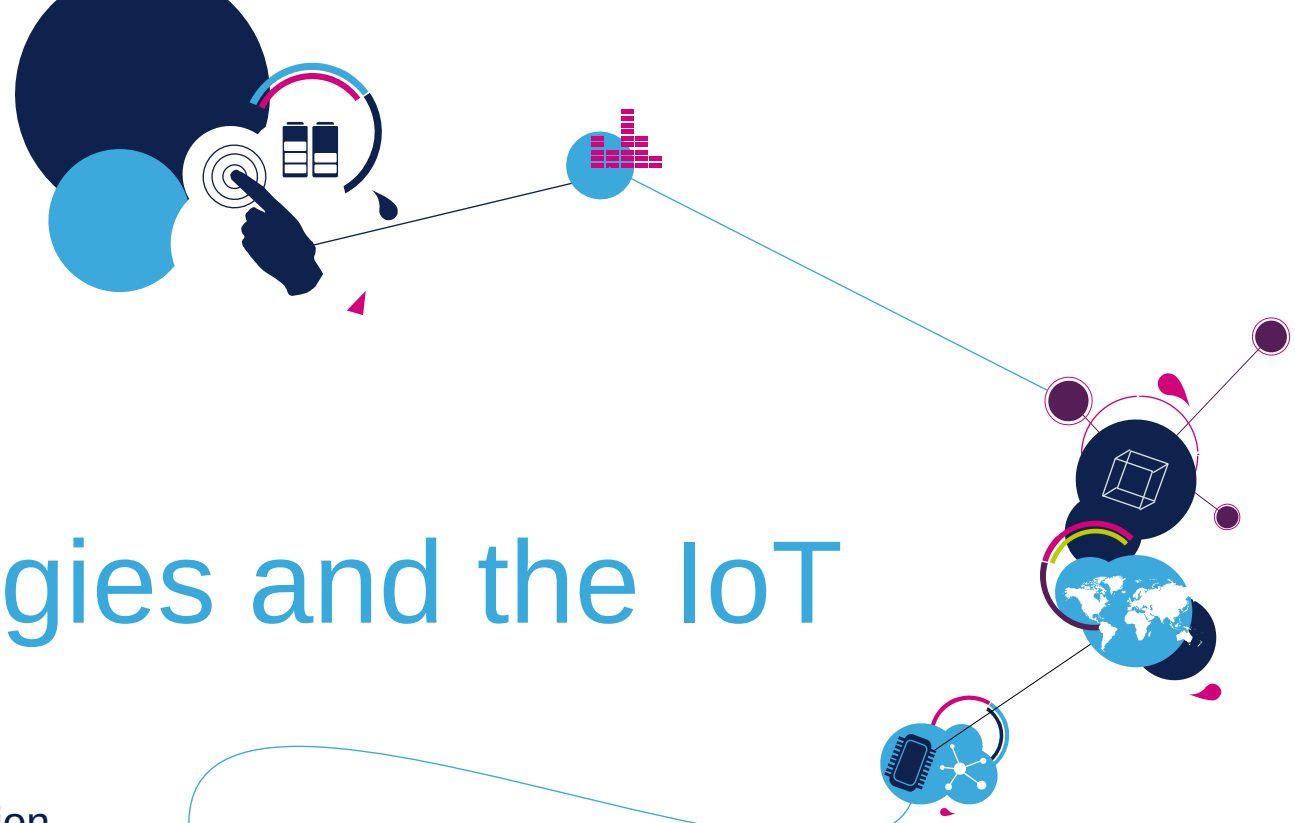

Wearable Technologies and the IoT

Andrea Onetti
General Manager - Analog and Audio Systems Division
STMicroelectronics

