Today`s agenda:

- The political context of the overall Horizon Europe negotiations
- Partnerships and specifically the “Made in Europe” Partnership
  - Timings, the negotiation process etc
- The storyline and exact content of the Made in Europe Partnership
  - political constraints
  - content = future call topics
- Exchange of views with the European Commission and with guests
- Discussions and exchanges of views
- Networking
- Indirectly: consortium building
Who We Are: a community.
Many roles:

- Source of information for members
- Networking between members
- Partner of the European Commission for the implementation of the PPP
- Source of information for the Commission and Member States
- Comparing national and regional initiatives
- Platform to meet and cooperate – opportunities beyond the PPP
Implementing the Partnership

European Commission & Member States

EFFRA
European Factories of the Future

Factories of the Future
Public Private Partnership

www.effra.eu
Our homework for the next 12 months:

Building on our success in FP7 and in Horizon 2020

There are more than 20-30 initiatives

Factories of the Future is one of the biggest initiatives

• with more than 1 billion Euros funding

• covering interesting topics and challenges
FACTORIES of the Future

Manufacturing plays a central role in Europe's economy

The EU invests in research and innovation for a sustainable, efficient and competitive manufacturing sector. Budget: €1.15 billion

- EU manufacturing €7 trillion in turnover
- 30 million direct jobs
- 60 million indirect jobs mainly in small or medium-sized enterprises (SMEs)
- 80% of total EU exports

Investing in Research & Innovation
"This team will shape the European Way: we will take bold action against climate change, build our partnership with the United States, define our relations with a more self-assertive China and be a reliable neighbour, for example to Africa."

"At the core of it will be an industrial strategy that enables our businesses – big and small – to innovate and to develop new technologies while creating new markets. We will be global standard setters. This is our competitive advantage"
The NEW European Commission:

Frans Timmermanns
Vice - President 2019-2024: European Green Deal

- EU’s carbon-cut target: Increase the EU’s target for 2030 towards 55% in a responsible way.
- Coordinate the work on the circular economy.
- EU tax policies enable to deliver on the European climate ambitions. This will include the work on the Carbon Border Tax too.
Towards circularity & zero-environmental impact of manufacturing
The NEW European Commission:

Mariya Gabriel
Commissioner for Innovation, Research, Culture, Education and Youth

- Ensure swift agreement on and full implementation of the future Horizon Europe programme, working with Member States, the research community, civil society and other Commissioners.
- Ensure sufficient investment flows to disruptive research and breakthrough innovations.
The NEW European Commission:

Thierry Breton
Commissioner for the Internal Market

- Develop a European industrial policy
- Contribute to the work on enhancing Europe’s technological sovereignty.
- Lead the work on a coordinated European approach on artificial intelligence; build a real single market for cybersecurity.
- Lead the Commission’s reflections on issues such as Europe’s technological sovereignty in key value chains.
Horizon Europe budget proposal: €100 billion* (2021-2027):

- **€25.8 billion** in current prices
  - **€13.5 billion** for Excellent Science
  - **€2.4 billion** for Global Challenges & European Ind. Comp.
  - **€2.1 billion** for Innovative Europe
  - **€52.7 billion** for Widening Part. & ERA
  - **€2.4 billion** for Euratom

* This envelope includes EUR 3.5 billion allocated under the InvestEU Fund.
Pillar 1
Excellent Science

- European Research Council
- Marie Skłodowska-Curie Actions
- Research Infrastructures

Pillar 2
Global Challenges and European Industrial Competitiveness

- Health
- Culture, Creativity and Inclusive Society
- Civil Security for Society
- Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

- Joint Research Centre

Pillar 3
Innovative Europe

- European Innovation Council
- European innovation ecosystems
- European Institute of Innovation and Technology

Made in Europe Partnership

Widening Participation and Strengthening the European Research Area

- Widening participation and spreading excellence
- Reforming and Enhancing the European R&I system

www.effra.eu
The overall political process

Other hot issues

The role of DG Grow
  Industrial policy
  Industrial value chains debate

DG Regio

The role of member states

Horizon Europe:
  Very high expectations in terms of impact
  The widening debate
  Wish to involve newcomers
Partnerships in the Digital & Industry cluster

