WE CAN
DO SO
MUCH
TOGETHER

Cybersecurity in the Internet of Things
(Building Trust in the Machine Economy)

Ana Ayerbe
ana.ayerbe@tecnalia.com
@anaayerbe

tecnalia Inspiring Business

TECNALIA
RESEARCH AND TECHNOLOGICAL DEVELOPMENT

SINCE 2011
TECNALIA is a benchmark Research and Technological Development Centre in Europe.

_MULTISECTORAL

_MULTI-TECHNOLOGY

tecnalia Inspiring Business

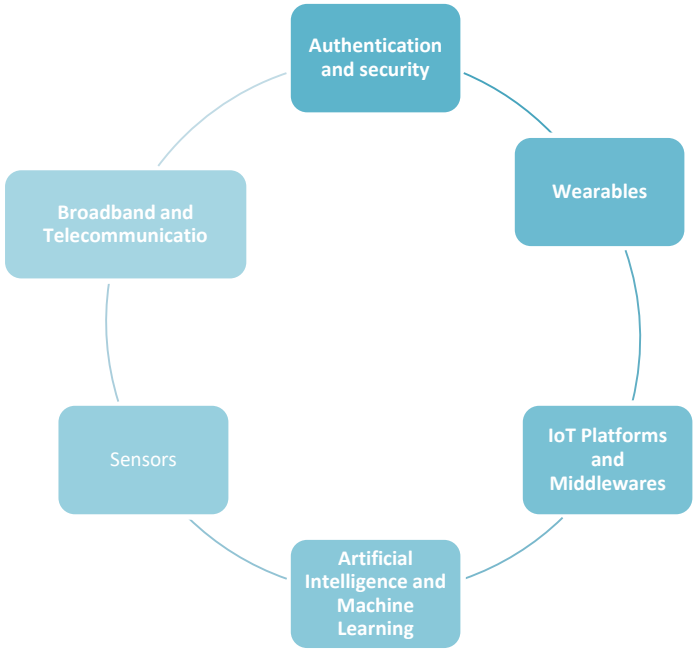
A model **ANTICIPATING THE FUTURE**

A COMBINATION
OF TECHNOLOGY,
TENACITY,
EFFICIENCY, COURAGE
AND IMAGINATION

WE RESEARCH TO OVERCOME **CHALLENGES FACED BY MANKIND**

A broad and transversal topic from basic technologies to the applications

Enabling Technologies



Application Domains

IoT Mass Market (B2C)

Things are massively produced and they are used by private users with little technical or security know-how

https://www.theguardian.com/technology/2016/oct/26/ddos-attack-dyn-mirai-botnet

The 5 Worst Examples of IoT H... | DDoS attack that disrupted ...

Support The Guardian | Subscribe | Find a job | Sign in | Search | International edition

The Guardian

News | Opinion | Sport | Culture | Lifestyle | More

World | UK | Science | Cities | Global development | Football | Tech | Business | Environment | Obituaries

Hacking

DDoS attack that disrupted internet was largest of its kind in history, experts say

Dyn, the victim of last week's denial of service attack, said it was orchestrated using a weapon called the Mirai botnet as the 'primary source of malicious attack'

