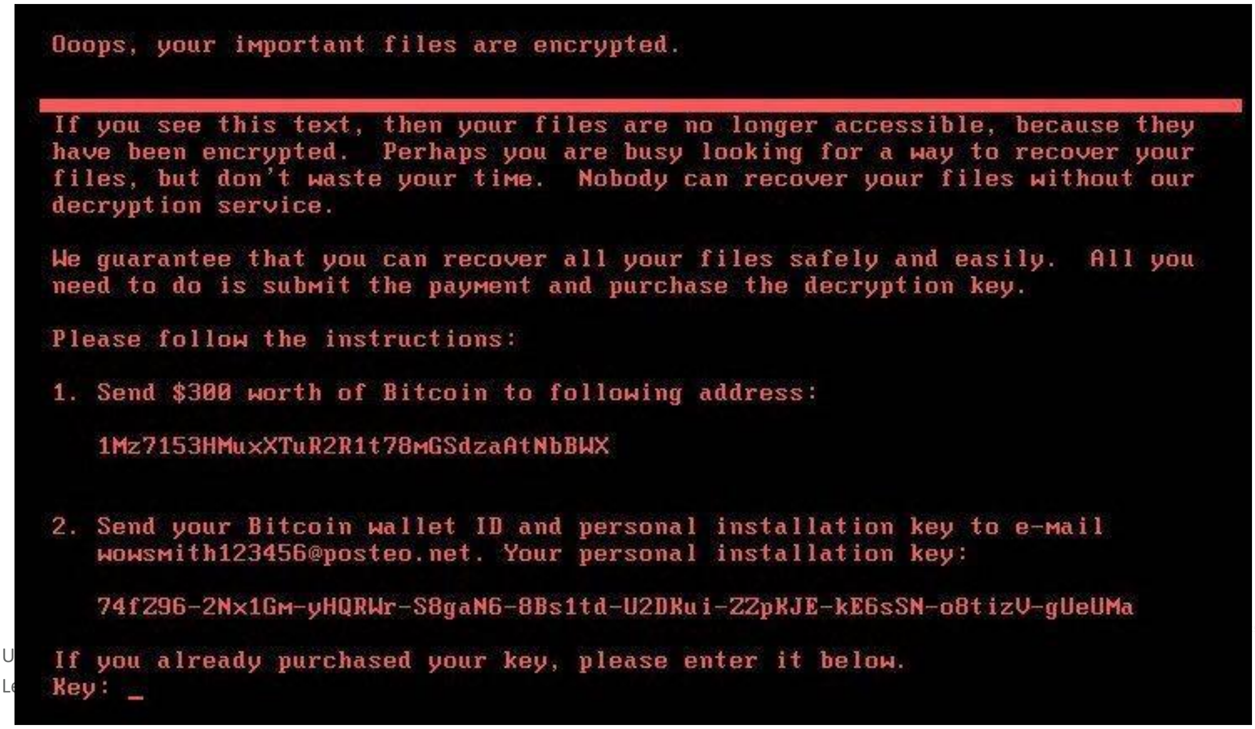
DEVELOPING DIGITAL PLATFORMS IN INDUSTRIE 4.0 AND INDUSTRIAL IOT (IIOT)

SECURITY CONSIDERATIONS

Source : https://www.hackread.com/mirai-botnet-linked-to-dyn-dns-ddos-attacks/

Ulrich Seldeslachts ,
Den Bosch, Oct 12th 2017

ConnectedFactories DIF Cluster Management Excellence ACDC TAKEDOWN Identify Prevent Respond European Commission LSEC LEADERS IN SECURITY



```
Ooops, your important files are encrypted.

If you see this text, then your files are no longer accessible, because they
have been encrypted.  Perhaps you are busy looking for a way to recover your
files, but don't waste your time.  Nobody can recover your files without our
decryption service.

We guarantee that you can recover all your files safely and easily.  All you
need to do is submit the payment and purchase the decryption key.

Please follow the instructions:

1. Send $300 worth of Bitcoin to following address:

   1Mz7153HMuxXTuR2R1t78mGSdzaAtNbBWX


2. Send your Bitcoin wallet ID and personal installation key to e-mail
   wowsmith123456@posteo.net. Your personal installation key:

   74fZ96-2Nx1Gm-yHQRWr-S8gaN6-8Bs1td-U2DKui-ZZpKJE-kE6sSN-o8tizV-gUeUMa

If you already purchased your key, please enter it below.
Key: _
```

U
Le

The industrial internet is here to stay. 50B devices connecting by 2020

Security Incidents are increasing in frequency, sophistication and impact

The only way to address security is an automated end-to-end approach and highly skilled professionals.

Source: Wurldtech 2016

Industrie 4.0, Industrial Internet, Smart Manufacturing indicate the level of Digitalisation of Manufacturing

Legacy and Smarter Devices are being connected to Drive Operational Efficiency

Smarter production will allow Mass Customization

Source: LSEC – 3IF.be, Siemens, 2016

The Fourth Industrial Revolution
Klaus Schwab
Industry 4.0
The Industrial Internet of Things
Alasdair Gilchrist
Apress
THE INDUSTRIES OF THE FUTURE
ALEC ROSS

Connectivity & sensing

Massive influx of data & connectivity of systems

Advanced analytics

Use of greater portion of **data via Advanced** Analytics and **machine learning**

