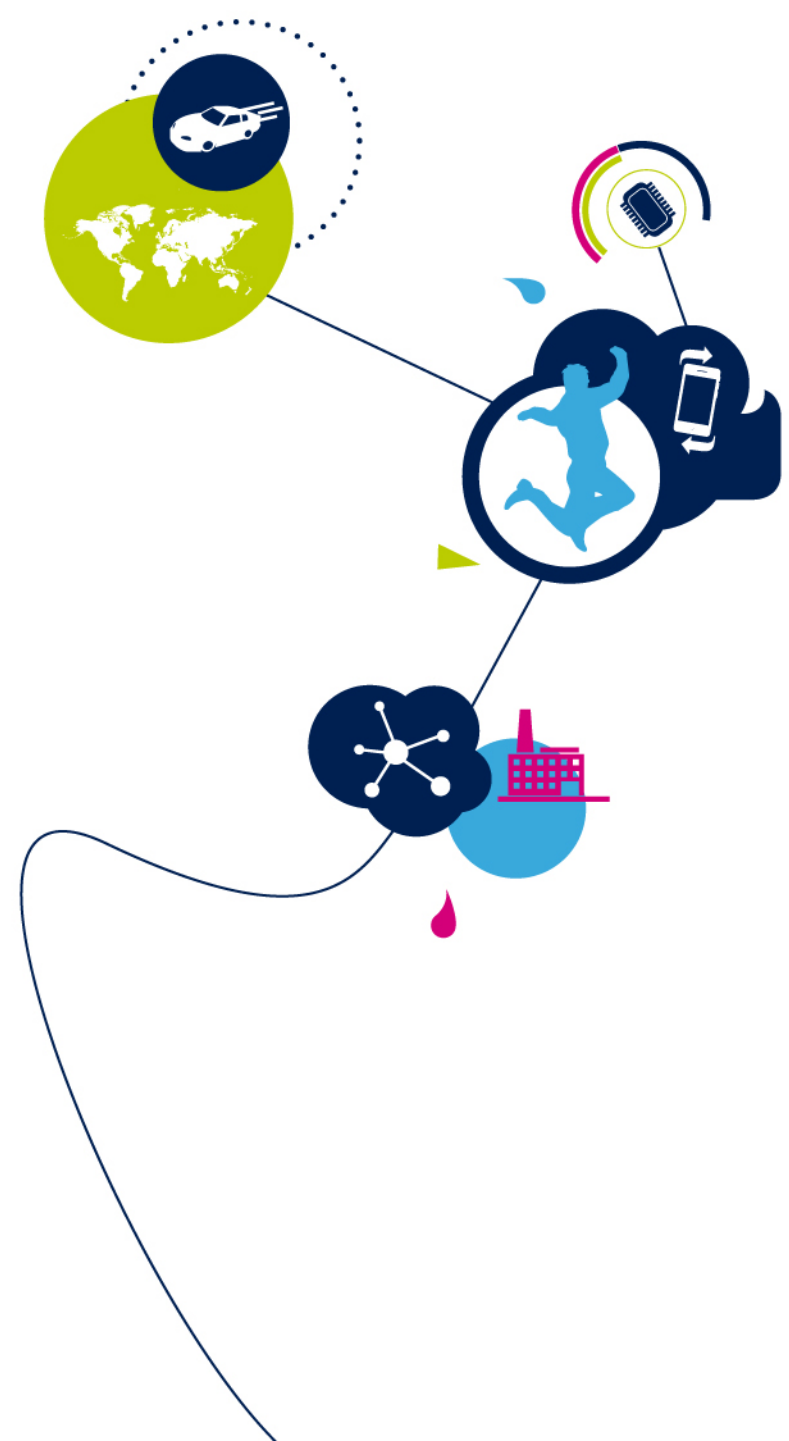


Application Strategic Focus

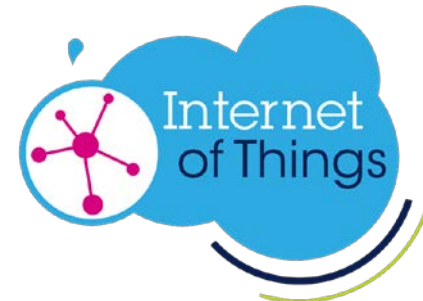
Georges Penalver




Chief Strategy Officer



Application Strategic Focus

The leading provider of products and solutions for Smart Driving and the Internet of Things



