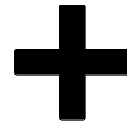# IoT in Factories of the Future cPPP:
2014-2016 Achievements and
2017-2020 Perspective

Carl Gisleskog
Digital Technology Advisor

EFFRA
EUROPEAN FACTORIES OF THE FUTURE
RESEARCH ASSOCIATION

- Official and Contractual Representative of the Private side in the "Factories of the Future" European Public-Private Partnership – cPPP

- Representative of the Manufacturing Industry Research Community and PPP Partner together with the European Commission in the Factories of the Future – FoF

EFFRA

EUROPEAN FACTORIES OF THE FUTURE RESEARCH ASSOCIATION

- Launched 2008/09

- Non-for-profit and industry-driven association

- Promoting the development of new and innovative production technologies
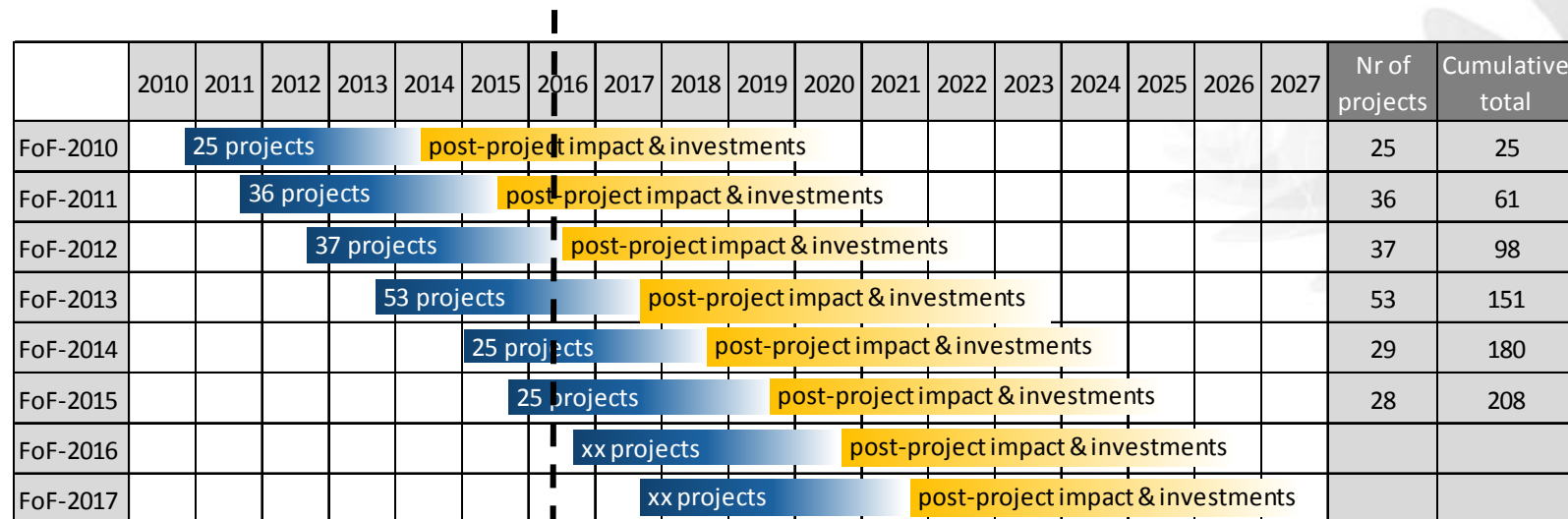
The Factories of the Future PPP
Critical Mass

|	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Nr of projects	Cumulative total
FoF-2010	25 projects				post-project impact & investments														25	25
FoF-2011		36 projects				post-project impact & investments													36	61
FoF-2012			37 projects				post-project impact & investments												37	98
FoF-2013				53 projects				post-project impact & investments											53	151
FoF-2014					25 projects				post-project impact & investments										29	180
FoF-2015						25 projects				post-project impact & investments									28	208
FoF-2016							xx projects				post-project impact & investments									
FoF-2017								xx projects				post-project impact & investments								

- **208** Projects to date.
- **~ 1,500** organisations participating
- High involvement of SMEs: **200+**
- Majority of projects feature **demo activities**

- **600+** results have been reported on EFFRA Innovation Portal
- Close to the market **exploitation** of project results
- Project results enhancing **existing products** and **production equipment**

