





IoT Week Bilbao 2018

4-7 JUNE 2018, BILBAO (SPAIN) **EUSKALDUNA CONFERENCE CENTRE**

IOT in Manufacturing

Factories of the Future meets Industrial IoT

AITOR ALZAGA

Industry 4.0 Coordinator

BILBAO, JUNE THE 7TH 2018







EUROPEAN MANUFACTURING STRATEGY













Public Private Partnership

SRA presented at the **Manufuture Conference** (2006)

Factories of the Future PPP strategic multi-annual roadmap (2010-2013)

Multi annual roadmap for the contractual PPP under Horizon 2020 (2013)

Factories 4.0 and Beyond



PROJECT FIGURES



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Nr Proj	Total
FOF-2010		25 PR	OJECTS										25	25
FOF-2011			36 PR	OJECTS									36	61
FOF-2012				37 PR	OJECTS								37	98
FOF-2013					53 PRC	JECTS							53	151
FOF-2014						29 PRC	DJECTS						29	180
FOF-2015							28 PRO	DJECTS					28	208
FOF-2016								37 PR	OJECTS				37	245
FOF-2017										PROJEC	TS		23	268
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ICT CONTRIBUTION TO THE FACTORIES OF THE FUTURE THREE WAVES

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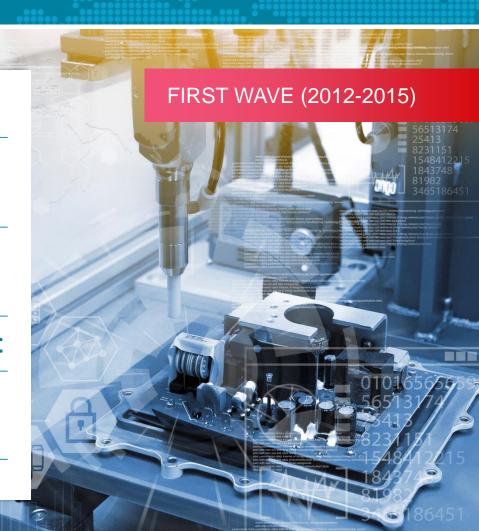
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FOF-2017									23 F	RUJEC			23	268

Predictive maintenance of production equipment

Innovative strategies for renovation and repair

Re-use of modular equipment

Intelligent production machines and 'plug-and-produce'





S COMPONENT SMART

















FIRST WAVE (2012-2015)

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EMBEDDED INTELIGENCE -CBM	M2M, CLOUD DATA STORAGE	COMMUNICATION, INTEROPERABILITY
CbM: • Machine tools • Press machines • Robots • Lift trucks	eMaintenance Remote Services	OSA-CbM OPC-UA Component's interfaces
Self-Description, Auto-Diagnostic: • Ctes • Machines • Lines		ISO/TC 108/SC5 «Condition monitoring and diagnostics of machines»