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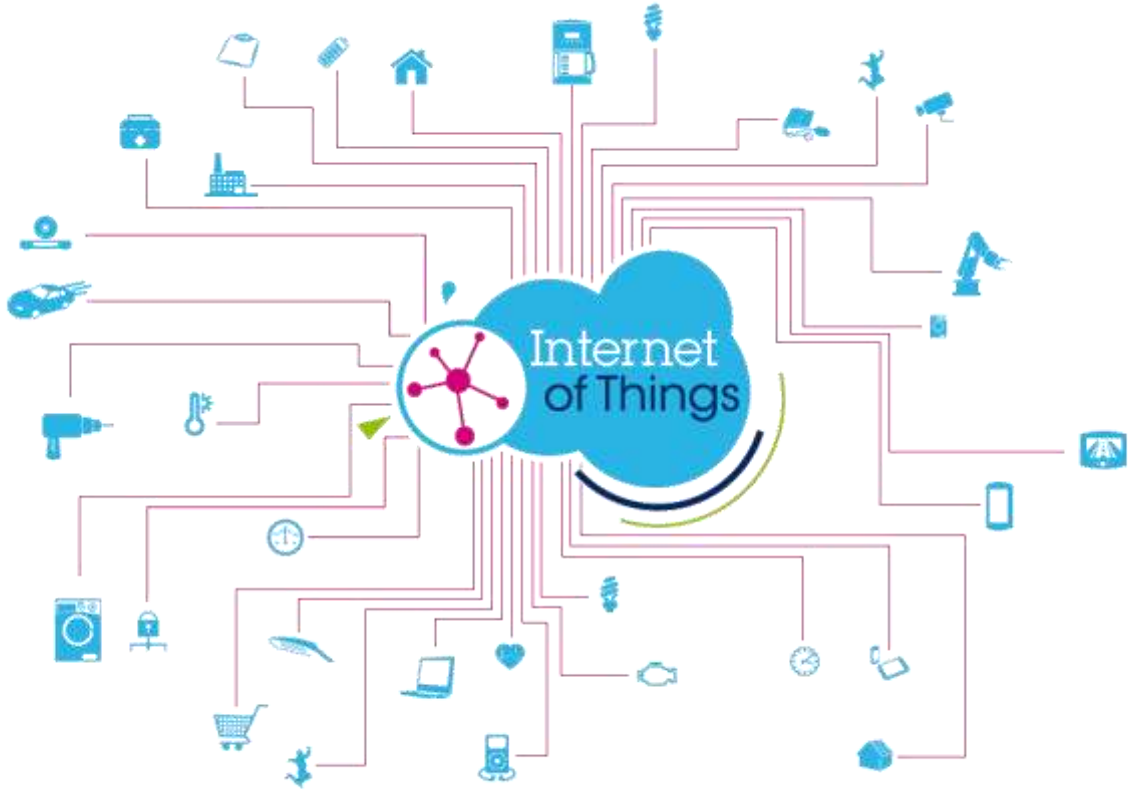
The Internet of Things

Existing Things augmented



New Things to augment life

“Things that leverage the internet to make them smarter…”

Existing Things Augmented
(Making Things Smarter)