Structural Changes
Digitisation

Digitalisation or Digitisation will affect manufacturing in a similar way as it is already happening to communication and consumers markets
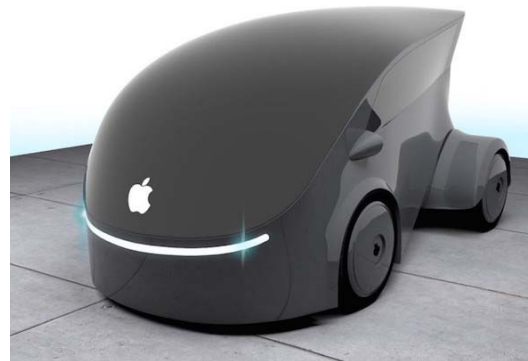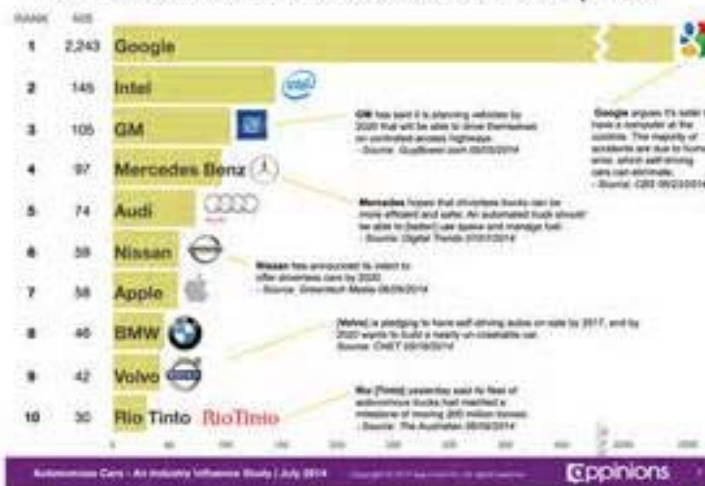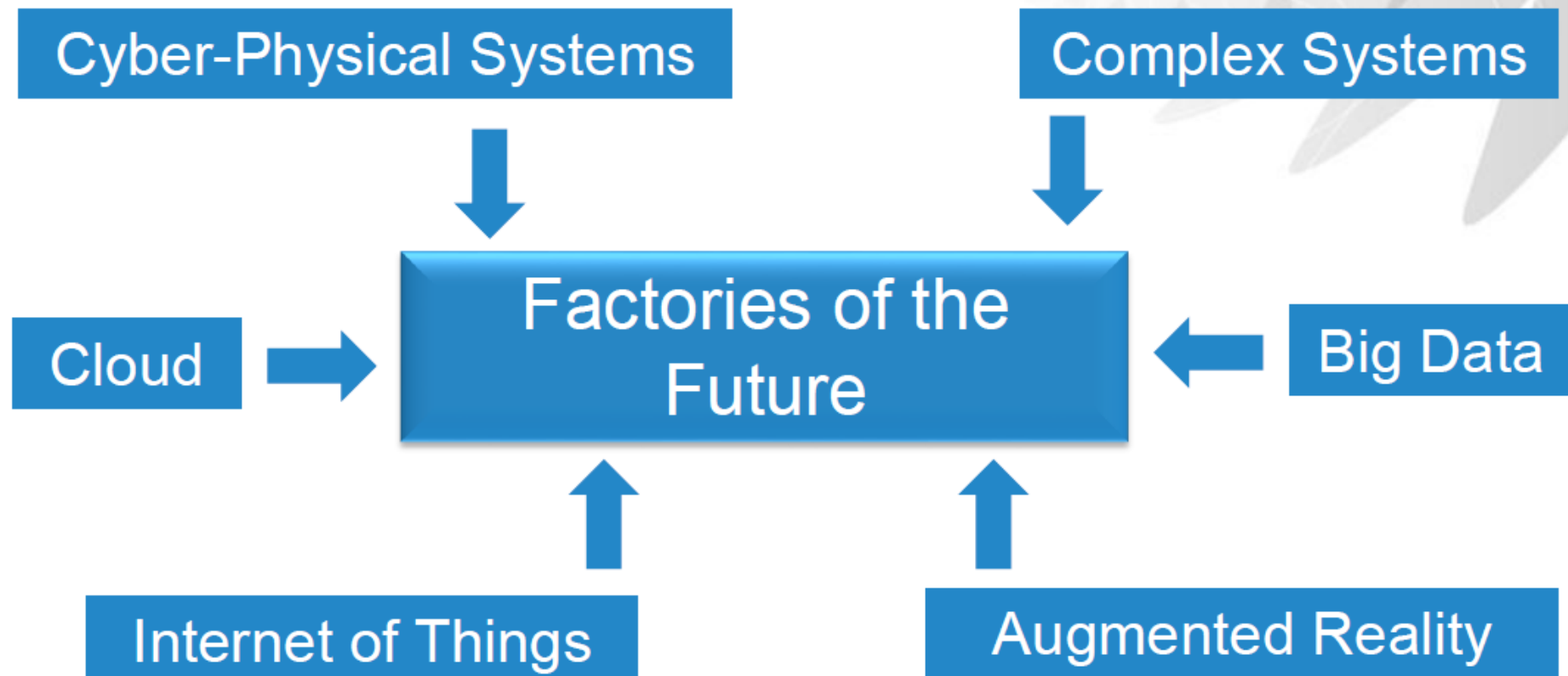
Digital Issues
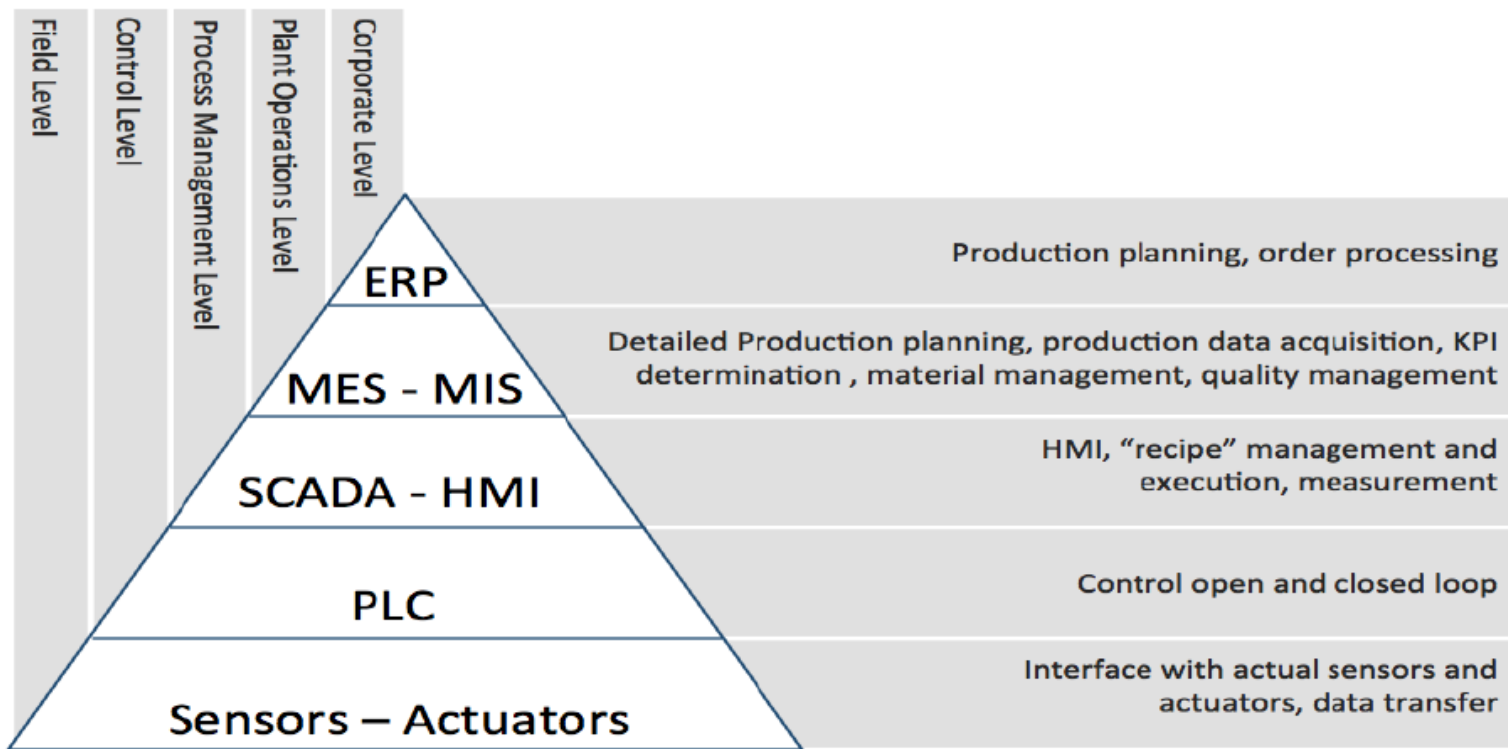
- Selection of digital issues impacting on & being addressed in 'Factories of the Future'