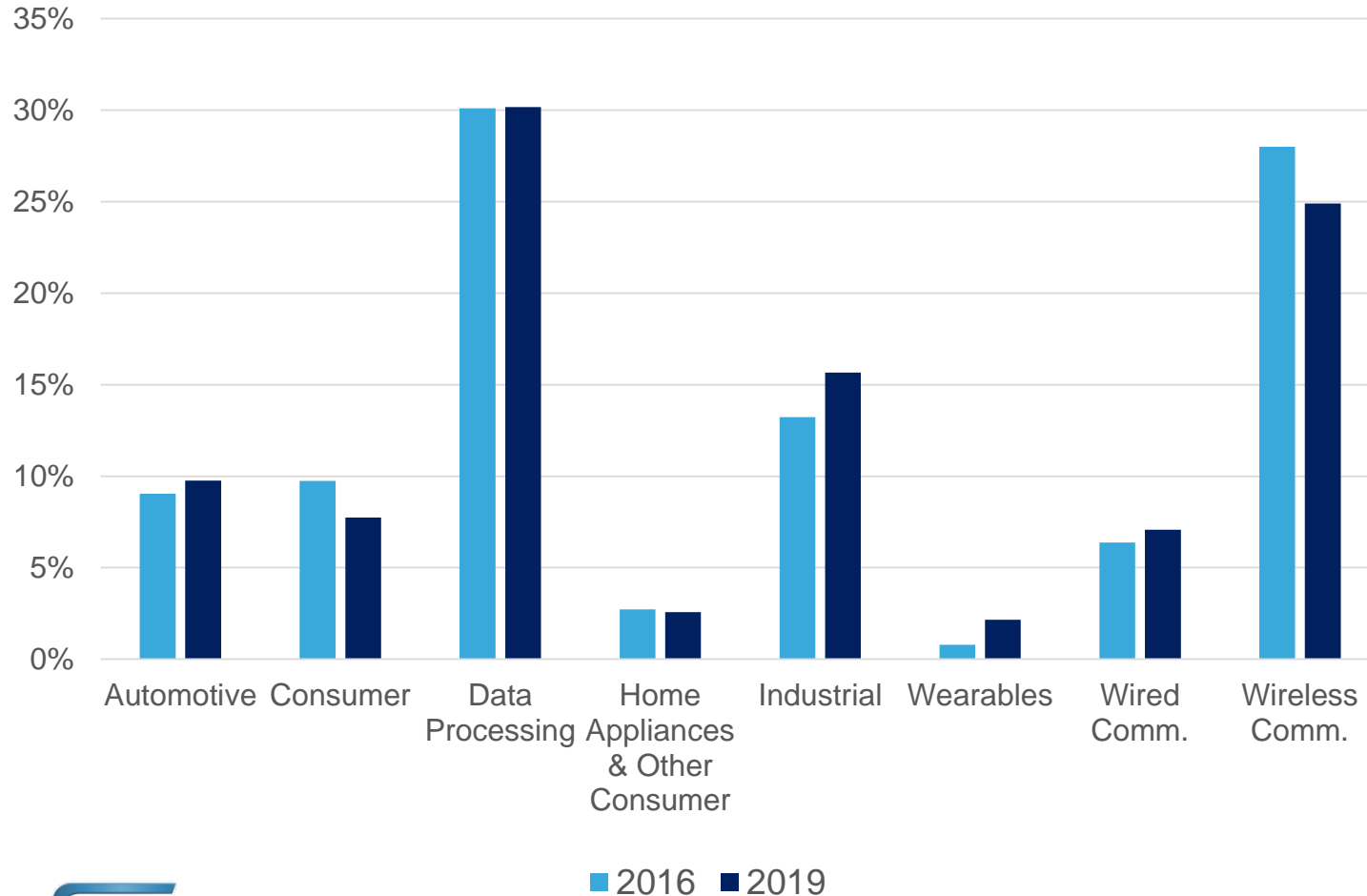
Safer		More connected
	Greener	

Smart Industry		Smart Home	
	Smart City		Smart Things

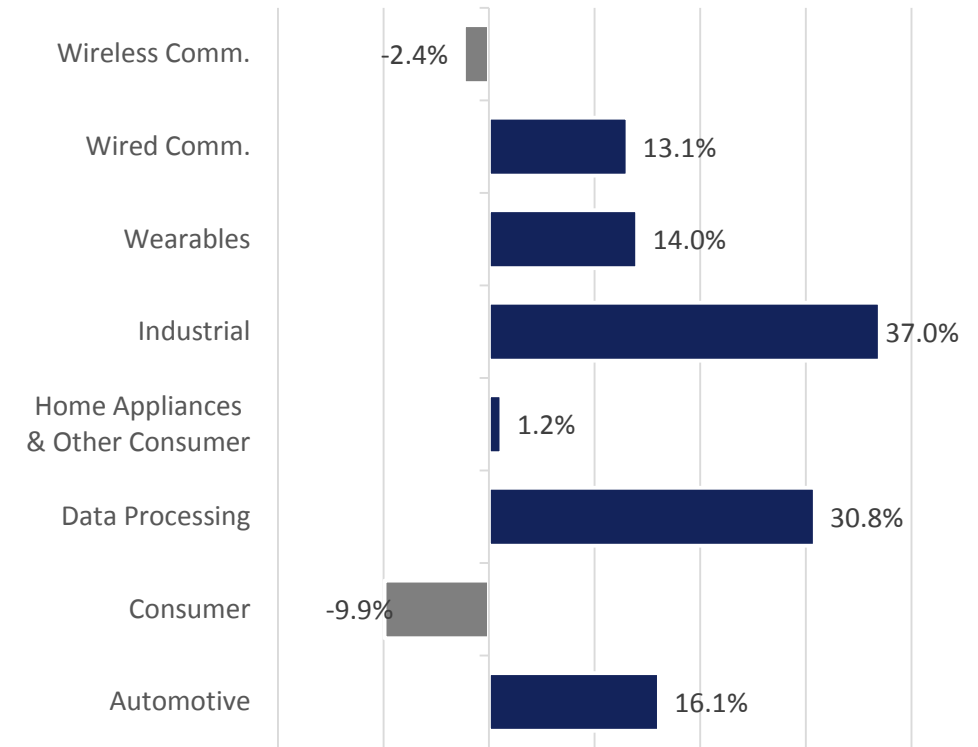
Addressing a Serviceable Available Market (SAM) of around \$150B

TAM Evolution by Application

% of TAM

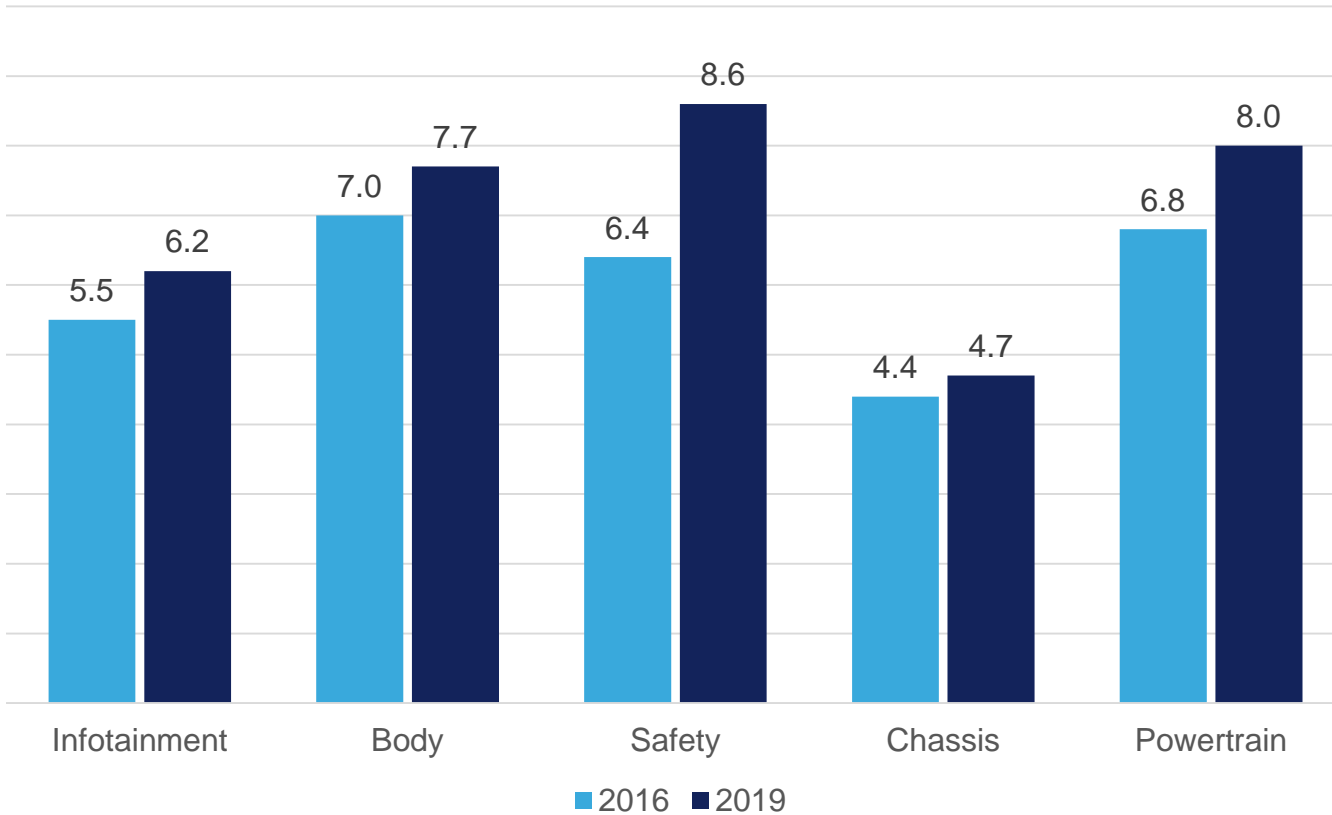


Contribution to TAM Growth (2016-2019)





