

Internet of Things

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www.pwc.pt/iot





Part I

New digital technologies

The Essential

8

Emerging technologies every organization should consider right now

Artificial intelligence

Virtual reality

Internet of Things

Blockchain

All attentions are on the **eight** that are having the biggest business impact right now.

3D printing

Robotics

Augmented reality

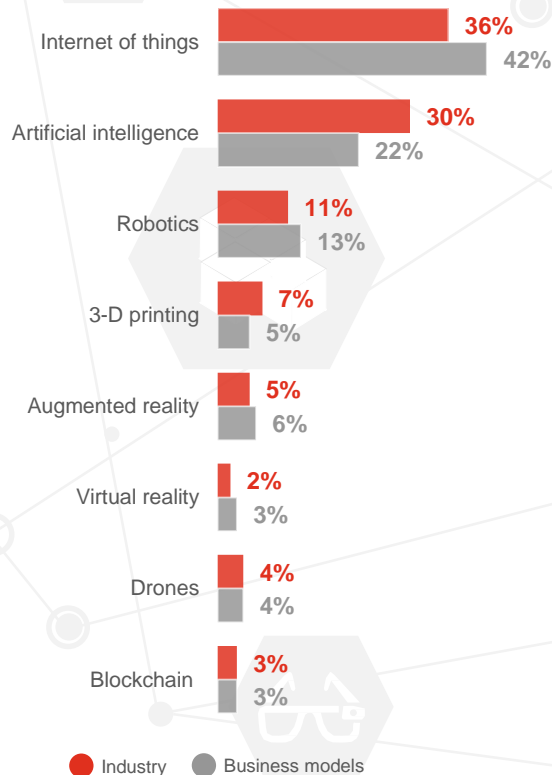
Drones

IoT is on top of CEOs priorities

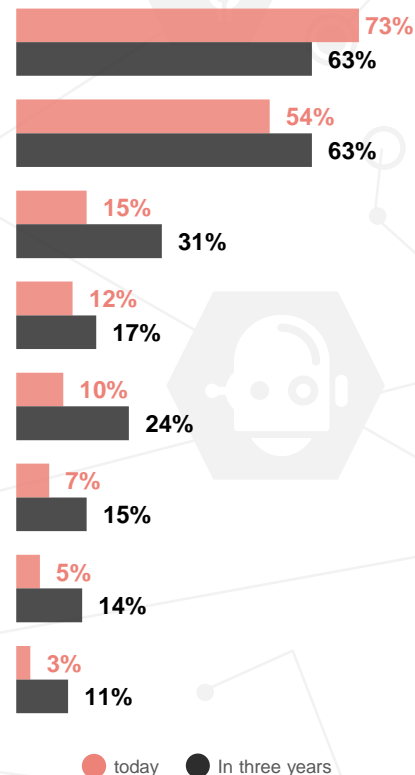
This technology is considered to be the most disruptive for industries and business models, and is the one having the higher investment

Source: Global Digital IQ, PwC

Disruptive technologies

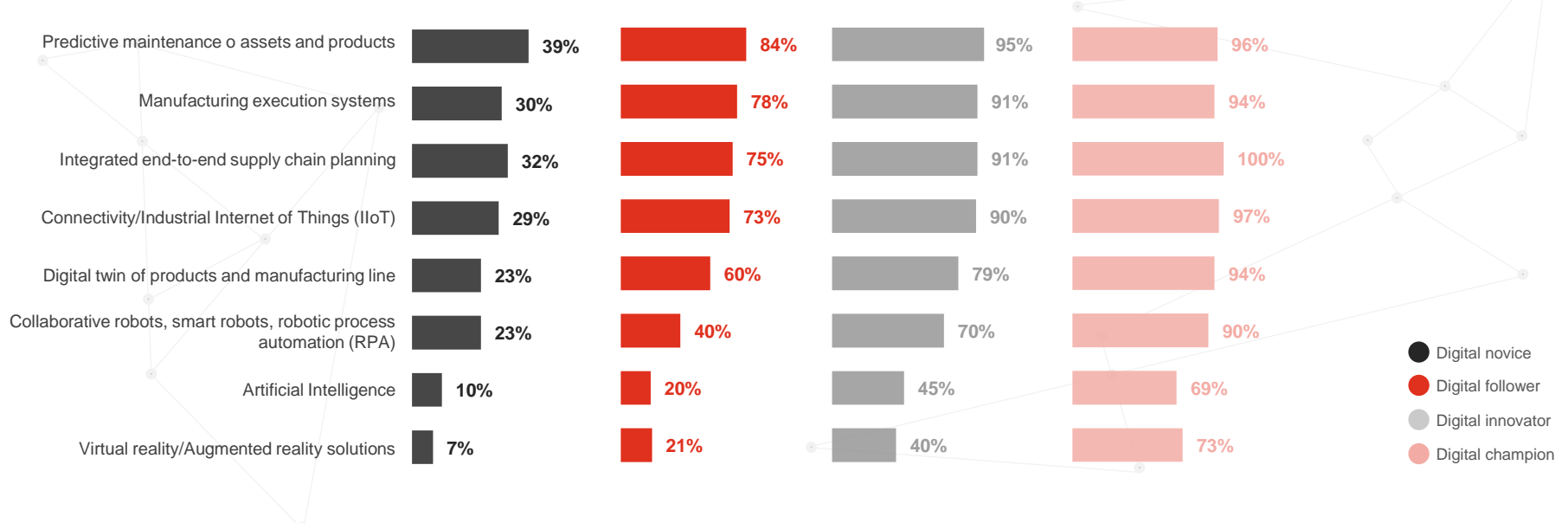


Investment made by organisations



IoT assumes different forms

Implementation of new technologies, by digital maturity level



Q: To what extent have you implemented, piloted, or planned to implement the following technologies within your company?

