Deliverable D2.5

Call FoF-05-2016

AM-motion

A STRATEGIC APPROACH TO INCREASING EUROPE'S VALUE PROPOSITION FOR ADDITIVE MANUFACTURING TECHNOLOGIES AND CAPABILITIES

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D2.5 Analysis of synergies and best practices based in EU, national and regional AM projects

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Abbreviations

Abbreviations	
3DP	3D printing
3DP	3D printing
AE	aerospace
AM	Additive manufacturing
AU	automotive,
C	construction
CDTI	Spanish Centre for the Development of Industrial Technology
CG	consumer goods
D	Design
DED	Direct Energy Deposition
H	health
IDEPA	Institute for Economic Development of Principado de Asturias
IE	business, commercialisation, industrial exploitation
IPR	intellectual property rights
E	electronics
EDU	education/training
EL	end of life
EN	energy
E&T	Industrial equipment &tooling
FICYT	Foundation for promotion of applied research and technology in Asturias
FoF	Factories of the Future
L	legislation
M	materials
M&D	Modelling and simulation
ME	Material Extrusion
MIUR	Italian Ministry of University and Research
MJ	Material Jetting
NMPB	Nanotechnologies, materials, production and biotechnology
P	process
PBF	Powder Bed Fusion
PP	post-processing
Pr	product
SL	Sheet Lamination
STD	standardisation;
TT	Technology Transfer
VC	Value chain
VP	Vat Photopolymerization;

1. Introduction

The present document constitutes Deliverable D2.5 "*Analysis of synergies and best practices based in EU, national and regional AM projects*" in the framework of the H2020 project "*A strategic approach to increasing Europe's value proposition for Additive Manufacturing technologies and capabilities*" (Project Acronym: AM-motion; Contract No.: 723560). This document is the result of the activities performed within the framework of work package 2 (WP2): "*Mapping the AM landscape*", and more specifically of Task 2.4 "*Synergies among projects: analysis & cluster*" led by CEA.

The main objective of WP2 is to have an overall picture of the current situation of the AM field and community with a view on the development of products or applications in lead markets. It aims to widen the scope of the market study, database and VC already established in the FoFAM H2020 project[1]. The results of this WP will not only reinforce these outputs but will also create stronger market and product centred links for cross-fertilisation and potential for new alliances.

This document collects the outcomes of the AM related projects of two main categories:

a) **Completed or on-going European projects.** This first category encompasses: the projects that were already analysed during the FoFAM project and that were covered under the umbrella of the of FoF public-private partnership; the completed or on-going (last 3 years) European projects of a variety of topics which include NMPB, ICT, Transport, Clean Sky, ERASMUS +, MSCA and INTERREG projects.
b) **National and Regional Projects**, collected by means of the Regional and National agencies.

In order to gathering this information, a project template (Annex I) was prepared and completed with preliminary information of each of the projects found at Cordis and EFFRA's database and project's web sites. The project coordinators were contacted for completion and validation of this information.

A total of **235** projects related to Additive Manufacturing were identified, from which **124** are **European Projects and 111 are National and Regional Projects**. Its general description can be found in Annex 2. From those, the template of 49 European projects were completed by the project coordinators. These include the templates of the projects identified for FoFAM project (18) and the templates gathered during AM-motion (31).

The information of the European AM projects is analysed and classified in terms of aims, sectors, value chain segment, manufacturing processes, type of materials and non-technological activities. Common synergies among the different projects are identified. The coordinators of

[1] FoFAM H2020 project: http://cordis.europa.eu/project/rcn/193434_en.html

future and newly identified projects will be contacted and their information will be progressively incorporated to the AM-motion e-tool/database[2].

In addition to the European projects selected for this study, other relevant projects were included on the project database, these are the National and Regional project. Relevant information for those were collected for several regions of Austria, France, Italy, Spain, Sweden, Portugal and UK.

Moreover, the AM-motion Project's workshop "*European Strategic Approach on Additive Manufacturing*" was organised in in Oeiras (Lisbon, Portugal), in collaboration with EWF, on 15th November 2017 aimed at bringing stakeholders together around key EU projects[3]. Two different sessions were held:

- Session 1: projects in different fields such as hybrid manufacturing, processes for complex structures, high performance manufacturing technologies and other key aspects.
- Session 2: feedback from 26 European projects on main bottlenecks in AM R&I and expressions of interest, projects' interaction and exploitable results.

2. Selected projects

Tables 1 and 2 summarises the general information for the European projects on additive manufacturing and whose templates are completed (totally or partially). A total of 28 European projects, identified within AM-motion, are depicted in table 2 and their information is detailed and analysed all along section 2.

2.1. EU funded AM projects

Tables 1 and 2 summarize the key Additive Manufacturing related projects identified benefiting of European Funds. The table shows the acronym of the project the Work Programme hosting the funds, the duration, the total budget, the type of coordination Institution, the coordinator and its country.

Table 1. AM related European FoF funded projects identified in FoFAM project

Nº	Acronym	Topic	Duration (yr)	Total Budget (M€)	Coordinator	Country
1	PHOCAM	FoF.NMP.2010-2	2010-2013	3.6	TU Wien	AU
2	HYPROLINE	FoF.NMP.2010-4	2012-2015	4.0	TNO	NL
3	AMAZE	FoF.NMP.2010-4	2013-2017	18.0	MTC	UK
4	SMARTLAM	FoF.NMP.2012-5	2012-2016	3.6	KIT	GE

[2] AM e-tool/database: http://www.rm-platform.com/index.php/am-database
[3] Workshop : http://am-motion.eu/news-events/108-presentations-am-motion-s-european-projects-workshop.html

5	3D-HiPMAS	FoF.NMP.2012-5	2012-2015	5.3	HSG-IMAT	GE
6	HiPR	FoF.NMP.2012-5	2012-2015	5.0	Rina Group	IT
7	HI-MICRO	FoF.NMP.2012-5	2012-2015	5.1	KU Leuven	BE
8	AMCOR	FoF.NMP.2012-7	2012-2015	4.7	TWI	UK
9	OPTICIAN2020	FoF.NMP.2013-6	2013-2016	5.7	Ascamm	ES
10	CASSAMOBILE	FoF.NMP.2013-6	2013-2016	8.7	Fraunhofer	GE
11	ADDFACTOR	FoF.NMP.2013-6	2013-2016	8.9	Synesis	IT
12	MANSYS	FoF.NMP.2013-9	2013-2016	4.4	TWI	UK
13	STELLAR	FoF.NMP.2013-10	2013-2016	4.0	Net Composites	UK
14	NEXTFACTORY	FoF.NMP.2013-11	2013-2017	4.7	Fraunhofer	GE
15	BOREALIS	H2020 FoF-02-2014	2015-2017	8.0	Prima industry	IT
16	ToMAX	H2020 FoF-02-2014	2015-2017	3.1	TU Wien	AU
17	REPROMAG	H2020 FoF-02-2014	2015-2017	5.7	OBE	GE
18	SASAM	FP7-NMP.2012.4.0-2	2012-2014	0.7	TNO	NL

Table 2. AM related European funded projects identified in AM-motion project

	Acronym	Work Programme	Duration (yr)	Total Budget (M€)	Coordination Institution Type	Coordinator	Country
1	AMABLE	H2020 / FoF-12-2017 (ICT)	2017-2021	8.2	RTO	Fraunhofer	GE
2	HyproCell	H2020 / FoF-13-2016 (ICT)	2016-2019	6.1	RTO	LORTEK	ES
3	iBUS	H2020/ NMP-35-2014	2015-2019	7.4	HE	U. Limerick	IE
4	ModuLase	H2020 / FoF-13-2016 (ICT)	2016-2019	2.4	RTO	TWI	UK
5	4DHybrid	H2020 / FoF-01-2016	2017-2019	9.4	LG	PRIMA ELECTRO	IT
6	Bionic Aircraft	H2020/ MG-1.2-2015 (transport)	2016-2019	7.9	RTO	LZN	GE
7	CAxMan	H2020 / FoF-08-2015 (ICT)	2015-2019	7.1	RTO	SINTEF	NO
8	DIMAP	H2020/ NMP-07-2015	2015-2018	5	RTO	PROFACTOR	AT
9	DREAM	H2020 / FoF-13-2016 (ICT)	2016-2019	3.2	RTO	CINSTM	IT
10	FAST	H2020/ NMP-07-2015	2016-2019	4.9	HE	UM	NL

11	HINDCON	H2020 / FoF-01-2016	2016-2019	4.7	SME	Vias y construcciones	ES
12	HIPERLAM	H2020 / FoF-13-2016 (ICT)	2016-2019	3.7	SME	ORBOTECH	ES
13	KRAKEN	H2020 / FoF-01-2016	2016-2019	5.9	RTO	AITIIP	ES
14	LASIMM	H2020 / FoF-01-2016	2016-2019	4.8	RTO	EWF	BE
15	MAESTRO	H2020 / FoF-13-2016 (ICT)	2016-2019	4	RTO	IPC	FR
16	NANOTUN3D	H2020/ NMP-07-2015	2015-2019	2.9	RTO	AIDIMME	ES
17	OpenHybrid	H2020 / FoF-01-2016	2016-2019	6.6	RTO	MTC	UK
18	PARADDISE	H2020 / FoF-13-2016 (ICT)	2016-2019	3.7	RTO	TECNALIA	ES
19	Symbionica	H2020 / FoF-10-2015	2015-2018	7.3	RTO	MTC	UK
20	ENCOMPASS	H2020 / FoF-13-2016 (ICT)	2016-2019	4	RTO	MTC	UK
21	SUPREME	H2020/Spire-07-2017	2017-2020	9.8	RTO	CEA	FR
22	TIFAN	FP7-JTI/ JTI-CS-2013-1	2013-2015	0.2	RTO	LORTEK	ES
23	Compolight	FP7/ NMP-2007	2008-2011	4.6	RTO	DTI	DK
24	BAMOS	H2020/ MSCA-RISE-2016	2017-2020	0.8	HE	ULPGC	ES
25	REVOLVE	H2020/ MSCA-ITN-2016	2017-2020	1.8	HE	HWU	UK
26	METALS	ERASMUS+	2015-2018	0.8	other	CECIMO	BE
27	3D PRISM	ERASMUS+	2014-2018	0.3	HE	Univ. of Sheffield	UK
28	ADMIRE	ERASMUS+	2017-2019	1	HE	Cranfield University	UK
29	ADDISPACE	INTERREG SUDOE	2016-2019	1.7	HE	ESTIA	FR
30	SAMT	INTERREG SUDOE	2016-2019	0.9	RTO	AIJU	ES
31	TRANSFRONT 3D	INTERREG POCTEFA	2016-2019	1.6	RTO	TECNALIA	ES

2.1.1. AMABLE

	AMable
Project full title	**AdditiveManufacturABLE**
Call topic	H2020-FOF-12-2017 - ICT Innovation for Manufacturing SMEs (I4MS)
Project coordinator	FRAUNHOFER - GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V
Coordinating country	Germany
Project web site	www.amable.eu
Project start-end date	01/09/2017 to 31/08/2021
Project budget (€)	8.217.958,75
Consortium	21 partners: Fraunhofer, CISCO, AIMEN, LORTEK, POLITO, DTI, LMS, EWF, FRC, Inspire, Sirris, Supsi, TNO, MTC, TWI, VTT, PWR, ZABALA, IDSA, Keen Bull, Roland Berger
Project aim / summary: EU SMEs/mid-caps face clear barriers in the uptake of Additive Manufacturing (AM) related to lack of skilled human resources, and lack of access to know-how, equipment, infrastructure and markets. The principal objective of this project is to overcome those barriers and enable the uptake of AM technologies by SMEs/mid-caps leading to the development of innovative business and service models and new value-chain models in a fully digital environment – thus bringing their ideas and business cases to life and making their innovations Additively Manufacturable (AMable). To achieve this objective, partners with expertise right across the AM value to: -Create an open-sourced-based, living and adapting AM eco-system which can offer required assistance to European SMEs/mid-caps and become self-sustainable after project execution; - Provide all necessary assistance to SMEs/mid-caps allowing successful exploitation of AM, including 3 'competitive calls' for experiments; -Offer a comprehensive range of AM support services through an open source- and API-based digital marketplace structured as three Platforms (Technology, Business, and Skills and Education); -Support and develop 'best in class' AM data handling tools and approaches, on an open-source basis; - Coordinate the development of synergies with the already existing I4MS framework, Competence Centres, Digital Innovation Hubs and other related research and innovation activities at the European level.	
Sectors addressed by the project	• Hall sectors
Value chains segments addressed	• All VC segment
AM process addressed	• All Am process
Materials addressed	• Metal • Polymer • Ceramic
Non-Technological activities addressed	• Standardisation • Business, commersicalisation, industrial exploitation • Technology transfer

