

# SECTION BIOTECH, NANO AND MANUFACTURING

Calls 2015

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# Competitive industries

## Leadership in enabling and industrial technologies (LEIT)

(ICT, nanotechnologies, advanced materials, biotechnology, manufacturing, space)

## Access to risk finance

Leveraging private finance and venture capital for research and innovation

## Innovation in SMEs

Fostering all forms of innovation in all types of SMEs

Boosting Europe's industrial leadership through research, technological development, demonstration and innovation in:

### ICT

- Micro- and Nano-electronics & Photonics
- Nanotechnologies
- Advanced Materials
- **Biotechnologies**
- Advanced Manufacturing

Space

**KETS  
And  
PPPS**

# Biotechnology, Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy



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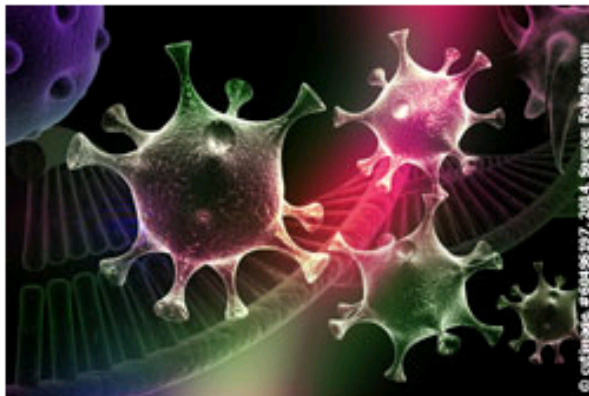
## HORIZON 2020

Excellent Science	Competitive Industries	Societal Challenges
<p>European Research Council (ERC)</p> <p>Future Emerging Technologies (FET)</p> <p>Marie Skłodowska Curie Actions (MSCA)</p> <p>European Research Infrastructures</p>	<p>Leadership in Enabling and Industrial Technologies</p> <p><i>Micro and Nanoelectronics</i></p> <p><i>Nanotechnologies</i></p> <p><i>Advanced Materials</i></p> <p><b><i>Biotechnologies</i></b></p> <p><i>Advanced Manufacturing and Processing</i></p> <p>Access to Risk Finance</p> <p><del>Innovation in SMEs</del></p>	<p>Health, Demographic Change and Wellbeing</p> <p><b>Food Security, Sustainable Agriculture, etc.</b></p> <p>Secure, Clean and Efficient Energy</p> <p>Smart, Green and Integrated Transport</p> <p><b>Climate Action, Resource Efficiency and Raw Materials</b></p> <p>Inclusive, Innovative and Reflective Societies</p> <p>Secure Societies</p>

European Institute of Innovation & Technology (EIT) • Joint Research Centre (JRC)  
 • Spreading Excellence and Widening Participation • Science with and for Society

## Biotechnologies

Home > **Biotechnologies**



**With applications in a broad variety of sectors, life sciences and biotechnology are main innovation drivers in the European Union, leading to new growth and competitiveness in traditional sectors, such as paper and pulp and chemical industries (including pharmaceutical the industry), textile companies and many others.**

Today, there are already many bio-based products on the market, which were produced by modern fermentation processes or a combination of biochemical and chemical processes, allowing significant savings in terms of greenhouse gas emissions of up to 80% and reducing energy consumption by up to 40%. Examples of bio-products include biopolymers

used in construction and household applications, biodegradable plastics, bio-lubricants, and bio-solvents. The use of bio-detergents and related enzymes are commonplace in nowadays households, allowing cleaner laundry with reduced environmental footprints as compared to using more traditional detergents. Biotechnology as key-enabling technology also constitutes an indispensable element in the manufacturing of antibiotics, vitamins, amino acids and other fine chemicals.

Our aim in supporting biotechnology research in the area of Leadership in Enabling and Industrial Research is to exploit the current and future know-how for boosting technological innovation and industrial leadership. We want European Industries to maintain their global leadership position for the benefit of European citizens. In pursuit of these goals we focus on mission-oriented research towards life sciences, biotechnology and biochemistry for sustainable non-food products and processes.