It used to tell you the time

Now it tells you what to do

It used to remind you of someone close to your heart

Now it reminds you to take care of your heart

It used to just provide power

Now it talks to your machines and tells how you much they are consuming

They used to help you see clearly

Now they help you to see more

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New Things to Augment Life

Smart City

Reduce traffic congestion

Better use of resources

Improve security

Smart Car

Reduce emissions

Increase safety

Save fuel

Smart Home

Make entertainment more interactive and immersive

Increase comfort

Save energy

Smart Me Healthcare

Empower patients

Help physicians monitor and diagnose remotely

Smart Me Fitness & Wellness

Help to lead healthier lives

Optimize sports performance

Early warning of illness

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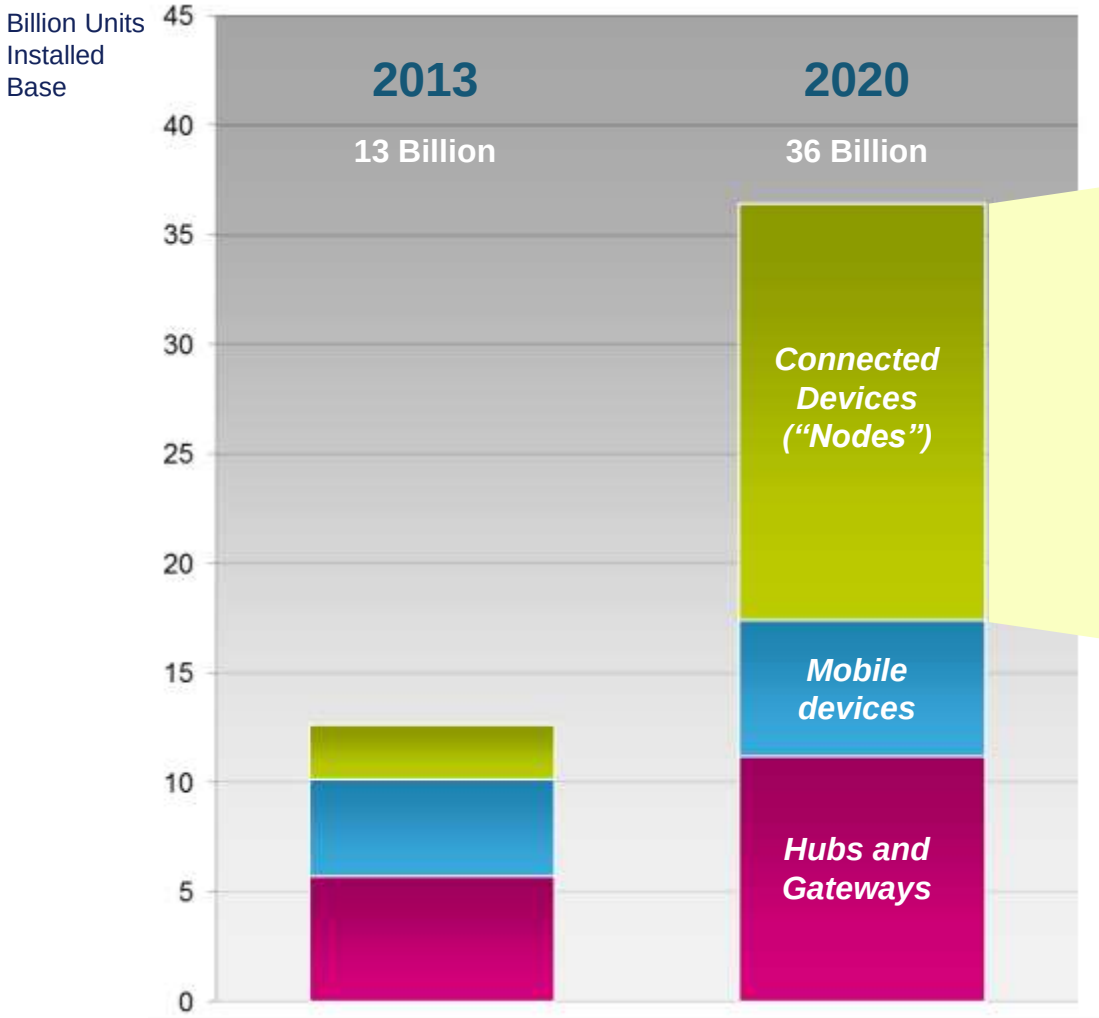
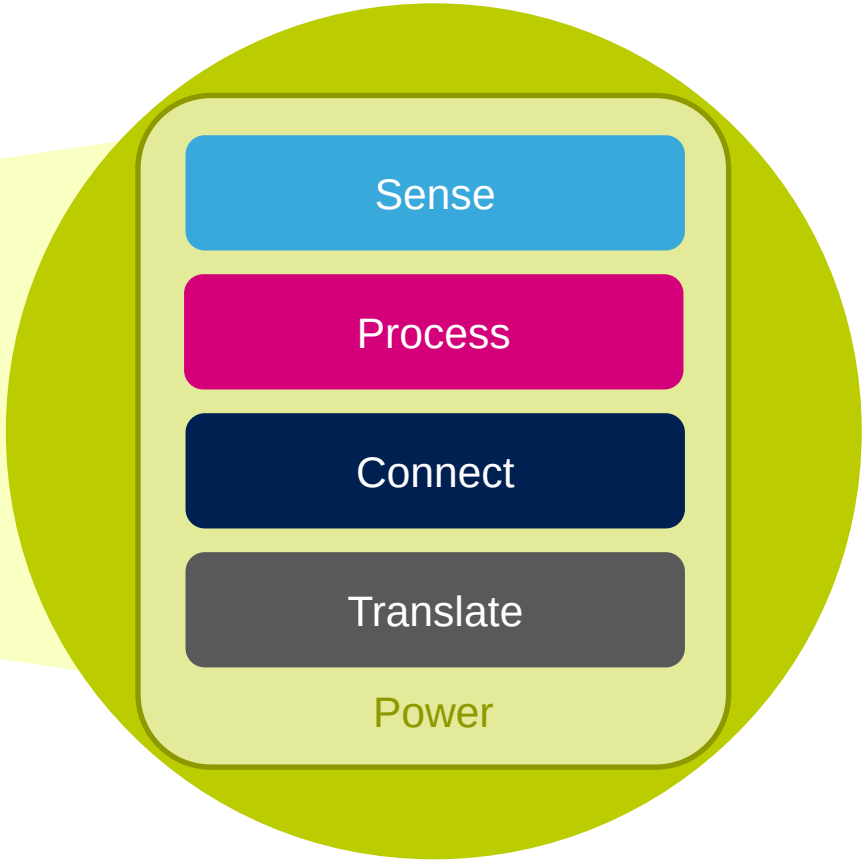
The Opportunity





