Building Trust in the Machine Economy

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TECNALIA
RESEARCH AND TECHNOLOGICAL DEVELOPMENT

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

_MULTISECTORAL
_MULTI-TECHNOLOGY

A model
ANTICIPATING
THE FUTURE

A COMBINATION
OF TECHNOLOGY,
TENACITY,
EFFICIENCY, COURAGE
AND IMAGINATION
WE RESEARCH TO OVERCOME CHALLENGES FACED BY MANKIND

- Health and Ageing
- Urban Habitat
- Advanced Manufacturing
- Digital and Hyperconnected World
- Low-Carbon Energy
- Climate Change and Lack of Resources
A broad and transversal topic from basic technologies to the applications

Application Domains

Enabling Technologies

- Authentication and security
- Wearables
- Sensors
- IoT Platforms and Middlewares
- Artificial Intelligence and Machine Learning
- Broadband and Telecommunication
IoT Mass Market (B2C)

Things are massively produced and they are used by private users with little technical or security know-how.
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
From “script-kiddie” to states-nations

- CYBERWAR
- CYBERSPIONAGE
- CYBERTERRORISM
- CYBERCRIMINALS
- CYBERACTIVISM
- CYBERMALICE
Industrial Internet of Things (B2B)
Using IoT in sectors like Industry 4.0, Energy, Health or Agriculture among others.
Objectives Search: Modbus (May’17)
Objectives Search: Modbus (June’18)

SHODAN

port 502

18,806

TOP COUNTRIES

UNITED STATES 3,213
FRANCE 1,164
SPAIN 1,163
ITALY 1,123
GERMANY 1,049

TOP ORGANIZATIONS

Verizon Wireless 1,404
Telestra Internet 863
Deutsche Telekom AG 744
Orange 743
Turkcell 645

TOP OPERATING SYSTEMS

Windows 7 or 8 23
Linux 2.6.x 17
Linux 3.x 14
Linux 2.4.x 11
Linux 2.2.x 8

TOP PRODUCTS

EMX P54 2020 564
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 explained

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
Blockchain explained

Cryptographically linked to make it Unalterable
So the minimum change would break the (logical) chain
Advantages

• **Disintermediation** of processes and business models

• **Integrated point of view** of synchronized, agreed and unalterable data

• **Trustworthiness and non-repudiation** of transactions

• **Traceability and transparency** of processes

• **Machine economy**: machines as active participants in the economy
Machine Economy

Architecture and escalability for IoT

Before 2005

Today

2025 and beyond

Building Trust in the Machine Economy
Machine Economy

Smart Contracts between machines

Raw materials, parts, maintenance, energy, delegation/coordination of production, logistics...

M2M transactions & tokenized value exchange
Traceability of the whole supply chain. Including also the life cycle of the product.
Authentication
Data Integrity
Decentralized registry
Reliable & Unalterable
Incident Forensics
1st Industrial Blockchain Laboratory in Europe
Blockchain is the next revolution

“It is not the strongest of the species that survive, nor the most intelligent. It is the one that is most adaptable to change”

Charles Darwin
Thanks for your attention!

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