ST SAM \$B

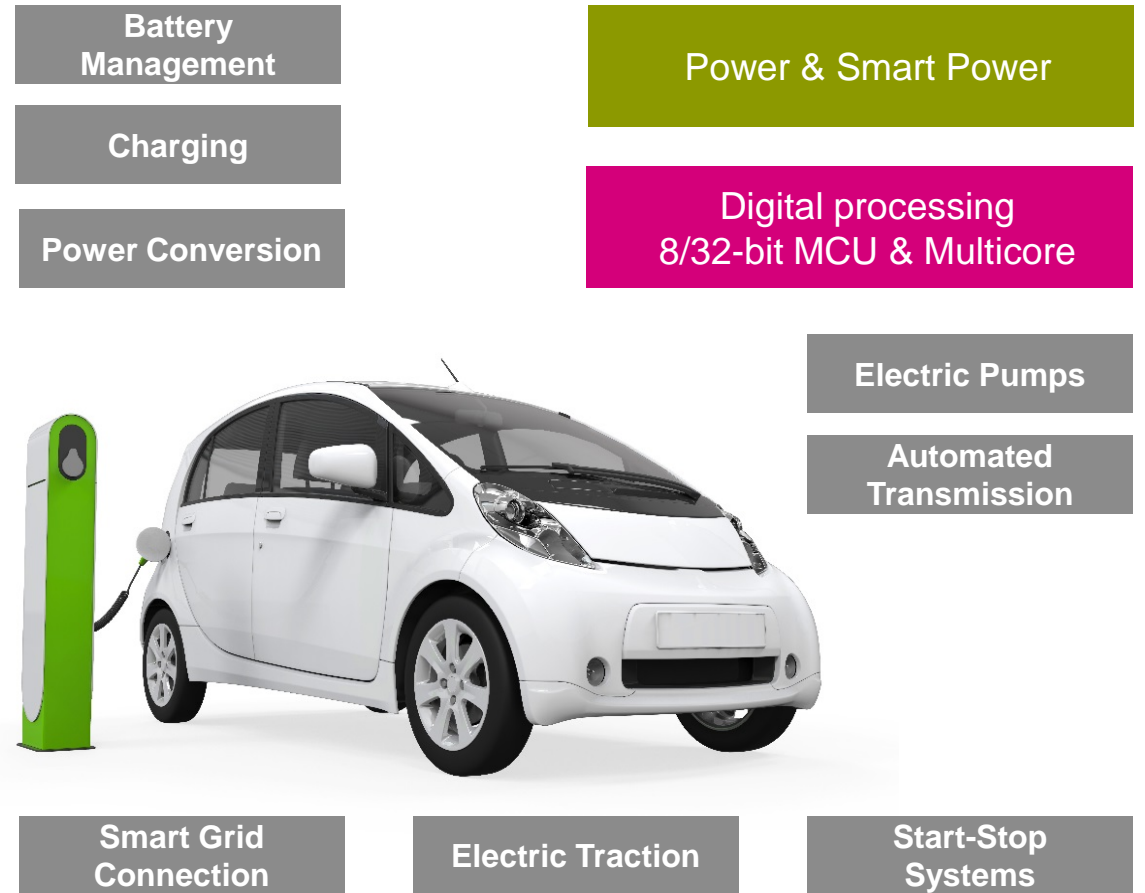
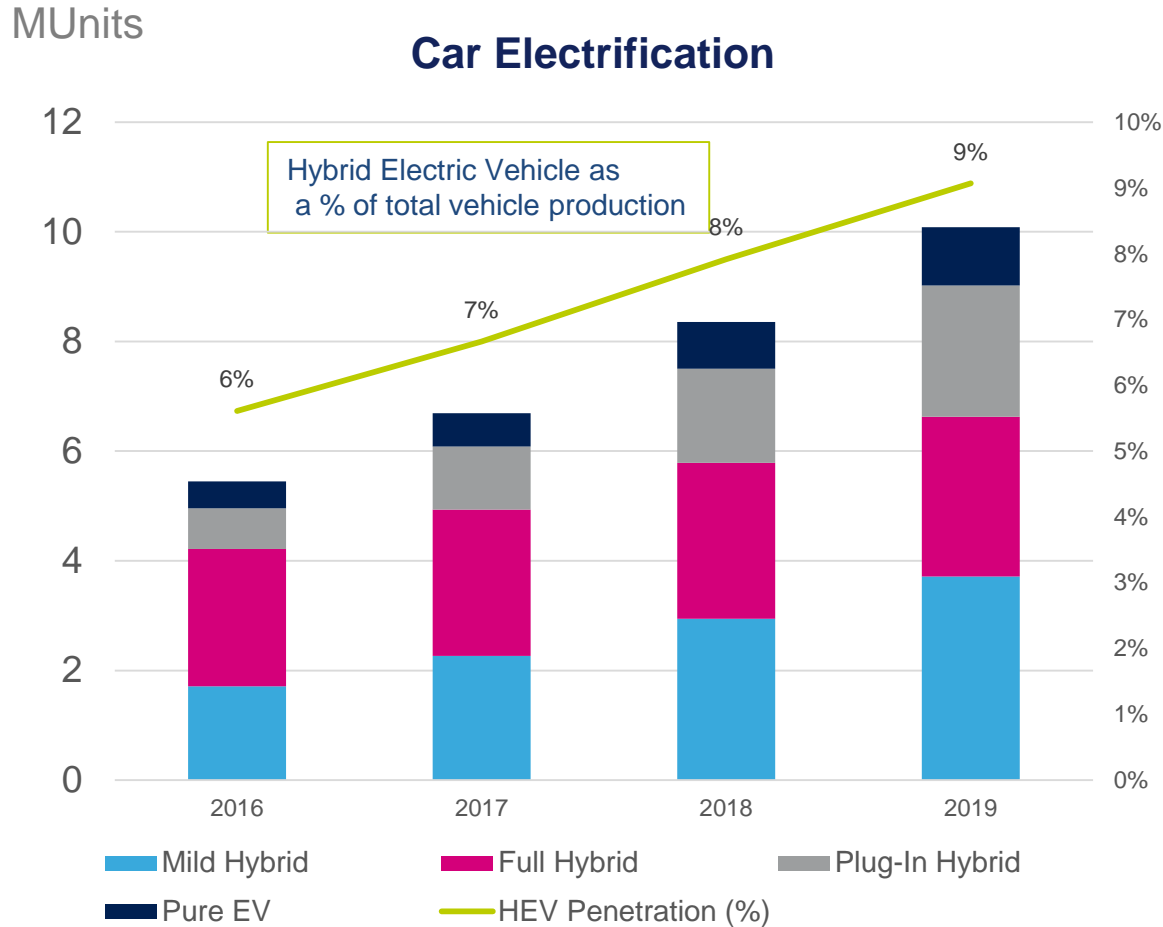


Key Applications

- Active Safety
- Passive Safety
- Electric & Hybrid vehicle Electrification
- Infotainment
- Telematics
- Powertrain
- Direct Injection Engine
- Automatic Gearbox
- Braking
- Steering

