WORKSHOP

L' Additive Manufacturing nel settore aerospaziale

24 marzo 2016

Sviluppumbria SpA - Foligno

Le fonti di finanziamento in ambito H2020: strumenti di finanziamento e call dedicate all'Additive Manufacturing

Serena Borgna

APRE

National Contact Point NMBP, BIO, ERC

borgna@apre.it

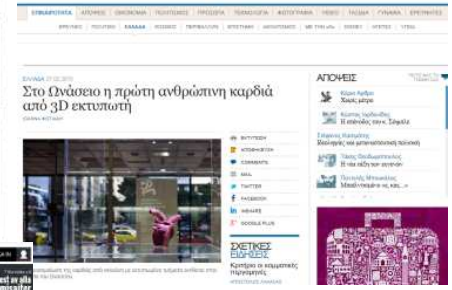
** Grazie alla Commissione Europeo per alcune slide.*

PPT: Additive Manufacturing in Horizon 2020, José Lorenzo Vallés "Key Enabling Technologies" DG Research and Innovation, European Commission

www.apre.it

© APRE 2013

AM in the press



www.apr

What is Additive Manufacturing ?

ISO/ASTM definition:

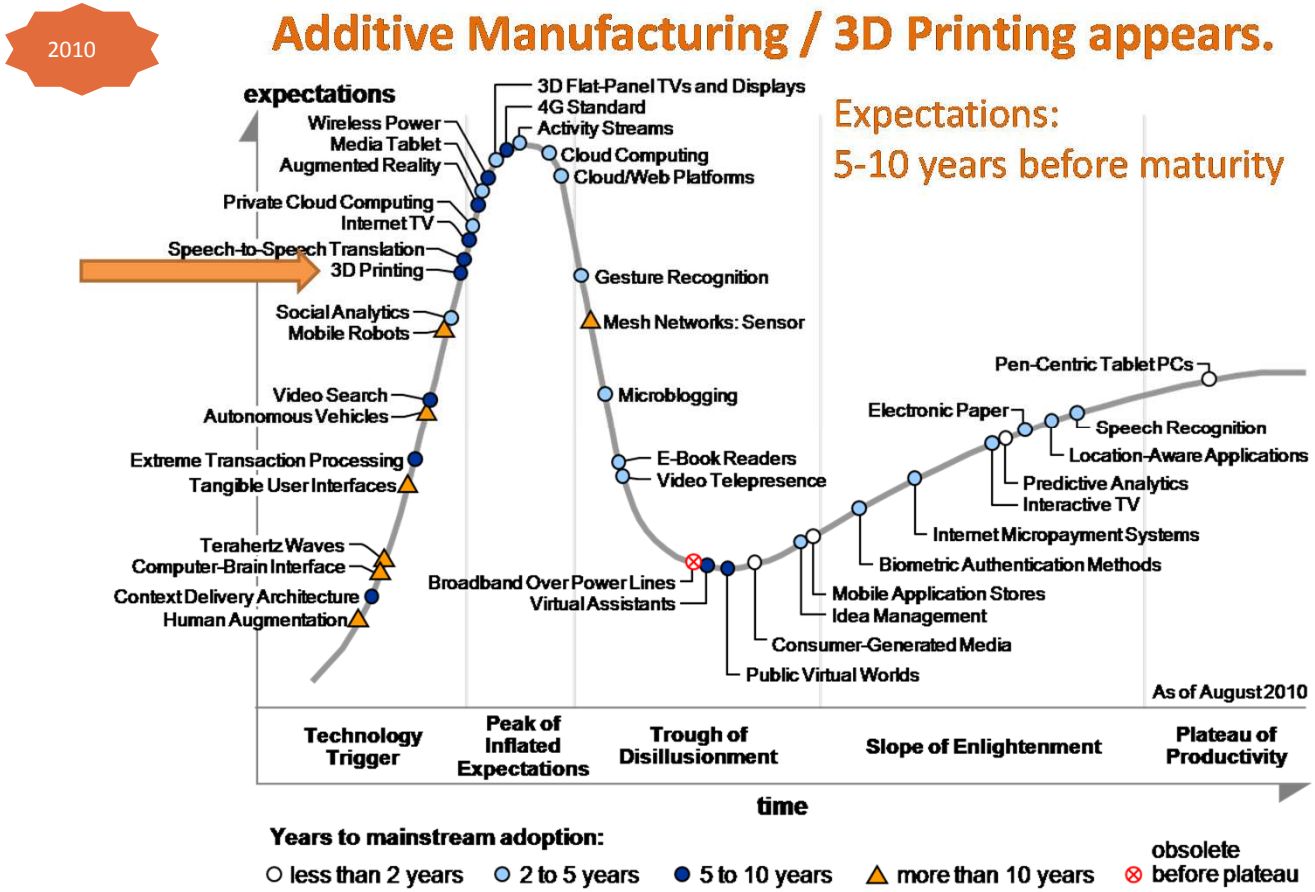
"Process of joining materials to make objects from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing methodologies, such as traditional machining."

Different terms used since AM started:

Different materials:
Polymers / Metals / Ceramics

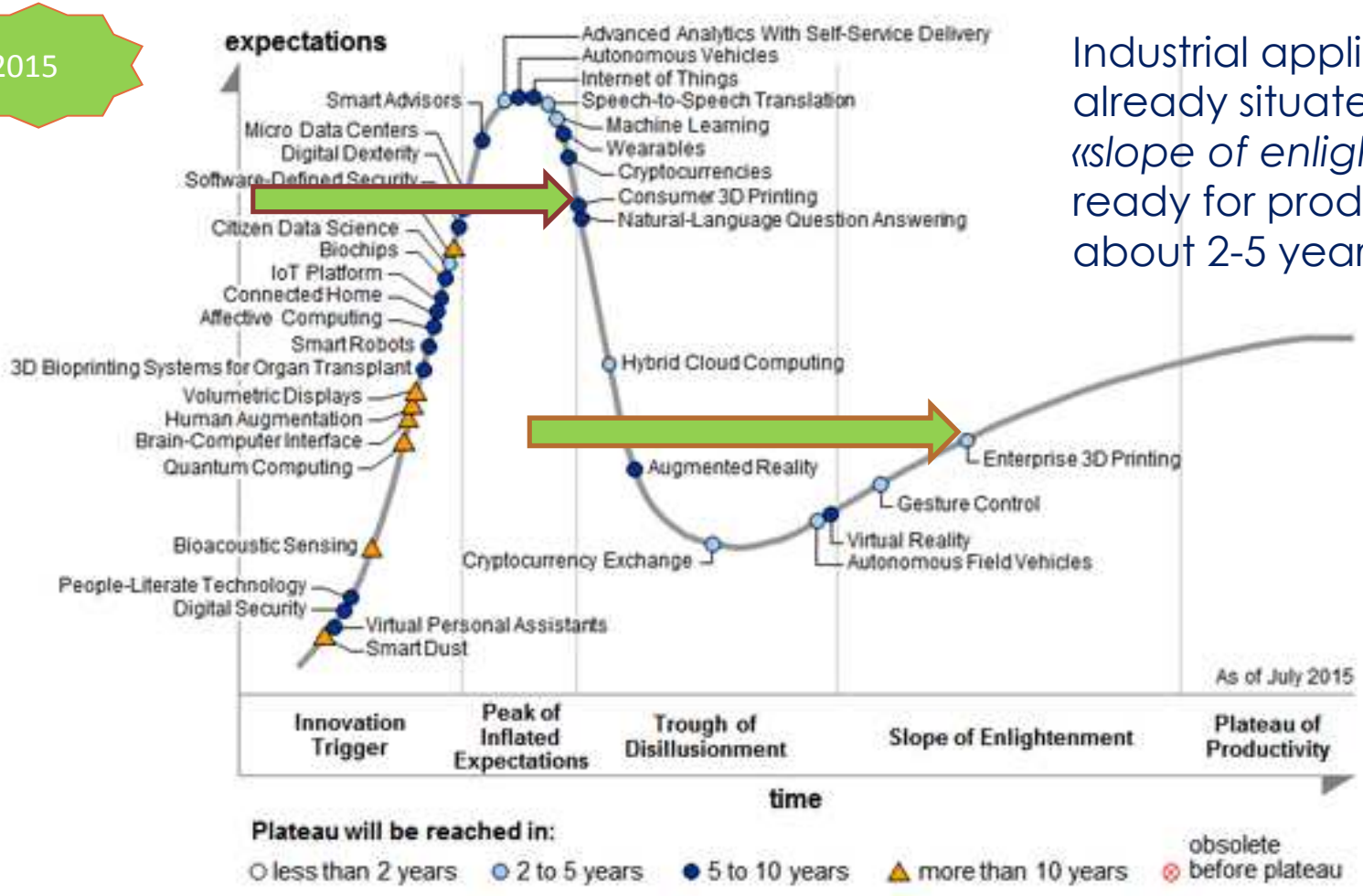
Different technologies: SLA / SLS / 3D-Printers / FDM / DLP / DMLS / EBM / LMD / LC / …

Attention on Additive Manufacturing is recent



In 2010, the Gartner Hype Cycle estimated 5-10 years to adoption

2015



Industrial applications are already situated in the *«slope of enlightenment»*, ready for production in about 2-5 years

Additive Manufacturing in EU Research and Innovation

- The EC already provides funds since the First Framework Programme **(FP1, 1984-1987),** e.g. rapid prototyping with laser scanning of polymers
- The following Framework Programmes **(1988-2013)** ensured continuous support from different EC services and programmes
- In **FP7 (2007-2013)**, more than **60** research projects based on AM technologies were funded with a total amount over **€160 million in EC funding** and a total budget of around **€225 million**
- Horizon 2020 has addressed AM within the **Key Enabling Technologies (KETs). 11** AM projects in **2014** and **2015** have been funded with more than **€52 million** in EC funding and a total budget of around **€60 million** in the NMPB Programme

Additive Manufacturing from FP3 to FP7 (1991-2013)

EC Programme	Number projects
FP3	4
FP4	8
FP5	3
FP6	12
FP7 IDEAS ERC	3
FP7 NMP	**34**
FP7 ICT	2
FP7 PEOPLE	8
FP7 SME	5
FP7 TRANSPORT	1
FP7 INCO	1
FP7 JTI	5
FP7 KBBE	1
FP7 SIS	1
TOTAL	**88**

	Metals	**11,3%**
	Polymers	**7,0%**
Materials	***Biomaterials***	**5,6%**
29,6%	*Ceramics*	2,8%
	Other materials	2,8%
	Process technologies	**23,2%**
Technologies	*Informatics*	10,6%
34,5%	*Standardisation*	0,7%
	Industrial processes	**7,7%**
	Health	**4,9%**
	Bioprinting	4,9%
	Aerospace	**3,5%**
Applications	*Moulds and tools*	3,5%
35,9%	*Micro 3D-Printing*	2,8%
	Foot and textile	2,1%
	Consumer goods	1,4%
	Electronics	1,4%
	Skills and education	1,4%
	Microfluidics	0,7%
	Design	0,7%
	Food	0,7%

NMP-FP7 projects (2007-2013)

NANOMASTER	Graphene based thermoplastic masterbatches for conventional and additive manufacturing processes
DIGINOVA	Innovation for Digital Fabrication
OXIGEN	Oxide Dispersion Strengthened Materials for the Additive Manufacture of High Temperature Components in Power Generation
AMAZE	Additive Manufacturing Aiming Towards Zero Waste & Efficient Production of High-Tech Metal Products
HI-MICRO	High Precision Micro Production Technologies
3D-HIPMAS	Pilot Factory for 3D High Precision MID Assemblies
AMCOR	Additive Manufacturing for Wear and Corrosion Applications
HIPR	High-Precision micro-forming of complex 3D parts
SMARTLAM	Smart production of Microsystems based on laminated polymer films
PRIME	Plug and PRoduce Intelligent Multi Agent Environment based on Standard Technology
SASAM	Support Action for Standardisation in Additive Manufactruring
BIO-SCAFFOLDS	Natural inorganic polymers and smart functionalized micro-units applied in customized rapid prototyping of bioactive scaffolds
PILOTMANU	Pilot manufacturing line for production of highly innovative materials

DIRECTSPARE	Strengthening the industries' competitive position by the development of a logistical and technological system for "spare parts" that is based on on-demand production.
OPEN GARMENTS	Consumer Open Innovation and Open Manufacturing Interaction for Individual Garments
COMPOLIGHT	CompoLight: Rapid Manufacturing of lightweight metal components.
STEPUP	STEP UP IN POLYMER BASED RM PROCESSES
MULTILAYER	Rolled multi material layered 3D shaping technology
IMPALA	Intelligent Manufacture from Powder by Advanced Laser Assimilation
LIGHT-ROLLS	High-throughput production platform for the manufacture of light emitting components
A-FOOTPRINT	Ankle and Foot Orthotic Personalisation via Rapid Manufacturing
IC2	Intelligent and Customized Tooling
PHOCAM	Photopolymer based customized additive manufacturing technologies
CORENET	Customer-oriented and eco-friendly networks for healthy fashionable goods
ARTIVASC 3D	Artificial vascularised scaffolds for 3D-tissue-regeneration

AM and FoF in the Industrial Leadership pillar

- The **Factories of the** Future (FoF) Public-Private Partnership **(PPP)** will play a major role in the support to Additive Manufacturing

- Under FoF, activities will be primarily developed through relevant **Industrial Roadmaps** in collaboration with the relevant stakeholders, *e.g. Additive Manufacturing Platform , ManuFuture ETP, AM FoF Clusters*

- **Industry** will play **a leading role** in defining **Research and Innovation priorities,** closing the gap between technology and manufacturing.