# Workprogramme 2014 –2015

- Sustainable Food Security SFS
- Blue Growth BG
- Innovative, Sustainable and Inclusive Bioeconomy ISIB
- *'Waste'* *WASTE* *SC5, Climat*
- *Biotechnologies* *BIOTECH* *LEIT*

## Calls 2015

- 3 February 2015 First Stage
- 11 June 2015 Second Stage

# Sustainable Food Security (SFS)

2014	2015
<ul style="list-style-type: none"><li>■ Pre –harvest losses</li><li>■ Soil management</li><li>■ Genetic Resources</li></ul>	<ul style="list-style-type: none"><li>■ Improved livestock</li><li>■ Crop productivity</li><li>■ Genetics for sustaining agriculture</li></ul>

# Blue Growth (BG)

2014	2015
<ul style="list-style-type: none"><li>■ Diversity of marine life</li></ul>	<ul style="list-style-type: none"><li>■ Preservation of marine ecosystems</li></ul>

# Innovative, Sustainable and Inclusive Bioeconomy (ISIB)

- Innovative feedstocks
- Next generation bio-refineries
- Supporting markets for bio-based products
- But: Most of the activities implemented through the JTI <http://biconsortium.eu/>



# Waste (SC5 Climate)

- Waste prevention
- Processes and products for recyclability
- Waste management

# Biotechnology (LEIT BIOTECH)

- Cutting edge biotechnologies
- Innovation drivers

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- **Nanotechnologies**
- **Advanced Materials**
- **Biotechnologies**
- **Advanced Manufacturing**

### Space

**KETS  
And  
PPPS**

# Nanotechnologies, adv. Materials and advanced manufacturing (PPPs)



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## HORIZON 2020

### Excellent Science

European Research Council (ERC)

**Future Emerging Technologies (FET)**

Marie Skłodowska Curie Actions (MSCA)

European Research Infrastructures

### Competitive Industries

Leadership in Enabling and Industrial Technologies

*Micro and Nanoelectronics*

**Nanotechnologies**

**Advanced Materials**

*Biotechnologies*

**Advanced Manufacturing and Processing**

Access to Risk Finance

~~Innovation in SMEs~~

### Societal Challenges

Health, Demographic Change and Wellbeing

Food Security, Sustainable Agriculture, etc.

Secure, Clean and Efficient Energy

Smart, Green and Integrated Transport

Climate Action, Resource Efficiency and Raw Materials

Inclusive, Innovative and Reflective Societies

Secure Societies

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# Calls 2015:

Name of Call	Call identifier	Deadline for submission	Budget (M€)
<b>Nanotechnologies, Advanced Materials and KET support actions</b>	H2020-NMP-2014/2015 (single stage)*	26/03/2015	254
<b>Nanotechnologies, Advanced Materials and KET support actions</b>	H2020-NMP-2014/2015 (two stage)	26/03/2015 08/09/2015	
<b>Biotechnology</b>	H2020 BIOTEC-215 (two stage)	03/02/2015	32
<b>Factories of the Future</b>	H2020-FoF-2014/2015	04/02/2015	145 (incl. ICT topics)
<b>Energy-efficient Buildings</b>	H2020-EeB-2014/2015	04/02/2015	64
<b>Sustainable Process Industries</b>	H2020 - SPIRE-2014/2015	04/02/2015	77

# What are KETs?



- Six strategic technologies
- Driving competitiveness and growth opportunities
- Contributions to solving societal challenges
- Knowledge- and Capital-intensive
- Cut across many sectors

