



HORIZON 2020

Leadership in Enabling and Industrial Technologies (LEIT)

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Horizon 2020 is different

- A strong challenge-based approach, allowing applicants to have considerable freedom to come up with innovative solutions
- Emphasis on innovation, simplifying types of action (research and innovation actions with 100% funding; innovation actions with 70% funding)
- Less prescriptive topics, strong emphasis on expected impact
- A strategic approach, with two-year work programmes
- Focus areas bring together different technologies, along entire innovation chain
- Cross-cutting issues mainstreamed (e.g. social sciences, gender, international cooperation)



Horizon 2020

Total indicative budget: 77 Bio. €*

Excellent science

- *European Research Council*
- *Future and Emerging Technologies*
- *Marie Curie actions*
- *Research infrastructures*

Indicative Budget:
24.4 Bio. €*

Industrial leadership

- ***Leadership in enabling and industrial technologies***
- *Access to risk finance*
- *Innovation in SMEs*

Indicative Budget:
17.0 Bio. €*

Societal challenges

- *Health, demographic change and wellbeing*
 - *Food security, sustainable agriculture, marine and maritime research and the bioeconomy*
 - *Secure, clean and efficient energy*
 - *Smart, green and integrated transport*
 - *Climate action, resource efficiency and raw materials*
 - *Inclusive, innovative and reflective societies*
 - *Secure societies*
- Indicative Budget:**
29.7 Bio. €*

* 2014-20, actual budget (tentative)
Includes EIT, JRC, "widening", "science with and for society", not shown above



Leadership in enabling and industrial technologies (LEIT)

Priority 1: Excellent Science

Priority 2: Industrial Leadership

Leadership in enabling and industrial technologies (LEIT)

(i) ICT including micro- and nano-electronics and photonics

(ii) Nanotechnologies

(iii) Advanced Materials

(iv) Biotechnology

(v) Advanced Manufacturing & Processing

(vi) Space

**This
Work Programme**

Access to risk finance

Leveraging private finance and venture capital for R&I

Innovation in SMEs

Fostering all forms of innovation in all types of SMEs

Priority 3: Societal Challenges



Industrial Leadership

- **Key Enabling Technologies (KETs) and support to industry, to recover from economic crisis**
- **Emphasis on R&D and innovation with strong industrial dimension**
- **Activities primarily developed through relevant industrial roadmaps (ETPs, PPPs)**
- **Involvement of industrial participants and SMEs to maximise expected impact => key aspect of proposal evaluation**
- **Funded projects will be *outcome oriented, developing key technology building blocks and bringing them closer to the market***



Mastering and industrial deployment of Key Enabling Technologies (KETs)

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**

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The issues regarding KETs

- Europe has strong position in science and in patenting activity
- EU actors are at top of patent ranking in each KET
- But there is a gap between the technology base and the manufacturing base
- We need to add demonstrators, competitive manufacturing and product development to the technologies

From Lab to Industry to Market



Main priorities for KETs in LEIT

- Technology development and validation, aiming at industrial deployment of Key Enabling Technologies (KETs)
- Strategic research agendas, roadmaps and value chains (applications in several sectors)
- Industrial engagement / leverage
- Pilots and demonstrators
- Cross-cutting KETs (combinations of KETs); target: 30% of KETs budget in H2020
- Enabling applications in Societal Challenges



