

Thematic Event: Internet of Things

hosted by Liberum

Thomas Rosteck, Division President CSS

23 March 2021

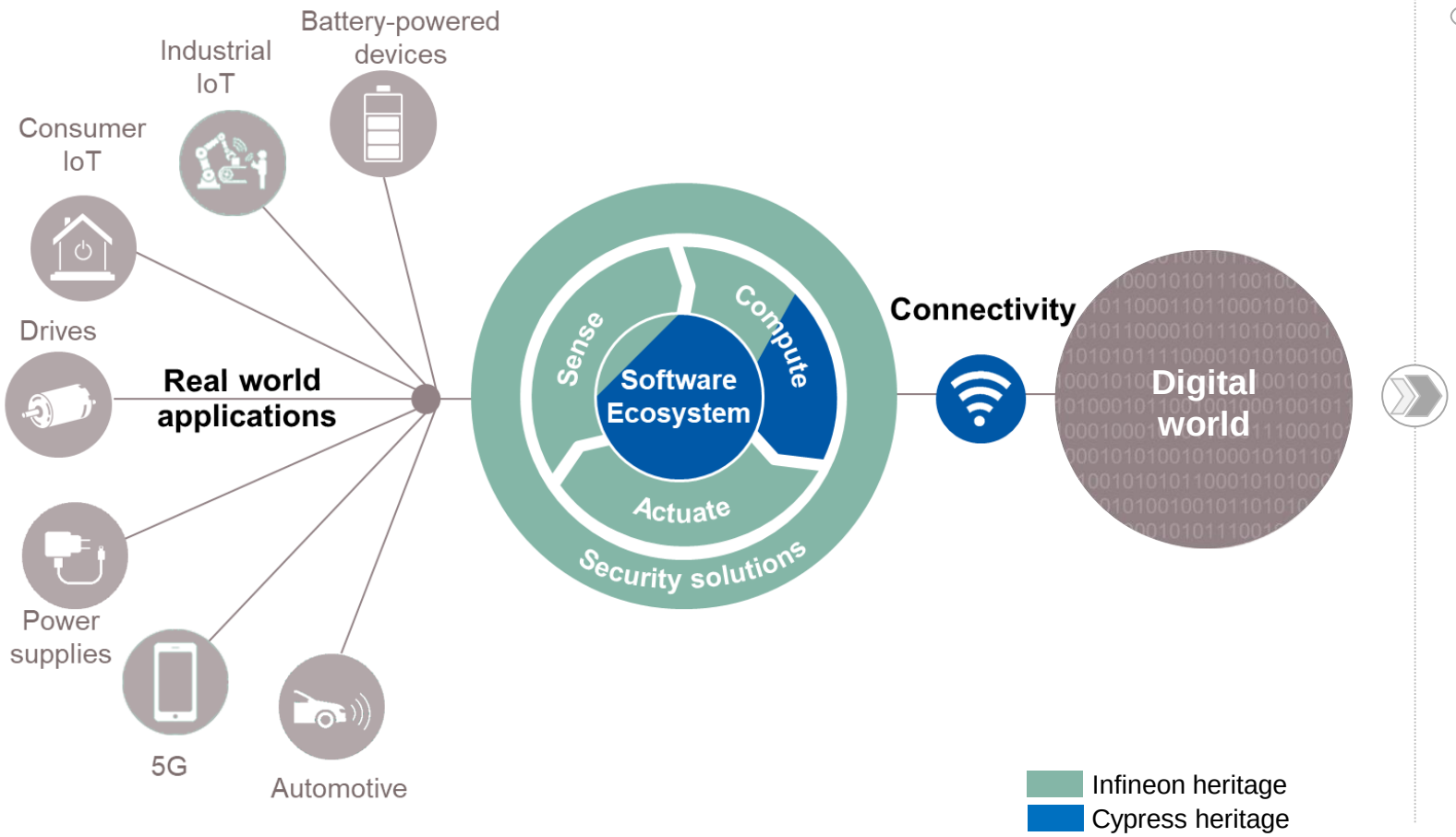
Internet of Things: ubiquity allows for double-digit billion number of devices; order of magnitude higher than in previous areas

	PC Era	Smartphone Era	IoT Era
Evolution (Launch)	› Launch: 1981	› Launch: 2007	› Launch: 2009
Characteristics	› Single product type › Few major players › Triple-digit million devices/year	› Single product type › Few major players › Single-digit billion devices/year	› Many product types › Numerous providers › Double-digit billion devices /year
Silicon winner	› Processor providers	› Wireless solutions providers	› System solutions providers
Interface			

