



12 ottobre 2015

LIUC-Università Cattaneo

Le altre sperimentazioni del Progetto FITMAN

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European
Commission

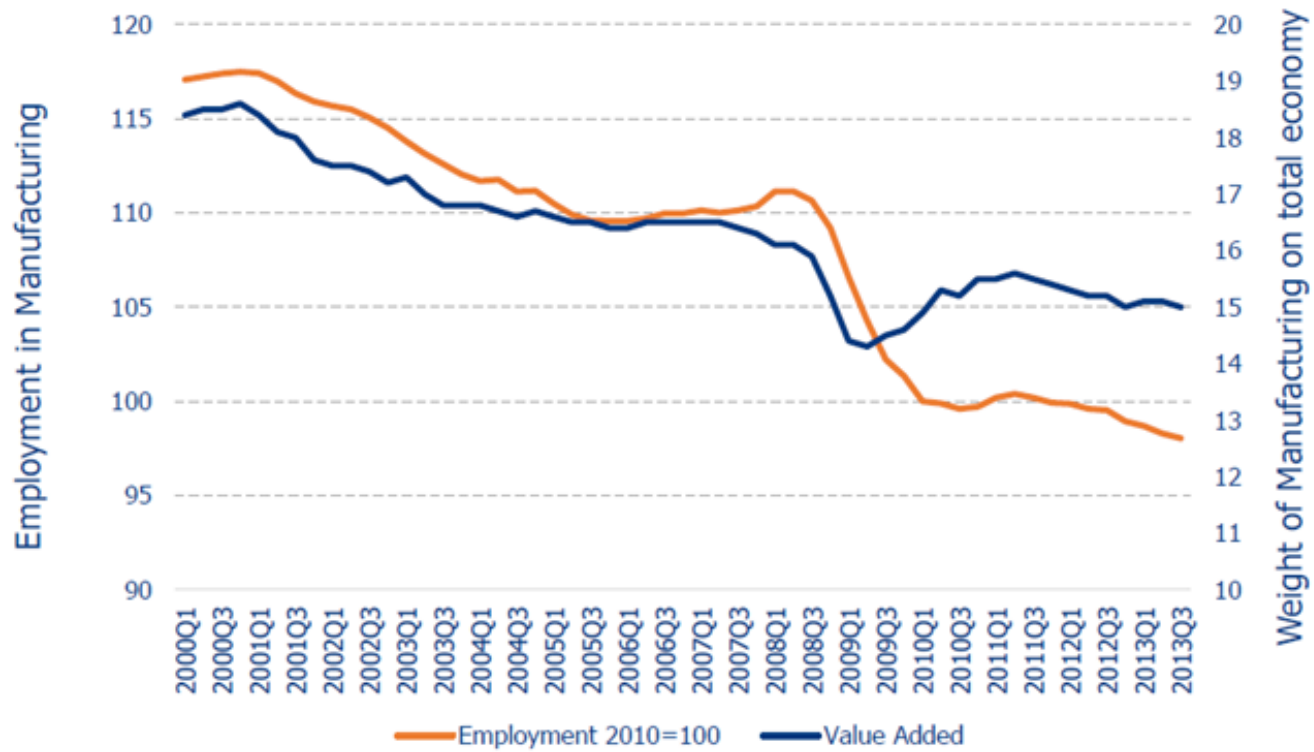




Growth and Jobs in Manufacturing

But European Manufacturing is also affected by a long-term structural decline ...

Value Added (% of total) and employment (2010=100) of Manufacturing in the EU-28, 2000Q1-2013Q3

