

APRE

Agenzia per la Promozione
della Ricerca Europea

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

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APRE

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** 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



A Technology Sets Inventors Free to Dream

By HAROLD YOUNG
 SAN FRANCISCO — Residents in the South Bay district of San Francisco, generally, will not be able to get their hands on the technology that will allow them to create products that were once the province of science-fiction writers.



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AM in the press

The Economist SPECIAL REPORT
MANUFACTURING AND INNOVATION
 April 2011 Issue



A third industrial revolution

SPiegel ONLINE WISSENSCHAFT

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Wissenschaft > Welt > Mond > Zukunftstechnik | Mondbau mit dem 3D-Drucker

Esa-Konzept: Mond-Siedler sollen sich Häuser selbst ausdrucken



Fotos ▶

南方网首页 新闻 经济 时政 财经 社会 专题 更多 >

南方网 社会新闻

3D打印别墅亮相苏州引围观

2010-01-19 23:43:16 来源：新华网 作者： 蒋西语 (1人参与)

近日，数幢使用3D打印技术建造的建筑亮相苏州工业园区。这些建筑包括一栋面积100平米的别墅和一栋4层居民楼。这些建筑的结构由大型3D打印机层层叠加而成，打印使用的“油墨”则由建筑垃圾制成。



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This cloud makes data make a difference.

Wann fliegen wieder Menschen zum Mond? Und wie können zumindest auf die zweite Frage haben europäische Welt könnten sich Behausungen selbst mit 3-D-Druckern helfen

EL PAIS SOCIEDAD

Cartuchos de células, impresoras de órganos

La bioprintografía en 3D se presenta como una opción de futuro de la medicina in algunas experiencias a pequeña escala aunque falta salvar obstáculos, como la v

3D printing: From racing cars to dresses to human tissue

By Fiona Graham
 Technology of business reporter, BBC News

9 September 2014 Business



Print it. About 5% of the Strakka Dome is 3D printed. Within the next five to 10 years Strakka's Dan Wahlsby thinks that's likely to be closer to 70-80%.

La stampante 3D che produce bistecca

Uno dei fondatori di PayPal finanzia un progetto che ha come vero obiettivo la creazione di tessuti

DA NISSAN INVITA MICHELE FARINA

NEW YORK - Come la vuole la biotecnica? Ben stampata, grazie. Peter Thiel, cofondatore di PayPal (sistema di pagamento online), avrebbe finanziato con 350 mila dollari (36 mila euro) una start-up chiamata Modern Meadow. Obiettivo? Realizzare bistecche di maiale (la carne bianca è più facile da stampare di quella ve colata).

Le stampanti 3D sono da anni una realtà produttiva (l'Economist qualche mese fa ha parlato di «terza rivoluzione industriale» alle porte). Un giorno non lontano ognuno di noi si potrà fare il proprio telefonino (o un visolino) in casa. Le bio-printer sono in fase sperimentazione, per esempio nel settore della medicina rigenerativa. Gli scienziati hanno stampato da un computer porzioni di pelle, di muscolo, di vasi sanguigni. Non è escluso che in futuro si possano ottenere organi complessi.

Fantascienza da brivido? È il meno impressionante parlare di cibo: già i ricercatori della Cornell University sono riusciti a «stampare» dei dolcetti molto semplici (caramelle). Realizzare carne dovrebbe essere più semplice che creare un organo.

VA. 170% **Plus resté en place**

Home | Capital | M&A | Leadership | Innovation | Digital | HR | Talent | Merit | VA | Exporter



Hand fick en ny hand - med 3D-skrivare

Sjalrige Holden Moras skadade en hand - men det löstes både snabbt och billigt med en 3D-skrivare.

Η ΚΑΘΗΜΕΡΙΝΗ
 ΕΚΔΟΣΗ

ΕΠΙΧΕΙΡΗΣΙΑΚΑ ΛΟΓΙΣΤΙΚΑ ΟΙΚΟΝΟΜΙΚΑ ΠΡΟΒΛΕΨΕΙΣ ΑΠΟΤΕΛΕΣΜΑΤΑ ΚΑΤΑΣΤΑΣΗ ΕΞΟΦΛΗΣΗΣ ΕΞΟΦΛΗΣΗ ΠΑΡΑΧΩΡΑ ΚΑΤΑΣΤΑΣΗ ΕΠΙΧΕΙΡΗΣΙΑΚΑ

ΕΠΙΧΕΙΡΗΣΙΑΚΑ ΛΟΓΙΣΤΙΚΑ ΟΙΚΟΝΟΜΙΚΑ ΠΡΟΒΛΕΨΕΙΣ ΑΠΟΤΕΛΕΣΜΑΤΑ ΚΑΤΑΣΤΑΣΗ ΕΞΟΦΛΗΣΗΣ ΕΞΟΦΛΗΣΗ ΠΑΡΑΧΩΡΑ ΚΑΤΑΣΤΑΣΗ ΕΠΙΧΕΙΡΗΣΙΑΚΑ

Στο Άντισιο η πρώτη ανθρώπινη καρδιά 3D εκτυπωτή

ΑΝΘΡΩΠΙΝΗ ΚΑΡΔΙΑ

Καθημερινή

le Monde diplomatique

Illusoire émancipation par la technologie

Depuis peu, des machines électroniques capables de produire des objets, fonctionnent à la manière d'imprimantes en trois dimensions, sont accessibles au grand public. Elles suscitent un engouement au sein d'un avant-garde qui y voit les ferments d'une nouvelle révolution industrielle. Mais les partisans de ces outils de bricolage technologique oublient souvent l'histoire qui les a vus naître.

par Johan Söderberg, janvier 2013

Ce serait la révolution industrielle du XXI^e siècle ; ce qui devait surprendre très vite se voit en magasin pourrait désormais être fabriqué chez soi grâce à des outils comme une découpeuse laser, une imprimante 3D, une fraiseuse à commande numérique, etc. Ces machines nevalent toutes un prix de principe technologique, grâce au mouvement d'un outil mécanique à l'aide d'un logiciel. Les plus coûteuses d'entre elles fonctionnent comme des imprimantes, mais en trois dimensions ; passage après passage, une base en plastique ou en bois sert de support pour des couches de matière. Le plus souvent, une résine synthétique ou un résineux un modèle numérique, jusqu'à obtention du volume désiré. De la plaquette de porte au miroir, les objets ainsi produits se multiplient.