Source: Global Digital Operations Study 2018, PwC



Part II

The Internet of Things

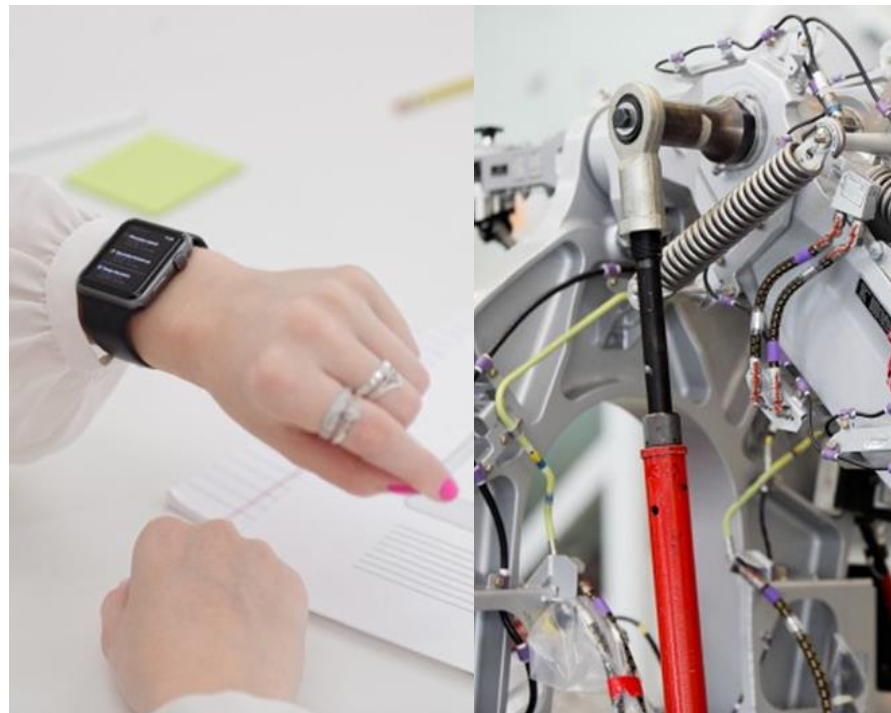
What is IoT and its benefits

The Internet of Things (IoT) is a **network of physical objects** — devices, vehicles, appliances — embedded with sensors, software, and network connectivity, so they can collect, exchange, and act on data, often without human intervention.

