ITU-SUDACAD Regional Forum on Internet of Things for Development of Smart and Sustainable Cities

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IoT For a Better Life

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Agenda

- Introduction
- IoT for a better life
- IoT architecture
- IoT challenges

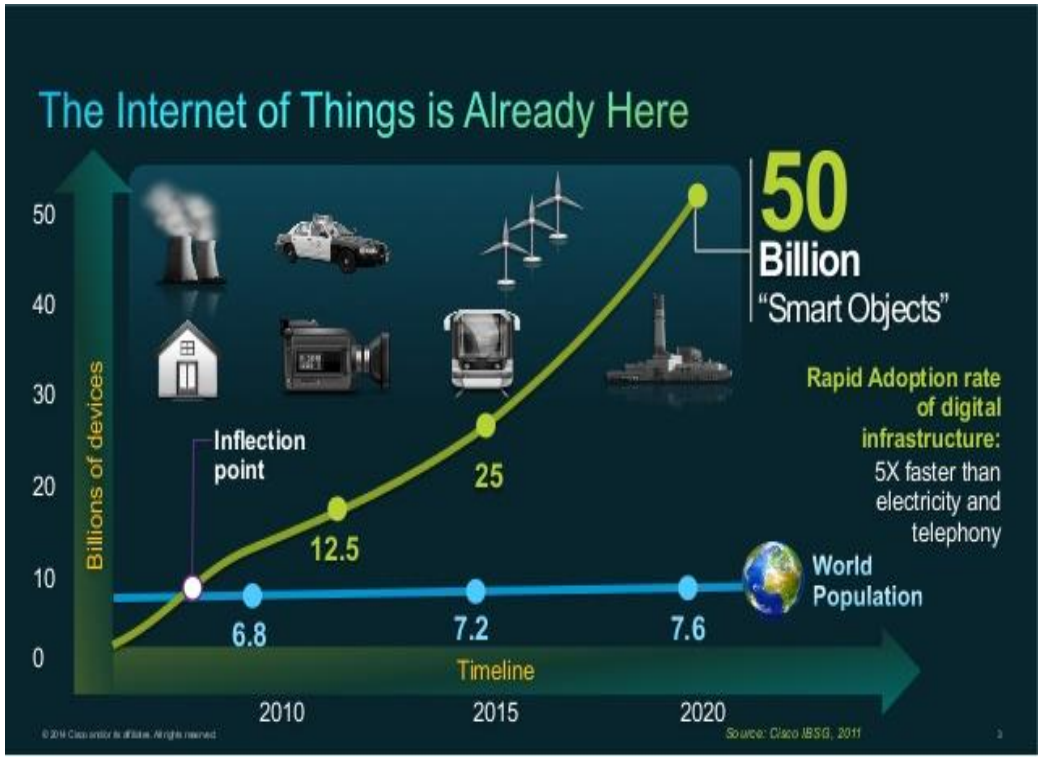
Introduction

Introduction

- a hyper-connected global ecosystem in which **“things”** communicate with other **“things”** whenever needed to deliver highly diversified services to the user.
- The term Internet of Things was first used by **Kevin Ashton** in 1999.
- Refers to uniquely identifiable objects (things) and their **virtual representations** in an **Internet-like structure**

