PSYMBIOSYS

IoT and the fourth Industrial Revolution

Geneve, June 8th 2017

Sergio Gusmeroli - Politecnico di Milano
<table>
<thead>
<tr>
<th><strong>Project No:</strong></th>
<th>636804</th>
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<tbody>
<tr>
<td><strong>Project Full Name:</strong></td>
<td>Product-Service sYMBIOtic SYStems</td>
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<tr>
<td><strong>Duration:</strong></td>
<td>36 months</td>
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<td><strong>Start date:</strong></td>
<td>February 1st, 2015</td>
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<td><strong>Partnership:</strong></td>
<td>13 partners, 6 countries</td>
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<td><strong>Strategic Objective:</strong></td>
<td>FoF-05-2014: Innovative Product-Service design using manufacturing intelligence</td>
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<tr>
<td><strong>Total Eligible Cost:</strong></td>
<td>5.996.304 EURO</td>
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<td><strong>EC Contribution:</strong></td>
<td>5.996.304 EURO</td>
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Project consortium

Brussels, June 2017
Product-Service Systems in WMF 2014

1-2 July 2014
Palazzo Mezzanotte, Milano
“The Way Forward to Prosperity through Global Manufacturing Collaboration”
The “SMILE” challenge: European businesses must focus on high value added activities.

- Value creation in Manufacturing is progressively shifting towards pre-production (R&D and Design) and post production (marketing and Pre-or-After sales service) activities.

Source: The European House - Ambrosetti re-elaboration on Bruegel data, 2014
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
Product-Service Systems: new jobs for Industry

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

- 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
| Barcelona, 3-4 May 2016 |

"From Global Challenges to Grand Manufacturing Opportunities: Leading towards Growth and Sustainability"
The Industrie 4.0 transition and PS Systems

Industry 4.0: Roland Berger perspective

The Industrie 4.0 transition
How it reshuffles the economic, social and industrial model

World Manufacturing Forum
Max Blanchet
Roland Berger
April 2016

Industrie 4.0 is changing the paradigm of manufacturing strategy

Characteristics of new Industrie 4.0

1. FROM MASS PRODUCTION TO MASS CUSTOMIZATION
   - Flexible production, short production lead time enabling new business models emergence and affordable customization

2. FROM VOLUME SCALE EFFECT TO LOCALIZED & FLEXIBLE UNITS
   - From large factories specialized per product in LCC to smart factories with high technological equipment enabling to produce at competitive cost everywhere

3. FROM PLANNED MAKE TO STOCK TO DYNAMIC MAKE TO ORDER
   - From an organized production, based on planning and forecast and supported by stocks, to dynamic production and yield management, on demand

4. FROM PRODUCT TO USAGE
   - Integrated conception, services being a key element of the business model/decision factor

5. FROM COST DRIVEN TO ROCE DRIVEN
   - Higher ROCE for lower Capital employed as complexity is transferred on numeric

6. FROM TAYLORISM TO FLEXIBLE WORK ORGANIZATION
   - Remote work (augmented reality, permanent connectivity), Tasks parallelism, flexible organization and management

7. FROM HARD WORKING CONDITIONS TO ATTRACTIVE WORK SPACE
   - Development of complex artisanal production, with clean, highly connected work space, white collars intensive
Industry 4.0: Expectations on EU Jobs

Employment destruction / creation in Europe following Industrie 4.0 implementation in 2035

Industrie job destruction and creation[millions, Western Europe]

- Historical productivity observed 2000-2015: 25.0
- Historical loss of competitiveness: -2.7
- Indusrie 4.0 ramp up: -2.9
- Relocation / Retention: +6%
- New Industrial Activities: 1.9
- New services: 6.7
- Re-investments of saved capital employed in new innovative services activities (start-up, scale ups): 19.7
- Total jobs in 2035: 26.4

Graph showing the expected changes in employment due to Industry 4.0 implementation.
The Smart Service Welt complements I4.0

SMART SERVICE WELT
Recommendations for the Strategic Initiative
Web-based Services for Businesses
FINAL REPORT

Brussels, June 2017
FIWARE for INDUSTRY in H2020 Factories of the Future

Evolution of FITMAN Specific Enablers in H2020 Program

www.fiwareforindustry.eu
AGENDA

17.30 - 17.45 The FIWARE for Industry Platform
(Sergio Gusmeroli, Politecnico di Milano – Engineering)

17.45 - 17.55 The IoT Solutions Space: Real-Digital World Data Interoperability: the PSYMBIOSYS Platform
(Uri Shani, IBM)

17.55 - 18.05 The IoT Solutions Space: Edge-computing IoT architecture, the FAR EDGE Project
(John Soldatos, AIT)

18.05 - 18.15 The Industrial Space: implementing Whirlpool Industry 4.0 Strategy
(Pierluigi Petrali, Whirlpool EMEA)

18.15 - 18.25 The Industrial Space: the BEinCPPS Experiment in Smart Moulds
(Juan Cadavid, CEA LIST)

18.25 - 19:00 Discussion:
- Digital Manufacturing Platforms: is the EU value proposition competitive?
- Industry 4.0 in Europe: how to involve Manufacturing SMEs in the fourth Industrial Revolution?
PSYMBIOSYS

IoT and the fourth Industrial Revolution

THANK YOU!!!!

Sergio Gusmeroli - Politecnico di Milano