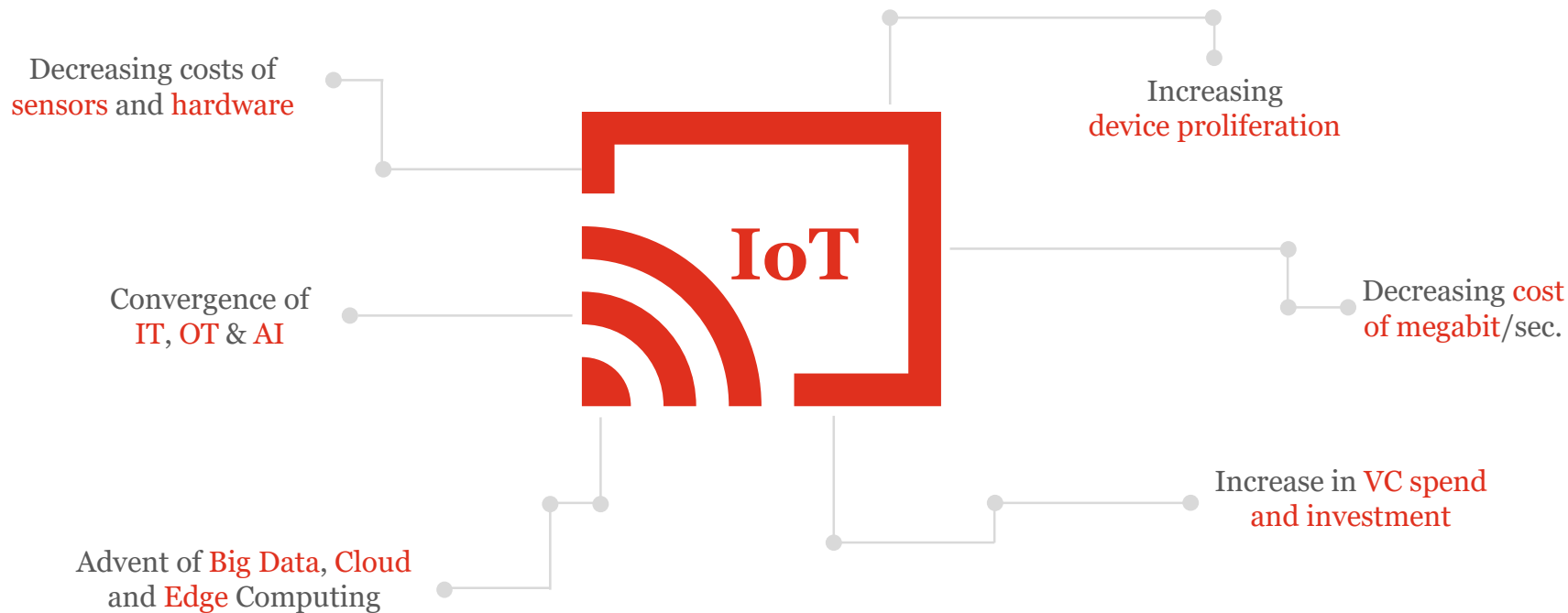
Key benefits



Source: Next in Tech, PwC



Key forces accelerating the IoT globally



IoT application changes across sectors

Experience-Led

Business-Outcome-Led

Consumer IoT

'Grey area'

Industrial IoT



Health & Body



Home & Hospitality



Retail & Wholesale



Buildings & Offices



Smart cities & Public sector



Consumer goods manufacturing



Industrial manufacturing



Natural resources



Logistics & Transportation



Utilities

Software & Communications are the enablers for all industries' IoT use cases

The IoT can make possible a multitude of potential enhancements

Companies know that what promises to create the most value for industries taking advantage of the IoT is the human and machine intelligence built into the technology

Source: Next in Tech, PwC

Healthcare

When kept informed by patients' wearable device data, doctors can offer personalized—and more immediate—care.

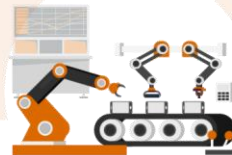


Security

Cameras combined with facial analysis could proactively determine whether someone will attempt a break-in.

Manufacturing

Sensor data apprises factory floor personnel of system health, resulting in fewer equipment failures that will slow production.



Logistics and shipping

Location tracking and condition monitoring of perishable or fragile goods can identify and prevent the damage or loss of valuable inventory.

Retail

Omnichannel customer experiences become a reality by combining data from online and brick-and-mortar shopping habits.



Building management

Lighting and temperature control can be adjusted based on occupancy patterns and weather and location data.

Oil and gas

Sensors help monitor oil pumps in pipelines, providing the ability to perform predictive maintenance and avoid failures.

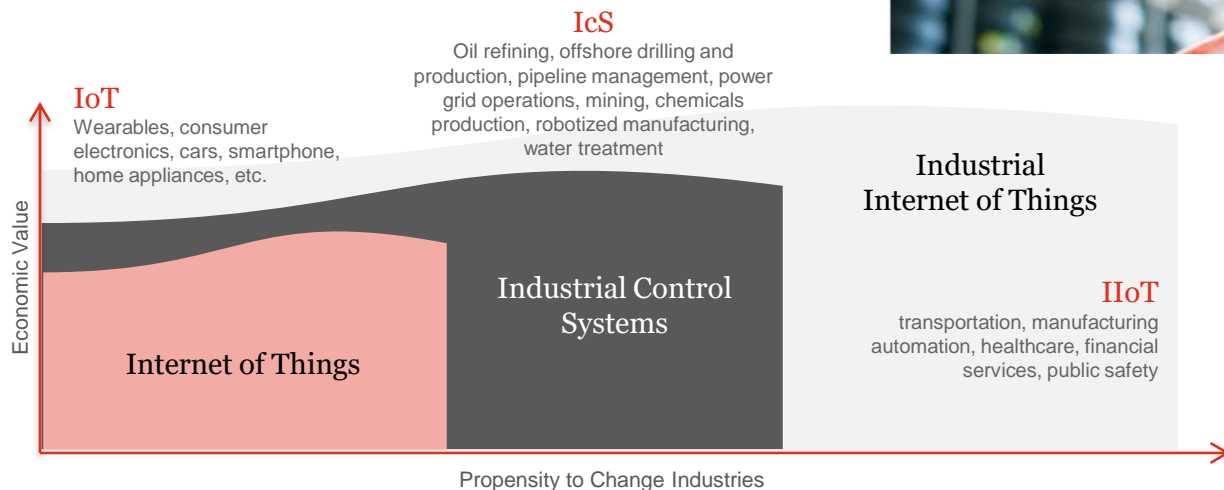


Agriculture

Sensors measure soil moisture so farmers can optimize irrigation systems.

IIoT will change industries and markets

The industrial Internet of Things (IIoT) refers to its non-consumer use in manufacturing and other industrial sectors, such as oil and gas, mining, energy and utilities, and transportation.



The IIoT adds sensors to people, places, processes, and products across a value chain to capture and analyse information that can advance an organization's goals.