Robotics & Automation

Automation (or semi-automation) of major portions of value chain

Process digitization

Mobile tools for **field-force** and **manage-ment support**

90%

Data in the world today has been created in the last two years

10^{15}

More computer operations per second than since the 1960s

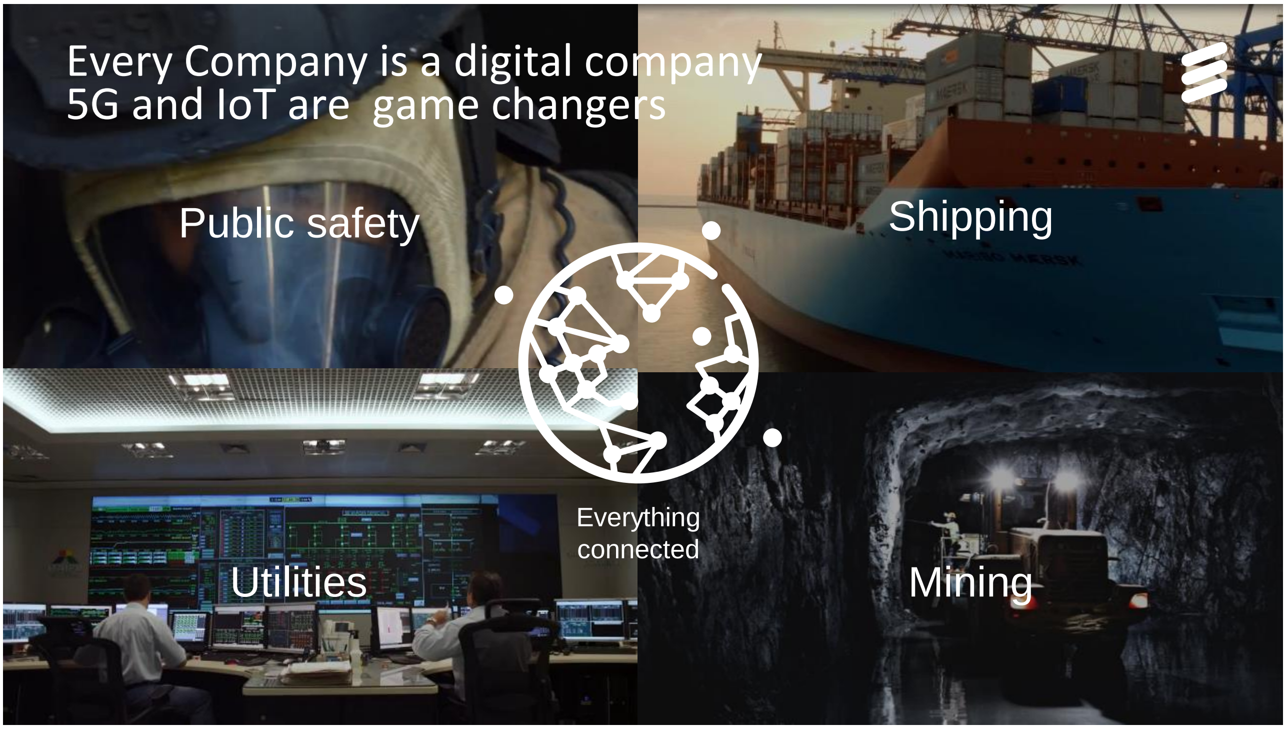
50%

Reduction in cost of robots since 1990 vs 80% increase in US labour costs

250k x

More RAM in iPhone 5 than in the Apollo 11 computer

Source: McKinsey & Co, 2017



Every Company is a digital company
5G and IoT are game changers

Public safety

Shipping

Everything connected

Utilities

Mining

The potential of I4.0

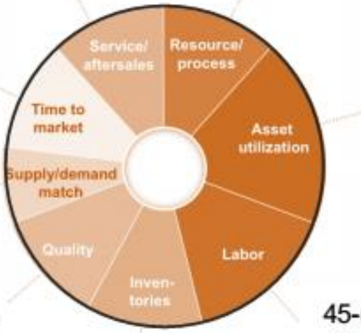
10-40% reduction of maintenance costs

3-5% increase of overall productivity

20-50% reduction in time to market

30-50% reduction of total machine downtime

Up to 85% increase of forecasting accuracy



10-20% reduction of costs for quality

45-55% increase of productivity in technical professions

20-50% reduction of inventory costs

Source : German Innovation Center for I4.0, 2017

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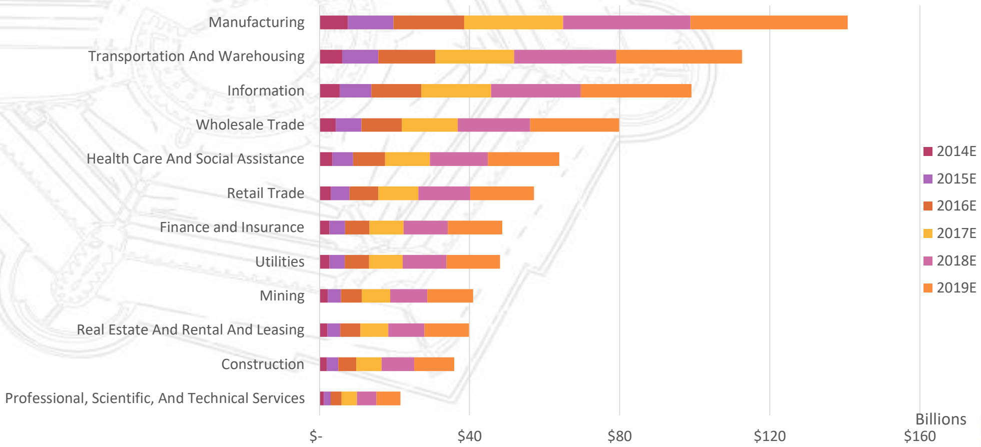
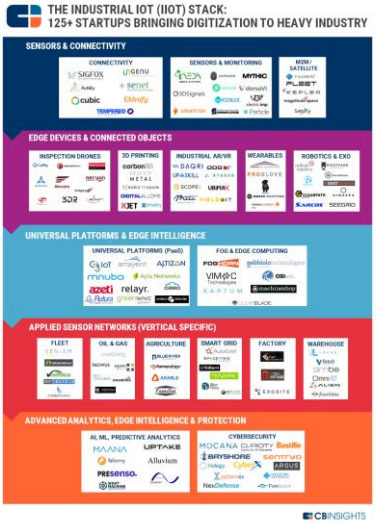
IoT… manufacturing to lead, logistics early adopter

Top Industries With Investments In IoT Solutions



Source: BI Intelligence, 2015

The next big thing for D&E?

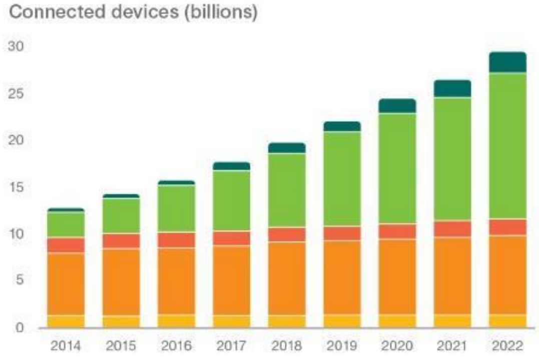

THE INDUSTRIAL IOT (IIOT) STACK:
125+ STARTUPS BRINGING DIGITIZATION TO HEAVY INDUSTRY
SENSORS & CONNECTIVITY
CONNECTIVITY
SENSORS & MONITORING
M2M / SATELLITE
EDGE DEVICES & CONNECTED OBJECTS
INSPECTION DRONES
3D PRINTING
INDUSTRIAL AR/VR
WEARABLES
ROBOTICS & EXO
UNIVERSAL PLATFORMS & EDGE INTELLIGENCE
UNIVERSAL PLATFORMS (PaaS)
FOG & EDGE COMPUTING
APPLIED SENSOR NETWORKS (VERTICAL SPECIFIC)
FLEET
OIL & GAS
AGRICULTURE
SMART GRID
FACTORY
WAREHOUSE
ADVANCED ANALYTICS, EDGE INTELLIGENCE & PROTECTION
AI, ML, PREDICTIVE ANALYTICS
CYBERSECURITY
CBINSIGHTS

1. **Sensors & Connectivity**
   1. **Connectivity**
   2. **Sensors & Monitoring**
   3. **M2M / Satellite**
2. **Edge Devices & Connected Objects**
   1. **Inspection Drones**
   2. **3D Printing**
   3. **Industrial AR/VR**
   4. **Wearables**
   5. **Robotics & Exo**
3. **Universal Platforms & Edge Intelligence**
   1. **Universal Platforms**
   2. **Fog & Edge Computing**

4. **Applied Sensor Networks**
   4. **Fleet**
   5. **Oil & Gas**
   6. **Agriculture**
   7. **Smart Grid**
   8. **Factory**
   9. **Warehouse**
5. **Advanced Analytics, Edge Intelli**
   1. **AI, ML, Predictive Analytics**
   2. **Cybersecurity**

Source: CB Insights 2017

29 billion devices – 29 billion sources of potential threat

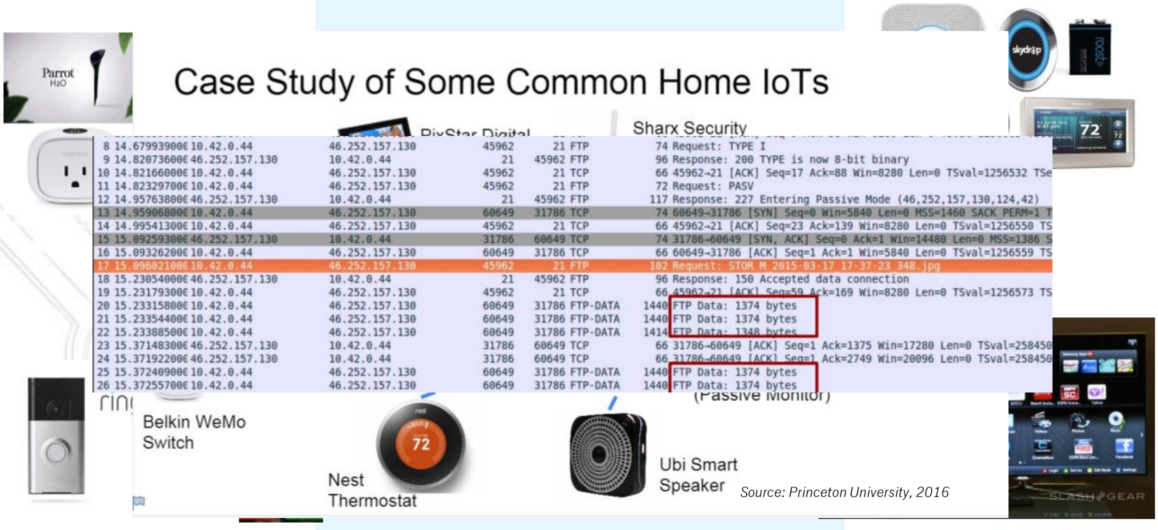


	2016	2022	CAGR
Wide-area IoT	0.4	2.1	30%
Short-range IoT	5.2	16	20%
PC/laptop/tablet	1.6	1.7	0%
Mobile phones	7.3	8.6	3%
Fixed phones	1.4	1.3	0%
	16 billion	29 billion	10%