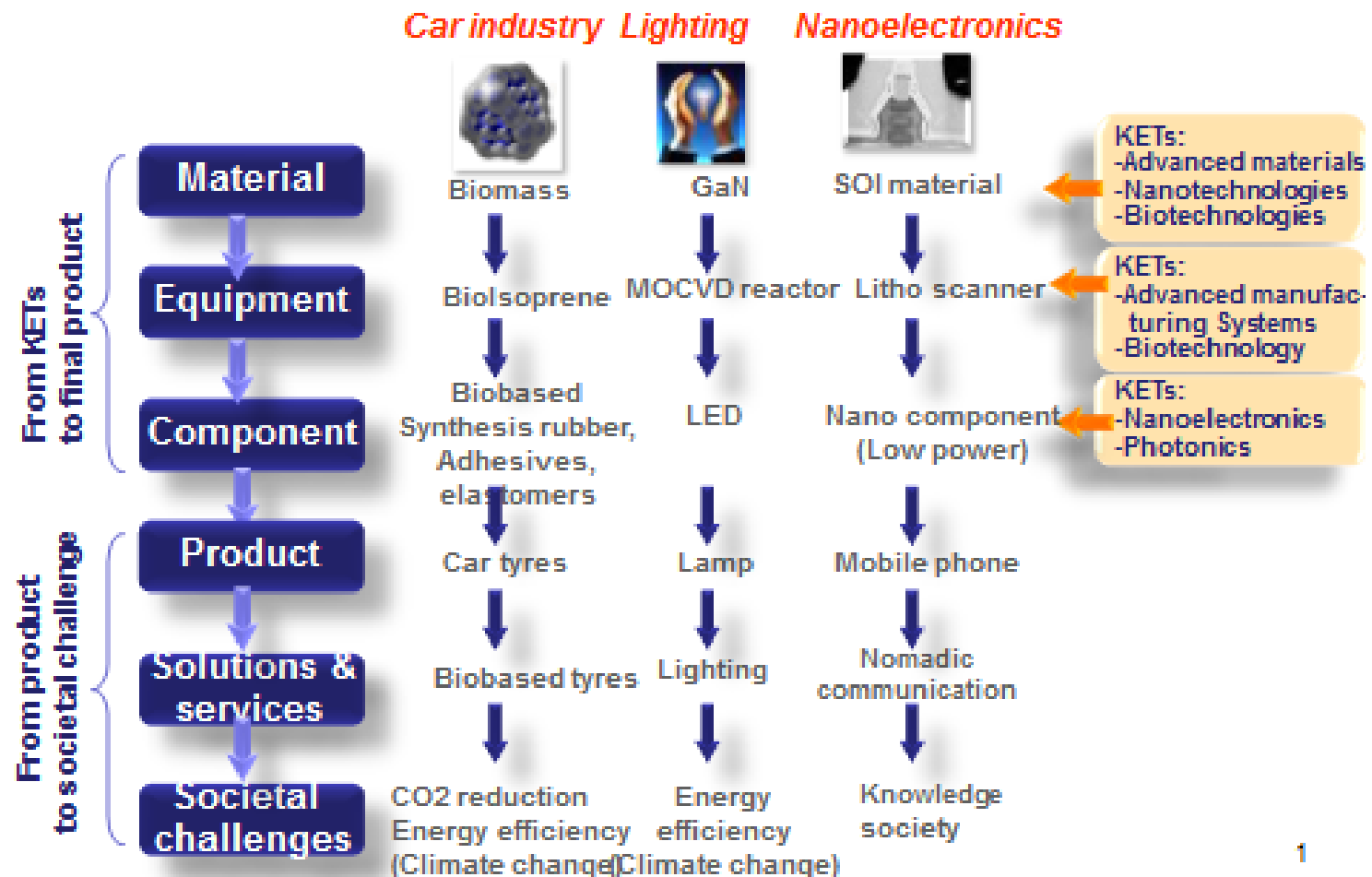
- **Nanotechnologies**
- **Advanced Materials**
- **Micro- and nano-electronics**
- **Photonics**
- **Biotechnology**
- **Advanced Manufacturing**

## European KET Strategy:

- EC Communications  
(2009)512 & (2012)341
- KET High-level Group

# What are Multi-Kets?

KETs are strategic all along value chains



# 6 challenges in Nano / Material / Manufacturing

- **Challenge 1: Bridging the gap between nanotechnology research and markets**
  - lightweight multifunctional materials and sustainable composites
  - structures surfaces
  - and functional fluids.
- **Challenge 2: Nanotechnology and Advanced Materials as enablers of applications in Health**
  - support more effective therapies in health care for important diseases.
  - to reach the point where they can be considered fit for purpose in preparation of, but not including, the clinical trial stages