European Commission

Combining several key enabling technologies for advanced products

Societal Challenge

Health



New nanotechnology-based diagnostics

New target drug delivery and release

Regenerative medicine

Nanomedicine



Advanced materials

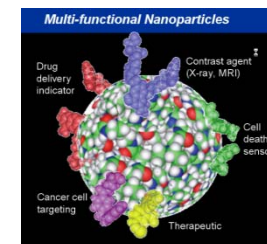
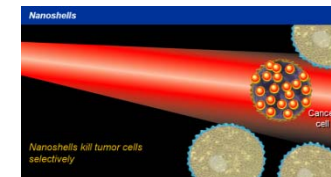
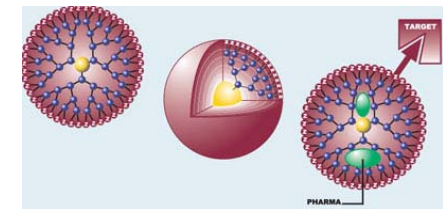
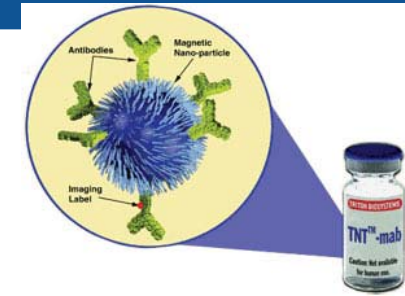
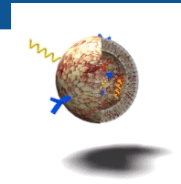
Microelectronics

Nanotechnologies

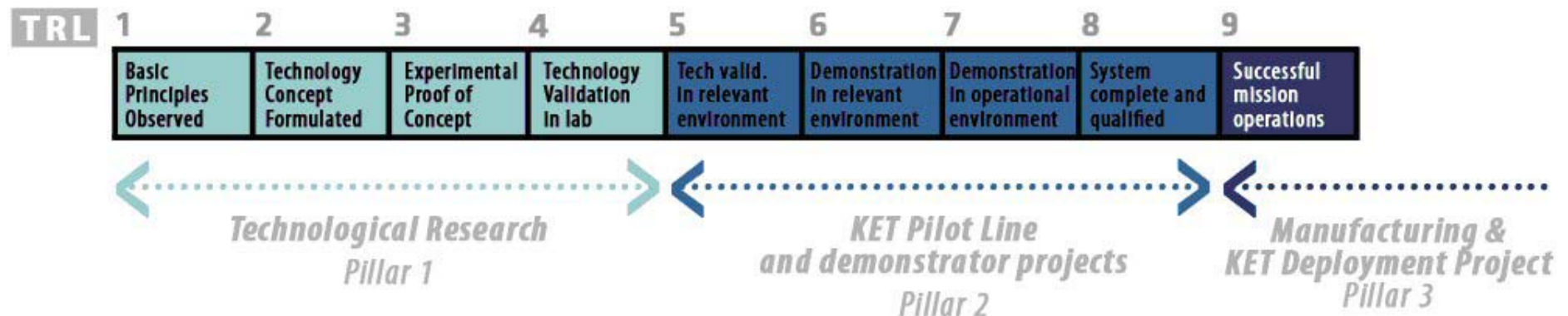
Photonics

Biotechnologies

Research and Innovation



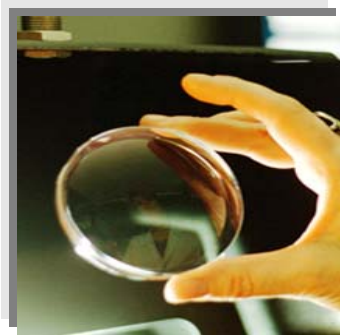
Technology Readiness Levels (TRLs) a useful tool in development and deployment of KETs



- NMP in FP7: TRLs 1 – 4;
up to 5-6 in 2012-13 (pilots and demonstrators)
- LEIT KETs: TRLs 3/4 – 8; centre at TRLs 5-7

FP7 example - Innoshade – Start TRL ~4 End TRL ~6

- Switchable light transmittance technology based on nano-composites
- Technology developed previously for small sized objects; project enables low-cost production of electrochromic shading appliances with lower energy consumption and faster response.
- Sub-projects on: Ophthalmic lenses, Domestic appliances, Aircraft & Vehicle applications



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Research and
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H2020 – LEIT/KETs: from R&D to close-to-market activities