2.1.2. HYPROCELL

Project full title	**Development and validation of integrated multiprocess HYbrid PROduction CELLs for rapid individualized laser-based production**
Call Topic	FOF-13-2016 - Photonics Laser-based production
Project Coordinator	IK4-LORTEK S COOP
Coordinating country	SPAIN
Project web site	www.hyprocell-project.eu
Project Start –End date	2016-11-01 to 2019-10-31
Project Budget (EUR)	EUR 6.163.60,50 (EUR 3.937.331 EU contribution)
Consortium	13 partners: LORTEK; TTS, ABB, RAMEM, FgH LTI, PolyShape, DELCAM, ADIRA, HAMUEL, VODERA, EROWA, BCT, Smartfactory
Project aim / summary: HyProCell develops and validates integrated multiprocess hybrid production cells for rapid individualized laser-based production. The cells include laser-based additive and subtractive manufacturing machines, ensuring a fully finished product from incoming raw materials. HyProCell proposes the combination of available cutting-edge Laser-based Additive Manufacturing (LBAM) machines and ICT innovations within an integrated multi process production cell, which will include at least LBAM and subtractive manufacturing machine/s, in order to ensure a fully finished product from the incoming raw material. The general objective of HyProCell is to implement and validate this concept in real settings, manufacturing real parts and measuring obtained benefits.	
Sectors addressed by the project	• Aerospace • Automotive • Energy • Industrial equipment and tooling
Value chains segments addressed	• Process • Product
AM process addressed	• Powder bed fusion • Direct energy deposition
Materials addressed	• Metal
Non-Technological activities addressed	• Business, commercialisation, industrial exploitation • IPRs

2.1.3. iBUS

Project full title	**iBUS – an integrated business model for customer driven custom product supply chains**
Call Topic	NMP-35-2014 - Business models with new supply chains for sustainable customer-driven small series production
Project Coordinator	UNIVERSITY OF LIMERICK
Coordinating country	Ireland
Project web site	http://h2020ibus.eu/
Project Start-end date	01/09/2015 to 31/08/2019
Project Budget (EUR)	7.440.361,25
Consortium	9 Partners: AIJU -Technological institute for children products and leisure; Dassault Systems, Fabrica de Juguetes

Project aim / summary:

To develop and demonstrate by 2018 an innovative internet based business model for the sustainable supply of traditional toy and furniture products that is demand driven, manufactured locally and sustainably, meeting all product safety guidelines, within the EU. The iBUS model focuses on the capture, creation and delivery of value for all stakeholders – consumers, suppliers, manufacturers, distributors and retailers.

The main focus of iBUS is to drive sales for EU traditional toy and furniture manufacturers by leveraging internet based technologies, focusing on safe products, quality, design and innovation. In this new iBUS model consumers become designers, designing, customising and placing orders for their own products online in the iBUS cloud. They will be supported by embedded services in iBUS, developed in the main by SME Technology providers. These services include augmented reality design assistants, design verification tools for compliance with EU product safety guidelines, analysis of environmental footprint and prototyping with additive layer / 3D printing. Subsequently, parametric engineering design principles will take the design from concept to demand. This demand will then be synchronised and optimised across the supply chain, supported by the embedded supply chain optimisation tools, to produce sustainable demand driven production and supply plans. Manufacturers will then produce the furniture and toys in small scale series production driven by the actual customer demand. Suppliers will have visibility of, and make decisions based on, end-customer demand. Likewise, customers will have visibility of their orders through all stages of production and delivery.

Sectors addressed by the project	• Consumer goods
Value chains segments addressed	• All VC segments
AM process addressed	• All AM processes
Materials addressed	• Metal
Non-Technological activities addressed	• Standardisation, • Legislation • IPRs • Technology Transfer

2.1.4. ModuLase

Project full title	**Development and Pilot line validation of a Modular re-configurable laser process head**
Call topic	FoF-13-2016 – Photonics Laser-based production
Project coordinator	TWI
Coordinating country	UK
Project web site	http://modulase.eu/index.html
Project start-end date	01/09/2016 to 31/08/2019
Project budget (€)	2.458.465 € (EU contribution 2.184.565 €)
Consortium	8 partners: TWI, QYSY, CRF, EWF, GEL, SODECIA, Aimen, ULO Optics
Project aim / summary: ModuLase aims to develop, validate and demonstrate a rapdily re-configurable laser process head that: - Is capable of welding, cladding and cutting, through the use of three modular end-effectors; - Includes intelligent sensor technologies for in-process monitoring; - Is linked to an intelligent system, in order to achieve adaptive process control, quality assurance, and semi-automated process parameter configuration. The ModuLase re-configurable laser process head system will be compatible with existing and future fibre-delivered laser process systems. The uniqueness of this approach is in the development of a technology which allows the process head system to perform welding, cladding and cutting operations, with a change-over time of < 1 minute between processes.	
Sectors addressed by the project	• Aerospace; • Automotive; • Energy
Value chains segments addressed	• Process
AM process addressed	• Laser cladding
Materials addressed	• Metal
Non-Technological activities addressed	• Standardisation • Education / training • Business/Commercialisation/industrial exploitation • IPRs

2.1.5. 4D HYBRID

4D HYBRID	
Project full title	**Novel ALL-IN-ONE machines, robots and systems for affordable, worldwide and lifetime distributed 3D hybrid manufacturing and repair operations-4D HYBRID**
Call Topic	FOF-01-2016 - Novel hybrid approaches for additive and subtractive manufacturing machines
Project Coordinator	PRIMA ELECTRO SPA
Coordinating country	Italy
Project web site	http://4dhybrid.eu/
Project Start-end date	2017-01-01 to 2019-12-31
Project Budget (EUR)	9.429.875 (4.990.000 EU contribution)
Consortium	20 Partners: SIEMENS, Polito, U oPatras, Uo Birmingham..

Project aim / summary:

From aeronautics to oil&gas, complex metal parts embrace major challenges across their lifecycles from the green field intensive manufacturing to the numerous maintenance and repairing operations worldwide distributed. The synergic combination of additive and subtractive processes could overcome individual shortcomings, going beyond the simple succession of steps. 'Plug and produce' modular approach is a key factor to success for such hybridization.

In this scenario, 4D will deliver 4 disruptive breakthroughs:

• A set of four elementary modules specifically designed for AM that embed the control and monitoring systems which can be integrated on new or existing concepts of machines and robots to realize different processes ranging from the DED (powder and wire) to ablation and cold spray;

• A new concept of CNC, constituting a high level sw layer which can be integrated on the top of commercial CNCs, and it is conceived as open to embed portions of the 4D modules control;

• A validated process model to fully exploit the synergistic interactions among elementary processes;

• A dedicated 4D Engineering CAD/CAE/CAM Platform, which covers the lifecycle of the reference product family where multiple processes and hybrid resources are integrated for the (re)manufacturing stage.

Innovation will be physically demonstrated at three possible levels of hybridization:

• Modules - Small hybrid modules, integrated on new special machines, focusing on portable units for certified in-situ repair operations;

• Hybrid Machines – Hybridization on existing robots and machines;

• Production lines - Hybridization of a flexible production line focusing on new concepts for AM mass production.

Sectors addressed by the project	• Aerospace • Automotive • Energy • Industrial equipment and tooling
Value chains segments addressed	• Process
AM process addressed	• Powder bed Direct fusion
Materials addressed	• Metal
Non-Technological activities addressed	• Business, commercialisation, industrial exploitation

2.1.6. Bionic Aircraft

Project full title	**Increasing resource efficiency of aviation through implementation of ALM technology and bionic design in all stages of an aircraft life cycle-BIONIC AIRCRAFT**
Call topic	H2020-MG-2015-Enhnacing resource efficiency of aviation
Project coordinator	LZN Laser Zentrum Nord
Coordinating country	Germany
Project web site	www.bionic-aircraft.eu
Project start-end date	01/09/2016 to 31/08/2019
Project budget (€)	7.968.812 € (6.441.062 € funding)
Consortium	10 partners: LZN, Airbus, Tekna, Airbus, Hexagon, Tecnalia, CENIT, ENLYTE, UNE, HTC, TUHH

Project aim / summary:

The BionicAircraft project will develop new technologies, methodologies and concepts for Additive Manufacturing (AM). Part of the project will be new design concepts and materials, to increase the weight saving potential of AM, as well as new concepts for quality control, repair, recycling and spare parts logistics.

With the developments, the maturity of AM will be increased, significantly enhancing the application of AM in civil aircrafts. This will lead to weight-savings of up to 1 ton in the medium-term per aircraft. In the long term, the construction of completely new types of aircrafts with weight saving potential of 30% will be possible, significantly reducing the emissions during operation. Due to the resource efficiency of AM Technologies themselves and new possibilities for spare parts logistics, the environmental impact will be further reduced.

Sectors addressed by the project	• Health • Aerospace • Automotive • Construction
Value chains segments addressed	• All VC segments
AM process addressed	• Powder bed fusion
Materials addressed	• Metal • Polymer
Non-Technological activities addressed	• Standardisation • Education/training • Business, commersialisation, industrial exploitation • IPRs

2.1.7. CaXMan

caxman computer aided technologies for additive manufacturing	
Project full title	**Computer Aided Technologies for Additive Manufacturing-CAXMAN**
Project call Topic	H2020-FoF-08-2015 - ICT-enabled modelling, simulation, analytics and forecasting technologies
Project Coordinator	SINTEF ICT
Coordinating country	Norway
Project web site	www.caxman.eu
Project Start-end date	2015-09-01 to 2018-08-31
Project Budget (EUR)	EUR 7.143.300 (7.143.300 EU contribution)
Consortium	13 partners: SINTEF, Fraunhofer, DFKI; CNR, CIMNE, Arctur, BOC; Missler, Jotne, STAM, Trimek, Tronrud, Novatra
Project aim / summary: The objectives of Computer Aided Technologies for Additive Manufacturing (CAxMan) are to establish Cloud based Toolboxes, Workflows and a One Stop-Shop for CAx-technologies supporting the design, simulation and process planning for additive manufacturing. More specifically the objectives are to establish analysis-based design approaches with the following aims: -To reduce material usage by 12% through introducing internal cavities and voids, whilst maintaining component properties; -To optimize distribution and grading of material for multi-material additive manufacturing processes; and -To facilitate the manufacture of components which are currently impossible or very difficult to produce by subtractive processes (e.g., cutting and abrasive operations); -To enhance analysis-based process planning for additive manufacturing including thermal and stress aspects, and their interoperability with the design phase; -To enable the compatibility of additive and subtractive processes in production in order to combine the flexibility of shape in additive manufacturing with the surface finish of subtractive processes	
Sectors addressed by the project	• ALL sectors
Value chains segments addressed	• Modelling&simulation • Design • Process • Post processing • Product
AM process addressed	• All AM process
Materials addressed	• Metal
Non-Technological activities addressed	• Standardisation • Business, commercialisation, industrial exploitation • IPRs • Technology transfer

