Internet of Things

Miguel Dias Fernandes

PwC Partner

pwc

September 2018

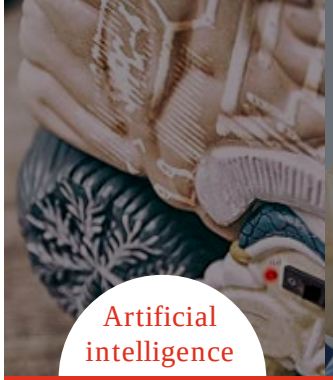
www.pwc.pt/iot

Part I

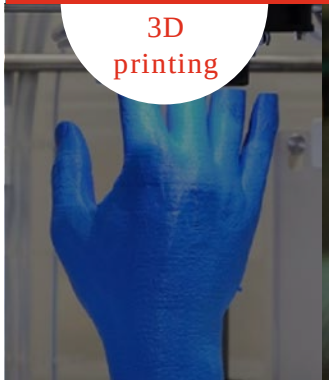
New digital technologies

The Essential 8

Emerging technologies every organization should consider right now



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

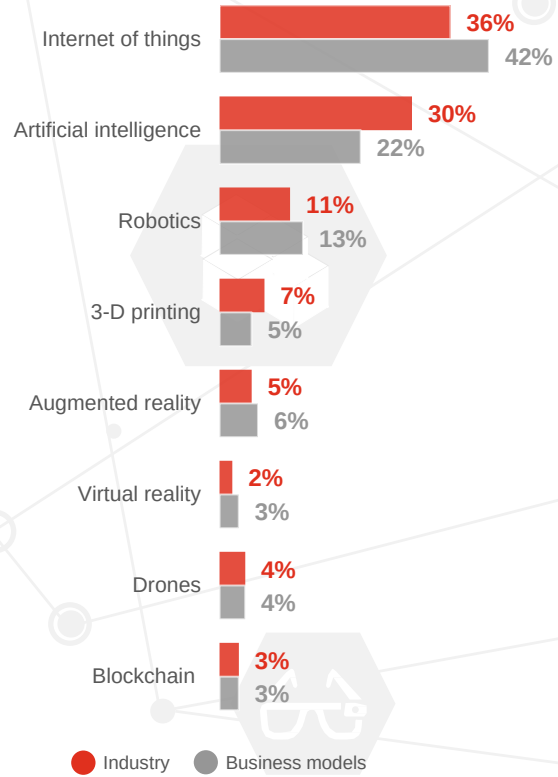


IoT is on top of CEOs priorities

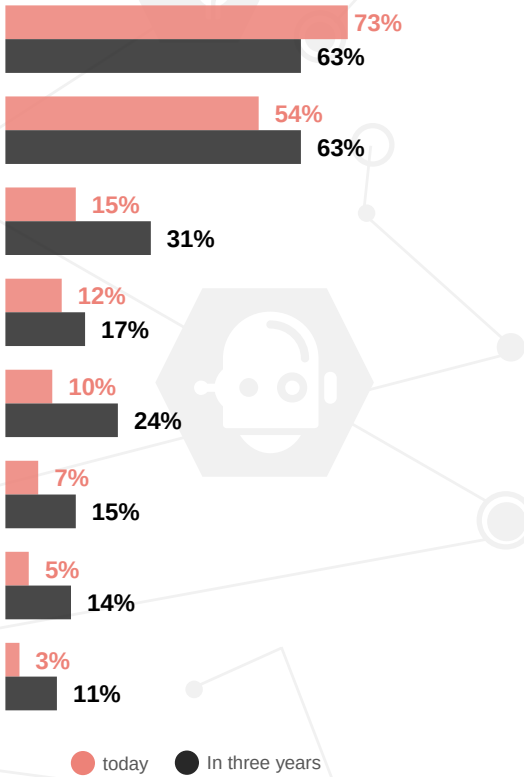
This technology is considered to be the most disruptive for industries and business models, and is the one having the higher investment