# Topic preview

Activity/Area/Topic & Title	Funding Scheme
<b>Bridging the gap between nanotechnology research and markets</b>	
<b>NMP 2 - 2015:</b> Integration of novel nanomaterials into existing production lines	Innovation Actions (70% funding) Intended start: TRL 5 – 6, target TRL 7 - 8
<b>NMP 3 - 2015:</b> Manufacturing and control of nanoporous materials	Innovation Actions (70% funding) Intended start: TRL 4 – 5, target TRL 6
<b>NMP 6 - 2015:</b> Novel nanomatrices and nanocapsules	Research & Innovation Actions (100% funding) Expected implementation: TRL 4 – 5
<b>NMP7 - 2015:</b> Additive manufacturing for table-top nanofactories	Research & Innovation Actions (100% funding) Expected implementation: TRL 4 – 5

## Nanotechnology and Advanced Materials for more effective Healthcare

<b>NMP 11 - 2015:</b> Nanomedicine therapy for cancer	Innovation Actions (70% funding) Intended start: TRL 4 – 5, target TRL 6 - 7
<b>NMP 12 - 2015:</b> Biomaterials for treatment and prevention of Alzheimer's disease	Research & Innovation Actions (100% funding) Expected implementation: TRL 5

## 6 challenges cont.

- **Challenge 3: Nanotechnology and Advanced Materials for low carbon energy technologies and Energy Efficiency (EUR 26 million)**
  - increase the use of renewable energy sources and to significantly **improve energy efficiency**.
  - Develop to **a *technology readiness*** demonstrating their potential for take-up in practical applications, which would be further pursued in technology or product development under the relevant societal challenge
- **Challenge 4: Tapping into the cross-sector potential of Nanotechnologies and Advanced materials to drive competitiveness and sustainability (EUR 58 million)**
  - use in several different applications and economic sectors, with the dual aim of ***boosting the competitiveness of European industry*** and making contributions to a ***sustainable economy***. (European culture and creativity through novel materials.
  - Enabling ***multi-sectorial potential***, by developing and advancing technological readiness of solutions with break-through potential.
  - ***International cooperation*** in this general area is particularly appropriate.

# Topic preview

## Nanotechnology and Advanced Materials for low-carbon energy technologies and Energy Efficiency

<b>NMP 14 – 2015:</b> <b>ERA-NET on Materials (including Materials for Energy (1 stage))</b>	ERA-NET (COFUND)
<b>NMP 15 – 2015:</b> <b>Materials innovations for the optimisation of cooling in power plants</b>	Innovation Actions (70% funding) Expected implementation: TRL 6
<b>NMP 16 – 2015:</b> <b>Extended in-service life of advanced functional materials in energy technologies (capture, conversion, storage and/or transmission of energy)</b>	Innovation Actions (70% funding) Expected implementation: TRL 6

## Exploiting the cross-sector potential of Nanotechnologies and Advanced materials to drive competitiveness and sustainability

<b>NMP 19 – 2015:</b> <b>Materials for severe operating conditions, including added-value functionalities</b>	Research & Innovation Actions (100% funding) Expected implementation: TRL 5
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# Topic preview

Exploiting the cross-sector potential of Nanotechnologies and Advanced materials to drive competitiveness and sustainability	
<b>NMP 22 – 2015:</b> Fibre-based materials for non-clothing applications	Innovation Actions (70% funding) Expected implementation: TRL 6
<b>NMP 23 – 2015:</b> Novel materials by design for substituting critical elements	Research & Innovation Actions (100% funding) Expected implementation: TRL 2 – 4
<b>NMPP24 – 2015:</b> Low-energy solutions for drinking water production – pilot plants	Innovation Actions (70% funding) Intended start: TRL 4 – 5, target TRL 6 – 7
<b>NMP 25 – 2015:</b> Inducement prize for the development of new materials and materials-based creative solutions by upstream collaboration between material scientists and designers	<b>PRIZE</b>
<b>NMP 26 bis – 2015:</b> Accelerating the industrial uptake of research in the fields of advanced manufacturing and processing	<b>SME Instrument (70% funding)</b> Funding for phase 1 will be provided in the form of a lump sum of 50 000 EUR)

# 6 challenges

- **Challenge 5: Safety of nanotechnology–based applications and support for the development of regulation (EUR 21 million)**
  - substantially *improve the performance of many products* through the unique properties of engineered nanoparticles.
  - The same properties, however, give rise to questions and concerns with regard to *potential health and safety risks*.
- **Challenge 6: Addressing generic needs in support of governance, standards, models and structuring in nanotechnology, advanced materials and production (EUR 16 million)**
  - Address a number of general, *structural needs* to deploy the key enabling technologies for the benefit of European industry and society
    - *infrastructure, metrology and standards*, skills
    - Networking, *dissemination and communication* issues
    - business models.
  - Sources of funding other than Horizon 2020, such as structural funds, are vital and appropriate links will be explored.