Même si cette technologie suscite un enthousiasme de petites entreprises créatives, son développement est essentiellement l'œuvre d'innovateurs, qui se différencient comme des moutons. Restreints dans le monde du logiciel libre, ils appliquent ces valeurs et pratiques aux mécanismes de fabrication. Pour les plus radicaux d'entre eux, la réappropriation populaire des outils ouvrirait la voie à une «démocratisation» de la production industrielle, avec, en ligne de mire, l'abolition de la société de consommation. L'entraide expertent réaliser les outils du travail et rendre ainsi obsolescence le mouvement de délocalisation de la production industrielle vers les pays du tiers-monde (2). Ce point de vue, plus proche des cercles d'élites, est notamment exprimé par le magazine spécialisé Make (à l'origine), qui, entre autres, organise chaque année une Maker Faire («Faire de la fabrication») dans plusieurs grandes villes du États-Unis.

Il suffit toutefois de se promener dans les allées de ce Salon pour constater une certaine confusion au sein de la révolution amateur. Parmi les nombreuses attractions proposées lors de son édition de 2011, à New York, on pouvait ainsi visiter la Print Village («village de l'impression») : une vitrine de stands consacrée à l'impression 3D. Regardé à son tour comme dérivé (combinaison de consommation, le Regdrop est capable de reproduire la plupart des éléments qui la composent, et ainsi de s'autoproduire).

What is Additive Manufacturing ?

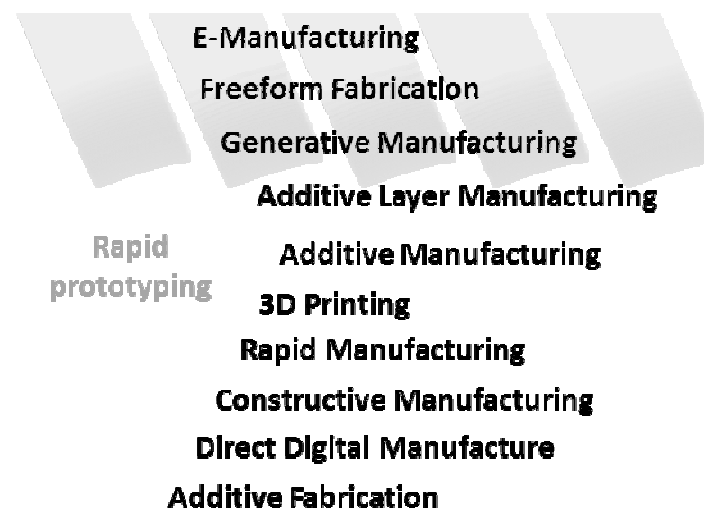
ISO/ASTM definition:

"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 materials:

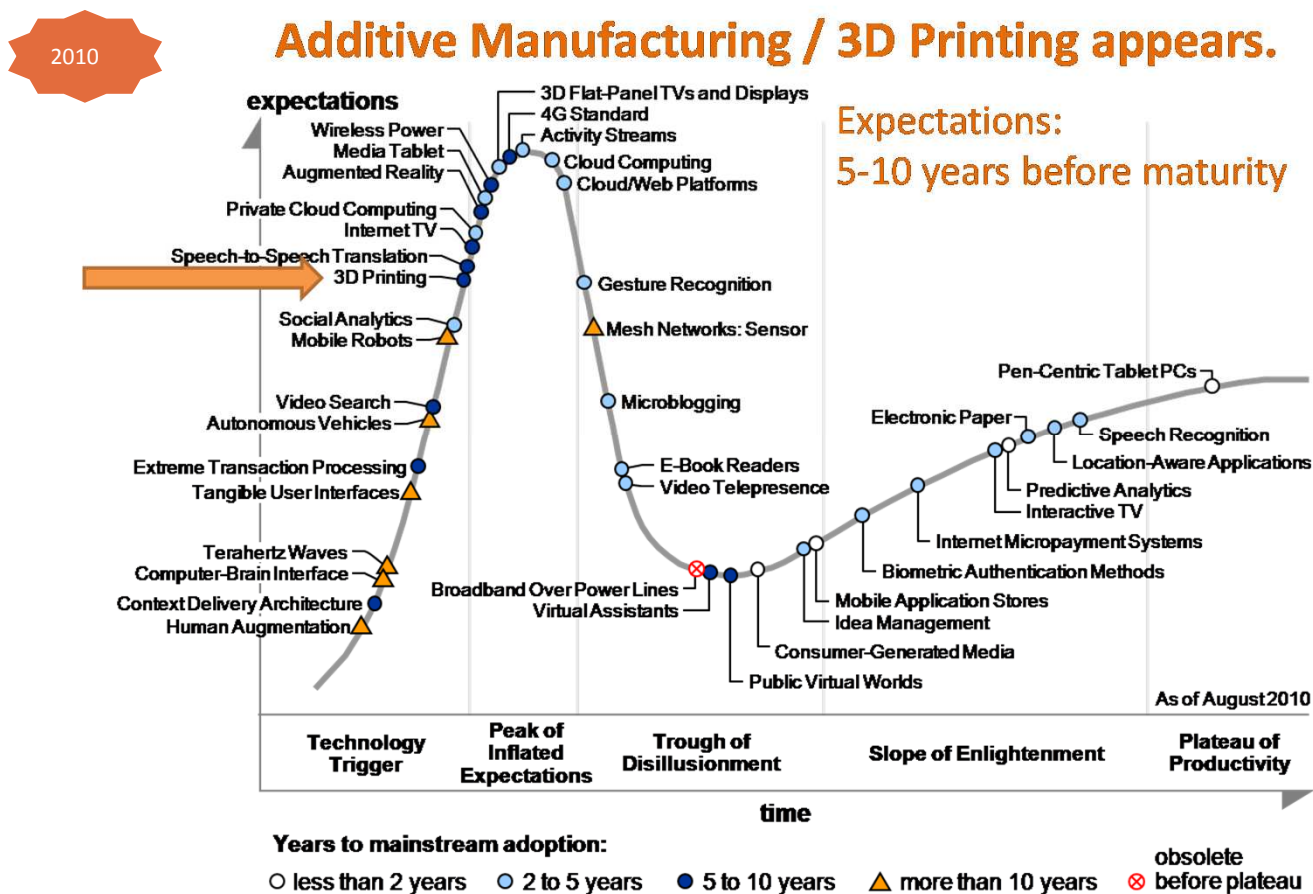
Polymers / Metals / Ceramics

Different terms used since AM started:



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

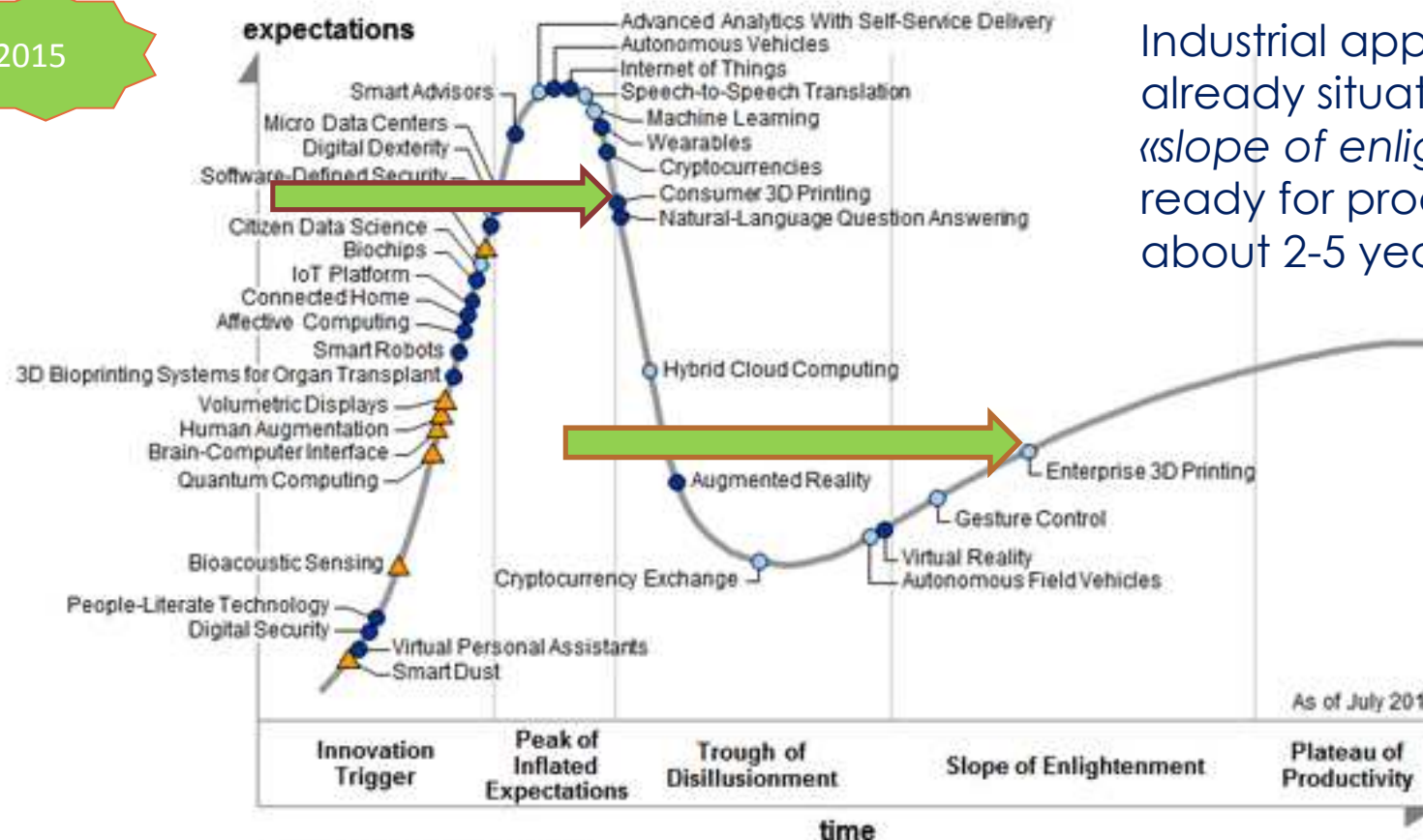
Attention on Additive Manufacturing is recent



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

Plateau will be reached in:

- less than 2 years
- 2 to 5 years
- 5 to 10 years
- ▲ more than 10 years
- ⊗ obsolete before plateau



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

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



NMP-FP7 projects (2007-2013)

NANOMASTER	Graphene based thermoplastic masterbatches for conventional and additive manufacturing processes	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.
DIGINOVA	Innovation for Digital Fabrication	OPEN GARMENTS	Consumer Open Innovation and Open Manufacturing Interaction for Individual Garments
OXIGEN	Oxide Dispersion Strengthened Materials for the Additive Manufacture of High Temperature Components in Power Generation	COMPOLIGHT	CompoLight: Rapid Manufacturing of lightweight metal components.
AMAZE	Additive Manufacturing Aiming Towards Zero Waste & Efficient Production of High-Tech Metal Products	STEPUP	STEP UP IN POLYMER BASED RM PROCESSES
HI-MICRO	High Precision Micro Production Technologies	MULTILAYER	Rolled multi material layered 3D shaping technology
3D-HIPMAS	Pilot Factory for 3D High Precision MID Assemblies	IMPALA	Intelligent Manufacture from Powder by Advanced Laser Assimilation
AMCOR	Additive Manufacturing for Wear and Corrosion Applications	LIGHT-ROLLS	High-throughput production platform for the manufacture of light emitting components
HIPR	High-Precision micro-forming of complex 3D parts	A-FOOTPRINT	Ankle and Foot Orthotic Personalisation via Rapid Manufacturing
SMARTLAM	Smart production of Microsystems based on laminated polymer films	IC2	Intelligent and Customized Tooling
PRIME	Plug and PReduce Intelligent Multi Agent Environment based on Standard Technology	PHOCAM	Photopolymer based customized additive manufacturing technologies
SASAM	Support Action for Standardisation in Additive Manufacturing	CORENET	Customer-oriented and eco-friendly networks for healthy fashionable goods
BIO-SCAFFOLDS	Natural inorganic polymers and smart functionalized micro-units applied in customized rapid prototyping of bioactive scaffolds	ARTIVASC 3D	Artificial vascularised scaffolds for 3D-tissue-regeneration
PILOTMANU	Pilot manufacturing line for production of highly innovative materials		