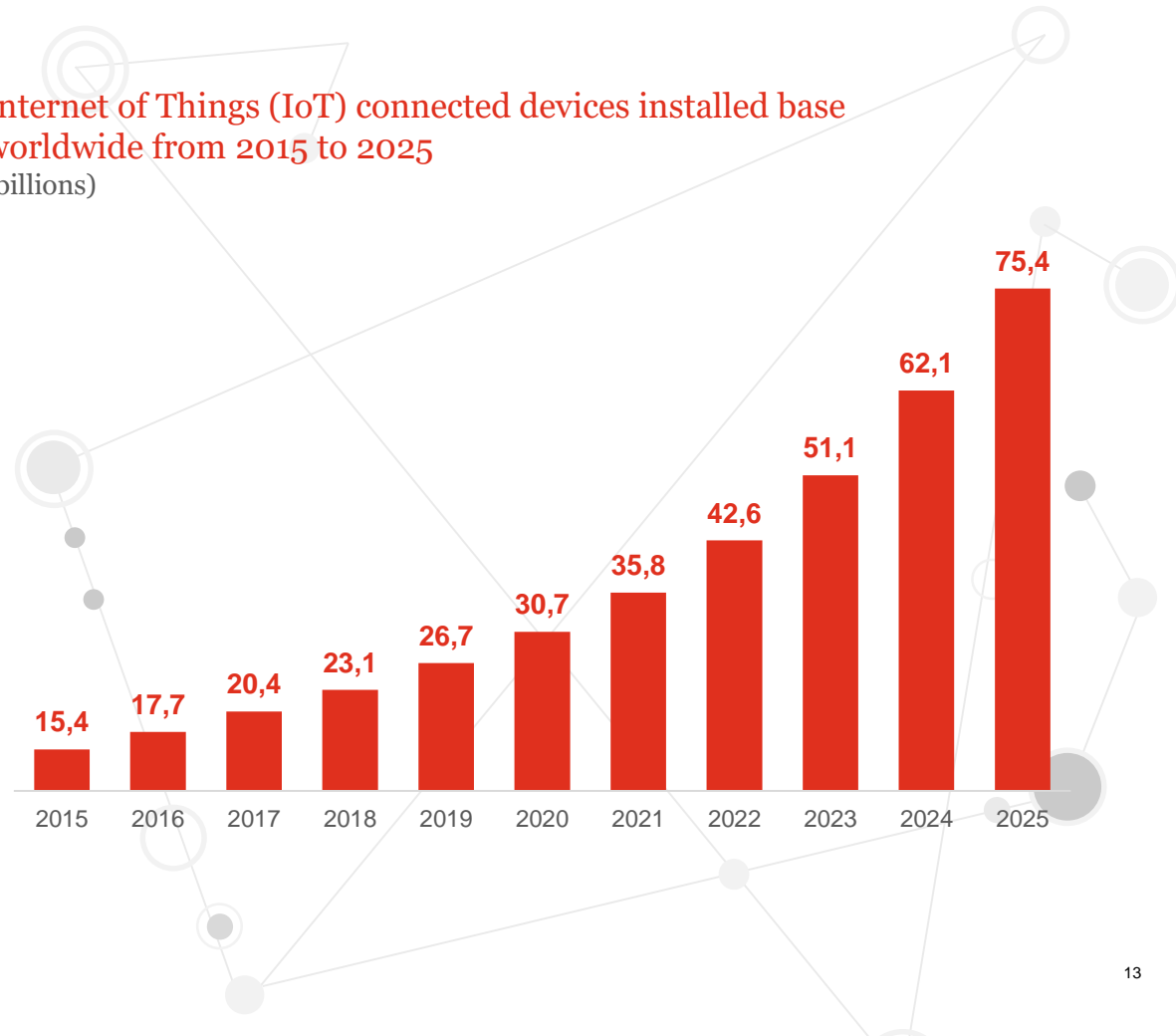


Connected devices are increasing

By 2020 the forecasted number
of connected devices will
reach the 31 billion.

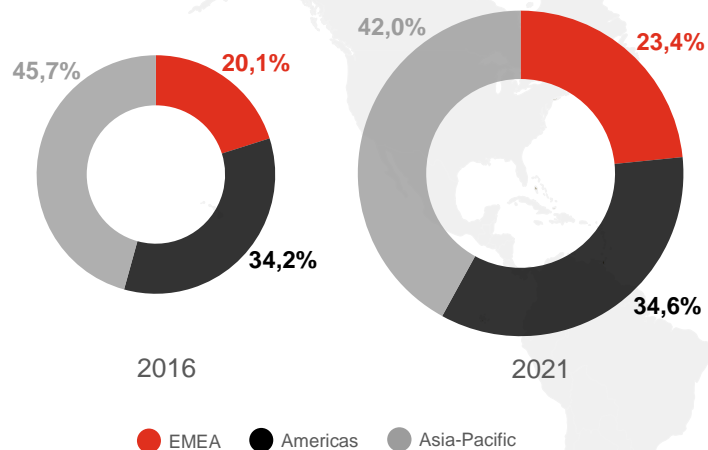
Source: IHS | Statista

Internet of Things (IoT) connected devices installed base
worldwide from 2015 to 2025
(billions)