Monitoring, Control and Optimization

Digital Twins

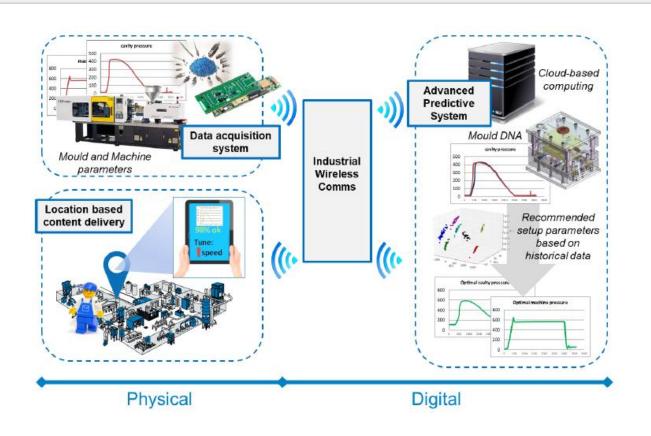
Cyber-Physical Systems

Industrial IoT



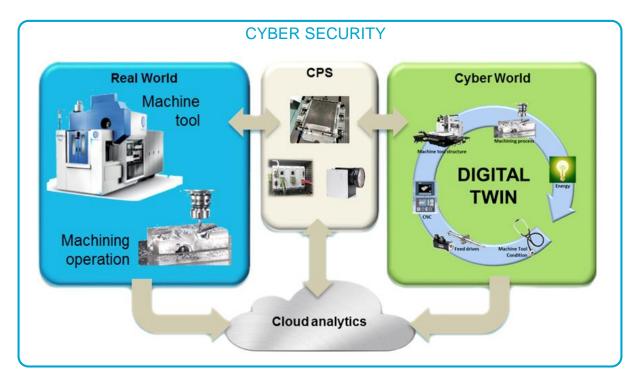


PREDICTIVE SYSTEM TO RECOMMEND INJECTION MOULD SETUP WITH PROCESS OPTIMISATION IN WIRELESS SENSOR NETWORKS





TWIN-MODEL BASED VIRTUAL MANUFACTURING FOR MACHINE TOOL PROCESS SIMULATION AND CONTROL



Machine Tool as a CPS



Digital Manufacturing Platforms

Operating system that integrates different technologies and various applications and services

Ecosystems

Standards

THIRD WAVE (2017-2020)

STANDARDS

PLATFORMS

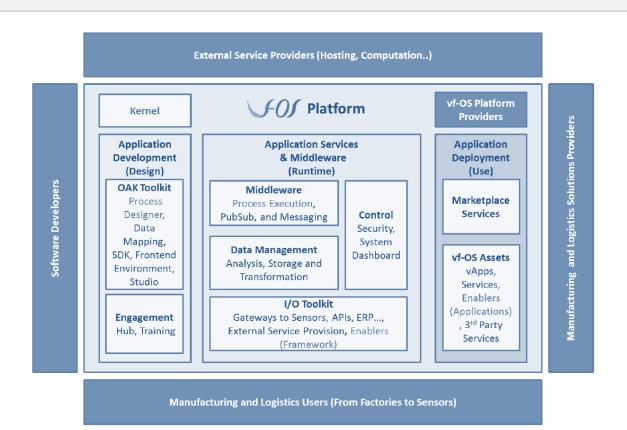
FEDERATION

ECOSYSTEMS

PILOTS



Vf-OS Virtual Factory Open Operating System



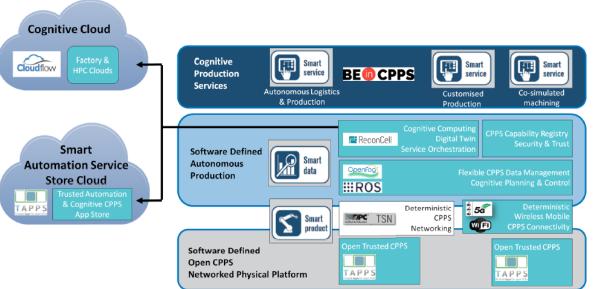


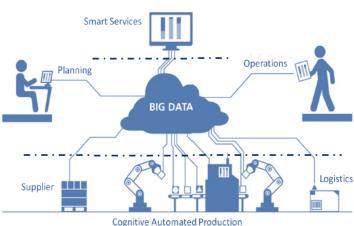
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Wireless autonomous, reliable and resilient production operation architecture for Cognitive Manufacturing

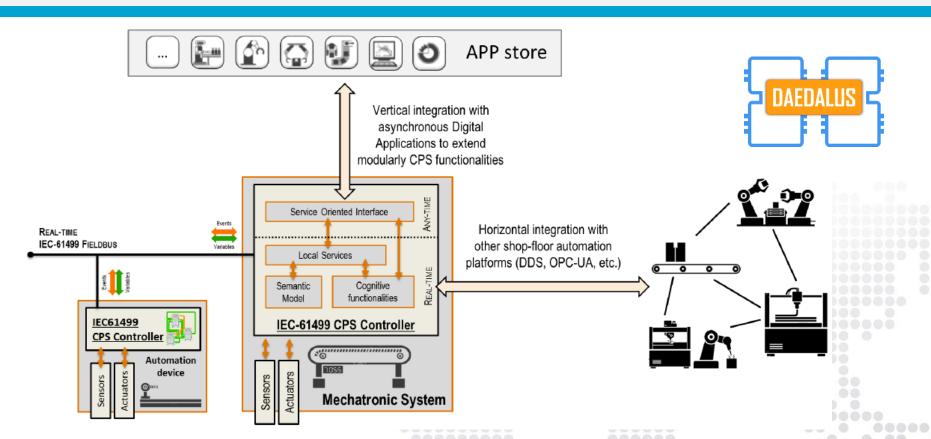








Distributed control and simulation platform to support an Ecosystem of digital automation developers





