

Business from technology

Opportunities within H2020 KETs

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1. KET Policy Context and Embedment of KETs in the H2020 Structure

- KETs are more than just technologies, it is about how to organise the critical value chains and networks in Europe

2. How can RTOs participate in KETs within H2020?

- Some critical remarks towards first Calls

3. KETs – supporting activities outside H2020

- Back to policy context: we need to deepen our understanding on ecosystems, these are indispensable for SMEs

EU's Key Enabling Technologies (KETs) COM(2012) 341

- KETs are knowledge intensive and associated with high R&D intensity, rapid innovation cycles, high capital expenditure and highly skilled employment

KETs enable process, goods and service innovation throughout the economy and are of systemic relevance

KETs are multidisciplinary, cutting across many technology areas with a trend towards convergence and integration

KETs can assist technology leaders in other fields to capitalise on their research efforts

EU's KETs are **micro-/nanoelectronics, nanotechnology, photonics, advanced materials, industrial biotechnology and advanced manufacturing technologies**

Implementation of KETs Agenda through Industrial Policy

KETs Investment through Horizon 2020, Structural Funds, and EIB Grants and Loans

KETs Agenda: get manufacturing industry back to Europe, create jobs, enhance competitiveness of European Value Chains

Commission Communication COM(2009) 512 on KETs in 2009

- Potential impact of KETs in strengthening Europe's industrial and innovation capacity (nanotechnology, micro and nano electronics, advanced materials, photonics, industrial biotechnology and advanced manufacturing systems)
- Setting up 1st High Level Group on KETs 2010-2011 (one year mandate) to elaborate a single comprehensive strategy on KETs in Europe

Commission Communication COM(2012) 341 on KETs in 2012

- KETs policy recognized and approved by all EU Member States
- Setting up 2nd High Level Group on KETs 2013-2014 (two year mandate) to forge the implementation of KETs policy in Europe and to advise the Commission

Commission Communication COM(2012) 582 on Industrial Policy

- Europe needs to reverse the declining role of industry in Europe for the 21st century by investment and innovation on KETs
- A new Communication on Industrial Policy is foreseen in the beginning of 2014

Commission Communication COM(2013) 542 on Defence and Security Sector

- KETs with dual-use potential

The new Cohesion Policy and Smart Specialisation)

KETs are one of the investment priorities of the European Regional Development Fund (ERDF) as a relevant investment for the smart growth of regions (Smart Specialisation). Formal Partnership Agreements and Operational Programmes are expected to be submitted by Member States for the adoption by the EC in 2014

KETs in Horizon 2020

Key Words: Crosscutting KETs Value Chains – TRL - Valley of Death - Proof of Concept – Early Stage Prototyping - Technology Validation – Demonstration – MultiKETs Pilot Plants – Industrial Deployment in Europe

Europe 2020

Horizon 2020 (2014-2020)

Excellent Science

- Frontier Research (ERC)
- **Future and Emerging Technologies (FET)**
- Skills and career development (Marie Curie Actions)
- Research infrastructures

~24,4 billion
€

Industrial Leadership

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

~17 billion €

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
- Europe in a changing world
- Secure Societies

~29,7 billion €

**Budget details are
still open!**

**Potential or obvious “RTOs
market share” in KETs?**

Three Pillars in Horizon Serving the Purpose

Europe 2020

Pillar 1 – Scientific Excellence

- Curiosity driven knowledge creation, individual academic projects

Pillar 2 – Industrial Leadership

- Real economy and market driven innovation, within individual industry sectors and across different clusters

Pillar 3 – Addressing Societal Challenges

- Demand side innovation along strong value chains with relevant actors involved
- New business opportunities out of societal challenges for the upcoming economy