Market size and spending in IoT are growing exponentially

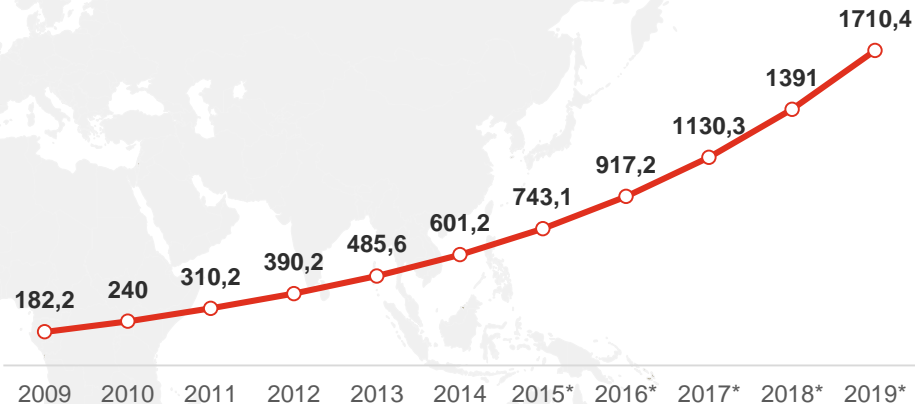
Worldwide IoT spending share by region, 2016–2021
(billion USD)



* forecast

Source: IDC | Statista | HKEnews

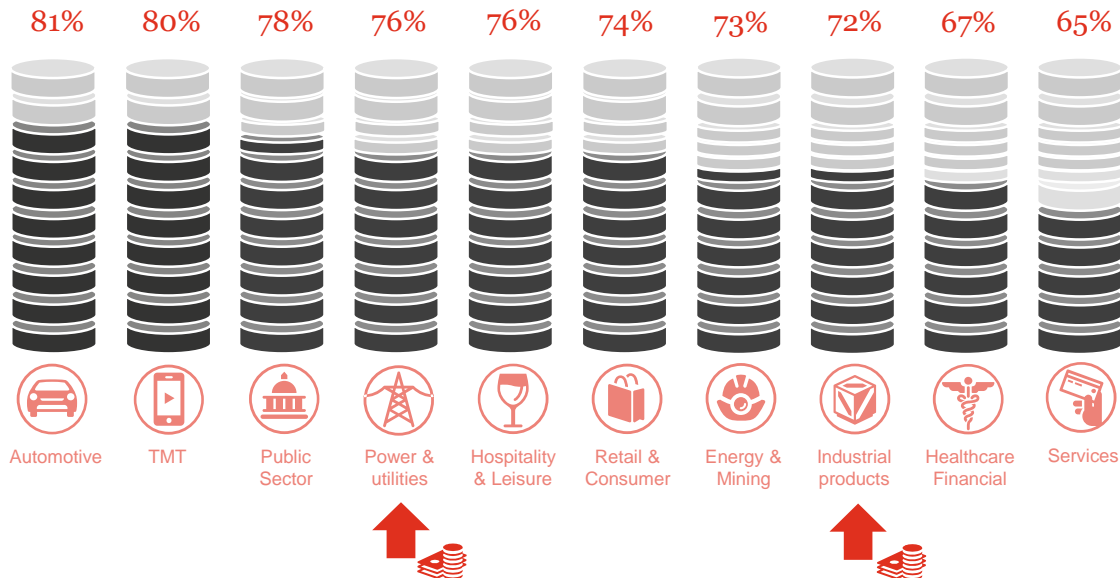
IoT global market size, 2009–2019
(billion USD)



What's driving investment by industry

Investment levels for IoT technology varies greatly by sector and business model depending on the needs of different industries

Investment in IoT by industry



↑ Sectors where major financial investment is expected by 2020

Source: The essential eight technologies. Board byte: the internet of things, PwC

As IoT moves forward there are game-changing security hazards



Source: Next in Tech | Uncovering the potential of the Internet of Things, PwC

To realize the full potential advantages of the IoT, companies must overcome some challenges. Security, collection, storage and use of data flows of information acquired through the use of these devices are some of the hot topics.

Security hazards

Secure devices and networks against data theft and service interruption

Improve analytics modelling to accommodate exponential data increases

Establish standards for data sharing and interconnectivity

Implement organizational change

Integrate with legacy systems and platforms



Part III

Real cases of IoT application

Rio Tinto Australia
runs driverless trucks
reducing operating
costs, and can operate
24/7, 365 days a
year...controlling the
trucks from an
operations center in
Perth, 1,200 km away.



GE Aviation analyzed 340TB of data from 3.4 million flights on 25 airlines to improve asset performance and minimize disruptions. The results speak for themselves.

- Performance Boosted **287x**
- Costs Lowered **7x**
- Lead to Innovation Fast-Trackd **7 days**





Part IV

Business approach to IoT

Common challenges while dealing with IoT

Companies are facing several challenges in order to understand what they need to know to implement and get the most out of IoT



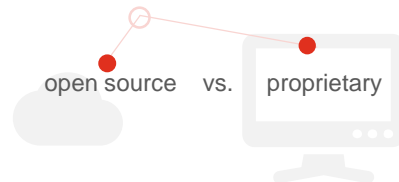
Lack of overall IoT and data **strategy**

Security hazards

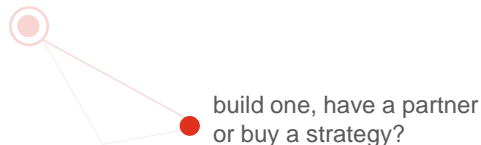


Interoperability.

What platforms and standards?