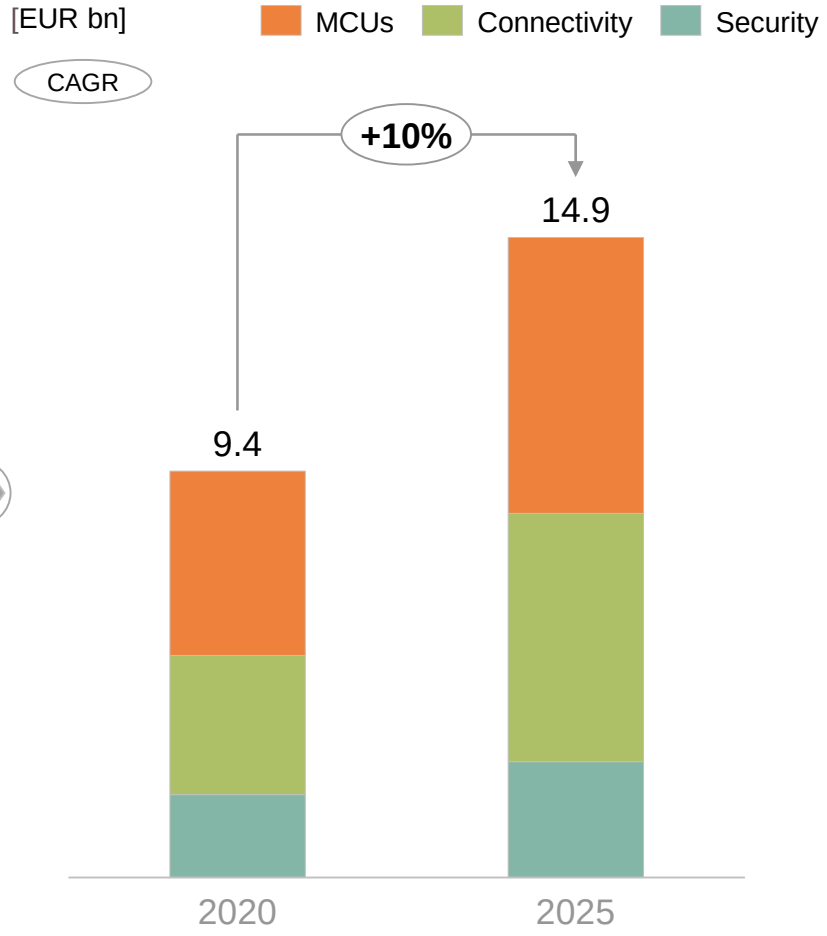
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Compute, connectivity, security and software ecosystem capabilities enable CSS to address a growing market driven by the IoT

Infineon portfolio elements and link between real and digital world



CSS market*



* Source: Infineon internal market model based on SAM view

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We empower the world to easily connect through smart and trusted solutions