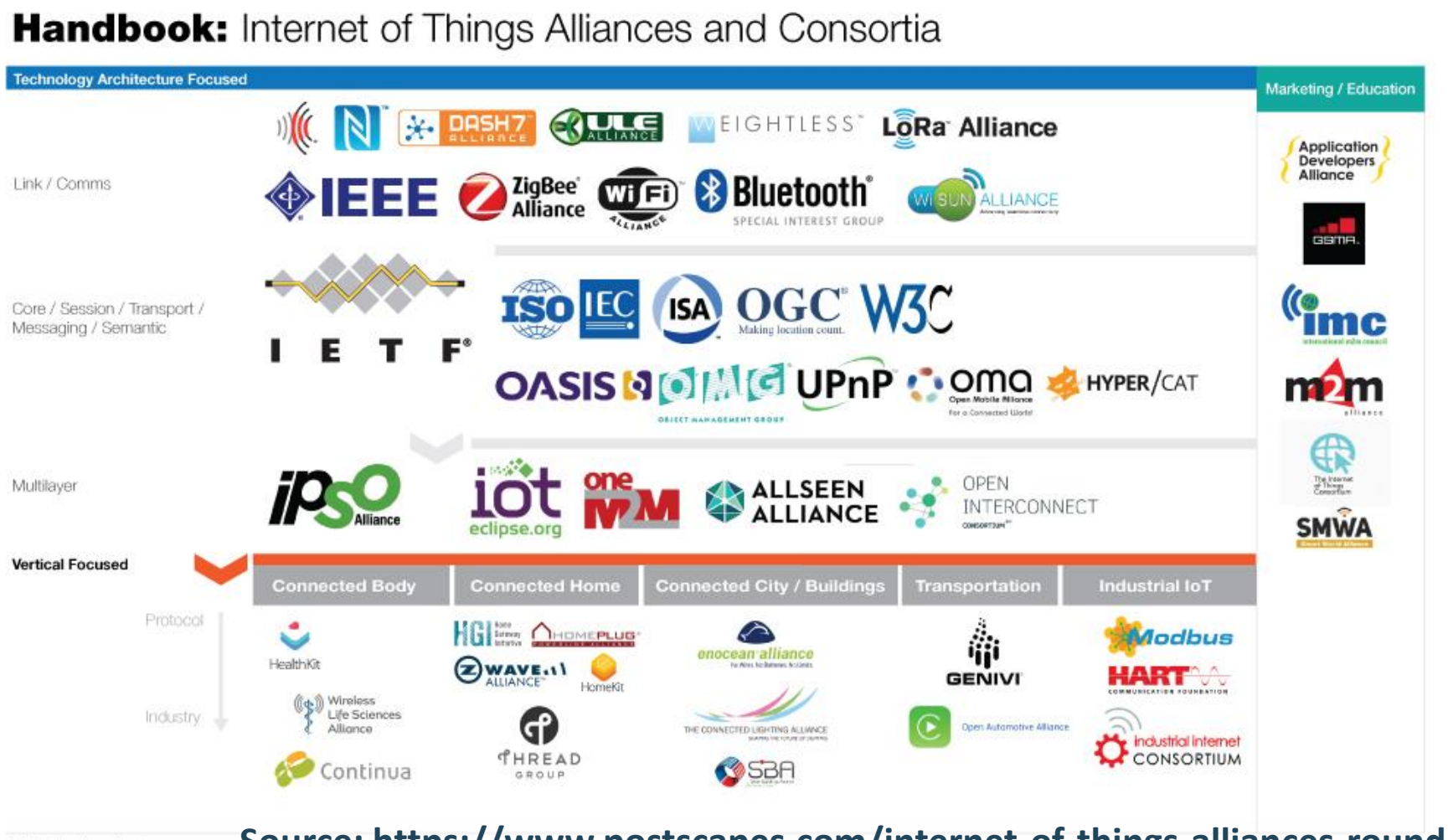
Introduction

- More connected devices than humans !!
- There will be more than 50 billion smart objects by 2020



