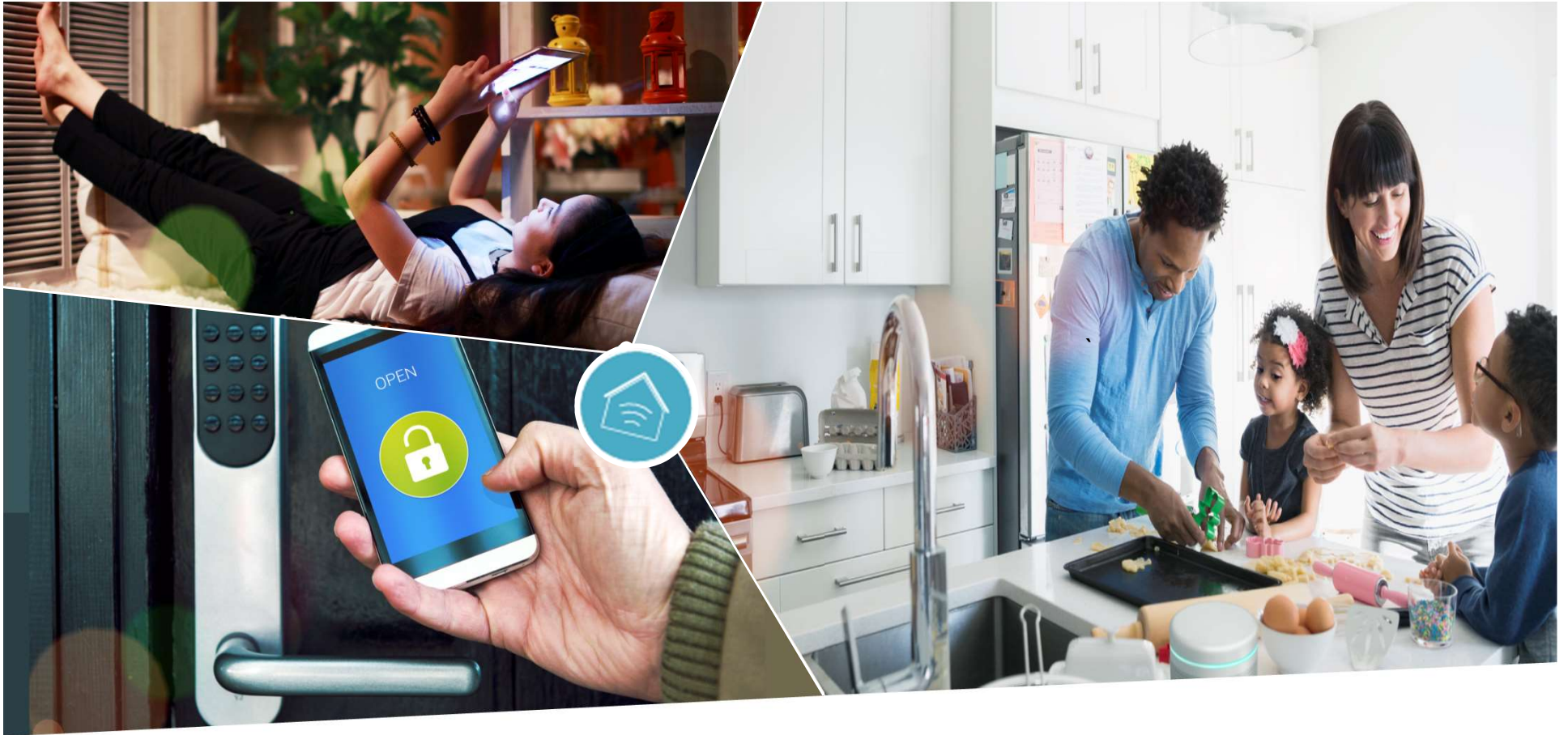




Smart Home – Be Ready to go with Infineon



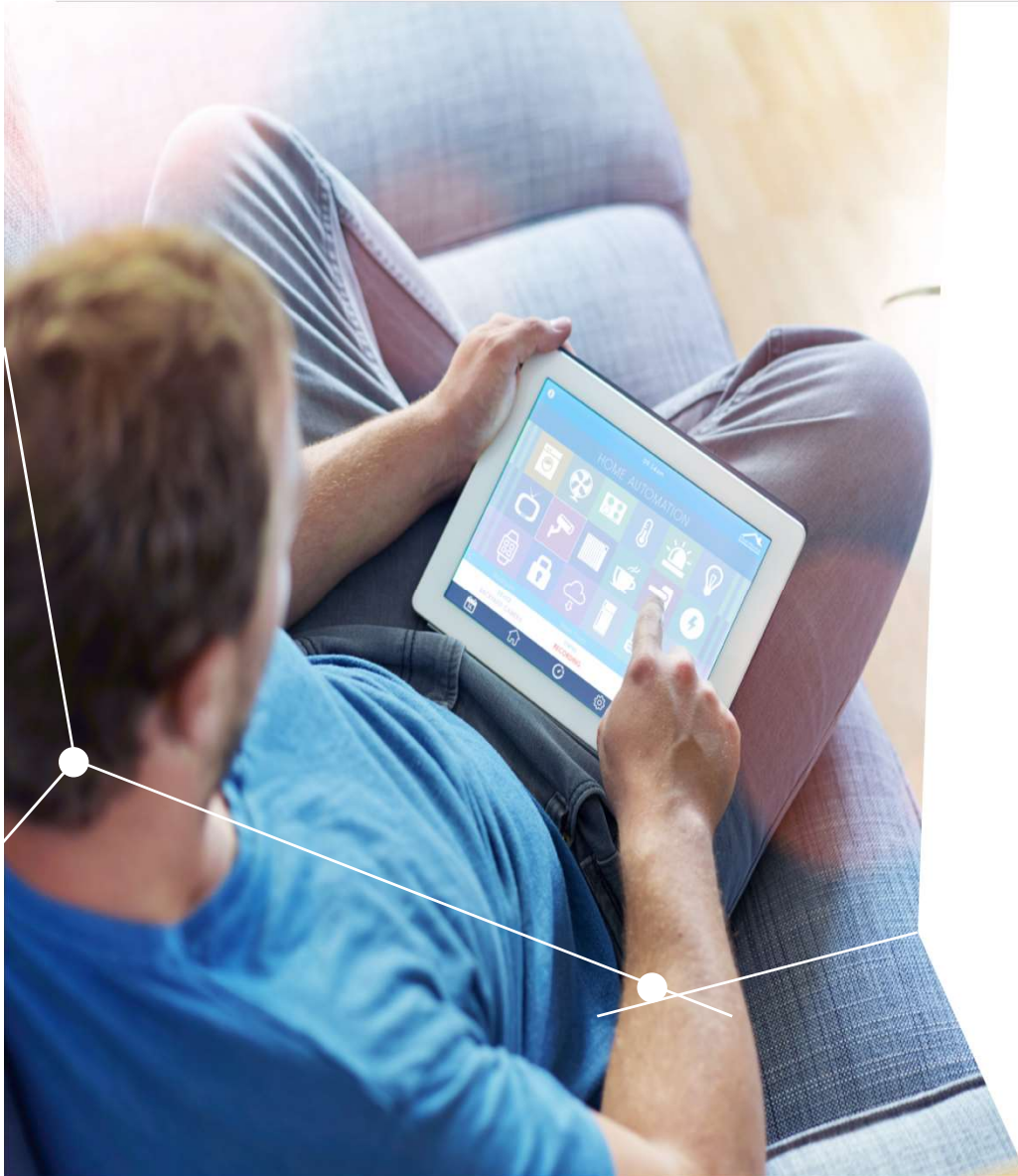
Agenda

- 1 Smart Home Markets & Trends : *Why Smart Home ?*
- 2 Gearing with Infineon Solutions : *What & Where can we combine ?*
- 3 Smart Home Security is the key concern: *What & How Security ?*
- 4 Summary : *We need your Drive Today !*