Augmented Things

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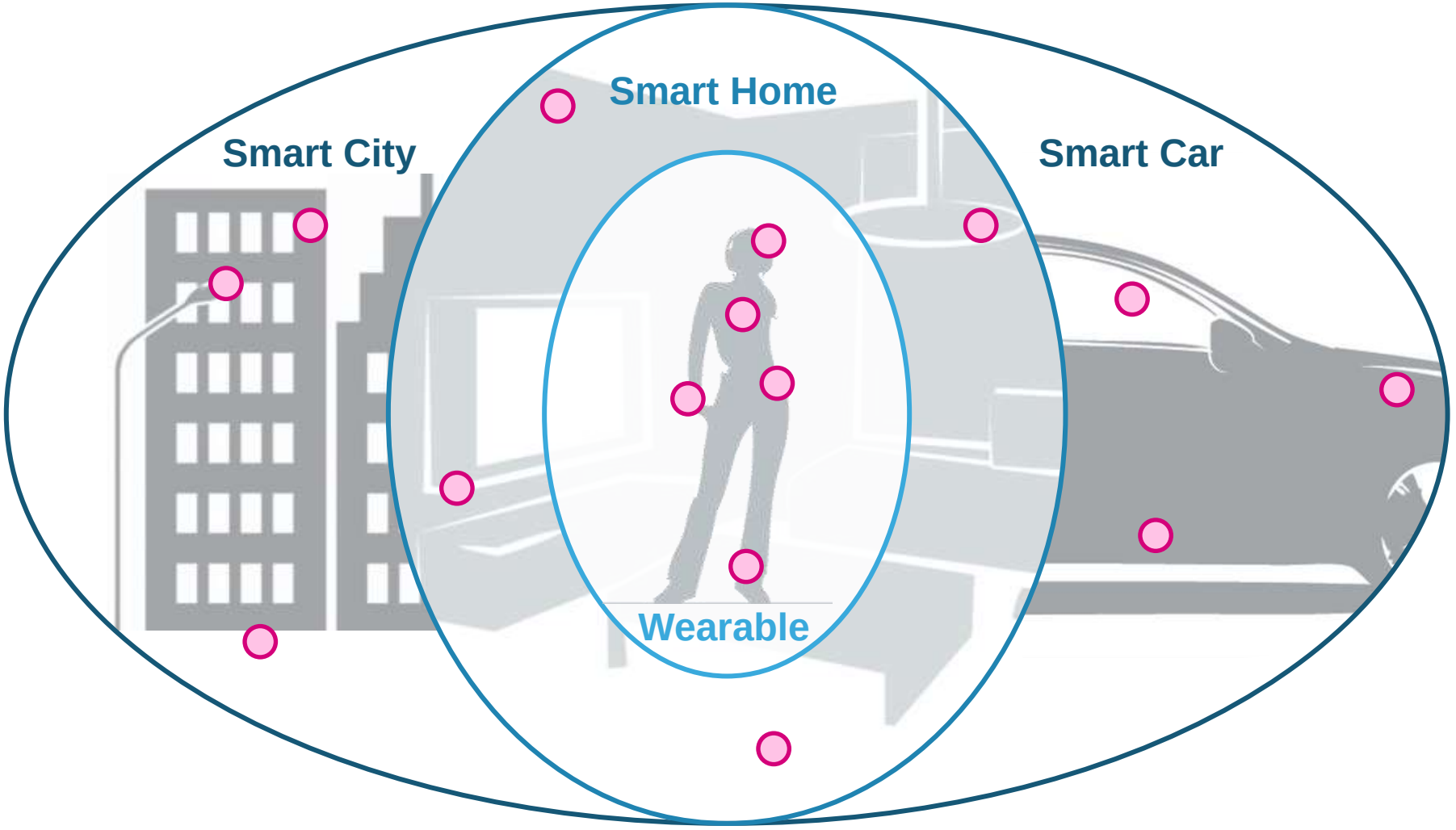
Source: ABI Research

Expanding to Make Things Smarter

Beyond the Smartphone



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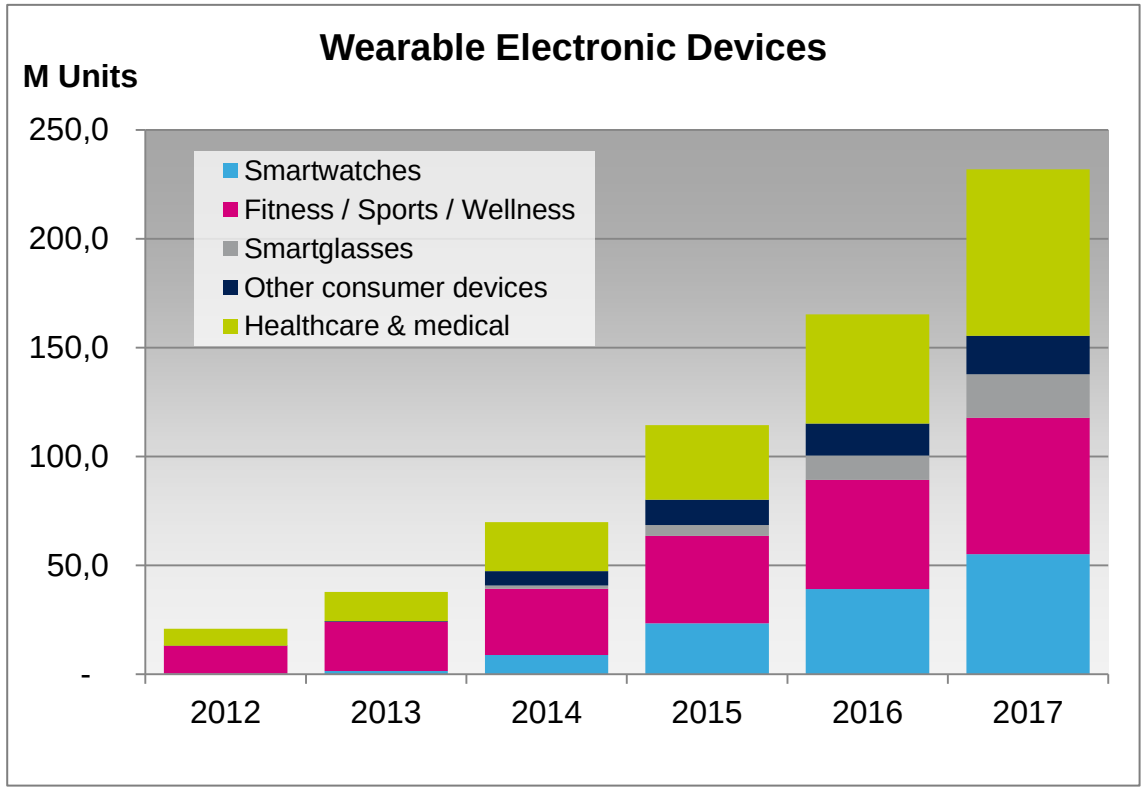
Wearables – the First Wave of the IoT