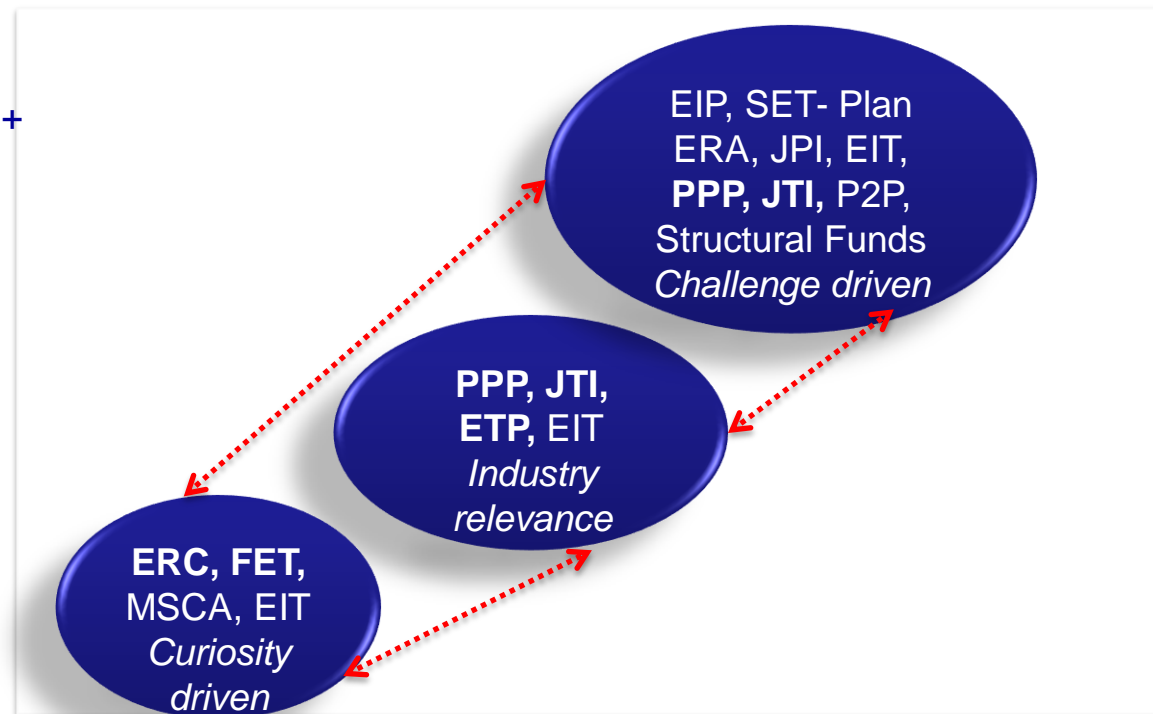
Large instruments in H2020 and main stakeholders engagement

Expected engagement

Member States + **RTOs** +
Enterprises + Academia

Enterprises + **RTOs**
+ Academia

Academia + **RTOs** +
Enterprises



Pillar 1

Pillar 2

Pillar 3

Embedment of KETs in Horizon 2020 Structure

?!some budget details are still open!?

Pillar 1, within Future and Emerging Technologies (**FET**). Total FET budget **xx** billion €.

KETs
??

Pillar 3, within

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

KETs
??

KETs 5,9 billion (30% for cross-cutting KETs)

Pillar 2

Within Leadership in Enabling and Industrial Technologies (LEIT)

- **ICT** **xx** billion €
 - **LEIT Nanoscience and nanotechnologies** **xx** billion €
 - **LEIT Advanced materials** **xx** billion €
 - **LEIT Advanced manufacturing & processes** **xx** billion €
 - **LEIT Biotechnology** **xx** billion €
 - **Space Research** **xx** billion €
- Within SME instruments

How can RTOs participate in KETs / H2020? (It may get tough for RTOs to maintain the market share)

Concrete information for future participants not really available yet:

1. Understand the **broad goals** of the KET agenda (industrial competitiveness and European jobs)
2. **PPPs** are instrumental for KETs (industrial value chains). Get inside the PPPs, make use of PPP info & brokerage events.
3. First Calls in December 2013 –draft programmes are already available. Read the Call texts carefully (**TRL 4-7 for KETs**).
4. Rely on good and experienced partners when building up the consortia. Understand the **new funding rules** (flat rate, costs for large infrastructure, difference between “more traditional” research and innovation activities and “close-to-market” innovation activities).
5. Get **SMEs** involved but be careful with the new SME instrument – we may not quite understand how it could work with RTOs!
6. The role of Programme Committees (government representatives) will be less in H2020. Advisory Boards may have a say, remains to be seen. PPPs are important when setting the KET-relevant priorities and Call contents. Work Programmes will be planned for two years’ period. If you want to influence, you have to do it **proactively**, essentially “in pack” with PPPs.