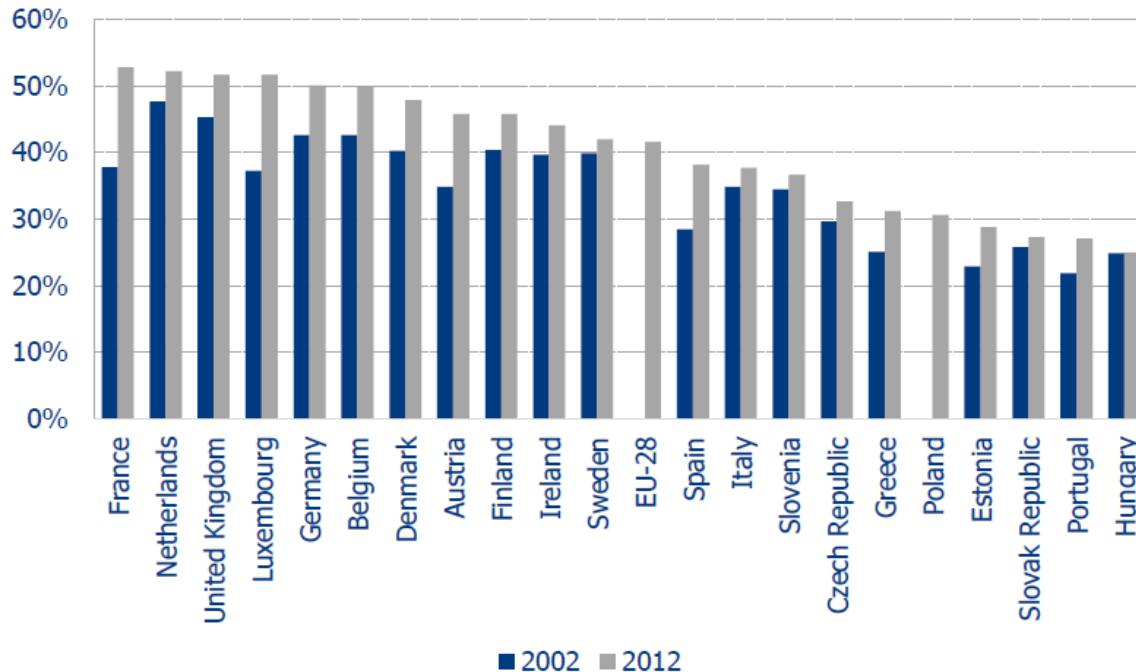


Source: The European House - Ambrosetti re-elaboration on Eurostat and AMECO data, 2014



... as the boundaries between Manufacturing and Services are blurring

Share of service-related jobs in the manufacturing sector, 2002-2012



- Producing goods is becoming a **smaller part of manufacturing firms'** activities
- Manufacturing now provides a **wide spectrum of services**: from pre- and after- sales services, to design, R&D and marketing services
- Ultimately, the boundaries between Manufacturing and Services are **blurring**

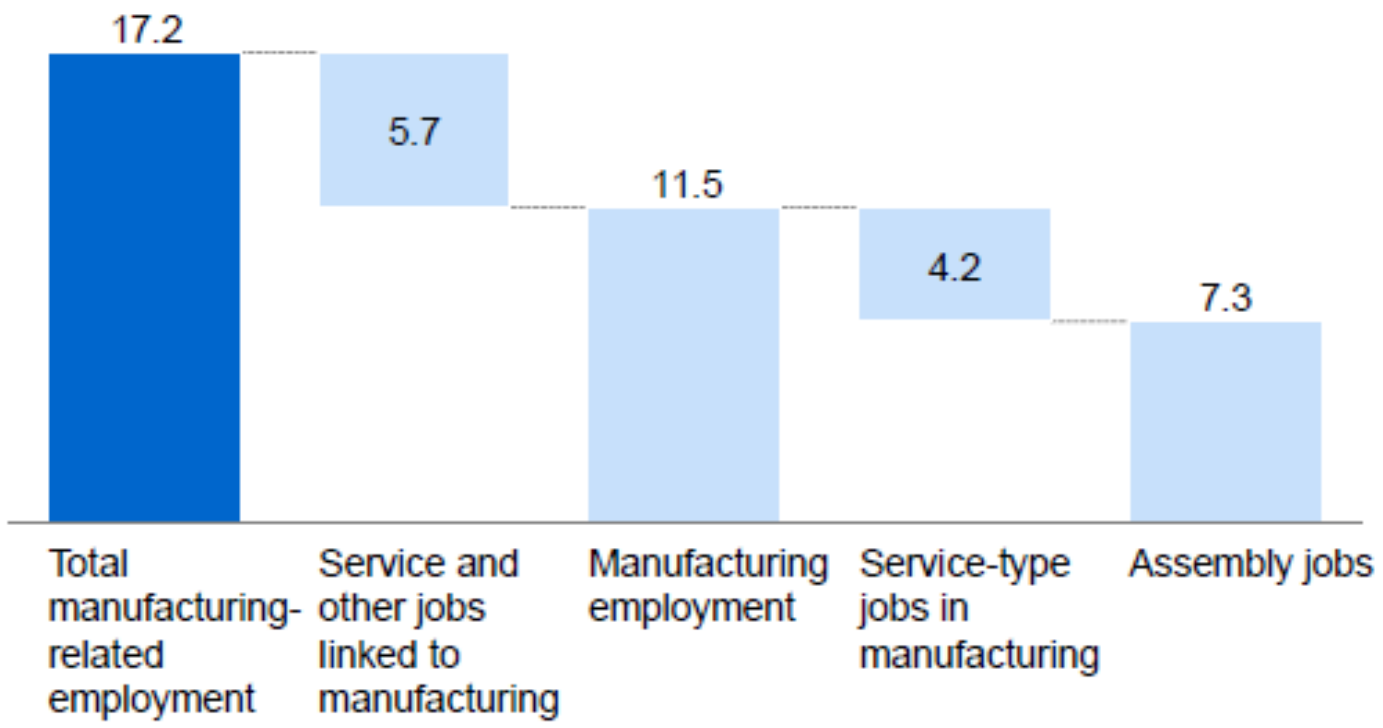
Source: The European House - Ambrosetti re-elaboration on OECD data, 2013