Source: Global Digital IQ, PwC

Disruptive technologies

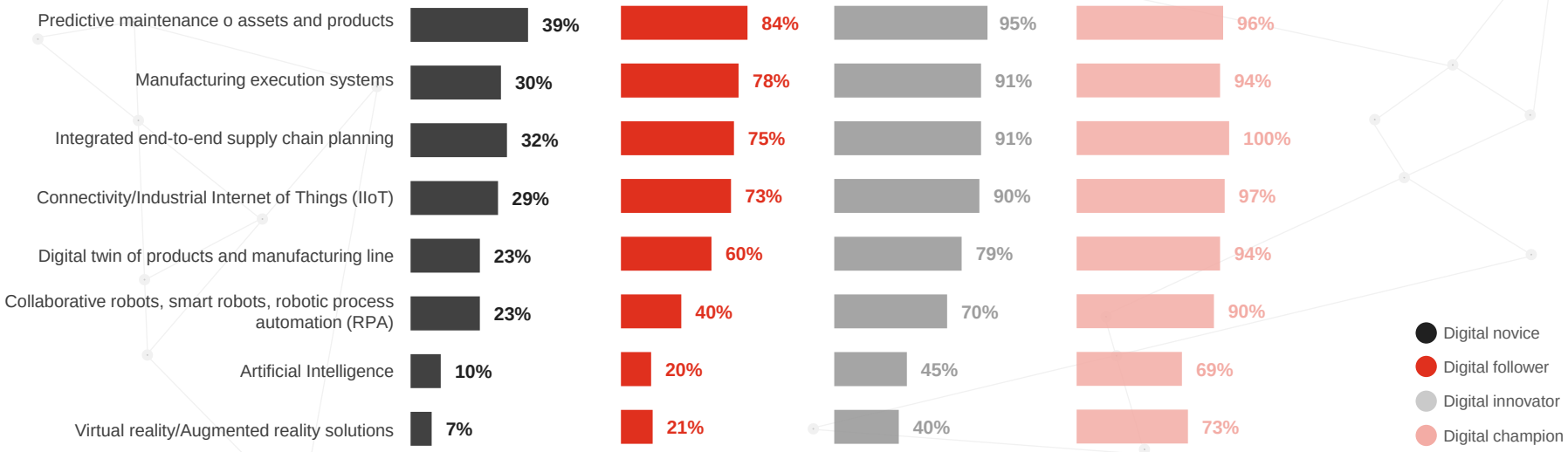


Investment made by organisations



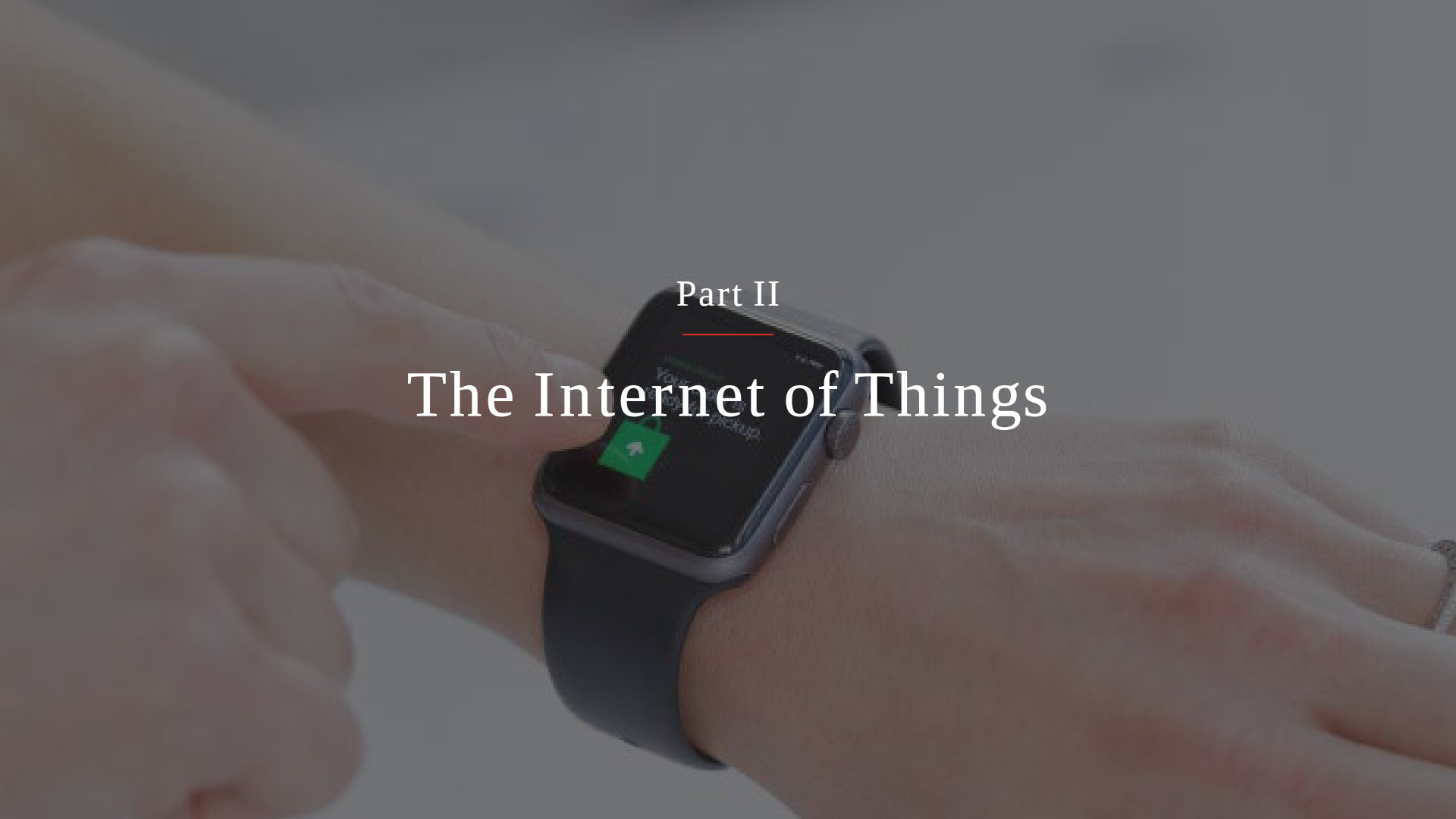
IoT assumes different forms

Implementation of new technologies, by digital maturity level



Q: To what extend 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

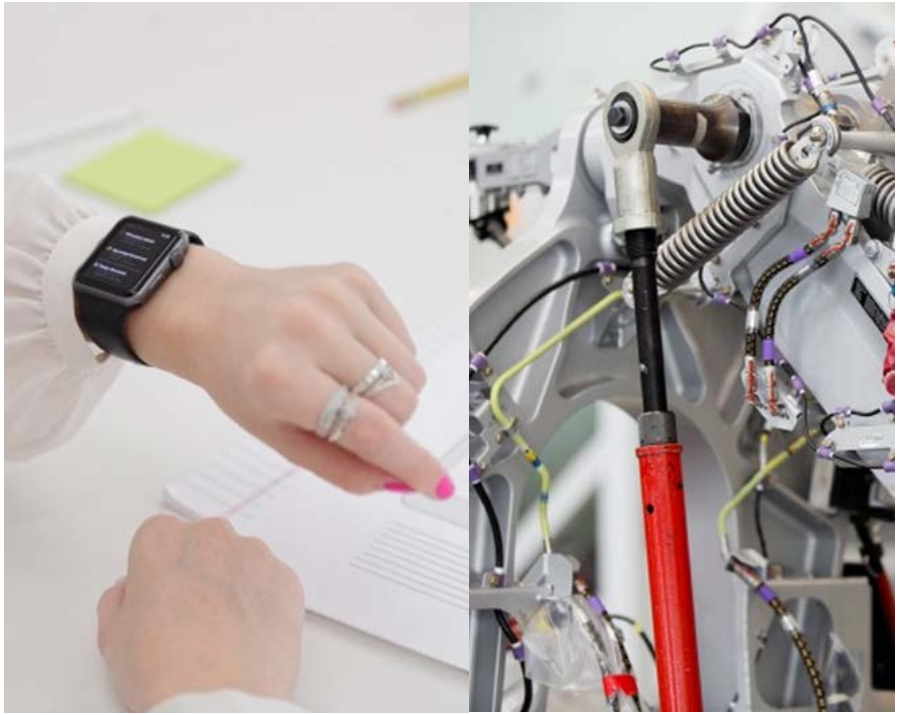
Real time analytics
- lower costs
- better informed decisions

H2M & M2M Communications
- more efficiency and productivity

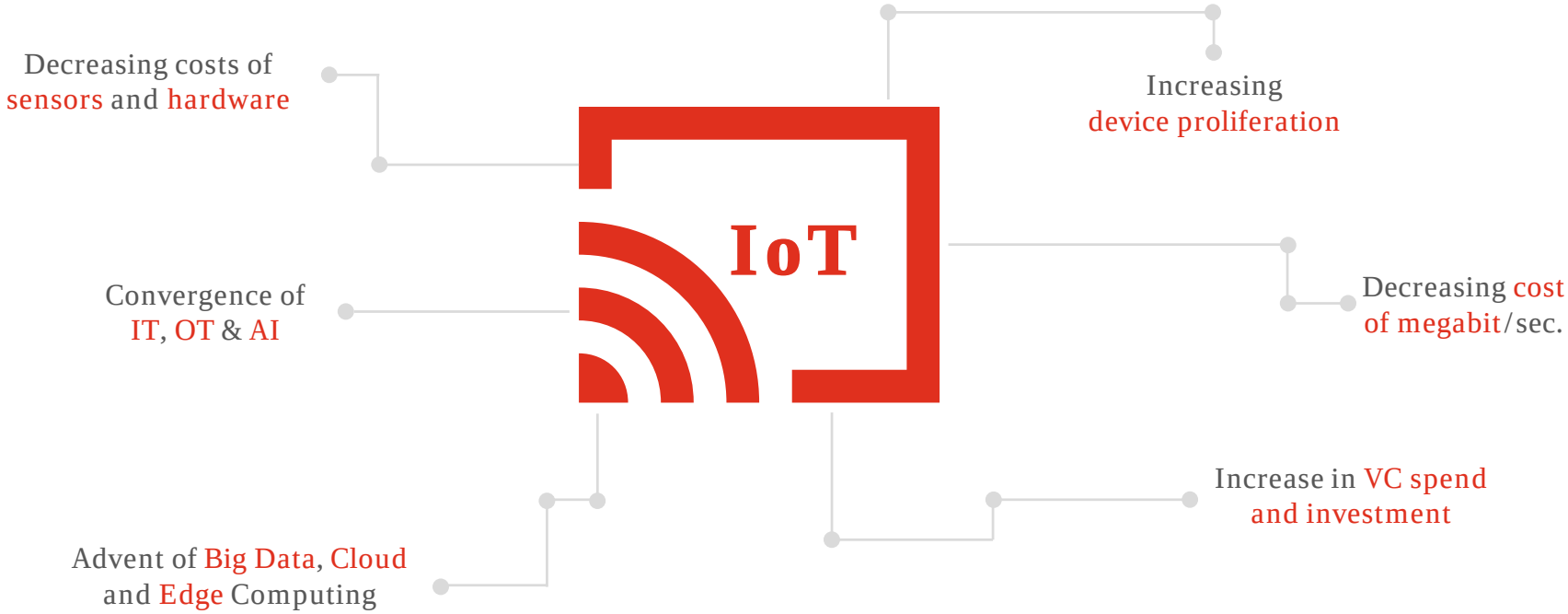
Best customer service
- prompt and accurate answers to individual needs

New offer of products & services
- new revenue streams

Source: Next in Tech, PwC



Key forces accelerating the IoT globally



IoT application changes across sectors

Experience-Led

Business-Outcome-Led

Consumer IoT

- Health & Body
- Home & Hospitality
- Retail & Wholesale

'Grey area'

- Buildings & Offices
- Smart cities & Public sector
- Consumer goods manufacturing

Industrial IoT

- 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

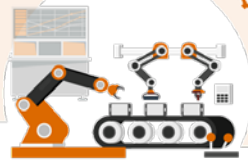
Source: Next in Tech, PwC

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.