Smart Driving Application Focus

Electric & Hybrid vehicle Electrification

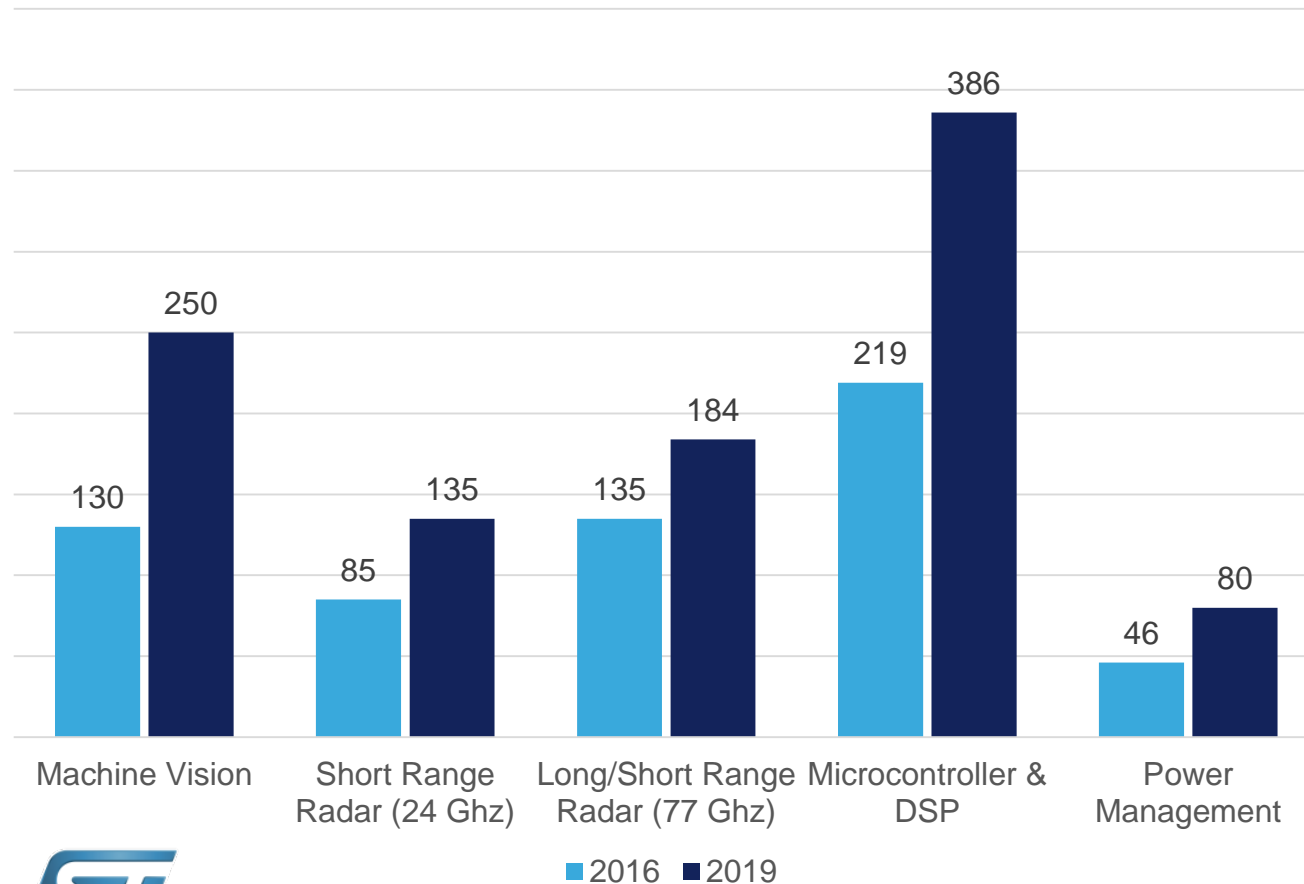




Smart Driving Application Focus

ADAS

ST SAM \$M



Applications: Forward collision warning, lane departure warning, pedestrian detection, adaptive cruise control, blind-spot detection