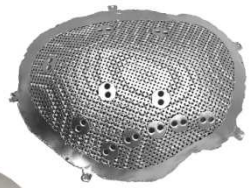
- Funded projects will be **outcome oriented**, going closer to the **market** and with high **SMEs** participation to maximise the expected **impact**

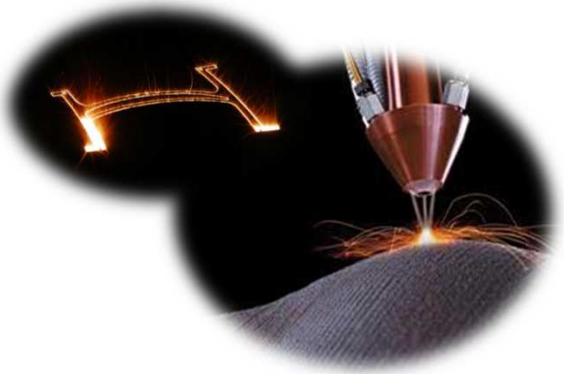
- Additive Manufacturing will also have a role in the **Societal Challenges**

Combining several KETs for advanced AM products

SOCIETAL CHALLENGE

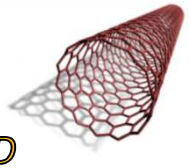
HEALTH





- ✓ *CUSTOMIZATION FOR REAL USER NEEDS*
- ✓ *NEW FUNCTIONAL DESIGNS FOR CONVENTIONAL USES*
- ✓ *NEW CONCEPT SOLUTIONS FOR LOW COST SITUATIONS*
- ✓ *FAST RESPONSE TO CRITICAL DEMANDS*
- ✓ *NEW TOOLS FOR NEW MINDED PROFESSIONALS*
- ✓ *MANUFACTURING ON DEMAND*

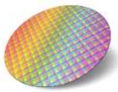
KETs



ADVANCED MATERIALS

NANOTECHNOLOGIES

MICROELECTRONICS



PHOTONICS

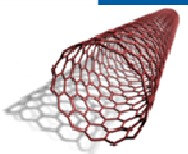
BIOTECHNOLOGIES

ADVANCED MANUFACTURING

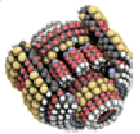
Combining several KETs for advanced AM products

SOCIETAL CHALLENGE

TRANSPORT

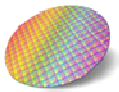


ADVANCED MATERIALS



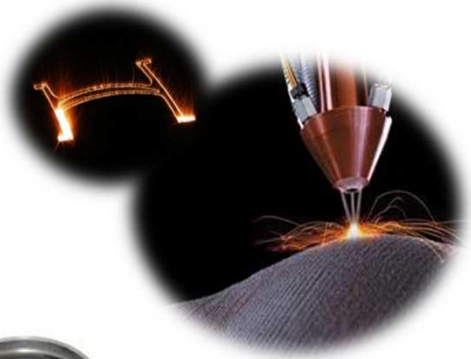
NANOTECHNOLOGIES

MICROELECTRONICS



PHOTONICS

ADVANCED MANUFACTURING

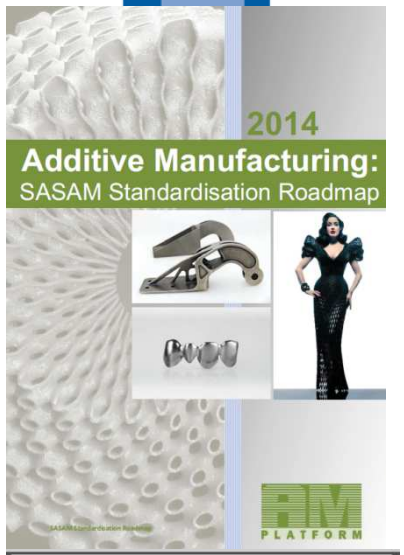


- ✓ CUSTOMIZATION FOR REAL END USER NEEDS
- ✓ NEW FUNCTIONAL DESIGNS FOR NEW VEHICLE CONCEPTS
- ✓ REDUCING COSTS INCREASING PERFORMANCE
- ✓ FAST RESPONSE TO HIGH DEMANDING SECTOR
- ✓ NEW TOOLS FOR NEW MINDED PROFESSIONALS
- ✓ NEW CONCEPT OPTIMISED INTRINCATED STRUCTURES TO FIT FUTURE USABLE SHAPES
- ✓ MANUFACTURING ON DEMAND

enterprise europe network
RINA

FP-related AM Roadmaps

- The **Factories of the Future Roadmap** highlighted Additive Manufacturing as a Research and Innovation priority within **Advanced manufacturing processes**
- The **European Additive Manufacturing Platform** recently published their **Strategic Research Agenda (SRA)** on Additive Manufacturing **2014-2020**
- The **FP7 CSA SASAM** has produced a **Roadmap for Standardisation** in AM setting up the basis for European standards, and in collaboration with CEN-CENELEC, ISO and ASTM
- The **FP7 CSA DIGINOVA** has developed a **Roadmap for Digital Fabrication**



AM in EU policy (I)

- The EC **Communication on Industrial Policy in 2012** mentioned 3D-Printing as a key element for the new Industrial Revolution
- The "**Industrial Landscape Vision 2025" (2013, EC),** showed AM as a case study on how Standards will facilitate new production systems, enhancing EU competitiveness
- The 2013 report of the EC Task Force for ***"Advanced Manufacturing Technologies for Clean Production***" presented AM / 3D-Printing as a key Advanced Manufacturing Technology
- In May 2015, the **EESC** adopted an own-initiative opinion on 3D-Printing
- In **September 2015**, the **EP** published a study for the **ITRE** Committee about **3D-Printing**

AM in EU policy (II)