Source: Ericsson Mobility Report, Nov 2016

Commercial in confidence | © Ericsson AB 2016 | 2016-12-30 | Page 11

But Key Experiences from IoT in the Home …



Case Study of Some Common Home IoTs

PixStar Digital

Sharx Security

```
 8 14.67993900€ 10.42.0.44       46.252.157.130   45962    21 FTP           74 Request: TYPE I
 9 14.82073600€ 46.252.157.130   10.42.0.44          21 45962 FTP           96 Response: 200 TYPE is now 8-bit binary
10 14.82166000€ 10.42.0.44       46.252.157.130   45962    21 TCP           66 45962→21 [ACK] Seq=17 Ack=88 Win=8280 Len=0 TSval=1256532 TSe
11 14.82329700€ 10.42.0.44       46.252.157.130   45962    21 FTP           72 Request: PASV
12 14.95763800€ 46.252.157.130   10.42.0.44          21 45962 FTP          117 Response: 227 Entering Passive Mode (46,252,157,130,124,42)
13 14.95906800€ 10.42.0.44       46.252.157.130   60649 31786 TCP           74 60649→31786 [SYN] Seq=0 Win=5840 Len=0 MSS=1460 SACK_PERM=1 T
14 14.99541300€ 10.42.0.44       46.252.157.130   45962    21 TCP           66 45962→21 [ACK] Seq=23 Ack=139 Win=8280 Len=0 TSval=1256550 TS
15 15.09259300€ 46.252.157.130   10.42.0.44       31786 60649 TCP           74 31786→60649 [SYN, ACK] Seq=0 Ack=1 Win=14480 Len=0 MSS=1386 S
16 15.09326200€ 10.42.0.44       46.252.157.130   60649 31786 TCP           66 60649→31786 [ACK] Seq=1 Ack=1 Win=5840 Len=0 TSval=1256559 TS
17 15.09602100€ 10.42.0.44       46.252.157.130   45962    21 FTP          102 Request: STOR M_2015-03-17_17-37-23_348.jpg
18 15.23054000€ 46.252.157.130   10.42.0.44          21 45962 FTP           96 Response: 150 Accepted data connection
19 15.23179300€ 10.42.0.44       46.252.157.130   45962    21 TCP           66 45962→21 [ACK] Seq=59 Ack=169 Win=8280 Len=0 TSval=1256573 TS
20 15.23315800€ 10.42.0.44       46.252.157.130   60649 31786 FTP-DATA    1440 FTP Data: 1374 bytes
21 15.23354400€ 10.42.0.44       46.252.157.130   60649 31786 FTP-DATA    1440 FTP Data: 1374 bytes
22 15.23388500€ 10.42.0.44       46.252.157.130   60649 31786 FTP-DATA    1414 FTP Data: 1348 bytes
23 15.37148300€ 46.252.157.130   10.42.0.44       31786 60649 TCP           66 31786→60649 [ACK] Seq=1 Ack=1375 Win=17280 Len=0 TSval=258450
24 15.37192200€ 46.252.157.130   10.42.0.44       31786 60649 TCP           66 31786→60649 [ACK] Seq=1 Ack=2749 Win=20096 Len=0 TSval=258450
25 15.37240900€ 10.42.0.44       46.252.157.130   60649 31786 FTP-DATA    1440 FTP Data: 1374 bytes
26 15.37255700€ 10.42.0.44       46.252.157.130   60649 31786 FTP-DATA    1440 FTP Data: 1374 bytes
```

(Passive Monitor)

Belkin WeMo Switch

Nest Thermostat

Ubi Smart Speaker

Source: Princeton University, 2016

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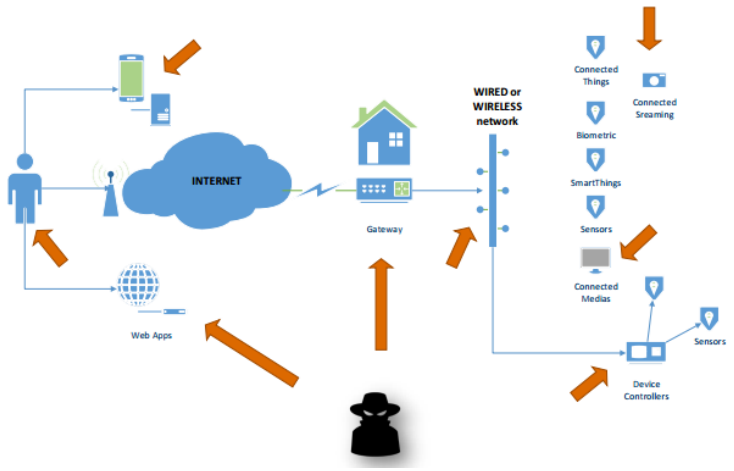
Source: BI Intelligence, 2015

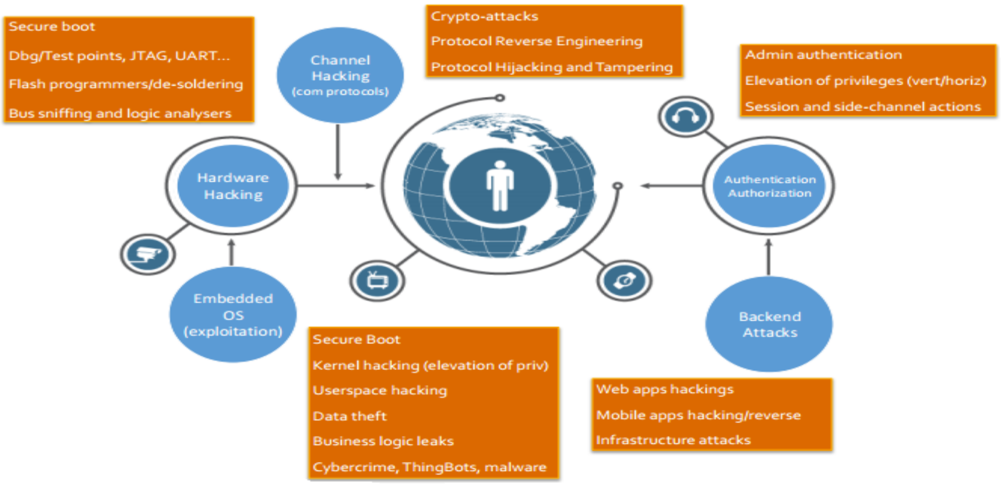
… learn that IoT Devices are a Cyber Target!