- Major cyber attack disrupts internet service across Europe and US

Nicky Woolf *in San Francisco*

@nickywoolf

Wed 26 Oct 2016 21.42 BST

769 423

This article is over 1 year old

Advertisement

Florencia - Hotel Esperanza
Bien 7.7
Reserva

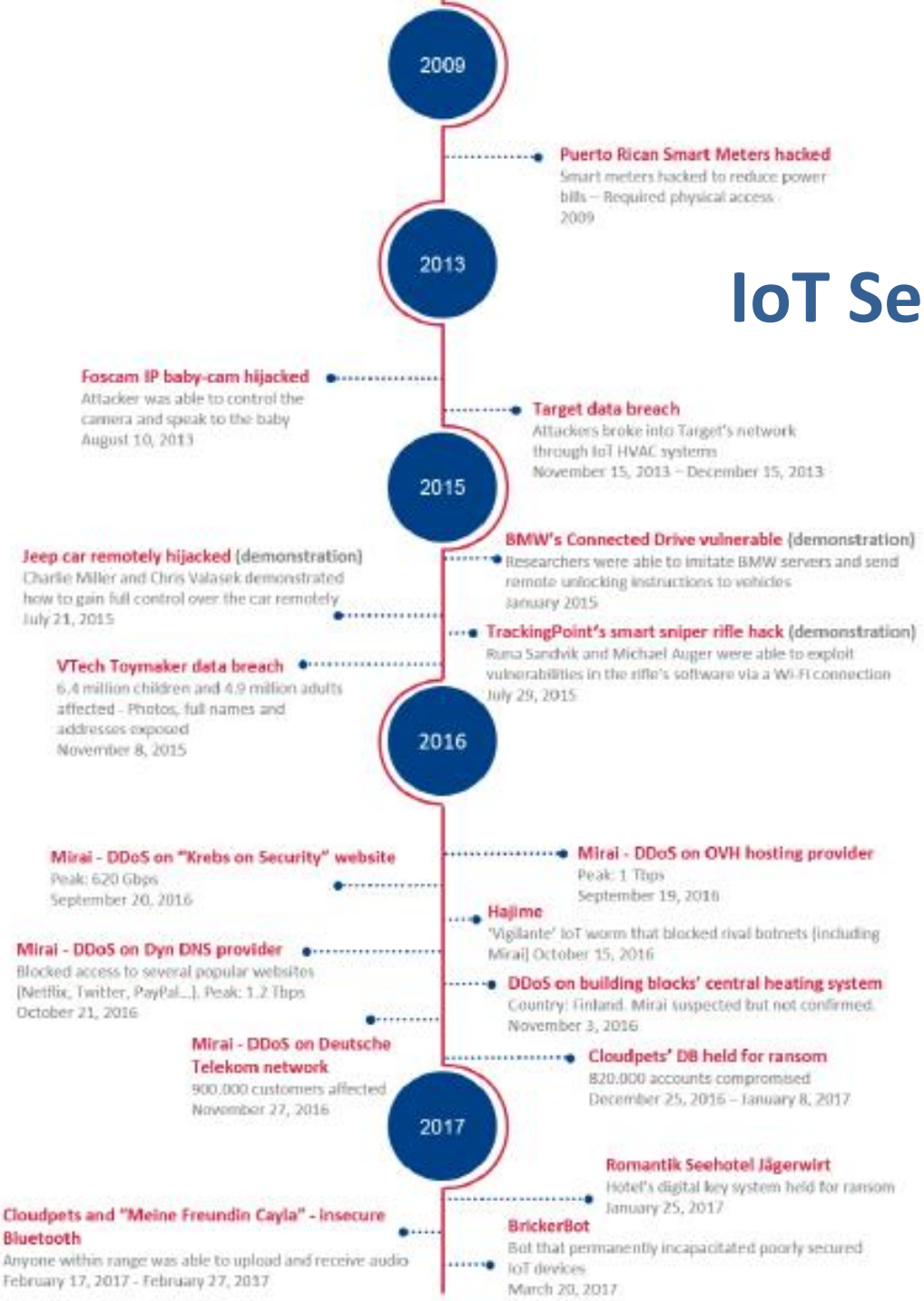
Pisa - Hotel La Pace
Bien 7.9
Reserva

Florencia - Hotel Caravaggio
Muy bien 8.4

https://www.theguardian.com/technology/2016/oct/21/ddos-attack-dyn-internet-denial-service

ES 22:23 05/06/2018

IoT Security Incidents



enisa

Baseline Security Recommendations for IoT

in the context of Critical Information Infrastructures

Industrial Internet of Things (B2B)

Using IoT in sectors like Industry 4.0, Energy, Health or Agriculture among others.

People:

Cybersecurity Awareness

Cybersecurity by Design:

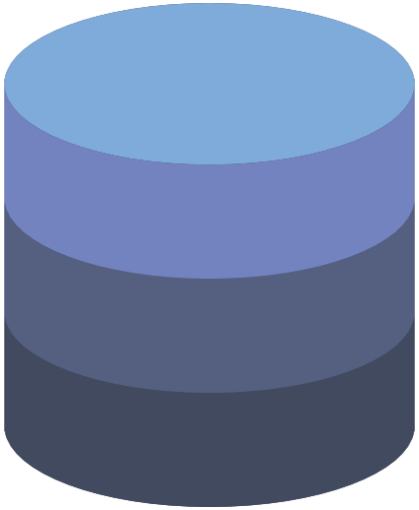
Cybersecurity in the whole Software Development Process

Cybersecurity along the Supply Chain.

Try not to use B2C devices in B2B applications

Blockchain is one of today's most disruptive technologies, it can change procedures and business models as we know them today.

Blockchain is a digital transactions and events log



Decentralized

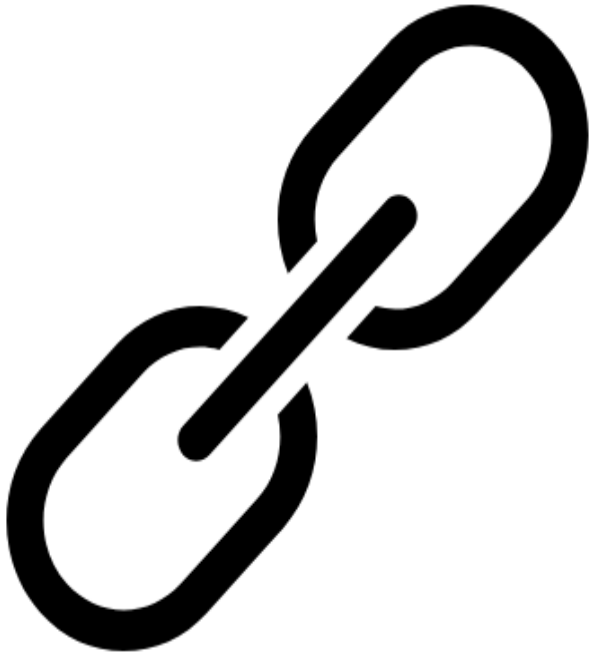
Distributed P2P architecture

Whose information is approved by the

Consensus

of the majority of the network

Cryptographycally linked to make it Unalterable



So the minimun change would break the (logical) chain

Advantages

- Disintermediation of processes and business models
- Integrated point of view of synchronized, agreeded and unalterable data
- Trustworthiness and non-repudiation of transactions
- Traceability and transparency of processes
- Machine economy: machines as active participants in the economy

Architecture and escalability for IoT

Machine Economy

Smart Contracts between machines

Raw materiales, parts, maintenance, energy, delegation/coordination of production, logistics…

M2M transactions & tokenized value exhange

Machine Economy

Traceability

of the whole supply chain. Incuding also the life cycle of the product.