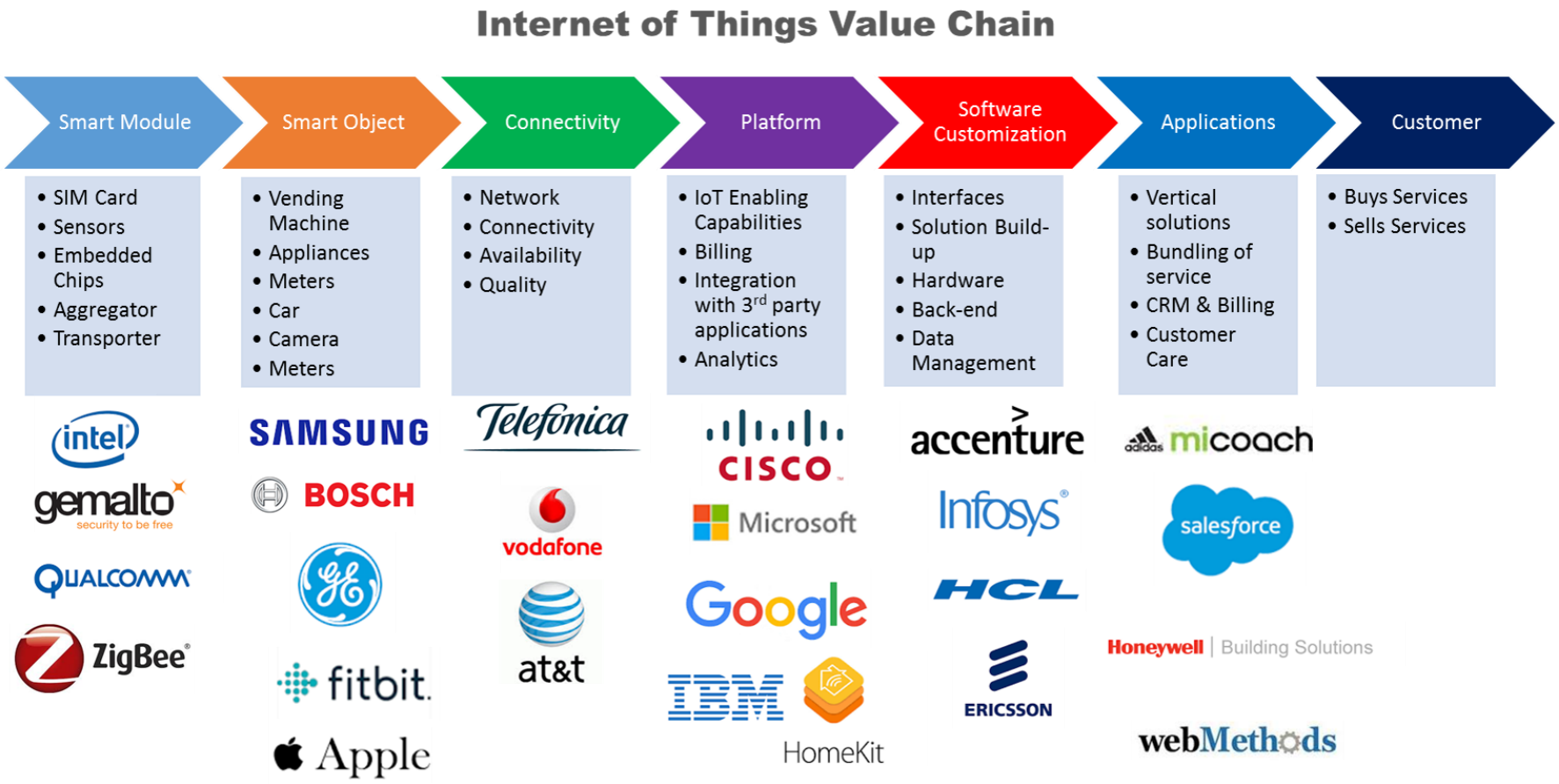
Source: CISCO

IoT alliances & consortia



Source: https://www.postscapes.com/internet-of-things-alliances-roundup/

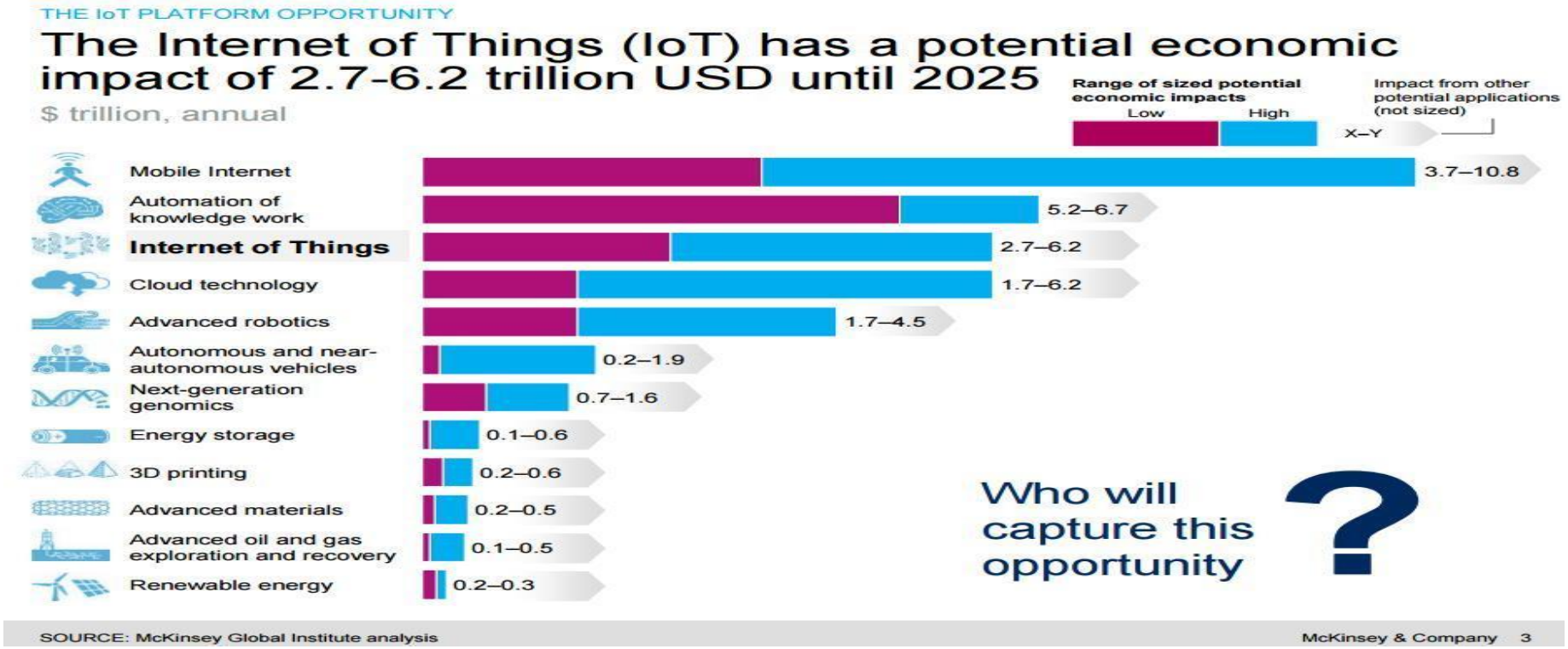
IoT value chain



Note, the above is not an exhaustive list of companies and any company may have play in more than one component of value chain
Copyright: Telecomcircle.com

