#InvestEUresearch

Horizon 2020 Work Programme for Research & Innovation 2018-2020

Advanced Materials & Nanotechnology with focus on Open Innovation Test Beds

SOFIA – 24 November 2017

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DG Research & Innovation – Industrial Technologies

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EU Policy Context

R&I in the context of European policy priorities (Political Guidelines for the Juncker Commission, July 2014)

- To boost jobs, growth and investment
- To realise a connected digital single market
- To implement a resilient Energy Union with a forward looking climate change policy
- To make Europe a stronger global actor

Commissioner Moedas' priorities

- Open innovation, Open science, Open to the world

http://bookshop.europa.eu/en/open-innovation-open-science-open-to-the-world-pbKI0416263/

European Commission

What are the challenges

- Fast growing competitors
- Investments outside EU
- EU still good in patenting, less good in turning R&D into innovation and business (e.g. KETs)
- Taking care of the SME landscape, value chains,

  « eco-systems »
- Difficulties in access to financing
- Keeping and developing skills and competences

➔ **How to make industry invest and create jobs in Europe, renew and extend global leadership and generate returns for Europe.**

European Commission

Investment in Manufacturing and R&I expenses

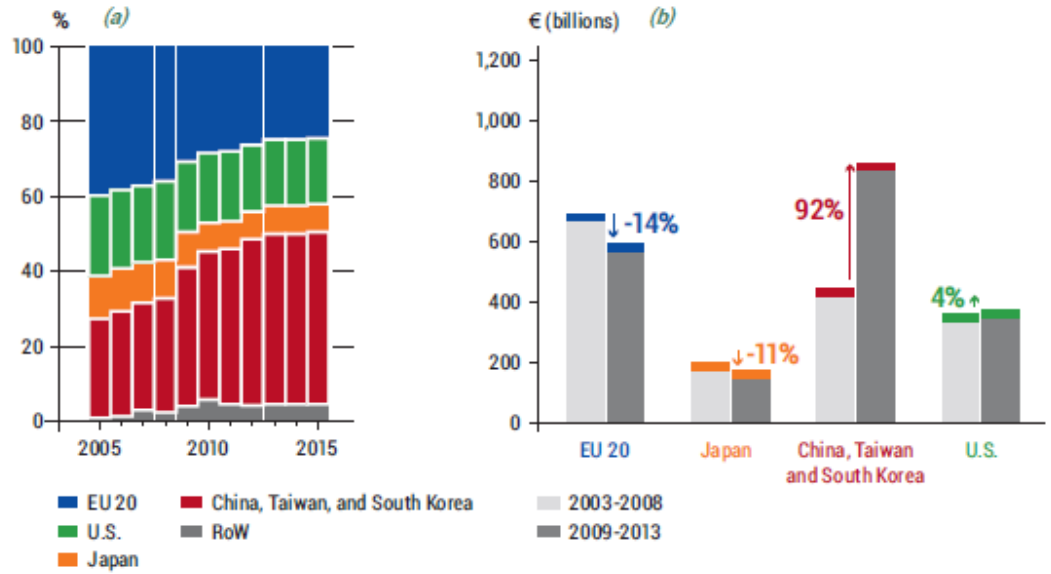
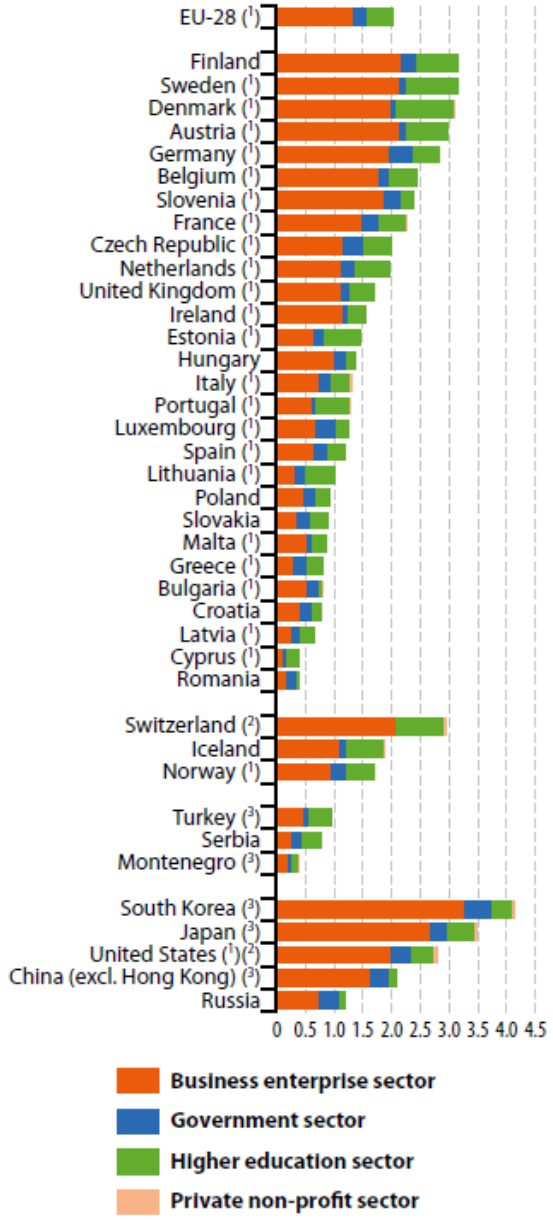


Figure 1.7. (a) Share of world's total manufacturing investment by regions and (b) Average change in total manufacturing investment by regions between the period 2003-2008 and 2009-2013. [32]

Source: Eurostat, *Smarter, greener, more inclusive? Indicators to support the Europe 2020 Strategy, 2016 edition*

KETs HLG 2015

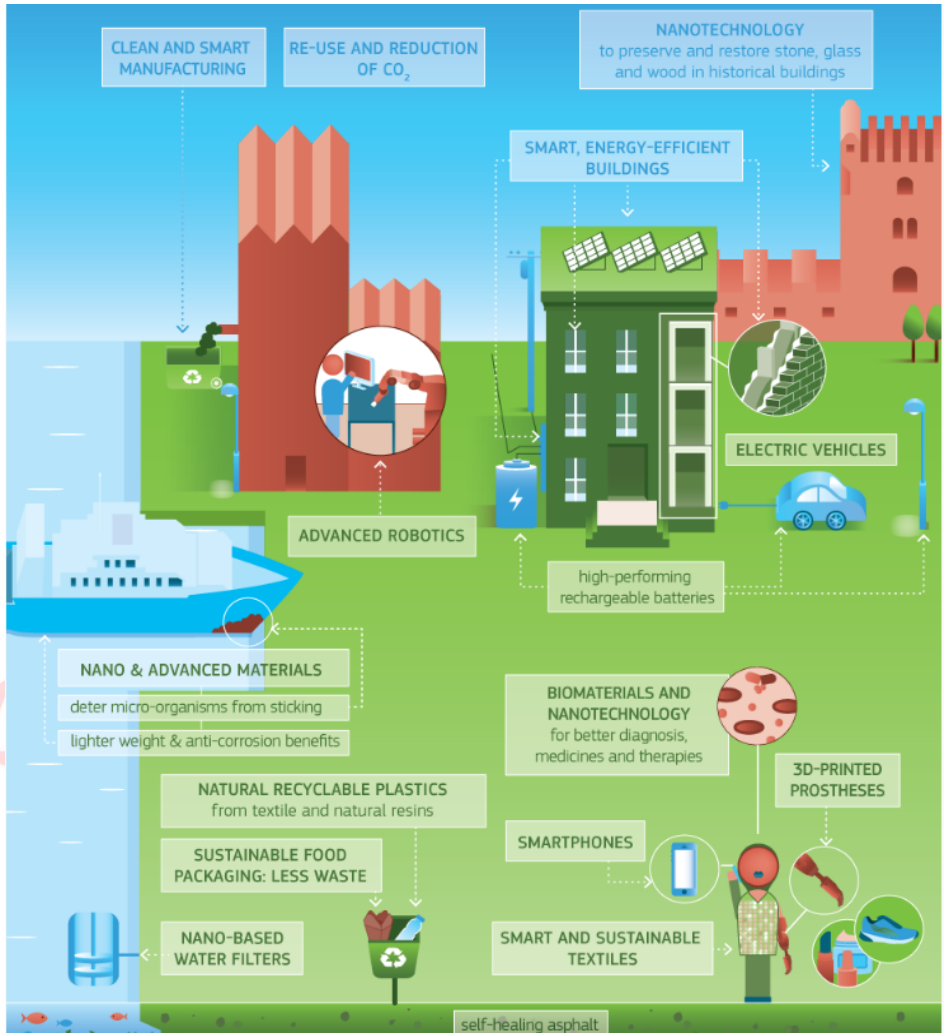
Figure 2.6: Gross domestic expenditure on R&D, by sectors of performance, by country, 2014
(% of GDP)



(1) Data are estimates and/or provisional.
(2) 2012 data instead of 2014.
(3) 2013 data instead of 2014.