## **Safety of nanotechnology-based applications and support for the development of regulation**

<b>NMK 30 – 2015: Increasing the capacity to perform nano-safety assessment</b>	Research & Innovation Actions (100% funding) Expected implementation: TRL 4
<b>NMK 31 – 2015: Next generation tools for risk governance of Nanomaterials</b>	Research & Innovation Actions (100% funding) No more than one project will be funded Expected implementation: TRL 5

## **Addressing generic needs in support of governance, standards, models and structuring in nanotechnology, advanced materials and advanced manufacturing and processing**

<b>NMK 33 – 2015: Societal engagement on responsible nanotechnology</b>	Coordination and Support Action - Support Action No more than one project will be funded
<b>NMK 41 – 2014/2015: Presidency events</b>	Coordination and Support Action - Coordination Action



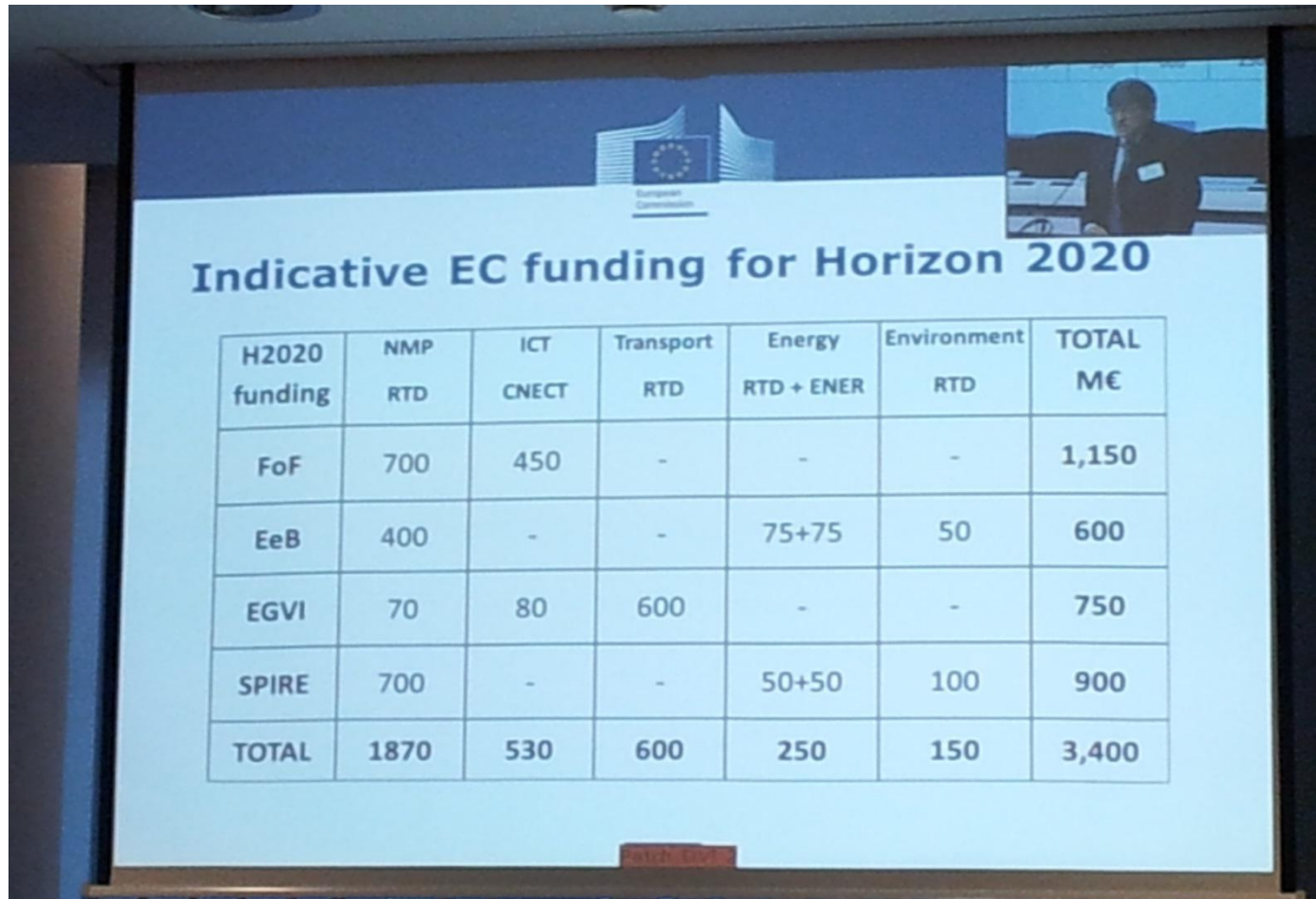
# NEWS FROM BRUSSELS ON THE PPPS

# Important for PPPs

- Value chain approach
- Cross sectorial / transferable technologies
- Lifecycle perspective
- Outline business plan
- Valorisation of results and products
- Address non technological barriers and bottlenecks
- Links to legislation and standardisation



# H2020 PPP Budget

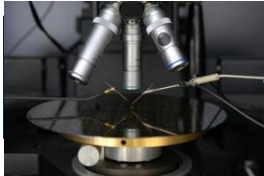


**Indicative EC funding for Horizon 2020**

H2020 funding	NMP RTD	ICT CNECT	Transport RTD	Energy RTD + ENER	Environment RTD	TOTAL M€