AM and FoF in the Industrial Leadership pillar

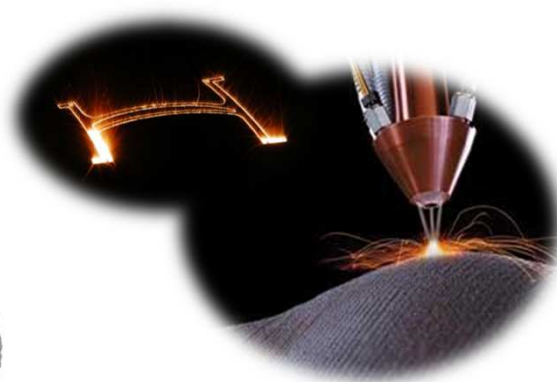
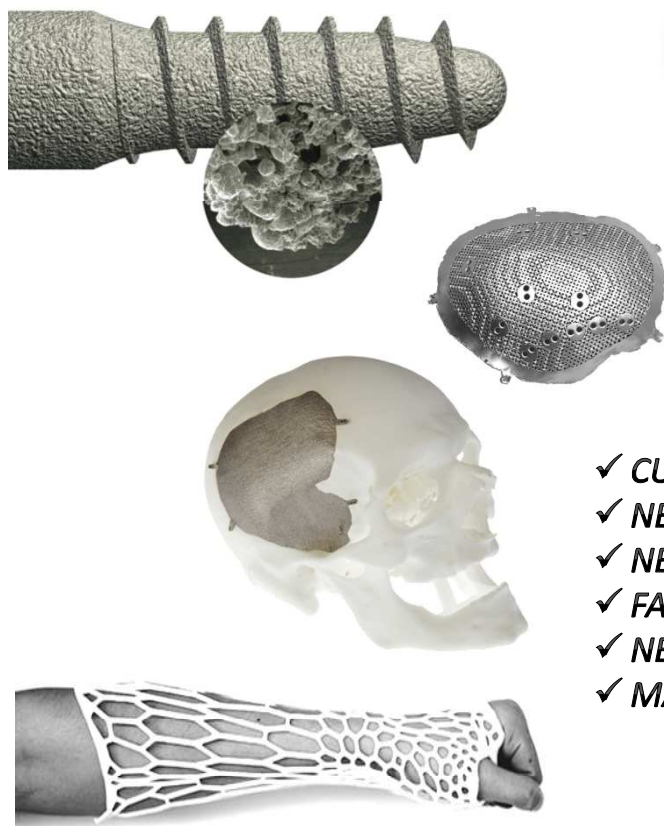
- The **Factories of the Future (FoF) Public-Private Partnership (PPP)** will play a major role in the support to Additive Manufacturing
- Under FoF, activities will be primarily developed through relevant **Industrial Roadmaps** in collaboration with the relevant stakeholders, e.g. *Additive Manufacturing 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**



SOCIETAL CHALLENGE

HEALTH

Combining several KETs for advanced AM products



- ✓ 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

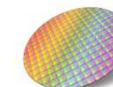
KETs

ADVANCED
MATERIALS



NANOTECHNOLOGIES

MICROELECTRONICS



PHOTONICS



BIOTECHNOLOGIES



ADVANCED
MANUFACTURING



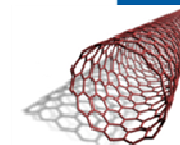


**SOCIETAL
 CHALLENGE**

TRANSPORT

Combining several KETs for
 advanced AM products

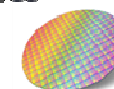
ADVANCED MATERIALS



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 INTRICATED STRUCTURES TO FIT FUTURE USABLE SHAPES
- ✓ MANUFACTURING ON DEMAND

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**



FACTORIES OF THE FUTURE
 Multi-annual roadmap
 for the contractual PPP
 under Horizon 2020

Prepared by
 EFFRA
 European Federation of
 Additive Production

Fully
 Research



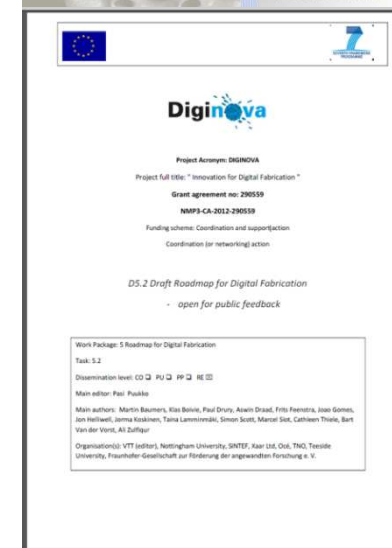
2014
Additive Manufacturing:
SASAM Standardisation Roadmap

AM
 PLATFORM



2014-2020
Additive Manufacturing:
Strategic Research Agenda

AM
 PLATFORM



Diginova

Project Acronym: DIGINOVA

Project full title: "Innovation for Digital Fabrication"

Grant agreement no: 290559

HMPS-CA-2012-290559

Funding scheme: Coordination and support action

Coordination (or networking) action

DS.2 Draft Roadmap for Digital Fabrication

- open for public feedback

Work Package: 5 Roadmap for Digital Fabrication

Task: 5.2

Dissemination level: CO PU IP RE

Main editor: Paul Paschke

Main authors: Martin Baumann, Klaus Boller, Paul Drury, Armin Drossel, Fritz Feinstra, Jose Gomez, Jan Heideck, James Kozlowski, Tamas Lammenszels, Simon Seitz, Marcel Sitt, Cathleen Thiele, Bert Van der Vort, Ali Zulfikar

Organization(s): VTT (edf), Nottingham University, SINTEF, Aar, Ute, Ode, TNO, Teesside University, Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e. V.



