#innovacion
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CLUSTER EUREKA **SMART** ON ADVANCED MANUFACTURING

Joseba Bilbatua
Director
Cluster SMART

EUREKA instruments

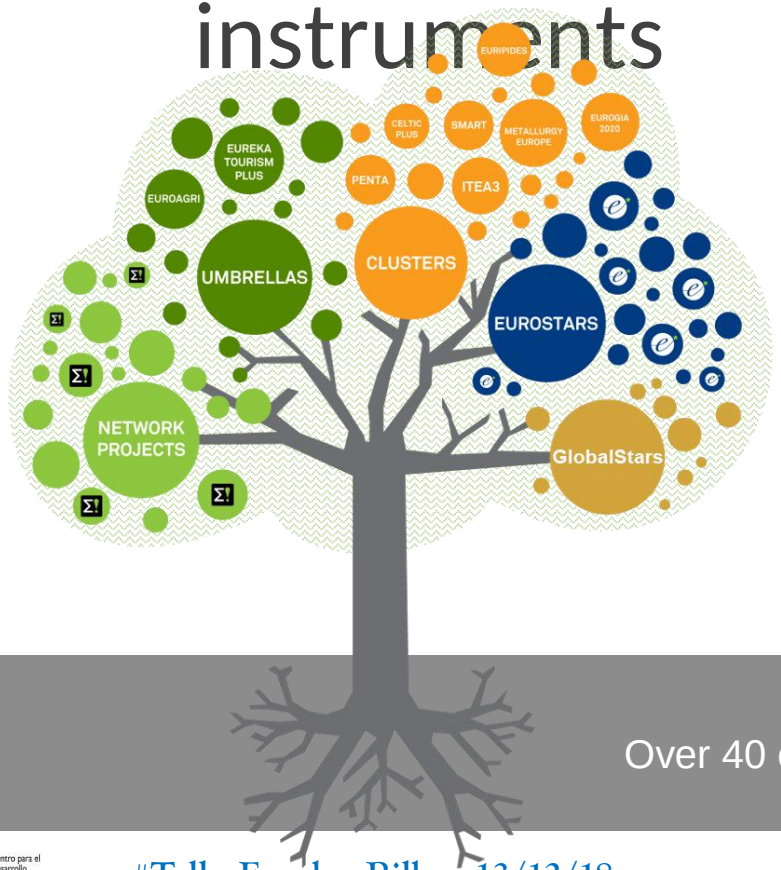
UMBRELLA PROJECTS

CLUSTER PROJECTS

EUROSTARS PROJECTS

NETWORK PROJECTS

GlobalStars

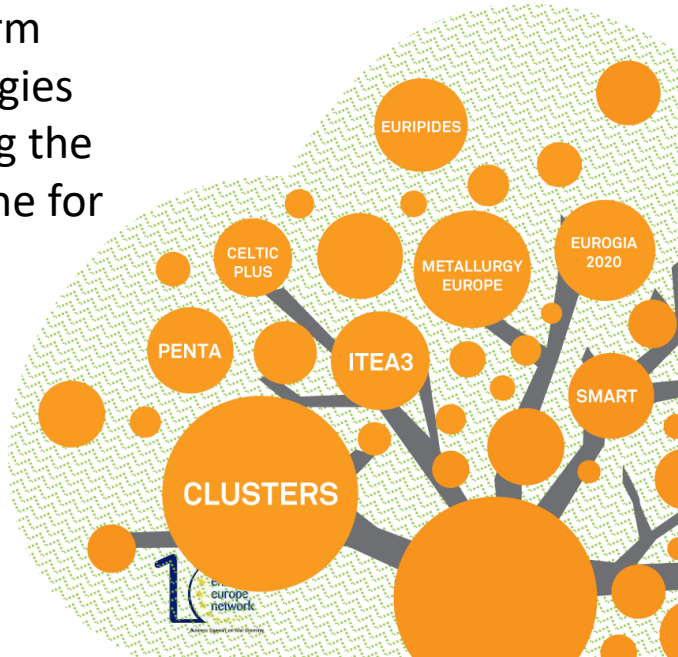


Over 40 countries

EUREKA Clusters

WHAT IS A EUREKA **CLUSTER?**

Initiated by European industry, EUREKA Clusters are long-term and strategically significant initiatives that develop technologies of key importance for European competitiveness. Addressing the needs of both large companies and SMEs, they are the engine for industrial innovation and economic growth.