Applications

Industrial and Consumer IoT

Industrial



Smart Home



Automotive



Gaming



Wearables



Payment, ID, Ticketing

Payment



Identification



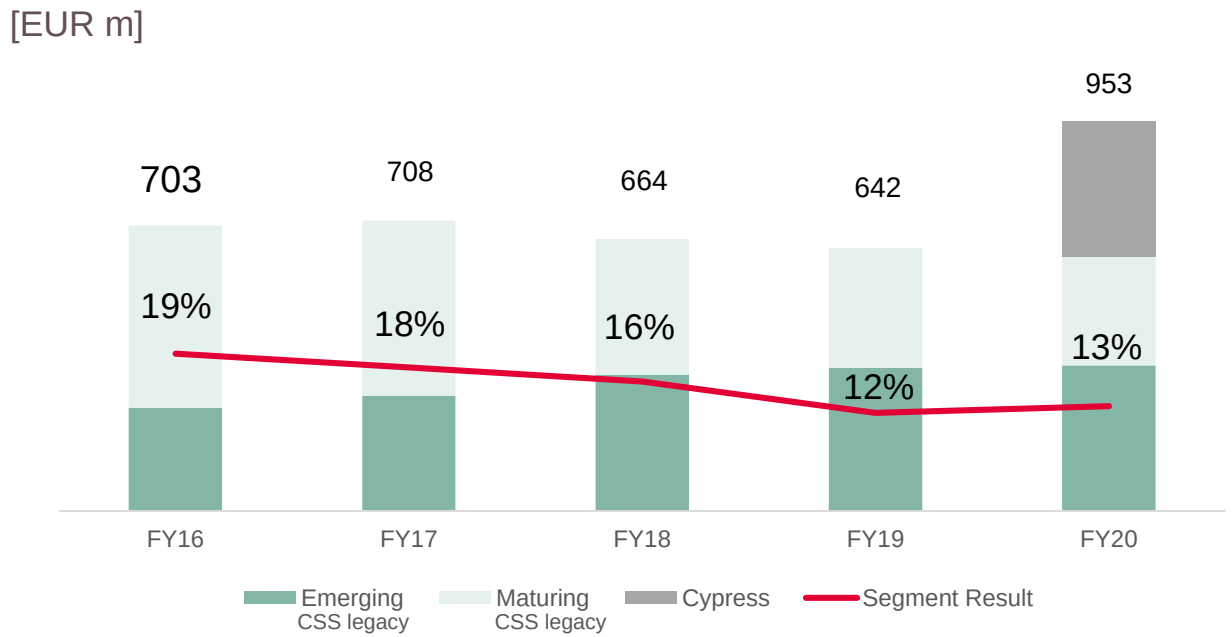
CSS capabilities

- Compute
- Wireless Connectivity
- Security
- Software

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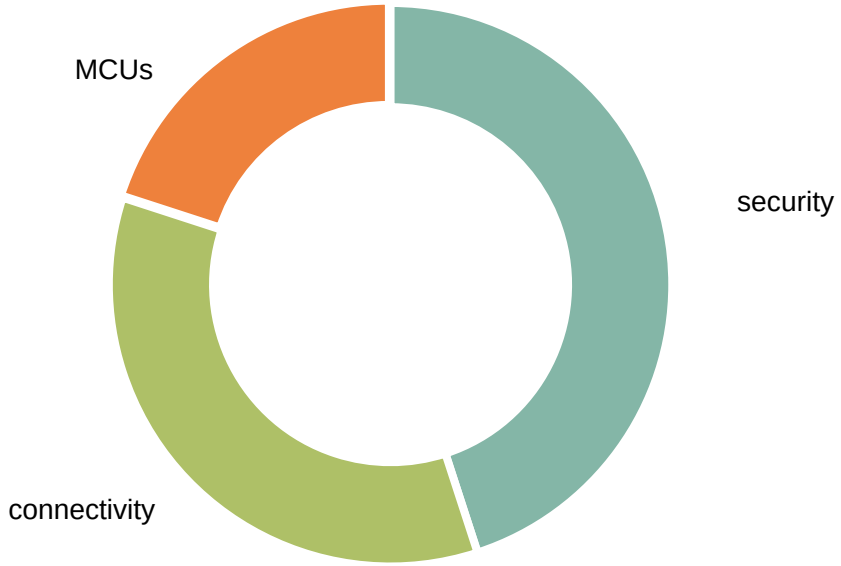
CSS at a glance – CSS legacy has been transitioning from a product to a system solutions provider

CSS reported revenue and Segment Result Margin



*

FY20 revenue split by product group



Key customers

AdvanIDe · BANG & OLUFSEN · BOSCH · brother · fitbit · GPO · hp · HYUNDAI · IDEMIA augmented identity · Lenovo · Microsoft · Midea · Nintendo · Raspberry Pi · THALES · SIEMENS · Watchdata

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Customer needs are best captured by our combination of a complete solution approach with a broad ecosystem

CSS P2S approach



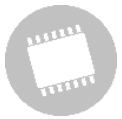
Customer System



Ecosystem



Software



Hardware

IoT & Consumer	Industrial	Secure transactions
IoT platforms	Dev. networks	Partnerships	Ind. associations
Dev. environment	Firmware	Operating system	add. SW features
Connectivity	Compute	Security	Power, sensors