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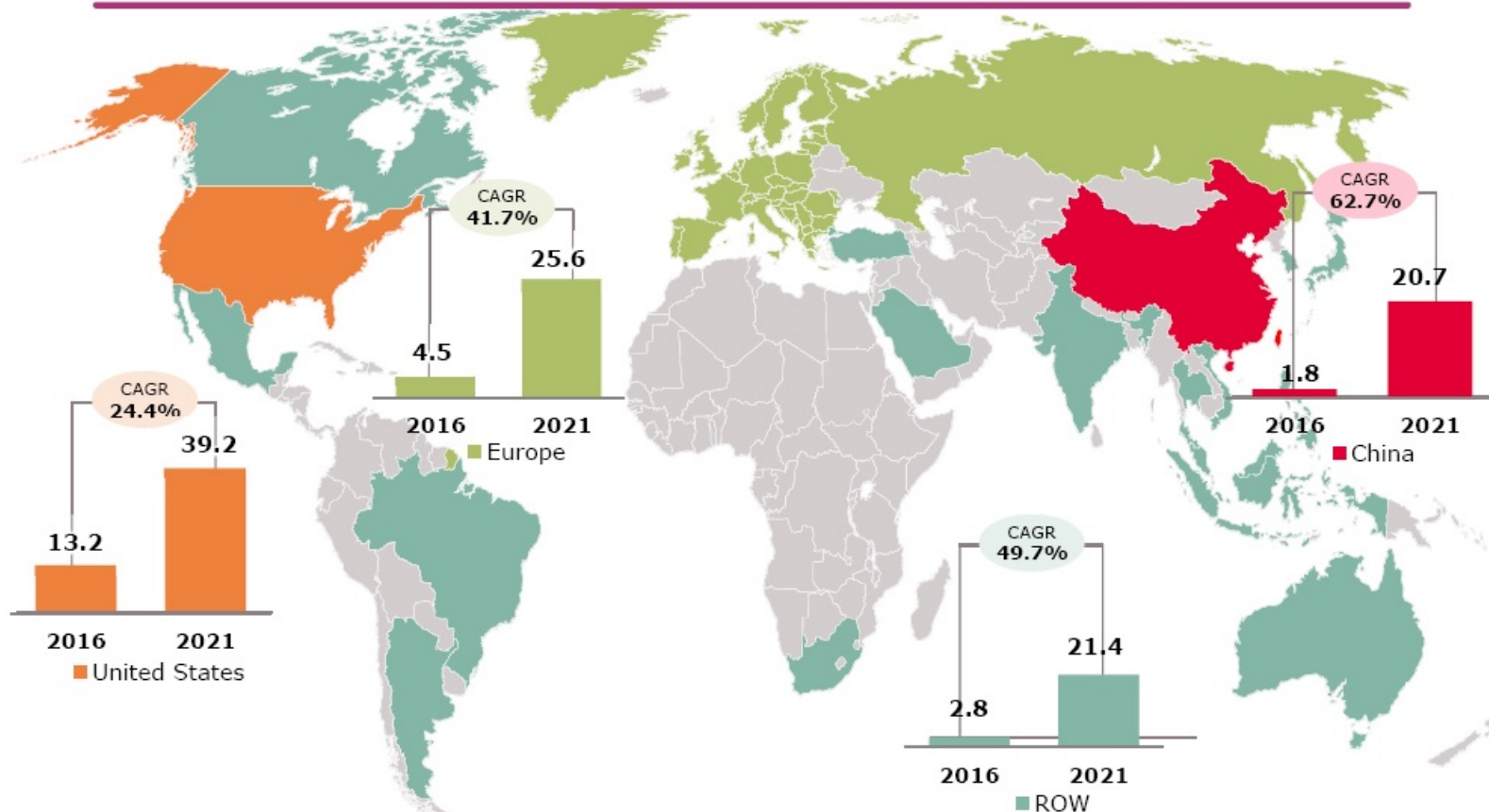
What drives the smart home market?



- › The main drivers of the smart home are the strong demand of people for **convenience**, **security** and **energy efficiency**
- › It can also **save valuable time** what is a great advantage in today's busy times
- › Manufacturers and OEMs are **expanding their product portfolio** of easy-to-use, safe, energy efficient devices and services