- Use of Technology Readiness Levels (TRLs from 3-4 to 8)
- Two funding rates
 - 100%** funding: TRLs 3-6
 - 70%** funding: TRLs 5-8(Non-profit participants can claim 100% funding)
- Cross-cutting KETs (combinations of KETs)
- Seamless coverage provided by FETs/ERC – LEIT – Societal Challenges
- Ground prepared in FP7 (first pilots and demonstrators, innovation activities)



Public Private Partnerships (PPPs)

- **Industry has a leading role** in defining research priorities
- **Pre-defined budget** ensures continuity and commitment
- Focused on **enabling industrial technologies**
- Increased use of **SME-friendly** instruments and **demonstration**
- Roadmaps prepared with large stakeholder involvement and public consultation
- Concrete technological and sector related objectives – commitment from industry to reach them and to provide the necessary R&D+I investments
- Using fully open H2020 calls



PPPs in H2020

- Industrial Investment Package of 10 July 2013 :
 - **Joint Technology Initiatives (JTIs) implemented by Joint Undertakings**
 - **Contractual PPPs (cPPPs)**
 - **Public-Public Partnerships (P2Ps)**
 - PPPs in H2020-LEIT :
 - JTI: Joint Technology Initiative on Electronic Components and Systems for European Leadership (ECSEL)
 - JTI on bio-based industries (BBI)
- cPPPs
- Robotics
 - Photonics
 - Advanced 5G Network Infrastructures
 - **Factories of the Future (FoF)**
 - **Energy-efficient Buildings (EeB)**
 - **Sustainable Process industry (SPIRE)**
 - Clean vehicles

General Policy Issues in LEIT

- Exploitation and business plans
- Industrial-size projects to look at additional funding/financing sources
- Contributions to solving societal challenges and to focus areas
- Open to International Cooperation
- Engagement with Social sciences and humanities
- Responsible approach to research and innovation
- Gender and diversity issues



Other funding sources

Risk-Finance in H2020

- Part of the Horizon 2020 budget (3.7%)* will be in the form of **risk-sharing** (for loans and guarantees) and **risk finance** (equity)
- Goal: **Stimulate more investment in research and innovation**, notably by the private sector - **Leverage effect**
- **Addressing financing gaps:** Intervention only if there are financing gaps in the R&I delivery chain (e.g. due to high risk)
- **Building a bridge from R&D to Innovation:** Effective and cost-efficient way to complement grant funding under Horizon 2020 and bring R&D results to the market
- Improved access to finance for investments in KETs

* Actual figure for the budget after the Council/EP/COM negotiations of July 2013; to be confirmed



Synergies with Structural & Investment Funds (ESIF)

- Increased funding for research and innovation available under regional funding
- *Smart Specialisation*: strategic framework to access funding for Research and Innovation in Structural Funds 2014-2020
- National / regional authorities in charge (not the Commission)
- Policy support measures to be undertaken timely (by the end of 2013)
- Support from other EU, national or regional programmes encouraged (supported or not by ESIF)
- Some topics particularly suitable for additional funding (e.g. to deploy technologies)



Support to SMEs: innovation for markets

Objective: 20 % of KETs & Societal Challenges budget to SMEs, including

- Collaborative projects 13% (same principle as FP7)
- SMEs Instrument 7%

SMEs Instrument

- Any innovating SME (SMEs only) looking for expansion and internationalisation
- Target population up to 1 200 000 SME
- Any of the three phases
- Combination of R&D, commercial applications and demonstration (tests, prototypes ...)

1. Validation of the project concept and feasibility : up to € 50,000

2. Development of commercial applications – demonstrator; 1 700

medium size projects expected: up to € 1,5 million per project

3. Commercialisation: no grant, but easing access to finance, networks, training, expertise



How does this work?