Source: Eurostat (online data code: rd_e_gerdtot)

Key Enabling Technologies at the heart of European competitiveness



KETs Info graphic (2016)

European Commission

What are Key Enabling Technologies

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

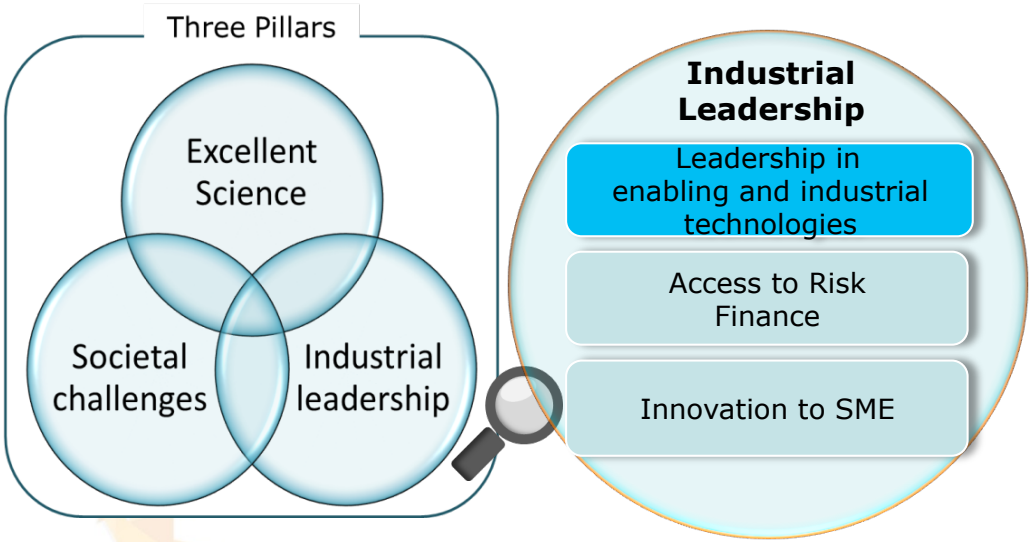
- **Nanotechnologies**
- **Advanced Materials**
- **Biotechnology**
- **Advanced Manufacturing & Processing**
- Micro- and nano-electronics
- Photonics

European KET Strategy:

- Review by High Level Strategy Group (starting autumn 2017)
- KET High-level Group: final report 'KETs: Time to Act', June 2015
- EC Communications COM(2009)512 & (2012)341

European Commission

NMBP in Horizon 2020

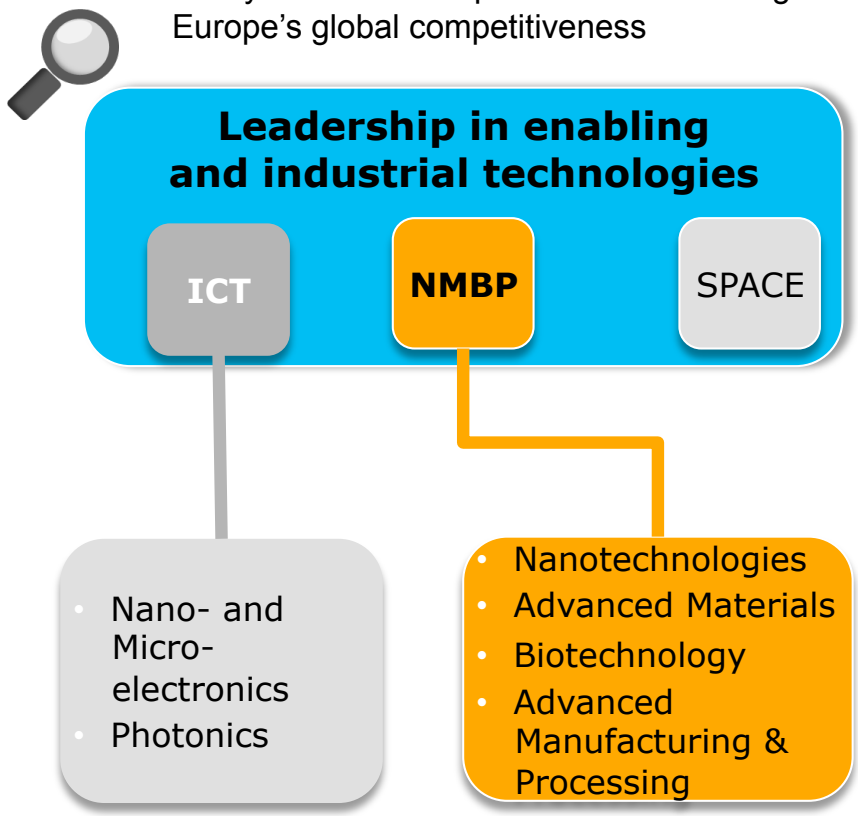


Indicative budget: 75 billion € *

Indicative Budget: 16.5 billion € *

Out of it for NMBP: 3.8 billion € *

Key Enabling Technologies (KETs) areas of key industrial competences determining Europe's global competitiveness



** July 2015 – includes EIT, JRC, "Science with and for Society", "Spreading Excellence / Widening Participation", in addition to three priorities above*

European Commission

NMBP in Horizon 2020

R&D and innovation with a strong industrial dimension and in partnership with industry

- Activities primarily developed through relevant industrial roadmaps (ETPs, PPPs)
- Requirements for business cases and exploitation strategies for industrialisation

Strengthening industrial capacities including SMEs, including through synergies with other funds (private – public)

- Cross-cutting KETs, including pilot lines and demonstrators, addressing societal challenges

Outcome and impact orientation, developing key technology building blocks and bringing them closer to the market

- Technology Readiness Level (TRLs) from 3-4 to 6-7 with emphasis on expected impact

Total budget under Horizon 2020: 3.8 billion €

European Commission

H2020 LEIT NMBP Operational Objectives

- Stimulate growth and jobs
- Enhance the Integration and deployment of enabling technologies by European industry
- Stimulate strong private sector involvement
- Enhance product competitiveness and impact
- Technology validation in an industrial environment to a complete and qualified system, ready or close to enter the market
- Provide new opportunities to tackle societal challenges

European Commission

Digitising European industry – the importance of data

- Horizon 2020: **Open Data by default** with opt-out possibility – requirements for Data Management Plans

- Industrial/SME Data:
  - Aware of data and their value – balance between sharing & protection
  - Data at the heart of the "4th industrial revolution«

- Policy background: Digital Single Market
  - "Digitising European Industry" (Communication April 2016)
    - *Industrial platforms (e.g. "Connected smart factory")*
    - *Digital Innovation Hubs and Open Innovation Test Beds (for SMEs)*
    - *Skills*
    - *Standards*
  - European Cloud Initiative and European Science Cloud
  - Data Economy, Platform Economy, incl. data ownership & liability questions