IoT design, attacks in a nutshell



Source: LSEC IoT Security 2015, PWC

Top 5 IoT attack vectors


Channel Hacking (com protocols)
Hardware Hacking
Embedded OS (exploitation)
Authentication Authorization
Backend Attacks

Secure boot
Dbg/Test points, JTAG, UART…
Flash programmers/de-soldering
Bus sniffing and logic analysers

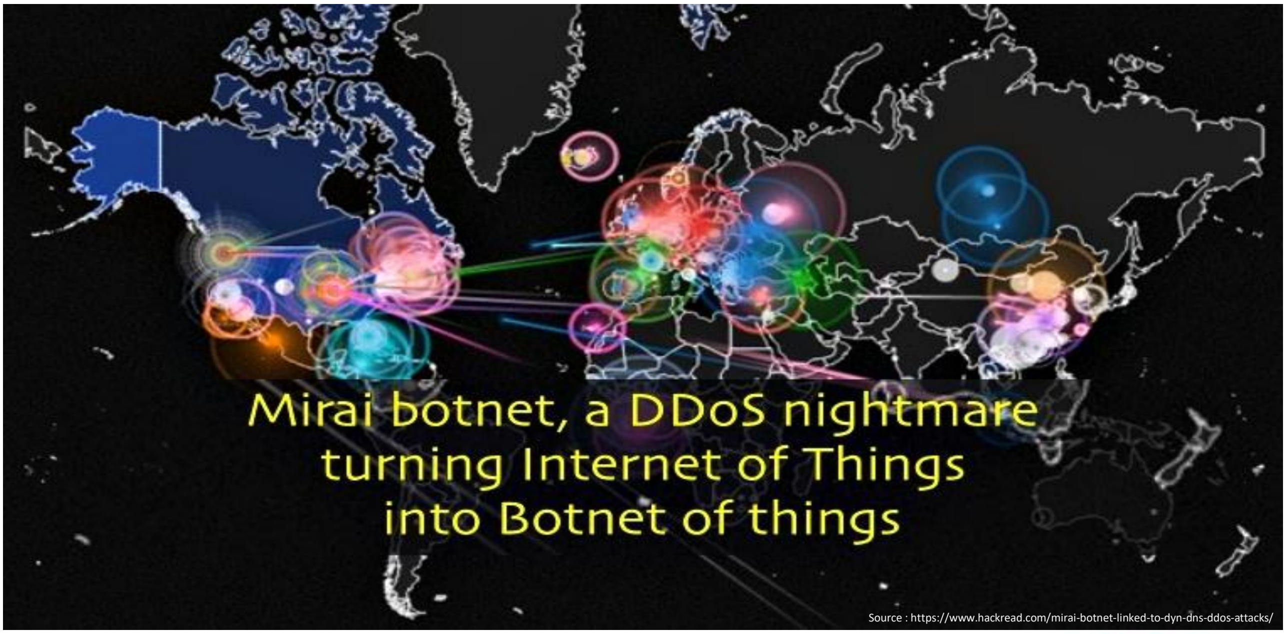
Crypto-attacks
Protocol Reverse Engineering
Protocol Hijacking and Tampering

Admin authentication
Elevation of privileges (vert/horiz)
Session and side-channel actions

Secure Boot
Kernel hacking (elevation of priv)
Userspace hacking
Data theft
Business logic leaks
Cybercrime, ThingBots, malware

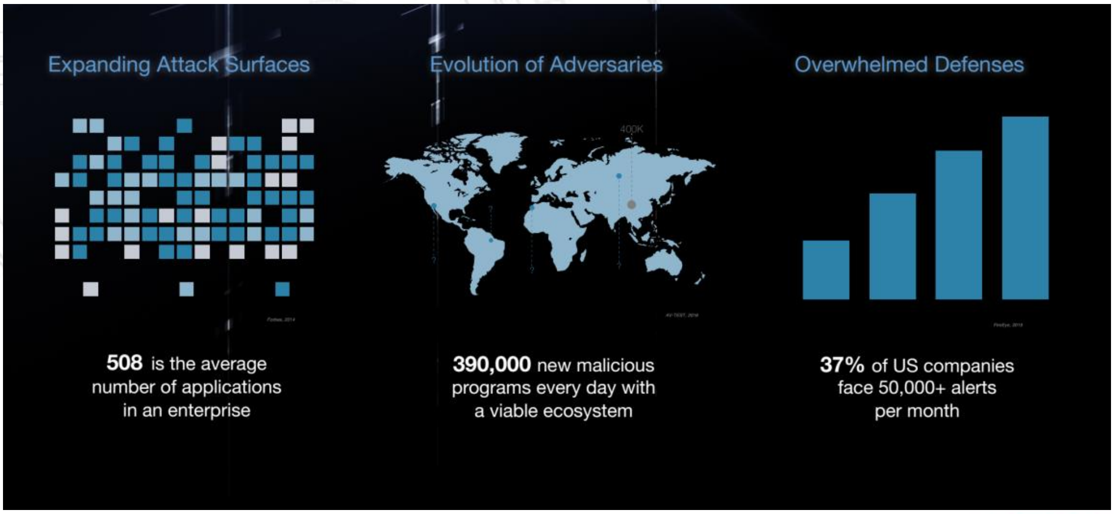
Web apps hackings
Mobile apps hacking/reverse
Infrastructure attacks

Source : LSEC IoT Security, 2015, PWC



Source : https://www.hackread.com/mirai-botnet-linked-to-dyn-dns-ddos-attacks/

Scaling Up Security Incidents



Expanding Attack Surfaces

508 is the average number of applications in an enterprise

Evolution of Adversaries

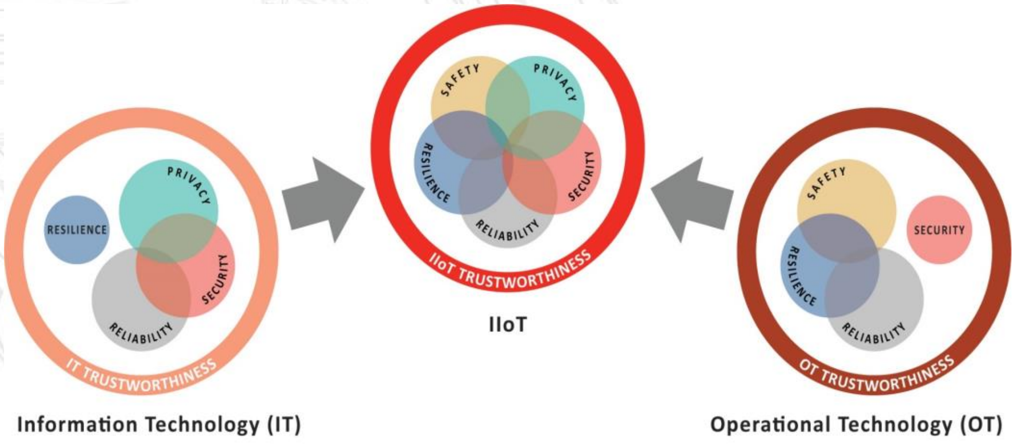
390,000 new malicious programs every day with a viable ecosystem

Overwhelmed Defenses

37% of US companies face 50,000+ alerts per month

Source : LSEC CTI 2017, Cyberreason

An Organizational Change is Needed



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Source: IIC – Industrial Internet Consortium, 2016

LSEC – European Cyber Security Catalyst

European Network of Security Professionals, Research and Industry

LSEC is an international IT - & Information **Security cluster**, a **not for profit** organization that promotes Information Security and the expertise in Europe. Founded by **KU Leuven**, supported by **European** and **Flemish** Communities and leading a PAN European Private partnership that interacts with Public Institutions, LSEC connects security experts, research institutes and universities, government agencies, end users, funding bodies and technical experts and is a **catalyst in cyber security innovations**. LSEC activities aim to raise cyber security **awareness**, support innovation and improve the competitiveness of the IT- Security market.

Unite stakeholders, stimulate collaboration, enable high tech entrepreneurship

LSEC provides an international platform that unites security stakeholders, stimulates collaboration and enables high tech entrepreneurship. This will help researchers understand industry needs, help Industry access the IT security research that they need, and help ensure that fundamental research is translated to sustainable solutions.

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LSEC – European Cyber Security Catalyst

Bring together the IT Security Expertise in Europe

With a broad membership base of over 265+ security specialized organizations, and more than 8.000 individual Information security professionals, LSEC accesses over 25.000 security stakeholders on a regular basis. With operations in the Netherlands, Belgium, Luxembourg and the UK, LSEC leads a PAN European Partnership with other security clusters that interacts with private partners, policy makers and public administration.