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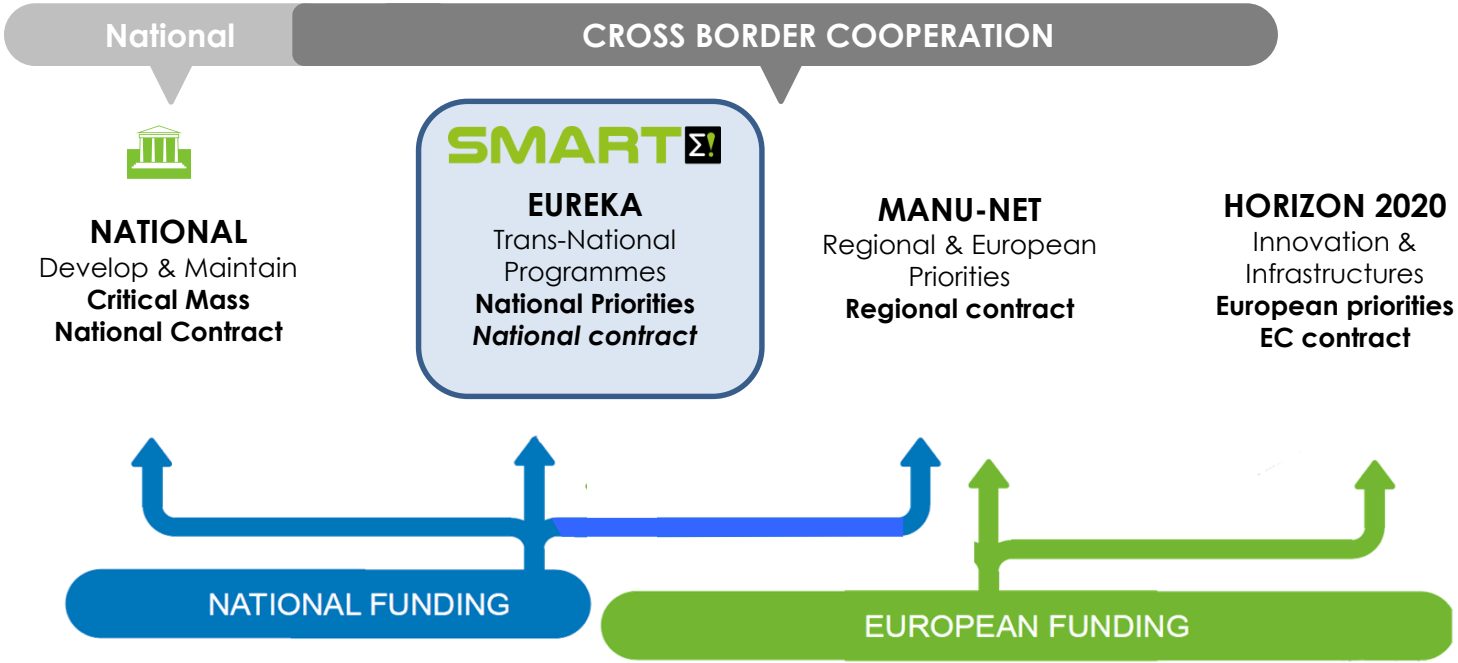
European innovation landscape



Clusters

Micro and nano electronics
(Last Call in 2015 but projects will continue until 2018)

ICT and telecommunications

Smart electronic systems

Low carbon energy technologies

Software intensive systems and services

Advanced materials and manufacturing

Micro & nanoelectronics enabled systems and applications

Advanced manufacturing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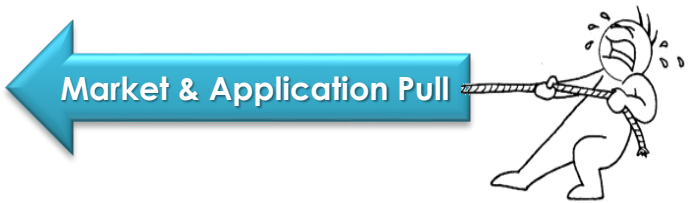
INDUSTRIAL CHALLENGES IN ADVANCED MANUFACTURING

- "**Zero Defects**" approach
- **Flexibility**, **adaptability**, process scalability
- **Light materials** and advanced processes
- **Energy efficiency**, and **waste reduction**
- Cost reduction, **advanced automation**
- Improve **man-machine collaboration**, ergonomic and safety
- **Value chain** integration
- Others...