Nanotechnologies and Advanced Materials

- **Industry successive markets**

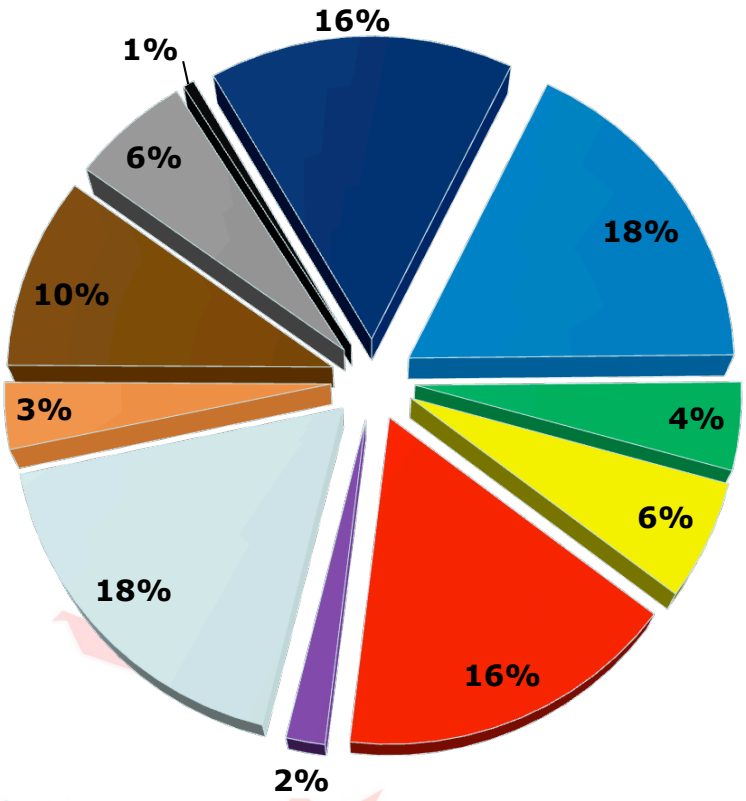
- **Example:**

Nanoparticles	Nanocoatings Thin-films (Self-Cleaning, anti-scratch…)	Glass Producer, Windscreens producer Car manufacturer

Source: Lux Research (2005) The Nanotech Intellectual Property Landscape. Lux Research: New York

European Commission

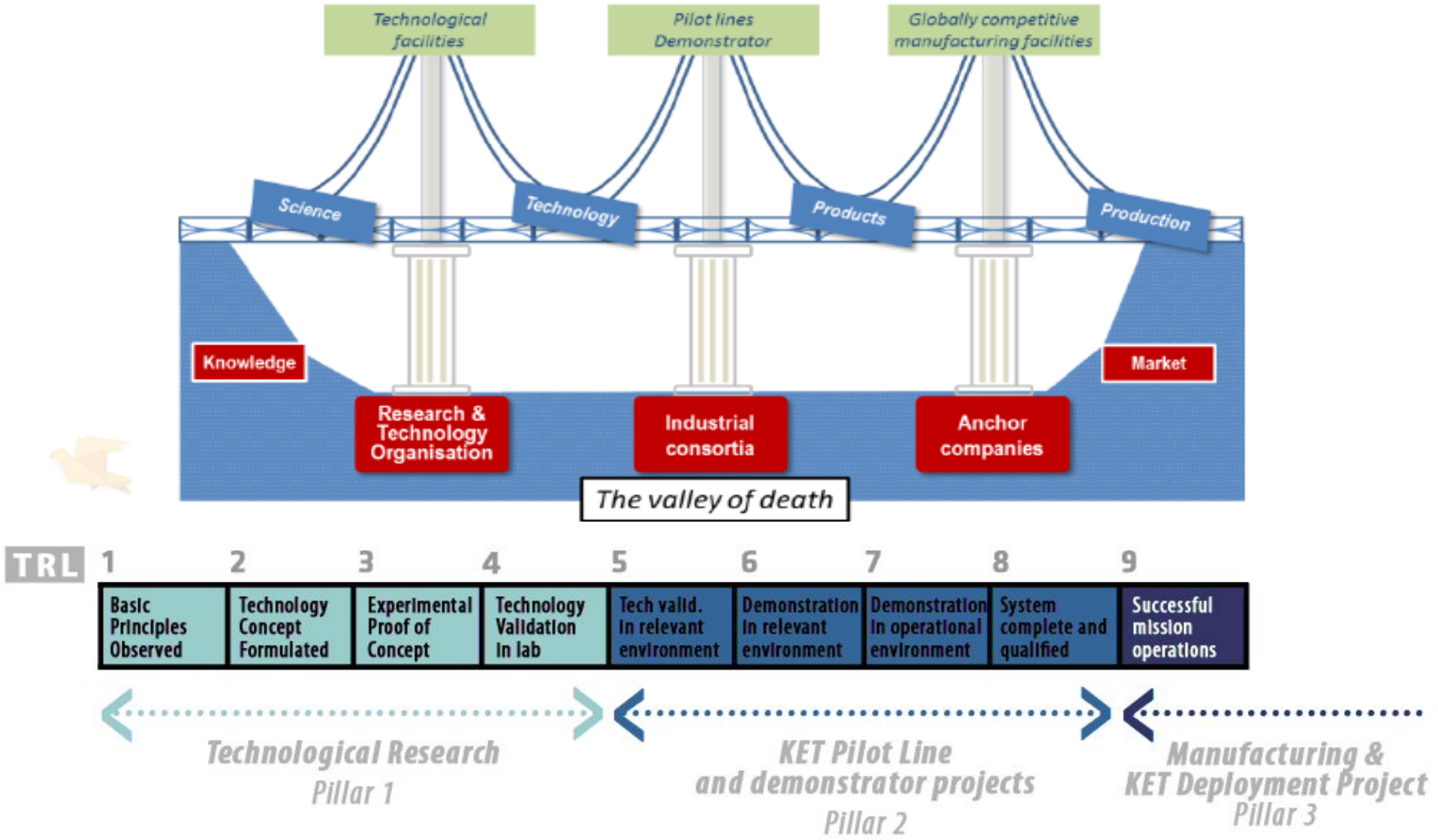
Nanotechnologies and Advanced Materials Horizon 2020 Projects



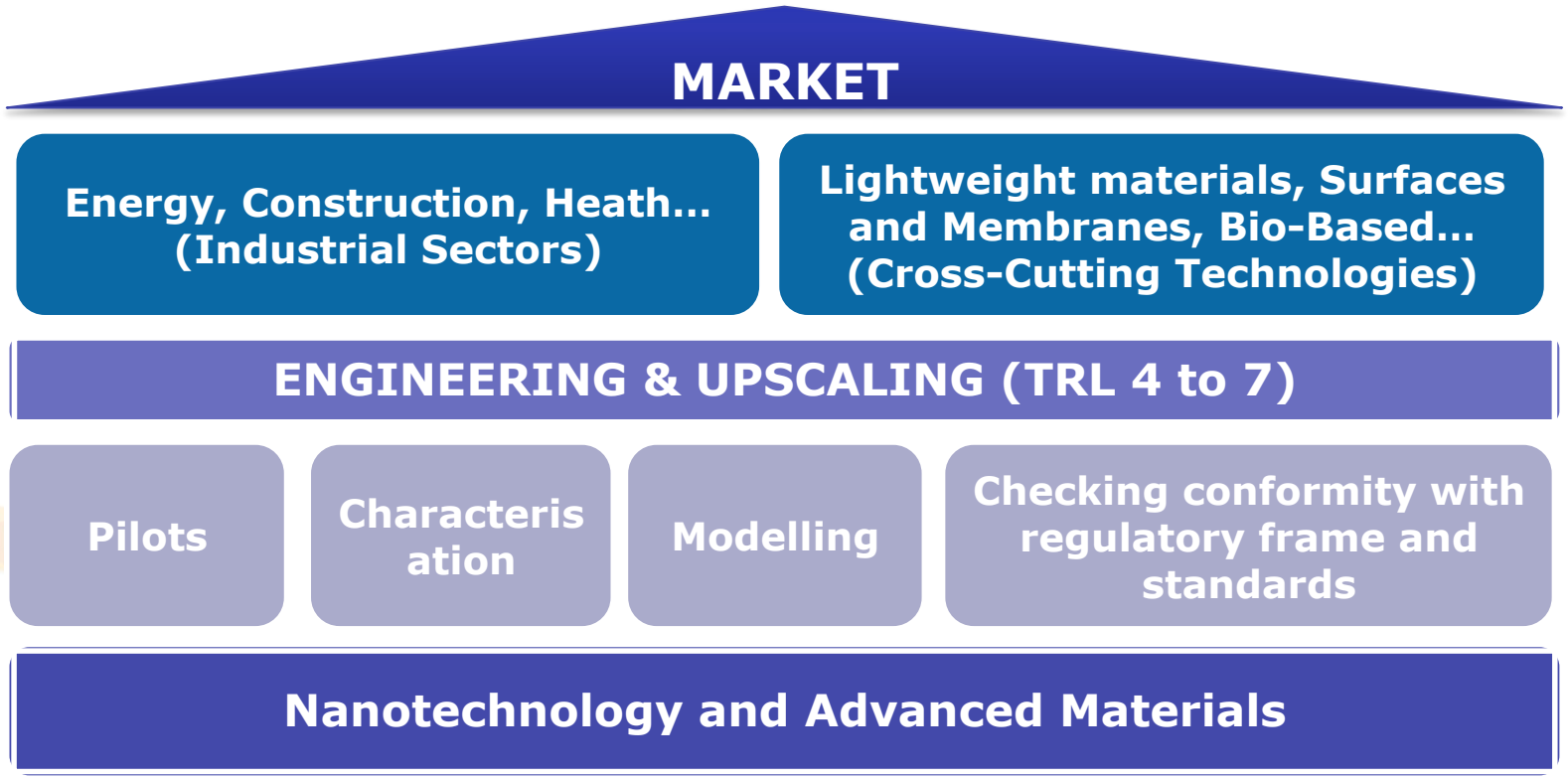
- Chemistry/Catalysis
- Energy
- Photonics/ Electronics
- Transport
- Health
- ICT
- Cross-cutting
- Nanosafety/Nanoregulation
- Environment
- Construction materials
- Others/Networking