Why wearable devices have taken off

- Addressing existing needs
- Building on the personal infrastructure of the smartphone – providing local and Internet connectivity as well as the screen and interface capabilities
- Based on a existing connectivity standards
- Motivated entrepreneurs seeing lower barrier to entry than more complex electronic devices
- High volume availability of tiny components allows reasonable cost and size end devices



Sources: Strategy Analytics, ABI

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What’s inside a typical wearable device?

Smart watch

- Sensors
- ULP Microcontrollers & Memories
- Ultra-low power connectivity
- Analog and mixed signal components

Smart Energy management

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Sources: http://ifixit.org/blog/6423/samsung-gear-2/

ST Winning in Wearables

Leading with the right products

- The leader in MEMS & sensors for consumer & mobile
- Leading in 32-bit low power microcontrollers
- Complementary Power management and connectivity solutions

The right sales model

- Broad market coverage
- Systems approach

Activity Monitor

Heart Monitor

Sports

Smart Watch

Accessories

Glasses & Goggles

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ST Winning in the Smart Home

- Sensors, intelligence and connectivity being added to many devices in the home
- Innovative nature of the products allows new companies to challenge established leaders
- ST present with many of the leaders in the first wave of augmented things in the home

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The Building Blocks of the IoT

Sensors & Actuators

- Motion MEMS
- Environmental Sensors
- MEMS microphones
- Touch Sensor
- Micro-actuators
- Proximity sensor
- Image sensors

Brain

- Low-power brain
- Sensor fusion

Communication

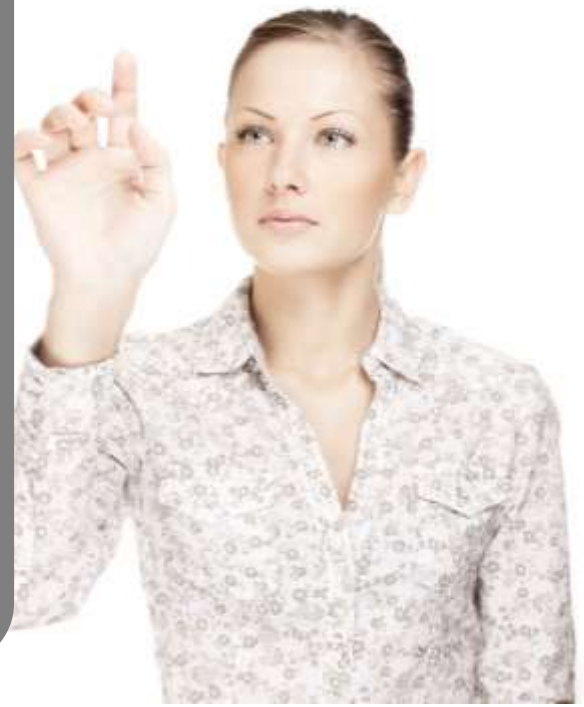
- Ultra-low power connectivity

Interfaces

- Analog

Energy

- Smart energy Management



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Leading Positions in the Key Building Blocks

ULP Microcontrollers & Memories

Number 2 in MCU (GP + Secure)

General-Purpose Microcontrollers

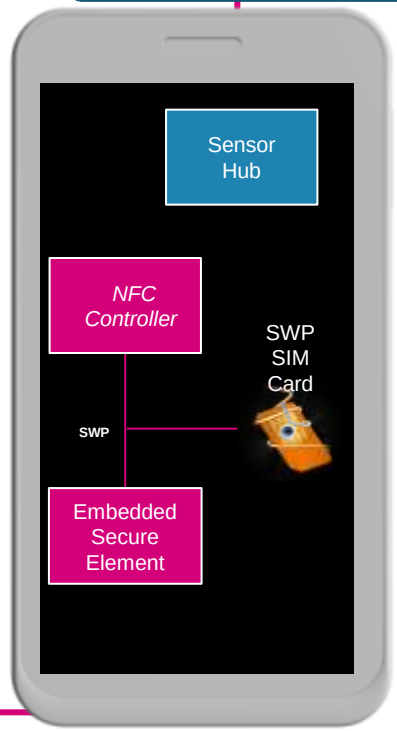
Leadership in 32-bit architecture based on Cortex-M™ platform

