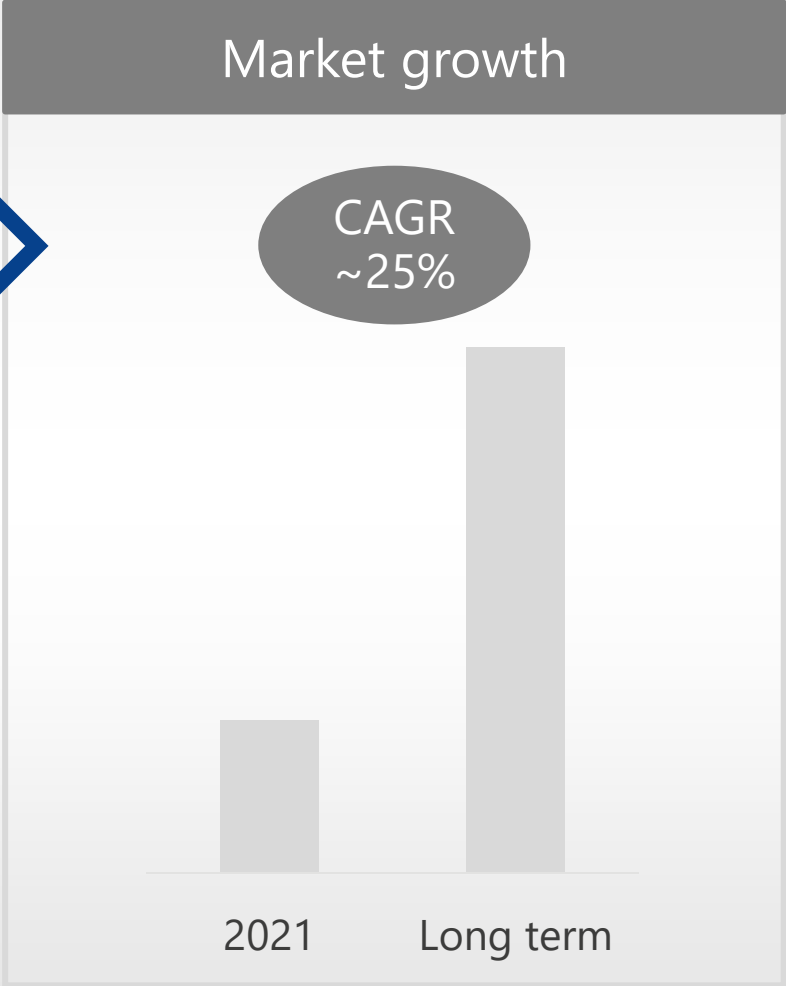
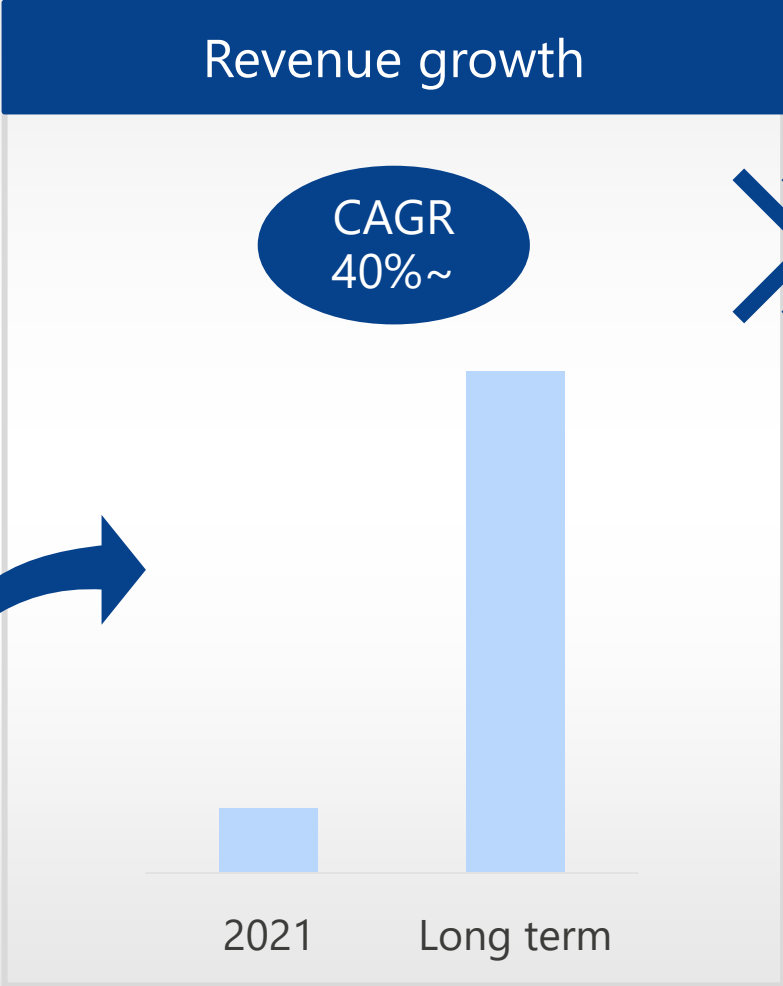
