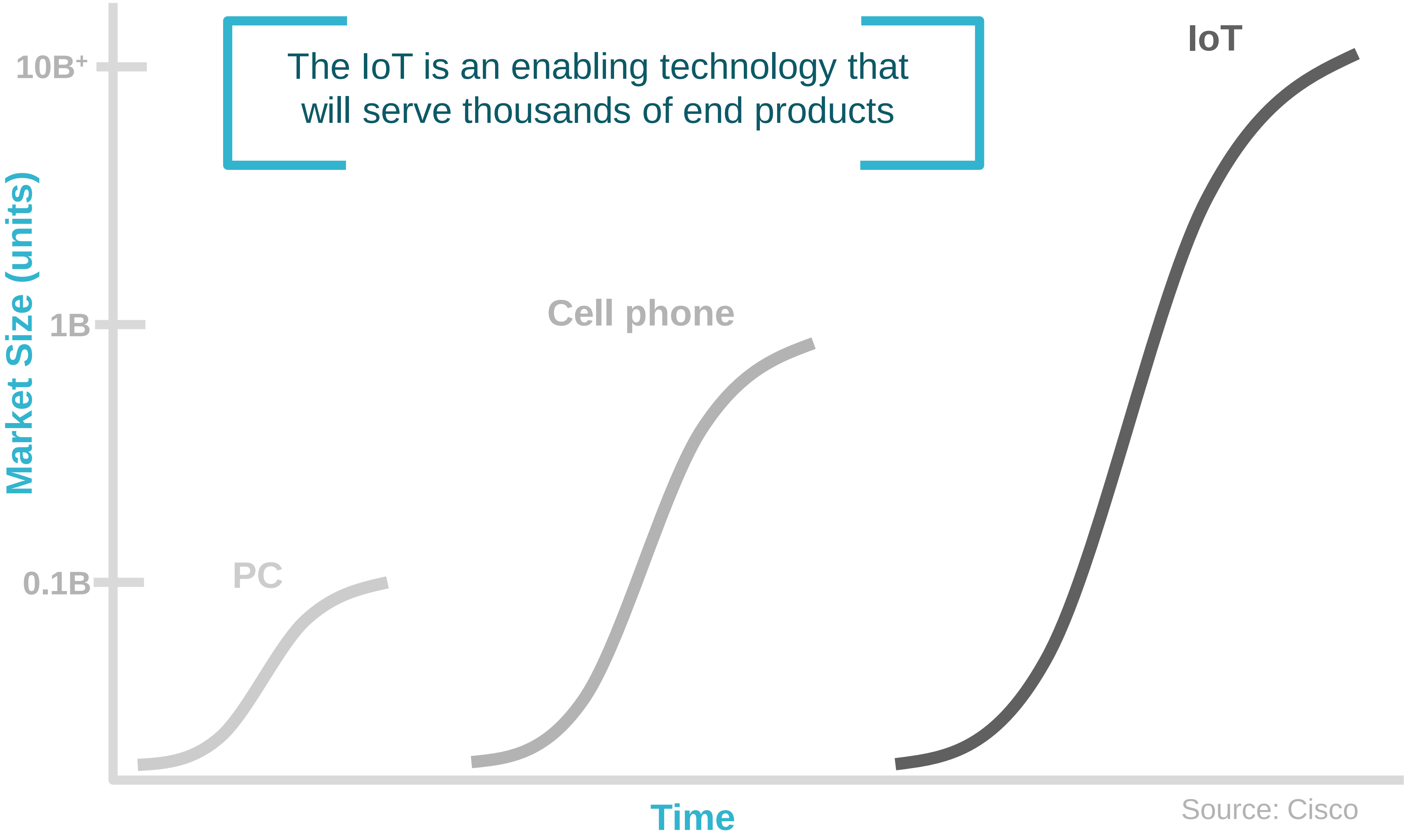
CONNECT
MORE
WITH TI

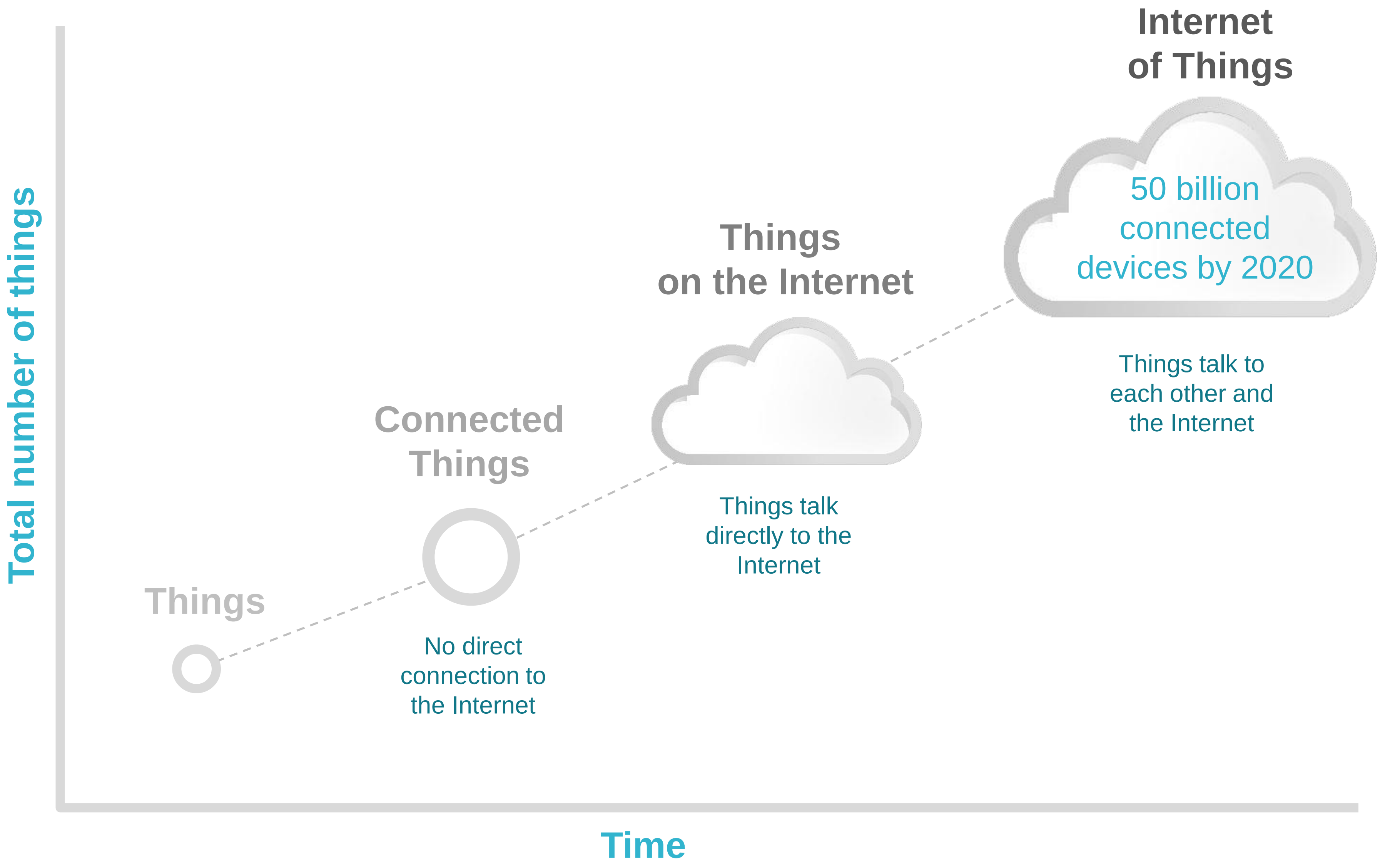
TI: The IoT technology leader

Why the IoT is attractive


The IoT is an enabling technology that will serve thousands of end products

Source: Cisco

The Evolution of the IoT



Total number of things

Things

Connected Things