Applications

Services

Full system functionality

Basis Technology

One stop shop for the customer

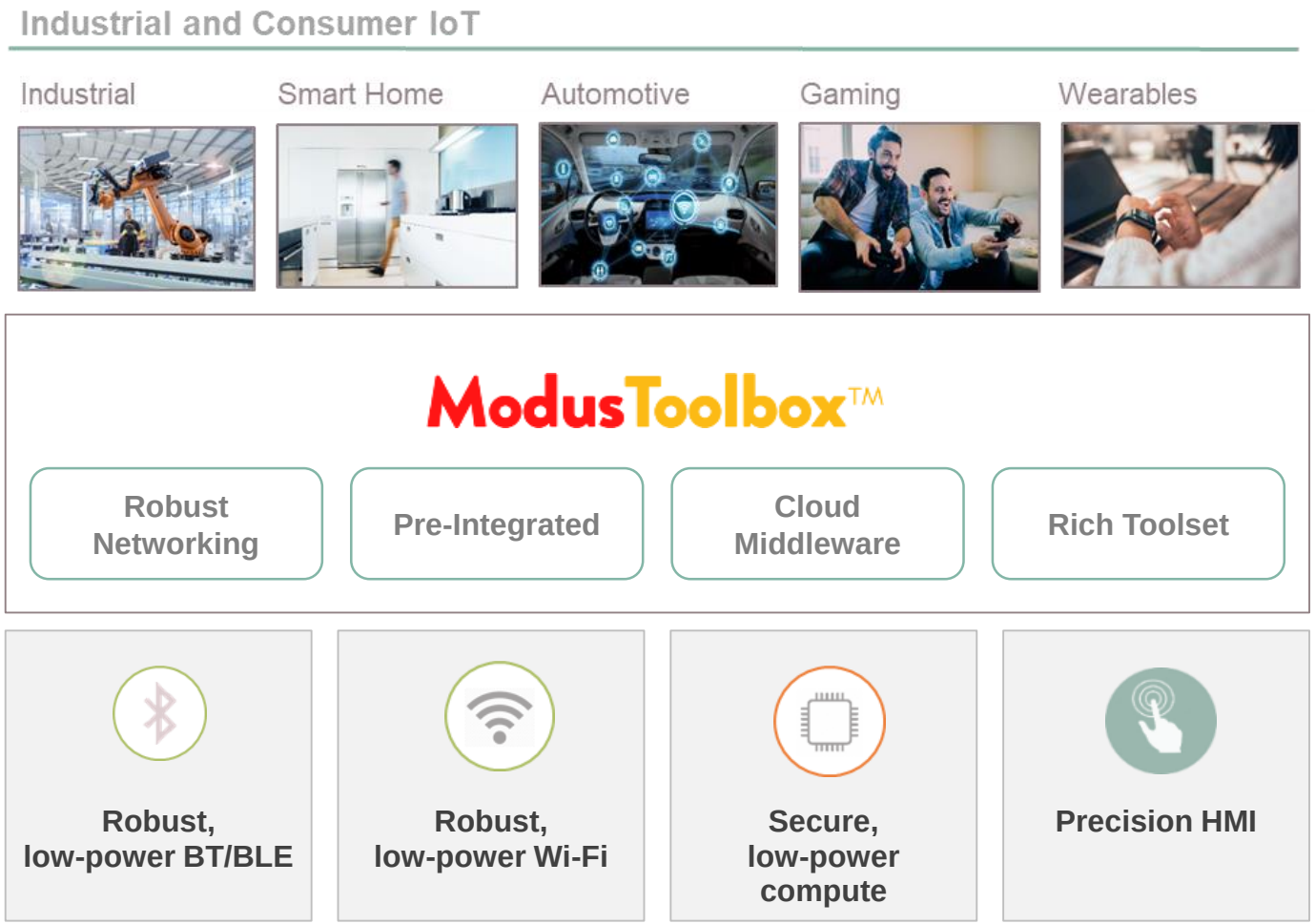
P2S

Product to System

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ModusToolbox™ – Differentiation by seamless integration of compute and connectivity components into our customer products

ModusToolbox™ supports our easy-to-integrate approach and underpins our P2S strategy