- Basic principles: same as for the FP7
- Basis document: the Work Programme
(to be published on 11 December 2013)
- Standard conditions: annexed to it
- Call conditions: for each call, included in the Work Programme
 - Indicative budget
 - Eligibility conditions
 - Selection and evaluation criteria
 - One-stage or two-stage evaluation
- Guidelines for submission, evaluation, selection and award will be published together with Grant Agreement models



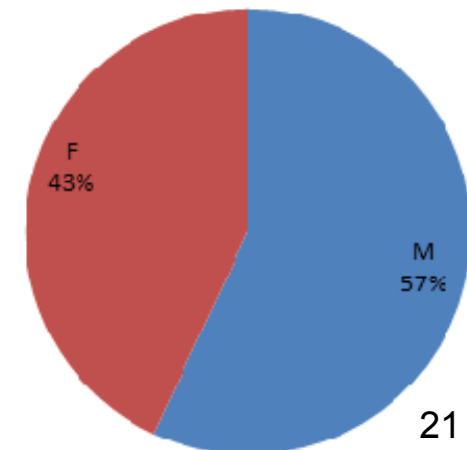
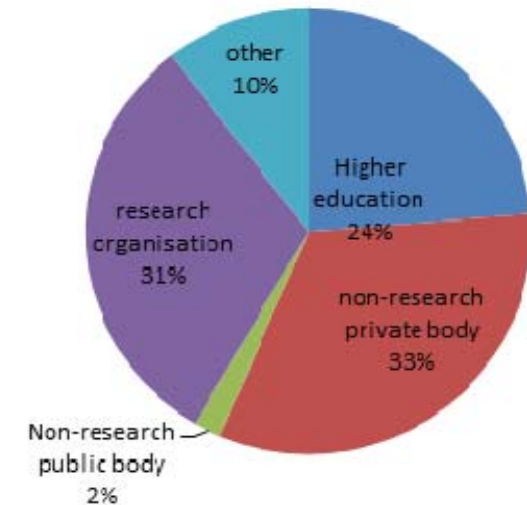
How does this work?

- Evaluation criteria divided in
 - Selection criteria
 - Award criteria: scientific excellence, impact, overall quality of implementation
- One-stage evaluation: proposals should be complete
- Two-stage evaluation:
 - only excellence and impact are evaluated of the outline of proposal at the 1st stage;
 - second stage: selection and evaluation of complete proposal
- Awarding contract takes into account both scientific (award criteria) and financial aspects

How does this work?

Evaluation panels

- Expertise in the topic
- Origin of evaluators (industry, academic etc.)
- Gender
- From different MS
- Renewal of evaluators (turnover $\geq 30\%$ / year)
- Conflict of interest (in part. members of various advisory panels)
- Specific guidelines on industrial origin of experts depending on the topic





One call for Nanotechnologies, Materials and KET support actions addressing

- the gap between nanotechnology research and markets,
- healthcare,
- low-carbon energy technologies and energy efficiency,
- competitiveness and sustainability,
- safety of nanotechnology-based applications and support for the development of regulation,
- generic needs in support of governance, standards, models, and structuring in nanotechnology, advanced materials and advanced manufacturing and processing.

One call for Biotechnology



Three cross-cutting calls implementing PPP

Factories of the Future (FoF)

- "Re-industrialisation"
- More environment-friendly and competitive manufacturing
- R&I to integrate and demonstrate at least 40 innovative manufacturing technologies

Energy-efficient buildings (EeB)

- Boosting the Energy-efficiency in Buildings
- Fostering new and higher quality jobs in the sector:
- R&I to integrate and demonstrate at least 40 innovative manufacturing technologies

Sustainable Process Industries (SPIRE)

- Contribution of the process industry to the EU2020 goals
- Radical steps towards environment-friendly processing:
- R&I to integrate and demonstrate at least 40 innovative systems and technologies:



Find out more on Horizon 2020:

<http://www.ec.europa.eu/research/horizon2020>

Participant Portal:

<https://ec.europa.eu/research/participants/portal/page/home>

More information: your **National Points of Contact**

Definition of Key Enabling Technologies in SEC(2009) 1257 final, 30.09.2009

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SEC:2009:1257:FIN:EN:PDF>