- Made in Europe
- Key Digital Technologies (JTI)
- Photonics
- Artificial Intelligence, data and robotics
- 5G / Smart networks and Services (in future apparently a JTI)
- HPC (JTI)
- SPIRE
- Clean Steel
- Metrology (P2P)
Partnerships in the other cluster

- Electric Vehicle/Towards zero-emission road transport
- Clean aviation
- Shift to rail
- Clean hydrogen
- Built environment & construction
- Automated Road Transport (JTI)
- Batteries

- Clean Energy
- Bio based economy (JTI)
- Eurostars 2
- Maritime*(planned)*

- EIT Manufacturing
- EIT Digital
- EIT Raw Materials
FoF calls managed by DG CONNECT

Inside the FoF PPP
- I4MS
- Platforms for Connected Factories
- Other Calls: Artificial Intelligence, Cybersecurity, Photonics

Outside the FoF PPP
- Digital Innovation Hubs
- Platforms Calls (for agriculture, for building, for hospitals, for transport etc.)
- Initiatives on AI, Cybersecurity, Photonics
Coffee break
Transforming Manufacturing with Help of EU Framework Programmes

FP7
- Building on the vision of the FoF 2020 roadmap and public consultation in 2016
- Vision of the factories of the future: the challenge perspective

FoF 2020
- Key priorities for FoF 18-19-20
- Agile value networks: Lot-size one - distributed manufacturing
- Excellence in manufacturing: Advanced manufacturing processes and services for zero-defect processes and products
- The human factor: Human competences in synergy with technological assets
- Sustainable value networks: Manufacturing in a circular economy
- Interoperable digital manufacturing platforms: connecting manufacturing services

Factories 4.0 and Beyond

Horizon Europe

2009/2010
2013/2014
2016

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The timeline for the Partnership

- 2018 inquiries/meetings/interviews/consultation

- March 2019: presentation at the GA to the Dep Dir Gen

- May/June: Commission sends to MS the Made in Europe fiche

- June – December: interactions with the Commission

- December 2019 – February 2020: finalising the exact scope and all details of the Made in Europe Partnership
Considering the six priorities of the new Comm President:

1) European Green Deal
2) An economy that works for people
3) A Europe fit for the Digital Age
4) Protecting our European way of life
5) A stronger Europe in the world
6) A new push for European democracy

United Nations Sustainable Development Goals
Climate Change is happening and there is consensus in society that it needs to be tackled. European society and policymakers are demanding a minimal (zero) environmental impact of manufacturing activities, which urges European companies accelerate further research, innovation and investments.

Today, natural resources and energy need to be imported from abroad; many critical components too. The concept of local/ regional / European sourcing is more important than before; also due to insecurity regarding internal open trade relations. There is a wish for assuring and maintaining technological sovereignty, for Europe to become less dependent on imports; and not to rely of foreign IT infrastructures.

Changes of policy frameworks, markets and customer preference are inducing a structural change in manufacturing value chains (for example the move to electromobility in the case of the automotive sector; higher recycling targets etc).

International competition is high, especially coming from Asia and America.

Other regions in the world are heavily investing in manufacturing support programmes.
New technologies are available and affordable which were unavailable or unaffordable before. They offer immense opportunities which accelerate innovation and transformation. These new technologies (either digital or physical/material-related) need to find their way into today`s companies.

The fast-moving transition towards smart autonomous systems and the increased use of Artificial Intelligence is profoundly changing the interaction between humans and machines. European industry is in the process of embracing these new technologies, which are needed to stay competitive and to respond to societal challenges.

Companies are preoccupied with a shortage of skilled personnel and with an ageing workforce. In particular for SMEs, the shortcoming of qualified staff and talents has become a major barrier and threat. Manufacturing does not have a sufficiently good image to attract best talents.

The more manufacturing companies go digital, the higher they are exposed to cyber-criminality.