Change in Industrial Automation

- Current approach to industrial automation

Field Level	Control Level	Process Management Level	Plant Operations Level	Corporate Level

ERP — Production planning, order processing

MES – MIS — Detailed Production planning, production data acquisition, KPI determination, material management, quality management

SCADA – HMI — HMI, "recipe" management and execution, measurement

PLC — Control open and closed loop

Sensors – Actuators — Interface with actual sensors and actuators, data transfer

- Viewed as no longer adequate to cope with current manufacturing trends

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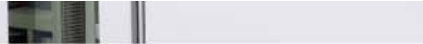*a MANUFUTURE initiative*

Factories of the Future

Change in Industrial Automation

- Architecture and platforms - BEinCPPS project
- New approach: No longer hierarchical situation but level due to increased technological capabilities
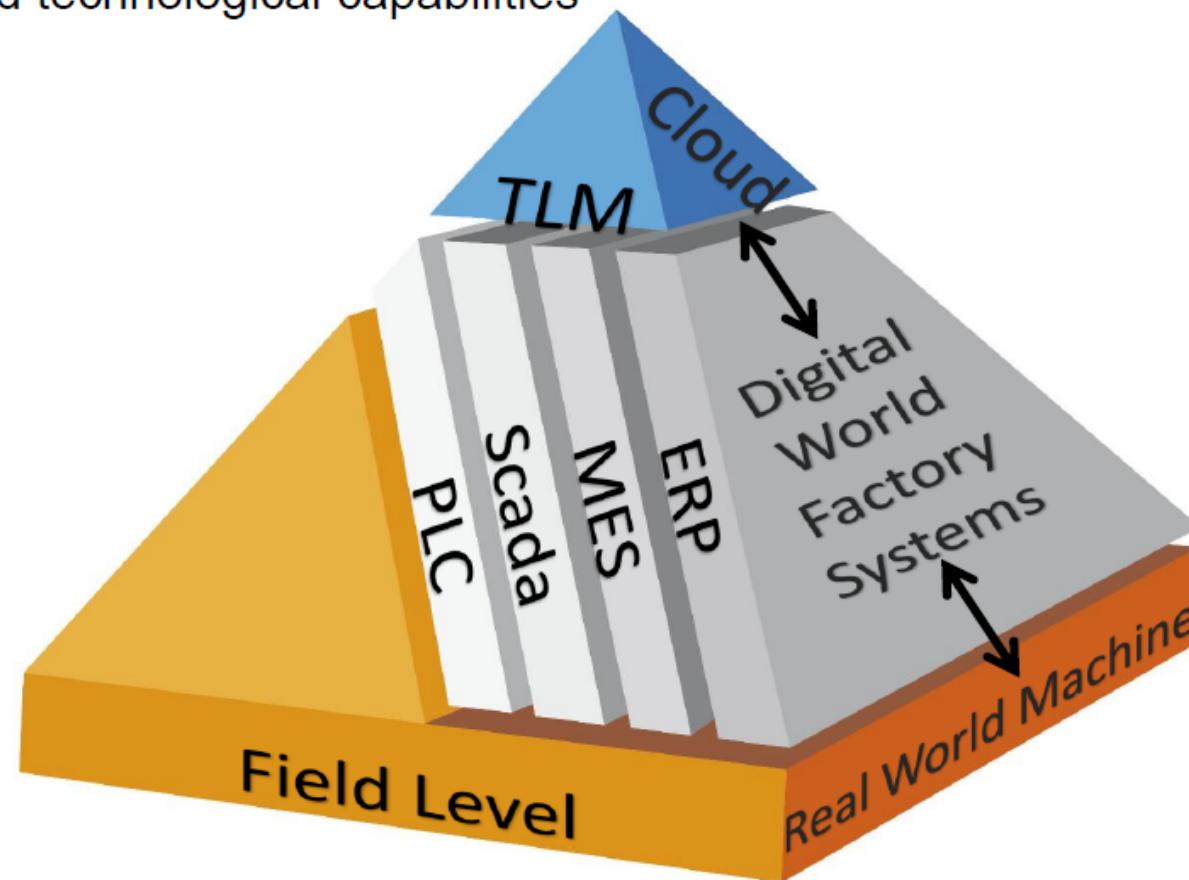
Factories of the Future
Project: CREMA