No direct connection to the Internet

Things on the Internet

Things talk directly to the Internet

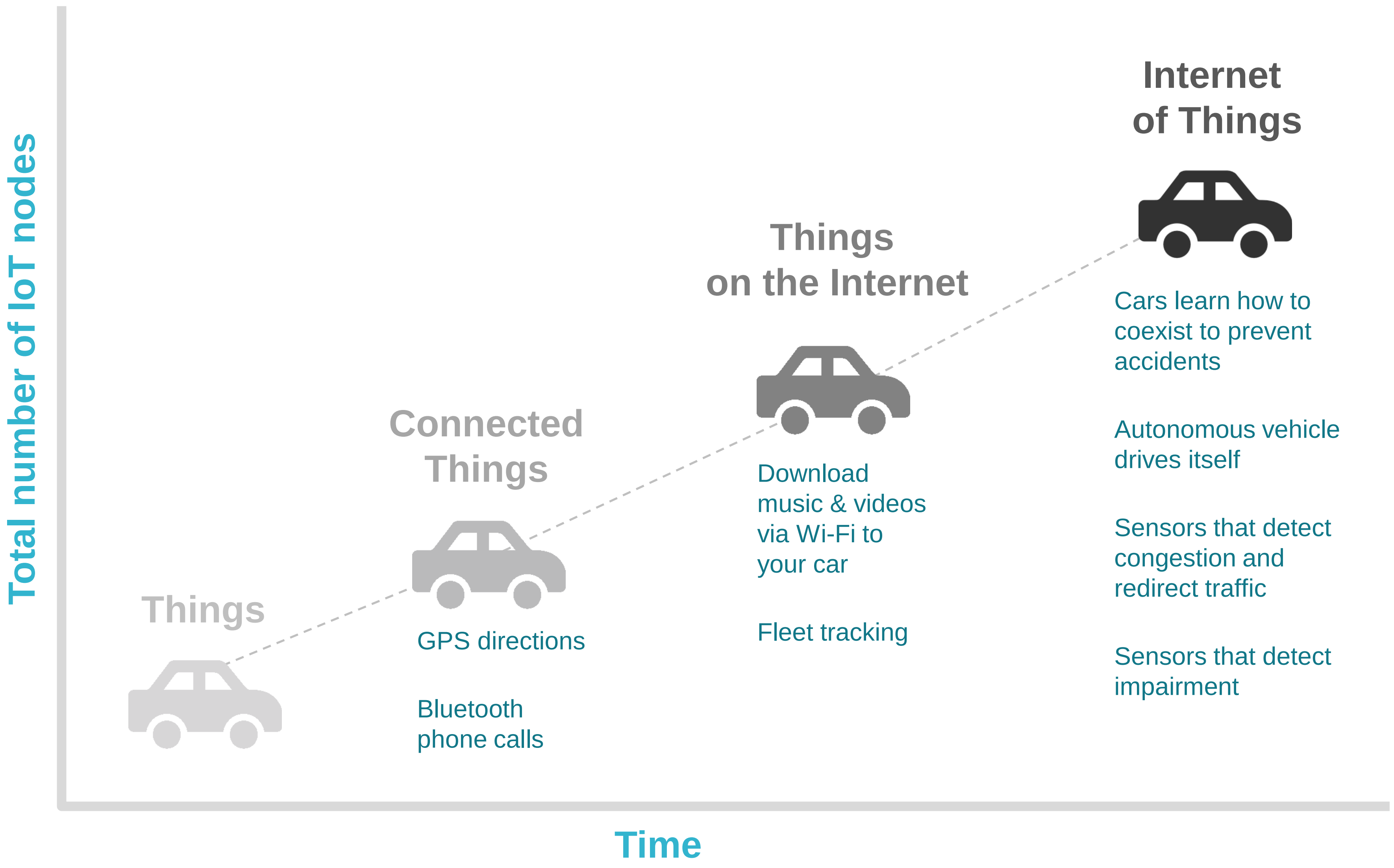
Internet of Things

50 billion connected devices by 2020

Things talk to each other and the Internet

Time

The Evolution of the IoT



Total number of IoT nodes

Time

Things

Connected Things

GPS directions