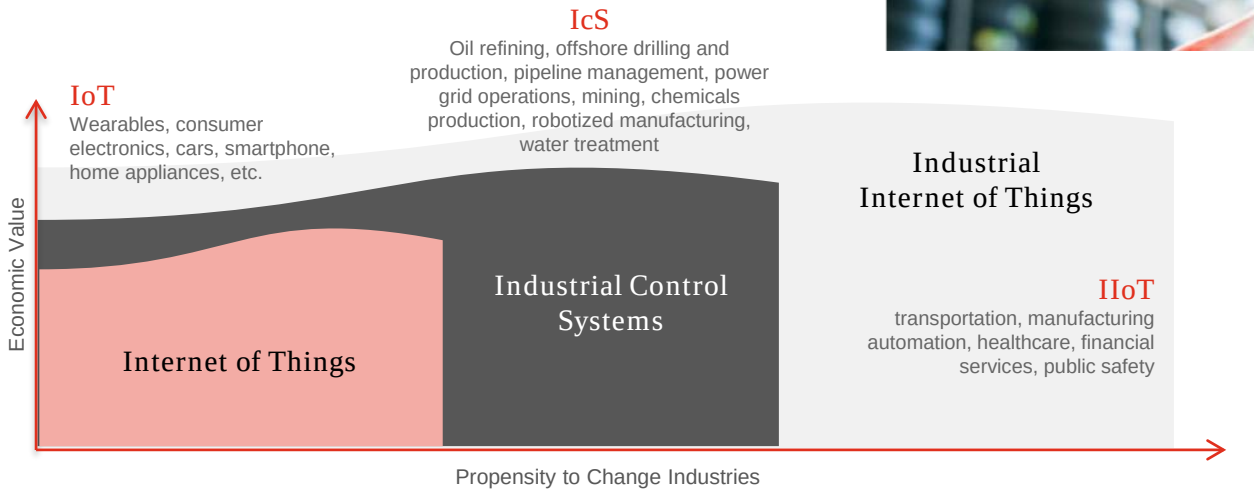
Building management
Lighting and temperature control can be adjusted based on occupancy patterns and weather and location data.

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.

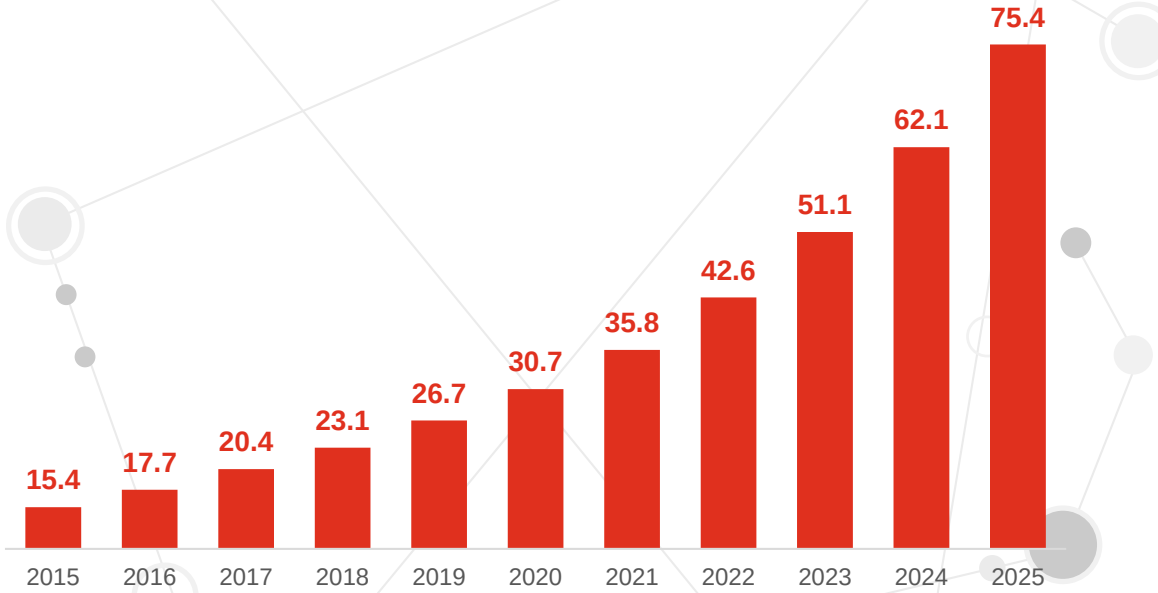
Connected devices are increasing

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

Source: IHS | Statista

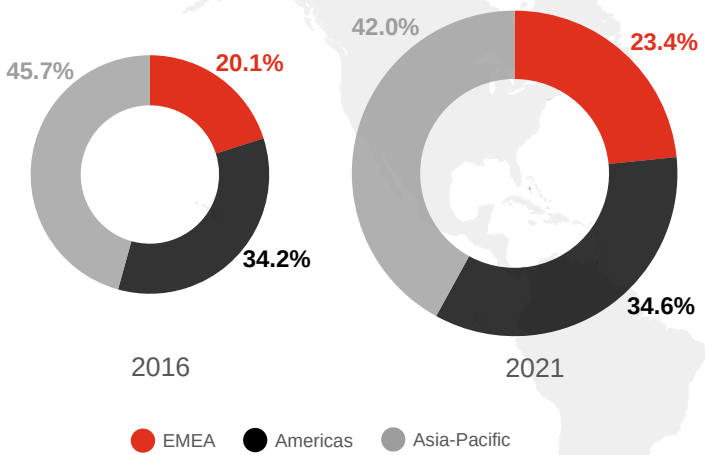
Internet of Things (IoT) connected devices installed base worldwide from 2015 to 2025