2.1.8. DIMAP

DIMAP DIGITAL MATERIALS FOR 3D PRINTING	
Project full title	**Novel nanoparticle enhanced Digital Materials for 3D Printing and their application shown for the robotic and electronic industry-DIMAP**
Project call Topic	H2020-NMP-PILOTS-2015_RIA NMP-07-2015 - Additive manufacturing for tabletop nanofactories
Project Coordinator	PROFACTOR GMBH
Coordinating country	Austria
Project web site	www.dimap-project.eu
Project Start date	2015-10-01 to 2018-09-30
Project Budget (EUR)	4.997.351,25 (4.997.351,25 EU contribution)
Consortium	12 partners: PROFACTOR; STRATSAYS; KIT BOREALIS;TIGER, FESTO, Philips, JKU, SOREQ, CIRP; PV NANO CELL; TECNAN,
Project aim / summary: The DIMAP project focuses on the development of novel ink materials for 3D multi-material printing by PolyJet technology. We will advance the state-of-the art of AM through modifications of their fundamental material properties by mainly using nanoscale material enhanced inks. This widens the range of current available AM materials and implements functionalities in final objects. Therefore, applications will not be limited to rapid prototyping but can be used directly in production processes. DIMAP will show this transition in two selected application fields: the production soft robotic arms/ joints and customized luminaires. In order to cope with these new material classes, the existing PolyJet technology is further developed and therefore improved. DIMAP targets at the following objectives: additive manufactured joints, additive manufactured luminaires, ceramic enhanced materials, electrically conducting materials, lightweight polymeric materials, high-strength polymeric materials, novel multi-material 3D-printer and safe by design. With the development of novel ink materials based on nanotechnology improvement of the mechanical properties (ceramic enhanced and high strength polymeric inks), the electrical conductivity (metal enhanced inks) and the weightiness (light weight polymeric materials) are achieved. Further focus points during the material and printer development are safe by design approaches, work place safety, risk assessment, collaboration with EU safety cluster and life cycle assessment. An established roadmap at the end of project enables the identification of future development needs in related fields order to allow Europe also in the future to compete at the forefront of the AM revolution.	
Sectors addressed by the project	• Electronics • Robotics
Value chains segments addressed	• All VC segments
AM process addressed	• Material jetting
Materials addressed	• Metal • Polymer • Ceramic
Non-Technological activities addressed	• Business; commercialisation; industrial exploitation; • IPRs; • Technology transfer; • nanosafety

2.1.9. DREAM

Project full title	**Driving up Reliability and Efficiency of Additive Manufacturing-DREAM**
Project call Topic	H2020_RIA FOF-13-2016 - Photonics Laser-based production
Project Coordinator	CONSORZIO INTERUNIVERSITARIO NAZIONALE PER LA SCIENZA E TECNOLOGIA DEI MATERIALI-INSTM
Coordinating country	Italy
Project web site	www.dream-euproject.eu
Project Start date	2016-10-01 to 2019-09-30
Project Budget (EUR)	3.242.435 (3.242.435 EU contribution)
Consortium	9 partners: INSTM, EOS, UTBv BEWG, MIND4D, POLYS,ADLER, RB, FERRARI
Project aim / summary: The aim of DREAM is to significantly improve the performances of laser Powder Bed Fusion (PBF) of titanium, aluminum and steel components in terms of speed, costs, material use and reliability, also using a LCA/LCC approach, whilst producing work pieces with controlled and significantly increased fatigue life, as well with higher strength-to-weight ratios. DREAM targets the development of a competitive supply chain to increase the productivity of laser-based AM and to bring it a significant step further towards larger scale industrial manufacturing. In order to upscale the results and to reach an industrial relevant level of productivity, the project is focused on the following four main challenges (i) Part modeling and topology optimization (ii) Raw material optimization to avoid powder contamination (iii) Process optimization, including innovations of the control software of the AM machine, to enable high throughput production (iv) Setup of laser-PBF of nanostructured Ti alloys with unchanged granulometric dimension for an additional push to higher productivity, since nanostructured metal powders can be sintered with lower energy input and faster speed. The project is focused on components for prosthetic, automotive and moulding applications to optimize the procedure for three different materials, respectively titanium, aluminum and steel.	
Sectors addressed by the project	• Health; • Automotive; • Industrial equipment and tooling
Value chains segments addressed	• All VC segments
AM process addressed	• Powder Bed fusion
Materials addressed	• Metal
Non-Technological activities addressed	• Standardisation • Business/Commercialisation/industrial exploitation • IPRs

2.1.10. FAST

	
Project full title	**Functionally graded Additive Manufacturing scaffolds by hybrid manufacturing-FAST**
Call topic	H2020-NMP-PILOTS-2015 NMP-07-2015 - Additive manufacturing for tabletop nanofactories
Project coordinator	UNIVERSITEIT MAASTRICHT (MU)
Coordinating country	Netherlands
Project web site	http://project-fast.eu/en/home
Project start-end date	01/12/2015 to 30/11/2019
Project budget (€)	4.916.750 € (4.916.750 € EU contribution)
Consortium	9 partners: MU, NDR, Fraunhofer IST, Gesim, Tecnalia, PRL, ABA, PV, PD
Project aim / summary: AM market has grown with trends higher than 20% every year in the last 10 years. Their fast uptake is due to different innovative factors such as no shape limits in manufacturing process, full customisation on the single artefact, localised production and no waste material. In particular, the ability to print any shape allows to design the products not following the constricting conventional manufacturing processes but just focalizing on their function. This "Design for Function" feature is one of the main drivers for AM uptake on a wider scale production and the limited number of "functional" materials that can be printed or the limit in controlling gradient and surface properties are showing to be an important barrier. This is particularly true in manufacturing of tissue engineering (TE) scaffolds where the technology has a promising growth over the last decade. Scaffolds production for tissue regeneration is one of the main fields where the "Design for Function" feature of AM make the difference relative to the other production techniques if in the production process all the needed "Functions" can be introduced: mechanics, geometry (porosity and shape), biomaterial, bio-active molecules and surface chemical groups. The FAST project aims to integrate all these "Functions" in the single AM process. This integration will be obtained by the hybridisation of the 3D polymer printing with melt compounding of nanocomposites with bio-functionalised fillers directly in the printing head and atmospheric plasma technologies during the printing process itself. Final objective of the project is to realize a demonstrator of the proposed hybrid AM technology in order to achieve a small pilot production of scaffolds for bone regeneration with the novel smart features to be tested in some in-vivo trials.	
Sectors addressed by the project	• Health
Value chains segments addressed	• Materials • Process • Product
AM process addressed	• Material extrusion
Materials addressed	• Polymer • Ceramic • Bio-materials
Non-Technological activities addressed	• Education / training • Business/Commercialisation/industrial exploitation • Technology Transfer

2.1.11. HINDCON

Project full title	**Hybrid industrial construction through 3D printing "all-in-one" machine for largescale advanced manufacturing and building processes-HINDCON**
Call topic	FoF-01-2016 – Novel hybrid approaches for additive and substractive manufacturing machines
Project coordinator	VIAS
Coordinating country	Spain
Project web site	www.hindcon3d.com
Project start-end date	15/09/2016 to 14/09/2019
Project budget (€)	4.798. 205 € (EUcontribution 4.798. 205 €)
Consortium	12 partners. VIAS, Lafarge, SIEMENS, XTREEE, CIM, SINTEF, Fraunhofer IPA…

Project aim / summary:

HINDCON project aims to adapt manufacturing technologies to the construction sector, advancing towards industrialisation and overcoming the limitations of actual approach for introducing Additive and Subtractive Manufacturing in construction activities.

The main aim of the HINDCON project is to develop and demonstrate a hybrid machine regarding 3D printing technologies with concrete materials focused on the industrialization of the Construction Industry, delivering to this sector an innovative technology that reduces environmental impact at the same time it reduces dramatically economic costs. The collaborative structure of the project will help to:

1) Integrate different technologies that converge in a hybrid solution. HINDCON "all-in-one"" machine will integrate Additive Manufacturing concrete extruder and Subtractive Manufacturing tool kit with the use of cementitious materials including mass materials with alternatives in concrete and additives, and reinforced with composites.
2) Cover the different aspects concerned (technology, economic, social and environment) and demonstrate the hybrid machine from different perspectives. On the one hand, it includes testing basic capabilities of the integrated prototype in laboratory. On the other hand, it involves the demonstration of the manufacturing system in a relevant environment.

Sectors addressed by the project	• Construction
Value chains segments addressed	• Material • Process • Product
AM process addressed	• -
Materials addressed	• Other: Concrete, cementitious materials
Non-Technological activities addressed	• -

2.1.12. HIPERLAM

Project full title	**High Performance Laser-based Additive Manufacturing- HIPERLAM**
Call topic	FoF.2016.13 Photonics Laser-based production
Project coordinator	ORBOTECH LTD.
Coordinating country	Israel
Project web site	http://www.hiperlam.eu
Project start-end date	01/11/2016 to 01/11/2019
Project budget (€)	3.756.256 (EU contribution 3.756.256)
Consortium	8 Partners: FLEXENABLE LTD; KITE INNOVATION LTD; NATIONAL TECHNICAL UNIVERSITY OF ATHENS; TNO, ORBOTECH LTD.; OXFORD Lasers LTD; P.V. Nano cell, LTD PRAGMATIC PRINTING LTD
Project aim / summary: HIPERLAM is an SME driven Research and Innovation Action (RIA) well-aligned to the Factories of the Future (FoF) Initiative. It aims to demonstrate superior resolution, cost and speed performance, featuring Laser-based Additive Manufacturing (LAM) to replace the existing traditional subtractive manufacturing processes. HIPERLAM focuses on two key applications: RFID antenna and Fingerprint bio-sensors. The high resolution printed conductive lines will be achieved by using Laser Induced Forward Transfer (LIFT) and Selective Sintering techniques applied on Nano-particle metallic inks.	
Sectors addressed by the project	• Automotive • Consumer goods • Electronics
Value chains segments addressed	• Materials • Process
AM process addressed	• Direct energy deposition
Materials addressed	• Metal
Non-Technological activities addressed	• Technology Transfer

2.1.13. KRAKEN

	
Project full title	**Hybrid automated machine integrating concurrent manufacturing processes, increasing the production volume of functional on-demand using high multi-material deposition rates- KRAKEN**
Call topic	FOF-01-2016 - Novel hybrid approaches for additive and subtractive manufacturing machines
Project coordinator	Fundacion AITIIP
Coordinating country	Spain
Project web site	http://krakenproject.eu/
Project start-end date	01/10/2016 to 30/09/2019
Project budget (€)	4.711.586 (4.711.586 EU contribution)
Consortium	14 partners: AITIIP; TWI, CSEM, ACCIONA, CECIMO, CRF, LEICA; VERO, ARASL; VBC, ALCHEMIE, ESPACE, TEAMNET, PININFA
Project aim / summary: KRAKEN will develop a disruptive hybrid manufacturing concept to equip SME and large industries with affordable All-in-one machine for the customised design, production/reparation and quality control of functional parts through subtractive and novel additive technologies in vast working areas without floor space requirements. New additive technologies targeting large areas using aluminium grades as well as thermoset materials will be validated at lab scale (TRL 4) and in relevant environments (TRL 5) and finally integrated and combined for the demonstration in industrial relevant environments (TRL 6). KRAKEN machine will be devoted to the production and reparation of functional parts of any size with dimensional tolerances under 0.3 millimetres and surface roughness under Ra 0,1 µm aiming to achieve 40% reduction in time and 30 % in cost and 25% increase in productivity. KRAKEN machine will be based on hybrid approach merging MEGAROB subtractive machine (working area 20x6x3 metres) together with high efficient metallic and novel non-metallic AM. After the end of the project, KRAKEN machine will be an affordable solution (1.5M€ estimated selling price, lower than current equipment and strategies for the production of final parts) for the customised production of large size functional parts; decreasing time (40%) and cost (30%), increasing productivity (at least 25%) and with a 90 % reduction of floor space required because it uses an ceiling installation broadly extended into the whole industry.	
Sectors addressed by the project	• All sectors
Value chains segments addressed	• All VC segments
AM process addressed	• Material extrusion
Materials addressed	• Metal • Polymer • Hybrid materials
Non-Technological activities addressed	• Standarisation • Education/training • Business, industrial exploitation • IPRs • Technology transfer