The overall smart home market revenue is expected to grow at an average rate of 33.4% by 2021

Total Smart Home revenue by region (billion US\$)



Source: Statista; IHS Markit Home Appliances report – Feb. 2018

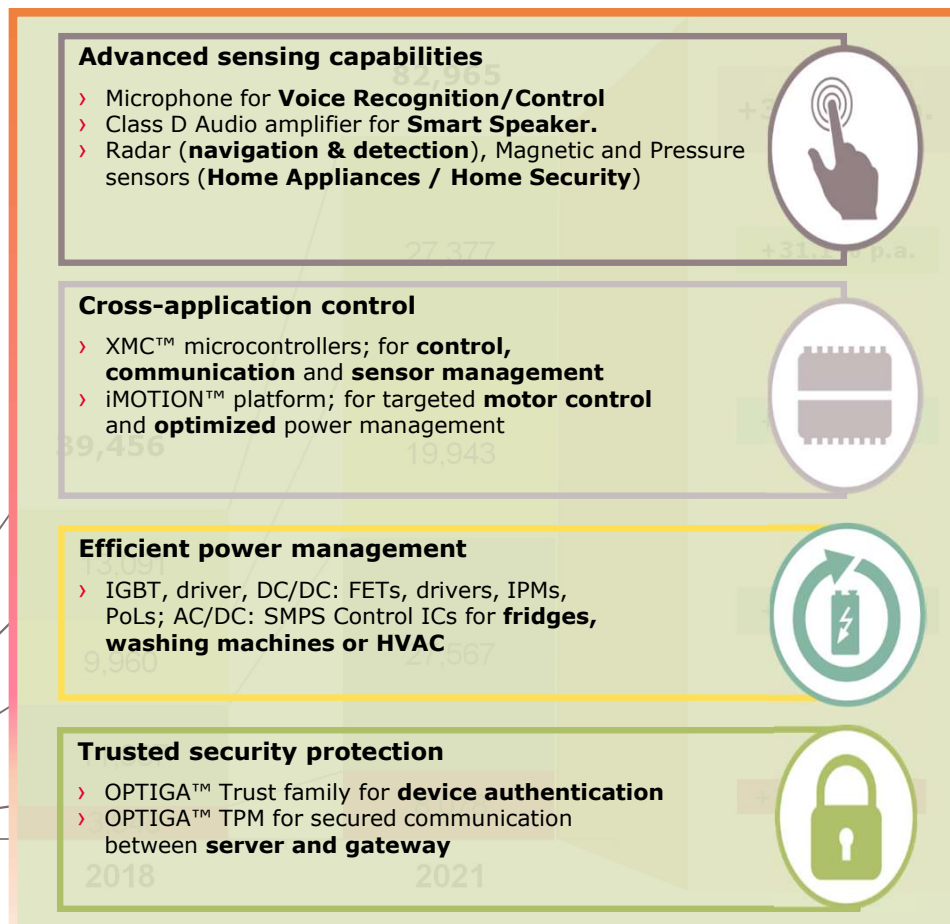
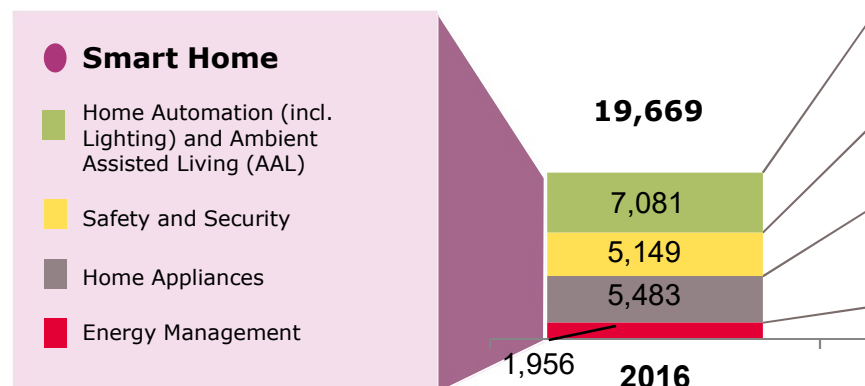
All smart home applications will reach a double digit growth in the next 5 years