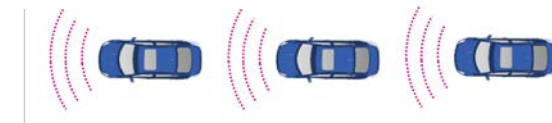
Sensors,
Motion MEMS, Cameras

Power & Smart Power

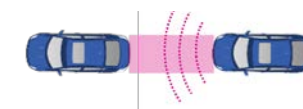
Machine Vision,
ASSP/Radar

Digital processing
8/32-bit MCU & Multicore

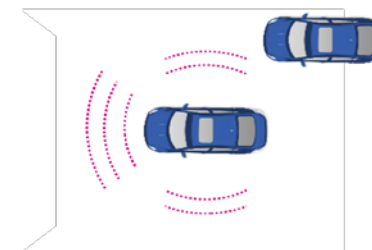
Adaptive Cruise Control



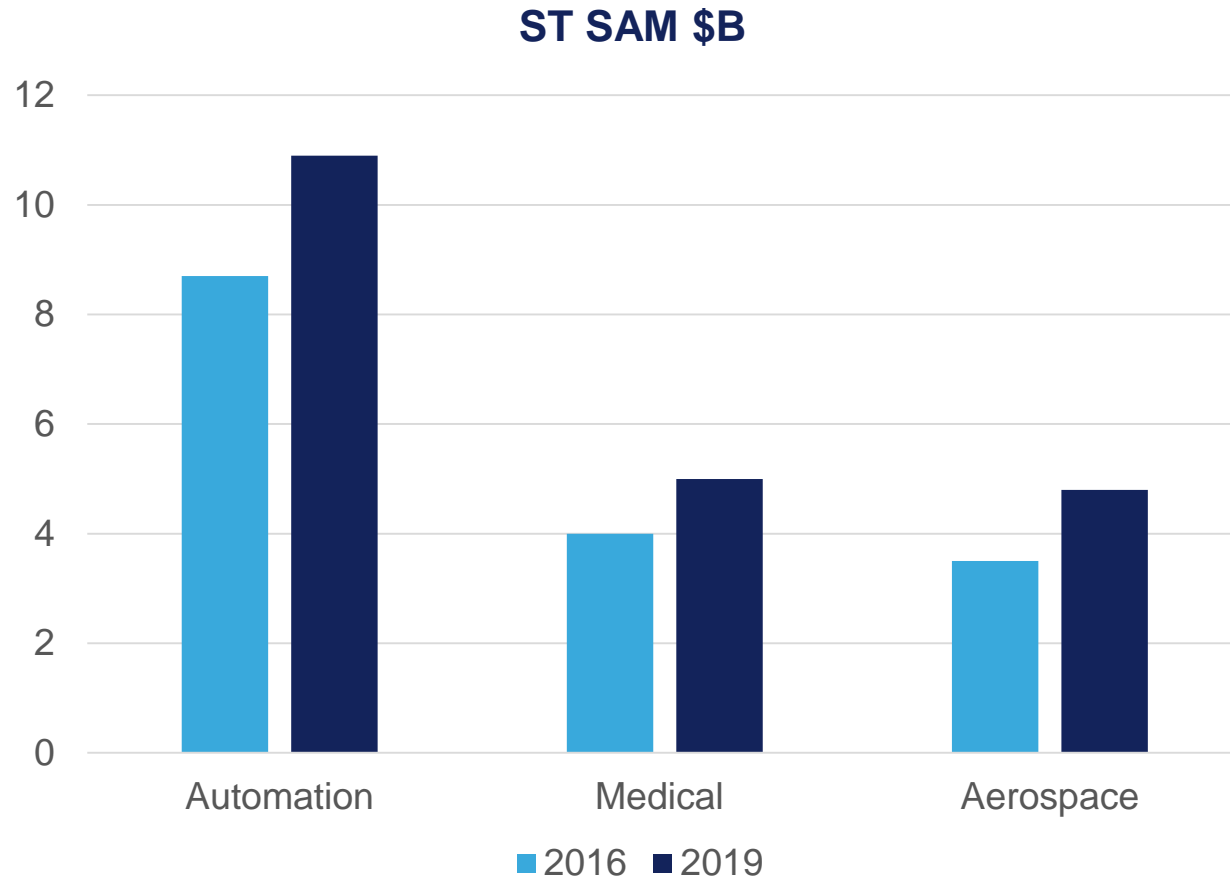
Collision Warning



Blind Spot Detection



Source: Strategy Analytics, ST



Source: IHS

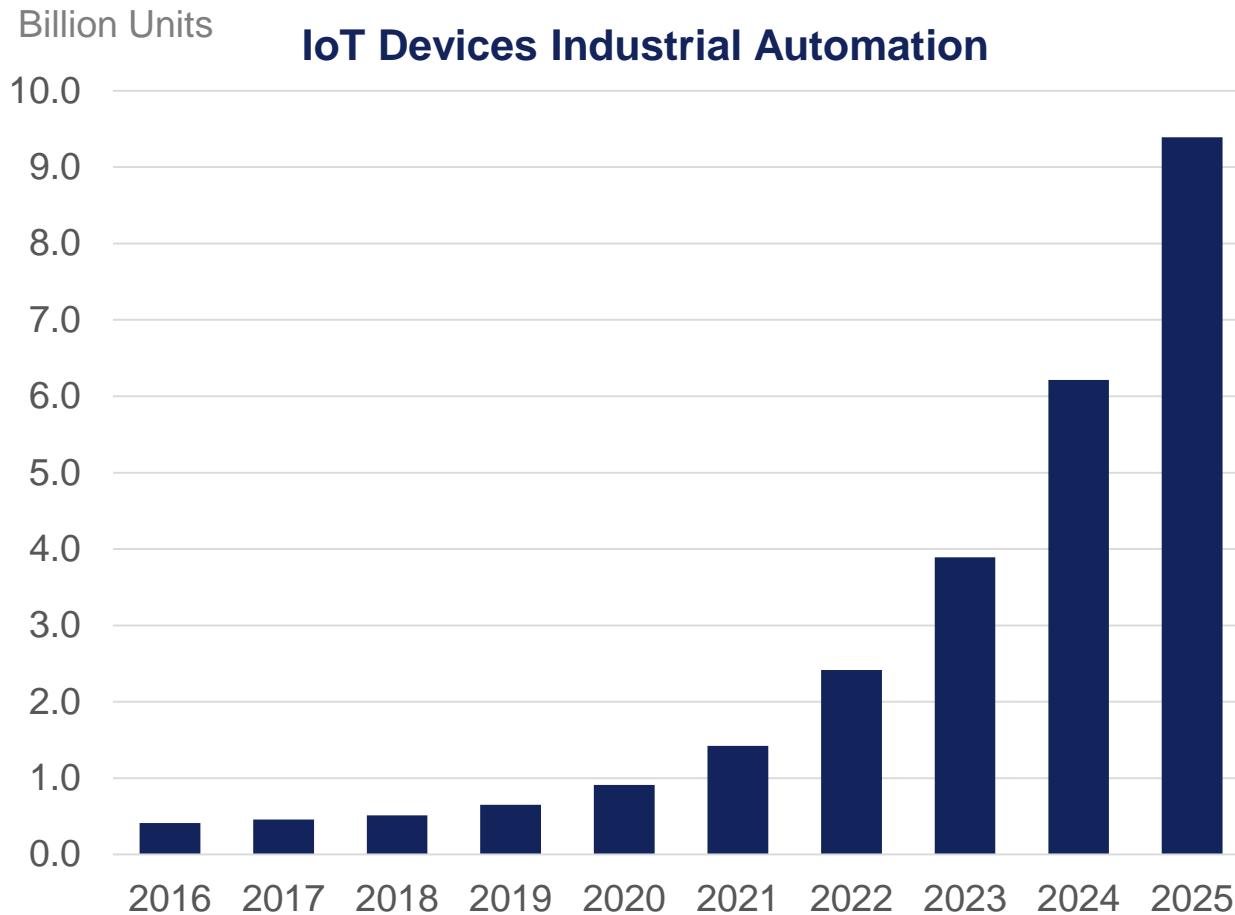


Key Applications

- Smart Manufacturing
- Factory Automation
- Smart Motion Control
- Industrial Robots
- Industrial Lighting
- Sensors for Industrial, Medical, Aerospace & Defense

Smart Industry Application Focus

Factory Automation



Smart Sensing

- Environmental sensors
- Motion sensors
- Acoustic MEMS
- Ranging sensors

Processing

- STM32 32-Bit MCU
- Secure MCU

Actuation & motor control

- Motor drivers
- Gate drivers
- Power switches

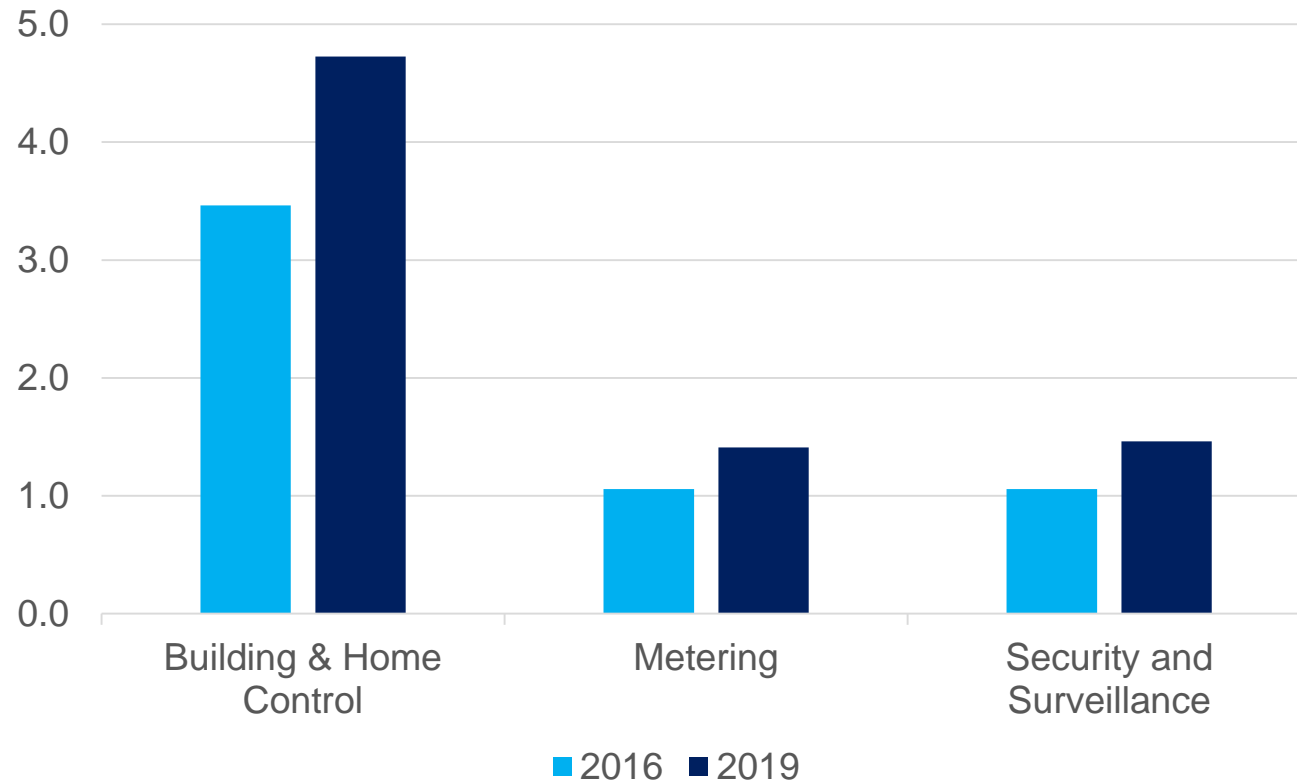
Connectivity

- Power line modem
- Bluetooth modules
- Wi-Fi modules
- SubGHz connectivity (LPWA)
- I/O link
- NFC