IOT driving Manufacturing Service Innovation US



Manufacturing drives production and service jobs

US manufacturing employment, 2010
Million



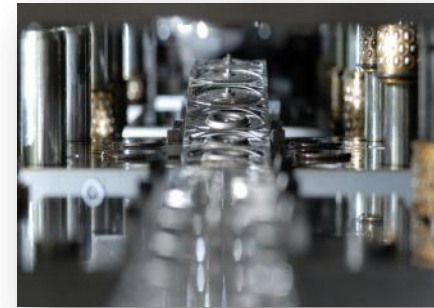
 @KatyMGeorge

McKinsey&Company

Factories of the Future Partnership



- Factories of the Future is Europe's advanced manufacturing partnership
- A public-private partnership funded by Horizon 2020 (budget of €1.15 billion 2014-2020). 1st Launched under EU's FP7
- Jointly supported through European Commission's DG CONNECT & DG Research and Innovation
- Research & innovation priorities identified by industry/research community
- Over 1,000 organisations participating, High involvement of SMEs: 200+
- 180 Projects to date. 400+ results reported on EFFRA Innovation Portal



<http://www.effra.eu/> --- <http://www.effra.eu/portal>

http://www.eurida-research.com/downloads/17.-cross-cutting_2016-2017_pre-publication.pdf page 19+

Factories of the Future 2020 Strategic Roadmap



Research & Innovation Priorities

Domain 1: Advanced Manufacturing Processes

Innovative processing for both new & current materials or products

Domain 2: Adaptive and Smart Manufacturing Systems

Innovative manufacturing equipment at component & system level, including mechatronics, control & monitoring systems

Domain 3: Digital, Virtual & Resource Efficient Factories

Factory design, data collection & management, operation & planning, from real-time to long term optimisation approaches

Domain 4: Collaborative & Mobile Enterprises

Networked factories & dynamic supply chains

Domain 5: Human-Centred Manufacturing

Enhancing the role of people in factories

Domain 6: Customer-Focused Manufacturing

Involving customers in manufacturing value chain, from product process design to manufacturing associated innovative services

Technologies & Enablers

- Advanced Manufacturing Processes
- Mechatronics for Advanced Manufacturing Systems
- Information & Communication Technologies
- Manufacturing Strategies
- Knowledge Workers
- Modelling, Simulation & Forecasting