Horizon 2020

Types of actions (- simplified interpretation)

**Driven by Large Consortia
(Industry, RTOs,
Universities etc.)**

**Research and
Innovation
Actions (RIA)**

**Innovation
Actions (IA)**

**Coordination
and support
actions (CSA)**

**Special
Instruments for
SMEs**

**Fast track to
innovation**

**SME
instrument**

**Inducement
prizes**

**Driven by Cities,
Regional Bodies,
Public
Administrations**

**PCP (Pre-
Commercial
Procurement)**

**PPI (Public
Procurement
for Innovative
Solutions)**

**Member States
involvement
necessary**

Teaming

Twinning

ERA Chair

ERANET

COFUND

Criteria vs. evaluation
**(Difficulties are to be expected in
Pillar 2 and Pillar 3 evaluation panels!)**

Excellence

- Clarity, pertinence, credibility, soundness of the concept, transdisciplinarity

Impact

- Expected impact according to the Work Programme / Call
- Enhancing innovation capacity, integration of new knowledge, strengthening the competitiveness, exploitation of results, IPR

Quality and Efficiency of Implementation

- Work plan, allocation of resources, competence of partners and consortium, management structures and procedures

End User Benefit should be included in Impact

Value Chain Correctness should be included
in Quality and Efficiency of Implementation

Context dependency of TRL

(Note – this needs to be checked on 11.12.2013!)

Where a topic description refers to a TRL, the following definitions apply:

- TRL 1 – basic principles observed - RTOs
- TRL 2 – technology concept formulated - RTOs
- TRL 3 – experimental proof of concept- RTOs
- TRL 4 – technology validated in lab - RTOs
- **TRL 5** – technology validated in relevant environment (industrial environment/industrially relevant in the case of key enabling technologies) - RTOs can be in lead here!
- **TRL 6** – technology demonstrated in relevant environment (industrial environment/industrially relevant in the case of key enabling technologies) – RTOs can be in lead here!
- TRL 7 – system prototype demonstration in operational environment
- TRL 8 – system complete and qualified
- TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

RTOs can (hopefully) take a lead up to TRL 6

RTOs can contribute in industry led TRL 7-9 actions

Research vs. innovation (what is close-to-market?) (EU State Aid Rules are behind this complexity)

Research and Innovation Actions

- Creation of new knowledge, exploring new or improved technology, product, process, service or solution
- Basic and applied research, technology development and integration, testing and validation on a small-scale prototype in a laboratory or simulated environment
 - May include limited demonstration or pilot activities aiming to show technical feasibility in a near to operational environment (TRL 5-6)

Innovation Actions

- Direct aims at producing plans and arrangements of designs for products, processes or services
- May include prototyping, testing, demonstrating, piloting, large-scale product validation and market replication
 - “Demonstration of pilot” in operational (or near to operational) environment (TRL 5-6)
 - “Market replication” aims to support **first application/deployment** in the market (**market failures/barriers** to uptake)

**Pay attention:
TRL 5-6 is the Grey Zone**

KETs – supporting activities

(1) HLG KETs – RTOs involved

The first KET High Level Expert Group **(2010-2011)** had the task to elaborate a single comprehensive strategy on KETs in Europe.

- The Group prepared strategic recommendations by which means the European Union is able to strengthen its industrial competitiveness and create permanent jobs in Europe.
- **A major focus was in industrial KETs Pilot Plants.**

The new KET High Level Expert Group **(2013-2014)** has been given the mandate to forge the implementation of KETs policy in Europe and to advise the Commission.