Understanding role in **IoT ecosystem**



How to **monetize** and sell IoT



Organisational

issues

lack of skills, innovation, governance, operating model

Scaling



moving out of pilot phase

A company's IoT strategy and vision serves as the foundation upon which to build a capability roadmap and an operational support model

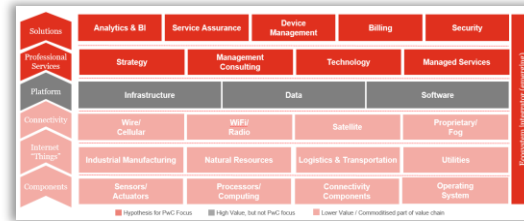
IoT Strategy

Business Outcomes



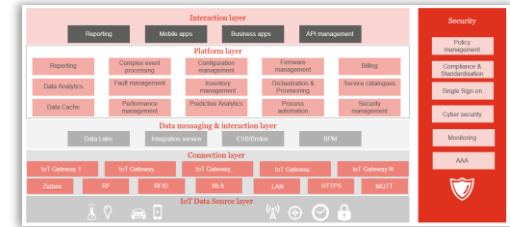
“What is the business problem /use case I am trying to solve?”

Capabilities



“What parts of the IoT ecosystem should I build, partner or buy?”

Operations and Support



“How do I operationalize and support IoT?”

IoT opportunities are anchored by four key business objectives



Innovation

IoT powered business models

Transforming business through innovative business, organization & product/service models that doesn't exist today.



- New revenue streams
- Increased revenue per user (ARPU)
- Higher margin services business
- Disruptive product + service offerings
- New business models



Engagement

IoT enabled customer experiences

Enabling interactions between clients and customers in a more engaging, seamless way



- Higher customer satisfaction scores
- Reduced customer churn
- Greater customer insights



Productivity

IoT digital efficiencies

Digitizing our clients' operating model and processes to improve productivity.



- Lower Opex
- Improved worker productivity
- Lower defect rates
- Higher uptime



Trust

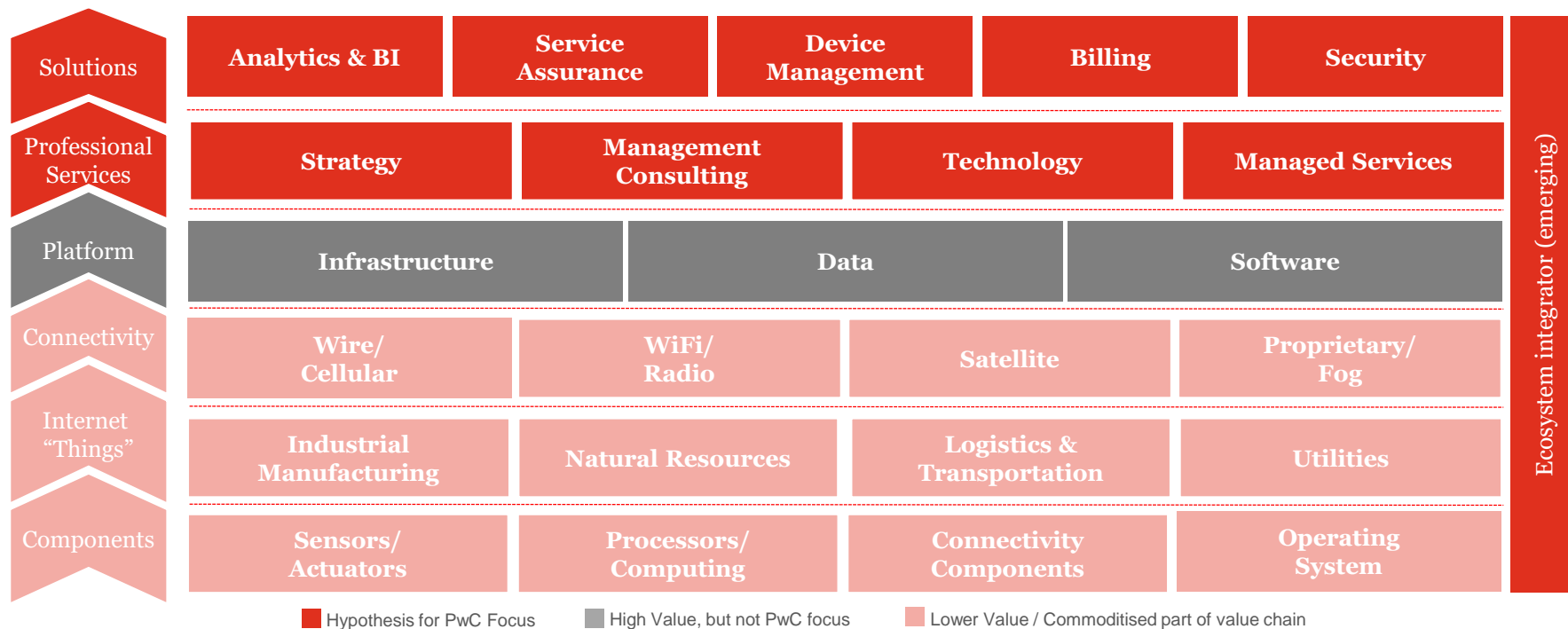
IoT secure environment

Ensuring secure information in a digital age to inspire trust in our clients by their customers