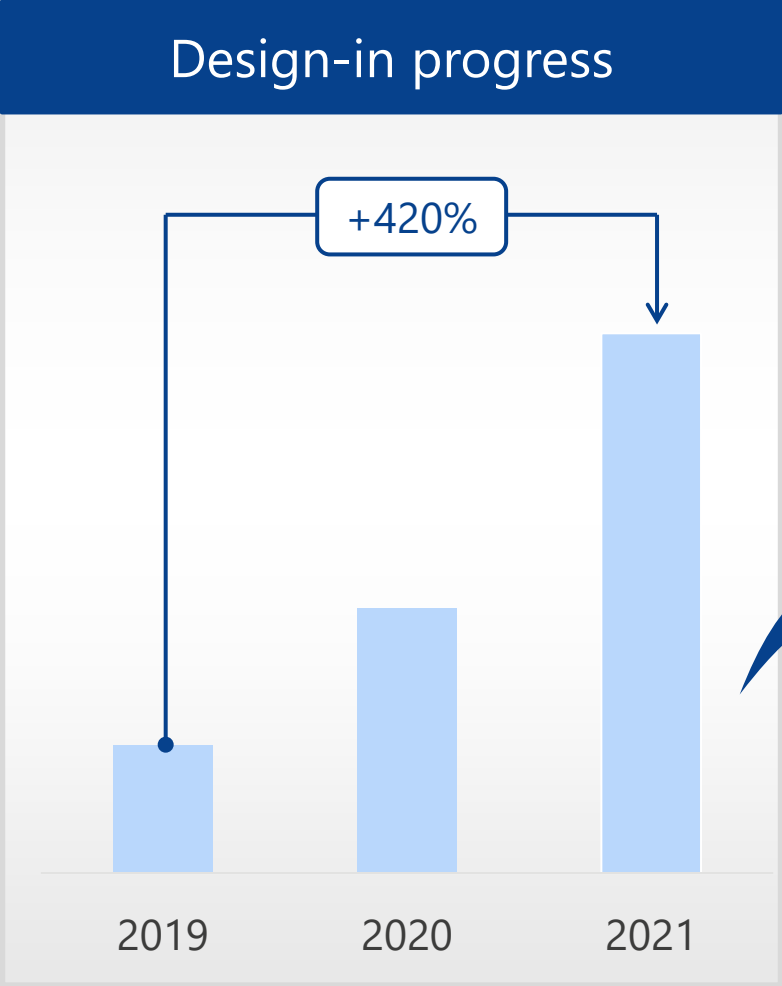
Camera : 6-9
Radar : 6-9