- CEA, FhG, TNO, VTT and IMEC are involved

KETs – supporting activities

(2) Surveys commissioned by DG ENTR – RTO collaboration

Ongoing: *Best Practices and Criteria for Multi-KETs Pilots*

- establish clear criteria and funding practices for multi-KETs Pilot lines
- led by TNO

Ongoing: *Crosscutting KETs Roadmap for Horizon 2020 Work Programmes*

- help the Commission in the specifications for the H2020 KETs work programmes
- led by d'Appolonia

Ongoing: *KETs Observatory*

- provide European and national policymakers and business stakeholders with reliable and representative data and analysis on the deployment of KETs
- led by IdeaConsult

In preparation: *Support to the Implementation of the KETs Action Plan with Focus on Promoting Cooperation between EU KETs Technology Centres of Excellence (TCE)*

- assess the current scope, intensity of cooperation and possible gaps between the Technology Centres of Excellence (**read: RTOs**) in the area of KETs across the European Union
- identify potential policy actions to foster their collaboration
- led by NN

KETs – supporting activities

(3) HLG KETs Sherpa Group - ongoing activities

Pan-European access to early stage KETs prototyping facilities for SMEs & Future RTO collaboration on technology infrastructures (TRL 2-6)

- **Recognised need at EU level:** Technology infrastructures, with access for SMEs in particular, will be necessary so that we can successfully accelerate the market uptake of results from fundamental and technological research in Europe.
- **Current barriers of collaboration:** Collaboration between RTOs either at regional, national or transnational level is not self-evident as they can be either competitors or partners, and there is national lock-in in the Member States administrations.
- **How to tackle:** Setting up of a technology infrastructures network calls for a joint, comprehensively arranged European approach with respect to the investment and impact criteria concerned, incl. funding principles.

Multi-KETs Industrial Pilot Line Project Test-Cases via PPP Mechanisms

- Four European critical industrial value chains selected as test cases for implementation and analysis
- Stakeholder Workshops on these test cases 23/24 October 2013 in Brussels (on invitation)
 - Embedded Energy
 - High Performance Production Systems
 - Smart Structures
 - Innovative Processes Using Renewable Resources

Integration of KETs into H2020 Pillar 3 on Societal Challenges

Promotion KETs at Member State and Regional Levels

KETs skills and education

**EIB Task Force on KETs
Financial Engineering**

Study on Innovation and Industrial Ecosystems

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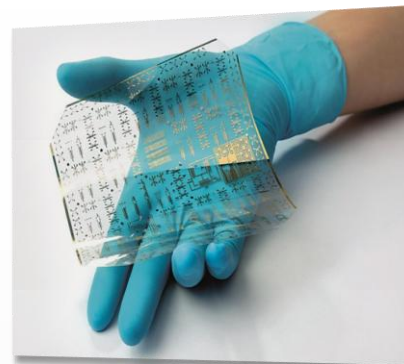
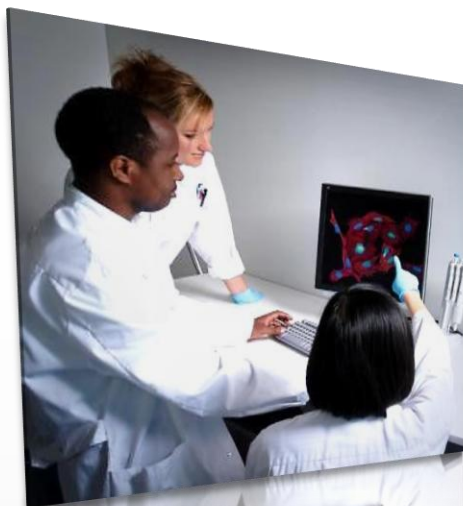
**EIB Task Force on KETs
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KETs – supporting activities

(4) Electronics Leaders Group ELG – RTOs involved

- A newly formed group of [Electronics CEOs met Vice-President Neelie Kroes](#) on 16th October 2013 to begin a new push to put Europe the leading edge in the design & manufacturing of micro- and nano-electronics.
- The [Electronics Strategy](#) proposed the creation of an Electronics Leaders Group (ELG) and a Stakeholder Engagement Forum (SEF).
- The [Electronic Leaders Group](#) brings together the leaders of Europe's 10 largest semiconductor and design companies, equipment and materials suppliers and of the three largest research technology organisations. The ELG will establish, by the end of the year, a strategic roadmap showing how they can reverse the downward trend of chip production in Europe.
 - FhG, IMEC, CEA involved



VTT creates business from technology