New Business Models are offering new opportunities but are also challenging today`s way of doing business. Manufacturing companies need to explore approaches.
### Made in Europe Partnership - Policy Objectives & Specific Objectives

#### Policy Objectives

- **European technology leadership & manufacturing excellence**
- **Circular and climate-neutral manufacturing**
- **New products, new markets**
- **New and attractive value added jobs**
- **Digital transformation of manufacturing industry**

#### Specific Objectives on Performance

- **Excellent, responsive and smart factories**
  - Scalable first-time-right high-productivity manufacturing
  - Agile and robust manufacturing
  - Productive manufacturing smart & complex products
- **Circularity & zero-environmental impact**
  - Circular economy and symbiotic manufacturing
  - Renewable energy and resource efficient factories
  - Virtual end-to-end life-cycle engineering from product to production lines, factories and value networks
- **Integrated product and production engineering**
  - Holistic and collaborative product-service engineering
  - Demand and customer-driven manufacturing value networks
- **Human-driven manufacturing innovation**
  - Co-creation in European knowledge networks
  - Human & technology complementarity and acceptance
  - Upskilling and re-skilling for future job-profiles

#### Specific Objectives on Key Technology Development and Deployment

- **Advanced and smart material processing technologies and process chains**
- **Smart mechatronics, robotics and logistic technologies**
- **Data analytics and artificial intelligence**
- **Simulation and modelling, digital twins**
- **Digital platforms and robust and secure industrial communication technologies**
- **New business models and human-centered innovation approaches**
Specific Objective ‘Excellent, responsive and smart factories’

1. Scalable, reconfigurable and flexible first-time right manufacturing
2. Productive manufacturing processes for smart and complex products
3. Zero-defect and zero-downtime manufacturing, including predictive quality and non-destructive inspection methods
4. Artificial intelligence for productive, excellent, robust and agile manufacturing chains
5. 5G in support of smart factories in dynamic value networks

Specific Objective ‘Human-driven manufacturing innovation’

1. Improving human device interaction using augmented and virtual reality and digital twins.
2. Digital platforms and engineering tools supporting creativity and productivity of development processes
3. Human & technology complementarity and excellence in manufacturing
4. Manufacturing Innovation and change management
5. Technology validation and migration paths towards industrial deployment of advanced manufacturing technologies by SMEs

Specific Objective ‘Integrated product and production engineering’

1. Collaborative product-service engineering for customer driven manufacturing value networks
2. Manufacturing with new and substitute materials
3. Manufacturing processes and approaches near to customers or consumers
4. Secure communication and IP management for smart factories in dynamic value networks
5. Predictive manufacturing capabilities & logistics of the future

Specific Objective ‘Circularity & zero-environmental impact’

1. Ultra-efficient, low energy and carbon-neutral manufacturing
2. De-manufacturing, re-manufacturing and recycling technologies for circular economy
3. Virtual end-to-end life-cycle engineering from product to production lines, factories, and networks
4. Digital platforms and data management for circular product and production-systems life-cycles
5. Transparency, trust and data integrity along the product and manufacturing life-cycle
Match between EFFRA Roadmap and the draft Made in Europe Proposal document

**General Information**

<table>
<thead>
<tr>
<th>Preliminary title of the European Partnerships</th>
<th>Made in Europe</th>
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<tbody>
<tr>
<td>Short description of the partnership</td>
<td>Towards a competitive manufacturing industry with a world-leading reduction of its environmental footprint, guaranteeing the highest level of well-being for workers, consumers and society.</td>
</tr>
<tr>
<td>Services directly involved</td>
<td>RTD.D2 (chef de file) and CNECT.A2</td>
</tr>
<tr>
<td>Context and problem definition</td>
<td>Europe’s manufacturing competence, based on value-added, high-quality products, customisation and product-service offers, attractive to global customers and local consumers, is facing a fierce race on technologies, skills, price, quality, and speed with traditional (US, Japan, Korea) and new competitors (e.g., China). In the period between 1995 and 2013, the European Value Added produced by the manufacturing sector fell from 23% to 17% on a global scale, which is significant, taking into account that manufacturing constitute 83% of the exports of the Union. Europe is facing a three-fold challenge with respect to its leadership position in manufacturing, particularly with respect to its:</td>
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<td>• Competitiveness – based on technological innovation, core competences, and swift market uptake;</td>
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<td>• Autonomy – core materials, key technologies, skills, and mastery of the strategic value chains, taking advantage of the digital transformation;</td>
</tr>
<tr>
<td></td>
<td>• Strategic advantage in taking up sustainability challenges (more inclusive productivity, higher job quality, environment and energy use).</td>
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</table>
**Co-creation through Manufacturing Eco-systems**

- **Excellent, responsive and smart factories**
  Scalable first-time right manufacturing
  Agile and robust optimal manufacturing