European Commission

Crossing the valley of death

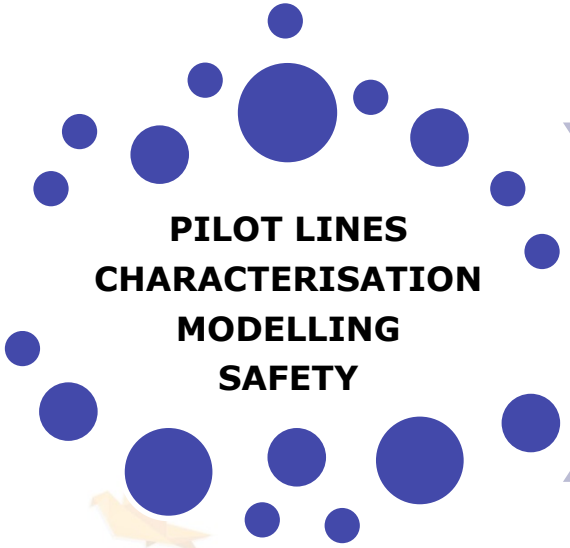


Overcoming the Challenge of Upscaling:
Reduction of Technological Risk & attract investments



European Commission

Open Innovation Test Beds



ACCELERATING INNOVATION for MATERIALS Industry

In the two KETs:

Nanotechnologies and Advanced Materials

Open Innovation Test Beds

FP7-H2020

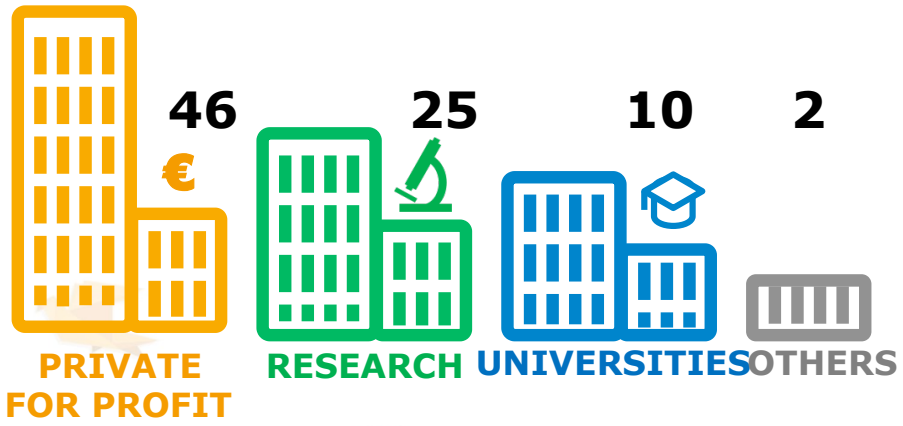
H2020-FP9

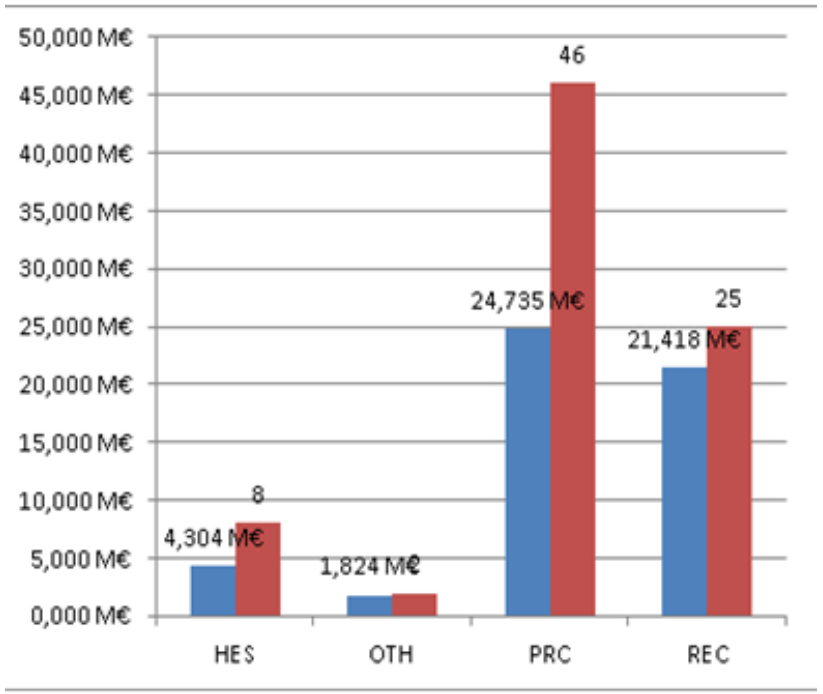
European Commission

Enablers for Innovation Ecosystems

- **Industry Pilot Facilities**

83 Pilot Facilites and Demonstrators, mostly with industry:





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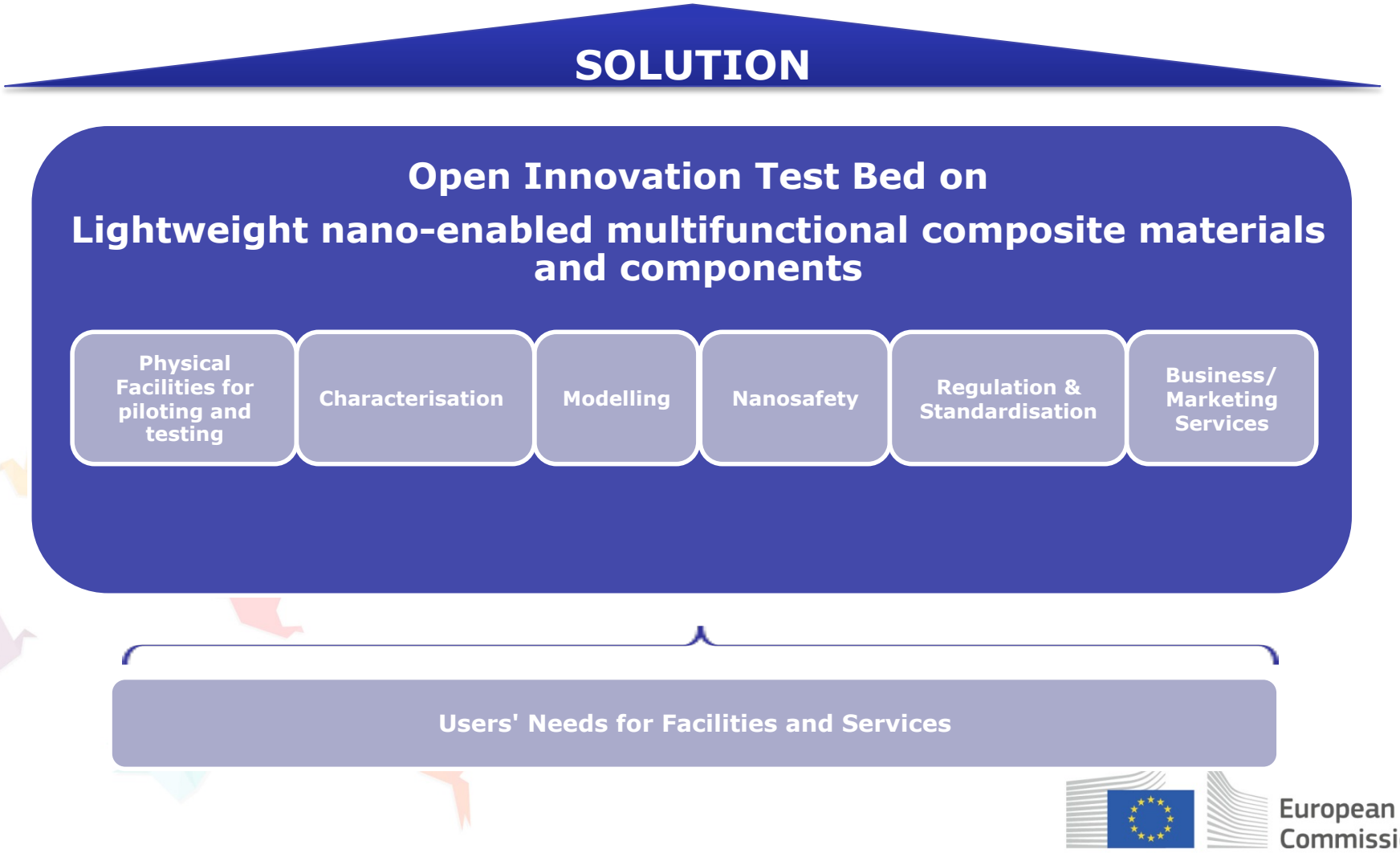
Open Innovation Test Beds - Tasks