HOME   PROJECT   NEWS   PARTNERS   CONTACT   WIKI
DELIVERABLES   PUBLICATIONS

H2020 CREMA project

Providing Cloud-based Rapid Elastic MAnufacturing based on the XaaS and Cloud model

Providing Cloud-based Rapid Elastic MAnufacturing based on the XaaS and Cloud model

CREMA aims at simplifying the establishment, management, adaptation, and monitoring of dynamic, cross-organisational manufacturing processes following Cloud manufacturing principles. CREMA will develop the means to model, configure, execute, and monitor manufacturing processes, providing end-to-end support for Cloud manufacturing by implementing real systems and testing and demonstrating them in real manufacturing environments.

Cloud Platform

Collaboration Tools

Data Collection Framework

Network Optimizer

Factories of the Future
Project: MANUTELLIGENCE
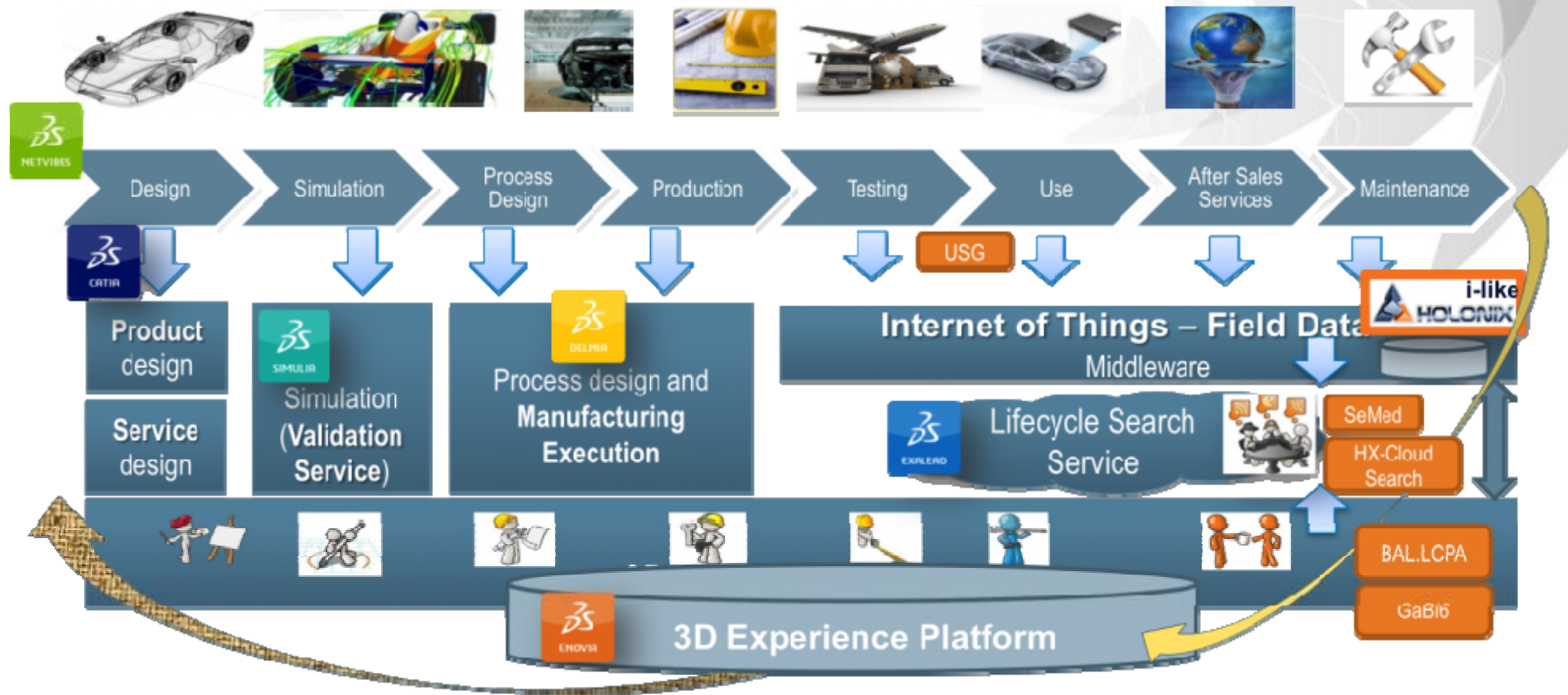
Factories of the Future PPP
Roadmap 2018-19-20