Strategic partner to FHI

LSEC has a strategic partnership with other European Cyber Security Clusters and Industry Associations. We've teamed up with FHI & D&E, because of joint interests and experience sharing, providing a channel for collaboration and joint developments.

eTrade Summit 2017

TRENDS IN CYBERSECURITY

(relevant for SafeShops.be)

Ulrich Seldeslachts,
Mechelen, Sept 28th, 2017

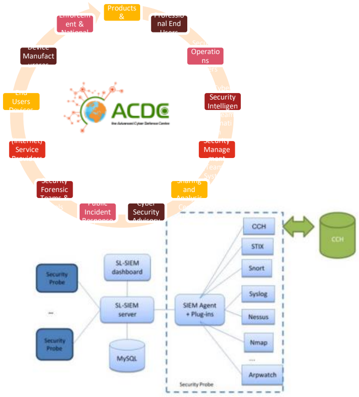
LSEC Activities :

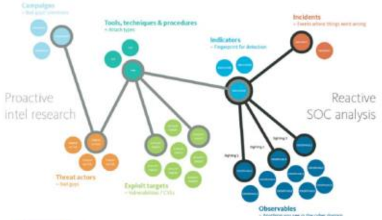
1. By Members for Members :
Experience Sharing - Conferences, Seminars, Workshops, Education, Training

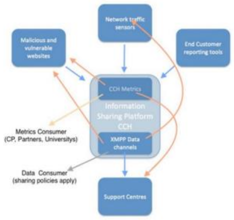
LSEC Data Protection
General Data Protection Regulation
Use Cases for DPIA & PbD Workshops
CYBER RANGE

LSEC Activities :

2. Cyber Security Threat Intelligence Sharing Platforn





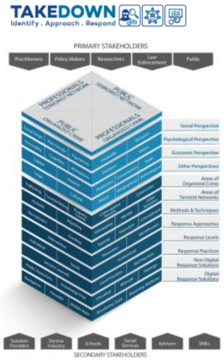

Network traffic sensors
Malicious and vulnerable websites
End Customer reporting tools
CCH Metrics
Information Sharing Platform CCH
XMPP Data channels
Metrics Consumer (CP, Partners, Universitys)
Data Consumer (sharing policies apply)
Support Centres

LSEC Activities :

3. Industrial Collaborations

IPACSO Innovation Awards

IPACSO AWARDS
Jakub Boratynski
Head of the Trust Unit, DG CONNECT, of the European Commission
IPACSO



Industrie 4.0, Industrial Internet and Industrial IoT in Flanders

Are You..?

Manufacturer, Industrial Processor or Technology Provider

Small & Medium Sized

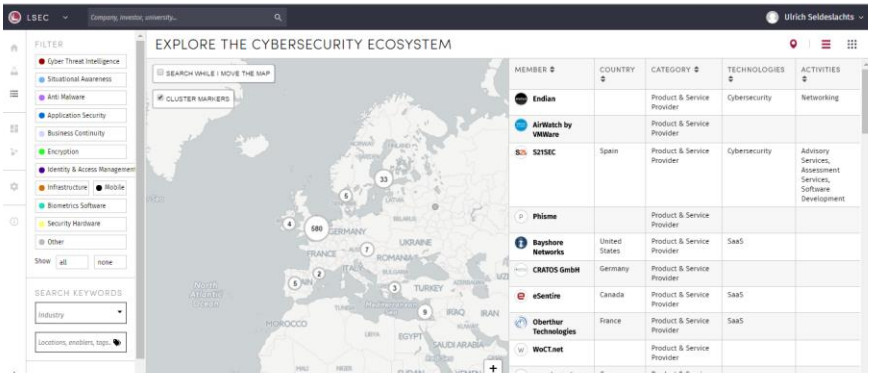
Going Smart, Digital and Connected

White Paper

Security in Industrie 4.0 Industrial Internet Industrial IoT

CONNECTED FACTORIES

LSEC European Market Platform : Clusters going digital



EXPLORE THE CYBERSECURITY ECOSYSTEM

FILTER

- ● Cyber Threat Intelligence
- ● Situational Awareness
- ● Anti Malware
- ● Application Security
- ● Business Continuity
- ● Encryption
- ● Identity & Access Management
- ● Infrastructure
- ● Mobile
- ● Biometrics Software
- ● Security Hardware
- ● Other

Show all none

SEARCH KEYWORDS

Industry

Locations, enablers, tags...

☐ SEARCH WHILE I MOVE THE MAP

☑ CLUSTER MARKERS

MEMBER ⇕	COUNTRY ⇕	CATEGORY ⇕	TECHNOLOGIES ⇕	ACTIVITIES ⇕
Endian		Product & Service Provider	Cybersecurity	Networking
AirWatch by VMWare		Product & Service Provider		
S21SEC	Spain	Product & Service Provider	Cybersecurity	Advisory Services, Assessment Services, Software Development
Phisme		Product & Service Provider		
Bayshore Networks	United States	Product & Service Provider	SaaS	
CRATOS GmbH	Germany	Product & Service Provider		
eSentire	Canada	Product & Service Provider	SaaS	
Oberthur Technologies	France	Product & Service Provider	SaaS	
WoCT.net		Product & Service Provider		

GLOBAL EPIC

Global Ecosystem of Ecosystems Partnership in Innovation and Cybersecurity

PARTNERSHIP MEMBERS

CSIT CENTRE FOR SECURE INFORMATION TECHNOLOGIES

cyberspark ISRAELI CYBER INNOVATION ARENA

Carleton UNIVERSITY Canada's Capital University

GCR

UNB EST. 1785 UNIVERSITY OF NEW BRUNSWICK | Canadian Institute for Cybersecurity

HSD The Hague Security Delta

THE KOSCIUSZKO INSTITUTE

PROCOMER COSTA RICA exporta

Cyber Wales

Cámaras Fundación INCYDE

LSEC LEADERS IN SECURITY

POLITECNICO DI TORINO 1859 1906

CYBERTECH YOUR NETWORK EXPANDED

bwtech @UMBC RESEARCH & TECHNOLOGY PARK

CITY OF SURREY the future lives here.