- Open access to facilities and services for design, development (prototyping), testing, and upscaling of materials and nanotechnologies for new products
- Demonstration in the relevant industrial environments
- Show-casing technologies with user industry in cross border applications
- Facilitate access of European SMEs along product supply chains
- Identification and assessment of potential regulatory, economic and technical barriers
- Engagement of stakeholders across the EU and the Associated Countries

Example of Test Bed with Own Facilities and Services



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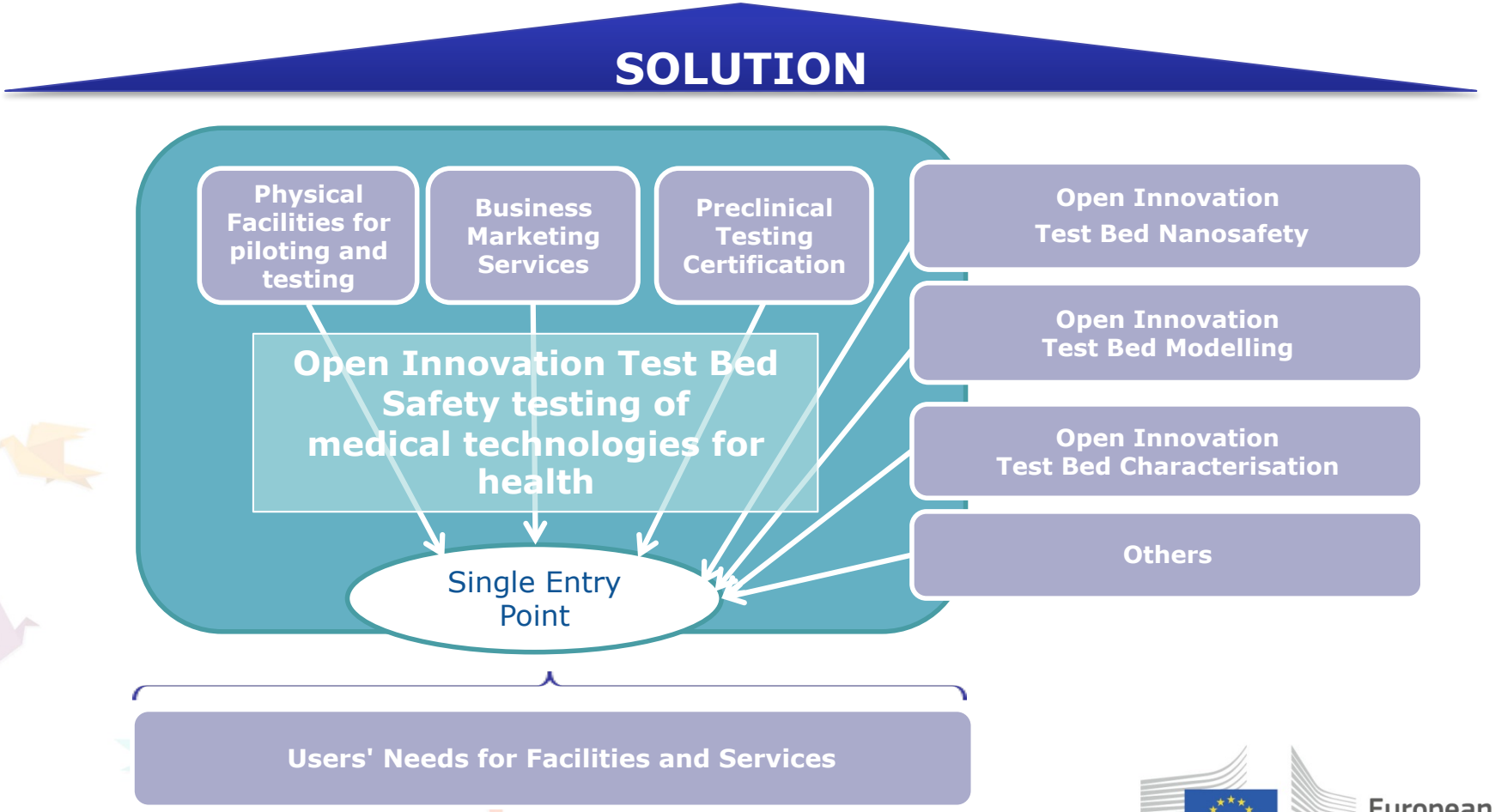
Example of Test Bed with Facilities & Service in House and Provided by External Entities



European Commission

Open Innovation Test Beds – Expected Impact

- Open and upgraded facilities at the EU level
- Reduced services access costs for companies using the test beds
- Improved industrial productivity
- Accelerated innovation in the specific domain
- Increased access to finance (for SMEs in particular) for investing in these materials or in applications using them
- ~20% increase in SMEs access to hubs' services and increased access to finance for investing in materials or in the applications using them.

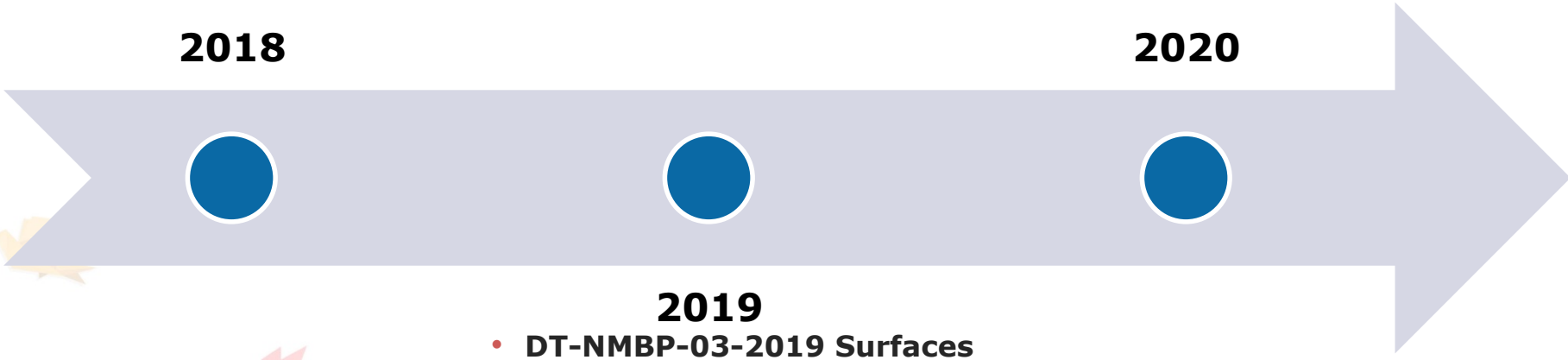
European Commission

WP2018-2020 TEST BEDS

For upscaling nanotechnology and materials, Open Innovation Test Beds will be funded in 6 technology domains, plus Characterisation and Modelling