Power management

- AD/DC converters
- DC/DC regulators
- Analog & digital I/Os
- Protections

ST SAM \$B



Key Applications

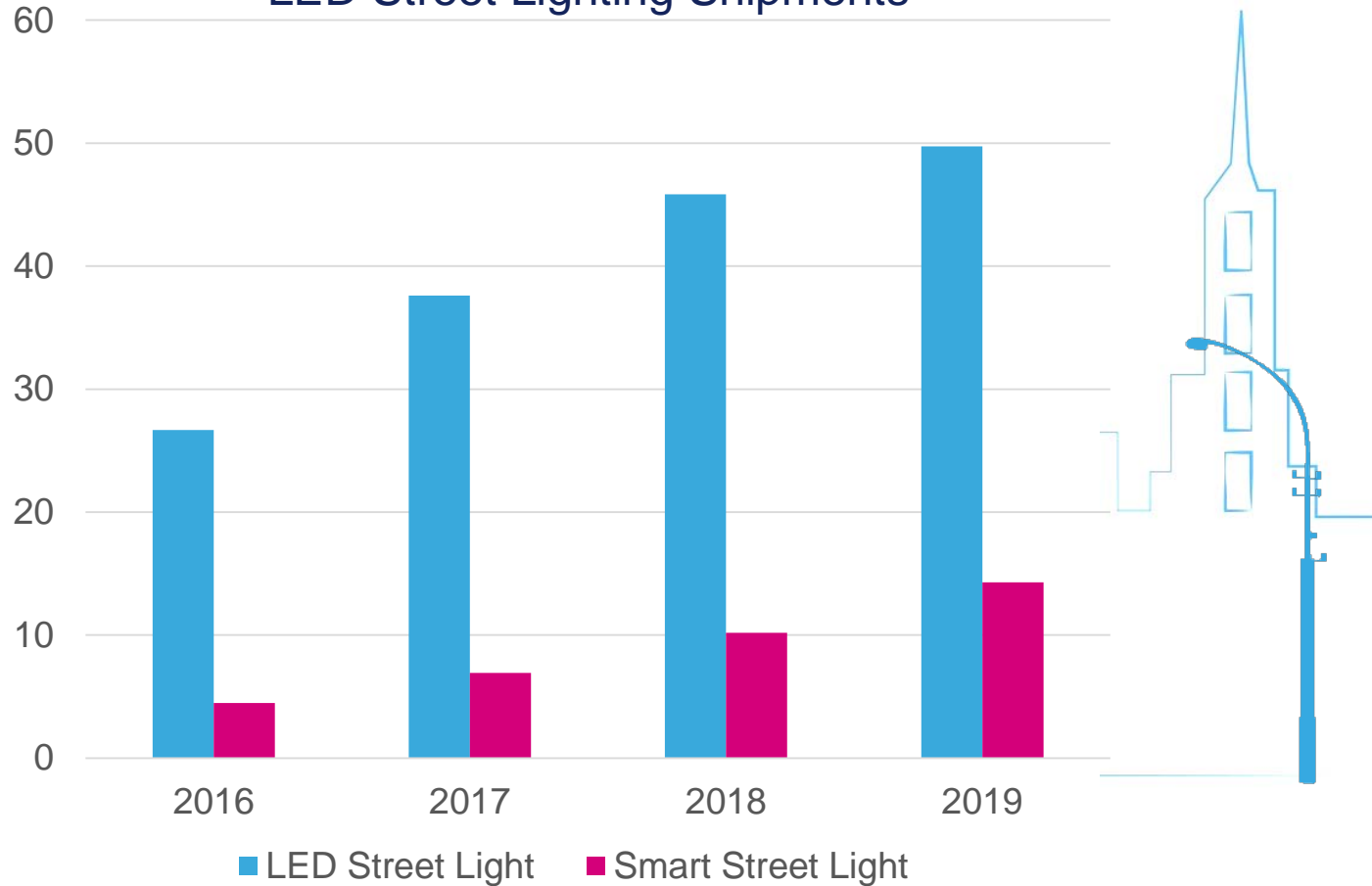
- Smart Transportation
- Home & Building automation
- Smart Metering
- Security & Surveillance
- Smart LED Lighting
- Heating & Energy Control

Smart Home & City Application Focus

Smart Street Lighting

MUnits

LED Street Lighting Shipments



Smart Sensing

- Environmental sensors
- Acoustic MEMS
- Ranging sensors

Processing

- STM32 32-Bit MCU
- Secure MCU

Connectivity

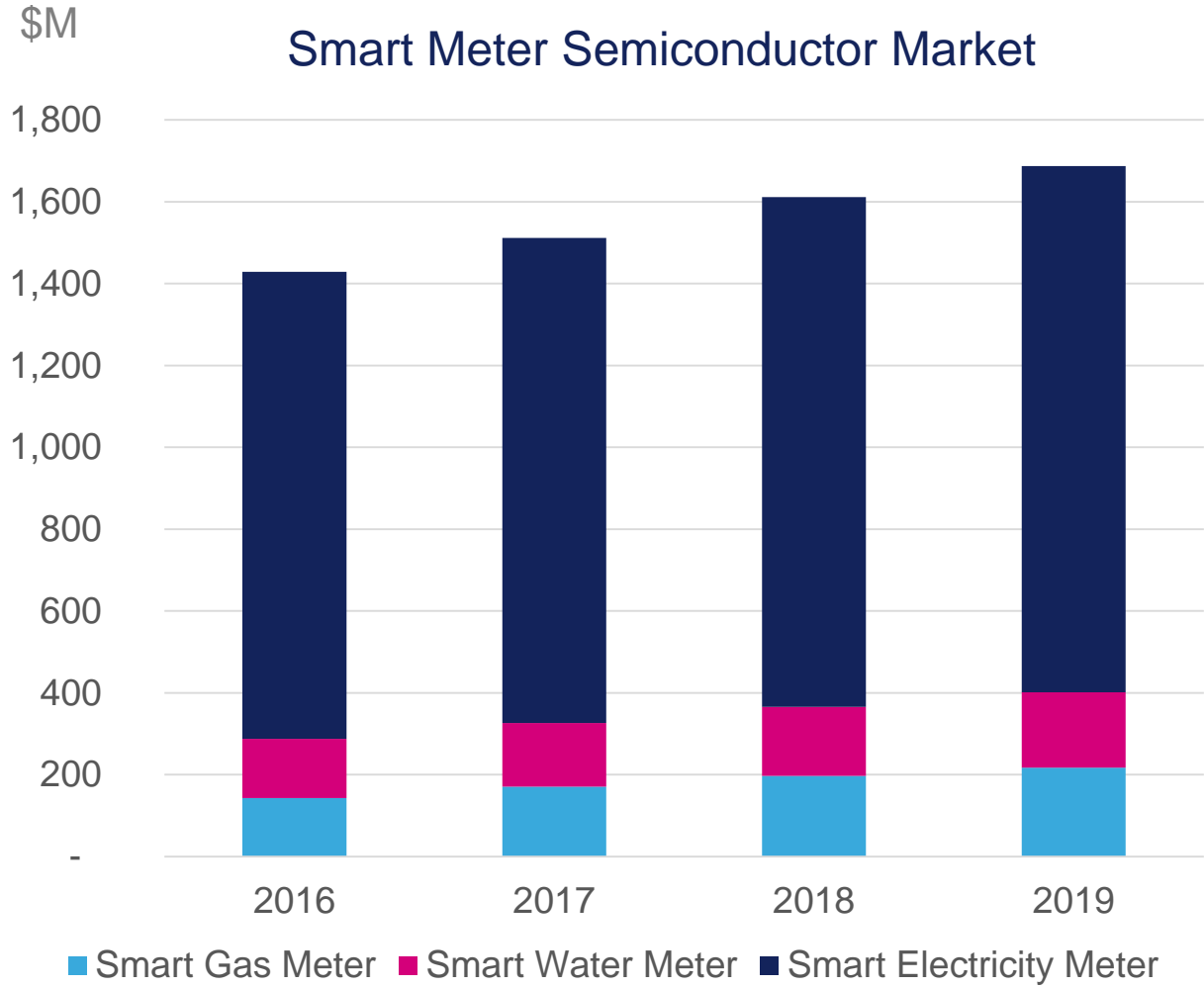
- Power line modem
- Wi-Fi modules
- SubGHz connectivity (LPWA)

Power management

- Power MOSFET
- MOSFET driver
- DC/DC LED driver
- Digital Controller
- Protections