https://globalepic.org

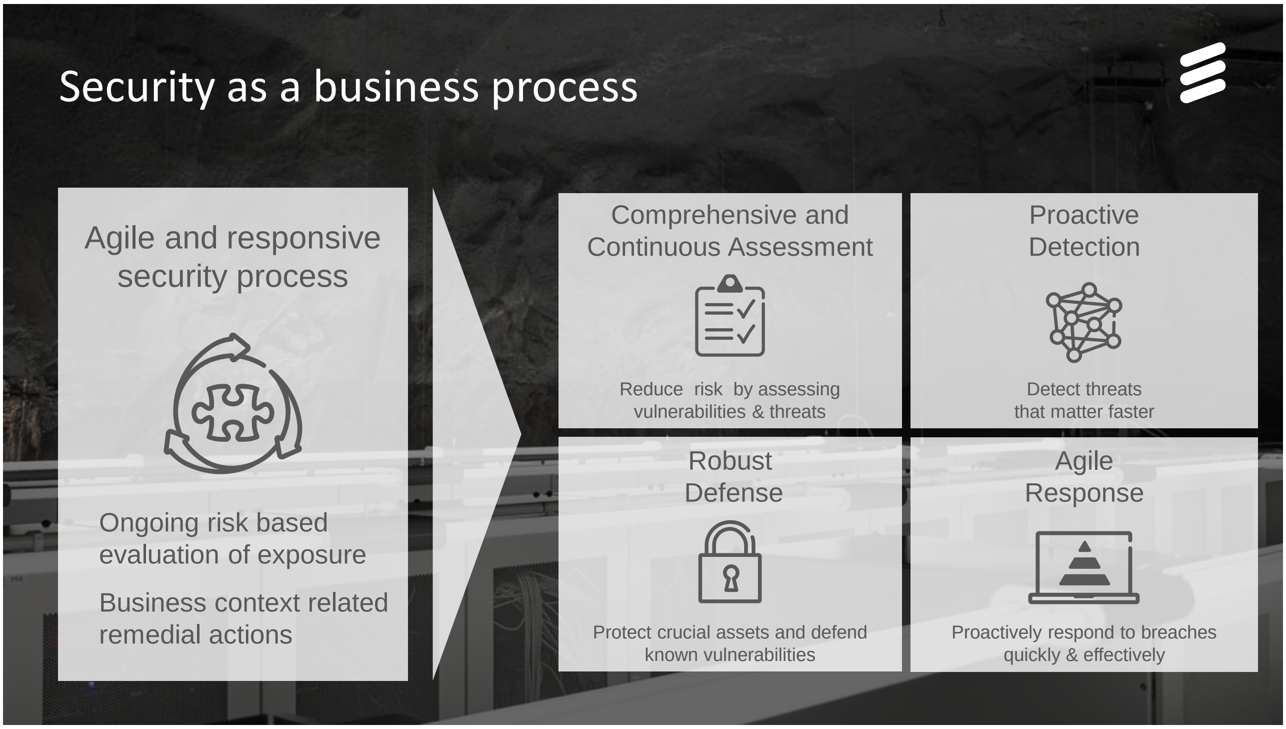
3IF.be – Industrie 4.0 in Flanders

1. **Stimulate** (economic) developments of industrial internet, industrie 4.0 and IIoT in Flanders, and support the viability of the Industry
2. **Inform** manufacturers and suppliers on use cases and technological developments to fully benefit of the technological opportunities ahead
3. **Support** the digital transformation with information sessions, workshops, trainings and advisory services
4. **Connect** suppliers with users of technology
5. **Identify and Create I4.0 ecosystems**, with Flemish technology providers
6. **Support** industry initiatives with digital, technology and best practice expertise and experiences
7. **Fieldlab Predictive Maintenance and Industrial Data System**

Digital Factories and Industrial Industrial Internet require Smart and Secure Devices

Collecting Data and Providing Insights into Factory Operations and Security Incidents AI Driven Advanced Analytics

Machine Learning and Highly Skilled Cyber Security Experts drive Automated Mitigation and Response



Security as a business process

Agile and responsive security process

- Ongoing risk based evaluation of exposure
- Business context related remedial actions

Comprehensive and Continuous Assessment
Reduce risk by assessing vulnerabilities & threats

Proactive Detection
Detect threats that matter faster

Robust Defense
Protect crucial assets and defend known vulnerabilities

Agile Response
Proactively respond to breaches quickly & effectively

Smart & Secure Devices : Opportunities & Challenges

End to End A holistic security perspective focusing on the whole chain of events, product lifecycle, organization, components, systems and network, both business and operational view. Master edges, hardware identity and privacy controls.

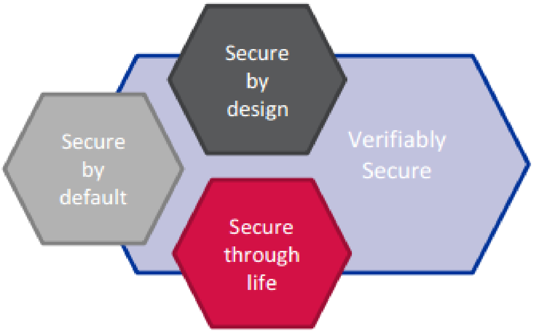
Chain of Trust including suppliers, partners, and defining a process involving people and checks and balances driving innovation and change.

Engage cyber security professionals with experience in OT or hire talent with the expertise

Isolation of processes, containers, using virtual and physical isolation

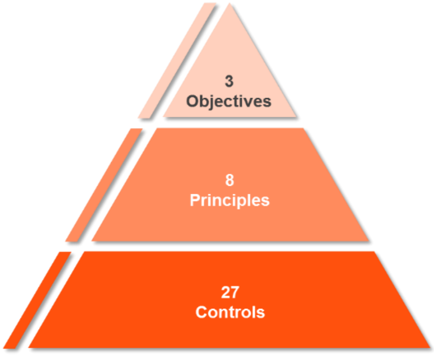
Source : LSEC, 3IF.be, IIC, GE Wurldtech, 2016

Structured Glossary – Cybersecurity - highlights



Supported by the European Commission through the Factories of the Future PPP (Grant Agreement Number 723777)

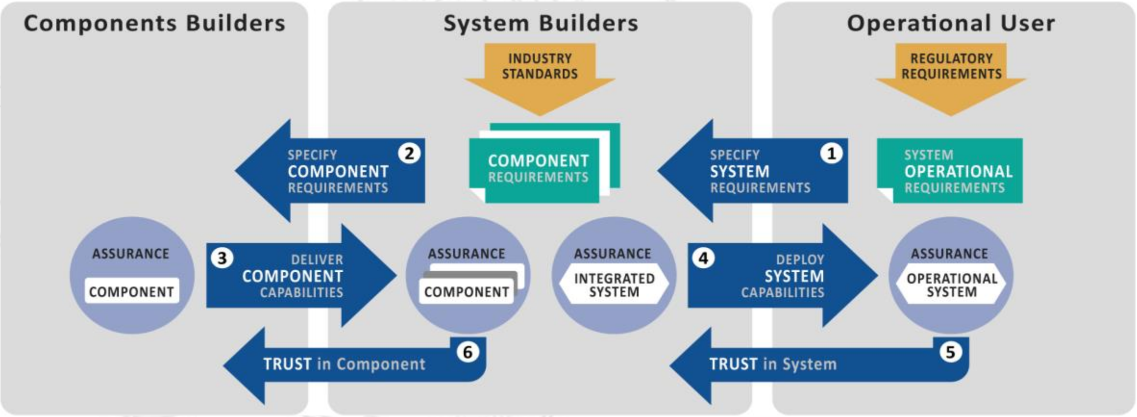
Structure Glossary – Cybersecurity - highlights



1) **secure your environment**
   a. Restrict Internet Access
   b. Segregate critical systems from general IT environment
   c. Reduce attack surface and vulnerabilities
   d. Physically secure the environment
2) **know and limit access**
   a. Prevent compromise of credentials
   b. Manage identities and segregate privileges
3) **detect and respond**
   a. Detect anomalous activity to system or transaction records
   b. Plan for incident response and information sharing

Supported by the European Commission through the Factories of the Future PPP (Grant Agreement Number 723777)

IIC Security Framework : security reference model


Components Builders
System Builders
Operational User
INDUSTRY STANDARDS
REGULATORY REQUIREMENTS
2 SPECIFY COMPONENT REQUIREMENTS
COMPONENT REQUIREMENTS
1 SPECIFY SYSTEM REQUIREMENTS
SYSTEM OPERATIONAL REQUIREMENTS
ASSURANCE COMPONENT
3 DELIVER COMPONENT CAPABILITIES
ASSURANCE COMPONENT
ASSURANCE INTEGRATED SYSTEM
4 DEPLOY SYSTEM CAPABILITIES
ASSURANCE OPERATIONAL SYSTEM
6 TRUST in Component
5 TRUST in System

Trust flows down from the owner/operator to all parts of the IIoT system, but trust must be enabled from the bottom up.

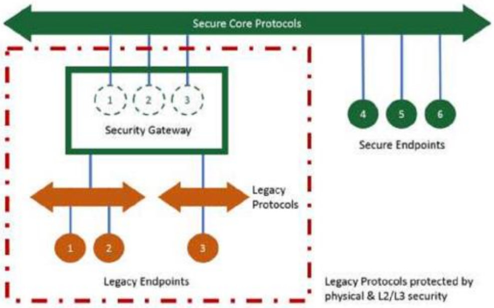
Source: IIC – Industrial Internet Consortium, 2016

Applying Security on the 3-tier architecture

Secure Implementations

End-to-end security: To achieve end-to-end security in an IIS, its implementation must provide:

- protected **device-to-device** communications,
- **confidentiality and privacy** of the data collected,
- **remote** security management and monitoring,
- simultaneously addressing **both existing technologies** as well as **new technologies**, and
- seamlessly spanning both information technology **(IT)** and operational technology **(OT)**
- **subsystems and processes** without interfering with operational business processes.