FoF	700	450	-	-	-	1,150
EeB	400	-	-	75+75	50	600
EGVI	70	80	600	-	-	750
SPIRE	700	-	-	50+50	100	900
<b>TOTAL</b>	<b>1870</b>	<b>530</b>	<b>600</b>	<b>250</b>	<b>150</b>	<b>3,400</b>

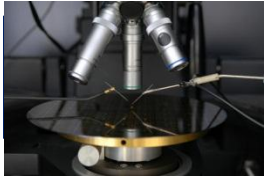


**[HTTP://WWW.EFFRA.EU/](http://www.effra.eu/)**



## Call for Factories of the Future (FoF)

- "Re-industrialisation"
  - Ensure best use of technology to boost productivity
  - Increase market share of EU suppliers of innovative manufacturing technology (CPS robotics, lasers and photonics, etc..)
  - Raise industrial investment in equipment from 6% to 9% by 2020
- More environment-friendly and competitive manufacturing:
  - Reduction of energy consumption in manufacturing, up to 30%
  - Less waste generated by manufacturing activities , up to 20%
  - Less consumption of materials (up to 20%)
- R&I to integrate and demonstrate at least 40 innovative manufacturing technologies in:
  - Adaptive and smart manufacturing equipment, 3D printing, increased production performance, collaborative and mobile enterprises, ..



## Call for Factories of the Future (FoF)

- **STAKEHOLDERS**
- Represented by the EFFRA stakeholder association
  - **Originating from the Manufuture ETP**
- A wide range of SMEs in manufacturing
  - **Users and suppliers**
- Major Stakeholders
  - **European Associations (e.g. ORGALIME, CECIMO, ..)**
  - **100+ direct memberships from Industry, RTOs, Academia and National Associations**