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SMART BOARD MEMBERS

10 Core Group Members form the Board of the SMART EUREKA CLUSTER International Association

VICE-CHAIR

AIRBUS

CHAIR

MONDRAGON HUMANITY AT WORK Finanzas Industria Distribución Conocimiento

SECRETARY

IK4 Research Alliance

GRUPO ANTOLIN

GKN

Irish Manufacturing Research

sirris driving industry by technology

SVÚM

swerea swedish research

Royo®

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SUPPORTING & INTERESTED COUNTRIES

Supporting Countries

Interested Countries

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Technical Domains

Advanced Manufacturing Processes

Intelligent and Adaptive Manufacturing Systems

Digital, Virtual and Efficient Companies

Person-Machine Collaboration

Sustainable Manufacturing

Customer-based Manufacturing

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Technical Domains

Advanced Manufacturing Processes

- **Production processes for new composites**, ceramic and thermoplastic materials.
- Development of low cost **composite materials** and processes for **high volume production**, including out of autoclave.
- **Integration of Manufacturing Processes**: machining, laser, chemical, ultrasonic, additive,…
- **Resource (material and energy) efficient** metal removal processes for advanced metallic alloys.
- Generation of **new part functionalities through surface** manufacturing processes.
- Advanced **additive manufacturing technologies** for optimum light designs and manufacturing aids.
- **Advanced modelling and simulation** tools for manufacturing process design and optimization.
- Advanced **union of hybrid materials**.

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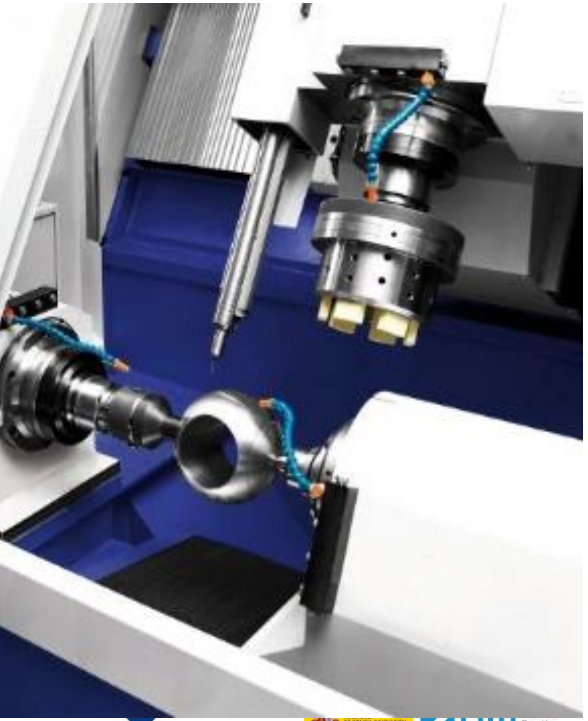
Technical Domains

Intelligent and Adaptive Manufacturing Systems



- Advanced **on-line processes monitoring and control** systems.
- Development of **measurement systems**, **sensors and indicators** algorithms for process diagnosis and optimization.
- Robotic toolbox including **light automation and collaborative robotics**
- **Real-time monitoring and optimization** of machines and equipment.
- **Advanced metrology** and non-contact, vision based parts on-line measurement in manufacturing processes.
- Advanced sensor system, **multi-sensor fusion**.
- Advanced automated **non-destructive inspection operations** (NDT)
- On-line inspection for **zero defects manufacturing**

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Technical Domains

Digital, Virtual and Efficient Companies

- **Simulation techniques** in manufacturing and assembly processes to increase ergonomics, first-time -right and production rates.
- Use of **big data and evolutionary algorithms for process diagnosis**, monitoring & control as well as predictive maintenance.
- Complete **traceability of tools, production progress and products** in real time.
- **Cybersecurity** and secured concepts for communications and cloud computing.
- **Virtual reality and augmented reality** simulators for planning and operation of manufacturing systems.
- Comprehensive modelling and simulation tools. **Cost models linked to design**, productivity, end of life and recycling.