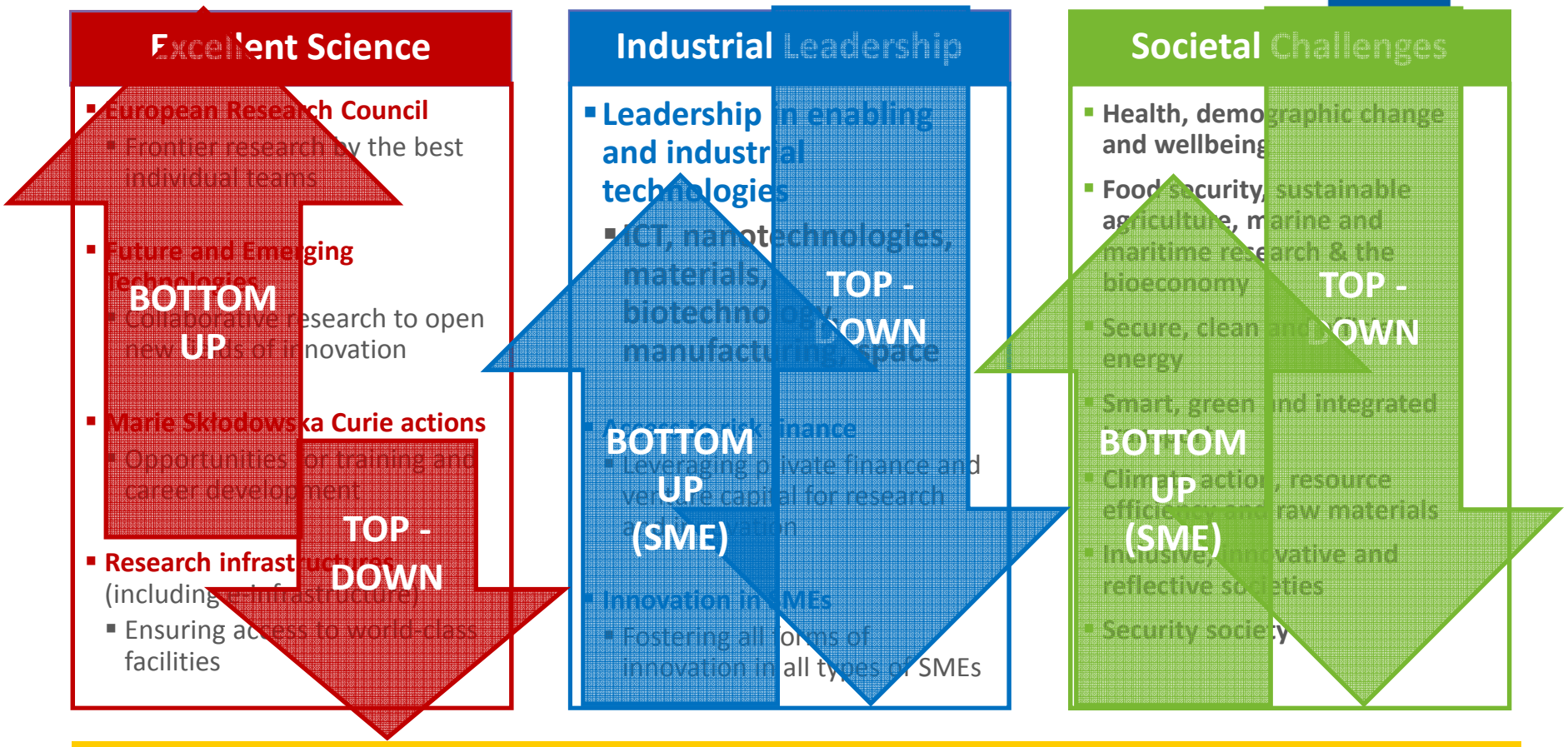
- **EC Additive Manufacturing Workshop (June 2014).** First AM dedicated Workshop in the EC identified the needs of AM and how to remove the current barriers for further AM development
- **Work Programmes 2014-2015** increased number of topics related to AM. Strategic CSA, FoFAM, focused in Regional aspects of AM and Clustering of FoF projects
- **Work Programmes 2016-2017** have increased the opportunities for AM in H2020 with respect to WP 2014-2015
- **Strategic CSA in FoF-5-2016** to develop an overall EU strategy for the next decade. Results to be published in 2017

APRE
Agenzia per la Promozione della Ricerca Europea

Additive Manufacturing in Horizon 2020 Work Programmes

enterprise europe network

H2020 structure



European Institute of Innovation and Technology (EIT)

Spreading Excellence and Widening Participation

Science with and for society

Joint Research Center (JRC)

H2020 structure

Excellent Science

- **European Research Council**
  - Frontier research by the best individual teams
- **Future and Emerging Technologies**
  - Collaborative research to open new fields of innovation
- **Marie Skłodowska Curie actions**
  - Opportunities for training and career development
- **Research infrastructures** (including e-infrastructure)
  - Ensur
    facilit

Industrial Leadership

- **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 reflective societies**

LEIT – NMBP

Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing

H2020 structure

Excellent Science

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

Industrial Leadership

- **Leadership in enabling and industrial technologies**
  - **ICT, nanotechnologies, materials, biotechnology, manufacturing, space**
- **Access to ris ce**
  - Leverag ance and ventu earch and in tion
- **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 reflective societies**
- **Security society**

SME INSTRUMENT
FAST TRACK TO INNOVATION

E

Spreading Excellence and Widening Participation

Science with and for society

Joint Research Center (JRC)

WORK PROGRAMME

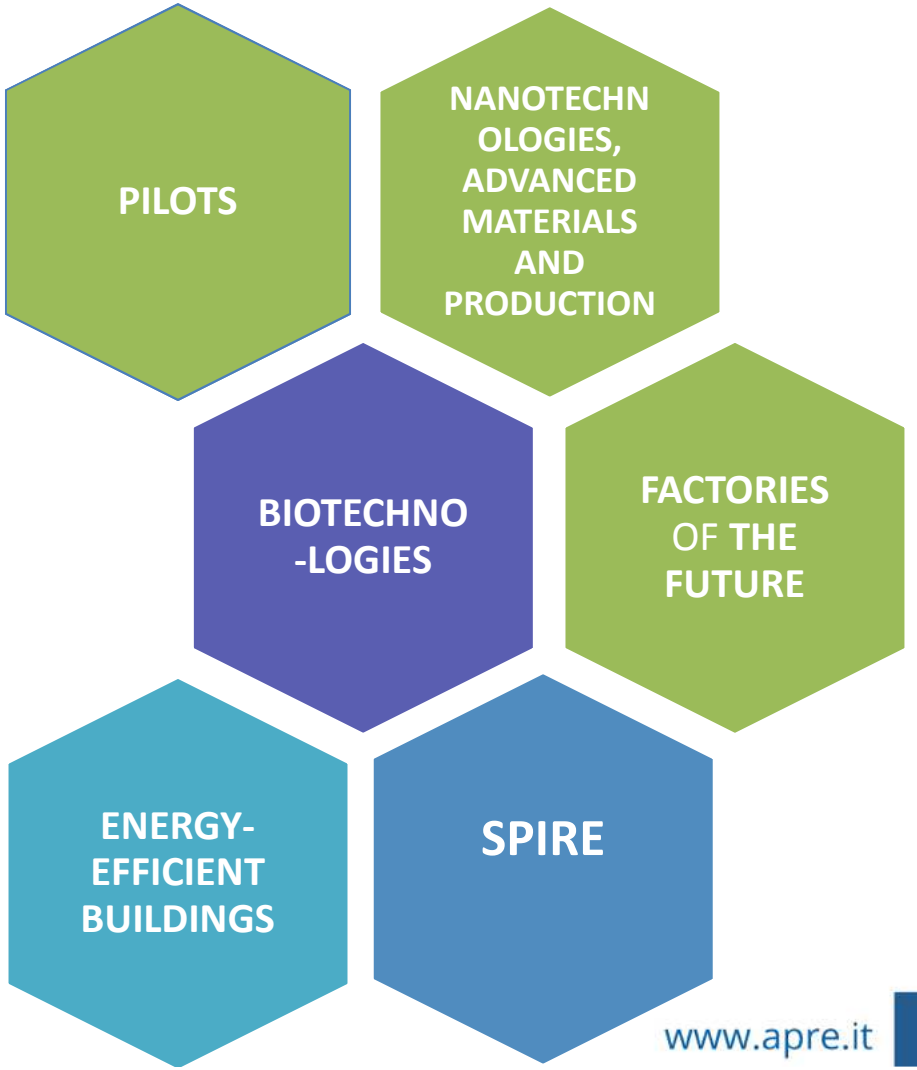
NMPB - Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing

Calls

2016/2017

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-leit-nmp_en.pdf

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-focus_en.pdf



AM in Horizon 2020

- **23** successful AM Projects started in Horizon 2020 during 2014, with a EU funding of around **€50 million** and a total budget of around €57 million
- In 2015(*), **5** AM Projects were funded, with a EU funding of around **€27** million and a total budget of around €31 million
- Horizon 2020 Work Programme for 2016-2017, mainly in the **Factories of the Future cPPP**, includes several opportunities for AM
- **Clustering** AM activities are fostered at the FoF annual Impact Workshops, enhancing synergies between projects

(*) July 2015

AM in Horizon 2020: Calls in WP 2014-2015

Code	Topic title	Type
FoF 2 -2014	Manufacturing process for complex structures and geometries with efficient use of material	RIA
FoF 8 -2015	ICT-enabling modelling, simulation, analytics and forecasting technologies	RIA& CSA
FoF 10 -2015	Manufacturing of custom made parts for personalised products	RIA
NMP 7 - 2015	Additive Manufacturing for table-top nanofactories	RIA
COMPET-3-2015	Bottom-up space technologies at low TRL	RIA

RIA: Research and Innovation Actions

CSA: Coordination and Support Actions

NMBP-Horizon 2020 projects (2014-2015)

BASMATI	Bringing innovAtion by Scaling up nanoMATerials and Inks for printing
BOREALIS	Borealis – the 3A energy class Flexible Machine for the new Additive and Subtractive Manufacturing on next generation of complex 3D metal parts.
CerAMfacturing	Development of ceramic and multi material components by additive manufacturing methods for personalized medical products
DIMAP	Novel nanoparticle enhanced Digital Materials for 3D Printing and their application shown for the robotic and electronic industry
FAST	Functionally graded Additive Manufacturing scaffolds by hybrid manufacturing
FoFAM	Industrial and regional valorization of FoF Additive Manufacturing Projects
iBUS	iBUS – an integrated business model for customer driven custom product supply chains
M-ERA.NET 2	ERA-NET for materials research and innovation
NANOTUN3D	Development of the complete workflow for producing and using a novel nanomodified Ti-based alloy for additive manufacturing in special applications.
PRINTCR3DIT	Process Intensification through Adaptable Catalytic Reactors made by 3D Printing
ToMax	Toolless Manufacturing of Complex Structures
WRAP	Waste-Based Rapid Adhesive-free Production of Sports goods