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

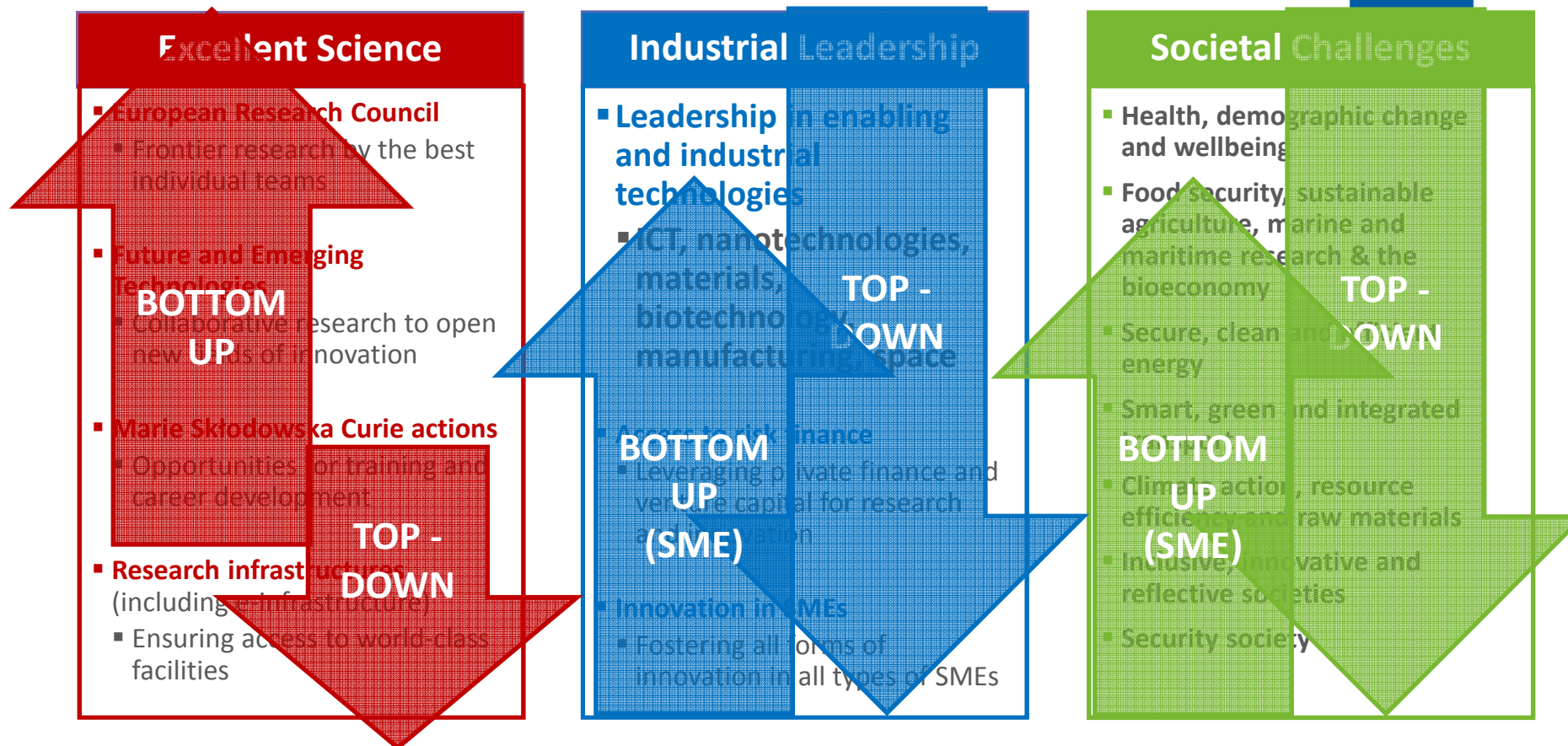




Additive Manufacturing in Horizon 2020 Work Programmes



H2020 structure



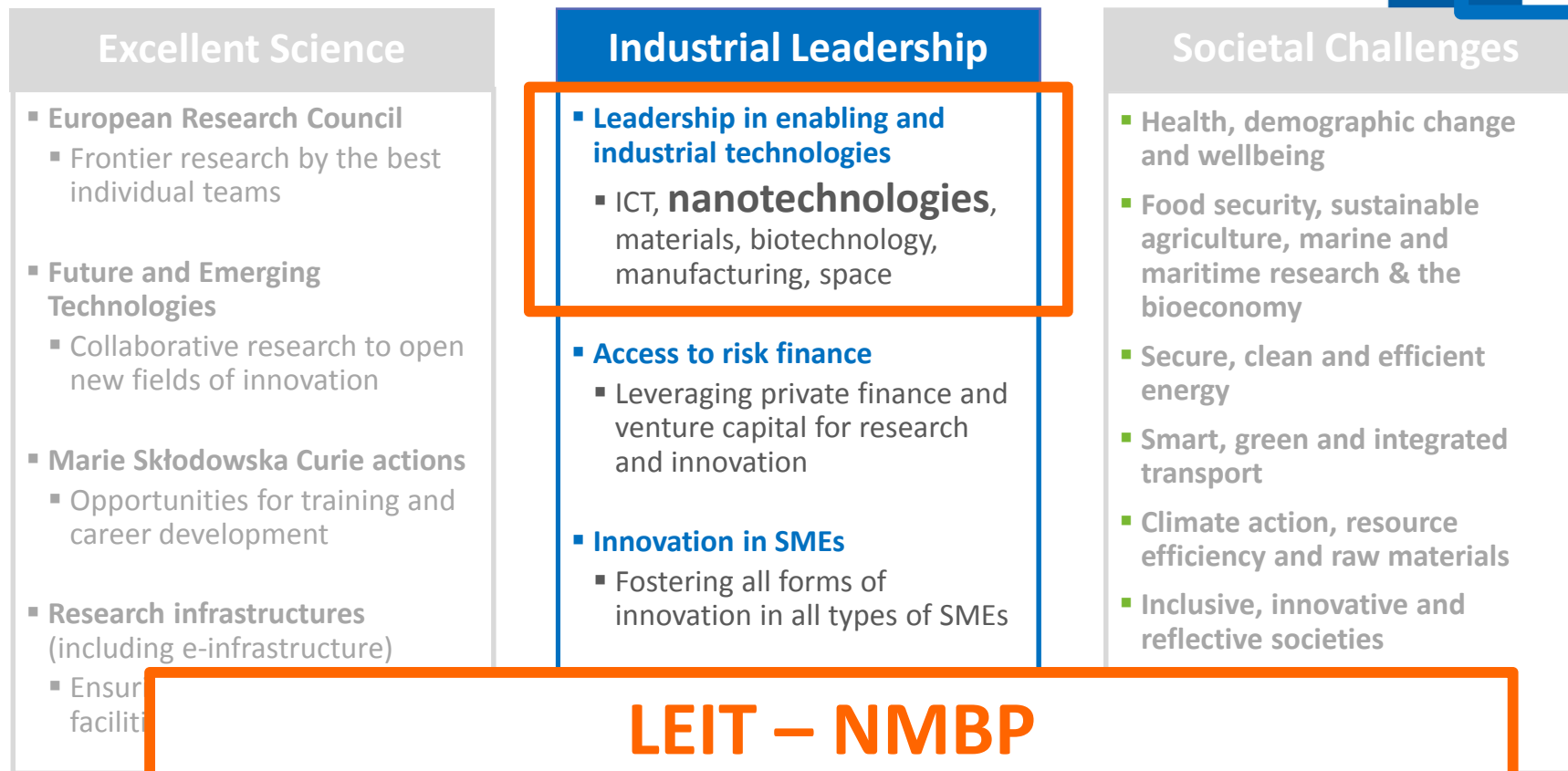
European Institute of Innovation and Technology (EIT)

Spreading Excellence and Widening Participation

Science with and for society

Joint Research Center (JRC)

H2020 structure



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 risk finance**
 - Leveraging venture capital and investment
- **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

Spreading Excellence and Widening Participation

Science with and for society

Joint Research Center (JRC)