Global Smart Home Revenue (Mn US\$ by segment)

CAGR 16 - 21

- › **Home Automation** is crucial for success in SH, either by partnering with key players or offering own solutions. **AAL** is the smallest segment, but shows the highest growth rate.
- › **Safety and Security** shows high revenue and strong growth.
- › **Home Appliances** penetration has yet to reach critical volume, but many smart appliances are poised for significant adoption growth.
- › **Energy Management** solutions offer well communicable purchasing reasons and, due to many sensors, can be well integrated.



Source: Statista; ABI The future of Smart Appliances in the home – Feb. 2018

Internet penetration and Data Privacy concerns will significantly influence the Smart Home devices adoption



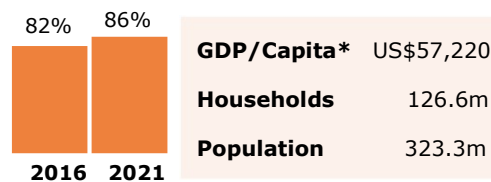
Internet penetration by region

Europe



Broadband connection is the most common technology for accessing the internet in the EU: in 2016, 72% of the household population had a fixed and/or mobile broadband connection.

United States



Broadband now accounts for virtually all (98%) of home internet service. As result, 82% of US households now have a broadband internet service

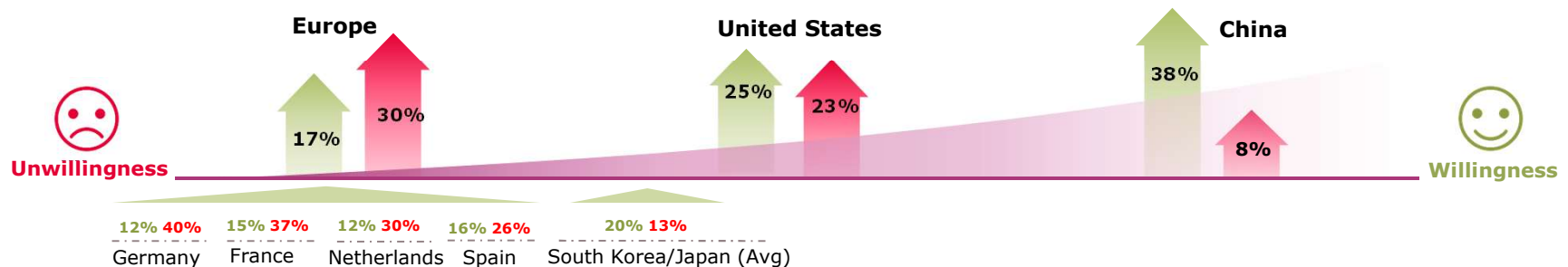
China



Beijing – 77.8%, Shanghai – 74.1% , Guangdong 80.2%

Large number of internet users and hefty local manufactures which will help to boost the uses of smart home devices in lower and middle income segments

Willingness to share personal data



Source: Statista, *numbers referred to FY2016; <https://www.chinainternetwatch.com> FY2017

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A world leader in semiconductor solutions



Our vision

We are the link between the real and the digital world.

Our values

We commit
We partner
We innovate
We perform

Our mission

We make life
easier, safer
and greener.

Part of your life. Part of tomorrow.