Bluetooth phone calls

Things on the Internet

Download music & videos via Wi-Fi to your car

Fleet tracking

Internet of Things

Cars learn how to coexist to prevent accidents

Autonomous vehicle drives itself

Sensors that detect congestion and redirect traffic

Sensors that detect impairment

Industrial in the IoT

Wirelessly connected LED lighting & energy management

Flow & pressure sensors

Automotive in the IoT

Navigation, Bluetooth hands free & audio, Wi-Fi

Keyless entry, interior lighting, mirror control, sensors

Homes in the IoT

Security & safety system, sensors

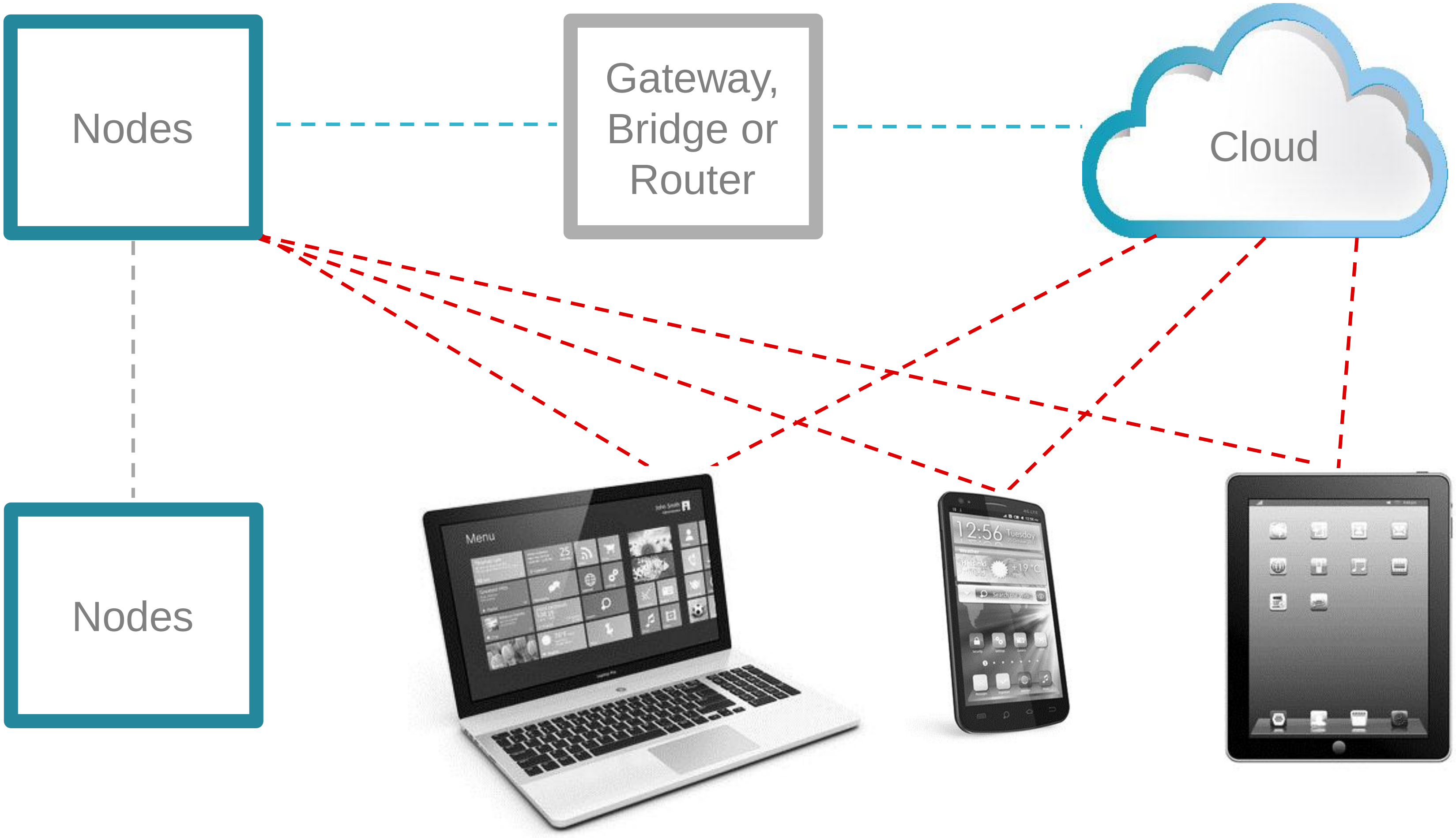
Smart home energy gateway, thermostats, sensors