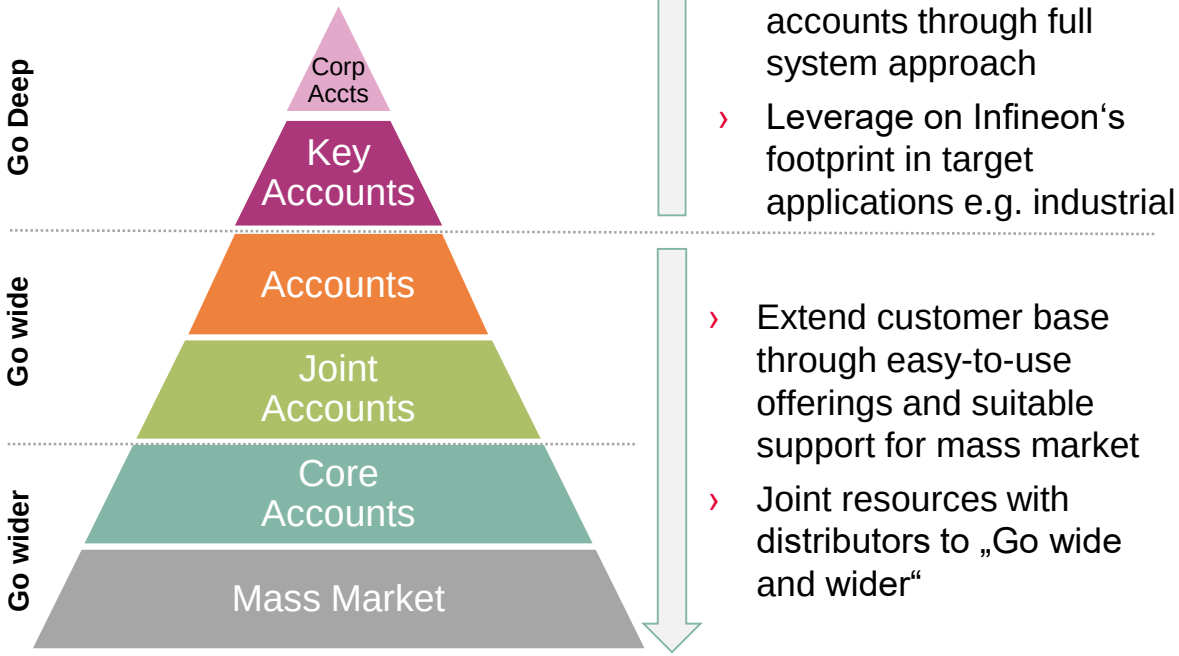
- Integrated Compute and Connectivity development environment
- Pre-integrated Compute and Connectivity for fast time-to-market and low-risk development
- Combined platform simplifies ongoing maintenance
- Exposes most advanced capabilities best-of-breed, low-power, robust connectivity
- Seamless Integrated Design Environment (IDEs) flows
- Full-function library manager supports collaborative code sourcing
- Easy-to-integrate sub-systems with well documented APIs

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Go-to-market approach – Extend focus towards „Go wide and wider“, smooth and balanced flow across the customer journey

CSS go-to-market approach

Proactive customer portfolio management



- Go deep at Infineon accounts through full system approach
- Leverage on Infineon‘s footprint in target applications e.g. industrial
- Extend customer base through easy-to-use offerings and suitable support for mass market
- Joint resources with distributors to „Go wide and wider“

Ensure a smooth and balanced flow across the customer journey

Awareness | Consideration | Comparison | Sample order | Prototyping | Purchase | Retain or Sell up



