Synergies with the European Framework Program

TSSP for Industrial Modernisation- 3rd Meeting-12 April 2018 Lapland

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Key policy aspects

- Horizon 2020 NMBP is oriented to research and innovation to reach the market. Industry and SMEs participate in all areas.
- National Contact Points, infodays, brokerage events, PPPs help to network.
- R&I helps transformation of European industry, and in particular SMEs to stay competitive and generate business. Coordinated efforts across EU, national and regional level are needed.
- The European Commission continues work on synergies with European Structural and Investment Funds and on simplification.
- Funding and financing needs financial engineering.
- Digital Innovation Hubs, Open Innovation Testbeds and Centres of Excellence offer access to technology and services.
- European Investment Fund offers access to finance for SMEs.
Horizon 2020 Leadership in Enabling and Industrial Technologies (LEIT)

**NMBP:** Nanotechnologies, Advanced Materials, Biotechnology, Advanced Manufacturing and Processing

**ICT:** Nano- and micro-electronics, Photonics

- **Indicative budget:** 75 billion € *
- **Out of it for NMBP:** 3.8 billion € *

* July 2015 – includes EIT, JRC, "Science with and for Society", "Spreading Excellence/ Widening Participation", in addition to three priorities above
Key Enabling Technologies - at the heart of European competitiveness


Updated criteria for KETs

**Enabling** - multiple cross sectoral, society, environment, circular economy, green growth

**Key capacity** – impact on people, society, safety & security, connectivity

**Relevant** – research, development, production, underpinning societal participation and democratic engagement, European sovereignty

Updated list of KETs

"Old" KETs are still relevant, but
merge Nanotechnologies and Advanced Materials
Merge Photonics and Micro/nanoelectronics
Widen scope of Biotechnology to Life-Science Technologies

Add two new KETs:
Artificial Intelligence
Security and connectivity technologies

Commission Communications 2009, 2012
High-level Groups 2011, 2013-15

Nanotechnology, Micro- and nanoelectronics, Photonics, Advanced Materials, Biotechnology, Advanced Manufacturing
Drivers: Globalisation – Digitisation – Knowledge Society
Rational: Global Excellence, Systemic Relevance, European Sovereignty, Sustainability, Multi-purpose

**KETS**

- Production Technologies
  - Advanced Manufacturing Technologies
  - Advanced Materials and Nanotechnologies
  - Life-Science Technologies

- Digital Technologies
  - Micro-Nanoelectronics and Photonics
  - Artificial Intelligence

- Cyber Technologies
  - Security and Connectivity

**Examples**

- Smart, high performance, high precision and additive manufacturing and processes, Robotics, Process Industry, Green Propulsion Technologies, Integrated Bio-refineries
- High performance, smart sustainable materials, Nanomaterials, Nanotechnology, Biomaterials, 2D Materials, Light Weight Technologies, New Chemistry
- IoT, Smart/intelligent sensors, Quantum technology, Supercomputing (high power, high performance, neuro-computing, beyond CMOS), Displays (LCD, Plasma) & Lighting (LED, OLED), Photonics Integrated circuits, Biophotonics
- Data generation and handling, Big data analytics, Machine learning and deep learning, Smart Robots, virtual agents, software technologies, decision making technologies
- Secure and Authenticated Communication, Avoiding identify theft, Data protection and privacy, IoT, Data/Connectivity Safety and Security, Human-Machine Interfaces, Human-Computer / Robot Interaction, 5G, baseband/processor platforms
- e-Governance, E-Administration, E-Voting, Cyber-Physical Systems, e-Safety and e-Security, Technology Assessment, Blockchain

**Societal Challenges**

- Environment
- Energy
- Mobility
- Health & Wellbeing
- Food & Nutrition
- Security
- Privacy
- Inclusion & Equality

**Missions**

- Missions
- Missions
- Missions
The Human in the centre

The future of work and jobs

- *changes to expect in industry and society, new job profiles (e.g. Factories of the Future PPP)*

Skills development – for digitisation, new jobs, entrepreneurship, interdisciplinary cooperation

- *European Skills Agenda, Digital Skills Coalition, Erasmus+ Sectoral Blueprints, Horizon 2020*
- *Digital technologies to support learning, also in factories*

Acceptance: by workers, by public

Human centred workplace design and work organisation, human-robot collaboration (e.g. Factories of the Future PPP)

Artificial Intelligence: calls for ethical framework, regulatory review

Policy responsibility with regard to cohesion and inclusiveness
The Challenge of Upscaling ("Valley of Death")

What is the issue?

- Gap between the technology base and the manufacturing base;
- Risks;
- Need to demonstrate – validate: pilot lines to show viability for competitive manufacturing and product development;
- Costs;

=> Bottlenecks in particular for SMEs to access pilot lines

What is the strategy?

Open "innovation hubs" – Test Beds (NMBP WP 2018-2020)

=> Focussing on enabling, generic advanced materials and nano-technology and their use by SMEs!
So far: Pilot Lines for nanotechnology and advanced materials => Enablers for Innovation Ecosystems

**Industry Pilot Facilities:**

109 Pilot Facilities and Demonstrators in Horizon 2020, mostly with industry

[Map of Europe with locations marked]
Pilot lines in Horizon 2020

- Nano-cupper
- Nano-inks
- Nano carbides
- Nano borides
- Pellets, aerogels
- Graphene,
- Nanostructures

Aerospace, Aviation, Automotive, Food,
Pharmaceutical,
Electronics packaging,
Electrical and electronic goods
Sporting goods
Medicine

- Injection moulding
- Casting
- Nano-reinforced aerogel via freeze-drying
- Nanocomposites coating on a sol-gel basis
- Electrospray
- Nanodeposition