(billions)

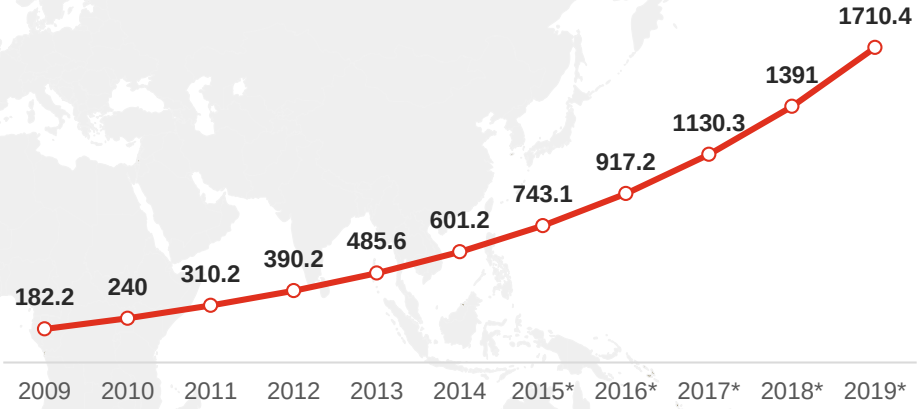


Market size and spending in IoT are growing exponentially

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



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



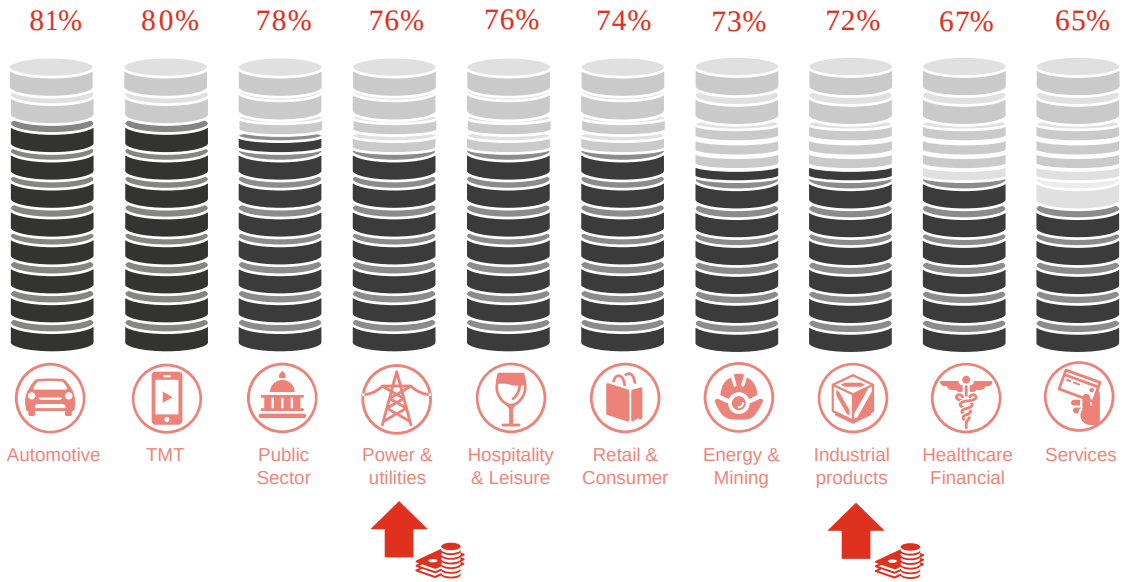
* forecast

Source: IDC | Statista | HKExnews

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 is expected the major financial investment 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