- **Low environmental footprint, customer-driven value networks**
  Demand and consumer driven manufacturing networks
  Circular economy (symbiotic manufacturing networks)

- **Parallel product and manufacturing engineering**
  Concurrent, holistic and collaborative product-service engineering
  Virtual end-to-end life-cycle engineering from product to production lines, factories and networks
  Manufacturing smart and complex products

- **Human-driven innovation**
  Co-creation in European knowledge networks
  Managing constant change
  Human & technology complementarity

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**Enabling Technologies & Approaches**

- Advanced and smart material processing technologies and process chains
- Smart mechatronic systems, devices and components
- Intelligents and autonomous hand and robotics, assembly and logistic technologies
- De-manufacturing and recycling technologies
- Energy and power supply technologies
- Simulation and modelling (digital twins)
- Robust and secure industrial communication technologies, distributed control architectures
- Data analytics, artificial intelligence and deployment of digital platforms
- New business and new organisational approaches
**Policy Objectives**

- European technology leadership & manufacturing excellence
- Circular and climate-neutral manufacturing
- New products, new markets
- New and attractive value added jobs
- Digital transformation of manufacturing industry

**Specific Objectives on Performance**

- **Excellent, responsive and smart factories**
  Scalable first-time-right high-productivity manufacturing
  Agile and robust manufacturing
  **Productive** manufacturing of smart & complex products

- **Circularity & zero-environmental impact**
  Circular economy and symbiotic manufacturing
  Renewable energy and resource efficient factories
  Virtual end-to-end life-cycle engineering from product to production lines, factories and value networks

- **Integrated product and production engineering**
  Holistic and collaborative product-service engineering
  Demand and customer-driven manufacturing value networks

- **Human-driven manufacturing innovation**
  Co-creation in European knowledge networks
  Human & technology complementarity and acceptance
  Upskilling and re-skilling for future job-profiles

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- Digital platforms and robust and secure industrial communication technologies
- New business models and human-centered innovation approaches

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Simulation and communication technologies for circular economy
- Ultra-efficient, low energy and carbon manufacturing
- De-manufacturing, re-manufacturing and recycling technologies for circular economy
- Mastering and tracing the product and production-life-cycle in a circular system
- Secure communication and IP management for smart factories in dynamic value networks
- Manufacturing processes and approaches near to customers or consumers
- Transparency, trust and data integrity along the product and manufacturing life-cycle
- Predictive Manufacturing capabilities & Logistics of the future

Manufacturing processes for smart and complex products
- Manufacturing with new and substitute materials
- Collaborative product-service engineering for customer driven manufacturing value networks
- Virtual end-to-end life-cycle engineering from product to production lines, factories, and networks

Manufacturing Innovation and change management
- Improving human device interaction using augmented and virtual reality and digital twins.
- Human & technology complementarity and excellence in manufacturing
- New approaches and engineering tools supporting creativity and productivity of development processes (KP)
- Technology validation and migration paths towards full industrial deployment of advanced manufacturing technologies by SMEs

Key Priorities
- Scalable, reconfigurable and flexible first-time right manufacturing
- 5G in support of smart factories in dynamic value networks
- Artificial intelligence for productive, excellent, robust and agile manufacturing chains
- Zero-defect manufacturing, including predictive quality and non-destructive inspection methods
- No-downtime manufacturing

Enabling technologies and approaches
- Manufacturing Innovation and change management
- Improving human device interaction using augmented and virtual reality and digital twins.
- Human & technology complementarity and excellence in manufacturing
- New approaches and engineering tools supporting creativity and productivity of development processes (KP)
- Technology validation and migration paths towards full industrial deployment of advanced manufacturing technologies by SMEs

Impact

Version March 2019 (EFFRA General Assembly)
### Focus Actions: Progressing towards a call topic format

**Key Priority 1: ‘Excellent, responsive and smart factories’**

1. Scalable, reconfigurable and flexible first-time right manufacturing
2. 5G in support of smart factories in dynamic value networks
3. Artificial intelligence for productive, excellent, robust and agile manufacturing chains
4. Zero-defect manufacturing, including predictive quality and non-destructive inspection methods
5. No-downtime manufacturing *(included in Zero-defect...)*