Smart Home & City Application Focus

Smart Metering



Metrology

- Metrology for single and polyphase meters

Processing

- STM32 32-Bit MCU
- Secure MCU

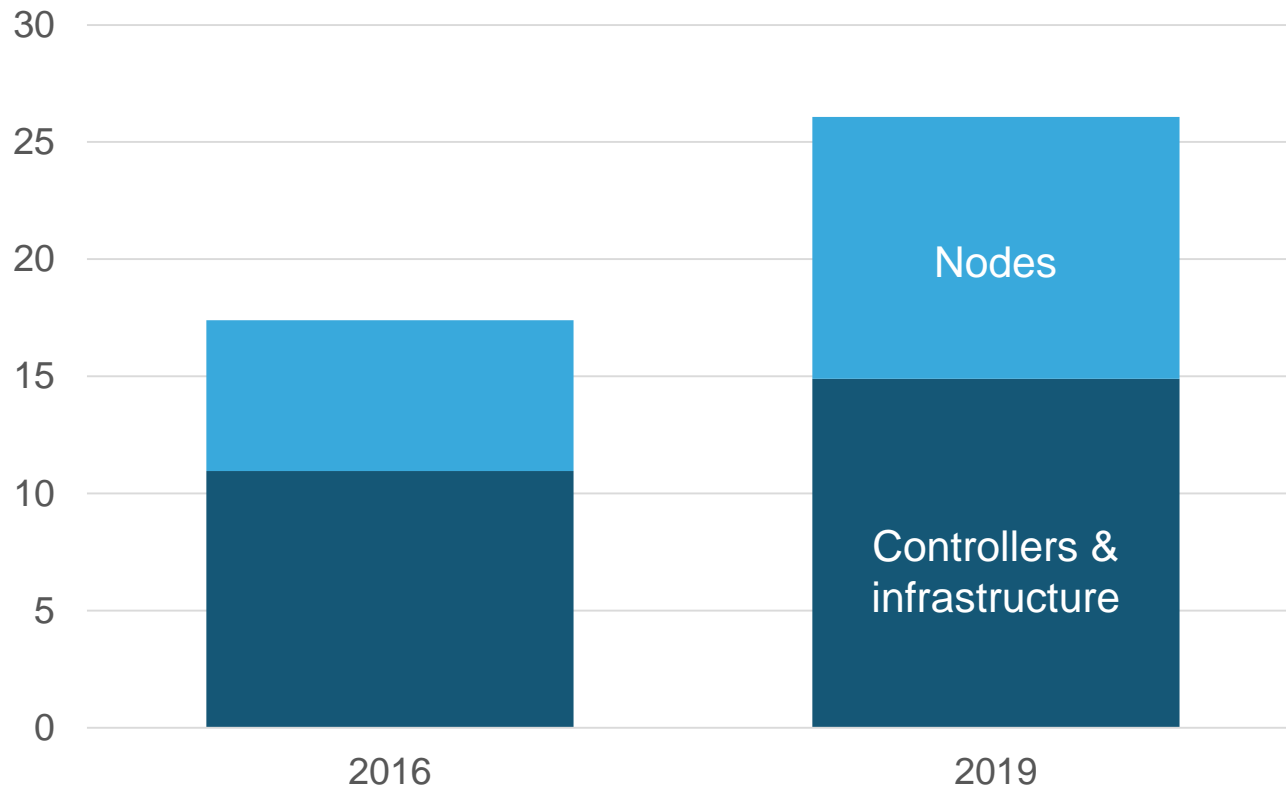
Connectivity

- Power line modem
- SubGHz connectivity (LPWA)
- NFC and RFID

Power management

- Integrated SMPS
- AD/DC converters
- DC/DC regulators
- Protections

Billion units installed base

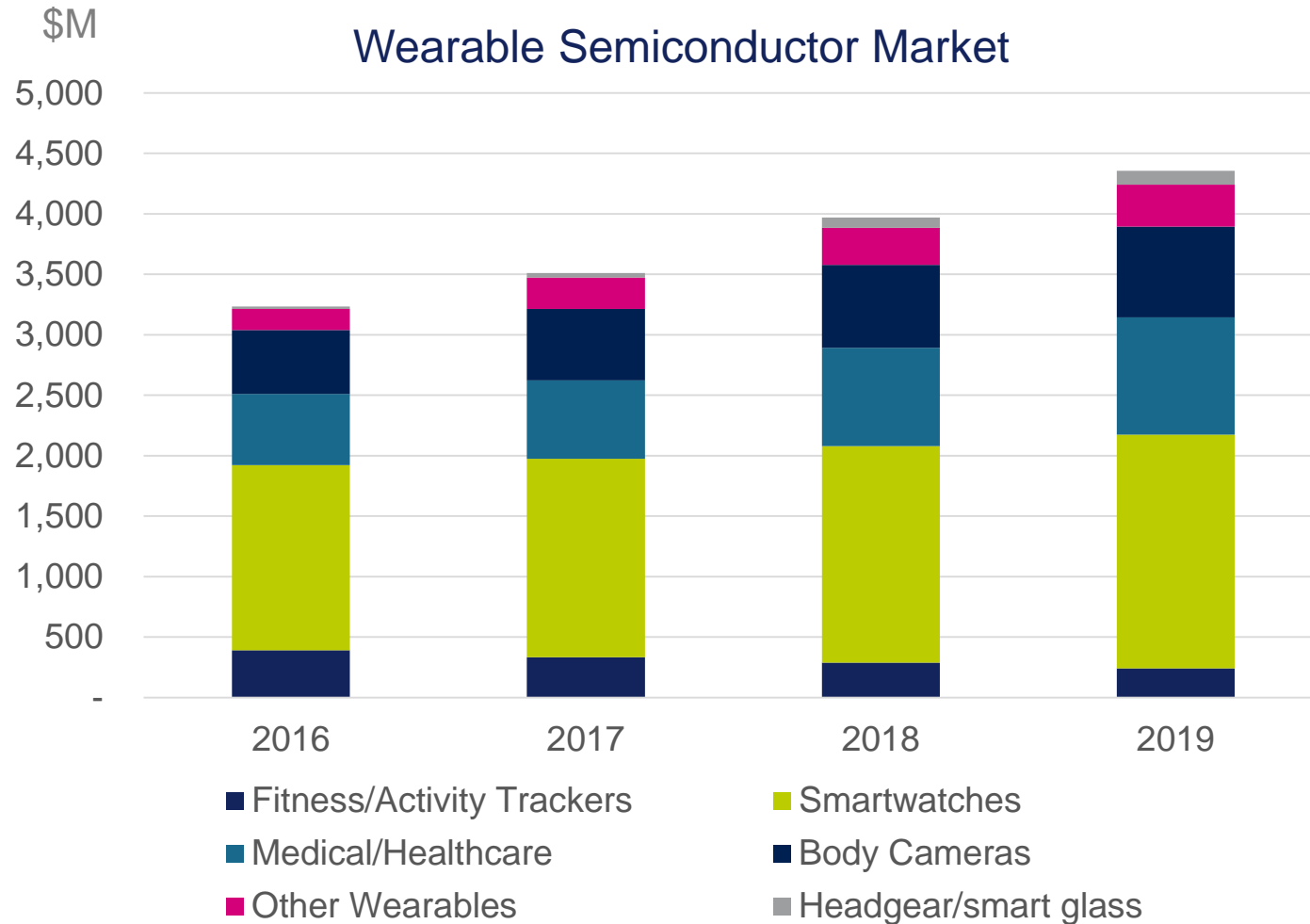


Key Applications

- Smartphones
- Tablets
- Wearable
- Smart Things

Smart Things Application Focus

Wearables



Smart Sensing

- Motion sensors
- Environmental sensors
- Acoustic MEMS
- Ranging sensors
- Micro-actuators
- Touch sensors