Go Deep

- Outbound marketing
- Direct sales
- Customer support

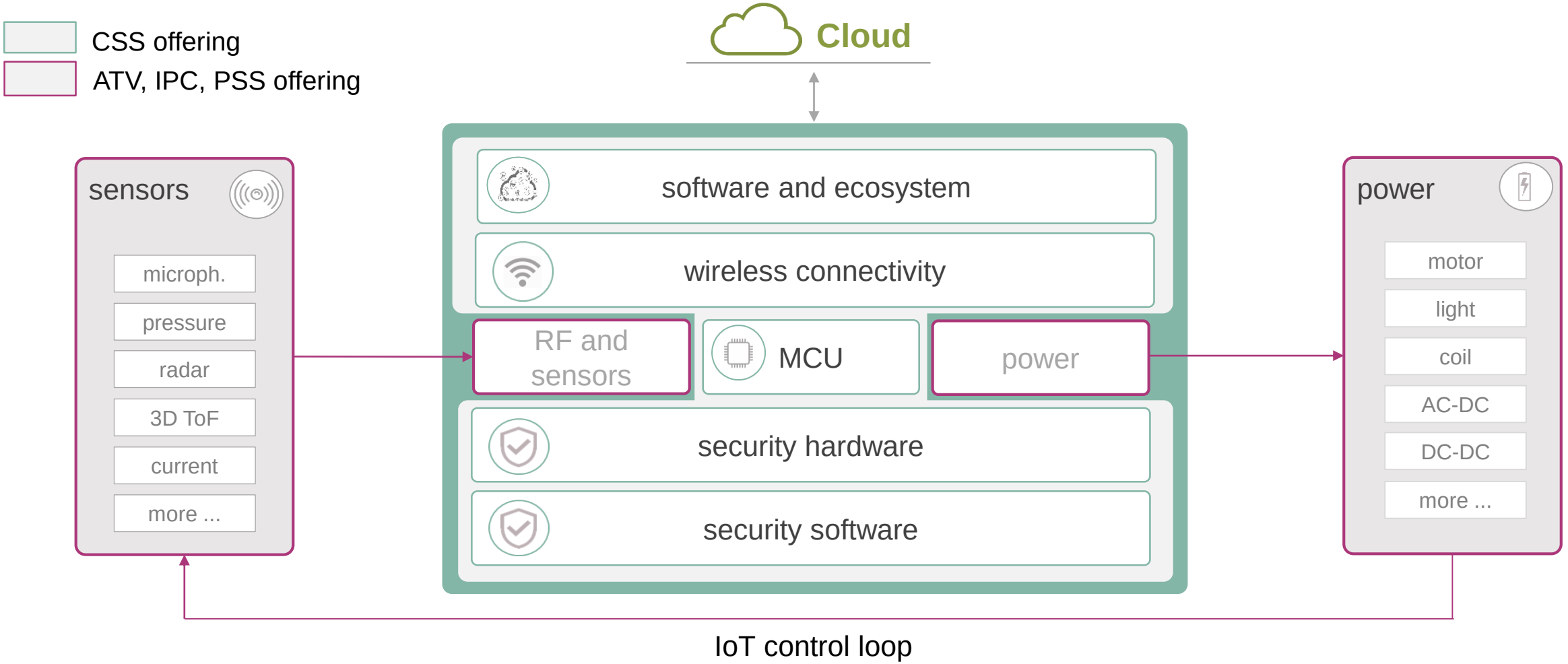


Go wide and wider

- Enhanced digital capabilities
- Inbound marketing (digitally driven)
- Data-driven sales
- Customer success management

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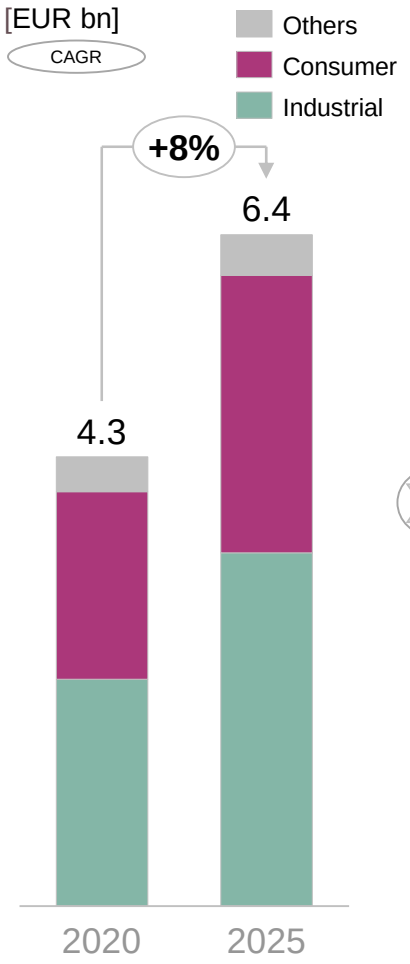
Infineon offers the entire system for IoT − CSS allows for a full system solutions approach to unlock new markets and applications



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MCUs – Dynamic market environment; CSS is well set to tackle trends in IoT & Consumer as well as Industrial markets

MCU market*



Trends in MCU markets

Continued growth of MCUs in smart home, driven by home automation devices and other connected devices

Industrial MCUs growing across wide range of applications

Blurring cost / performance differences between MCUs and MPUs

Beginning to embrace 32-bit MCU with machine learning (ML) acceleration for edge compute

Segments and focus topics

IoT & Consumer



- Deliver core IoT blocks (MCU, radios, software) and bundled solutions
- Pairing of MCU and connectivity
- Prepare and enable emerging edge compute wave with ML capabilities
- Leading integrated security features

Industrial



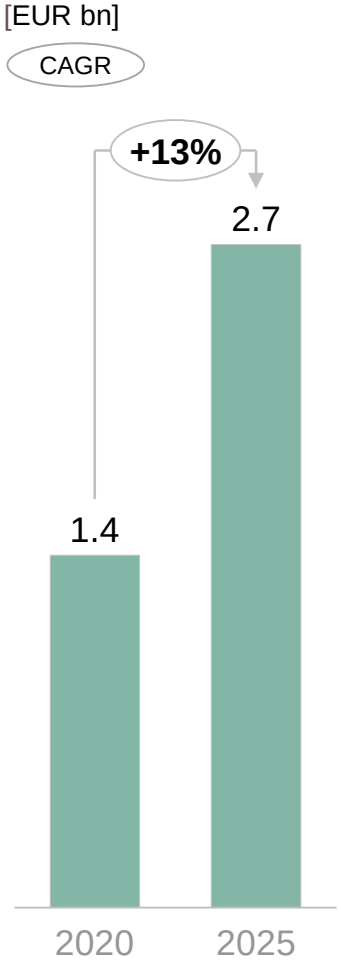
- Deliver highly differentiated MCU based industrial solutions
- Provide easy to use sub-system solutions based on Infineon building blocks (sensor control, motor control, power management and connected MCUs)

* Source: Infineon internal market model based on SAM view

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Wi-Fi – Market driven by a dynamic environment of specifications; CSS is addressing main growth trends