*1: Level2 base *2: Level3 base *3: Strategy Analytics, SAM defined by Renesas

RENESAS GROWING SHARE IN xEV MARKET

Renesas is rapidly expanding in xEV space with faster growth anticipated



xEV : LEADING PRODUCT PORTFOLIO

Broad and diversified Renesas product portfolio with highly competitive performance
Many of the products below are used multiple times in a single system application

| | | | |
|--|-----------------------|-----------------------|---------------------------|
| Scalable MCU family | MCU | | |
| Best fit optimized power management | PMIC | IPD | Gate driver |
| Precision sensing | Battery management IC | Battery current sense | Sensor signal conditioner |
| Unique analog | CMIC | Contactor driver | Position sensor |
| Communication | Communication bridge | BLE | Optocoupler |
| Efficient power devices | MOS | IGBT | SiC/GaN |

KEY ADVANTAGE : WINNING COMBOS FOR xEV

Differentiated Approach : Cost Competitive : Optimized System Solution : Fast Time to Market

Complete system solutions

- Integrated “digital + analog + power” combo’s
- Faster Time to Market with reduced customer R&D effort

Best-in-class analog

- Precision battery monitor
- Position sensing
- Lowest-power BLE
- Power management

Scalable analog

- Scalable-cell battery monitor
- Scalable-functionality gate driver
- Flexible and configurable analog

Winning Combo



Efficient power device

- Best-in-class power consumption
- Investment on IGBT / MOS capacity
- Acquisition / partnership for SiC / GaN