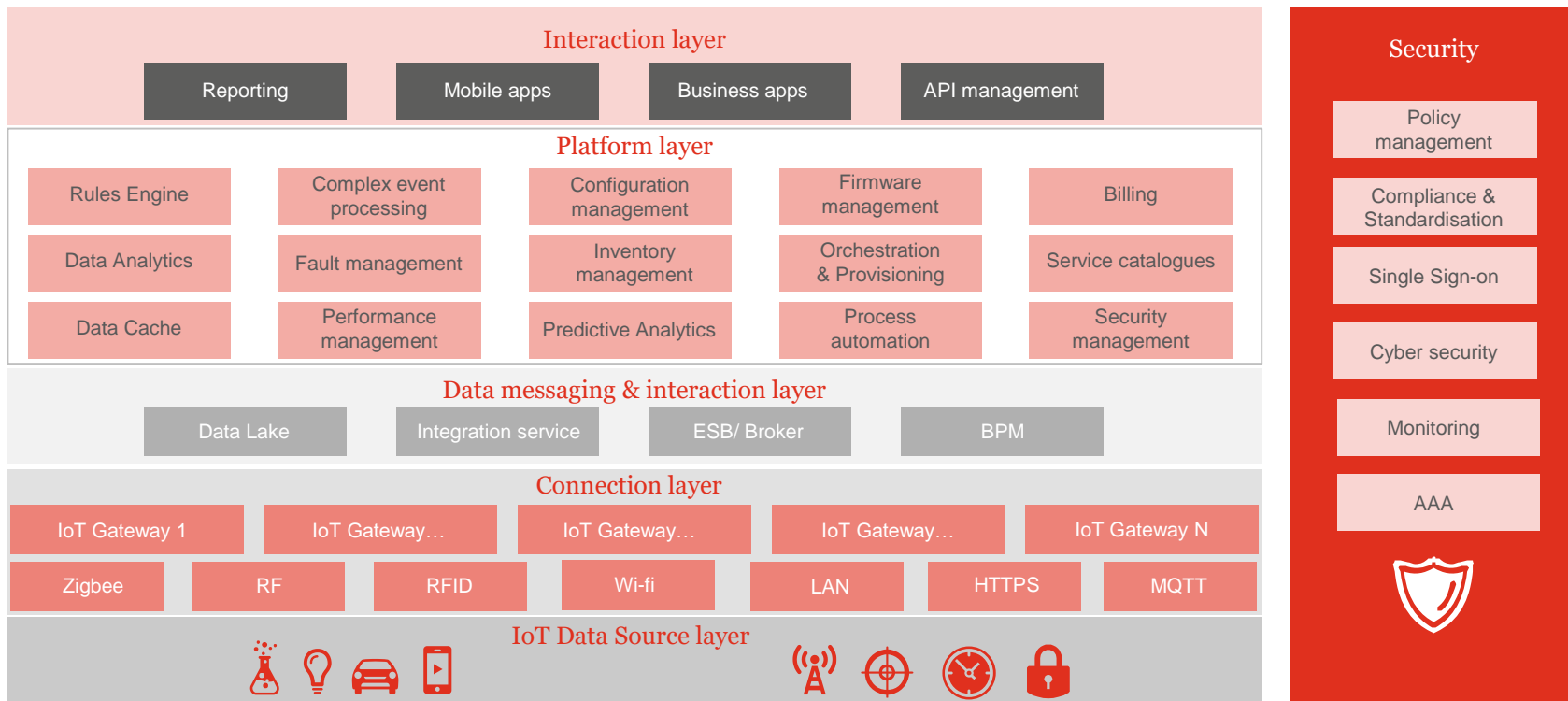


- Reduced risk
- Greater brand value
- Stronger customer satisfaction

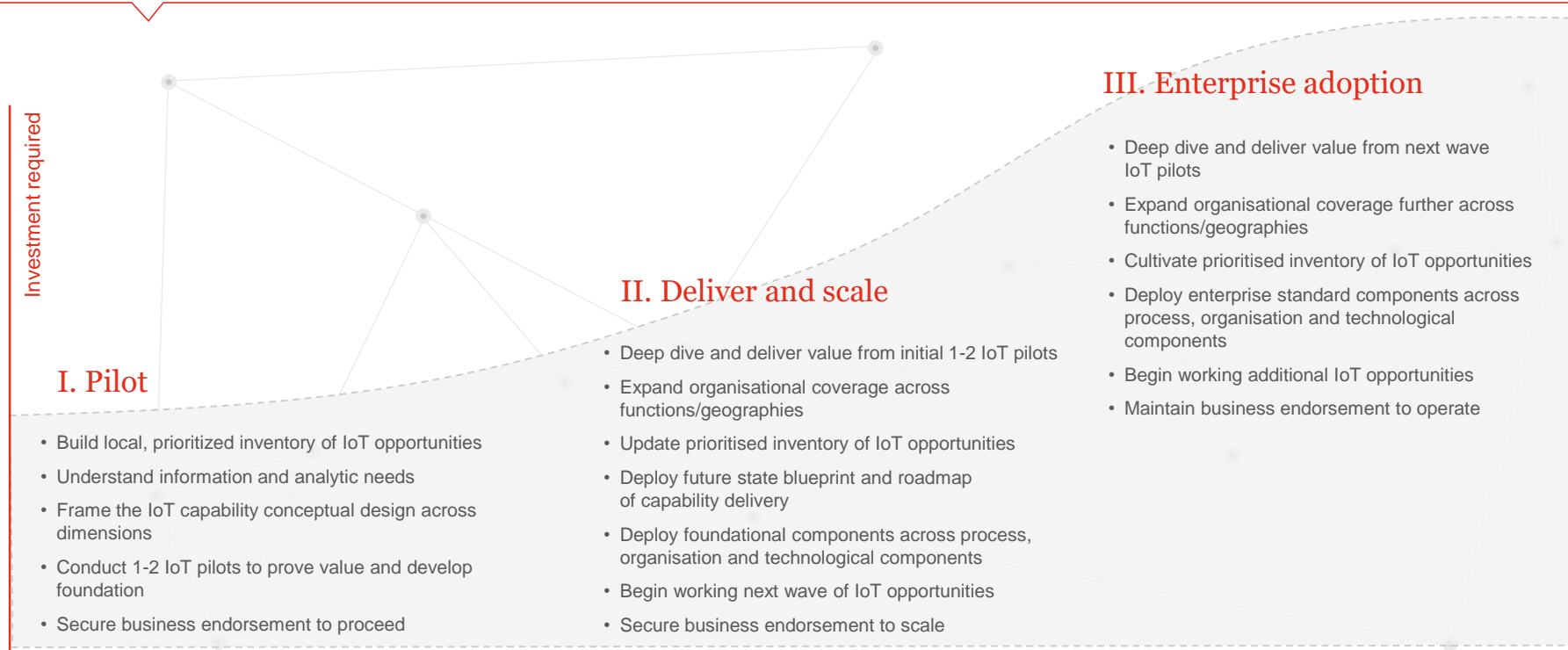
IIoT value chain and detail on IIoT ecosystem structure