WORK PROGRAMME

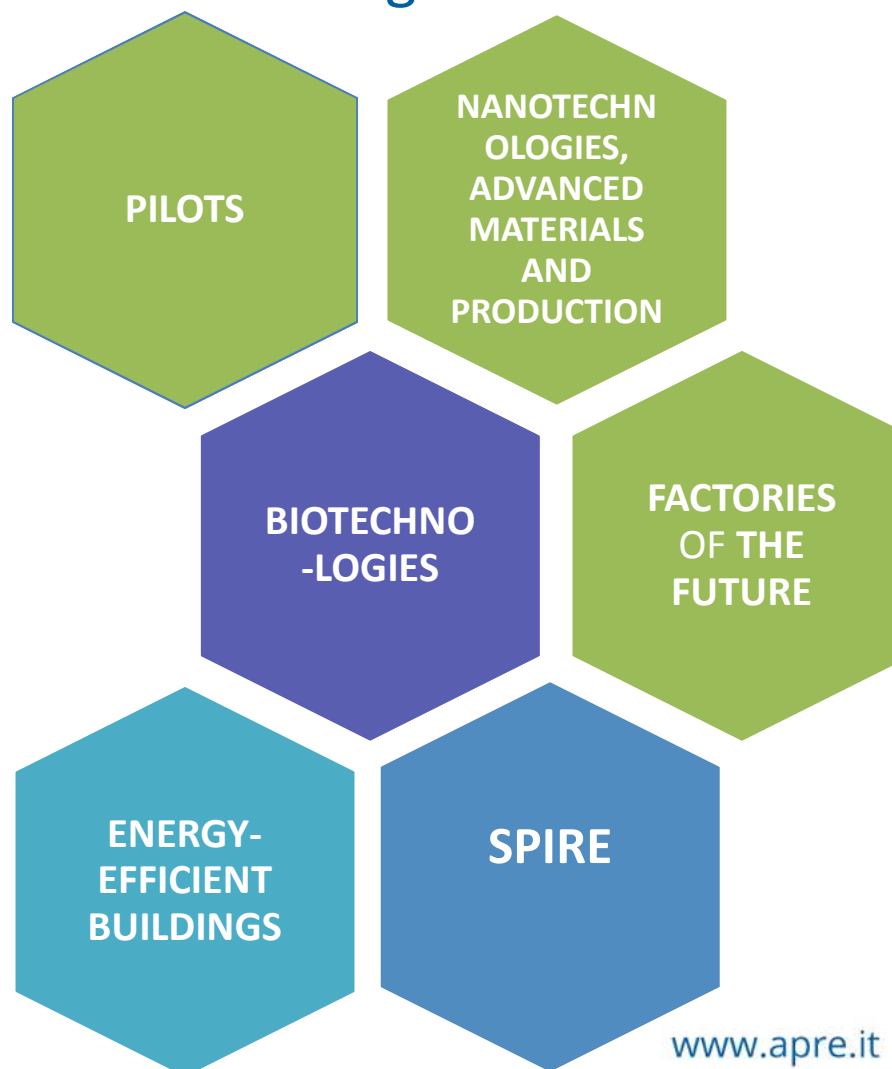
NMPB - Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing

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



BOREALIS



FoFAM



Stellar

Synergies and benefits of clustering

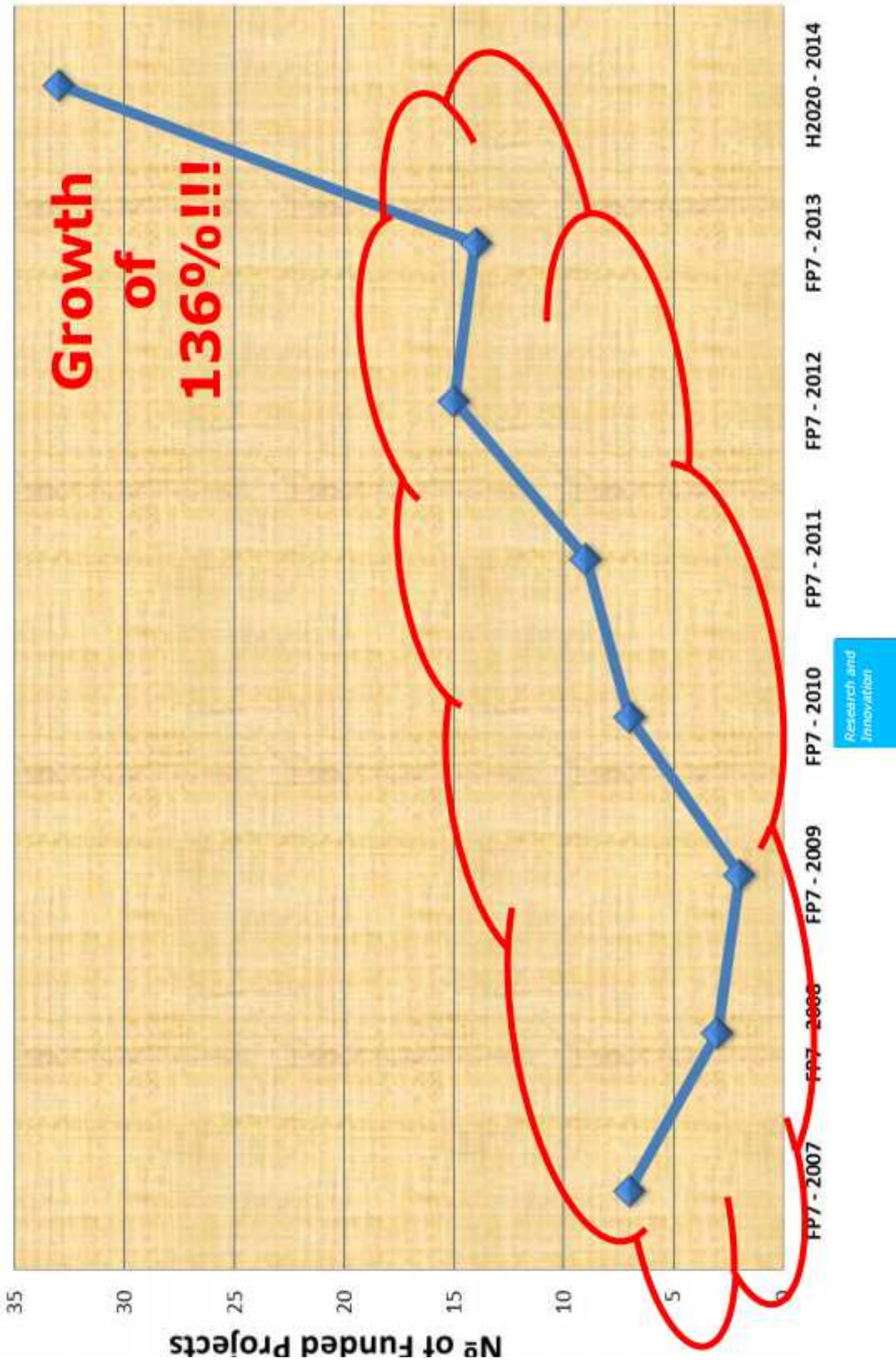
- 5 Joint industrial workshops
- Technology transfers to other projects and establishment of new project initiatives
- Access to networks and opportunities to interact with a wider group of industries
- Knowledge about the respective focus of other projects helps in better specification of future applications
- 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 microfluidics 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