- **DT-NMBP-01-2018 Lightweight**
- **DT-NMBP-02-2018 Med-tech Health**
- **DT-NMBP-07-2018 Characterization**

- **DT-NMBP-04-2020: Bio-based**
- **DT-NMBP-05-2020: Building Envelopes**
- **DT-NMBP-06-2020: Nano-pharmaceuticals**
- **DT-NMBP-11-2020: Modelling**



- EMMC - European Materials Modelling Council
- EPPN - European Pilot Production Network
- Nanosafety Cluster

European Commission

NMBP Calls 2018-2019

NMBP WP published on the participant portal

LEIT NMBP – 3 calls – 2018-19 budgets

- FOUNDATIONS FOR TOMORROW'S INDUSTRY – **269 M€**
- TRANSFORMING EUROPEAN INDUSTRY – **340 M€**
- INDUSTRIAL SUSTAINABILITY – **447 M€**

Publication 27 October 2017

2018 Deadlines

- Two-stage topics: **23/01/18** and **28/06/18**
- Single-stage topics: **22/02/18**
- Lump sum funding pilot scheme topic: **DT-NMBP-20-2018**: **08/03/18**
- EU-China flagship initiative on Biotechnology topic: **CE-BIOTEC-04-2018**: **25/04/18**

European Commission

FOUNDATIONS FOR TOMORROW'S INDUSTRY
Open Innovation Test beds (2018-2019)

Topic Title	Year	Type
DT-NMBP-01-2018: Open Innovation Test Beds for Lightweight nano-enabled multifunctional composite materials and components	2018	IA
DT-NMBP-02-2018 Open Innovation Test Beds for Safety Testing of Medical Technologies and Health	2018	IA
DT-NMBP-03-2019 Open Innovation Test Beds for nano-enabled surfaces and membranes	2019	IA

European Commission

FOUNDATIONS FOR TOMORROW'S INDUSTRY
Materials Characterisation and Computational Modelling (2018-2019)

Topic Title	Year	Type
DT-NMBP-07-2018: Open Innovation Test Beds for Characterisation	2018	IA
DT-NMBP-09-2018: Accelerating the uptake of materials modelling software	2018	IA
DT-NMBP-08-2019: Real-time nano-characterisation technologies	2019	RIA
DT-NMBP-10-2019:Adopting Materials modelling in manufacturing processes	2018	RIA
DT-NMBP-12-2019: Sustainable Nano-Fabrication	2019	CSA

European Commission

FOUNDATIONS FOR TOMORROW'S INDUSTRY
Governance, Science-Based Risk Assessment and Regulatory Aspects (2018-2019)

Topic Title	Year	Type
NMBP-13-2018: Risk Governance nanotechnology	2018	RIA
NMBP-14-2018: Nanoinformatics: from materials models to predictive (eco)toxicology	2018	RIA
NMBP-15-2019: Safe by design, from science to regulation: metrics and main sectors	2019	RIA

European Commission

TRANSFORMING EUROPEAN INDUSTRY
BIOTECHNOLOGY & MEDICAL
(2018-2019)

Topic Title	Year	Type
BIOTECH-01-2018: Standardisation in Synthetic Biology	2018	CSA
BIOTECH-02-2019: Boosting the efficiency of photosynthesis	2019	RIA
BIOTECH-03-2018: Synthetic biology to expand diversity of nature's chemical production	2018	RIA
CE-BIOTECH-04-2018:New biotechnologies for environmental remediation	2018	RIA
CE-BIOTECH-05-2019:Microorganism communities for plastics bio-degradation	2019	RIA
NMBP-22-2018: Osteoarticular tissues regeneration	2018	RIA

European Commission

INDUSTRIAL SUSTAINABILITY
CATALYSING THE CIRCULAR ECONOMY (2018-2019)

Topic Title	Year	Type
CE-NMBPP-24-2018: Catalytic transformation of hydrocarbons	2018	RIA
CE-NMBPP-25-2019: Photocatalytic synthesis	2019	RIA
CE-NMBPP-26-2018: Smart plastic materials with intrinsic recycling properties by design	2018	RIA

European Commission

INDUSTRIAL SUSTAINABILITY
CLEAN ENERGY THROUGH INNOVATIVE MATERIALS
&
CULTURAL HERITAGE
(2018-2019)

Topic Title	Year	Type
LC-NMBP-27-2019: Strengthening EU materials technologies for non-automotive battery storage	2019	RIA
LC-NMBP-29-2019: Materials for non-battery based energy storage	2019	RIA
LC-NMBP-30-2018: Materials for future highly performant electrified vehicle batteries	2018	RIA
LC-NMBP-32-2019: Smart materials, systems and structures for energy harvesting	2019	RIA
NMBP-33-2018: Innovative and affordable solutions for the preventive conservation of cultural heritage	2018	IA

European Commission

Expected Impact

- Technological ambitions, including goals for environmental sustainability, cost reduction
- User involvement
- Take-up of results for industrialisation (business cases and exploitation strategies)
- Building an eco-system for test/validation infrastructure (for SMEs)
- Reach out to newcomers and civil society.

N.B. Proposal evaluation => Excellence & Impact criteria equally important; higher weighting for impact for Innovation Actions!

European Commission

OPEN INNOVATION TEST BEDS (2018-2019)

- **DT-NMBP-01-2018:** Open Innovation Test Beds for Lightweight, nano-enabled multifunctional composite materials and components (IA)
- **DT-NMBP-02-2018:** Open Innovation Test Beds for Safety Testing of Medical Technologies for Health (IA)
- **DT-NMBP-07-2018:** Open Innovation Test Beds for Characterisation (IA)
- **DT-NMBP-03-2019:** Open Innovation Test Beds for nano-enabled surfaces and membranes (IA)

European Commission

DT-NMBP-01-2018: Open Innovation Test Beds for Lightweight, Nano-enabled Multifunctional Composite Materials and Components

From TRL 4 to 7!

Specific Challenge

- **Establish facilities** for cost effective and sustainable industrial upscaling and deployment of **new** smart lightweight and **nano-enabled** multi-functional and environmentally friendly **materials**,
- **Provide materials** with radically enhanced properties and functionalities, for high-value composite **components and structures** in a wide range of industrial applications.
- **Easily accessible** through open, networked end user entry points
- Tested in **industrial environment** also for **regulatory** constraints
- **Relevance** for a large number of sectors and applications…
  - e.g. incorporating smart interacting sensors or indicators, ..
  - e.g. offering enhanced electrical performance, reliability, high-performance thermal and/or electrical conductivity, UV shielding etc…
  - all validated on relevant use cases

Up to 15 m€

IA 70-100%

European Commission

DT-NMBP-01-2018: Open Innovation Test Beds for Lightweight, Nano-enabled Multifunctional Composite Materials and Components

Scope

- Upgrade or develop **materials facilities and processing techniques**
- Available to industry through open access at fair conditions and cost, for enhanced user involvement and accessibility.
- Provide design/modelling, development, characterisation/testing, regulatory and safety assessment, and upscaling services of specific nano-particle/nano-objects based new materials.
- **Demonstrate** with end users in relevant industrial environments.
- Potential **technical, economical and regulatory barriers** considered
- Cover whole materials development chain: **single entry points**

Proposals for Innovation Actions submitted under this call should include a business case and exploitation strategy

European Commission

DT-NMBP-01-2018: Open Innovation Test Beds for Lightweight, Nano-enabled Multifunctional Composite Materials and Components

Open services - Value chain - SME access – Business plan

Expected impact

- Open, upgraded facilities, easily accessible to users across Europe.
- Attracting new SME users with >20% increase for existing test beds.
- Additional turnover of >4 times EU funding, within 5 years end of grant
- >15% improved process parameters.
- > 20% faster verification of materials performance.
- >20% improved industrial productivity, reliability, environmental performance, durability, and life-cycle costs of these materials.
- >15% reduction in energy consumption across sectors using the materials.
- Increased access to finance (for SMEs in particular) for investing in the materials or applications.

NOTE: Relevant indicators and metrics, with baseline values, to be provided!

European Commission

DT-NMBP-02-2018: Open Innovation Test Beds for Safety Testing of Medical Technologies for Health

TRL from 4/5 to 7

Two new EU regulations that govern medical technologies (medical devices and in-vitro diagnostics) introduce a new set of rules to improve the safety of medical devices for the benefit of patients.

