

19th EuroSciCon Conference on Nanotechnology and Smart Materials

"Nanotechnology based solutions for enhanced products and processes in existing industrial manufacturing plants"

Workshop

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Nanotechnology for the EU progress

Nanotechnology as a Key Enabling Technology

Key Enabling Technologies (KETs) are a group of six technologies:

- micro and nanoelectronics,
- nanotechnology,
- industrial biotechnology,
- advanced materials,
- photonics, and
- advanced manufacturing technologies.



They have applications in multiple industries and help tackle societal challenges. Countries and regions that fully exploit KETs will be at the forefront of creating advanced and sustainable economies.



Source: http://ec.europa.eu/growth/industry/policy/key-enabling-technologies en

The problem

KET's and the European "Valley of Death"

Europe is a global leader in the development KETs.

However, the European record in translating this knowledge advantage into marketable products and services doesn't match this. KETs-related manufacturing is decreasing in the EU and patents are increasingly being exploited outside the EU.

One of Europe's major weaknesses with KETs is its difficulty converting knowledge into marketable KETs-based products and services.

This innovation gap has been identified as the European 'Valley of Death'.





Source: https://ec.europa.eu/growth/industry/policy/key-enabling-technologies/challenges en

The strategy

European strategy for KETs

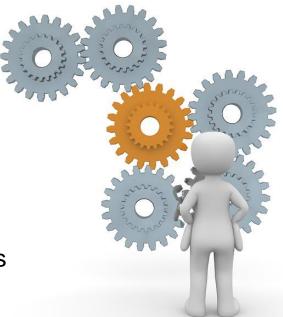
Creating the right investment conditions and economic environment for the KETs industry to develop its manufacturing capacities in Europe

Reinforcing the KETs innovation capacity of SMEs

Helping industry develop innovative products that integrate different technologies

Addressing the skills requirements for KETs

Ensuring a level playing field for KETs





Source: https://ec.europa.eu/growth/industry/policy/key-enabling-technologies/challenges en

The role of Horizon 2020 Programme

Horizon 2020

Horizon 2020 is the biggest EU Research and Innovation programme ever.

Seen as a means to drive economic growth and create jobs by coupling research and innovation, it is aimed at ensure Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation.

Excellence Science

- European Research Council
- Frontier research by the best individual teams
- Marie Curie actions
- Opportunities for training and career development
- Future and Emerging Technologies
- Collaborative research to open new fields of innovation
- Research Infrastructure (including e-infrastructure)
- Ensuring access to world-class facilities

Industrial leadearship

- Leadership in enabling and industrial technologies
- ICT, nanotechnologies, 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

Societal Challenges

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

European Institute of Innovation and Technology (EIT)

Combining research, innovation & training in Knowledge and Innovation Communities

Joint Research Center (JRC)

Providing a robust, evidence base for EU policies



Source: https://ec.europa.eu/programmes/horizon2020/what-horizon-2020

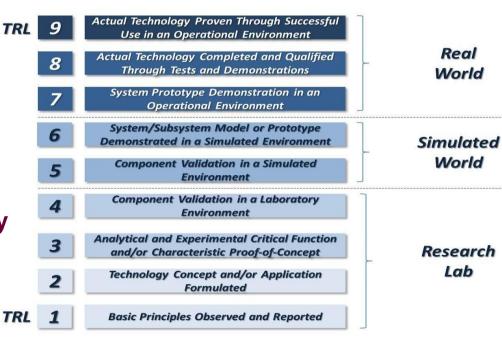
The role of Horizon 2020 Programme

Leadership in Enabling and Industrial Technologies (LEIT)

This part of H2020 programme covers different areas:

- Nanotechnologies
- Advanced materials
- Advanced manufacturing and processing
- Biotechnology

Activities address the whole innovation chain with **Technology Readiness Levels** (TRLs) spanning the crucial range from medium levels to high levels preceding mass production.





Source: <a href="https://ec.europa.eu/programmes/horizon2020/en/h2020-section/nanotechnologies-advanced-materials-advanced-manufacturing-and-processing-and-

The contribution of IZADI-NANO2INDUSTRY Project to overcome the European Innovation Gap

IZADI-NANO2INDUSTRY Project and KETs

Funded under the LEIT pillar of H2020 programme, IZADI-NANO2INDUSTRY proposes different solutions based on KETs (such as nanotechnology, advanced materials and manufacturing) to contribute to overcome the barriers that nano-materials are facing to get introduced in the market.

Nanotechnologies/ Advanced Materials	Advanced processes	TRL
Nano-reinforced thermoplastics	Nanotextured mould inserts	TRL7 – ESTCRATCH pilot line
Nano-reinforced metal castings	Gravity casting process for nanoreinforced metal parts	TRL7 – HARDCAST pilot line
Nano-structured coatings	Thermal spray technology	TRL7 – TRIBONANO pilot line