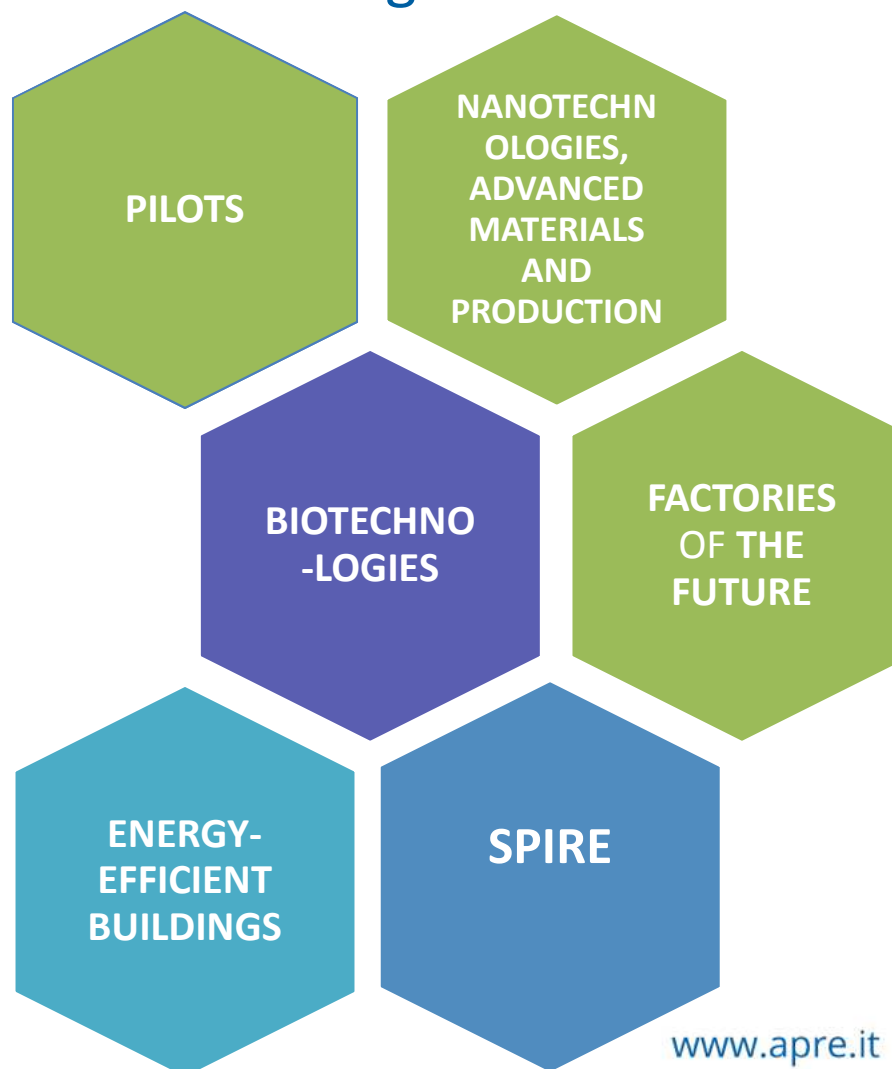
NMPB - Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing

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

Agencia per la Promozione
della Ricerca Europea



EN

Horizon 2020

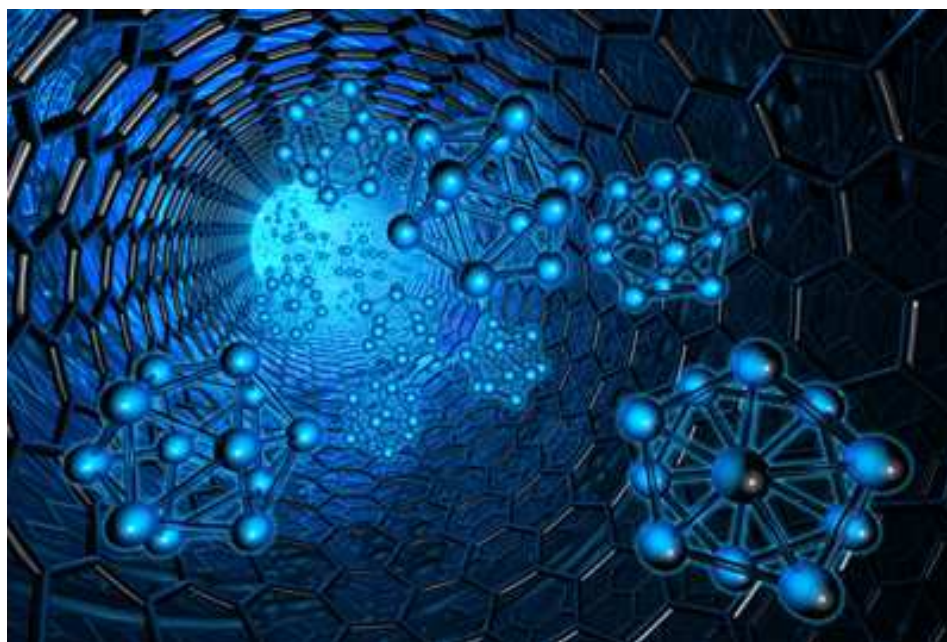
Work Programme 2016 - 2017

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.

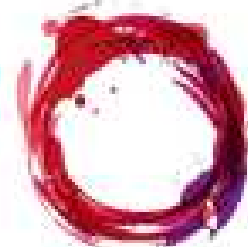
(European Commission Decision C(2016)1349 of 9 March 2016)



WP NANOTECHNOLOGIES, ADVANCED MATERIALS , BIOTECHNOLOGY AND PRODUCTION

WP 2017: DRAFT
Apertura WP 2017
11 Maggio 2016

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



**WP INDUSTRY 2020 IN THE
CIRCULAR ECONOMY**
CROSS-CUTTING CALL

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



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 utmost 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 aspects²².