FoF AM Cluster

AMAZE

REProMag
Resource Efficient Production of Magnets

BOREALIS

Hi-Micro

FoFAM

TOMAX

Stellar

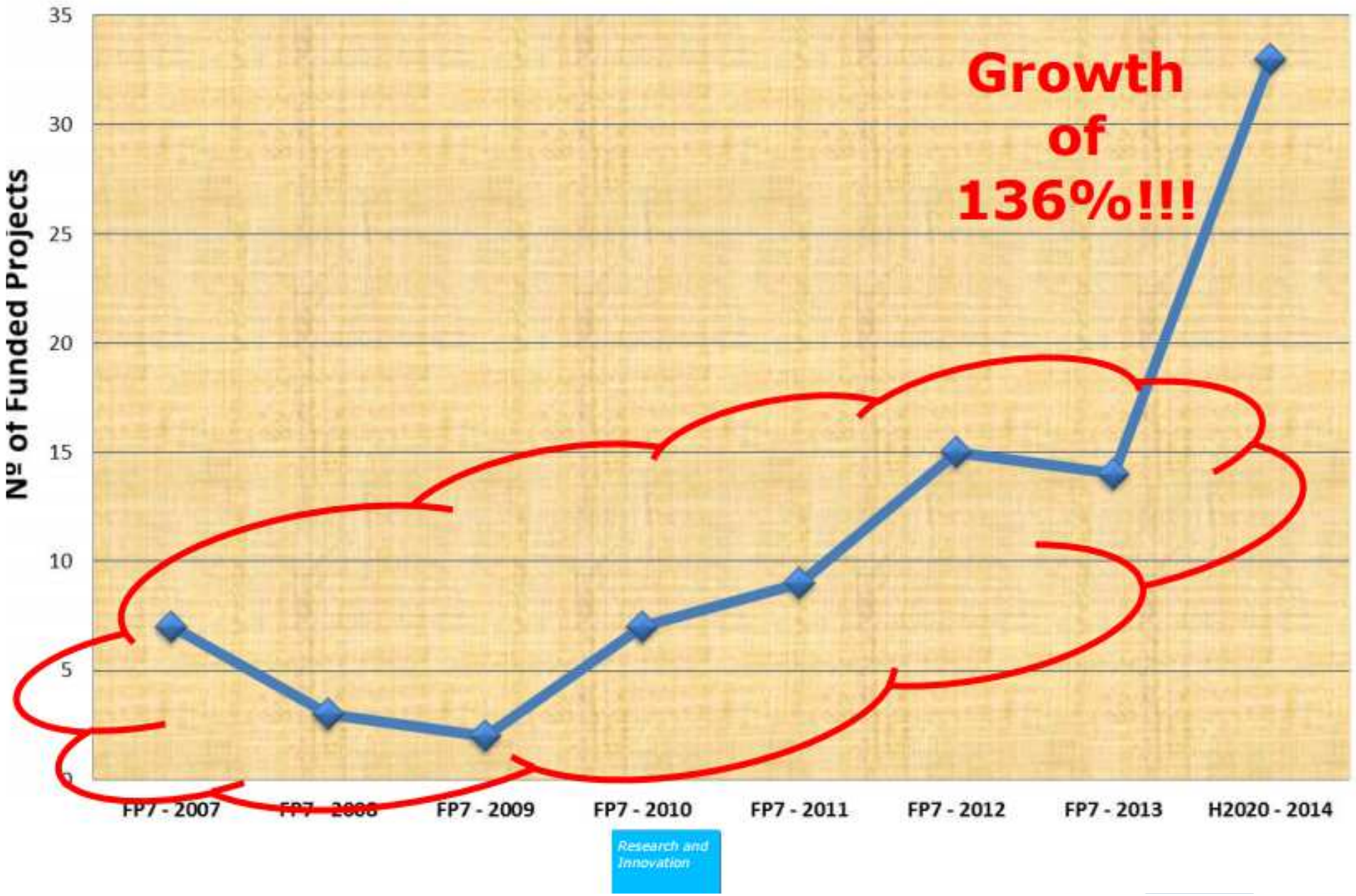
Synergies and benefits of clustering

- 5 Joint industrial workshops
- Technology transfers to other projects and establishment of new project initiatives
- Access to networks and opportunities to interact with a wider group of industries
- Knowledge about the respective focus of other projects helps in better specification of future applications
- IPR issues in exchanging intermediate project results and/or project prototypes, several patents and standardisation collaboration
- International Cooperation with US and China
- Several Spin-Offs and Start-ups

AM in the WP 2016-2017

Code	*Topic title*	*Type*
FoF-1-2016	Novel hybrid approaches for Additive and Subtractive manufacturing machines	RIA
FoF-5-2016	Support for the further development of Additive Manufacturing technologies in Europe	CSA
FoF-13-2016	Photonics Laser based production. From "Design to piece" – Excellence in Laser based additive industrial manufacturing	RIA
FoF-12-2017	**ICT Innovation for Manufacturing SMEs (I4MS). iv. Digital Design for Additive Manufacturing**	**IA**
PILOTS-03-2017:	**Pilot Lines for Manufacturing of Nanotextured surfaces with mechanically enhanced properties**	**IA**
PILOTS-04-2017	**Pilot lines for 3D printed and/or injection moulded polymeric or ceramic microfuidics MEMS**	**IA**
NMPB-22-2017	**Business models and industrial strategies supporting novel supply chains for innovative product services**	**RIA**
EUB-02-2017 (ICT WP)	**IoT Pilots – Smart manufacturing: customisation – continuous Additive Manufacturing / Robot systems for Additive Manufacturing**	**RIA**

Additive Manufacturing Projects in European Commission



WORK PROGRAMME

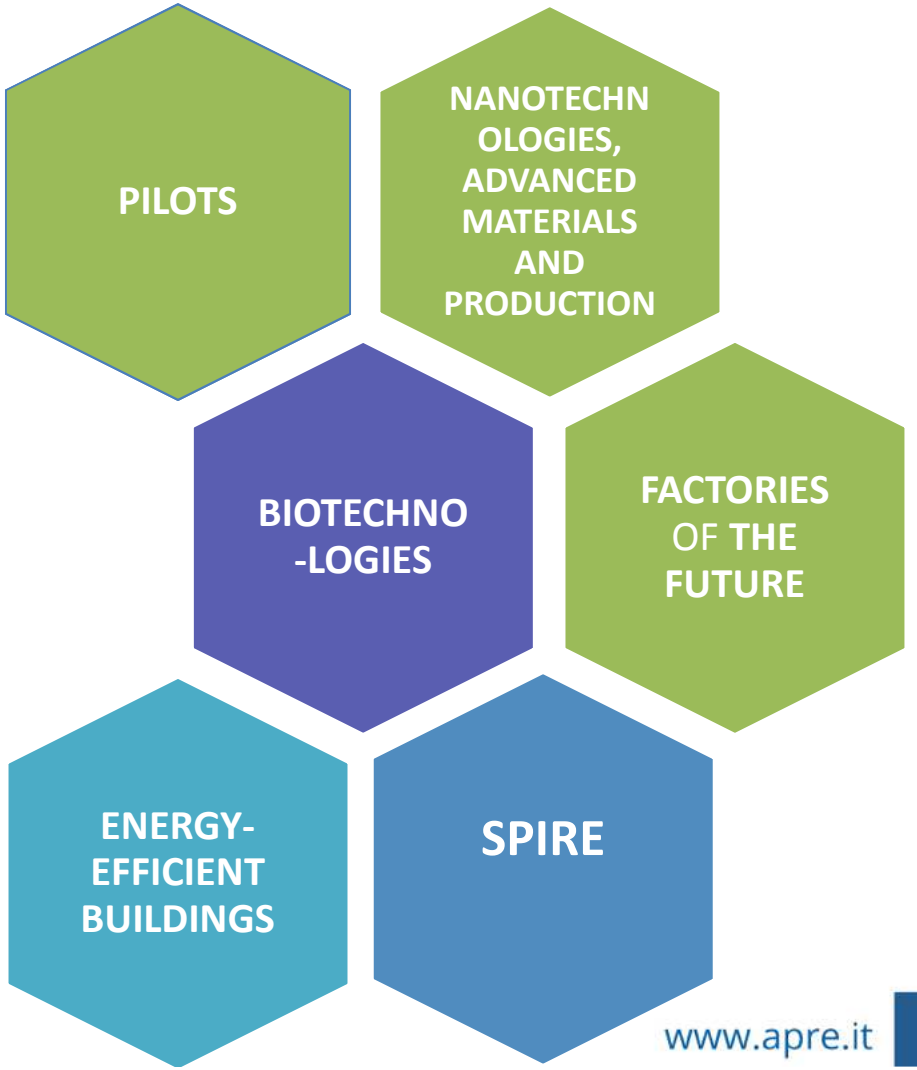
NMPB - Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing

Calls

2016/2017

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-leit-nmp_en.pdf

http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-focus_en.pdf



EN

Horizon 2020

Work Programme 2016 - 2017

5.ii. Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing

Important notice on the second Horizon 2020 Work Programme

This Work Programme covers 2016 and 2017. The parts of the Work Programme that relate to 2017 are provided at this stage on an indicative basis. Such Work Programme parts will be decided during 2016.