Wi-Fi market*



Trends in Wi-Fi markets

Wi-Fi 4 CERTIFIED

Specially suited for IoT devices with basic connectivity, low cost, low-power requirements

Wi-Fi 5 CERTIFIED

Focus on high bandwidth IoT applications to ensure data transmission

Wi-Fi 6

New standard Wi-Fi 6 is gaining momentum initially on high-performance applications

Segments and focus topics

IoT & Consumer



- Broad portfolio with Wi-Fi 4 / 5 / 6 standalone and combo offerings
- Lead transition to Wi-Fi 6 for IoT

IoT low-power



- Extend leadership on low-power devices
- System-level power optimization using optimized Wi-Fi product architecture

Automotive



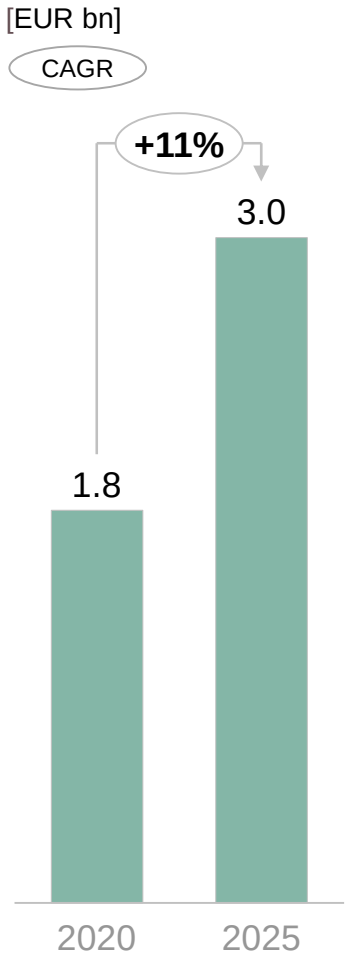
- Extend leadership in automotive infotainment and telematics with Wi-Fi 6 combo offerings
- Enable enhanced use cases with low-energy audio in auto infotainment

* Source: Infineon internal market model based on SAM view

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Bluetooth – Market driven by further penetration of Bluetooth use cases across devices; CSS focus topics enable this development

Bluetooth (BT) market*



Trends in Bluetooth markets

Continued growth in smart home, driven by home automation devices and wearables

Covid-19 provides tailwinds for work-from-home electronics and continued digitalization

Shift from Bluetooth single mode and BT/BLE to BLE single mode

LE Audio and Mesh 1.1 are new standards for BT audio and device networks

Segments and focus topics

Smart Home



- Focus on Mesh 1.1 and Mesh 2.0 (upcoming) device network protocols
- Drive engagements for emerging standards such as Connected Home over IP

Streaming & Compute



- Grow BLE-HID (Human Interface Devices) foot-print
- Drive beacons, tags with BLE Location + security in asset-tracking/industrial

Automotive



- Leverage Infineon Automotive footprint to add auto-body and sensor connectivity
- Enhance in-cabin experience

Wearables



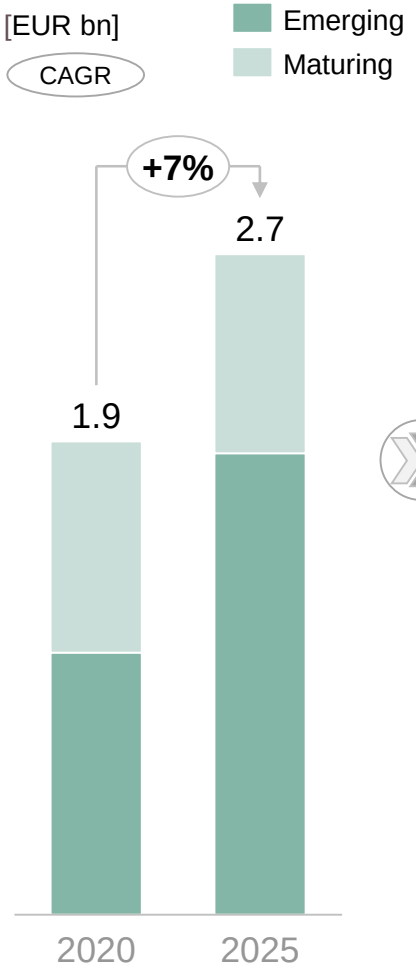
- Infineon Wireless Audio Stereo Synchronization (WASS) in BT speakers as a differentiation
- Proliferate footprint in wearables by leveraging WASS technology

* Source: Infineon internal market model based on SAM view

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Security – Several long-term key trends driving value, generating emerging opportunities, shaping CSS' focus in the security field