IoT operational reference architecture

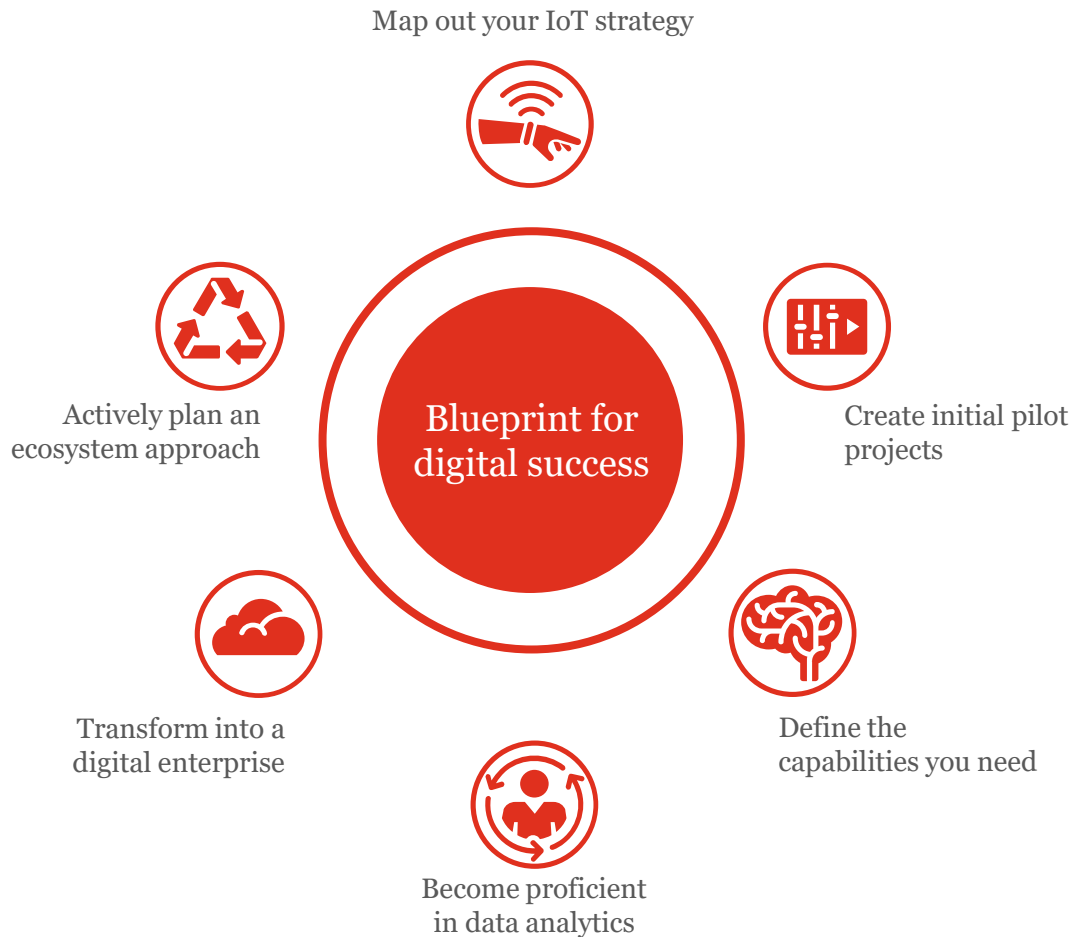


Getting started in the IoT adoption



Blueprint for digital success

• Six steps to build out IoT capabilities



Thank you!

“Computers are incredibly fast, accurate and stupid;
humans are incredibly slow, inaccurate and brilliant;
together they are powerful beyond imagination”

Albert Einstein