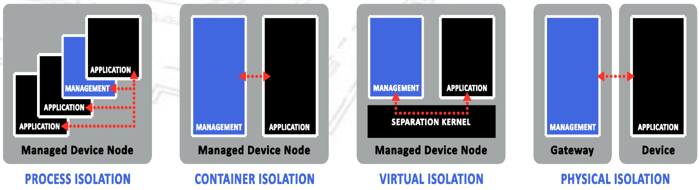


Source: IIC, 2016

IIC IIoT Security Reference Architecture Components

- Security Isolation Models
- Process Isolation
- Container Isolation
- Virtual Isolation
- Physical Isolation

- Future :
  - Decentralized Management
  - Edge Autonomy
  - Software Defined World
  - Hardware Identity (PUF)
  - Privacy Controls: Homomorphic Encryption
  - Quantum Computing
  - Fog Computing, Blockchain



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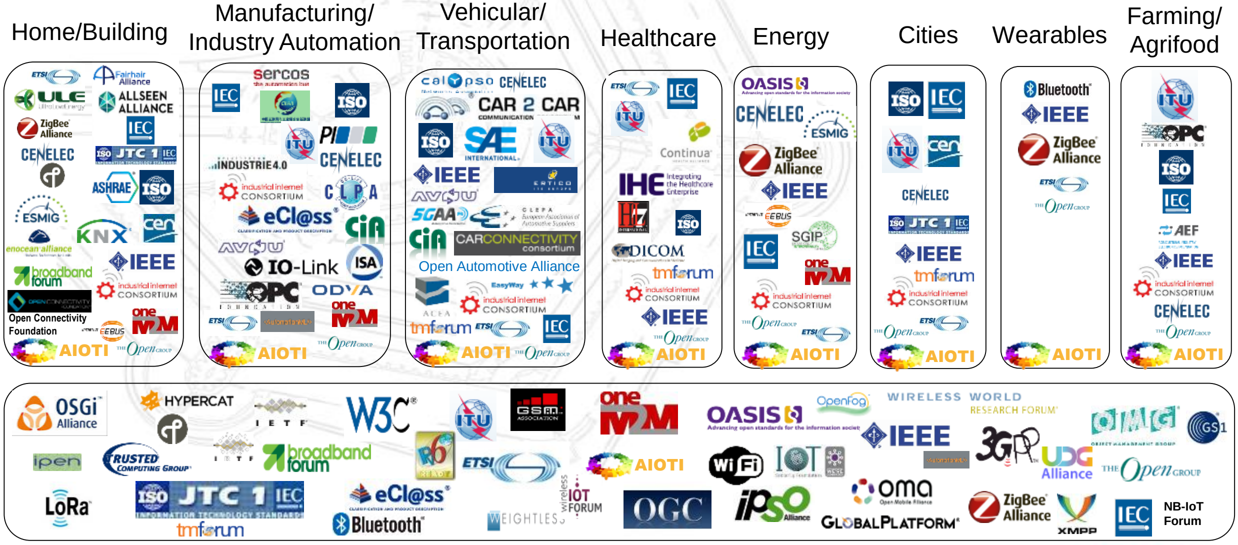
Source: IIC, 2016

Some things about Standards : there's a couple of them



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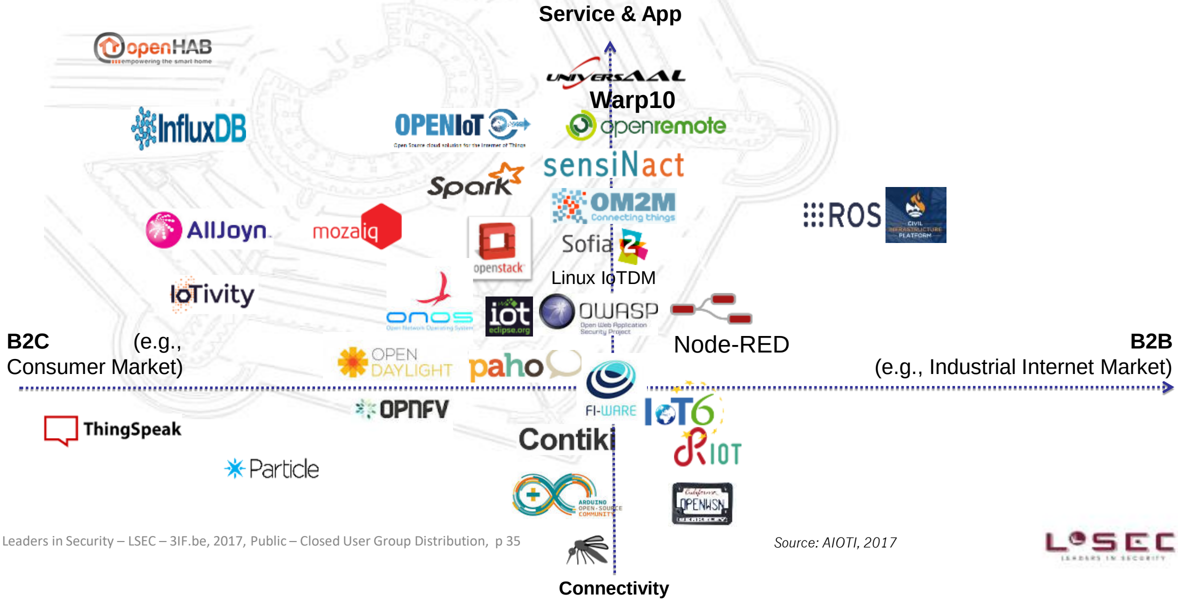
Source: AIOTI, 2017

Some things about Standards : ok open source then …



Source: AIOTI, 2017

Some things about Standards : Security (at least some)

Standard / Scheme	Body	Country / Industry	Link	Ref.
Certification de Sécurité de Premier Niveau (CSPN)	ANSSI	France Generic	https://www.ssi.gouv.fr/administration/produits-certifies/cspn/les-procedures-formulaires-et-methodologies	3.1.1
Commercial Product Assurance (CPA)	NCSC	UK Generic	https://www.ncsc.gov.uk/schem-product-assurance-cpa	
Common Criteria	Signatories of the CCRA Signatories of the SOG-IS	International Generic	https://www.commoncriteriapo www.sogis.org	
European Privacy Seal	EuroPriSe	Europe Generic products, websites	https://www.european-privacy-seal.eu/EPS-en/Home	3.1.4
National IT Evaluation Scheme (NITES)	CSA Singapore	Singapore General	https://www.csa.gov.sg/	3.1.5
Software Improvement Group (SIG) Software Quality Model for Security	Software Improvement Group	The Netherlands General	https://www.sig.eu/insight/practical-model-rating-software-security	3.1.6
UL Cybersecurity Assurance Program (UL 2900-1 / 2)	UL	USA Generic	http://www.ul.com/cybersecurity/	3.1.7
ULD Datenschutz-Gütesiegel	Unabhängiges Landeszentrum für Datenschutz Schleswig-Holstein	Germany (Schleswig-Holstein)	https://www.datenschutzzentrum.de/guetesiegel/ (German only)	3.1.8

Standard / Scheme	Body	Country	Link	Ref.
ISA/IEC 62433 (Security for Industrial Automation and Control Systems)	ISA/IEC	International	https://webstore.iec.ch/searchform&q=62443 http://www.isasecure.org/en-US/	3.2.1
IACS Cybersecurity Certification Framework (proposed)	JRC	Europe	https://erncip-project.jrc.ec.europa.eu/networks/tgs/european-iacs	3.2.2

Source: EC, September 2017

Regulation on its way – ePrivacy (Regulation) 01.17

Proposal for a

Stronger privacy rules for electronic communications

EC proposed a Regulation on Privacy and Electronic Communications to update current rules to technical developments - adapt them to GDPR that will enter into application in May 2018.