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

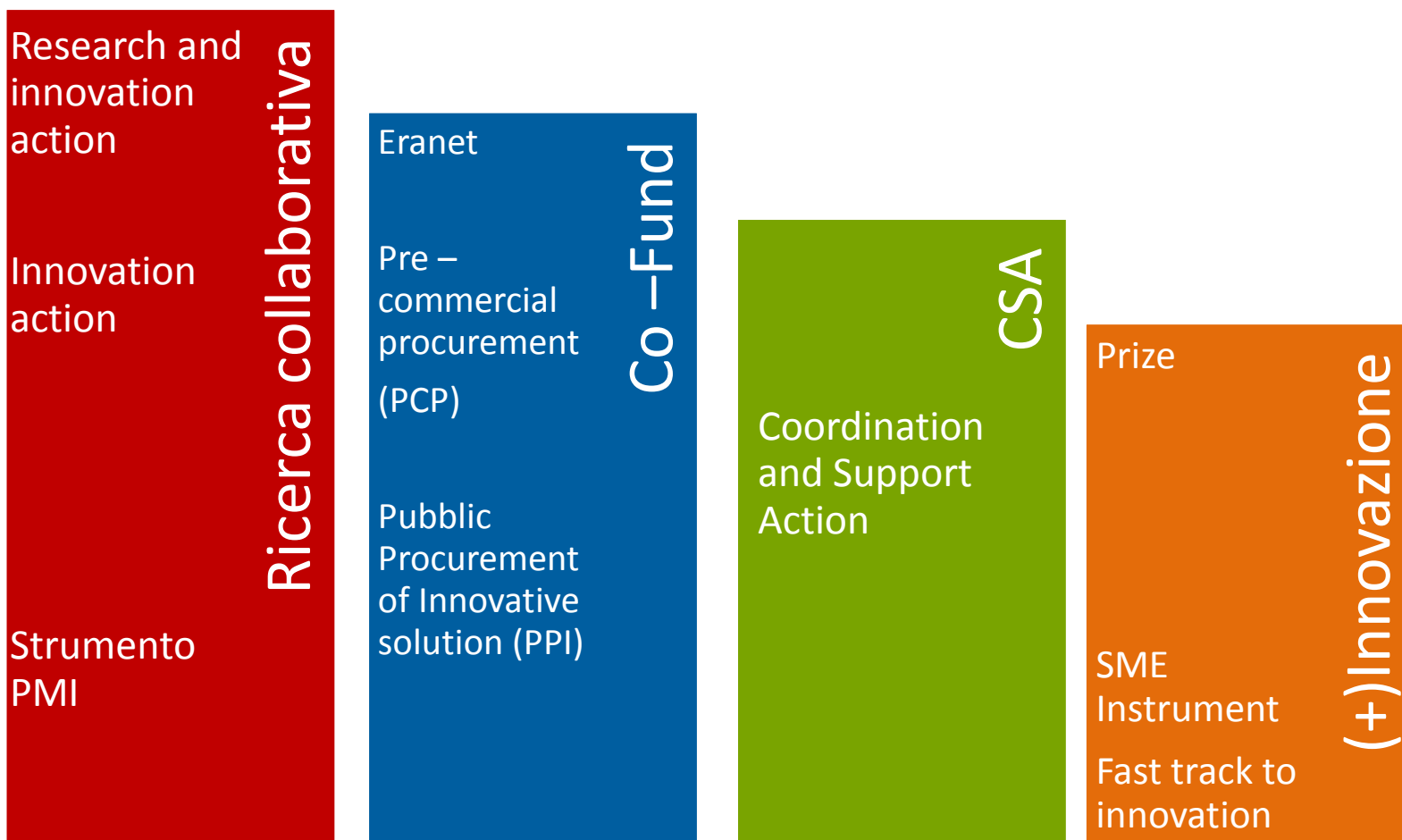
The Commission considers that proposals requesting a contribution from the EU between EUR 5 and 7 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

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;



TIPOLOGIE AZIONI





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, demonstrating, piloting, large - scale product validation and market replication

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

- a. Demonstration or pilot
- b. Market replication

The SME Instrument

SEAMLESS BUSINESS INNOVATION SUPPORT FROM IDEA TO MARKET...



...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

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>

RESEARCH & INNOVATION
Participant Portal

European Commission > Research & Innovation > Participant Portal > Home

HOME FUNDING OPPORTUNITIES HOW TO PARTICIPATE EXPERTS SUPPORT

On this site you can find and secure **funding** for research & innovation projects

- 2014-2020 Horizon 2020 - research and innovation framework programme
- 2007-2013 7th research framework programme (FP7) and Competitiveness

Non-registered users

- search for funding
- read the funding guide & download the legal documents
- check if an organisation is already registered
- contact our support services or check our FAQs

Registered users

- submit your proposal
- sign the grant
- manage your projects

WHAT'S NEW? FUNDING OPPORTUNITIES HOW TO PARTICIPATE WORK AS AN EXPERT MY F

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ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/index.html

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Horizon 2020

Calls Search Topics Call Updates

FP7 & CIP Programmes

Calls Call Updates

COSME

Other Funding Opportunities

Horizon 2020

Excellent Science

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

Industrial Leadership

- Leadership in enabling and industrial technologies (LEIT)
- Access to risk finance
- Innovation in SMEs

Filter a call FILTER

Type: Proposal (checked), Tender, Status: Open (checked), Closed, Forthcoming

Sort by: Title, Call Id, Publication Date (checked), Deadline Date

<p>Industrial Leadership BIOTECHNOLOGY H2020-LEIT-BIO-2015-1</p> <p>Pub.Date: 11/12/2013 Deadline: 24/02/2015</p>	<p>Industrial Leadership BIOTECHNOLOGY H2020-LEIT-BIO-2014-1</p> <p>Pub.Date: 11/12/2013 Deadline: 12/03/2014</p>	<p>Industrial Leadership Call for Nanotechnologies, Advanced Materials and Production H2020-NMP-ERA-NET-2015</p> <p>Pub.Date: 11/12/2013 Deadline: 26/03/2015</p>
<p>Industrial Leadership Call for Nanotechnologies, Advanced Materials and Production H2020-NMP-CSA-2015</p> <p>Pub.Date: 11/12/2013 Deadline: 26/03/2015</p>	<p>Industrial Leadership Call for Nanotechnologies, Advanced Materials and Production H2020-NMP-PILOTS-2015</p> <p>Pub.Date: 11/12/2013 Deadline: 26/03/2015</p>	<p>Industrial Leadership Call for Nanotechnologies, Advanced Materials and Production H2020-NMP-GV-2014</p> <p>Pub.Date: 11/12/2013 Deadline: 07/10/2014</p>
<p>Industrial Leadership Call for Nanotechnologies, Advanced Materials and Production H2020-NMP-CSA-2014</p>	<p>Industrial Leadership Call for Nanotechnologies, Advanced Materials and Production H2020-NMP-2014-two-stage</p>	<p>Industrial Leadership Call for Nanotechnologies, Advanced Materials and Production H2020-NMP-2015-two-stage</p>



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 political 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!

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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 CO₂ 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