APRE
Agenzia per la Promozione della Ricerca Europea

EN

Horizon 2020

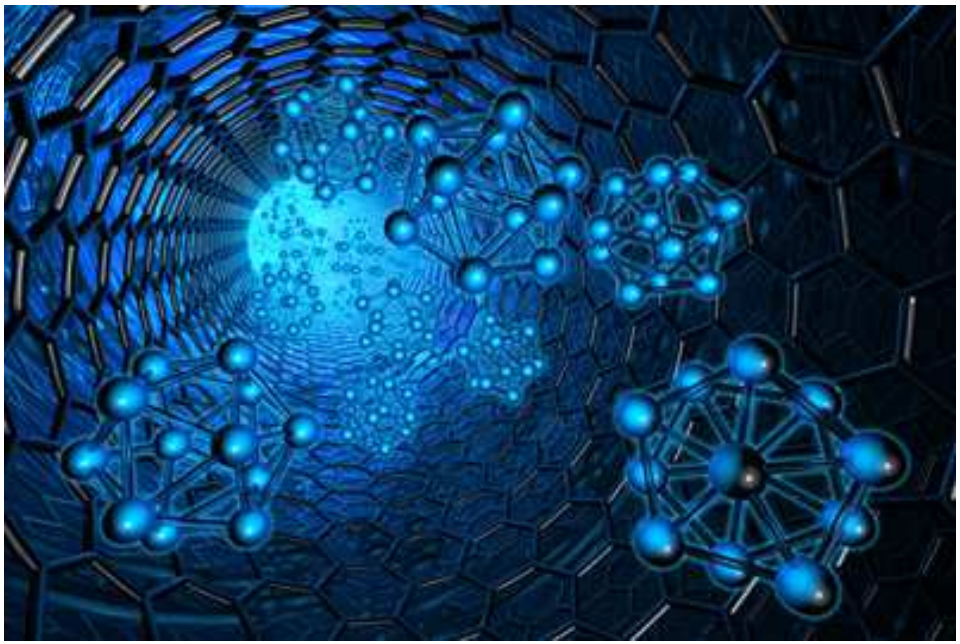
Work Programme 2016 - 2017

17. Cross-cutting activities (Focus Areas)

Important notice on the second Horizon 2020 Work Programme

This Work Programme covers 2016 and 2017. The parts of the Work Programme that relate to 2017 are provided at this stage on an indicative basis. Such Work Programme parts will be decided during 2016.

(European Commission Decision C(2016)1349 of 9 March 2016)



WP 2017: DRAFT
Apertura WP 2017
11 Maggio 2016

Deadline (two stage) –
27 ottobre 2016(first)
4 Maggio 2017 (second)

WP NANOTECHNOLOGIES, ADVANCED MATERIALS , BIOTECHNOLOGY AND PRODUCTION

WP 2017: DRAFT

Apertura WP 2017 11.05.16 (Pilot)/ 20.09.16 (FOF)

Deadline:

PILOT (two stage) – **4 Maggio 2017**

FOF (single stage) – **19 Gennaio 2017**

WP INDUSTRY 2020 IN THE CIRCULAR ECONOMY

CROSS-CUTTING CALL

Work Programme TOPICS Structure

SPECIFIC CHALLENGE	• sets the context, the problem to be addressed, why intervention is necessary
SCOPE	• delineates the problem, specifies the focus and the boundaries of the potential action BUT without describing specific approaches
EXPECTED IMPACT	• describe the key elements of what is expected to be achieved in relation to the specific challenge

TOPIC NMP Examples

NMBP-15-2017: Nanotechnologies for imaging cellular transplants and regenerative processes in vivo

Specific Challenge: Detection and monitoring of cell and tissue transplants in vivo is of [illegible] importance for development of clinical cell therapy. Suitable nanotechnology-based imaging approaches with high sensitivity should allow for monitoring of cell viability, engraftment and distribution, also through the use of nanomaterials for cells marking. Appropriate imaging techniques have been developed for application in small animals, but are not available yet for use in preclinical large animal models and patients. In particular, such technologies will represent an important safety measure enabling early detection of cell based therapy.

Scope: Proposals should focus on the following:

- Development of highly sensitive imaging approaches enabling discrimination of living cell and tissue transplants based e.g. on optical imaging, magnetic resonance imaging and / or nuclear medicine techniques;
- Monitoring should be highly sensitive, in best case allowing for detection of single cells and cell morphologies;
- Possibility of non-invasive whole body monitoring (magnetic, optical) in large animals;
- Development of clinically applicable imaging approaches, taking into account medical regulatory aspects;
- Interpretation of the data with theoretical models (to be developed if necessary).

As relevant, the proposed activities should address sex and gender specific aspects[22].

Activities are expected to commence at Technology Readiness Levels 3/4 and reach 5/6.

The Commission considers that proposals requesting a contribution from the EU between EUR 5 and 7 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Expected Impact:

- Availability of novel highly sensitive nanotechnology-based imaging approaches allowing for monitoring of survival, engraftment, proliferation, function and whole body distribution of cellular transplants in preclinical large animal models and patients;
- Imaging technologies facilitating the provision of new regenerative therapies to patients;

FINAL

TIPOLOGIE AZIONI

Ricerca collaborativa

- Research and innovation action
- Innovation action
- Strumento PMI

Co –Fund

- Eranet
- Pre – commercial procurement (PCP)
- Pubblic Procurement of Innovative solution (PPI)

CSA

- Coordination and Support Action

(+)Innovazione

- Prize
- SME Instrument
- Fast track to innovation

Progetti collaborativi

R&I actions

Basic research, applied research, technology development and integration, and testing e validation on a small scale prototype in a laboratory or simulated environment

Funding rate: 100% costi diretti, 25% costi indiretti

I actions

Prototyping, testing, demostrating, piloting, large - scale product validation and market replication

Funding Rate: 70% costi diretti (100% no profit); 25% costi indiretti

a. Demostration or pilot

b. Market replication

APRE
Agenzia per la Promozione della Ricerca Europea

The SME Instrument

SEAMLESS BUSINESS INNOVATION SUPPORT FROM IDEA TO MARKET...

PHASE I
Grant of € 50,000 (lump sum) + coaching support

PHASE II
Grant of € 0.5 Million to € 2.5 Million (70% of funding)* + coaching support
*as a general rule

PHASE III
Risk Finance (Private/Public)

Concept & Feasibility Assessment
Idea to Concept

Demonstration Market Replication R&D
Concept to Market-Maturity

Commercialisation
Market-Maturity to Market Launch

Idea > Business Plan

Elaborated Business Plan

Commercialisable Output

Market Success

...YOUR HIGHWAY TO DELIVER INNOVATION ON THE MARKET!

Apply at any time!

6 months → 12-24 months →

ACTIVITIES SUPPORTED

PROOF OF CONCEPT
- ✓ Prove Technical and Commercial Viability
- ✓ Explore IP Regime
- ✓ Design Study
- ✓ Develop Pilot Application
- ✓ Risk Assessment

DEMONSTRATION OF COMMERCIAL POTENTIAL via
- ✓ Prototyping
- ✓ Testing
- ✓ Piloting
- ✓ Miniaturization
- ✓ Scaling-up
- ✓ Application Development

GO-TO-MARKET
- ✓ EU Quality Label (Promotion & Networking with Financiers/Clients)
- ✓ Investment Readiness Training
- ✓ SME window in the EU Financial Facilities (debt & equity backed by EIB/EIF)
- ✓ Link to Public Procurement Networks

APRE
Agenzia per la Promozione della Ricerca Europea

Fast Track to Innovation Pilot

THE ULTIMATE BOOST FOR OUTSTANDING BUSINESS INNOVATORS WITH A NEED FOR SPEED...