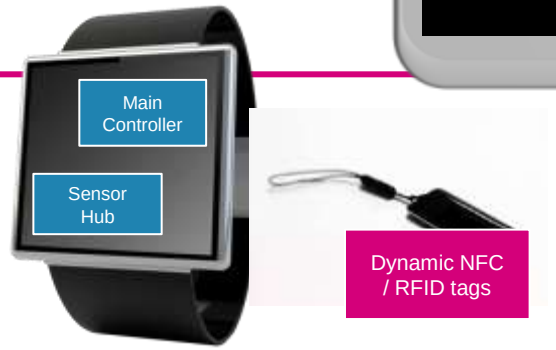
Memories

Leadership in RF EEPROM Near-Field-Communication compliant

Secure MCU

Leadership in 32-bit architecture based on Secure Cortex™- SCxxx platform

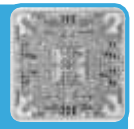




MEMS & Sensors

Number 1 in MEMS and Micro-actuators

MOTION



ACOUSTIC

ENVIRONMENTAL

ACTUATORS

TOUCH

ANALOG

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Connectivity

Ultra-low power Connectivity

- Ultra low-power Bluetooth connectivity solution for wearable and the IoT
  - Master and Slave Single Mode BLE (4.0) Network Processor.
  - On chip non-volatile Flash memory allows OTA BLE-stack upgrade. Stack qualified
- Plug-and-play Wifi modules
  - Fully qualified and certified
  - Easy entry to wireless for customers
- Spirit Transceiver for sub-1 GHz radios
  - Very low power
  - Flexible Multi-band transceiver
  - Protocol stack Wireless M-BUS, 6LowPAN

Power and Analog

Smart Energy Management

Largest portfolio of power management IP for smartphone and tablet

2 in Industrial power

- Power management ICs
- Lighting ICs
- Diodes
- Analog & Mixed Signal ICs
- Thyristors & AC switches
- Transistors
- EMI filtering & signal conditioning
- Protection devices

Analog and mixed signal components

Wide range of analog products needed by our customers to complete product design

Operational amplifiers

Large portfolio of highly power-efficient op amp in tiny packages

Analog switches

Compact single and dual switches for audio and USB

Current sensors

High accuracy current measurement for contactless battery chargers

Battery gas gauges

Low-power gas gauge providing very accurate battery life indicators

Audio amplifiers

High-efficiency Class D and G amplifiers for headsets and speakers

Smart reset

Customizable products providing safe and convenient reset

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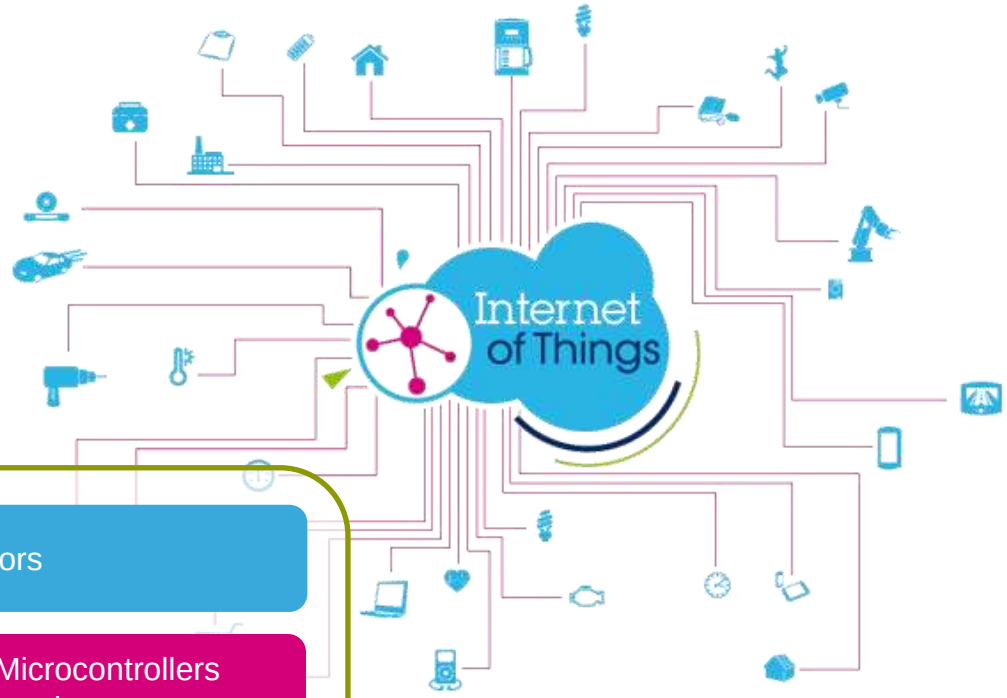
ST has All the Ingredients for the IoT