- "respect for private life and the protection of personal data in electronic communications"
- current ePrivacy rules only cover traditional telecoms providers - Privacy is guaranteed for content of communication as well as metadata
- control of any privacy-sensitive information stored on their devices
- Amending the exemptions to consent for processing traffic and location data

Source: EC, September 2017

Regulation on its way – Cybersecurity Act (COM(2017) 477) 09.17

Proposal for a

REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on ENISA, the "EU Cybersecurity Agency", and repealing Regulation (EU) 526/2013, and on Information and Communication Technology cybersecurity certification

- Cybersecurity certification of ICT products and services
- ICT products and services need to directly incorporate security features in the early stages of their technical design
- purpose to inform and reassure purchasers and users about the security properties
- Proposal for Cybersecurity Certification Framework (the "Framework")

Source: EC, September 2017

3IF.BE Trainings & Workshop : Drivers License I4.0 – also in Nederland

DIGITALISATION AND
INDUSTRY 4.0 DRIVER LICENSE®

Are you on target for industry 4.0?

Course
4
Exam
Course
3
Digital Factory
Course
1
Major concepts of the digitalized industry
Course
2
Advanced concepts of industry 4.0

Course 1 basics of the industrialisation, big data, IoT, horizontal and verticale integration, production 4.0, R&D 4.0, logistic 4.0, business-model-innovation 4.0

Course 2 maintenance procedures 4.0, quality management 4.0, staff and workplace 4.0, data mining, robotic 4.0, after sales services 4.0, autonomous systems

Course 3 assistance-systems, collaboration human-machine, cloud systems, system periphery / MES 4.0, additive production, engineering, options for implementation

Course 4 preparation and final examination for the industry 4.0 driver license

KEY QUESTIONS IN COURSE 1

- Why is it important to act early?
- How does digitalisation change the world?
- Which development paths are possible with industry 4.0?
- What new possiblities are created for the production environment, logistic and R&D?
- Why are new business models the actual challenge?

YOUR PROFIT

- systematic comprehension for the digitalisation
- concrete approaches for your company
- insights into already implemented industry 4.0 projects
- intensive interchange with other course participants and the trainer
- character of a interactive workshop

More information

Industrial Automation Security

www.lsec.eu – www.3if.be

Industrial Automation Security

9.11.17

Antwerp Engineering Company

- Industrial Automation Security & ICS vs ICT
- Securing Industrie 4.0 & Industrial IoT
- Orchestrating ICS & ICT
- Application Security & Access Management for Appliances & Embedded

3IF.BE Digital Transformation Guidance

ACME

Industrieel Internet Transformatieplan

Richtlijnen, procedures, handleidingen en codes van goede praktijk voor Digitalisering van de Smart Factory, Industrie 4.0, Industrial Internet en Industrial IoT

Inzichten in de transformatie naar nieuwe ontwikkelingen en digitalisering van de productie

Door het 3IF.be (Industrial Internet in Flanders) en LSEC – Leaders in Security,
Voor productiebedrijven, integratoren en ICT-oplossingen-leveranciers

www.3IF.be
www.lsec.eu

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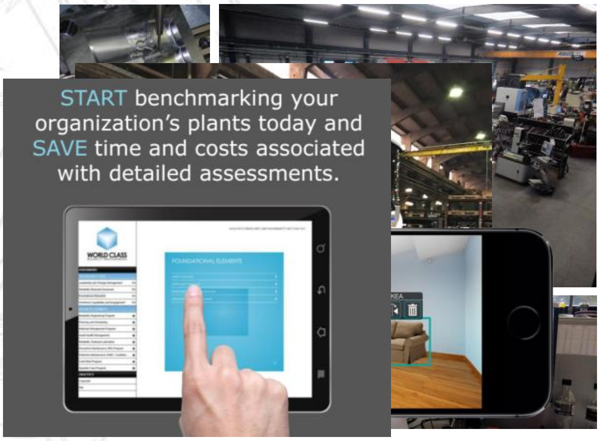


START benchmarking your organization's plants today and SAVE time and costs associated with detailed assessments.

Assessments for Manufacturing SME's in 2017-2018

More information

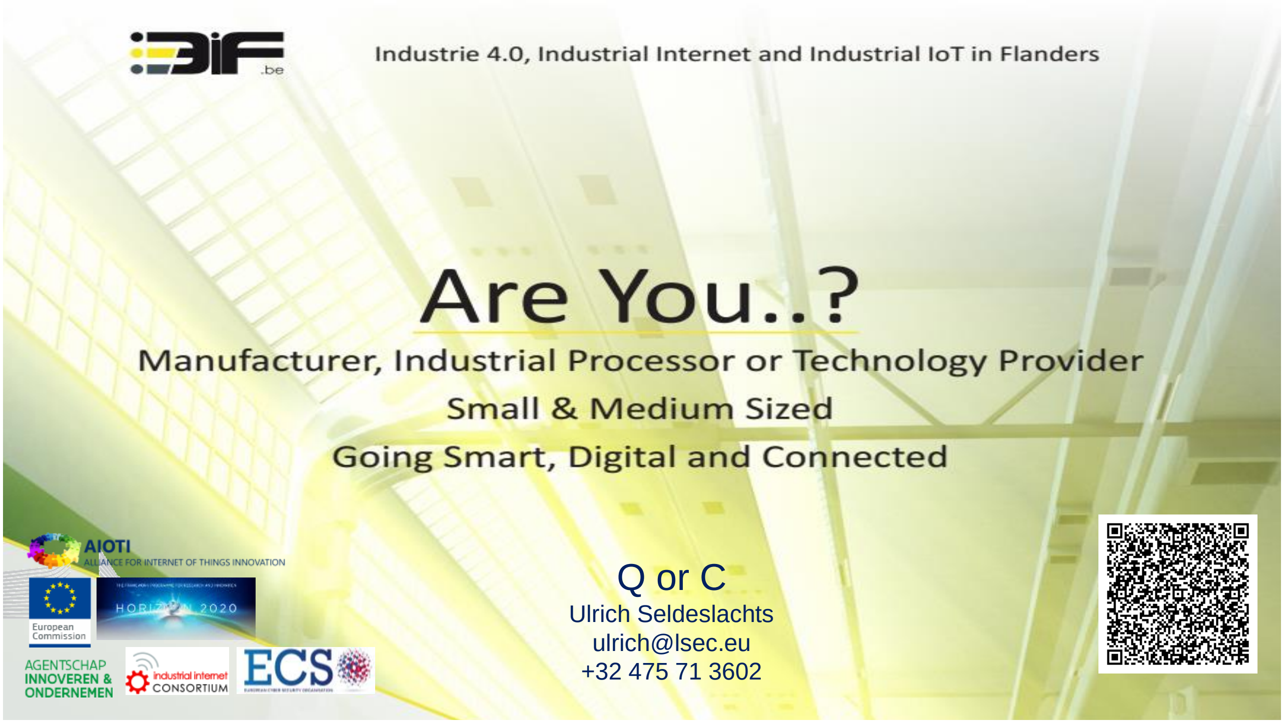
www.lsec.eu – www.3if.be

3IF.be

29.05.18

Industrie 4.0 – Industrial Internet in Flanders International Conference 2018

- Trends & Developments in Industrie 4.0 & IIoT
- From Use Case to Business Case to Industrial Roll Out and Operations
- Edges and Cloud, Mastering End to End Security
- Flanders Industrie 4.0 Field Lab experiences from the trenches.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AIOTI
ALLIANCE FOR INTERNET OF THINGS INNOVATION
European Commission
HORIZON 2020
AGENTSCHAP
INNOVEREN &
ONDERNEMEN
industrial internet
CONSORTIUM
ECS

Industrie 4.0, Industrial Internet and Industrial IoT in Flanders

Are You..?

Manufacturer, Industrial Processor or Technology Provider

Small & Medium Sized

Going Smart, Digital and Connected

Q or C

Ulrich Seldeslachts
ulrich@lsec.eu
+32 475 71 3602