2.1.14. LASIMM

Project full title	**Large Additive Subtractive Integrated Modular Machine-LASIMM**
Call topic	H2020: FoF-01-2016 - Novel hybrid approaches for additive and subtractive manufacturing machines
Project coordinator	EUROPEAN FEDERATION FOR WELDING JOINING AND CUTTING-EWF
Coordinating country	Belgium
Project web site	http://www.lasimm.eu/index.html
Project start-end date	01/10/2016 to 30/09/2019
Project budget (€)	4.868.262,50 € (EU contribution .4.868.262,50 €)
Consortium	10 Partners (BAE Systems, Cranfield University, Loxin, Tecnico Lisboa…)
Project aim / summary: The LASIMM project aim is to develop a large scale flexible hybrid additive/subtractive machine based on a modular architecture which is easily scalable. The machine will feature capabilities for additive manufacture, machining, cold-work, metrology and inspection that will provide the optimum solution for the hybrid manufacturing of large engineering parts of high integrity, with cost benefits of more than 50% compared to conventional machining processes. For large scale engineering structures material needs to be deposited at a relatively high rate with exceptional properties. To ensure this the machine is based on wire + arc AM for the additive process. A unique feature of the machine will be the capability for parallel manufacturing featuring either multiple deposition heads or concurrent addition and subtraction processes. To facilitate parallel manufacturing the machine architecture is based on robotics. To ensure that the surface finish and accuracy needed for engineering components is obtained for the subtractive step a parallel kinematic motion robot is employed. This robot is also used for application of cold work by rolling between passes. A key part of this project is the development of ICT infrastructure and toolboxes needed to programme and run the machine. The implementation of parallel manufacturing is extremely challenging from a software perspective and this will be a major activity within the project.	
Sectors addressed by the project	• Aerospace; • Energy • Construction
Value chains segments addressed	• Modelling&Simulation • Design • Materials • Process • Post-processing • Product
AM process addressed	• Wire + Arc Additive Manufacture (WAAM).
Materials addressed	• Metal
Non-Technological activities addressed	• Standardization • Education/Training • Business, industrial exploitation • IPRs

2.1.15. MAESTRO

Project full title	**Modular laser based additive manufacturing platform for large scale industrial applications-MAESTRO**
Project call Topic	H2020_RIA-FOF-13-2016 - Photonics Laser-based production
Project Coordinator	CENTRE TECHNIQUE INDUSTRIEL DE LA PLASTURGIE ET DES COMPOSITES
Coordinating country	France
Project web site	https://www.maestro-project.eu/
Project Start date	2016-10-01 to 2019-09-30
Project Budget (EUR)	3.995.905 (3.995.905 EU contribution)
Consortium	10 partners: PEP, CEA, UoB, ALTAIR, MIM, OBE, EOS, III-V LAB, CRF, GEMMATE, ALSTOM

Project aim / summary:

MAESTRO aims to develop and combine with existing Selective Laser Melting (SLM) techniques five innovations that will constitute the basis of a highly competitive manufacturing value chain:
(1) a single pre-process software for a numerical chain combining all mandatory steps and configurations of SLM together with its related pre- and post-processes,
(2) Hybridization of SLM with MIM,
(3) Adaptive process control of SLM,
(4) system level integration of a modular platform,
(5) open access to an easy-to-use demonstration platform to reinforce to EU leadership in AM.
These innovations will enable SLM to overcome the current limitations (speed, productivity, costs) to address large scale markets: productivity will be improved by 30%, cost reduced by 30% with quality towards zero defect.

Sectors addressed by the project	• Aerospace • Automotive • Electronics • Railway
Value chains segments addressed	• ALL VC segments
AM process addressed	• Powder bed fusion
Materials addressed	• Metal
Non-Technological activities addressed	• ALL activities

2.1.16. NANOTUN3D

	NANOTUN3D
Project full title	**Development of the complete workflow for producing and using a novel nanomodified Ti-based alloy for additive manufacturing in special applications-NANOTUN3D**
Call topic	NMP-07-2015 – Additive manufacturing for tabletop nanofactories
Project coordinator	INSTITUTO TECNOLOGICO METALMECANICO, MUEBLE, MADERA, EMBALAJE Y AFINES-AIDIMME
Coordinating country	Spain
Project web site	www.nanotun3d.eu
Project start-end date	01/10/2015 to 31/03/2019
Project budget (€)	2.936. 657 € (EU contribution: 2.936. 657 €)
Consortium	9 partners: Aidimme, Laurentia technologies, TWI, CEIT, TLS, APR, Vito, Zoz Gmbh, UPV
Project aim / summary: NANONTUN3D will take advantage of the possibilities of Additive Manufacturing (AM) together with the development of a specially tailored Ti- based nano-aditived material to achieve dramatic improvements in structural parts of aero, space, mobility, and equipment sectors, reaching expected savings between 40% and 50% of material in critical applications. inherent benefits of AM will be kept (decrease in throughput times, tool-less production, high buy-to–fly-run ratios, etc.). By adding nano-particles (np) to metal matrixes, the whole life cycle of the NANOTUN3D material has been designed with AM processability in mind: safety and handling issues, processing in well-known AM technologies, postprocessing and eventual certification issues are dealt with, and innovative core-shell treatment of the nano-particles that suits the Ti matrix and produces Ti64-like powder ready to be AM processed. A whole Health, Safety and Environmental (HSE) management system will also be developed, as well as all the protocols to start qualification/certification of material and process.	
Sectors addressed by the project	• Aerospace • Automotive
Value chains segments addressed	• Modelling&simulation • Design • Materials • Process • Post-processing
AM process addressed	• Powder bed fusion
Materials addressed	• Metal
Non-Technological activities addressed	• Business/Commercialisation/industrial exploitation • IPRs • Technology Transfer

2.1.17. OpenHybrid

Project full title	**Developing a novel hybrid AM approach which will offer unrivalled flexibility, part quality and productivity-OPENHYBRID**
Call topic	H2020: FoF-01-2016 - Novel hybrid approaches for additive and subtractive manufacturing machines
Project coordinator	Manufacturing Technology Centre(MTC)
Coordinating country	UK
Project web site	www.openhybrid.eu
Project start-end date	01/10/2016 to 30-09-2016
Project budget (€)	6 643 718,75 €
Consortium	14 Partners: MTC, Weir, SIEMENS, Fraunhofer IPT, TWI, EWF, ESI; GF, HMT, CRF, PIC, BCT, GUD,

Project aim / summary:

The OpenHybrid project will offer unrivalled flexibility, high quality on parts produced and increased productivity for companies looking into taking advantage of its unique ability to perform both additive and subtractive manufacturing. In recent years the combination of laser-based Additive Manufacturing and Computer Numerical Controlled (CNC) machining has become increasingly popular, with several machine tool manufacturers exhibiting products based on different machine tool configurations (hybrid manufacturing). Most commonly hybrid system is based on Directed Energy Deposition (DED) AM processes.

By creating new hybrid machines, equipped with both subtractive and additive manufacturing technologies, OpenHybrid will be a game changer for faster creation of new opportunities and applications for Additive Manufacturing (AM). This new solution, when implemented, will increase the level of robustness and repeatability of such industrial processes, will optimise and evaluate the increased performance of production lines in terms of productivity and cost-effectiveness and, finally, it will assess the sustainability, functionality and performance of the produced new materials. Beyond new parts production, this new manufacturing method will also allow for a very effective repair technique.

Sectors addressed by the project	• Aerospace • Automotive
Value chains segments addressed	• Modelling&simulation • Design • Materials • Process (incl Equipment and ICT) • Post -processing • Product (incl. QA and Testing)
AM process addressed	• Directed Energy Deposition
Materials addressed	• Metal
Non-Technological activities addressed	• Standardisation • Education/training • Business, commercialization, Industrial exploitation • IPRs

2.1.18. PARADDISE

Project full title	**A Productive, Affordable and Reliable solution for large scale manufacturing of metallic components by combining laser-based ADDItive and Subtractive processes with high Efficiency-PARADDISE**
Call topic	H2020-FOF-13-2016 - Photonics Laser-based production
Project coordinator	Fundacion Tecnalia research & innovation
Coordinating country	Spain
Project web site	www.paraddise.eu
Project start-end date	01/10/2016 to 30/09/2019
Project budget (€)	3.761.402,50 € (EU contribution: 3.761.402,50 €)
Consortium	8 partners: Tecnalia, RWTH, GKN, UPV, Michelin, SIEMENS, IBARMIA, PRECITEC

Project aim / summary:

The overall objective of PARADDISE project is to rationalize, to structure and to make available to the stakeholders of manufacturing value chain the knowledge and the tools for combining two antithetical processes: Laser Metal Deposition (LMD) and Machining (milling and turning). The project will develop expert CAx technologies, smart components and monitoring and control systems tailored for the hybrid process in a cost-effective way and with structured knowledge about LMD process. The PARADDISE solution will offer a synergetic combination among: i) the high flexibility for the designs and for the materials to be used, the high material efficiency and the high savings in material resources and its associated costs of the LMD operations; and ii) the high accuracy, the high robustness and the high productivity of subtractive operations. The solution will be integrated in the 'ZVH45/1600 Add+Process' hybrid machine from IBARMIA manufacturer (PARADDISE partner), which is already available in the market as well as at TECNALIA's facilities (PARADDISE coordinator). Thus, the PARADDISE project will conceive a process-machine-tools solution.

By means of this combined manufacturing process, large scale manufacturers of value-added metallic components will be able to achieve high quality and high productivity with a minimum use of material and energy resources when manufacturing those parts, which will lead to a reduction in manufacturing costs. In that way, the PARADDISE project intends to boost and to spread the use of Laser Metal Deposition (LMD) technology along the life cycle of value-adding metal components.

Sectors addressed by the project	• Aerospace • Automotive
Value chains segments addressed	• Modelling&simulation • Process
AM process addressed	• Direct energy deposition
Materials addressed	• Metal
Non-Technological activities addressed	• Standardisation • Education/training • Business/Commercialisation/industrial exploitation • IPRs • Technology transfer

2.1.19. SYMBIONICA

SYMBIONICA	
Project full title	**Reconfigurable Machine for the new Additive and Subtractive Manufacturing of next generation fully personalized bionics and smart prosthetics-SYMBIONICA**
Call topic	H2020-FoF-10-2015 Manufacturing of custom made parts for personalised products
Project coordinator	SINTEA PLUSTEK
Coordinating country	Italia
Project web site	www.symbionicaproject.eu
Project start-end date	01/10/2015 to 30/09/2018
Project budget (€)	7.305.000 €
Consortium	12 partners: SINTEA, OTTO; Medacta, University of Sheffield, SUPSI, Prima Industrie, IRIS; FRAMOS; OPIS; Globotics,
Project aim / summary: Symbionica project focuses on the manufacturing of personalized bionics, smart endoprosthetics and exoprosthetics that require geometric and functional customization. The Symbionica concept integrates an innovative machine performing deposition of advanced materials and subtractive processes along with a supply chain distributed co-engineering platform for advanced design and full personalization involving all relevant stakeholders, design and engineering of the products and through-life services. Symbionica manufacturing solution is conceived as a multi-material AM machine for material deposition and ablation, flexible and reconfigurable in the working cube, the material processing, the technology and the manufacturing strategy, with an advanced closed loop control methodology for product and process quality monitoring. This way Symbionica products are manufactured in one processing step, complex in shape, 3D structured and joint free. The Cooperative Design Platform will guarantee seamless data integration, reverse engineering from patient and parametric design to couple patient specific parts to standard ones. At the end, a Bionic Through-life Sensing System will support the patient to approach and gradually become comfortable with the prosthesis by assisting him with an exercise plan, a physiology monitoring platform and an on-line prosthesis data collection.	
Sectors addressed by the project	• Health
Value chains segments addressed	• Modelling&simulation • Design • Process • Product
AM process addressed	• Material jetting • Materail extrusion
Materials addressed	• Metal • Polymer
Non-Technological activities addressed	• Education/training • Business/Commercialisation/industrial exploitation • Technology transfer

2.1.20. ENCOMPASS

Project full title	**Engineering COMPASS**
Call topic	FoF-13-2016 – Photonics Laser-based production
Project coordinator	Manufacturing Technology Centre (MTC)
Coordinating country	UK
Project web site	http://encompass-am.eu/
Project start-end date	01/01/2016 to 31/12/2019
Project budget (€)	4.040.371 € (EU contribution: 4.040.371)
Consortium	11 partners: MTC, ITP, Fraunhofer FHG, Renishaw, Rolls-Royce, Altair, ULIV, Depuy, ESI, EWF, CRF

Project aim / summary:

The ENCOMPASS project principally aims to create a fully digital integrated design decision support (IDDS) system to cover the whole manufacturing chain for a laser powder bed fusion (L-PBF) process encompassing all individual processes within in. The ENCOMPASS concept takes a comprehensive view of the L-PBF process chain through synergising and optimising the key stages. The integration at digital level enables numerous synergies between the steps in the process chain and in addition, the steps themselves are being optimised to improve the capability and efficiency of the overall manufacturing chain.