Security ICs market*



Trends in security ICs market

- Proliferation of contactless payment
- Growth of payment-enabled wearables
- Proliferation of IoT devices with increased security requirements
- Increasing penetration of eSIM Consumer in mobile devices
- Anti-counterfeiting for consumer devices to protect end users' health and experience

CSS focus

Innovation leadership

- Leading silicon technology platforms
- Contactless performance
- Secure embedded control

Increasing solution share

- Enhance full solutions portfolio (silicon + software) with extension of SECORA™ and OPTIGA™ families

Prepare for market opportunities

- Address adjacent and new market opportunities like biometric cards, wireless charging, new authentication applications, among others

Selected Segments

Payment
Contactless, smart wearables and accessories, biometric cards

Device Authentication
Accessories, printer authentication, battery authentication, wireless charging

Mobile Security
eSIM Consumer, SIM

Trust Anchors
IoT nodes & infrastructure, automotive security

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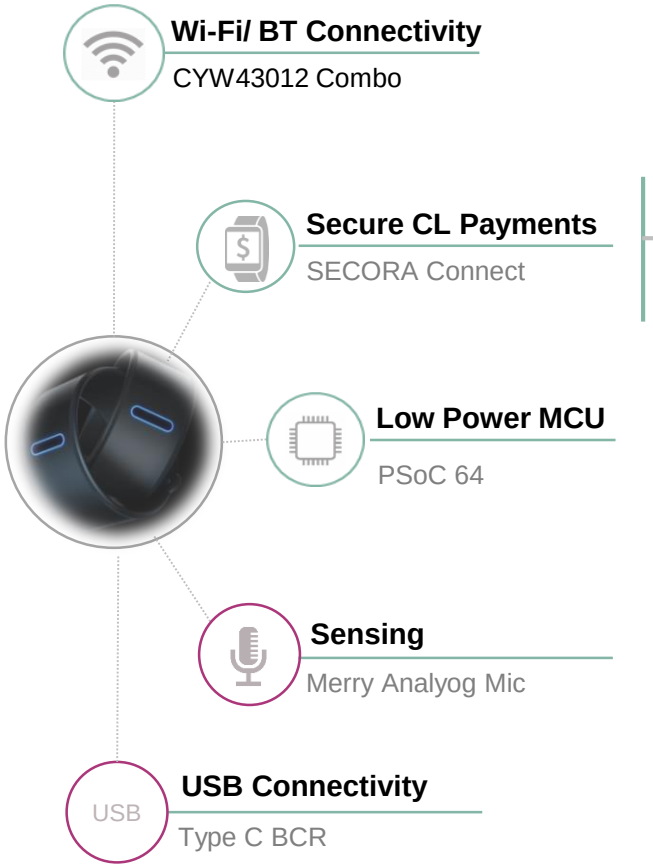
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The Start-Up Deed is using a combination of bone conduction and gesture recognition to make audio transmission trough the fingers possible

Synergies application example

CSS offering | Other Infineon Divisions offering

Smart Wearable - Deed



- **Secured contactless payments** using NFC
- Multimodal **biometric identification and authorization** for each transaction
- Credit card details are **safely stored inside the wristband** and lots of other functions



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Infineon's new AIROC™ Wi-Fi 6 solutions bring reliable, high performance connectivity to smart homes

- **Infineon is expanding its AIROC™ wireless portfolio** of high-performance, reliable and secured offerings with combined Wi-Fi 6/6E and Bluetooth 5.2 combo capabilities
- Key advantages of the new solution include:
  - **Doubled wireless coverage range** compared to Wi-Fi 4 and 5
  - **40 percent more coverage** than typical Wi-Fi 6/6E solutions
  - Over **20 percent power savings**, enabling longer battery life
  - **Improved connection robustness** with enhanced interference mitigation
  - Multi-layer security protections enabling a **higher level of security for IoT applications**



Selected target applications



Streaming Devices



Game Consoles



Smart Speakers



Infotainment

Sources: Infineon press releases

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Key takeaways



CSS **empowers** the world to **easily connect** through **smart and trusted solutions**

Combination of CSS capabilities including Compute, Connectivity, Security and software ecosystem, allows for a **full system solutions approach** to **unlock IoT opportunities** and applications

Portfolio strengths and **CSS focus activities** to address market trends in compute, connectivity and security set the basis for **tackling growth opportunities**

Focus on software, ecosystem and customer systems enables **Product to System** (P2S) and **one stop shop** for the customer

Go-to-market approach focused on **extending customer base** and ensuring a **smooth and balanced flow** across the **customer journey**

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