Fitness and healthcare in the IoT

Informed workouts with activity & performance measurement

Safe independent living with fall detection, medication monitoring, etc.

How the IoT works



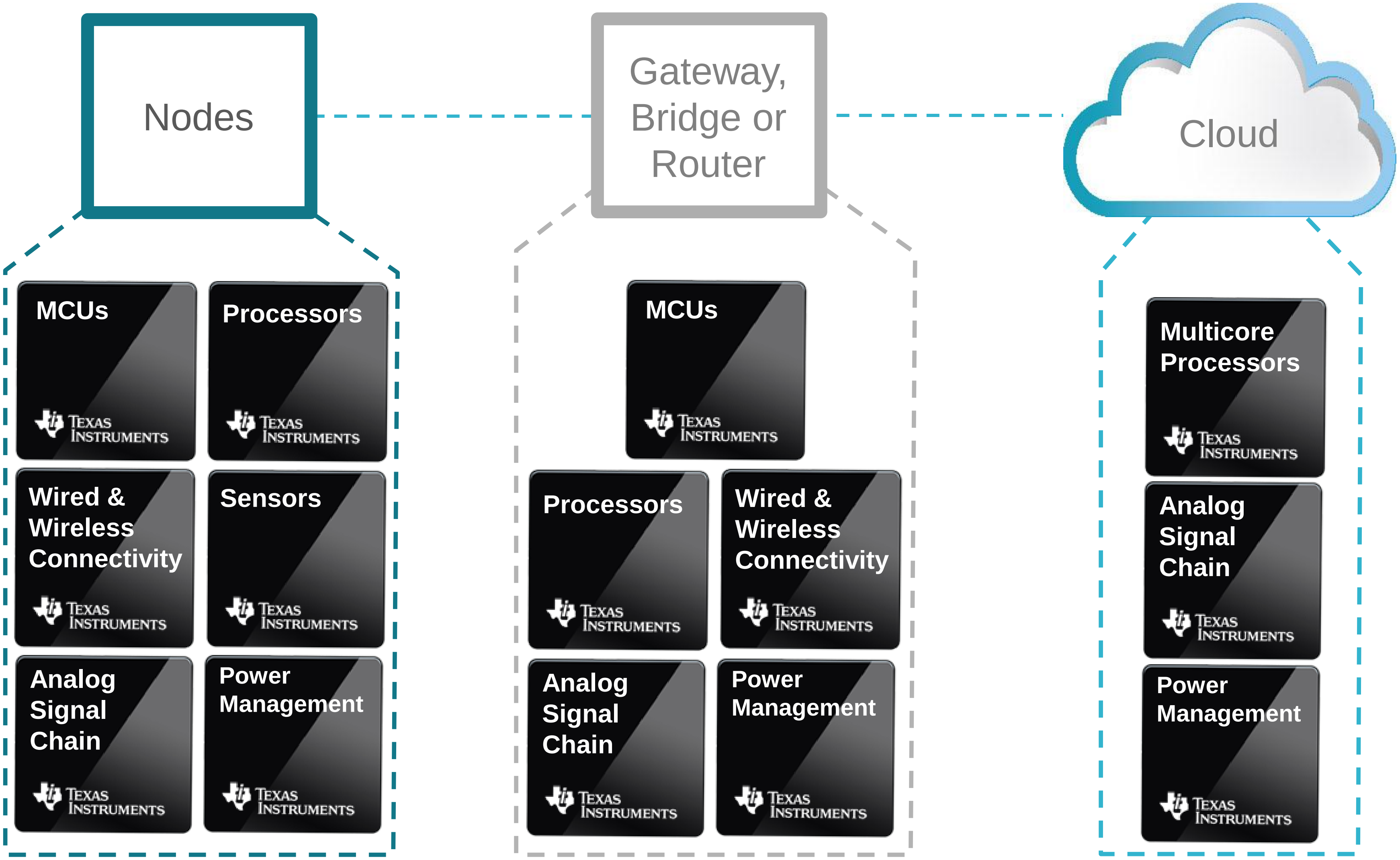
Nodes

Gateway, Bridge or Router

Cloud

Nodes

Only TI has all the IoT building blocks



Nodes

- MCUs
- Processors
- Wired & Wireless Connectivity
- Sensors
- Analog Signal Chain
- Power Management

Gateway, Bridge or Router

- MCUs
- Processors
- Wired & Wireless Connectivity
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Cloud

- Multicore Processors
- Analog Signal Chain
- Power Management

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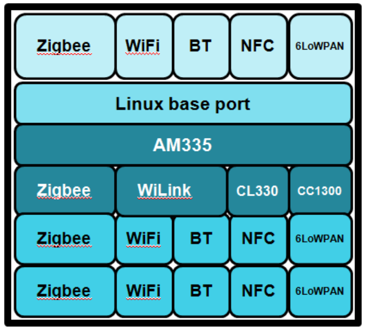