ENCOMPASS addresses the three key steps in the process chain: component design, build process, and post-build process steps (post-processing and inspection). The links between these stages are being addressed by the following five interrelations:

1. Between design process and both build and post-build processes in terms of manufacturing constraints
2. Between the design process and build process component-specific L-PBF scanning strategies and parameters to optimise processing and reduce downstream processing
3. Between the design process and the build and post-build processes in terms of adding targeted feature quality tracking to the continuous quality monitoring throughout the process chain
4. Between the build and post-build processes by using build specific processing strategies and adaptation based on actual quality monitoring data (for inspection and post-processing)
5. Between all stages and the data management system with the integrated design decision support system

Sectors addressed by the project	• Health • Aerospace • Automotive
Value chains segments addressed	• Modelling¬Simulation • Design • Process • Post-processing • Product
AM process addressed	• Powder bed fusion
Materials addressed	• Metal
Non-Technological activities addressed	• Standardisation • Education / training • Business/Commercialisation/industrial exploitation • IPRs

2.1.21. SUPREME

SUPREME	
Project full title	**Sustainable and flexible powder metallurgy processes optimization by a holistic reduction of raw material resources and energy consumption-SUPREME**
Call topic	H2020-SPIRE 07_2017- Integrated approach to process optimisation for raw material resources efficiency, excluding recovery technologies of waste streams
Project coordinator	CEA
Coordinating country	France
Project web site	www.supreme-project.com
Project start-end date	01/09/2017 to 31/08/2020
Project budget (€)	9.810.118,75 € (Eu contribution 7.959.642,89 €)
Consortium	17 partners : CEA, OUTOTEC, MBN, ASL, GKN, IPC, MBN, Tecnalia, Renishaw, PRODINTEC, TWI, RHP, IRIS; MBA; DELLAS, CRF, EPMA
Project aim / summary: SUPREME aims at optimizing powder metallurgy processes throughout the supply chain. It will focus on a combination of fast-growing industrial production routes and advanced ferrous and non-ferrous metals. By offering more integrated, flexible and sustainable processes for powders manufacturing and metallic parts fabrication, SUPREME enables the reduction of the raw material resources losses while improving energy efficiency, production rate and CO2 emissions, into sustainable processes and towards a circular economy. To achieve this goal, an ambitious cross-sectorial integration and optimization has been designed between several powder metallurgy processes: gas and water atomization as well as ball milling for metal powder production, additive manufacturing and near-net shape technologies for end-parts fabrication. Quality and process control will be developed to monitor KPI, based on eco-innovation approach, to demonstrate the optimization of material and energy use. 4 demonstrators will be proposed at each step of the value chain in real industrial setting and ready for business exploitation at TRL 7.	
Sectors addressed by the project	• Health • Aerospace • Automotive • Industrial equipment and tooling;
Value chains segments addressed	• Materials • Process, Equipment • Post-processing • Product
AM process addressed	• Powder bed fusion • Direct Energy Deposition
Materials addressed	• Metal
Non-Technological activities addressed	• Standardisation • Education / training • Business/Commercialisation/industrial exploitation • IPRs • Technology Transfer

2.1.22. TIFAN

Project full title	**Manufacturing by SLM of TItanium FAN wheels. Comparison with a conventional manufacturing process-TIFAN**
Call topic	SP1-JTI-CS-2013-01
Project coordinator	LORTEK S COOP
Coordinating country	Spain
Project web site	No website
Project start-end date	01/10/2013 to 31/03/2015
Project budget (€)	199.989,20 € (EU contribution 142.000 €)
Consortium	2 partners: Lortek, CTME

Project aim / summary:

The TIFAN project addresses the manufacturing by SLM of fan wheel of an air cooling unit that is currently made of stainless steel. New environmental friendly fan wheels made of Titanium alloy TA6V will be developed. 5 fan wheel demonstrators will be fully manufactured and characterised within the project. The TIFAN project involved the comparison between SLM and conventional bar machining process in terms of material properties (Rm, Rp0.2, E, E%, fatigue, surface roughness and corrosion resistance), environmental impact (Life Cycle Assessment) and cost. The project will be focused in the next value aspects:

- Developing at the maximum the versatility that offers of SLM manufacturing technology.
- Applying advanced in-process and post-built surface quality improvement strategies.
- Optimizing powder usage efficiency by defining improved powder recycling methodologies and minimizing the volume required for support structures
- Optimizing fan wheel design applying full advantage of SLM possibilities: light-weight design, lattice structures.
- Decrease the environmental impact and manufacturing process by means of component's weight and waste raw materials and CO2 emissions reduction.

The objective of the TIFAN project is not only to manufacture of demonstrators, but to identify the critical factors that could give rise to a further manufacturing cost and weight reduction as well as mechanical performance improvement. Some of these factors comprise a significant progress beyond the state of the art.

Sectors addressed by the project	• Aerospace;
Value chains segments addressed	• Design • Materials • Products
AM process addressed	• Powder bed fusion
Materials addressed	• Metal
Non-Technological activities addressed	• Technology Transfer

2.1.23. COMPOLIGHT

Project full title	**Rapid Manufacturing of lightweight metal components-CompoLight**
Call topic	NMP-2007-3.4-1 - Rapid manufacturing concepts for small series industrial production
Project coordinator	Danish Technological Institute (DTI)
Coordinating country	Denmark
Project web site	http://cordis.europa.eu/project/rcn/89909_en.html
Project start-end date	01/11/2008 to 31/10/2011
Project budget (€)	4.608.789,66 € (EU contribution 3.508.954)
Consortium	12 partners: DTI, MB Proto, EHP. FC, HYD, MAR, Sitex 45, FJ, EO, Fraunhofer, Sirris, TNO
Project aim / summary: The project proposes to solve identified shortcomings of Rapid Manufacturing (RM) by addressing five areas, all of which are related to design and production of lightweight metal parts. These deficiencies are: 1) lack of design rules for RM, which could guide the designer, 2) lack of guidelines and simulation software to support to the user in the work preparation prior to RM processing and predict quality features and mechanical properties of the part, 3) CAD application software to augment – partly automate – the design of internal structures of a part, 4) research in the effective use of RM integrated in a process chain jointly with conventional processes, and 5) lack of ways to define and effectively control surfaces quality CompoLight is addressing these problems by means of experiments, applied research and software development.	
Sectors addressed by the project	• Automotive • Consumer goods • Energy • Industrial equipment and tooling
Value chains segments addressed	• Modelling&Simulation • Design • Materials • Process, equipment, ICT • Post-processing • Product
AM process addressed	• Powder Bed Fusion • Binder jetting
Materials addressed	• Metal
Non-Technological activities addressed	• Business, commersialisation, industrial exploiation

2.1.24. BAMOS

Project full title	**Biomaterials and Additive Manufacturing : Osteochondral Scaffold innovation applied to osteoarthritis**
Call topic	MSCA-RISE-2016 – Research and Innovation Staff Exchange
Project coordinator	University of Las Palmas de Gran Canaria (ULPGC)
Coordinating country	Spain
Project web site	http://www.risebamos.eu/
Project start-end date	01/01/2017 to 31/12/2020
Project budget (€)	828.000 € (EU contribution 639.000)
Consortium	7 partners: ULPGC, University College London, RNOH, Universidade do Minho, Xi'an Jiaotong University, Shaanxi Hengton Intelligent Machine Co Ltd., Zhejiang University
Project aim / summary: Osteoarthritis (OA) is a degenerative joint disease, typified by a loss of quality of cartilage and changes in bone at the interface of a joint, resulting in pain, stiffness and reduced mobility. BAMOS particularly addresses the challenges in OA treatment by providing novel cost effective osteochondral scaffold technology for early intervention of OA to delay or avoid the joint replacement operations. This project has the potential to relieve pain in patients with OA improving their quality of life by keeping people active. It fits with the scope of EU Societal Challenges to encourage the provision of improved clinical care for patients in the field of healthcare, especially for elderly patients. Novel biopolymeric composites, processed by additive manufacturing, will be characterized and tested as well as coatings on titanium scaffolds. Also, thermal welding technique will be used to join the cartilage component with the bone component to form an osteochondral unit.	
Sectors addressed by the project	• Health;
Value chains segments addressed	• Modelling&Simulation • Design • Materials
AM process addressed	• Vat Photopolymerization • Material extrusion • Direct energy deposition • EBM
Materials addressed	• Metal • Polymer • Ceramic • Biomaterials
Non-Technological activities addressed	• All activities

2.1.25. REVOLVE

	
Project full title	**Radio Technologies for Broadband Connectivity in a Rapidly Evolving Space Ecosystem: Innovating Agility, Throughput, Power, Size and Cost**
Call topic	H2020-MSCA-ITN-2016 MSCA-ITN-2016 – Innovative Training Networks
Project coordinator	HERIOT-WATT UNIVERSITY (HWU)
Coordinating country	UK
Project web site	http://revolve.eps.hw.ac.uk/
Project start-end date	01/01/2017 to 31/12/2020
Project budget (€)	1.834.895,07 € (EU contribution 1.834.895,07 €)
Consortium	5 partners: HWU, THALES ALENIA SPACE FRANCE, Large Space Structures GMBH, CNRS/INSA, Fundacion Prodintec
Project aim / summary: Part of the European Commission's H2020 Marie Skłodowska-Curie Actions, the European Industrial Doctorate programme REVOLVE: Radio Technologies for Broadband Connectivity in a Rapidly Evolving Space Ecosystem: Innovating Agility, Throughput, Power, Size and Cost addresses the rapidly growing need for performance and cost in emerging satellite missions focusing on new technologies and design methods for antenna and radio front-ends. Structured around a major European satellite integrator (Thales Alenia Space), REVOLVE brings together a further 4 leading European R&D laboratories from universities, industries, and technology institutes in the domain of radio frequency electronics and antennas for space applications that are located in France, Germany, Spain and the United Kingdom. Together with an interdisciplinary, intersectoral and international team of supervisors, REVOLVE brings together 7 Early Stage Researchers in the area of antennas, manufacturing, electronics and system engineering to underpin the European Space Sector for the emerging developments in this field.	
Sectors addressed by the project	• Aerospace • Electronics
Value chains segments addressed	• Modelling & simulation • Process • Product
AM process addressed	• -
Materials addressed	• Metal • Polymer • Ceramic
Non-Technological activities addressed	• Education / training • Business/Commercialisation/industrial exploitation • IPRs • Technology Transfer