Scalable processors

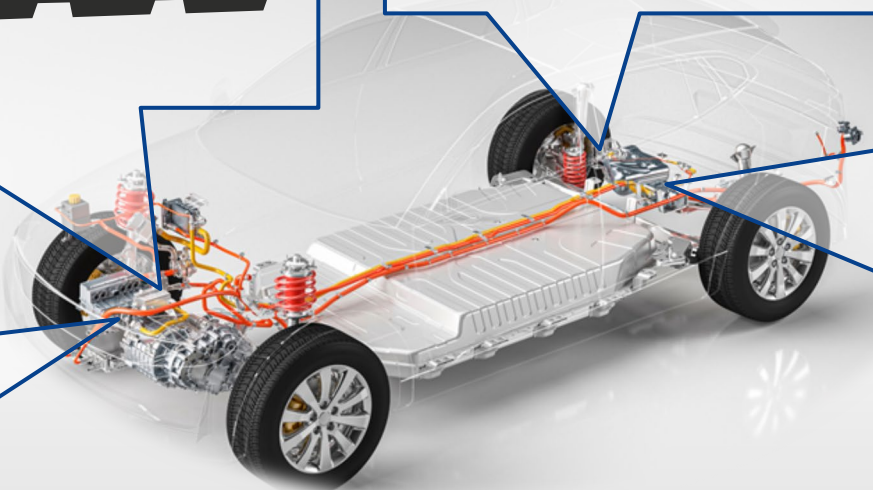
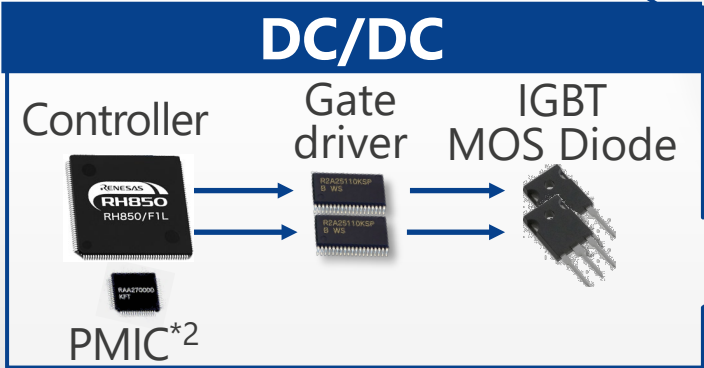
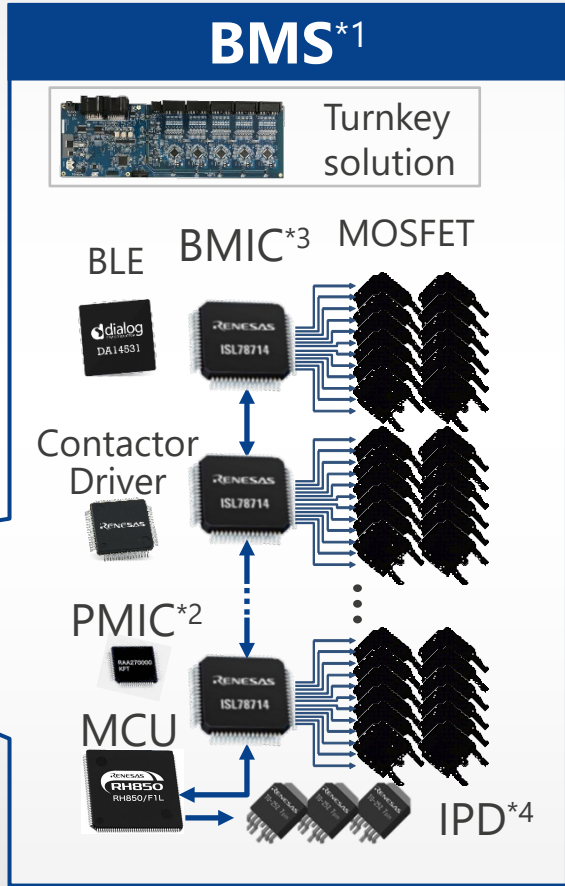
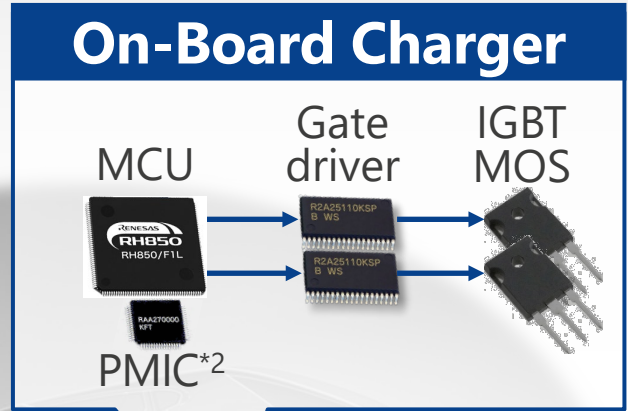
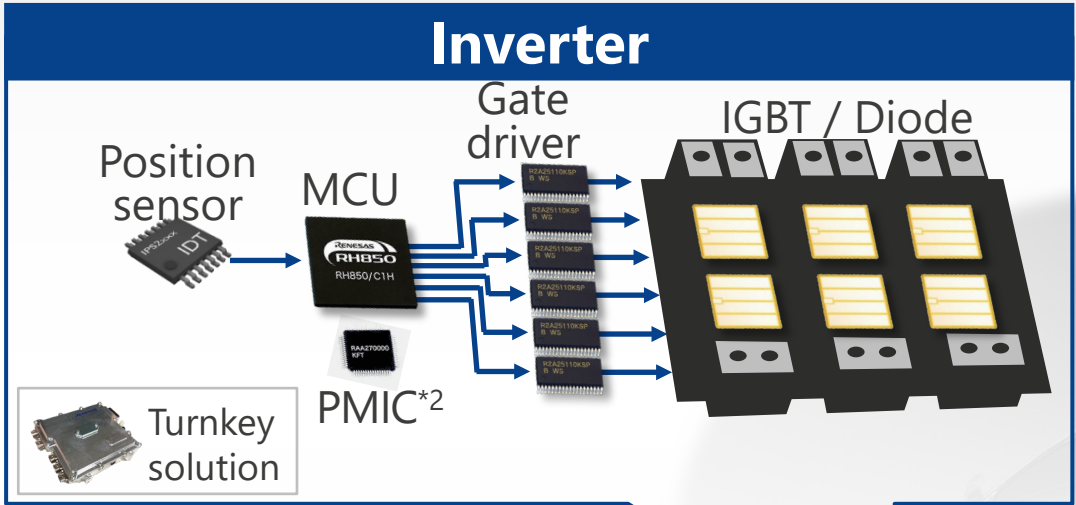
- Optimized Compute
- SW “First” approach
- Security & motor control IPs