ST has all the ingredients to enable Augmented Things in the IoT

- A unique portfolio with all the key technologies & products
- Understanding the sensor-to-cloud value chain
- Engaging with a broad ecosystem
- Expertise in digital-security technologies
- State-of-the-art semiconductor technologies and high-volume production capabilities



Sensors

ULP Microcontrollers & Memories

Ultra-low power connectivity

Analog and mixed signal components

Smart Energy management

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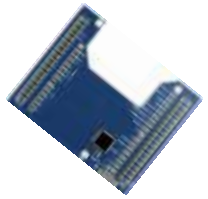
ST Enabling the Ecosystem

ULP Microcontrollers & Memories



Software

STM32 Cube

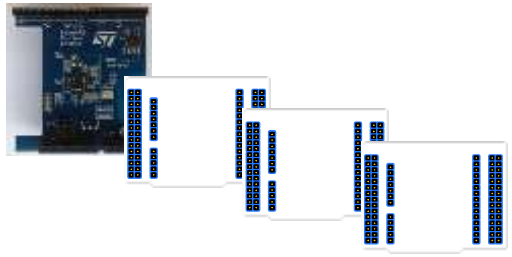
Security

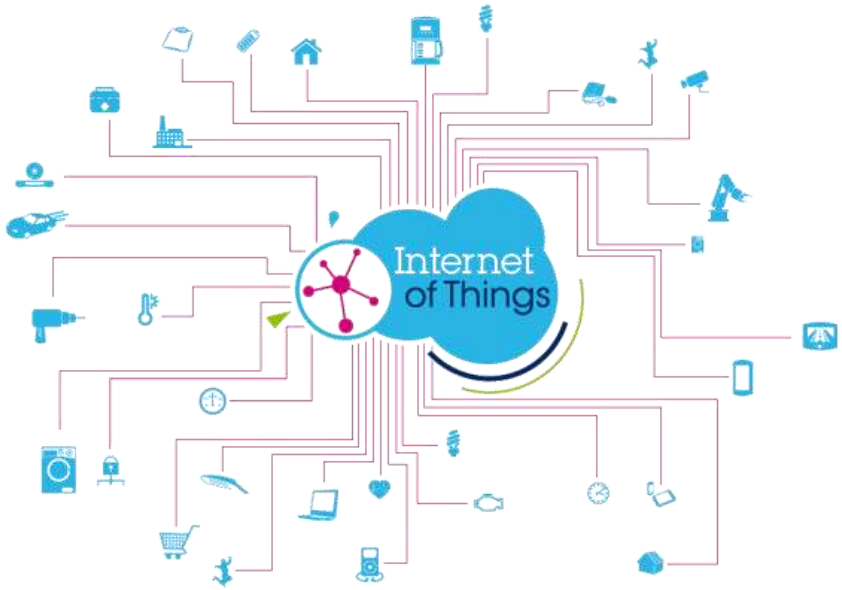
Sensors

Ultra-low power connectivity

Smart Energy Management

Analog and mixed signal components





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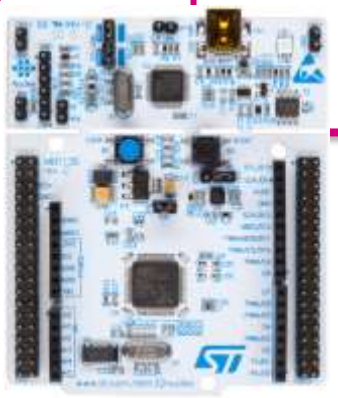
ST supporting Wearable Technologies Innovation World Cup 2014/2015

STM32 Nucleo

- STM32 Nucleo board as a standard hardware platform connecting many ST devices
- STMCube allows rapid software development with maximum reusability across ST's microcontroller devices



BlueNRG Shield

- An STM32 Nucleo expansion board and based on BlueNRG
- Enables Bluetooth Low Energy connectivity and easy application development

BlueNRG USB Dongle

- An evaluation board based on BlueNRG. Supports both master and slave roles
- Features a low power STM32L on board. Primarily meant to interface with BlueNRG but can also be used for custom application development

Free of charge for the first 100 IWC contestants requesting them

The database for the submission of solutions will be open from June 2014 until November 2014.
Registration at www.innovationworldcup.com/wt/