The challenges are :

- To preserve timely access to innovative healthcare solutions and to support the competitiveness of the European industry,
- To provide testing facilities and support services to help industry and users develop and test medical devices that comply with the new safety regulations.
- To provide companies and users in this sector access to affordable and advanced testing facilities and services to facilitate the development of new and safe medical technologies
- To define new methodologies for clinical testing, when relevant.

European Commission

DT-NMBP-02-2018: Open Innovation Test Beds for Safety Testing of Medical Technologies for Health

TRL from 4/5 to 7

Scope

- Verify compliance of design, development, preclinical and clinical testing of new/existing medical devices with new regulations.
- Accelerate and simplify pre-clinical and clinical testing paradigms.
- Identify regulatory, medico-economic and technical barriers.
- Open fair and transparent access as well as visibility and dissemination across the EU.
- Validate QC processes to permit on-line quality evaluation.
- Demonstrate medical devices in relevant environments.
- Propose services to maximise market uptake and awareness.
- Demonstrate wide application of services across Europe.

European Commission

DT-NMBP-02-2018: Open Innovation Test Beds for Safety Testing of Medical Technologies for Health

Open services - SME access -
Innovative materials – Impact!

Expected Impacts

- Faster approval and thereby reduced time to market of new medical devices.
- Innovative, safe and cost effective, healthcare medical devices.
- Open and upgraded safety testing facilities for medical devices.
- 20% increase in SMEs access to hubs' services.
- Substantial benefits for European citizens
- New market opportunities

European Commission

DT-NMBP-07-2018: Open Innovation Test Beds for Characterisation

TRL
from 4 to 6

Specific Objective:

Efficiency of materials up-scaling & use in new products in European manufacturing industry depends on advances in characterisation and testing. Essential industry competencies comprise **technologies, know-how and proficiency in interpretation of results, data, and characterisation standards** in order to help bring new materials into products.

Challenge:

to establish open user-driven characterisation test beds including all aspects of novel multi-scale & multi-modal characterisation solutions management, analytics and mining of the resulting data (Materials Informatics). Interaction is required between the stakeholders regarding the latest technological solutions, such as non-destructive characterisation approaches.

European Commission

DT-NMBP-07-2018: Open Innovation Test Beds for Characterisation

Establish open innovation characterisation test beds that will:

- create, sustain and drive the use of novel materials characterisation techniques, which will network materials characterisation stakeholders and implement an integrated approach. In particular:
  - Collectively develop **novel advanced solutions** for specific & relevant industrial problems.
  - Support advanced data analysis & storage, **standardisation, reference materials, regulation** & safety;
  - Facilitate **common approaches** to common problems for fast adoption of innovative tools for characterisation by industry and strengthen interface between academia and industry;
  - Enable the integration of information based on materials modelling & characterisation through the development of widely agreed & standardised datasheets
- Network relevant stakeholders across Europe for defining roadmaps, **application of real-time methods**, implementation of regulatory and safety requirements, training and management of information (Materials Informatics) & development of new skills.
- Proposals submitted under this topic should include actions designed to facilitate **cooperation with other projects**; to enhance user involvement; & to ensure the accessibility & reusability of data produced in the course of the project by agreeing on metadata for the description of materials characterisation and databases

TRL from 4 to 6

European Commission

DT-NMBP-07-2018: Open Innovation Test Beds for Characterisation

Expected impact:

- Translation of industrial needs into characterisation workflows, increased awareness & uptake by industry, & effective access of materials manufacturing companies to know-how & advanced tools;
- **Measurable reduction of costs for product design & time-to-market** by means of faster & cheaper evaluation of production process deviations;
- Increased ability and quantifiable cost reduction for industry to comply with regulations.

Proposals for Innovation Actions submitted under this call should include a business case and exploitation strategy

EUR ~ 9 million

European Commission

DT-NMBP-03-2019: Open Innovation Test Beds for nano-enabled surfaces and membranes

From TRL 4 to 7!

Specific Challenge

Establish facilities for cost effective and sustainable industrial upscaling and deployment of nano-enabled surface and membrane technologies.

Integration of state-of-the-art nano-scale processes for modification, functionalisation, and structuring/coating of surfaces or membranes.

- e.g. using thin film architecture, coating tech., surface structuration etc., and/or
- nanostructured membrane's functionalities.
- for improved properties (e.g. optical, surface energy, durability, reduced friction, separation, filtration etc.)

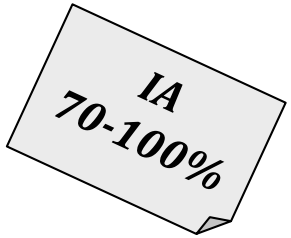
Proposals for Innovation Actions submitted under this call should include a business case and exploitation strategy

European Commission

DT-NMBP-03-2019: Open Innovation Test Beds for nano-enabled surfaces and membranes

Scope:

- Upgrade or develop **materials facilities and processing techniques**
- Available to industry through **open access** at fair conditions and cost, for enhanced user involvement and accessibility.
- Provide design/modelling, development, characterisation/testing, regulatory and safety assessment, and upscaling services of new nano-enabled surfaces and membranes.
- **Demonstrate** in relevant industrial environments.
- Applications can be industrial as well as consumer **products**.
- Potential **technical, economical and regulatory barriers** considered,
- Cover whole materials development chain: **single entry points**



European Commission

DT-NMBP-03-2019: Open Innovation Test Beds for nano-enabled surfaces and membranes

Open services - Value chain - SME access – Business plan!

Expected impact:

- **Open, upgraded facilities, easily accessible to users across Europe.**
- **Attract new SME users with >20% increase for existing test beds.**
- **Additional turnover of >4 times EU funding, within 5 years end of grant**
- **>15% improved process parameters.**
- **>20% faster verification of surface or membrane performances for highly promising applications.**
- **>20% improved industrial productivity, reliability, environmental performance, durability and life-cycle costs of the new surfaces or membranes.**
- **>15% reduction in energy consumption for applications using the novel nano-enabled surfaces or membranes.**
- **Increased access to finance (for SMEs in particular) for investing in the surface or membrane technology or in applications using them.**

NOTE: Relevant indicators and metrics, with baseline values, to be provided!

European Commission

Further information

Horizon 2020: http://ec.europa.eu/research/horizon2020/index_en.cfm

Key Enabling Technologies, R&I website :
http://ec.europa.eu/research/industrial_technologies/index_en.cfm

Participant Portal - Funding Opportunities and support services :
http://ec.europa.eu/research/participants/portal/desktop/en/home.html

National Contact Points in your country (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

National Contact Points website - webinars, presentations, guidance :
http://www.nmpteam.eu/

Research Enquiry Service:
http://ec.europa.eu/research/index.cfm?pg=enquiries

CORDIS database with EU funded research projects :
http://cordis.europa.eu/projects/home_en.html

European Commission

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About Horizon 2020

http://ec.europa.eu/research/horizon2020/

WP NMBP 2018/2020

FAQ on Open Innovation Test Beds

Living document: updated as of 20 November 2017

European Commission

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European Commission

1- What are OITBs for material upscaling, characterisation, modelling, and safety?

- **Entities**, established in at least three Member States and Associated Countries, **offering access to physical facilities, capabilities and services** required for the development, testing and upscaling of nanotechnology and advanced materials in industrial environments.
- Bring nanotechnology and advanced materials within the reach of companies and users in order to **advance from validation in a laboratory (TRL 4) to prototypes in industrial environments (TRL 7)**.
- **Upgrade existing or support the setting of new public and private** test beds, pilot lines, and demonstrators to develop, test and upscale nanotechnologies and advanced materials for new innovative products and services in some specific domains.
- Typically run by for **profit organisations.**
- Users could be **industry**, including **SMEs**, as well as **innovators** and **start-ups.**

2- How many OITBs will be funded and in which domains?

- The call is expected to create about 20 Open Innovation Test Beds for **materials development and upscaling in six technology domains**:
  - Lightweight nano-enabled multifunctional materials and components
  - Safety Testing of Medical Technologies for Health
  - Nano-enabled surfaces and membranes
  - Bio-based nano-materials and solutions
  - Functional materials for building envelopes
  - Nano-pharmaceuticals production

- Four Open Innovation Test Beds for **materials characterisation** and four Open Innovation Test Beds for **modelling** will be also funded, in addition to the already existing NanoSafety Platform.