Authentication

Data Integrity

Decentralized registry

Reliable & Unalterable

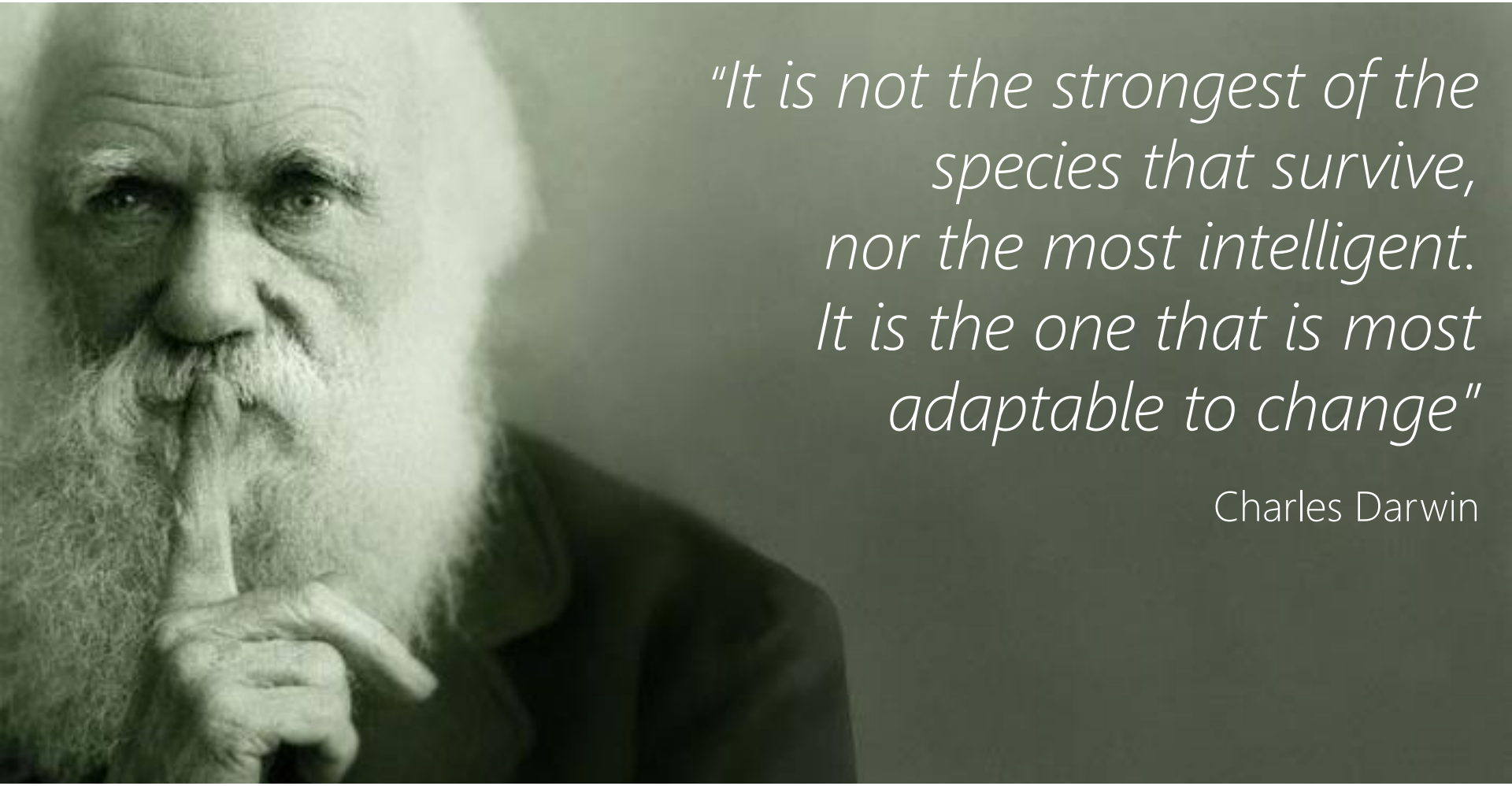
Incident Forensics

INDUSTRIAL
INTERNET
OF THINGS

1st Industrial Blockchain Laboratory in Europe

BLOCKCHAIN Lab
Inspiring Business. Enabling Trust

Blockchain is the next revolution



Thanks for your attention!

www.cyberssbytecnalia.com

Ana Ayerbe
ana.ayerbe@tecnalia.com
@AnaAyerbe