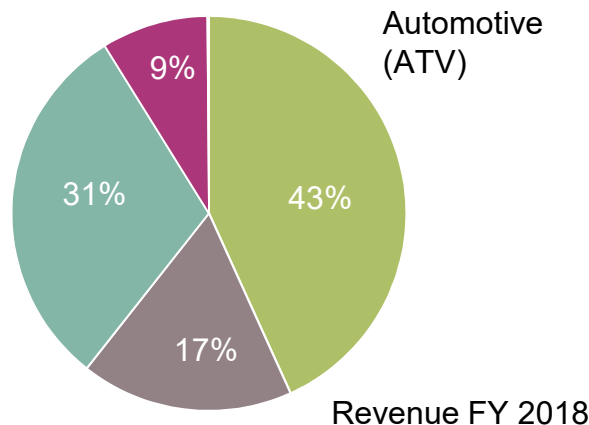
Infineon at a glance

Business Segments

Digital Security Solutions (DSS)

Power Management & Multi-market (PMM)

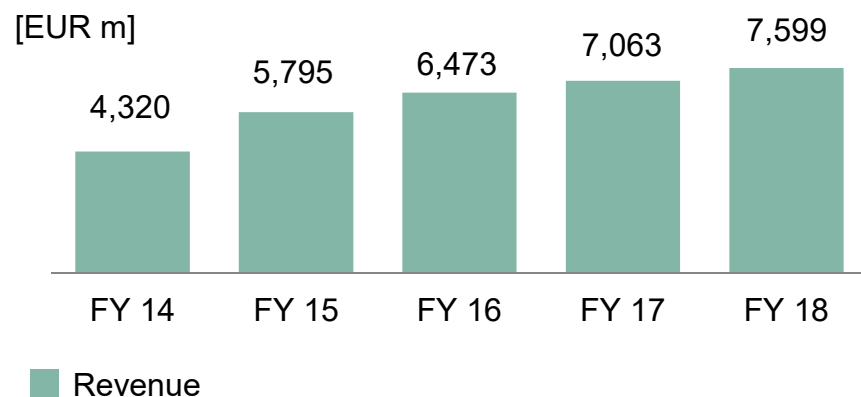
Industrial Power Control (IPC)



Revenue FY 2018

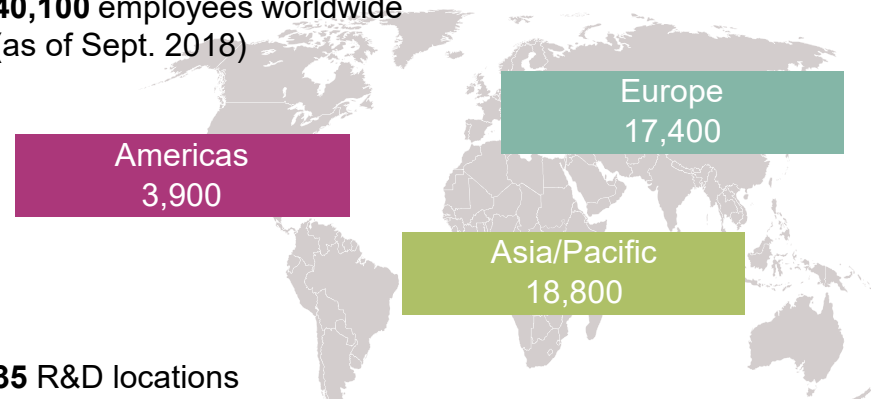
Further information in the [Annual Report 2018](#)

Financials



Employees

40,100 employees worldwide (as of Sept. 2018)



35 R&D locations
17 manufacturing locations

Market Position

Automotive



2

Strategy Analytics,
April 2019

Power



1

IHS Markit,
Technology Group,
September 2018

Security ICs



1

ABI Research
October 2018

Security is essential



What is a smart home?



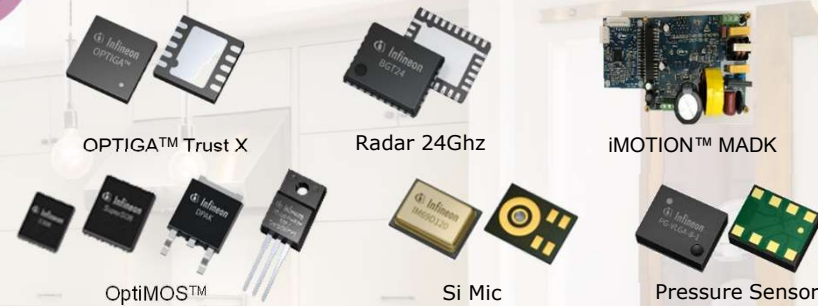
A **smart home** is a home that provides increased **user convenience** and **energy efficiency** based on **smart** and **secured** devices, functionalities and services which can be **controlled remotely** or interact or provide data automated based on **intelligent sensing** and **situational awareness**.