2.1.26. METALS

METALS MachinE Tool ALliance for Skills	
Project full title	**MachinE Tool Alliance for Skills**
Call topic	ERASMUS +
Project coordinator	CECIMO – The European Committee fort he co-operation of the machine tools
Coordinating country	Belgium
Project web site	http://www.metalsalliance.eu
Project start-end date	01/11/2015 to 30/10/2018
Project budget (€)	858.080 €
Consortium	11 partners: CECIMO, IVAC-EEI, ITB, TKNIKA, VDW, AFOL, UCIMU, DETMOLD, IMH, ECOLE, AFM
Project aim / summary: The MachinE Tool ALliance for Skills (METALS) aims to provide the industry with entrepreneurial skills needed vis-à- vis emerging technologies. The Alliance is built on a partnership bringing together CECIMO, the European Association of the Machine Tool Industries, and its National Associations as well as VET providers, research institutes and regulatory bodies from Germany, Spain and Italy. The partners will firstly analyse emerging technologies in the sector and build a European machine tool industry skills panorama detecting current and future (2025) entrepreneurial skills needs in four key areas, namely design, assembly, operation and maintenance. The partnership, based on the skills needs identified and in line with ECVET principles, will jointly design a curriculum at EQF level 5 and learning materials which will be available for public use through an e-learning platform. The learning programme will be integrated into learning programmes of VET providers and machine tool builders across Europe and will support up-skilling VET learners, machine tool industry workers and low-skilled adults and the unemployed. The knowledge gained through thee-learning programme will be converted into skills and competences by work-based learning experience at machine tool companies. The METALS project will: a) Improve labour market intelligence by bringing together partners from education and industry b) Increase the effectiveness of curriculum delivered in the sector c) Help the sector meet its skills needs d) Give insights to public authorities in order to design and implement policies boosting the competitiveness of sector and employability of workforce.	
Sectors addressed by the project	• Tooling;
Value chains segments addressed	• Design • Materials • Process • Post-processing • Product
AM process addressed	• All AM processes
Materials addressed	• Metal
Non-Technological activities addressed	• Education/training

2.1.27. 3DPRISM

Project full title	**3DPRinting Skills for Manufacturing-3DPRISM**
Call topic	ERASMUS +
Project coordinator	University of Sheffield
Coordinating country	UK
Project web site	http://3dprism.eu/
Project start-end date	09/01/2014 to 02/01/2018
Project budget (€)	337.350 €
4	4 partners: U: of Sheffield, Florida Univ., CECIMO, Exelia
Project aim / summary: 3DPRISM aims to improve the quality of VET and the employability of learners, with outputs that emphasize on the applied aspects of 3D printing. To this end, the consortium comprises partners from the areas of VET, manufacturing, training R&D, and certification & accreditation regulation, thus laying the ground for the creation of a sustainable link between skills supply and demand in the advanced manufacturing sector. In this sense, the combined expertise and aligned interests of partners will deliver outputs that will empower VET providers to accurately monitor and respond to ongoing and emerging challenges in manufacturing, so as to equip the workforce with much demanded 3D printing skills in the job market. 3DPRISM will also provide learners with online learning materials (i.e. MOOC and open educational resources), and provide evidence and recommendations for the advancement and development of policies in skills-related aspects of advanced manufacturing and 3D printing. It will also establish a network for a follow-up project on certification and accreditation of 3D printing programmes and courses.	
Sectors addressed by the project	• All sectors
Value chains segments addressed	• All value chain segments
AM process addressed	• All AM processes
Materials addressed	• Metal • Polymer
Non-Technological activities addressed	• Education/training

2.1.28. ADMIRE

Project full title	**Knowledge Alliance for Additive Manufacturing between Industry and universities-ADMIRE**
Call topic	ERASMUS +: KA2 - Cooperation for innovation and the exchange of good practices - Knowledge Alliances
Project coordinator	Cranfield University
Coordinating country	UK
Project web site	http://admireproject.eu/
Project start-end date	01/01/2017 to 31/12/2019
Project budget (€)	998. 035 €
Consortium	8 partners: University of Birmingham, University of Bremen, Tecnico Lisboa, GlobalRobots, IREPA LASER, MTC, EWF
Project aim / summary: ADMIRE, intends to: establish a solid relationship among enterprises working in AM supply chain, research centers and universities. It responds to the urgent industrial need of qualifying AM personnel. Firstly, together (universities, companies and students) will design a Metal AM MSc with a set of innovative features, including work-based learning approaches, flexible learning paths, including a problem-based (PBL) one and holding an international teaching staff trained in entrepreneurship from enterprises and universities. It secondly enhances the flow of knowledge and innovation among the triangle, through the creation of a collaborative AM platform/hub to store PBL assignments and solve them collaboratively, matching students, research institutions and enterprises, uploading research positions, internships and job vacancies in AM; and promoting AM knowledge speed-dating and AM world café meetings.	
Sectors addressed by the project	• All sectors
Value chains segments addressed	• All VC segments
AM process addressed	• All AM processes
Materials addressed	• Metal
Non-Technological activities addressed	• Standardisation • Legislation • Education/training • Business; commersialisation, industrial • Technology transfer

2.1.29. ADDISPACE

Project full title	**Selection of aerospace components for improving Metal Additive Manufacturing technologies-ADDISPACE**
Call topic	INTERREG SUDOE-Axis 1 Research and innovation
Project coordinator	Ecole Supérieure des Technologies Industrielles Avancées-ESTIA
Coordinating country	France
Project web site	www.addispace.eu
Project start-end date	01/07/2016 to 30/06/2019
Project budget (€)	1.774.450,69 € (Funding 1.330.838,02 €)
Consortium	9 partners: ESTIA, LORTEK, CATEC, AFM, IPLEIRA, PEMAS, VLM, Micronorma, Grupo Nicolas Correa
Project aim / summary: ADDISPACE provides an answer to the limited adoption of AM technologies used to manufacture metal parts in the aerospace sector. Such an approach responds to the following challenges: -Not enough information about existing AM technologies, the potential benefits of their adoption in the aerospace sector and about the possible technology transfer solutions that can facilitate their adoption. -High investment costs for the acquisition of AM equipment and its implementation in the existing manufacturing chains and lines of metal part manufacturing companies and SMEs. -Insufficient reliability of manufactured products, due to the absence of solid manufacturing process control and monitoring mechanisms. -Regulations currently under development and not known by users (defectology, quality, verification), and absence of design criteria and rules. -Absence of skilled staff for the transition towards the use of this type of technology, due to the absence of specialised, skilled and trained labour. ADDISPACE's answer is the creation of an AM technology dissemination and transfer platform for companies, specifically for SMEs from the aerospace sector of the SUDOE, configuring such a platform as a stable environment and meeting and collaboration point for research centres and the industrial sector, where they can integrate these technologies.	
Sectors addressed by the project	• Aerospace
Value chains segments addressed	• Modelling & simulation • Design • Materials • Products
AM process addressed	• Powder bed fusion • Direct energy deposition
Materials addressed	• Metal
Non-Technological activities addressed	• Education/training • Technology Transfer

2.1.30. SAMT SUDOE

Project full title	**SPREAD OF ADDITIVE MANUFACTURING (AM) AND ADVANCED MATERIALS TECHNOLOGIES FOR THE PROMOTION OF KET INDUSTRIAL TECHNOLOGIES IN PLASTIC PROCESSORS AND MOULD INDUSTRIES WITHIN SUDOE SPACE-SAMT SUDOE**
Call topic	INTERREG SUDOE-Axis 1 Research and innovation
Project coordinator	AIJU
Coordinating country	Spain
Project web site	www.samtsudoe.com
Project start-end date	27/09/2016 to 30/06/2019
Project budget (€)	994.827 (746.120 funding)
Consortium	5 partners: AIJU, CEIV, IVACE, CENTIMFE, CNR-ICMCB
Project aim / summary: The project aims at developing links and synergies between enterprises, R&D centres, clusters, higher education and R&D+i governmental & regional institutions to promote new KET in SUDOE space. Particularly, Additive manufacturing technologies (3D printing) and Advanced Materials will be the project focus in order to boost advanced production systems, nanotechnology and advanced materials in industrial sectors present in SUDOE space such as plastic processors and mould industries. These new technologies will be spread over the plastic processor and mould industries, which are well established technological industries that work within a broad range of sectors including the automotive, health, creative industries, textile, clothing and footwear and consumer goods industries. It will be done through 4 main activities: - Specialised roadmaps on existing technologies - Transnational collaborative SAMT web Platform - Creation of training material in the form of Open Educational Resources (OER) - Development of Multi- KET demonstrators.	
Sectors addressed by the project	• All sectors
Value chains segments addressed	• All VC segments
AM process addressed	• All process
Materials addressed	• All materials
Non-Technological activities addressed	• Education/training • Technology transfer

2.1.31. TRANSFRON3D

Project full title	**Impression 3D transfrontalière/transfronteriza**
Call topic	INTERREG POCTEFA-POCTEFA 14-20
Project coordinator	TECNALIA
Coordinating country	SPAIN
Project web site	http://transfron3d.eu/
Project start-end date	01/06/2016 to 01/06/2019
Project budget (€)	1.649.649 (1.052.525 funding)
Consortium	8 partners: Tecnalia, ESTIA, UPV-EHU, MIZAR, AKIRA, PRICE; VENTANA, AERNNOVA

Project aim / summary:

The TRANSFRON3D project will mainly address the challenges and needs related to the economy, employment, knowledge, and innovation within the POCTEFA area. The main objective of the project is the collaboration between technological centers, universities, large companies and SMEs from both sides of the border, for the production of parts with high added value through additive manufacturing processes. These technologies are still in an early development stage and require a multidisciplinary knowledge on materials, simulation, manufacturing processes, characterization, etc. In addition, the term "additive manufacturing" encompasses several different manufacturing processes. Currently, the knowledge of each of these areas of expertise is dispersed among different companies, research centers and universities within the POCTEFA area.

The project will address various aspects of additive manufacturing process. The resulting outputs will include optimized designs, improved processes, and validation of the parts. The most notable result will be the production of four prototypes. This approach represents a radical change in working methods and offers advantages like a drastic reduction in the use of raw material, a high flexibility for the design of the component, and a reduced delivery time.

Sectors addressed by the project	• Aerospace • Automotive • Industrial equipment and tooling
Value chains segments addressed	• Modelling & simulation • Design • Materials • Process • Post processing • Products
AM process addressed	• Powder Bed Fusion • Direct energy deposition • Binder jetting
Materials addressed	• Metal
Non-Technological activities addressed	• Business, Commercialisation, Industrial exploitation • IPRs • Technology transfer

2.2. National & Regional funded AM projects

A sample of **111 National and Regional Projects** was identified and the general description of these projects can be found expressed as a table in Annex 3. Projects funded by the national and regional programmes of the following European countries are collected: Austria, France, Italy, Spain, Sweden, Portugal and UK.

The following table depicts those AM projects funded by National and European instruments, considering the Funding Entity, the amount of the funding, the coordinator organisation and the Country or Region leading the project.