Zigbee	WiFi	BT	NFC	6LoWPAN
Linux base port				
AM335				
Zigbee	WiLink		CL330	CC1300
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Zigbee	WiFi	BT	NFC	6LoWPAN

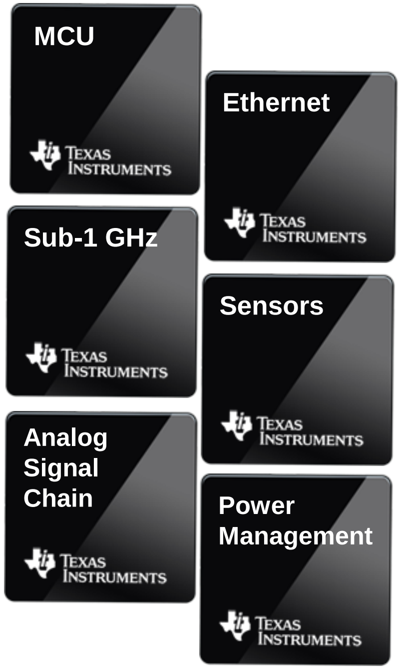
TI gateway reference design

- Hardware
- Software
- Speeds development

HP Moonshot

- DSP-accelerated ARM server
- Leverages TI's 66K2Hx KeyStone II multicore DSP + ARM® Cortex™-A15 platform
- High-performance computing
- Ideal performance/power

Only TI has all the IoT building blocks



MCU

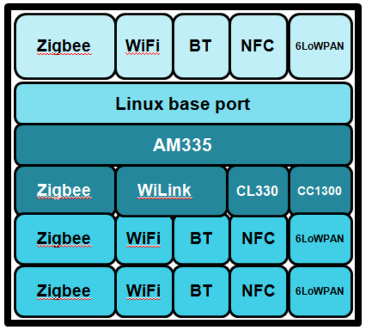
Ethernet

Sub-1 GHz

Sensors

Analog Signal Chain

Power Management



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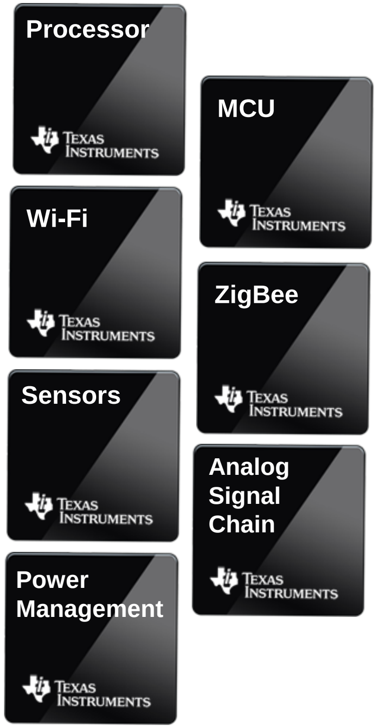