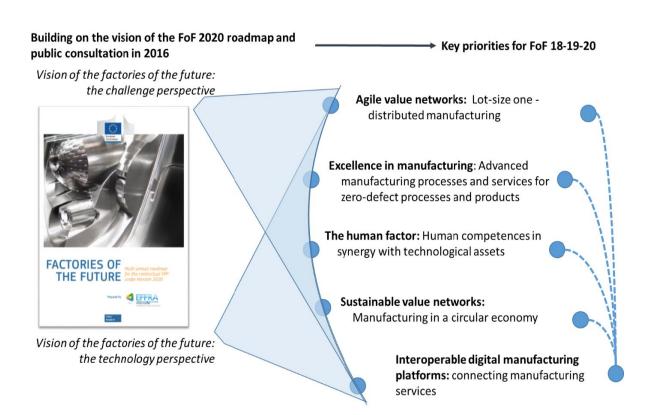
DIGITISING EUROPEAN INDUSTRY







FROM FoF 2020 ROADMAP TO FACTORIES 4.0 & BEYOND







THIRD WAVE + (2019-2022)

Interoperable Digital Manufacturing Platforms

- CPS: integration with physical legacy machines in factories
- Platform inter-connectivity

Agile value netoworks:

- Integration of CPS (from M2M/IoT) and ERP
- Industrial data space architectures and standards

Zero-defect manufacturing – Quality Assurance – Self learning systems

Plug-and-inspect data gathering systems, based on IoT solutions

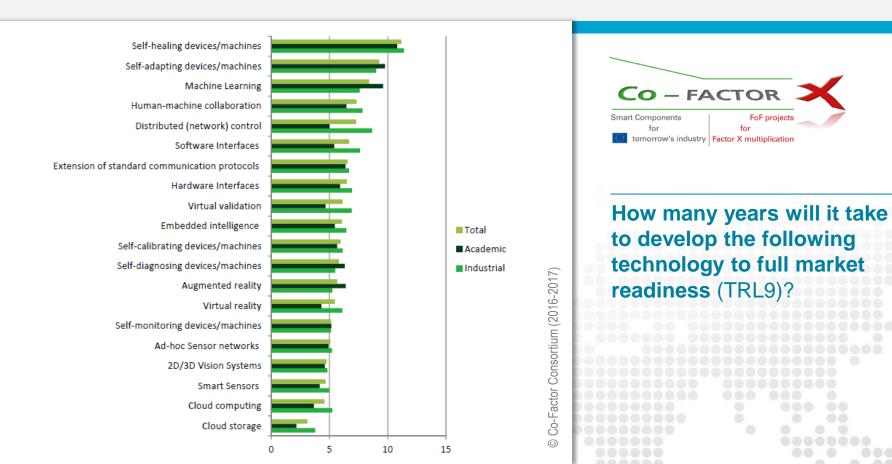
Sustainable Value Networks

ICT technologies and models for energy monitoring and assesment



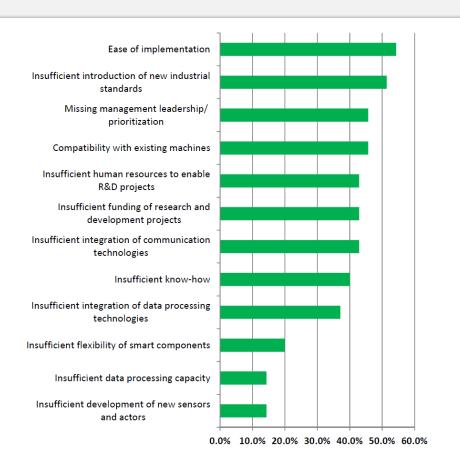


FINDINGS FROM DOMAIN EXPERTS OPINIONS





FINDINGS FROM DOMAIN EXPERTS OPINIONS





Main barriers for the development and introduction of smart components

Co-Factor Consortium (2016-2017)

CONCLUSIONS

IoT is one of the key enabling technologies for FoF

Growing gap between **exponentially changing technology** and **implementation** by organisations

Inmaturity of the **Manufacturing Platform concepts** and implementation

OT is conservative

"Digital part" is taking too much relevance (some opinion)

Open software vs propietary software





















PARKE TEKNOLOGIKOA C/ Iñaki Goenaga, 5 20600 EIBAR GIPUZKOA **SPAIN** www.tekniker.es