- Capacity touchscreens
- B-pillar
- Swash plate
- Aerogels
- Novel functional products for skin thermal comfort;
  Scaffolds for bone generation
NMBP Calls 2018-2019

Work Programme published on the participant portal:


LEIT NMBP – 3 calls

• FOUNDATIONS FOR TOMORROW’S INDUSTRY – 269 M€
• TRANSFORMING EUROPEAN INDUSTRY – 340 M€
• INDUSTRIAL SUSTAINABILITY – 447 M€

2018 Deadline

• EU-China flagship initiative on Biotechnology topic: CE-BIOTEC-04-2018 : 25/4/18

2019 Deadlines

• Two-stage topics: 22/01/2019 and 3/09/2019
• Single-stage: 21/02/2019
• EU-China flagship initiative on Biotechnology topic: CE-BIOTEC-05-2018 : 01/03/2019
What’s next?
Addressing the valley of death through Industrial R&I infrastructure

*Economic and social importance of access to technology and services*

- Testing and validation, respecting rules/standards, is an essential component before the commercialisation of any idea, product or service (access, risk reduction, lower costs, faster market entry)

- Today 4 major developments across all industries:
  - Virtual tests increase speed and complexity and cuts costs significantly
  - Sharing test and demonstration facilities among users
  - Automation and digitisation
  - Global industry and value chains

- In 60% of EU MS, SMEs are not likely to find the infrastructure services they need
Industry (SME) oriented R&I infrastructures – State of play

NATIONAL LEVEL
- Sweden: Testbed Sweden
- Germany: 'Labs Network Industrie 4.0'
- Netherlands: "Accelerating in Field Labs"

INTERNATIONAL LEVEL
- Made in China 2025

EU level
- Pilot lines in Nanotechnology & Advanced Material (DG RTD)
- Digital Innovation Hubs (DG CNECT)
- KETs Technology Centres (DG GROW)
- EIT’s Knowledge and Innovation Communities (DG EAC)
- JRC Open Labs (DG JRC)
We need a EU strategy for Industrial Research and Innovation infrastructure

Why?
So many different types of infrastructure: Structure and streamline the offer – simplify for those who need.
Costly: Coordination and sharing to reduce costs, for higher efficiency and impact.
Eco-system approach for European SMEs/industry to stay competitive and generate business.

→ Coordinated efforts across EU, national and regional strategies are needed!
8781 proposals received the Seal of Excellence

+/- 5400 excluding resubmissions

32 Schemes/in 13 countries
CY (4)*, CZ (3), IT (6), ES (4), FR (1), HU (1), SI (3), SE (2), NO (1), PL (2), UK (1) and EL (2) and SK (2)
11 regional schemes in 4 countries:
IT (6), ES (3), FR (1), CZ (1)
Blueprint for Sectoral Cooperation on Skills

Framework for strategic cooperation between key stakeholders
To increase the **talent pool** and deliver **sector-specific skills** solutions
Funded under ERASMUS+

### Selection of sector
- **EU partnerships**
- **National partnerships**

### 2017 sectors vs 2018 sectors

<table>
<thead>
<tr>
<th>2017 sectors</th>
<th>2018 sectors</th>
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<tbody>
<tr>
<td>Automotive</td>
<td>Additive manufacturing</td>
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<tr>
<td>Maritime technology</td>
<td>Construction</td>
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<tr>
<td>Textile-clothing-leather-footwear</td>
<td>Maritime shipping</td>
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<tr>
<td>Space (earth observation)</td>
<td>Paper-based industry</td>
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<tr>
<td>Tourism</td>
<td>Steel</td>
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Study 2018- Financing the Deep Tech Revolution: How investors assess risks in KETs

Reduce information asymmetries about KETs companies

Provide targeted support and advice to KETs companies

Refine existing financial instruments

Focus on information asymmetries

Determine the needs: technology vs. technology and market / business plan

Tackle information asymmetries - case studies

Review the way due diligence is performed by financial counterparties

Recommend and design potential new tools and approaches to fill the information gap
Timeline

- **Oct 2017**
  - Adoption of WP 2018-2020

- **End 2017**
  - Communication on H2020 interim eval

- **Summer 2018**
  - WP 2019 update

- **Summer 2019**
  - WP 2020 update

- **May 2018**
  - Multiannual Financial Framework

- **20.10.16 – 15.1.17**
  - Public Stakeholder Consultation

- **End 17 – May 18**
  - Public Consultation on Post Horizon 2020

- **May 2018**
  - Post Horizon 2020 proposal Impact Assessment

- **2020**
  - Post Horizon 2020 decision
Further information

National Contact Points (NMP): [http://ec.europa.eu/research/participants/portal/desktop/en/support/national_contact_points.html#c,contact=country/sbg//1/1/0&+person.last_name/desc](http://ec.europa.eu/research/participants/portal/desktop/en/support/national_contact_points.html#c,contact=country/sbg//1/1/0&+person.last_name/desc)
http://www.nmpteam.eu/
European Pilot Production Network: [https://eppnetwork.com/](https://eppnetwork.com/)
Workshop Nanotechnologies and Advanced Materials for Regional Growth – The Challenge of upscaling, 7 Feb. 2017, Brussels
[http://ec.europa.eu/research/index.cfm?pg=events&eventcode=561FD004-C1CC-1B6B-20F005541185BC34](http://ec.europa.eu/research/index.cfm?pg=events&eventcode=561FD004-C1CC-1B6B-20F005541185BC34)
Workshop on Industrial R&I Infrastructure, 1 March 2018
Report coming soon
European Industry Day 22-23 February 2018 including Conference Document “Re-finding Industry” [https://ec.europa.eu/info/events/eu-industry-day_en](https://ec.europa.eu/info/events/eu-industry-day_en)