Processing

- STM32 32-Bit
- Secure MCU

Connectivity

- Bluetooth Low Energy
- Wi-Fi modules
- NFC

Power management

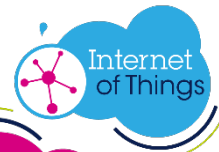
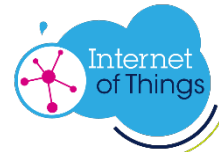
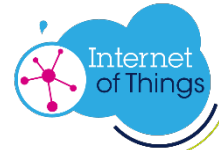
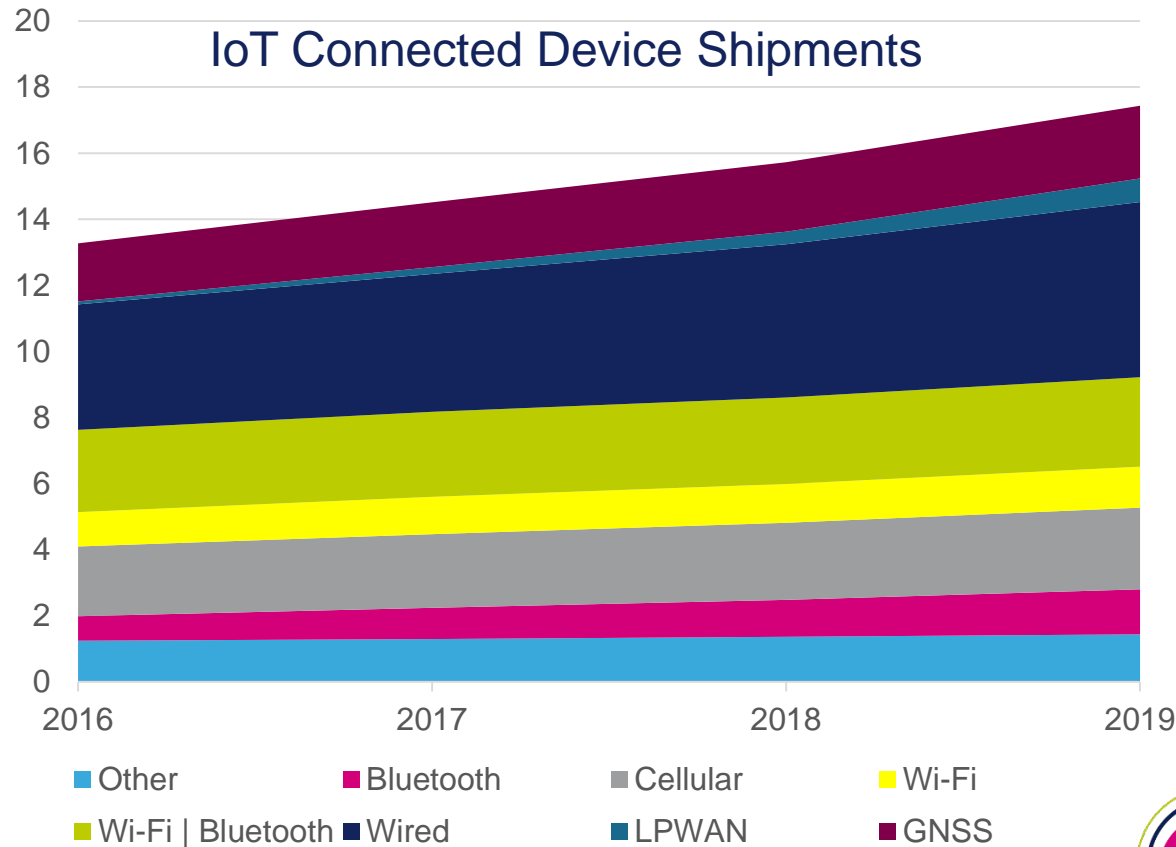
- Energy Harvesting ICs
- OLED power management
- Thin-film battery
- Power management ICs
- Protections



Connectivity Needed Everywhere

Billion Units

IoT Connected Device Shipments



Bluetooth & Wi-Fi

Bluetooth Low Energy

- BlueNRG - Highly energy-efficient network processor

Car Wi-Fi

- Partnership with Autotalks for V2X solutions

High data rate low-power RF

- Partnership for solutions targeting disposable devices

SubGHz

- **SPIRIT** - Very low power RF transceivers for SubGHz
- **LPWAN (Low Power Wide Area Networks) Partnerships**
 - **LoRa** – Partnership with STM32
 - **SigFox** – Partnering for SPIRIT2



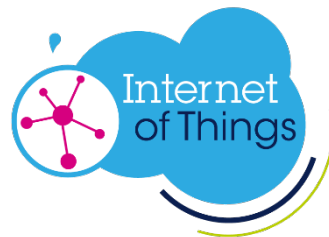
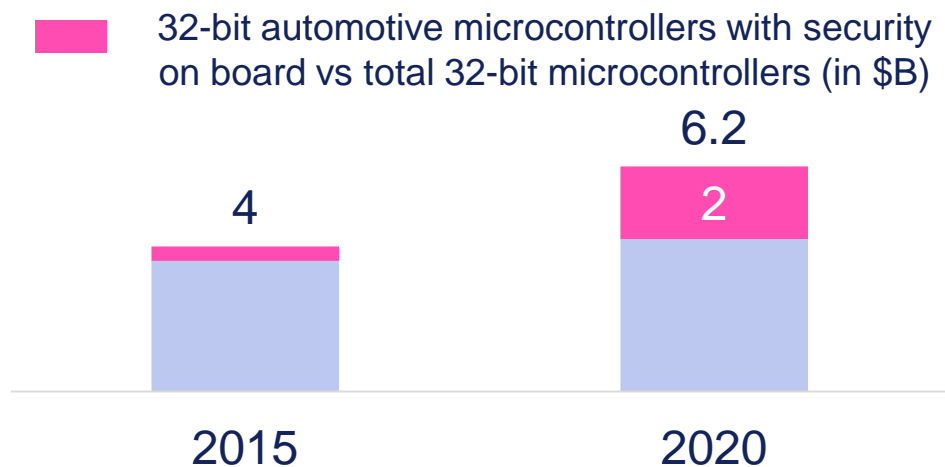
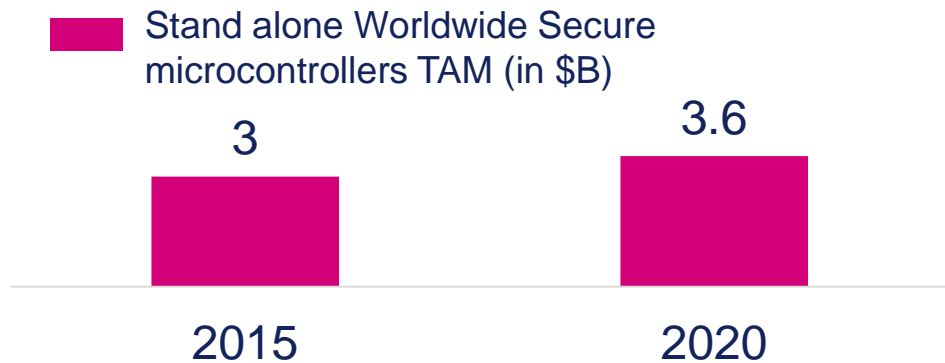
GNSS

- TESEO – Multi-constellation GNSS solutions

Power Line Communications

- STARGRID & STCOMET - Solutions covering all the major power line communications protocols

Security Needed Everywhere



Secure MCU



ST54 for Secure Mobile Transactions

- Mobile devices & wearable
- Secure payment, transport, access control & biometry

STSAFE for Authentication & IP protection

- Brand protection, TPM, metering, accessories, LPWAN, Secure IoT

ST33 & ST33TPM for Automotive

- Secure communications among peripherals
- Secure firmware upgrade, secure boot
- Secure cellular connections

Secure Automotive Solutions

Automotive MCU

- SPC5 MCU with Crypto

Car Connectivity

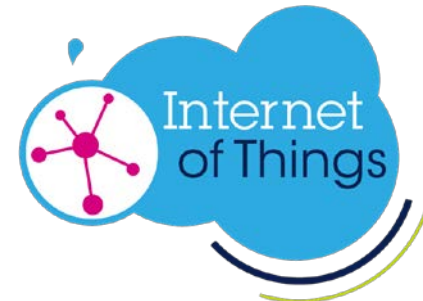
- Wi-Fi Secured for Car-2-X

Application Strategic Focus

The leading provider of products and solutions for Smart Driving and the Internet of Things



Safer		More connected
	Greener	



Smart Industry		Smart Home	
	Smart City		Smart Things

Addressing a Serviceable Available Market (SAM) of around \$150B