# Topic Factories of the Future

<b>FoF 8 – 2015:</b> <b>ICT-enabled modelling, simulation, analytics and forecasting technologies</b>	<b>Research and Innovation Action (100% funding)</b> <b>And Coordination and Support Action</b>
<b>FoF 9 – 2015:</b> <b>ICT Innovation for Manufacturing SMEs</b>	<b>Innovation Action (70% funding)</b> <b>And Coordination and Support Action</b>
<b>FoF 10 – 2015:</b> <b>Manufacturing of custom made parts for personalised products</b>	<b>Research &amp; Innovation Actions (100% funding)</b> Expected implementation: TRL 4 – 6 A leading role of the participating SMEs with R&D capacities is expected
<b>FoF 11 – 2015:</b> <b>Flexible production systems based on integrated tools for rapid reconfiguration of machinery and robots</b>	<b>Innovation Actions (70% funding)</b> Expected implementation: TRL 5 – 7
<b>FoF 12 – 2015:</b> <b>Industrial technologies for advanced joining and assembly processes of multi-materials</b>	<b>Innovation Actions (70% funding)</b> Expected implementation: TRL 5 – 7
<b>FoF 13 – 2015:</b> <b>Re-use and re-manufacturing technologies and equipment for sustainable product life cycle management</b>	<b>Research &amp; Innovation Actions (100% funding)</b> Expected implementation: TRL 4 – 6
<b>FoF 14 – 2015:</b> <b>Integrated design and management of production machinery and processes</b>	<b>Research &amp; Innovation Actions (100% funding)</b> Expected implementation: TRL 4 – 6



**[HTTP://WWW.E2B-  
EI.EU/DEFAULT.PHP](http://www.e2b-ei.eu/default.php)**



## Call for Energy-efficient Buildings (EeB)

- **Boosting the Energy-efficiency in Buildings**
  - Speed up the reduction of energy use and Green House Gas emissions in line with the 2020 goals by targeting a higher renovation / renewal rate.
  - Development of affordable energy efficiency solutions turning the business into a knowledge-driven sustainable business
  - Development of systemic approaches for green buildings and districts, addressing interoperability and standards.
- **Fostering new and higher quality jobs in the sector:**
  - Turning the largest European single activity (almost 10% of the EU GDP) into a sustainable, higher skilled industry, taking account of the millions of SMEs active in the sector.
- **R&I to integrate and demonstrate at least 40 innovative manufacturing technologies in:**
  - Innovative construction, retrofitting, district level approaches and performance monitoring.



## Call for Energy-efficient Buildings (EeB)

- **STAKEHOLDERS**
- Represented by the E2BA stakeholder association
  - Originating from the European Construction Technology Platform (ECTP)
- A wide range of SMEs in construction
  - Users, suppliers, service providers.....
- Major Stakeholders
  - 12 sub-sector associations (architects, materials suppliers, housing agencies etc.)
  - Strong direct involvement from Large industry
  - 100+ direct memberships from Industry, RTOs, Academia and Associations



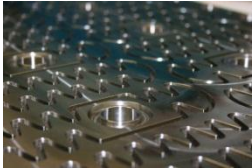
# Topic preview EeB 2015

## Call for EeB – Energy-efficient Buildings

<b>EeB 5 – 2015:</b> <b>Innovative design tools for refurbishment at building and district level</b>	<b>Innovation Actions (70% funding)</b> <b>Expected implementation: TRL 5 – 7</b>
<b>EeB 6 – 2015:</b> <b>Integrated solutions of thermal energy storage for building applications</b>	<b>Research &amp; Innovation Actions (100% funding)</b> <b>Expected implementation: TRL 4 – 6</b>
<b>EeB 7 – 2015:</b> <b>New tools and methodologies to reduce the gap between predicted and actual energy performances at the level of buildings and blocks of buildings</b>	<b>Innovation Actions (70% funding)</b> <b>Expected implementation: TRL 5 – 7</b>
<b>EeB 8 – 2015:</b> <b>Integrated approach to retrofitting of residential buildings</b>	<b>Innovation Actions (70% funding)</b> <b>Expected implementation: TRL 5 – 7</b>

**SPIRE**

**[HTTP://WWW.SPIRE2030.EU/](http://www.spiire2030.eu/)**



## Call for Sustainable Process Industries (SPIRE)

- Contribution of the process industry to the EU2020 goals
  - Processes and systems for increased energy and materials resources efficiency
  - Contribution to EU competitive edge
  - Ensuring growth and jobs with long-term stability
- Radical steps towards environment-friendly processing:
  - A reduction in fossil energy intensity of up to 30% by 2030
  - Up to 20% reduction in non-renewable, primary raw material intensity by 2030
  - a significant contribution to a drastic efficiency improvement in CO<sub>2</sub>-equivalent footprints of up to 40% by 2030
  - potential improvements extend beyond “process industry”
- R&I to integrate and demonstrate at least 40 innovative systems and technologies:
  - Adaptable processes using alternative feedstocks, reduction of waste and water usage; CO<sub>2</sub> reduction, novel green materials, industrial symbiosis, ..