Source: https://recap-project.eu/news/internet-of-things-and-retail/

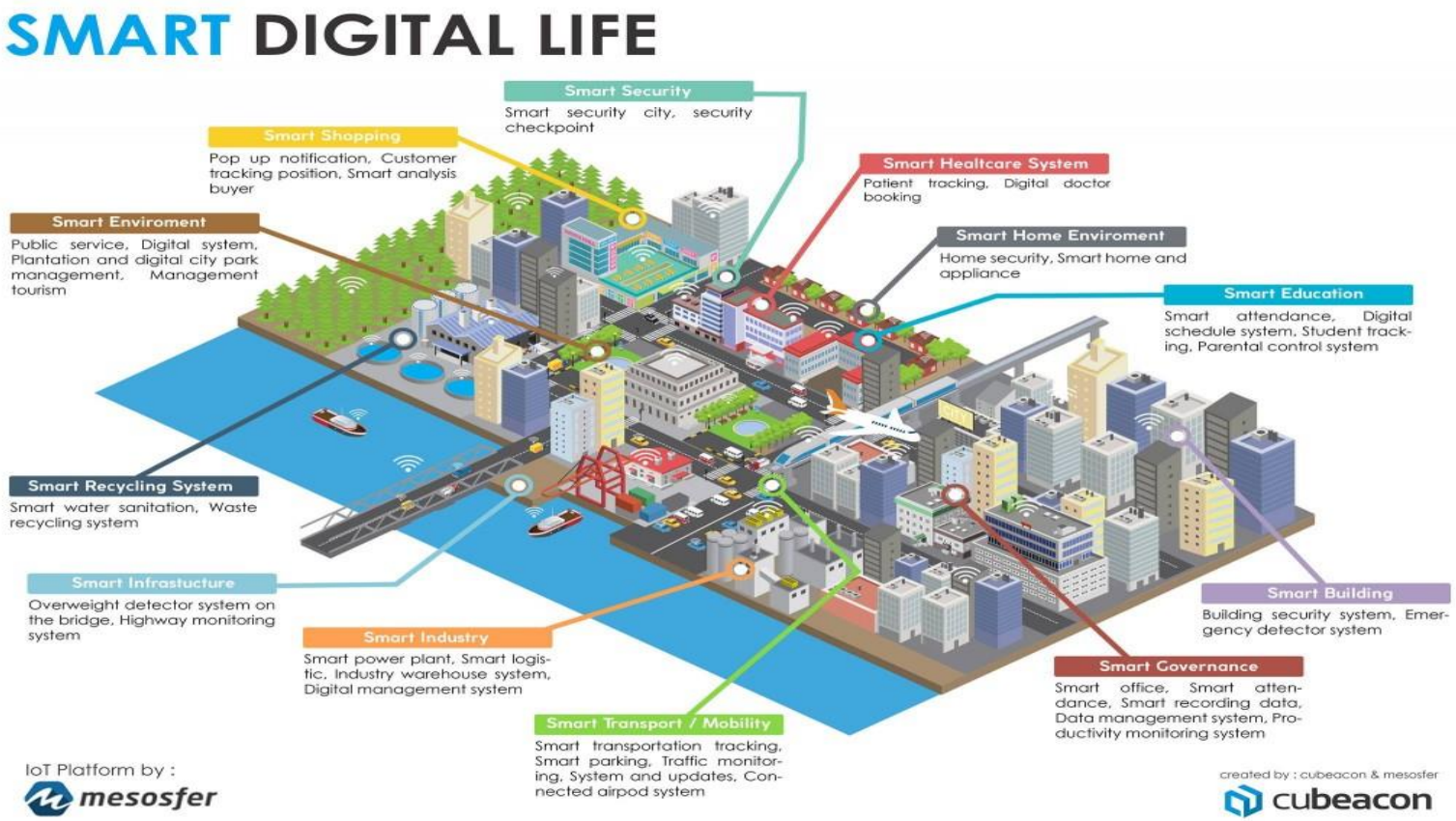
IoT Markets forecast



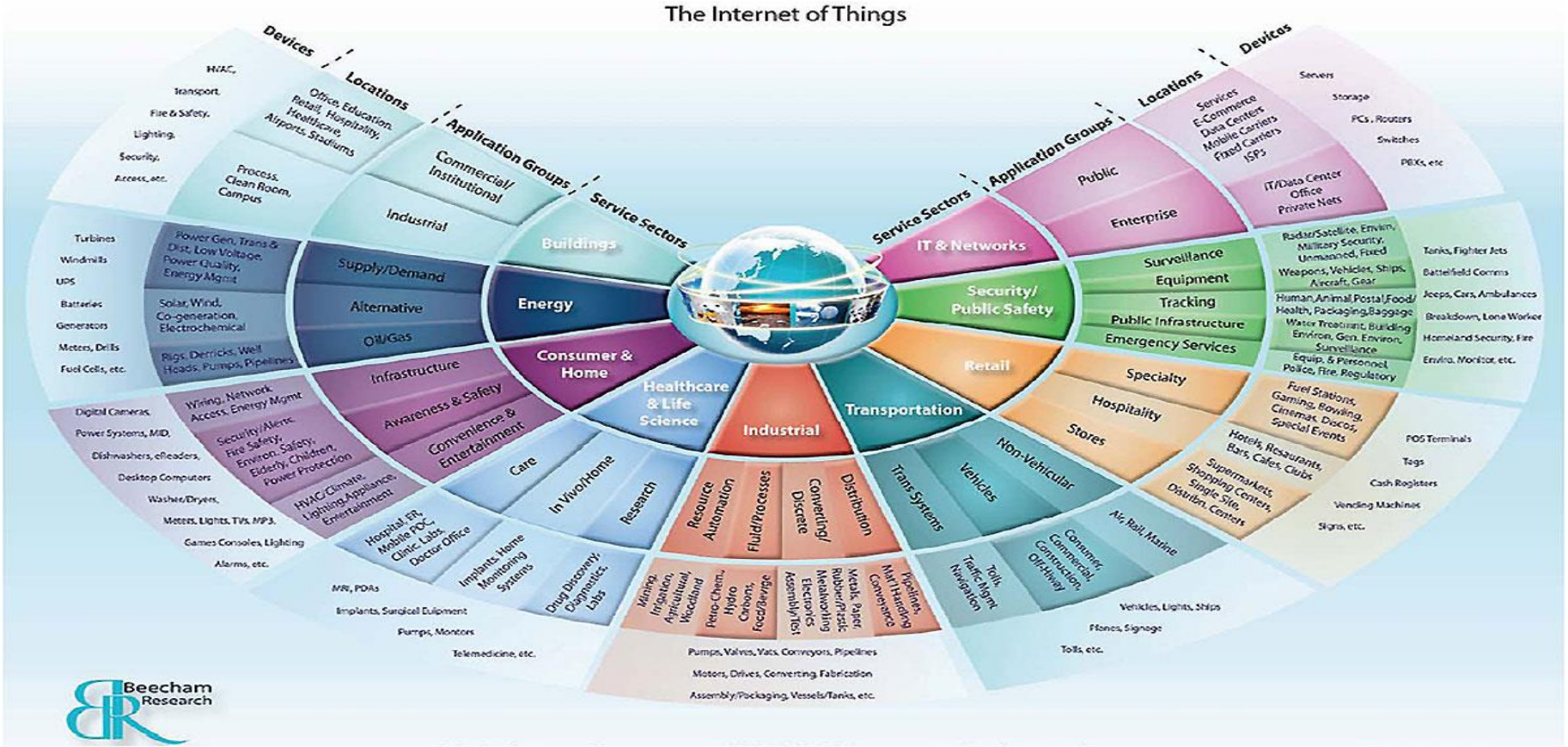
Source: https://blogs-images.forbes.com/louiscolumbus/files/2016/11/McKinsey.jpg

IoT for a better life

IoT for a better life



Source: https://blog.cubeacon.com/wp-content/uploads/2017/06/cubeacon-digital-life-1024x728.jpg



https://blog.atlasrfidstore.com/wp-content/uploads/2013/07/beecham_research_internet_of_things.jpg

IoT: Evoltion or Revolution ?