Challenges & Opportunities

- Manufacturing Future Products
- Economic
- Social
- Environmental

Sustainability

Factories of the Future 2020

PSYMBIOSYS Project



PSYMBIOSYS 5 Tussles

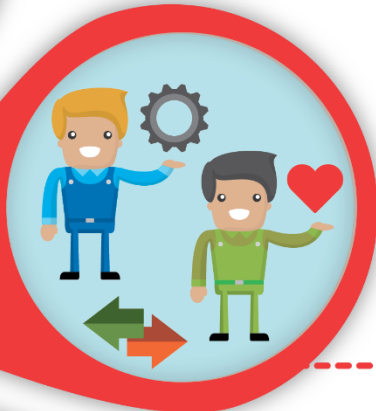
DESIGN -
MANUFACTURING



REAL - DIGITAL

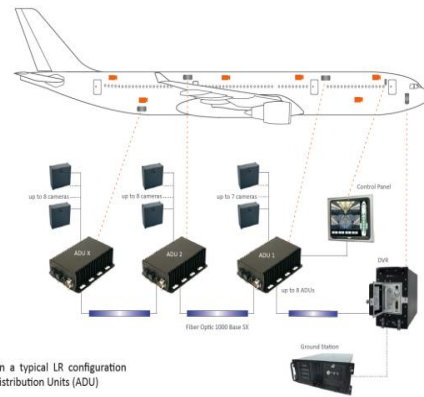


BUSINESS -
INNOVATION



KNOWLEDGE -
SENTIMENT

PRODUCT - SERVICE

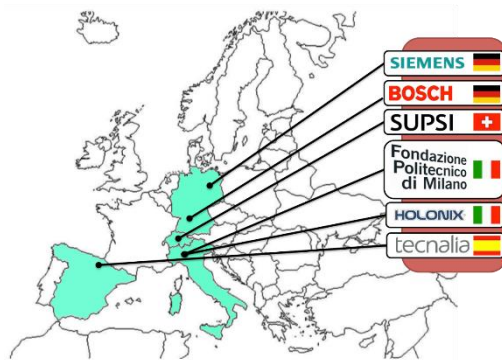


DVR shown in a typical LR configuration with 3 Area Distribution Units (ADU)



Project funded by European Commission to **define the roadmap for CPS4MFG** (CPS for Manufacturing) in Europe

- **17 Guru Interviews**
- **3 Knowledge Capture Events**
- **100+ Strategic Breakthroughs**
- **6 Application Domains' Clusters**
 - i. New data-driven services and business models
 - ii. Data-based improved products
 - iii. Closed-loop manufacturing
 - iv. Cyberized™ plant/ "Plug & Produce
 - v. Next step production efficiency
 - vi. Digital ergonomics
- **80+ CPS-related enabling technologies**
- **90+ obstacles and barriers identified**



TTTech



FESTO

IBM



Fraunhofer

UNIVERSITY OF
Cincinnati



ABB



DASSAULT
SYSTEMES

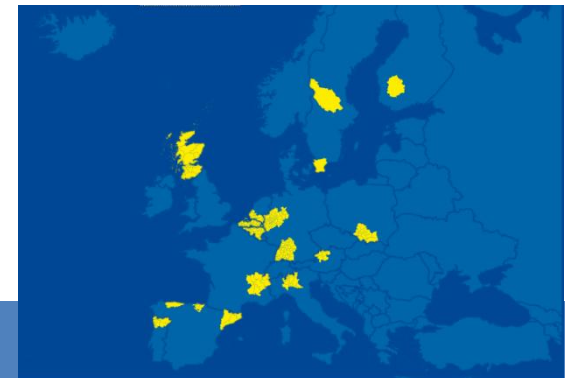


BEinCPPS: Business Experiments in Cyber Physical Production Systems



A Consortium of 23 partners performing CPPS experimentations in 5 regions (Lombardia, Euskadi, Baden Württemberg, Norte, Rhône Alpes) with Competence Centers, Industries, IT partners, SMEs Technology Transfer bodies)

- **Phase I:** 5 Big Industrial Champions involving their value chain SMEs
- **Phase II:** Open Call for additional platform / application providers (800k for IT SMEs)
- **Phase III:** pan-EU Open Call for replications of the champions in other sectors / domains / regions (1.2M for MANUFACTURING SMEs)



FITMAN Results



One FITMAN Generic Platform for Manufacturing Industries, as a collection of several Generic Enablers

Three FITMAN Specific Platforms as a collection of several Specific Enablers Implementations

Smart Factory Platform

Digital Factory Platform

Virtual Factory Platform

Ten FITMAN Trials Platforms as instantiation of the selected Generic and Specific Enablers for 10 industry-driven multi-sectorial Trials



One generic and flexible **Trials Verification and Validation Framework**, encompassing concepts, methods and tools for Manufacturing Trials

Ten FITMAN Trials in Six Countries



LARGE ENTERPRISES:





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