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Technical Domains

Person-Machine Collaboration

- Smart use of **IoT and virtual or augmented reality**.
- **Improved visualisation** and analysis of complex production flows.
- Advanced **operator information systems**, production and process model based systems to support operator decisions
- **Intuitive programming devices**, aimed at multimodal tasks and based on new dialogues between humans, machines and robots
- Friendly and **inclusive work environments** (noises, emissions, vibrations, loads, repetitive tasks, ergonomics).
- Ergonomic **human-robot collaboration**, for Human performance improvement and error minimisation.
- Concepts for **safe automation of operations and of system integration**
- **Augmented and immersive reality** for fast training, secure and efficient operation

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Technical Domains

Sustainable Manufacturing

- **Cleaner processes, with less resource consumption**: materials, energy, lubricants, etc. and reduction of generated waste
- Improving the **cost and weight of parts** using additive manufacturing and other net-shape manufacturing techniques
- **Design aimed at manufacturing, assembly, disassembly, remanufacturing, reuse and recycling**.
- Processes with **zero emissions and waste**. Towards zero defects.
- **Industrial symbiosis**: using, recovering and redirecting resources for reuse.
- **Reduction of the carbon footprint of production processes**.
- **Recyclability** of new materials.

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Technical Domains

Customer-based Manufacturing

- Simulation, concurrent engineering methods and prototyping technologies for **shortening development and certification cycles.**
- **Rapid prototyping** techniques.
- **Customization** of products and processes.
- Towards **manufacturing as a service** and additional services for manufacturing operation support.
- Modular systems, reconfigurable machines and processes for **efficient adaptation to customer demands**.


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CALL FOR PROJECTS

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Consortium comprised of at least 2 industrial companies from 2 different EUREKA participating countries

Innovative and market oriented

Eligibility criteria

Civil purpose

Budget must be balanced among partners

2 Stage procedure

SMART Call will follow a 2-stage procedure, each of them having the following characteristics:

- **Project Outline (PO)**: the intention of this short document (approx. 15 pages) is to provide an overview of the project, its main objectives, partnership and impact. Those POs positively evaluated are invited to the second stage.

- **Full Project Proposal (FPP):** describes the project implementation plan in detail, the advance beyond the state of the art and the exploitation and financial plan.

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Evaluation

- **Relevance to SMART Program**
- **Quality and efficiency of the implementation – Project planning and consortium quality**
  - Quality of the consortium
  - Added value through co-operation
  - Realistic and clearly defined project management and planning
  - Reasonable cost structure
- **Impact - Market and Commercialisation**
  - Market application and impact
  - Market access and risk
  - Competitive advantage
  - Clear and realistic commercialisation plan
- **Excellence - Innovation and R&D**
  - Degree of innovation
  - New applied knowledge
  - Level of Technical challenge
  - Technical achievability and risk
- **Contact with NFAs**
  - Contact with National Funding Authorities

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Results of the 1st Call SMART – June 2018

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FIRST SMART CALL: FPPs

- Number of POs (1st Stage) : 34
- Number of FPPs presented: 26

- **Number of FPP Labelled : 20**
- Total Cost: 39 M€
- Number of Participating Organizations: 104

- Total Participating Countries: 14
  - Supporting Countries: 8
  - Interested Countries: 6

FPP

- 2 - 5 M€
- 4-5 participants
- 2-3 countries
- 30 months

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SECOND CALL FOR PROJECTS

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Second Call

SMART Second Call Calendar	
Opening of the Call	10 September 2018
PO Proposers Day	3 October 2018
Deadline for PO	19 November 2018
SMART TC + PAB	18 December 2018
Announcement Invitation to Present FPP	19 December 2018
Declaration of Acceptance (DoA)	01 February 2019
Deadline for FPP	15 March 2019
SMART TC + PAB	8-9 May 2019
SMART Board - Labeling	9 May 2019
Selected projects receive SMART label	10 May 2019

Second Call

THANKS FOR YOUR ATTENTION

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