Integrate with legacy systems and platforms

Implement organizational change

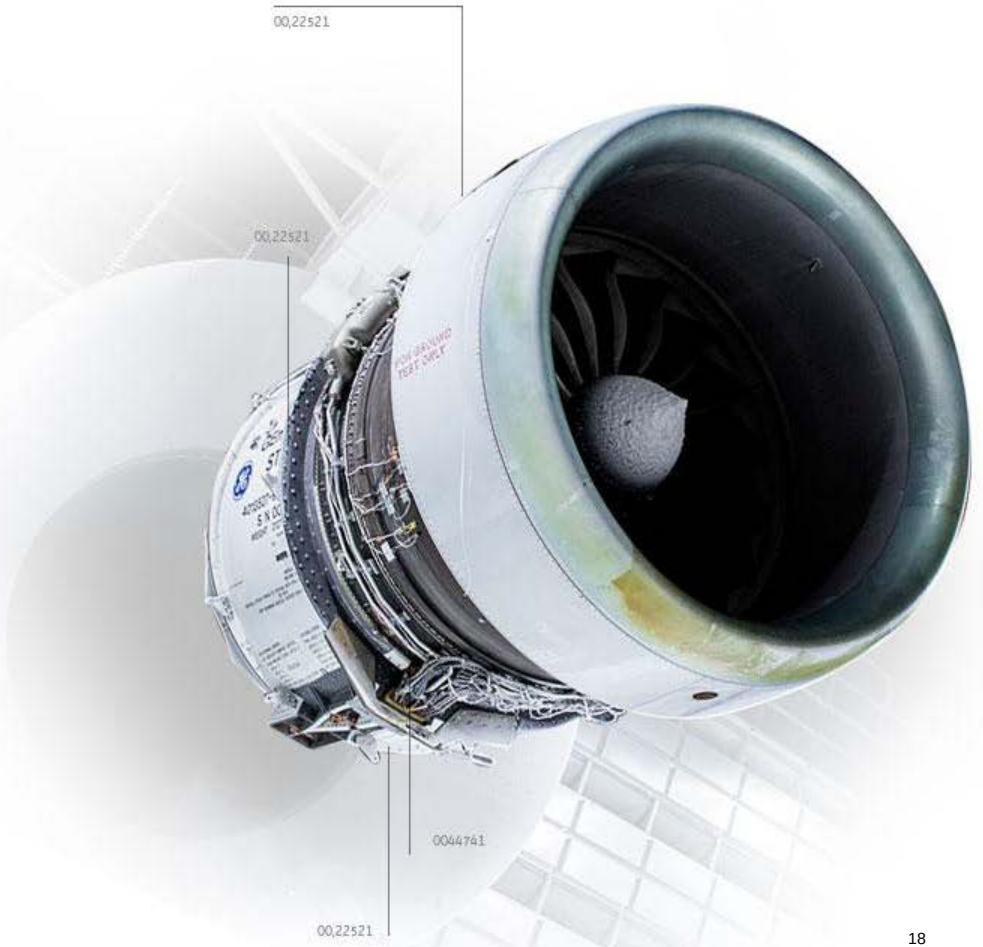
Part III

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-Tracked 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?

open source vs. proprietary

Understanding role in **IoT ecosystem**

build one, have a partner or buy a strategy?

How to **monetize** and sell IoT

Scaling

moving out of pilot phase

Organisational issues

lack of skills, innovation, governance, operating model

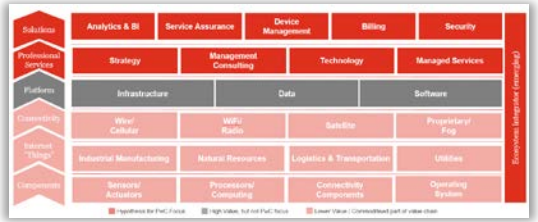
A company's IoT strategy and vision serves as the foundation upon which to build a capability roadmap and an operational support model

IoT Strategy

Business Outcomes

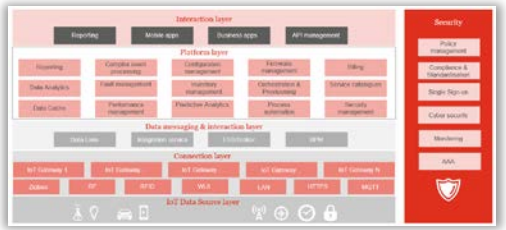
"What is the business problem /use case I am trying to solve?"

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.

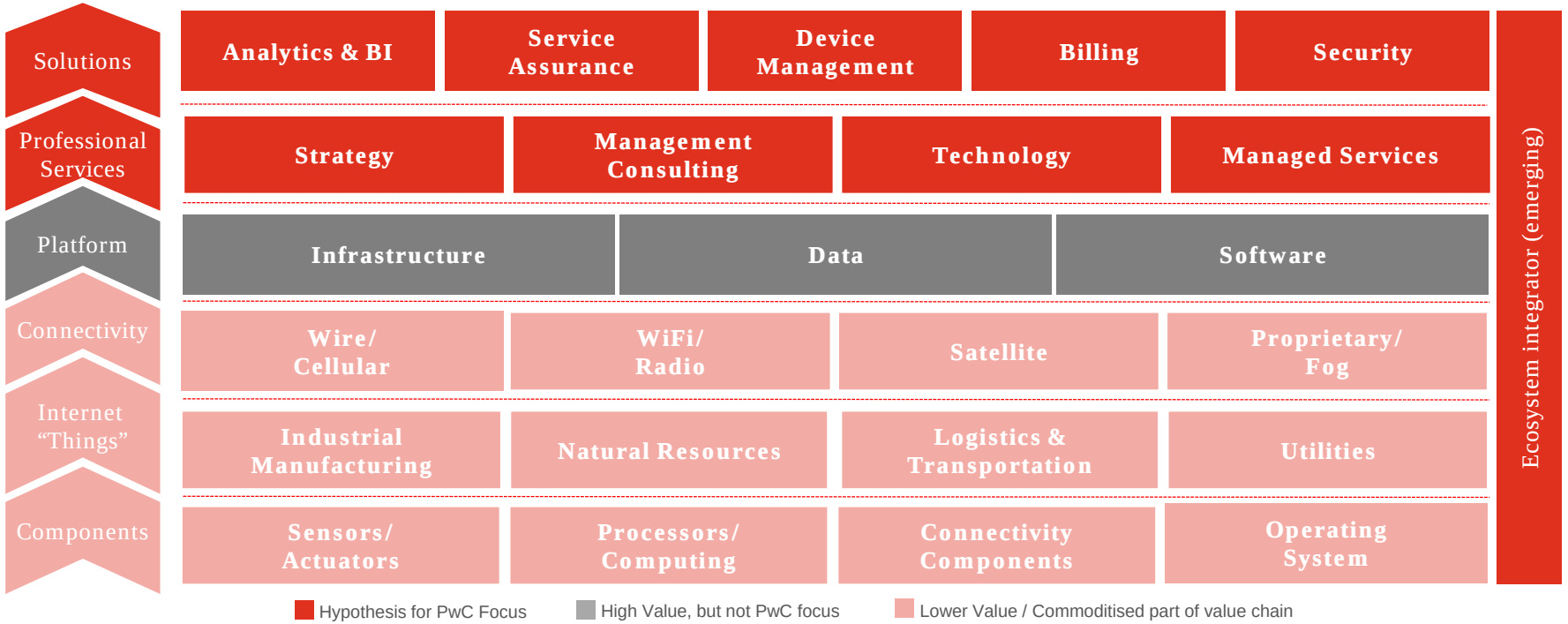
- Lower Opex
- Improved worker productivity
- Lower defect rates
- Higher uptime