PREPARE YOUR PROPOSAL

Build your industry-intensive consortium*
minimum 3 partners - maximum 5 partners
(all based in the EU and / or in Horizon 2020 associated countries)

Proposal

Outstanding Business Innovation Concept
(high-readiness level / TRL 6, meaning demonstrated in a relevant environment)

Continuous open call until end 2016

6 months time-to-grant

DEVELOP YOUR INNOVATION

Receive an **EU grant of EUR 1 million to 3 million**
(70% of funding, 100% of funding for non-profit entities)

From Mature R&D
Demonstration
Market-Oriented
R&D
to Market-Mature Innovation

12-24 months for implementation

HIT THE MARKET!

Start your commercial activities

The Market
Market-Maturity to Market Launch

Market-ready result
(finished product, service, process/ TRL 9)

At most 36 months from grant to market

*In a consortium with 3 or 4 partners, at least 2 should be industry, and in a consortium with 5 partners, at least 3; alternatively at least 60% of the project budget should be allocated to industry (i.e. private for profit entities)

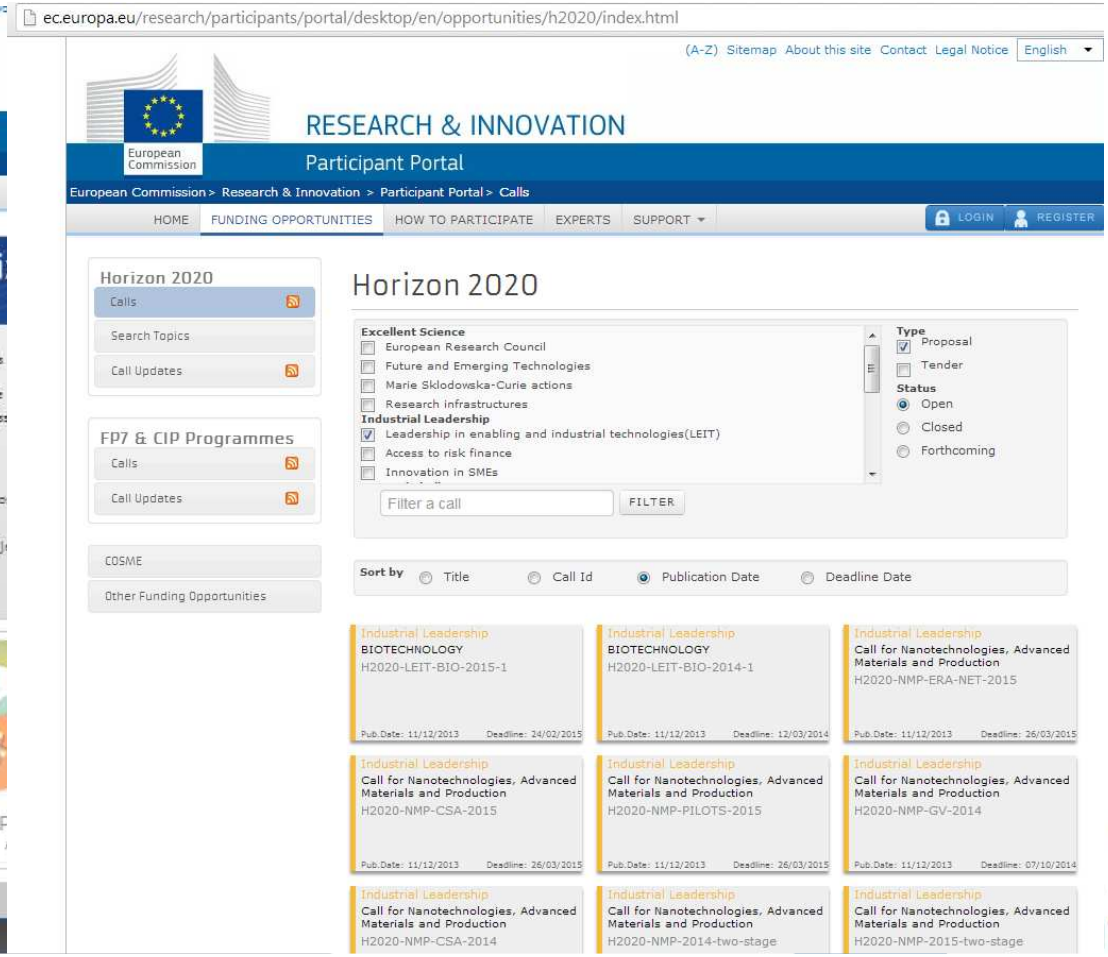
... AND EAGER TO COMPETE ON GLOBAL MARKETS...!

ACTIVITIES SUPPORTED

Systems validation in real working conditions – Testing – Piloting – Business model validation – Standard setting – Pre-normative research – EU quality label

RESEARCH PARTICIPANT PORTAL

http://ec.europa.eu/research/participants/portal/page/home



Stakeholders consultation

How the work programme 2018-2020 for Nanotechnologies, Advanced Materials, Biotechnology, and Advanced Manufacturing and Processing" (NMBP) is being shaped.

The multiannual work programme will take into account the policitical priorities of the European Union, stakeholders' views and foresight exercises. Consultation of stakeholders is an integral part of the programming process.

Open until: 2 May 2016.

The consultation document is available at:

https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/NMBP_Stakeholder_consultation.pdf

and the background information at:

https://ec.europa.eu/programmes/horizon2020/en/nmbp-work-programme-2018-2020-preparation

Responses should be sent to RTD-NMBP-H2020STAKEHOLDERS@ec.europa.eu.

Next events

- International Cluster on Additive Manufacturing and 3D-Printing. *Barcelona, 02/05/2016*
- 17th AM Platform stakeholders meeting. May-June *2016*
- *Kick-Off Meeting of strategic CSA FoF-5-2016. Brussels, October 2016*

GRAZIE PER L'ATTENZIONE!

APRE
Agenzia per la Promozione della Ricerca Europea
via Cavour, 71
00184 - Roma
www.apre.it
Tel. (+39) 06-48939993
Fax. (+39) 06-48902550

Serena Borgna
borgna@apre.it
Martina Desole
desole@apre.it

Potential benefits of Additive Manufacturing

- Disruption of the manufacturing value chain, allowing a shift from mass production to full customisation.
- Makes light weight structures which retain structural strength
- Less material, less waste, less energy, less CO_2 emissions
- Reduced time to market and freedom in design, which can create new business models and market opportunities
- Enables production on a local basis, closer to their point of consumption, strengthening regional economies