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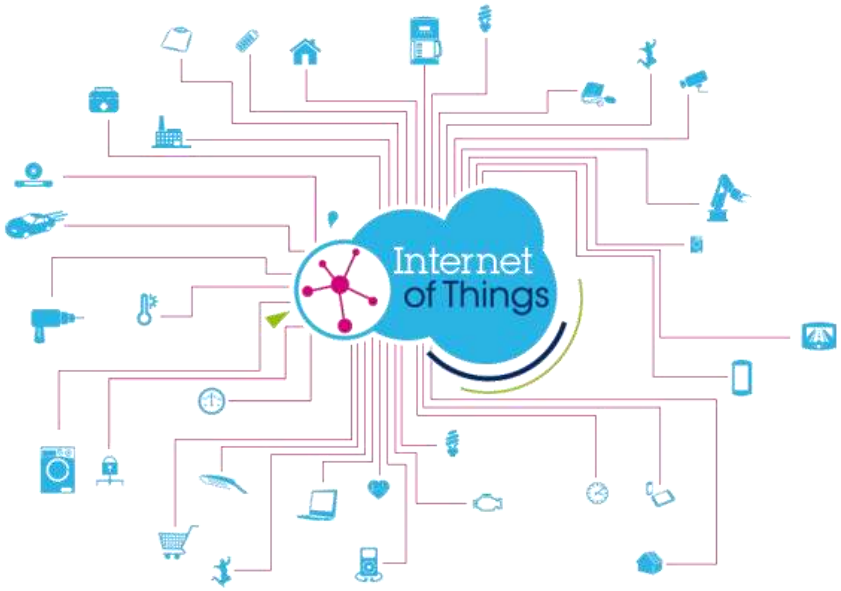
Conclusions

- The IoT has the potential to connect tens of billions of objects to internet generating demand for sensors, microcontrollers, connectivity and energy management

- ST has all the ingredients for the IoT/Wearables and is winning today in the first high volume markets that have emerged

- ST is proud to be once again the Title sponsor of the Wearable Technologies Innovation World Cup 2014/2015 and support brilliant minds developing creative wearable solutions



14/15
INNOVATION
WORLD
CUP

www.innovationworldcup.com/wt/

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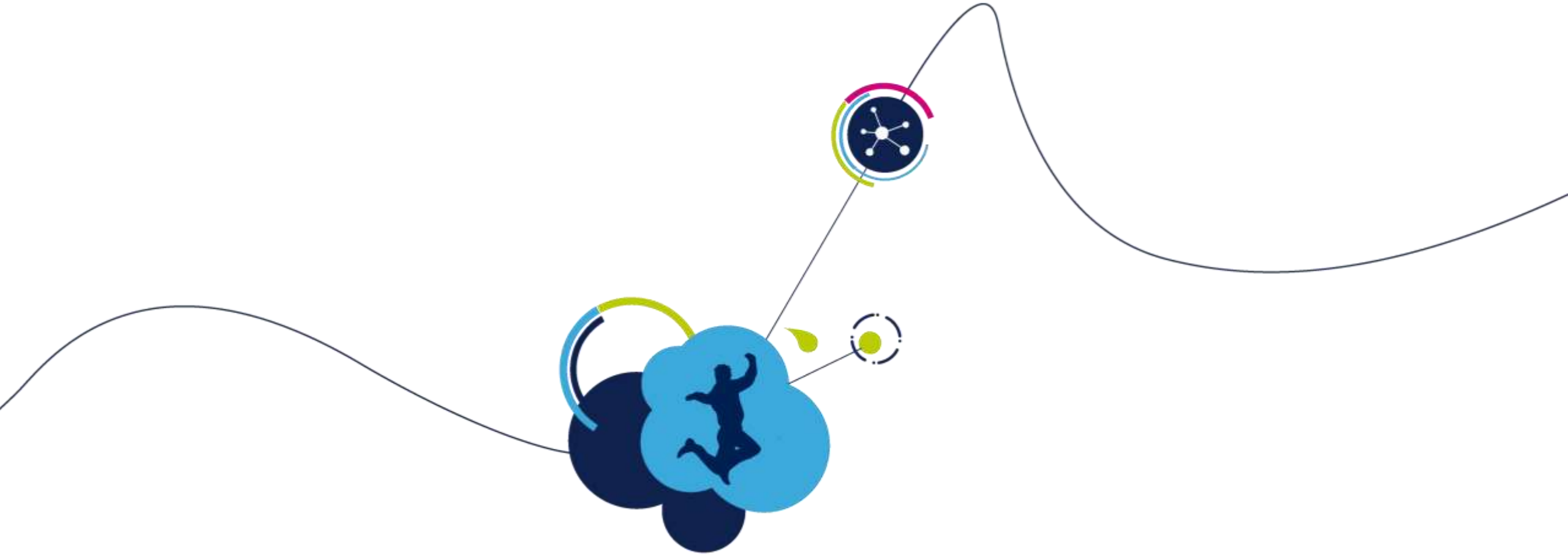

Thank You

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