3- Which activities eligible for funding?

- All **activities from the prototyping to the industrial production**, and especially the testing in industrial environment, the validation of the characteristics of the materials and the control of the respect of legal and regulatory constraints.
- The **EU funding will support the upscaling and engineering process, a number of demonstration cases and dissemination/links with other eco-systems.**
- **Eligible costs** could notably include:
  - Acquisition, adaptation, installation and calibration of upscaling and testing equipment
  - Demonstration cases
  - Definition of access conditions to facilities and services
  - Networking activities between Open Innovation Test Beds and similar initiatives
  - Communication and dissemination activities
  - Design and Development of Services Infrastructure: Technology expertise; Legal / regulatory expertise; Modelling tasks; Characterisation tasks; Facilitation of access to funding for test beds' customers

4- Which costs are not eligible?

- Building costs
- Research costs, including acquisition of equipment, if not used for upscaling materials as described in the Open Innovation Test Beds topics
- Costs already paid by a national, regional or European subsidy

5- What is the European added value of OITBs?

- **Single entry point** for any users to materials facilities and services across Europe
- **Broad access** to materials development facilities and services across Europe
- **Accelerated maturity of products for a faster market entry**
- **Reduced costs** for accelerating materials production for both industry and users
- **Harmonised conditions** for testing and procedures for materials upscaling, characterisation and modelling to improve internal market accessibility
- **Increased return on investment** in materials research
- **Early stage access to intelligence on EU regulations** making the materials development process more efficient
- **Easier marketability of products in Europe** (e.g. non-European products to be tested in accordance to EU regulations to enter the market)

6- How will OITBs become sustainable once EU funding ends?

- Proposals should demonstrate that the test beds will reach out and deliver services to users, including SMEs, in a sustainable way and based on **market analysis, a business plan and how to attract further investments, e.g. venture capital.**
- The consortium will have to provide their **own resources** from the beginning, they should pay attention to adjust their services to reach a sufficient number of potential users.
- Proposals should include an **exploitation strategy**, together with dissemination actions, to ensure that potential customers will know about test beds existence, services, and access conditions.
- **After the end of EU funding, the Test Beds will have to operate autonomously on the revenues of the services they provide**.

7- Who are the potential applicants?

- Proposals can be submitted by a consortium, which is free to involve any relevant partner from **Members States and Associated Countries**, provided that it respects Horizon 2020 rules and the conditions specified in the Work Programme.
- This means that **private entities** can apply, as well as **Research and Technology Organisations, Research Centres, or Higher Education Establishments.**
- **While current pilot lines can apply, test beds' funding is not restricted to them.**

8- What does open access mean?

- Open access in this context means that any interested party, from Europe and globally, **can access test beds' facilities and services independently** whether they are part of the consortium or not.
- It is critical that any interested party from the EU or Associated Countries can access the test beds at **fair conditions and pricing and with transparent and mutual obligations in regard to for instance on security, safety and intellectual property rights.**
- Open Innovation Test Beds should set a **framework for the definition of the access conditions to their facilities and services respecting transparency and fair access conditions**.

9- What will "single entry point" mean for the users?

- As test beds aim at **providing a full service along all steps of the technological developmen**t of a physical innovation, all needed expertise have to be provided to users through a **single entry point.**
- If necessary, each test bed have **to acquire complementary services** from other entities, for instance on characterisation and or modelling, in order to offer a full package to users.

10- Will SMEs outside the project consortium have access to these test beds?

- Yes, SMEs will have access to the test beds at the **same conditions** as any other entity from the EU or Associated Countries.
- For **SMEs as core targeted user group**. The test beds will **offer a range of services,** which are of specific interest to them, e.g. regulatory support and development of innovative materials SMEs frequently cannot afford on their own.
- Proposals should demonstrate a solid and measurable outreach strategy towards SMEs and innovators outside the consortium.

11- How do the test beds interact with other test beds funded under the same topic and with other similar initiatives?

- Part of the EU funding is for **launching cooperation** among themselves and with the other existing OITBs to make the cooperation systematic and sustainable at the end of the project. Moreover, it will be in the test beds' interest to **cooperate in a regular way with others entities to exchange services,** as well as the outcomes of their experience in providing services.
- Each proposal should include an amount for **coordination and networking,** with other similar test beds as well as with other innovation eco-systems in the EU, whether European, national or regional.
- A 2017 NMBP call Coordination and Support Action (CSA) project EPPN has started to map existing services on upscaling of materials across the EU and Associated Countries. This mapping exercise is involving Member States, Candidate Countries and Associated Countries, e.g. through the support of the High Level Group on Nanotechnologies and Advanced Materials (HLG).

12- Will the interaction between test beds be an evaluation criteria?

- The proposers will have to specify the way they plan their cooperation with other OITBs (existing or under establishment). Therefore this element will be part of the overall evaluation.
- It is considered an element of the sustainability analysis.

13- What is the link / synergy with regional funding?

- Open Innovation Test Beds should become an element of an overall eco-system on materials upscaling, which already contains some regional facilities, and therefore **should cooperate together**. The sustainability analysis and the business study which are part of the proposals will ensure **there won't be duplication of facilities and activities at the regional level**.
- When funding facilities and services through Open Innovation Test Beds, **the principle of no double funding will apply** - https://ec.europa.eu/research/regions/index.cfm?pg=synergies
- If a Member State or a region wishes to support some entities with the costs for acceding to the Open Innovation Test Beds, this is possible within the remit of the EU and national rules on state aid.

14- What is the link/difference with the Digital Innovation Hubs (DIH)?

- Digital Innovation Hubs focus primarily on helping SMEs to master their digital transformation and advice on the choice among technologies for digitisation.
- Open Innovation Test Beds **are complementary** to Digital Innovation Hubs as they concentrate on the upscaling, demonstration, characterisation and modelling of advanced materials, including nanomaterials.
- Open Innovation Test Beds could in some cases have the need to acquire digital services on a specific technology development. **Synergies based on complementarities are possible.**

15- Why cascading grants are not being used for OITBs?

- Digital Innovation Hubs operate with cascading grants but their scope is larger than the Open Innovation Test Beds. The cascading grant system ensures to the Digital Innovation Hubs a stable range of users. Digital Innovation Hubs are technology neutral and provide their users with a neutral opinion on which technology to use. Moreover, cascading grants have to be managed by an entity having a large financial capacity to bear the subsequent financial risk.
- **Open Innovation Test Beds work on a different scope and a more downward segment of the value chain, where users of Test Beds will find an immediate benefit, without needing a system of cascading grants.**
- It is expected, as it is currently the case for the existing Pilot Lines, to have mainly private entities managing the Open Innovation Test Beds.

16- How does the INNO SUP actions relate to the OITBs?

- The INNO-SUP topics (under Horizon 2020) will fund mainly brokerage actions, matchmaking initiatives between innovative SMEs and large entities, but it doesn't fund the development process of the innovation in materials. The new INNO-SUP from 2017 calls foresees a similar approach as DIH, however focusing on manufacturing technics, therefore a different scope than the Open Innovation Test Beds.
- Nevertheless, OITBs, DIH and INNO SUP funded entities, have links and need to **ensure coordination** as well as cooperation in some domains, as well as a coordination with national and regional structures.

17- What is the link with the Knowledge and Innovation Communities (KICs)?

- KICs are partnerships that bring together business, research centres and universities to develop innovative products and services, start new companies and train the next generation of entrepreneurs.
- Start-ups set up following a KIC partnership can use the Open Innovation Test Beds to upscale their innovation in materials towards reaching the market.

18- Is there a link between the Horizon 2020 programme on research infrastructures and the OITBs?

- Horizon 2020 Research Infrastructures programme deals with facilities, resources and services that are used by the research communities to conduct research and foster innovation in their fields. To ensure the implementation and operation of the ESFRI and other world class research infrastructures, including the development of regional partner facilities; integration of and access to national research infrastructures.
- The Open Innovation Test Beds focus on testing and upscaling equipment as well as modelling, characterisation, regulatory and technology advice for innovative technology products which have already gone through the research process and are at the further step of upscaling.
- In some specific cases, an Open Innovation Test Beds may acquire a service from an ESFRI infrastructure for a specific product, however the ESFRI infrastrucutres cannot be seen as Open Innovation Test Beds.