IoT integrates leading technologies such as:

- RFID technologies
- WSN / Advanced sensing and actuation
- Cloud / Fog computing
- Big Data
- Data mining
- Security and privacy
- Etc…

- The term "Internet of Things" has come to describe a number of technologies and research disciplines that enable the Internet to reach out into the real world of physical objects. ------IoT 2008

Source: http://www.iot-conference.org/iot2008

Smart Tooth Brush

The Beam Brush is a connected toothbrush that engages users with their daily hygiene routine.

http://www.beamtoothbrush.com/toothbrush/


Smart Washing Machine
Smart Aqualtis is the first Indesit Company washing machine designed to be integrated in 'Smart' ecosystems, covering a wide range of use cases.
Information received from washing machine!
Information
Operation
Usage
Statistics
http://zigbee.org/Products/ByStandard/AllStandards.aspx


Bluetooth-Enabled Insoles
Shares navigation, directions and orientation.
http://lechal.com/products.html


Smart Slow Cooker
Enjoy remote access to all your slow cooker's functions, no matter where you are.
http://www.belkin.com/us/Products/home-automation/c/wemo-home-automation/

Smart Mirror

A reflective mirror with programmable applications and digital display for the home, office and public environments (hotels, hospitals, retail shops).

http://www.cybertecturemirror.com/

Smart Bike


Valour by Vanhawks gives
directions, reroutes to avoid
traffic, and tracks riding metrics.
http://www.vanhawks.com/


Smart Garbage Cans
BigBelly alerts when it needs to be emptied so smarter collection decisions can be made.
http://www.bigbelly.com/solutions/stations/smartbelly/
BigBelly
SOLAR


Smart Gardening
Bitponics gives data on plants and conditions surrounding them for better gardening.
http://www.bitponics.com/

Nod

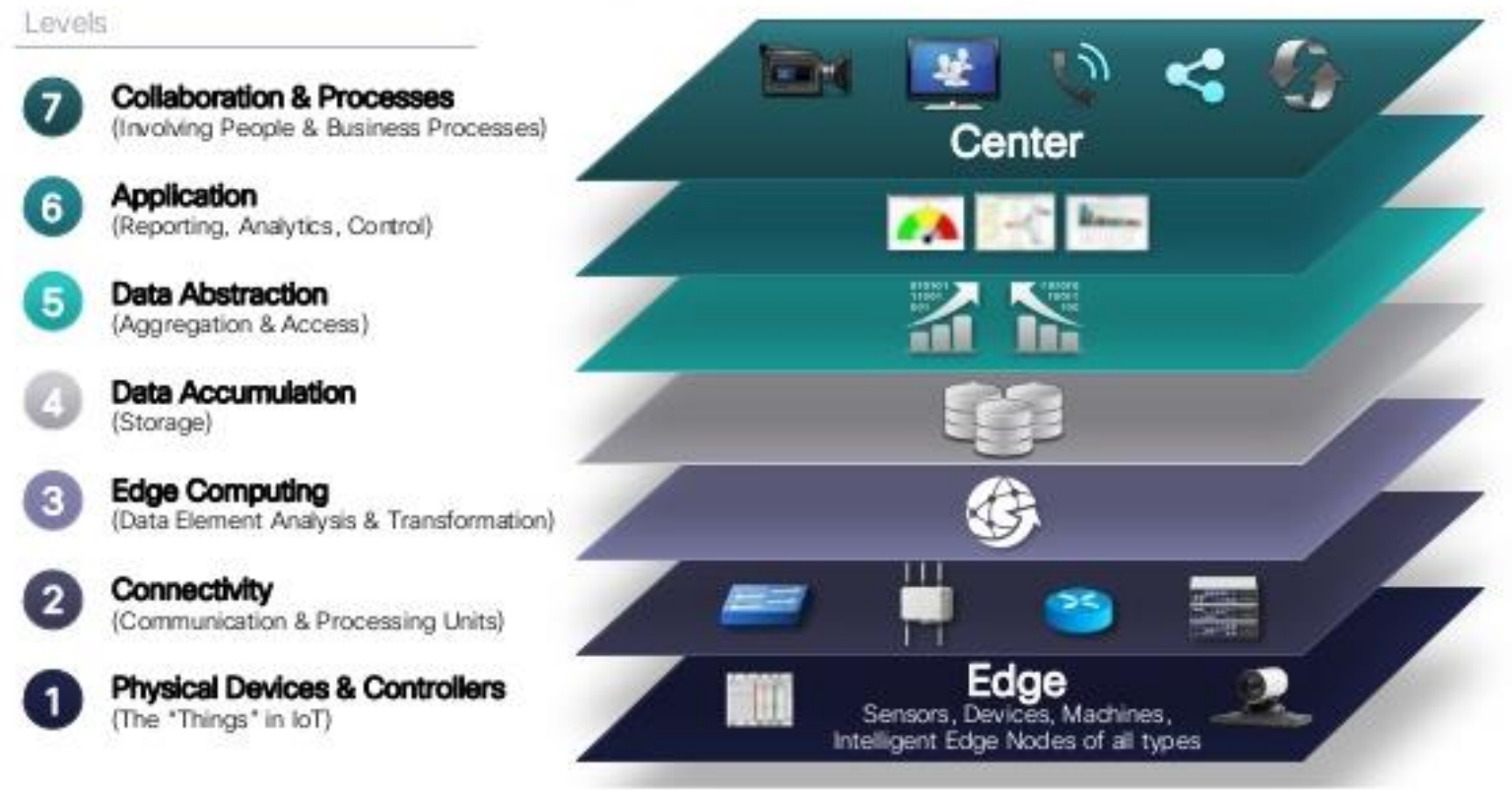
Nod transforms your movements into commands. It brings the world around you to life, as you control everything from your laptop to your living room lights with a wave of your hand.