High quality

- <1ppm return
- World Class Methodology
- Functional Safety

RENESAS PLATFORM SOLUTIONS FOR xEV SYSTEMS

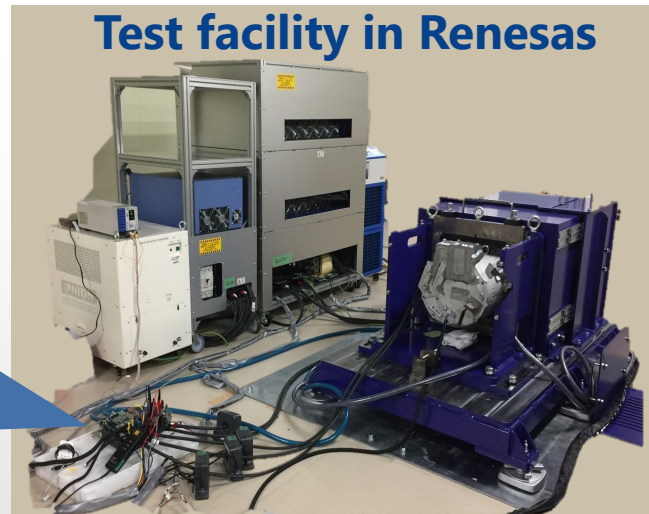
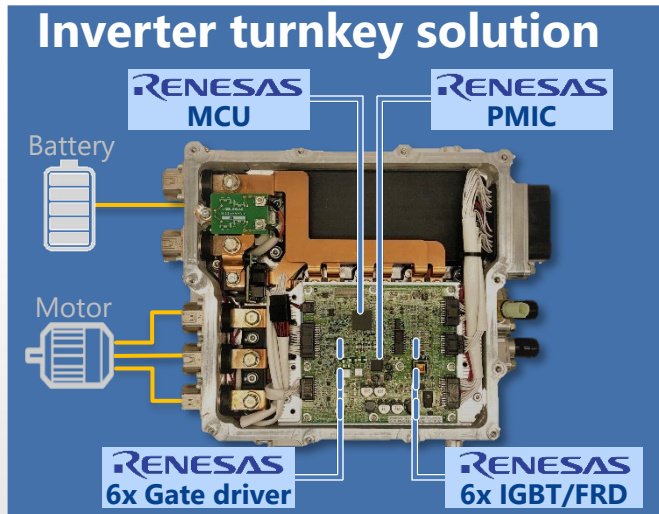
Broad Product Portfolio serves wide range of automotive applications
“Digital + Analog + Power + Software” - Fully Integrated Application Based Optimized Solutions



*1: BMS: Battery Management System *2: PMIC: Power Management IC *3: BMIC: Battery Management IC *4: IPD: Intelligent Power Device

EXPANDING & ACCELERATING ADOPTION INTO xEV

- Multiple **Winning Combos** and Reference Designs for **ease of use** and **faster time to market**
- **Turnkey optimized** solutions and support for **emerging markets** like China, India and other regions
- Validated **system solutions** (MCU + Analog + Power + S/W) eases **customer adoption**
- Strong history and know-how for **functional safety** and **quality** for automotive
- Strong focus and investments in **innovation**, **cost** competitiveness and **capacity** expansion



Demo car

[Renesas.com](https://www.renesas.com)