Table 3. AM related National and Regional projects

	Project Acronym	Funding Entity	Funding (M€)	Country/Region	Coordinator
1	NextGen3D	FFG	-	Austria	Profactor
2	FRACTAL	CDTI	>7 M€	Spain	ETXE-TAR
3	SELENA	CDTI	7.2	Spain	CESA
4	FUTURALVE	CDTI		Spain	MIZAR ADDITIVE MANUFACTURING
5	ECLIPSE	CDTI		Spain	EADS CASA
6	SILENCIO	CDTI		Spain	EADS CASA
7	CON3D	CDTI	1.1	Spain	COPROSA
8	BUIL3D-PRINT	CDTI	3.29	Spain	CEMENTOS TUDELA VEGUIN
9	3DCONS	CDTI	0.8	Spain	VIAS Y CONSTRUCCIONES
10	KERAMIC	CDTI	-	Spain	TORRECID
11	ADVANSEAT	CDTI	-	Spain	GRUPO ANTOLIN
12	RECLAMA	FICYT	0.0019	Spain/Asturias	TALLERES ZITRON S.A.
13	SOLADI3D	IDEPA	0.3	Spain/Asturias	ArcelorMittal España, S.A

	Project Acronym	Funding Entity	Funding (M€)	Country/Region	Coordinator
14	AMFOOD	IDEPA	0.08	Spain/Asturias	CASA GERARDO
15	SLSAero	FICYT	0.1	Spain/Asturias	ACITURRI ADDITIVE MANUFACTURING
16	AM-MEDICO	FICYT	0.2	Spain/Asturias	Fundacion PRODINTEC
17	Adaptation of DMLS 3D printing technology for knee prosthesis components	IDEPA	0.03	Spain/Asturias	SOCINSER 21 S.A.
18	Implementation of wear-reduction micro textures through additive manufacturing technology over joint prosthesis featuring metal/plastic contact.	IDEPA	0.1	Spain/Asturias	MBA INCORPORADO; INGENIACITY
19	AM INNOVA	Regional ARAGON	0.05	Spain/Aragon	CLUSTER AERONÁUTICO DE ARAGÓN - AERA
20	ADDITIVE	Basque Government	-	Spain/ Basque Region	LORTEK S. COOP
21	FAMOLD	Basque Government		Spain/ Basque Region	LORTEK S. COOP
22	ADIMAQ	POCI/FEDER	1.1	Portugal	CEI Zipor (SME)
23	SLMXL	POCI/FEDER	1.4	Portugal	ADIRA - METAL FORMING SOLUTIONS, S.A.
24	NEXT.parts	POCI/FEDER	0.7	Portugal	3DTECH - PRODUÇÃO, OPTIMIZAÇÃO E REENGENHARIA LDA. (SME)
25	FIBR3D	POCI/FEDER	2.5	Portugal	INEGI - INSTITUTO DE CIÊNCIA E INOVAÇÃO EM ENGENHARIA MECÂNICA E

	Project Acronym	Funding Entity	Funding (M€)	Country/Region	Coordinator
					ENGENHARIA INDUSTRIAL (RTO)
26	TOOLING4G	POCI/FEDER	4.8	Portugal	ANÍBAL H. ABRANTES - INDÚSTRIAS DEMOLDES E PLÁSTICOS S.A.
27	add.AM	POCI/FEDER	5.9	Portugal	ADIRA - METAL FORMING SOLUTIONS, S.A.
28	PRODUTECH SIF	POCI/FEDER	5.3	Portugal	TEGOPI, S.A.
29	HiPA2l	National Agencies/ERANET	0.5	Portugal	LKR Leichtmetallkompetenzzentrum Ranshofen GmbH (Austria)
30	ROBMOLDE	ANI		Portugal	ISQ - Instituto de Soldadura e Qualidade (Portugal)
31	SIRBLADE	ANI		Portugal	TAP - Transportes Aéreos Portugueses (Portugal)
32	BIGPROTO	ANI		Portugal	CENTIMFE
33	HIBRIDMOULDE 21	ANI		Portugal	CENTIMFE
34	HIBRIDMOULDE	ANI		Portugal	CENTIMFE
35	FRF	ANI		Portugal	CENTIMFE
36	RNPR	ANI		Portugal	CENTIMFE
37	Smart Manufacturing 2020	MIUR	12	ITC3: Liguria	Siemens SpA, Genova Politecnico di Milano
38	"HIGH PERFORMANCE MANUFACTURING"	MIUR		ITC4: Lombardia	MCM SpA, Vigolzone (PC) / Politecnico di Milano

	Project Acronym	Funding Entity	Funding (M€)	Country/Region	Coordinator
39	Control System for Aeronautical and aero-derived engines	European Funds for Regional Development	29.3	ITF4: Puglia	Avio Aero
40	ULTRAHIGH TEMPERATURE CERAMIC MATRIX COMPOSITES BY ADDITIVE MANUFACTURING USING POLYMER PRECURSORS	Ministry of Abroad Affair "La Farnesina"	0.12	ITH5: Emilia-Romagna	ISTEC
41	MANUSPACE	Lazio Region	1	ITI4: Lazio	Consorzio Matris (La Sapienza, Roma 3, Università Tor vercata, Centro Sviluppo Materiale)
42	MADE4LO	Lombardy Region	6.6	ITC4: Lombardia	Tenova
43	OrthoFLase	ANR	0.9	France	OSSEOMATRIX
44	ELASTICITE	ANR	0.3	France	INSA de Strasbourg, LGeCO
45	MOSART	ANR	0.3	France	Office National des Etudes et de Recherches Aérospatiales
46	LEMCI	ANR	0.3	France	Laboratoire d'etude des microstructures et de mécanique des matériaux / Laboratory for the study of microstructures and materials mechanics
47	SISCob	ANR	0.5	France	PPRIME - Université de Poitiers /Poitiers university
48	3D-SLS	ANR	0.5	France	Institut National des Sciences Appliquées de Lyon génierie
49	FA2SCINAE	ANR	0.6	France	SIMAP

	Project Acronym	Funding Entity	Funding (M€)	Country/Region	Coordinator
50	MACOY3D	ANR	0.2	France	Institut de Chimie de la Matière Condensée de Bordeaux
51	MONARCHIES	ANR	0.6	France	Laboratoire d'Ingénierie et Sciences des matériaux - URCA
52	3DRX-online	ANR	0.7	France	Thales Research & Technology
53	ATOMIQ	ANR	0.8	France	THALES ALENIA SPACE FRANCE
54	Bone printing	ANR	0.6	France	Institut National de la Sante et de la Recherche Medicale
55	FastPrinting	ANR	0.4	France	Institut de Science des Matériaux de Mulhouse
56	ILTO	ANR	0.5	France	CNRS DR Provence et Corse
57	MATERIAL	ANR	0.6	France	Institut National de Recherche en Informatique et en Automatique
58	NextBone	ANR	0.3	France	Groupe d'Etudes sur le Remodelage Osseux et les bioMatériaux
59	GRMH2TANK	ANR	0.2	France	University of Kiel, Faculty of engineering, Institute for Material Science - Functional Nanomaterials
60	LIGNOPROG	ANR	0.2	France	UMR Fractionnement des Agroressources et Environnement
61	FAIR	BPI		France	
62	GPP MULTIMAT	FUI	2.3	FR71: Rhône-Alpes	CETIM

	Project Acronym	Funding Entity	Funding (M€)	Country/Region	Coordinator
63	Mouilinnov	FUI	4.6	FR71: Rhône-Alpes	SCHNEIDER Electric
64	Itech Mould	FUI	3.2	FR71: Rhône-Alpes	ARRK Shapers
65	Almée	FUI		FR71: Rhône-Alpes	THALES
66	3D Hybrid	FUI		FR	Manutech USD
67	Dry to Fly	INVESTISSEMENT D'AVENIR PSPC	12.5	FR71: Rhône-Alpes	MECACHROME
68	RAMp-UP	VINNOVA - Swedish Innovation Agency	0.5	Sweden	SWEREA
69	CAM2	VINNOVA - Swedish Innovation Agency	2.4	Sweden	Chalmers University
70	SUMAN	The Knowledge Foundation	6.1	Sweden	University West
71	SUMANnext	The Knowledge Foundation	3.2	Sweden	University West
72	3DPrint	EU		Sweden	University West
73	3DPrintPlus	EU		Sweden	University West
74	Miljo:FIA	EU, Region Vaestra 75Gotaland, Swedish Agency for Economic and Regional Growth	1.5	Sweden	University West
75	SAMw	The Knowledge Foundation	2.6	Sweden	University West
76	TIME	Innovate UK		UK	Spirax Sarco Ltd
77	DIGI-TOOL	Innovate UK		UK	Toolroom Technology Limited
78	3D Screen Printing	Innovate UK		UK	Cadscan Limited

	Project Acronym	Funding Entity	Funding (M€)	Country/Region	Coordinator
79	Development Improvements in atomising nickel, cobalt & iron based alloys for use in AM	Innovate UK		UK	LSN DIFFUSION LIMITED
80	Metal AM Process Informatics for Improved Surface Finish of Complex Parts	Innovate UK		UK	CROFT ADDITIVE MANUFACTURING LTD
81	RAD-AMP	Innovate UK		UK	L.P.W. TECHNOLOGY LIMITED
82	PlasMan - High integrity manufacture				AQUASIUM TECHNOLOGY LIMITED
83	START	Innovate UK	0.036	UK	SCORPION TOOLING UK LIMITED
84	RoboWAAM	Innovate UK		UK	KUKA Systems Uk Limited
85	SEAMLESS	Innovate UK	0.1	UK	Toolroom Technology Limited
86	AMSURFIN	Innovate UK	0.2	UK	ADDITIVE MANUFACTURING TECHNOLOGIES LTD
87	CAMBER	Innovate UK	0.1	UK	Skanska Technology Limited
88	ALF	Innovate UK		UK	ESP Technology Limited
89	PowderCleanse - Automated powder recycling and quality assurance for enhanced additive manufacturing material reuse	Innovate UK	0.2	UK	LPW Technology Limited

	Project Acronym	Funding Entity	Funding (M€)	Country/Region	Coordinator
90	Tailorable and Adaptive Connected Digital Additive Manufacturing	Innovate UK	0.3	UK	HiETA Technologies Limited
91	SEAM	Innovate UK	0.05	UK	Wallwork Heat Treatment Limited
92	Development and commercialization of 3D-printed ceramic/refractory carbonized items.	Innovate UK	0.17	UK	CAT INTERNATIONAL LTD
93	Unravelling &addressing orthopaedics & prosthetics problems by human-centred design	Innovate UK		UK	Innovative Technology and Science Limited
94	3D Fashion: Closures and trims	Innovate UK		UK	BIOV8TION LIMITED
95	University of Sheffield and Tripal Ltd	Innovate UK		UK	University of Sheffield
96	Wire Arc Additive manufacturing of near net shapes for Spacecraft propellant tanks	Innovate UK	0.17	UK	Airbus Defence And Space Limited
97	High temperature, affordable polymer composites for AM aerospace applications	Innovate UK	0.17	UK	Victrex Manufacturing Limited
98	SHAPE	Innovate UK	0.46	UK	Ilika Technologies Limited
99	RAMP-UP	Innovate UK	0.3	UK	Reliance Precision Limited
100	PROMENADE	Innovate UK	0.24	UK	Johnson Matthey Plc

	Project Acronym	Funding Entity	Funding (M€)	Country/Region	Coordinator
101	WINDY	Innovate UK	4.6	UK	Airbus Operations Limited
102	MEGCAP	Innovate UK		UK	Safran Electrical & Power UK Ltd
103	Advanced Inverted Brayton Cycle exhaust heat recovery with Steam Generation	Innovate UK	0.1	UK	HiETA Technologies Limited
104	CHARM	Innovate UK	0.09	UK	HiETA Technologies Limited
105	The University of Sheffield and LPW Technology Limited	Innovate UK	0.09	UK	University of Sheffield
106	Newcastle University and DePuy International Limited	Innovate UK	0.048	UK	Newcastle University
107	Gravity Sketch - Intuitive 3D Creation	Innovate UK	0.025	UK	Gravity Sketch
108	A 3D printing solution to solve parents pain with orthotics services	Innovate UK	0.094	UK	Project Andiamo Limited
109	Prototype Development of a Hybrid Gas and Ultrasonic Powder Delivery System	Innovate UK	0.15	UK	Advanced Laser Technology Ltd
110	CAM	Innovate UK		UK	LONDON FOREST PRODUCTS LIMITED
111	HYLAFORM		2.9	BE	VUB

The number of identified National and Regional projects by country is summarised in the following table and graph.