## Call for Sustainable Process Industries (SPIRE)

- **STAKEHOLDERS**
- Initiative of 8 process industry sectors
  - Chemical, Steel, Process engineering, Minerals, Non-ferrous metals, Cement, Ceramics and Water
  - Support from the relevant European industrial associations
  - Represented in a common association: A.SPIRE
- A broad commitment
  - Direct commitment from large industries
  - Wide representation across all sectors
  - 70+ direct memberships from Large Industry, SMEs, Academia and RTOs

# Topic preview SPIRE 2015

## Call for SPIRE – Sustainable Process Industries

<b>SPIRE 5 – 2015:</b> <b>New adaptable catalytic reactor methodologies for Process Intensification</b>	Research & Innovation Actions (100% funding) Expected implementation: TRL 3 – 5
<b>SPIRE 6 – 2015:</b> <b>Energy and resource management systems for improved efficiency in the process industries</b>	Research & Innovation Actions (100% funding) Expected implementation: TRL 4 – 6 A leading role of the participating SMEs with R&D capacities is expected
<b>SPIRE 7 – 2015:</b> <b>Recovery technologies for metals and other minerals</b>	Innovation Actions (70% funding) Expected implementation: TRL 5 – 7
<b>SPIRE 8 – 2015:</b> <b>Solids handling for intensified process technology</b>	Innovation Actions (70% funding) Expected implementation: TRL 5 – 7
<b>SILC II Sustainable industry Low Carbon II</b>	
<b>SILC II–2014</b> <b>Sustainable industry Low Carbon II</b>	Innovation Actions (50% funding)! Expected implementation: TRL 5 – 7



## Contribution to Green Vehicles (societal challenge 4)

- Improved battery technologies for Fully Electric Vehicles (FEV)
- Building on results from projects of the FP7 GCI PPP
- Next generation of batteries should be **made** : developed, tested, produced in Europe

## Contribution to WASTE (Societal challenge 5)

- **Eco-innovative solutions** and resource-efficient products, processes and services
- **Industrial symbiosis** : turning waste from one industry into useful feedstock for another one.

## SME Specific instrument

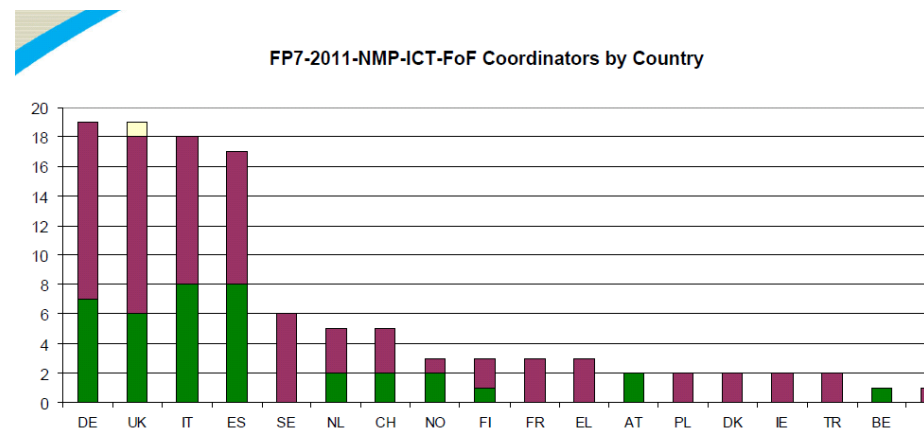
- **1 topic in Nanotechnology and Materials – 2014 and 1 in PPP – 2015**
- Fast track – bottom-up
- Specific management arrangements

# PPP Webstreams

- [http://ec.europa.eu/research/industrial\\_technologies/information-day-for-ppp-2014\\_en.html](http://ec.europa.eu/research/industrial_technologies/information-day-for-ppp-2014_en.html)

# Evaluation of the first calls

	Total submitted	Total funded	CH submitted	CH funded	CH success rate	EU success rate
FoF	181	21	50	7	14%	11.6%
EeB	90	13	11	2	18.2%	14.4%
SPIRE	68	11	9	2	22.2%	16.2%







# FAQ