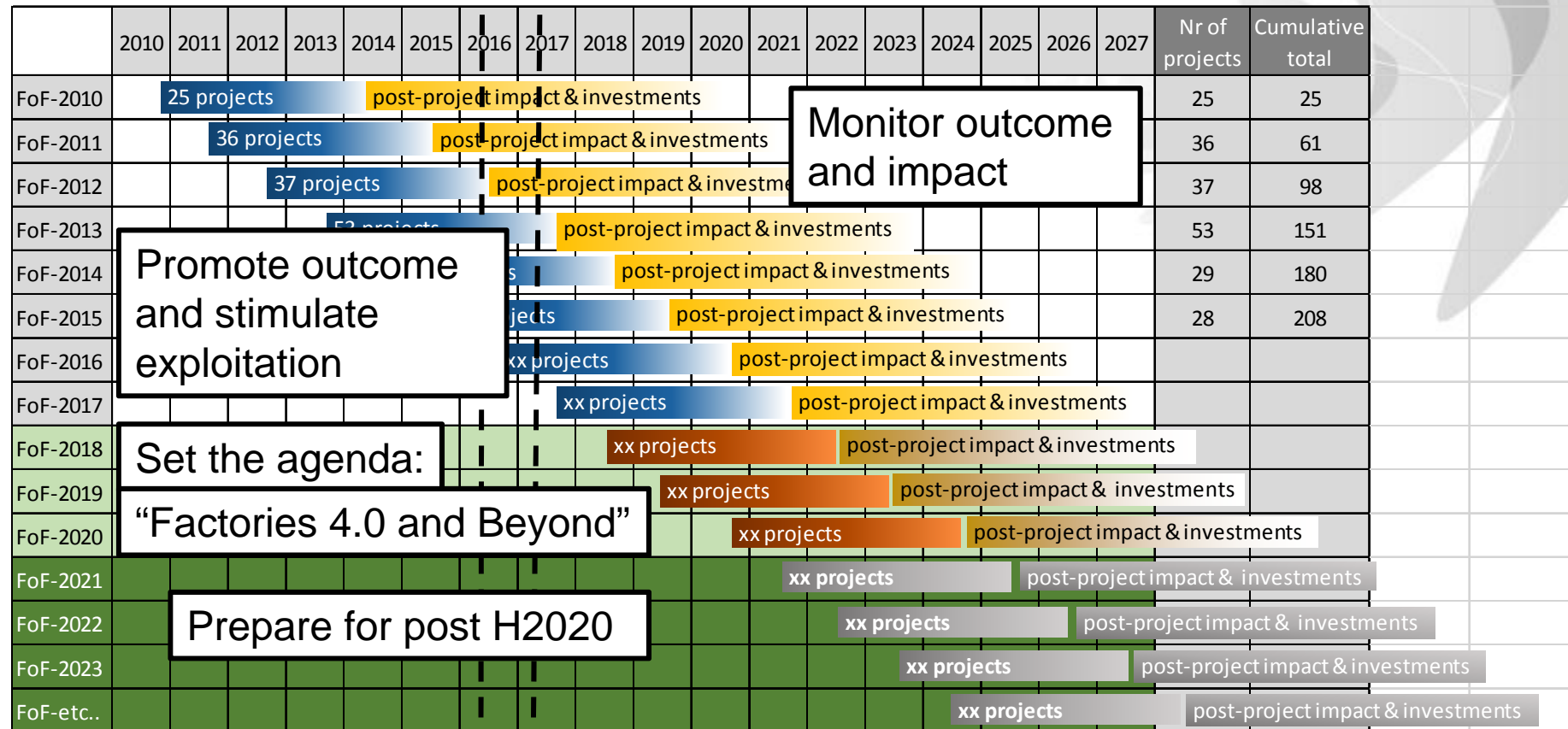|	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Nr of projects	Cumulative total
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FoF-2020												xx projects			post-project impact & investments					
FoF-2021													xx projects			post-project impact & investments				
FoF-2022														xx projects			post-project impact & investments			
FoF-2023															xx projects			post-project impact & investments		
FoF-etc..																xx projects			post-project impact & investments	