Trust

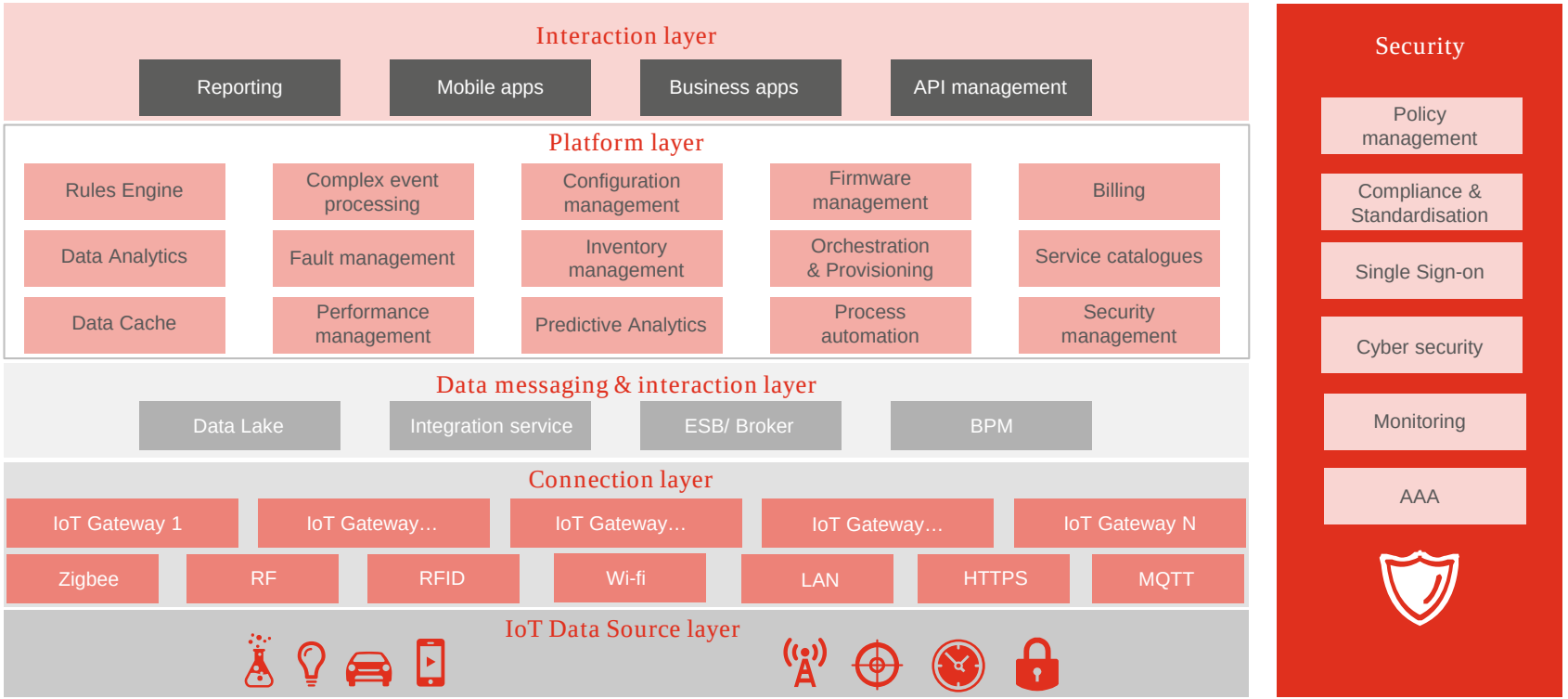
IoT secure environment
Ensuring secure information in a digital age to inspire trust in our clients by their customers