Infineon Technologies AG





Smart Kitchen



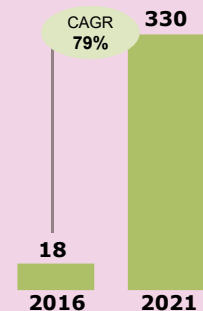
Power Efficient, Smart Home Appliances with Secured Connectivity

- › Power and sensor solutions for a Smarter, Greener Home
- › Hardware Security based OPTIGA™ Trust solutions protect against cyber attacks while ensuring platform integrity
- › XENSIV™ to enable Smart Automation in home appliances
- › ESD surge protection for home appliances

IFX Solutions to enable Use-case

- › **OPTIMOS™, CoolMOS™** for efficient power management
- › **iMotion/XMC & IPM** (IGBT+Driver IC) for efficient motor control
- › **OPTIGA™ Trust** family for security & IP Protection
- › **SiMic**: voice control; **Radar 24GHz/60GHz**: smart environment / gesture control.
- › **ToF Sensors** for indoor navigation, gesture control & HMI.
- › **ESD TVS Diodes** for ESD surge protection

Smart connected HA (mil units)



Units shipment for clothes dryer, Dishwasher, large cooking, Refrigerator, Air conditioner, washing machine. **Source: IHS**

Smart Lighting



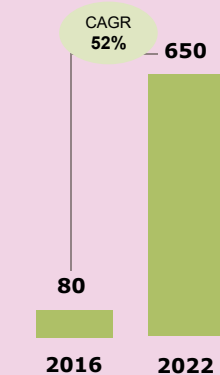
Intelligent lighting control & motion detection

- › Smart dimming with gesture control and XENSIV™ radar
- › OPTIGA™ Trust security solutions for IP protection and hardening against cyber attacks
- › XMC™ 1xxx for energy efficient LED lighting control and BCCU (Brightness & Color Control Unit) for flicker-free dimming & smooth automatic color change

IFX Solutions to enable Use-case

- › **Radar** 24GHz for motion/presence and lighting control, with localised flooding detection in kitchen or wet areas
- › **LED Drivers** for constant current to LED light engines with power efficient multi stage topology selections
- › **CoolMOS™** and **OptiMOST™** provide fast switching with low losses MOSFETS solutions
- › **XDP digital IC family**, all-in-one package solution that integrates a digital power controller with key peripherals
- › **OPTIGA™** for secure connection with Algo protection
- › **XMC™ 1xxx** for automated LED Controls

Smart lighting (mil units)



Units shipment for wireless embedded and connected home LED bulbs and lighting strips.
Source: ABI



Home Energy Management



XMC1200



IGBT



CoolSET™



CoolMOS™



OptiMOS™

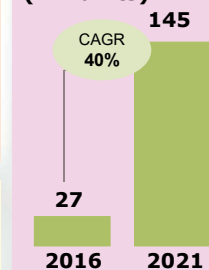
Greener Home Management with Smart Power and Sensing controls

- › Intelligent (e.g. Voice) & remote monitoring of power usage enabled by XENSIV™ SiMic
- › Secure motion sensing & smart enabling of devices with XENSIV™ radar sensors
- › Secure transmission of data by OPTIGA™ family of products for remote management

IFX Solutions to enable Use-case

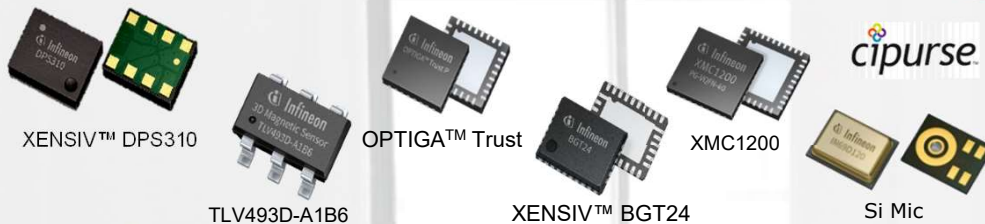
- › **iMotion™ /XMC** and **IPM** (IGBT+driver IC), for energy efficient motor control
- › Control ICs, Driver ICs, **CoolSET™**, **CoolMOS™**, **OPTIMOS™** for energy efficiency SMPS
- › **OPTIGA™** family for secure connection and mutual authentication

Energy Management (mil units)



Units shipment for clothes indoor smart plugs, dedicated heaters, radial controls, AC controls, thermostats, and multi-measuring units.
Source: ABI

Home Security & Safety



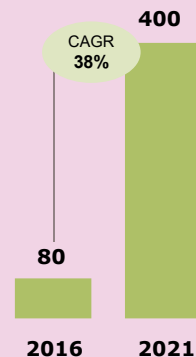
Enabling Safer Homes without Physical Boundaries

- › Intelligent (e.g. Voice) & remote monitoring enabled by XENSIV™ SiMic
- › Secure motion sensing & smart intrusion / presence detection with XENSIV™ radar sensors, pressure sensor and magnetic sensor.
- › Secure transmission of data by OPTIGA™ family of products for remote management and mutual authentication.
- › High performance real-time control with XMC4xxx