Monitor outcome and impact

Promote outcome and stimulate exploitation

Set the agenda:

"Factories 4.0 and Beyond"

Prepare for post H2020

Today

Mid-term review FoF PPP

Roadmap Timeline

- April 7 2016 – Opening of public consultation on FoF 2018-19-20

- April 2016 – Consultation workshop in co-operation with the sCorPiuS Project

- May 4 2016 – Closing of public consultation on FoF 2018-19-20

- Until end of June – finalise 'Factories 4.0 and beyond' document

- Publish and deliver to EC

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RESEARCH ASSOCIATION

Consultation Document

EFFRA is preparing for its strategic discussion with the European Commission about the 'Factories of the Future' work programme 2018-19-20, covering the three last calls under Horizon 2020. In order to prepare for this discussion EFFRA has launched a public consultation.

We invite the broad manufacturing industrial and research & innovation community to participate in this consultation. Feedback should be provided through the response form that can be accessed once you are logged into the EFFRA Innovation Portal (www.effra.eu/portal). See also www.effra.eu.

Please provide us with your feedback by Wednesday, 4 May 2016 after which it will not be possible to provide a response.

EFFRA will use your input to compile a roadmap document complementing the current 'Factories of the Future 2020' roadmap, entitled 'Factories 4.0 and beyond' that will be delivered to the European Commission as a contribution to the preparation of the FoF PPP work programme 18-19-20.

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RESEARCH ASSOCIATION
a MANUFUTURE initiative

Headlines	Sum of 'Importance'	Close to market
HL01 - Manufacturing for complex and/or multi-material components - rate importance	4460	80
HL02 - Advances in Additive manufacturing - rate importance	4290	77
HL03 - High precision manufacturing - rate importance	3620	74
HL04 - Material and resource efficiency in manufacturing - rate importance	3970	76
HL05 - Energy efficiency on machine level - rate importance	3090	64
HL06 - Energy efficiency on factory level - rate importance	2960	69
HL07 - Zero-defect manufacturing – quality assurance – self-learning systems - rate importance	4620	84
HL08 - Re-use of factories - rate importance	1780	51
HL09 - Safe and ergonomic work environments - rate importance	3360	69
HL10 - Supporting the human in the workplace – Manufacturing training/re-skilling - rate importance	3320	68
HL11 - Human machine/robot cooperation for flexible and evolving factories	3410	71
HL12 - Reconfigurable cells, self-reconfigurable cells through smart sensors/devices	3480	74
HL13 - Distributed Intelligence Architecture and Systems on the Factory Floor	2500	64
HL14 - Novel production management tools for a responsive CPS-based production	2760	69
HL15 - On-site manufacturing technologies	2680	67
HL16 - Digital Factory Modelling and Simulation	3430	75
HL17 - Multiple Source (Big) Data Mining and Real Time Analysis	3360	75
HL18 - Cyber-Physical Factories	2400	63
HL19 - Digitisation of the Supply Chain – Manage complex customer-driven value networks	2490	64
HL20 - Collaborative, dynamic and resilient customer-driven production networks	2020	61
HL21 - New Approaches for the Cyberised Supply Chain	1940	59
HL22 - Manufacturing as a Service (MaaS) – Servitisation of autonomous and reconfigurable production	2250	62,5
HL23 - Collaborative Engineering	2190	63
HL24 - User Centric Product and Production Equipment Engineering	1810	57
HL25 - Standards, Platforms, Protocols and Interoperability	2520	72
HL26 - Security, Privacy and Liability – Cybersecurity and Industrial Safety	2490	71
HL27 - Lifecycle Management/PLM	1940	61
HL28 - European Circular Economy Open Platform	1890	56
HL29 - Business Models for the Digital Service Factory	1690	56
HL30 - New methodologies for financial & risk assessments of innovative production technologies	1410	54
Grand Total	84130	

Factories of the Future & EFFRA
Connecting National & Regional Programmes

Factories of the Future PPP: On-line Resource
EFFRA Innovation Portal

One reference resource…

- for **progress monitoring**
- for **online brokerage**
- for **sharing information among projects**
- for promoting projects, results and demonstrators to the **wider community**
- for **portfolio management** and analysing coverage of FoF 2020 roadmap
- for **supporting roadmapping exercises**
- detailed **search function**

www.effra.eu/portal

Thank You for Your Attention

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EuropeanFactories

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