- Reduced risk
- Greater brand value
- Stronger customer satisfaction

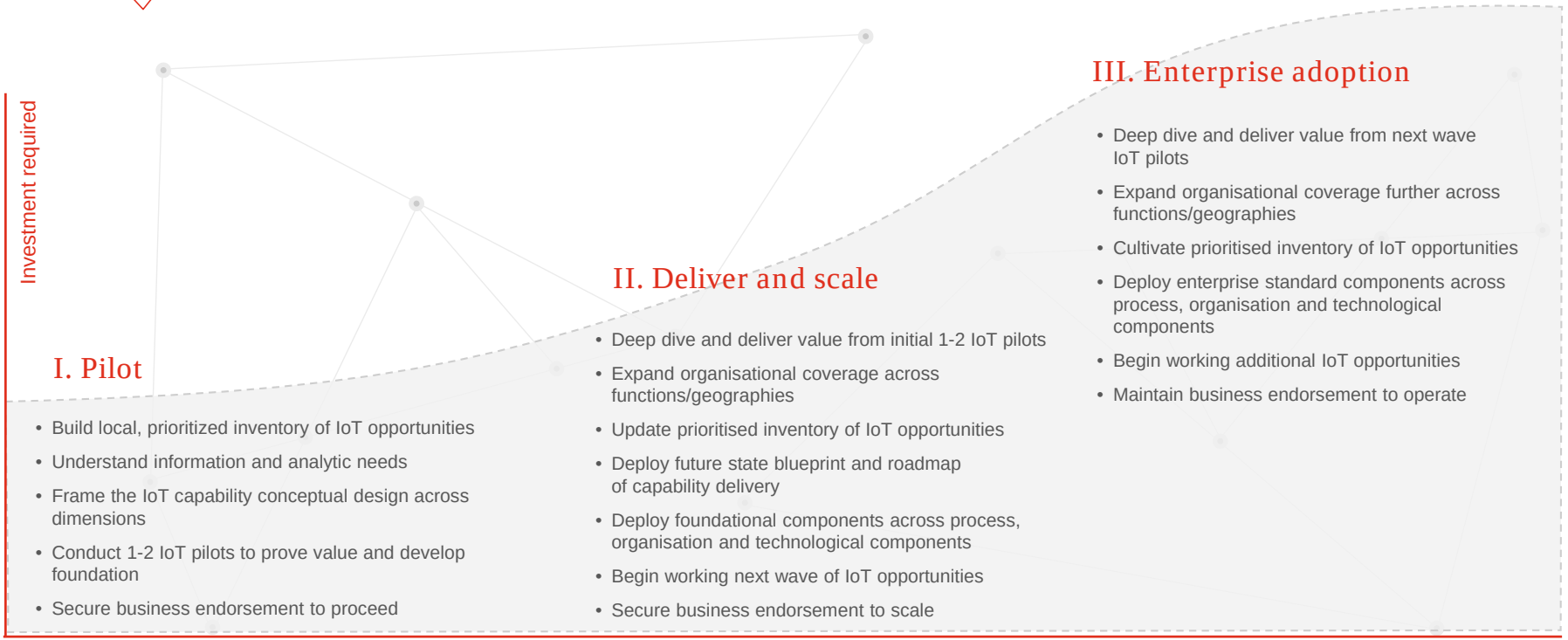
IIoT value chain and detail on IIoT ecosystem structure



IoT operational reference architecture

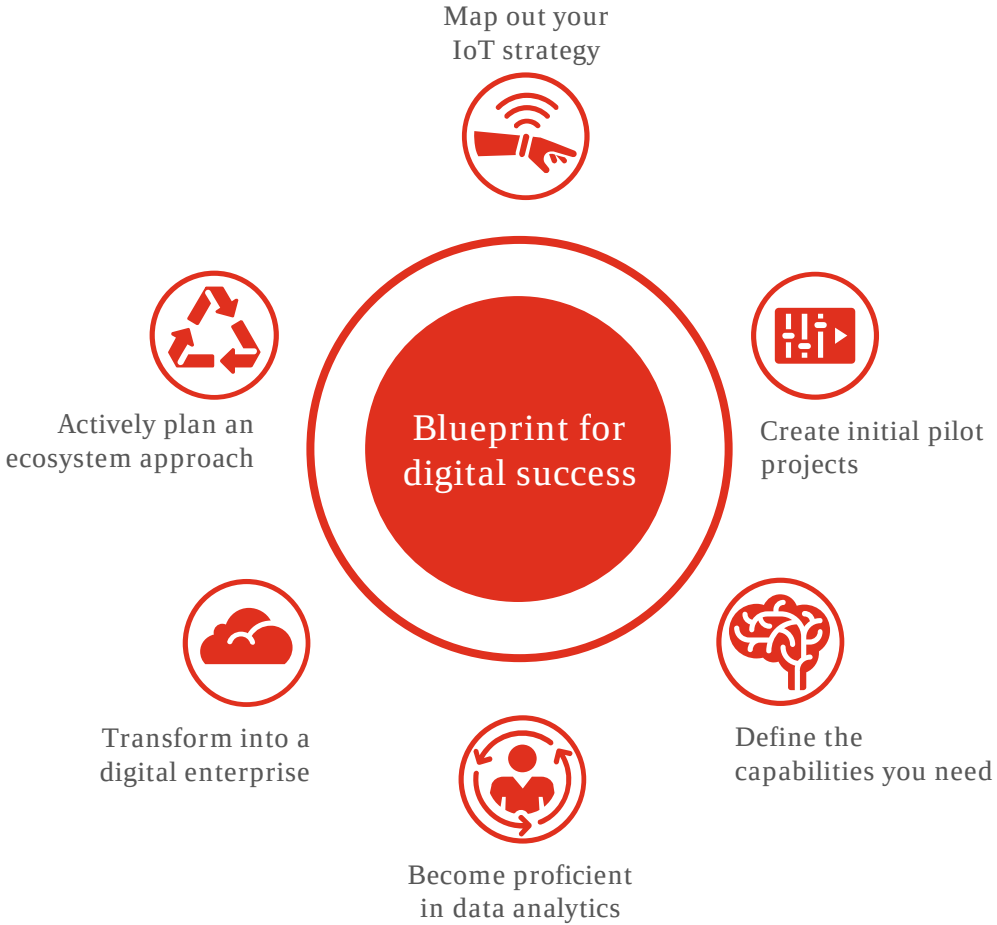


Getting started in the IoT adoption



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

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