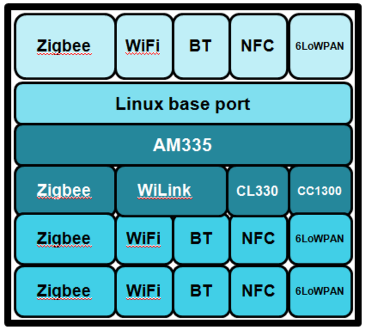

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IoT – The United Nations of connectivity

CHALLENGE

Connectivity:
One size doesn't fit all

WHAT IS NEEDED

Broad variety of wired or wireless standards

TI DELIVERS

ZigBee™
- Low power mesh network
- Smart metering & lighting
- Moving into home automation

Sub-1GHz Low Power, Robustness, Long Range
- Low power & long range
- Proprietary & open protocols
- Metering, security systems

Wi Fi®
- Fast – 10Mbps++
- Direct Internet connection
- Home & enterprise apps

Bluetooth® SMART
- Lowest power
- Connect to tablet/phone
- Moving to industrial, automotive

PRIME ALLIANCE
G3-PLC Alliance
- Data over power lines (OFDM)
- Developed for smart grid
- Lighting, solar, appliances

EtherCAT.
ETHERNET
- Fast, low latency Ethernet
- Real-time industrial control
- Information technology

NFC GPS RFid Bluetooth® 2.4GHz IEEE P1901.2 6LoWPAN EtherNet/IP ANT+ PurePath™ Wireless Audio RF4CE IEEE 802.15.4

System-level approach to power is required

CHALLENGE

Power is critical

WHAT IS NEEDED

The lowest power solutions for any application

TI DELIVERS

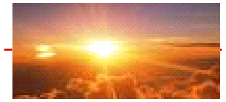
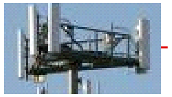
Technology for billions of battery- or harvested-powered devices

Power management & precision analog ICs

Low-power microcontrollers

Low-power wireless connectivity

Harvesting power and stretching battery life

Light  Vibration  Thermal  RF 

Security vital at all layers

CHALLENGE

Security is a must

WHAT IS NEEDED

Built-in hardware security technology

TI DELIVERS

Security solutions to prevent, detect and respond to unintended or malicious behavior

Hardware

Software

Connectivity

Symmetric cryptography

Authentication & anti-cloning

IP protection

Tamper protection

Protecting manufacturers' and consumers' devices, solutions and services

The IoT must be easy

CHALLENGE

Complexity

WHAT IS NEEDED

IoT solutions for everyone, not just experts

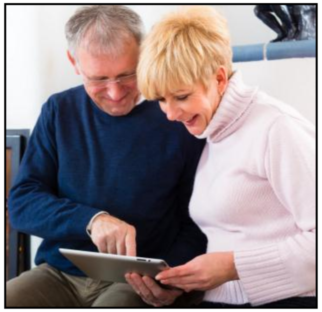
TI DELIVERS

Solutions that are making the IoT easy for manufacturers and consumers

Manufacturers: Easy to develop and add to designs

- Simplified RF
- Easier Internet connectivity
- Tools, software & support

Consumers: Easy to set up and use



Making the IoT of 2020 happen

Challenges	What is needed
Connectivity: One size doesn't fit all	Broad variety of wired or wireless standards
Power is critical	The lowest power solutions for any application
Security is a must	Built-in hardware security technology
Complexity	IoT solutions for everyone, not just experts
Rapidly evolving	Flexible hardware and software portfolio to mix & match

TI has the broadest "IoT-ready" portfolio

CONNECT MORE WITH TI

ti.com/connectmore

ti.com/iot

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