https://hellonod.com/


Smart Shirt
Monitors how your body behaves over time, includes heart rate recovery and breathing at rest, to monitor improvements in health.
http://omsignal.com/

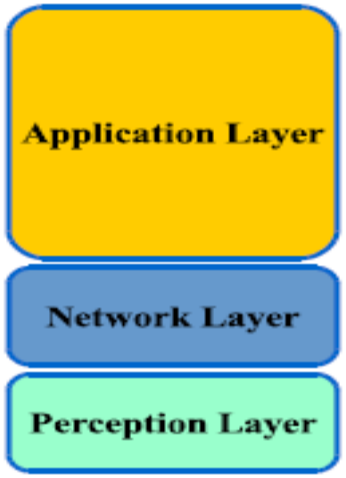
IoT architecture

IoT reference model

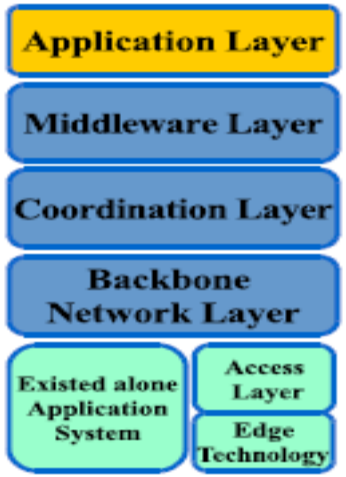


Source: C ISCO

IoT Architecture



Three-layer



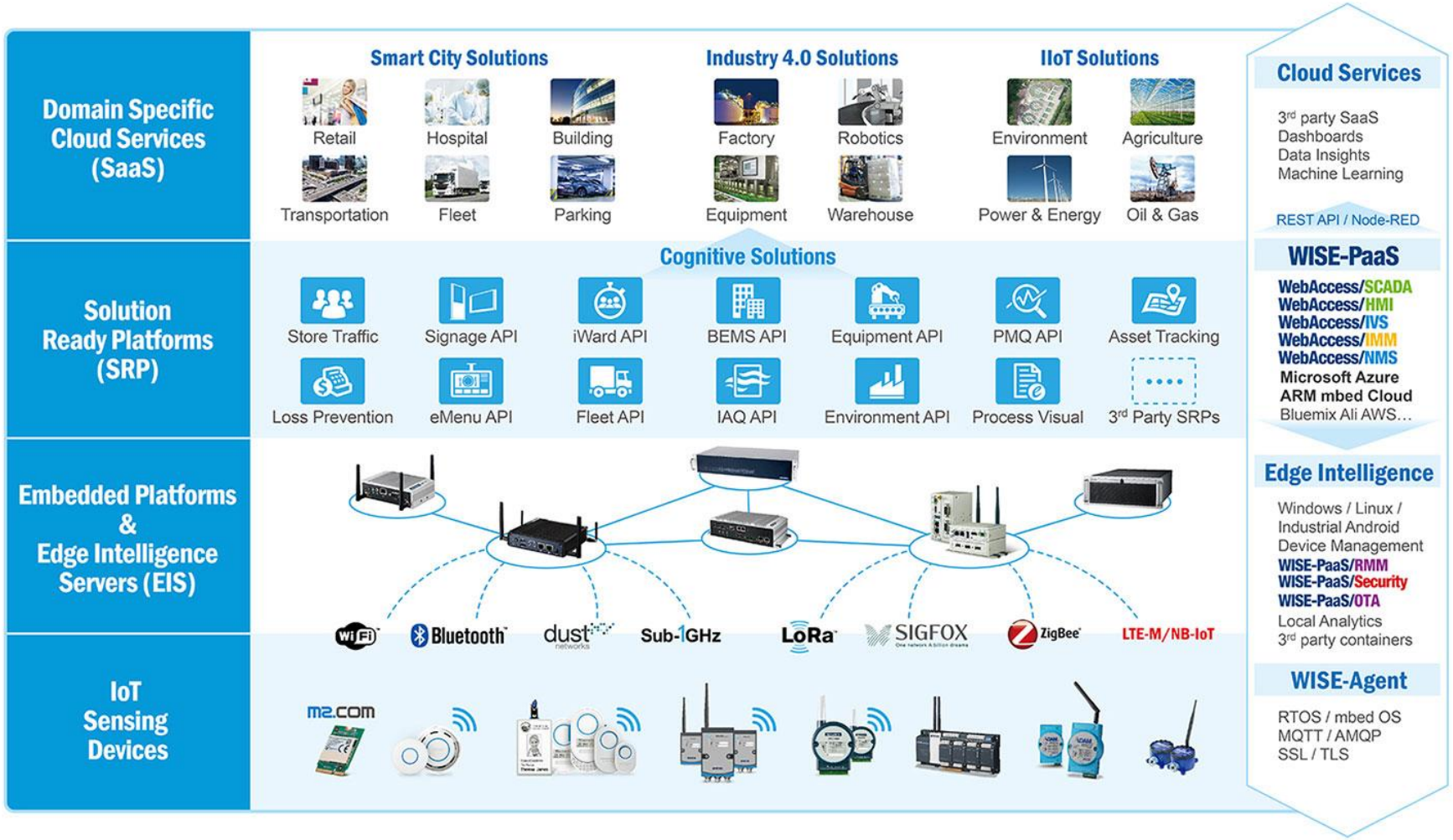
Middle-ware based

SOA Based

Five-layer

https://www.researchgate.net/profile/Mohd_Rahul/publication/317570955/figure/fig8/AS:529047734439936@1503146217383/Fig-8-Architecture-of-IoT-with-IoT-Elements.jpg

Advantech IoT Solution Architecture



Source: https://www.corex.co.za/images/Solutions/Topbanner_IoT1.jpg

IoT challenges

IoT Challenges

- Standardization
- managing and fostering rapid innovation is a challenge for governments (Business Model)
- Privacy and security
- Absence of governance
- Vulnerability to internet attack
- **Lack of interoperability**

Interoperability

“Interoperability is required to unlock more than $4 trillion per year in potential economic impact for IoT use in 2025, out of a total impact of $11.1 trillion .”

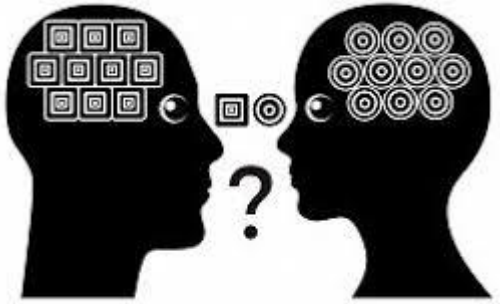
Source: A 2015 McKinsey Global Institute report

Interoperability

‘Lack of interoperability causes a major technological issue:

Impossibility to plug non-interoperable IoT devices into heterogeneous IoT platforms’

‘ Lack of interoperability leads to loss of business opportunities, especially for small innovative enterprises, which cannot afford to provide their solution across multiple platforms and protocols’.



Source: Faouzi Kamoun, esprit IoT workshop

There is a need for:

cross-platform

cross-standard

cross-domain IoT services and applications

Source: Faouzi Kamoun, esprit IoT workshop

Thank You