IFX Solutions to enable Use-case

- › **Magnetic & Pressure sensors, Radar** 24GHz / 60GHz for motion and intrusion detection.
- › **SiMic** for voice recognition.
- › **3D image Sensors (ToF)** for facial recognition in IP camera.
- › **OPTIGA™ Family** as hardware Trust Anchor for data privacy and confidentiality.
- › **CiPurse™** as open standard smart technology for access control
- › **XMC4xxx** as a high performance MCU

Security systems (mil units)



Units shipment for contact sensors, smoke detection sensors, motion sensors, flood detection sensors, smart locks, and security control cameras. **Source: ABI**



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Demand

Which key building blocks enable smart homes?



A Smart Home demands for **intelligent devices** that are equipped with **sensors, controllers, actuators and security**.

This means they can collect, interpret and process data and then trigger appropriate actions or responses - all within a secure environment.

Interoperability and communication between the devices and systems are prerequisites.

Security
Encrypting the data transfer and protecting privacy



Sensing
Collecting and generating the data



Control
Processing data and triggering actions



Actuate
Smart actuating of devices

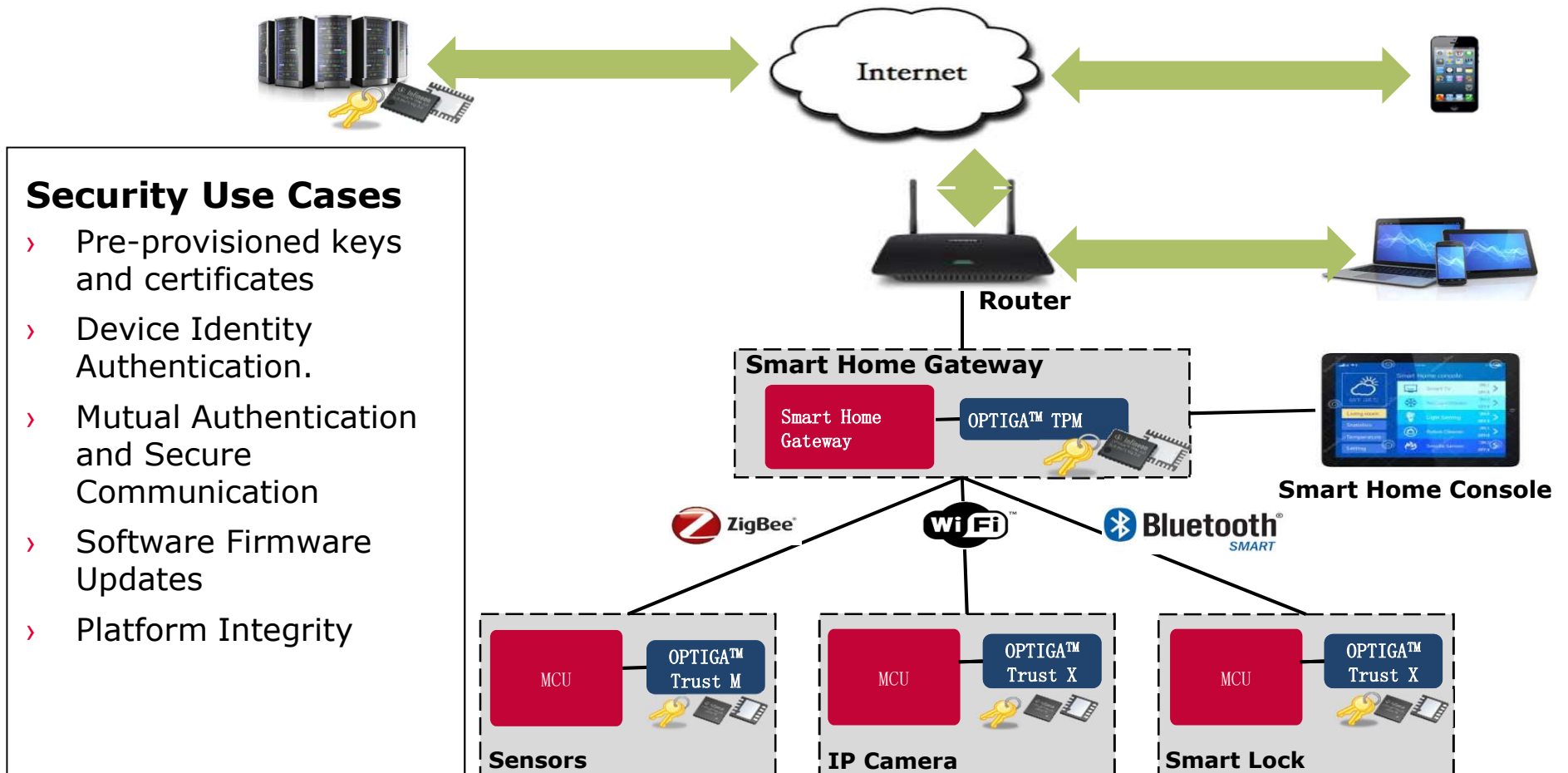


Connectivity Communication between the diverse devices

Main security concerns for our customers



Smart Home Architecture

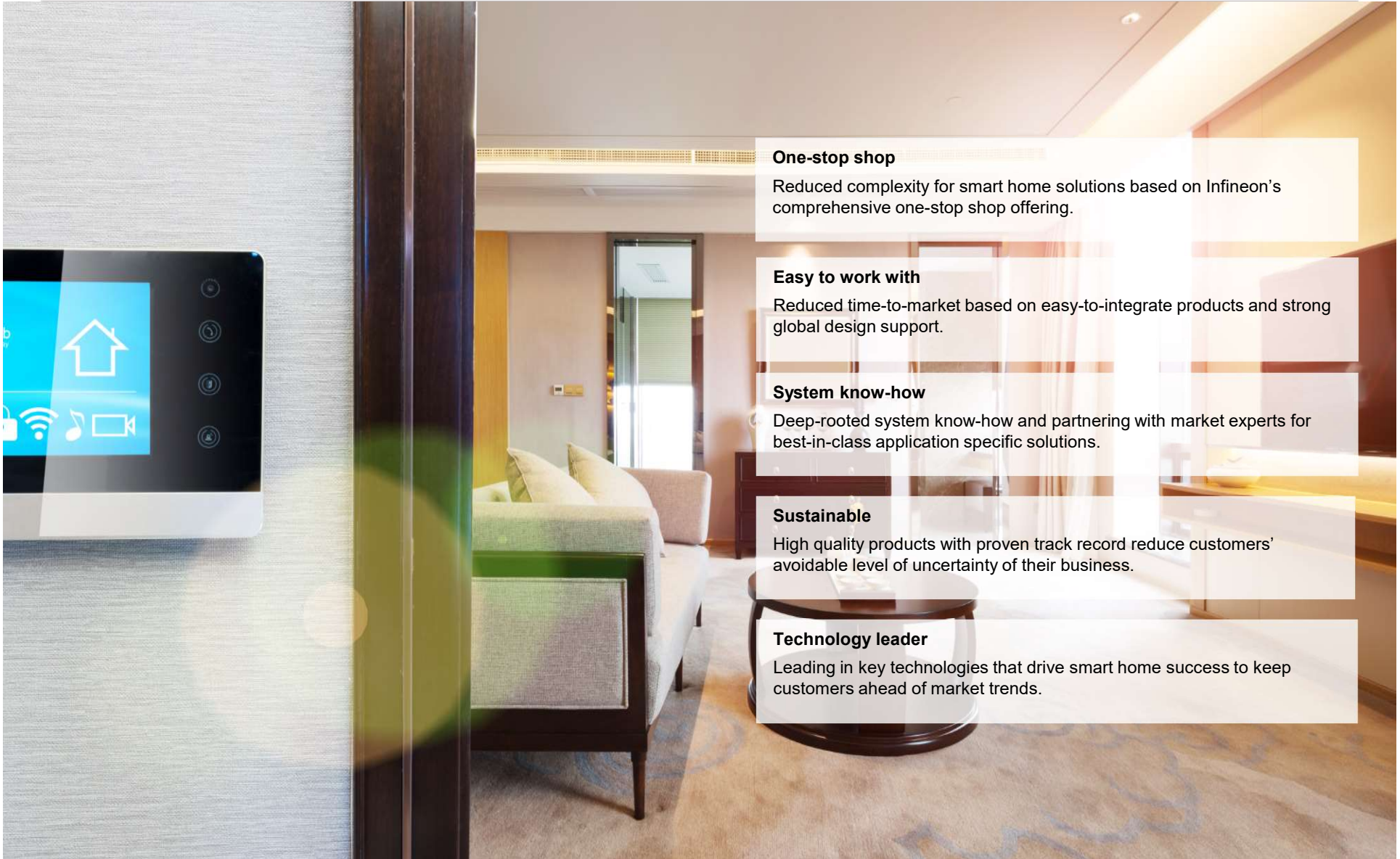


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Your benefits

Smartify homes the secured way



One-stop shop

Reduced complexity for smart home solutions based on Infineon's comprehensive one-stop shop offering.

Easy to work with

Reduced time-to-market based on easy-to-integrate products and strong global design support.

System know-how

Deep-rooted system know-how and partnering with market experts for best-in-class application specific solutions.

Sustainable

High quality products with proven track record reduce customers' avoidable level of uncertainty of their business.

Technology leader

Leading in key technologies that drive smart home success to keep customers ahead of market trends.



Call for action

Let's Grow Deeper and Create Success together... Promoting and supporting smart home to a wider market





Part of your life. Part of tomorrow.