**Key Priority 2: ‘Zero-environmental impact, customer-driven value networks’**

1. Simulation and communication technologies for circular economy *(included in Virtual end...)*
2. Ultra-efficient, low energy and carbon manufacturing
3. De-manufacturing, re-manufacturing and recycling technologies for circular economy
4. Mastering and tracing the product and production-life-cycle in a circular system *(included in Digital p...)*
5. Secure communication and IP management for smart factories in dynamic value networks *(moved to KP3)*
6. Manufacturing processes and approaches near to customers or consumers *(moved to KP3)*
7. Transparency, trust and data integrity along the product and manufacturing life-cycle
8. Predictive Manufacturing capabilities & Logistics of the future

**Key Priority 3: ‘Parallel product and manufacturing engineering’**

1. **Manufacturing processes for smart and complex products**
2. Manufacturing with new and substitute materials
3. Collaborative product-service engineering for costumer driven manufacturing value networks
4. Virtual end-to-end life-cycle engineering from product to production lines, factories, and networks *(moved to KP2)*

**Key Priority 4: ‘Human-driven innovation’**

1. Manufacturing Innovation and change management
2. Improving human device interaction using augmented and virtual reality and digital twins.
3. Human & technology complementarity and excellence in manufacturing
4. New approaches and engineering tools supporting creativity and productivity of development processes
5. Technology validation and migration paths towards full industrial deployment of advanced manufacturing technologies by SMEs
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Excellent, Responsive, & Smart Factories
Low-Environmental Footprint, Customer-Driven Value Networks
Roadmap Priorities

Parallel Product & Manufacturing Engineering
Human-Driven Innovation
Lunch break
Transforming Manufacturing with Help of EU Framework Programmes

FP7

FoF 2020

Factories 4.0 and Beyond

Building on the vision of the FoF 2020 roadmap and public consultation in 2016

Vision of the factories of the future: the challenge perspective

Key priorities for FoF 2018-2020

Agile value networks: Lot-size one - distributed manufacturing

Excellence in manufacturing: Advanced manufacturing processes and services for zero-defect processes and products

The human factor: Human competences in synergy with technological assets

Sustainable value networks: Manufacturing in a circular economy

Interoperable digital manufacturing platforms: connecting manufacturing services

Horizon Europe

2009/2010

2013/2014

2016
Made in Europe panel discussion

- Jürgen Tiedje - DG Research & Innovation, European Commission
- Yves Paindaveine - DG Connect, European Commission
- Rainhill Freitas - Airbus
- Björn Sautter - Festo
- Herman Derache - EFFRA-Vice Chairman, Agoria/Sirris
- Riikka Virrkunen - EFFRA Board member, VTT
- Kai Peters - VDMA European office
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<td><strong><a href="http://www.effra.eu">www.effra.eu</a></strong></td>
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1. Scalable, reconfigurable and flexible first-time right manufacturing
2. Manufacturing processes for smart and complex products
3. Zero-defect and zero-downtime manufacturing, including predictive quality and non-destructive inspection methods
4. Artificial intelligence for productive, excellent, robust and agile manufacturing chains
5. 5G in support of smart factories in dynamic value networks

Specific Objective ‘Circularity & zero-environmental impact’

1. Ultra-efficient, low energy and carbon-neutral manufacturing
2. De-manufacturing, re-manufacturing and recycling technologies for circular economy
3. Virtual end-to-end life-cycle engineering from product to production lines, factories, and networks
4. Digital platforms and data management for circular product and production-systems life-cycles
5. Transparency, trust and data integrity along the product and manufacturing life-cycle

Specific Objective ‘Integrated product and production engineering’

1. Collaborative product-service engineering for customer driven manufacturing value networks
2. Manufacturing with new and substitute materials
3. Manufacturing processes and approaches near to customers or consumers
4. Secure communication and IP management for smart factories in dynamic value networks
5. Predictive manufacturing capabilities & logistics of the future

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1. Improving human device interaction using augmented and virtual reality and digital twins.
2. Digital platforms and engineering tools supporting creativity and productivity of development processes
3. Human & technology complementarity and excellence in manufacturing
4. Manufacturing Innovation and change management
5. Technology validation and migration paths towards industrial deployment of advanced manufacturing technologies by SMEs
End of meeting.....

Networking Cocktail!

Thank you for the participation!