Table 4. AM National and Regional Projects by country

Country	N° Projects
AT	1
BE	1
FR	25
IT	6
Pt	15
SE	8
SPAIN	20
UK	35
TOTAL	**111**

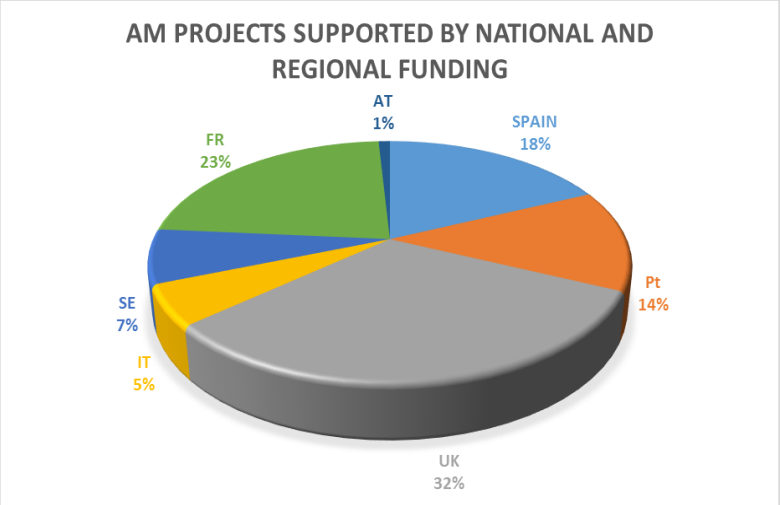


Figure 1. National and Regional Projects on AM identified by country

Some of the projects of the list completed the AM-motion template and thus all the related information will be integrated in the AM-motion e-tool/database. For more information about these National and Regional projects please refer to Annex 3.

3. Project database template

A questionnaire was developed and sent to the project coordinators requesting for relevant project information, that would be further implemented in the AM-motion database and analysed. The project's questionnaire and the gathered project's data will be used as an important input for the design of the AM-motion database system (XLS based) already developed within FoFAM project and upgraded during AM-motion project with relevant information of more European projects, together with National and Regional ones.

Moreover, in order to be able to integrate this information with the one coming from the survey on regions capabilities and policies that is carried out in parallel (task 2.2), the developed project questionnaire was provided to use as an input to T2.2 and similar definitions and lists of items were appropriate were used.

3.1. Template developed

Next items for the questionnaire are defined in an XLS spreadsheet (Annex 1). The lay-out of the spread sheet shows already the structure of the database to be developed. It contains six main sections:

a) General info: project and consortium general data

b) Projects technology developments: project framework with regards the market sectors and the value chain stages and segments, technologies, materials types and non-technological information.

c) Project main findings: related to the main outcomes, TRLs expected...

d) Knowledge transfer indicators: related to possible exploitable results

e) Future R&D needs and non-technological obstacles

f) Key recommendations for the development of additive manufacturing in Europe

To see the complete AM-motion Template please refer to Annex 1.

4. General Analysis

The identified EU projects were analysed considering:

- The call topic
- The budget
- The country coordinator of the project
- By coordinator

4.1. Analysis by topic and budget

Previous FoFAM project identified and analysed the AM projects funded by the Factories of the Future (FoF) Call topics. AM-motion goes further and analyses a variety of projects funded by different European programmes, including FP7 and Horizon 2020.

Table 5. AM EU projects by Typology of Programme

Workprogramme	Number of projects	Budget (€)
ERC	6	8.291.956,00
MSCA (H2020, FP7-People)	15	16.479.005,92
NMP (H2020 LEIT NANO/AVDMANU, FP7)	56	327.817.513,96
ICT (H2020 LEIT, FP7)	12	43.022.150,25
SME (H2020, FP7)	9	11.054.339,25
TRANSPORT (H2020, FP7)	5	24.600.019,34
INTERREG	4	4.418.926,69
ERASMUS+	4	2.192.878,00
JTI	11	10.221.863,11
Other	2	3.351.228,78
Total	**124**	**451.449.881,30 €**

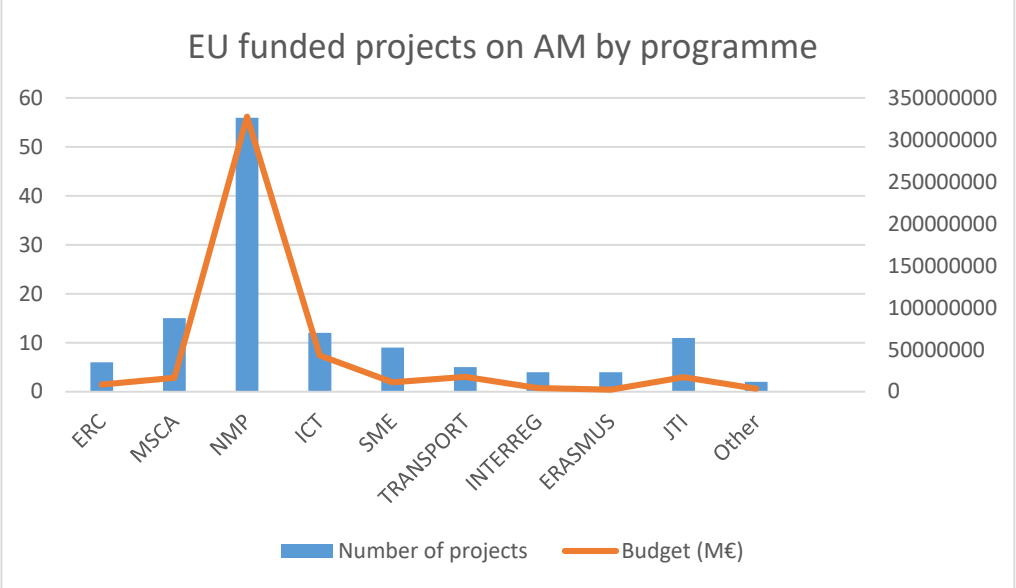


Figure 2. *AM EU funded projects by Programme and funding budget*

The NMBP Programme holds the majority of AM projects and funding

4.2. Analysis of projects by country

Most of the identified projects are coordinated by three countries UK (31 projects) representing 25 % of the projects, ES (20 projects) and DE (20 projects). These three countries hold more than half of the projects, more precisely 57% of them.

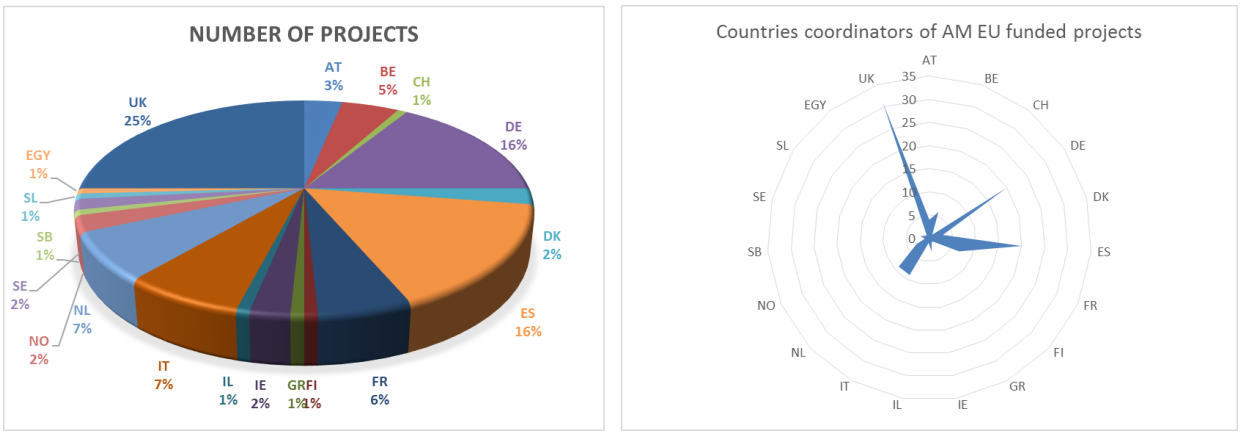


Figure 3. *AM EU funded projects by country. a) Percentages; b) Main coordinators countries*

4.3. Analysis by Coordinator Institution

The 123 EU funded projects are inequitably shared among a variety of coordinators. TWI (UK) leads the list with 9 projects, followed by Fraunhofer (DE) with 6 projects and MTC (UK)

and LORTEK Corp (ES) coordinators of 4 projects. The rest of Institutions holds only 2 or 1 project. For more information, please refer to table in the Annex 2.

Coordinator Institution	N° of projects
TWI LIMITED	9
FRAUNHOFER - GZFDAF	6
THE MANUFACTURING TECHNOLOGY CENTRE LIMITED LBG (MTC)	4
LORTEK S COOP	4
FUNDACION PRODINTEC	3
KATHOLIEKE UNIVERSITEIT LEUVEN	3
STIFTELSEN SINTEF	3
TECHNISCHE UNIVERSITAET WIEN	3

5. Sectorial analysis

According to the conclusions of AM-motion Deliverable 2.1, eight sectors have been identified as the most promising areas for deployment of AM technologies. These sectors will be the focus on AM-motion further studies and project's classification.

- Health
- Aerospace,
- Automotive,
- Consumer goods,
- Electronics,
- Energy,
- Industrial equipment and tooling,
- Construction,

A sectorial analysis has been carried out thanks to the information provided by some projects' coordinators when completing the template.

5.1. Analysis of projects by activity sector

Regarding the activity sector, 58 projects have confirmed their interest in the eight previously mentioned sectors. Figure 3 shows that Transport, considering Aerospace 23% of the projects and automotive 17%, is one of the most promising sector where AM could be applied. Health is a rather promising sector, as manifested by 20% of the projects identified.

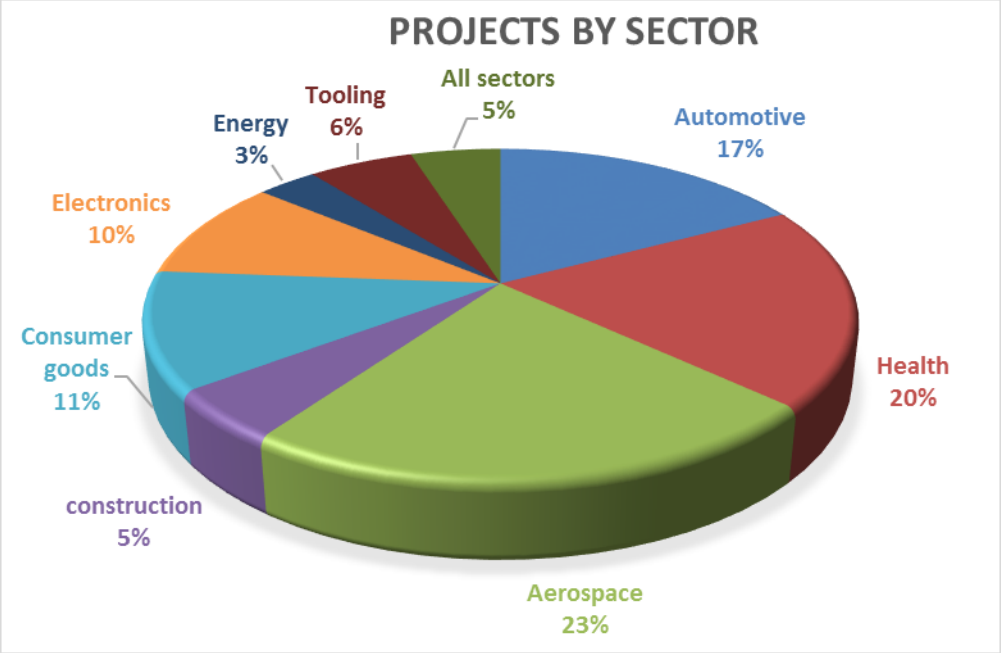


Figure 4. *Sectorial distribution of the identified EU projects*

Transport is one of the most promising sector where AM could be applied

5.2. Analysis of projects by Value Chain segment

A sample of 56 projects could be taken into account to accomplish the analysis of the Value Chain segment by project. As it can be seen in Annex 2, several value chain segments can be addressed by a single project. Activities related to **the process** are considered the main VC segment by 20 % of the projects while the activities related to the **End of life are not contemplated**. Only 9% of the projects analysed deal with all VC segments included End of life activities.

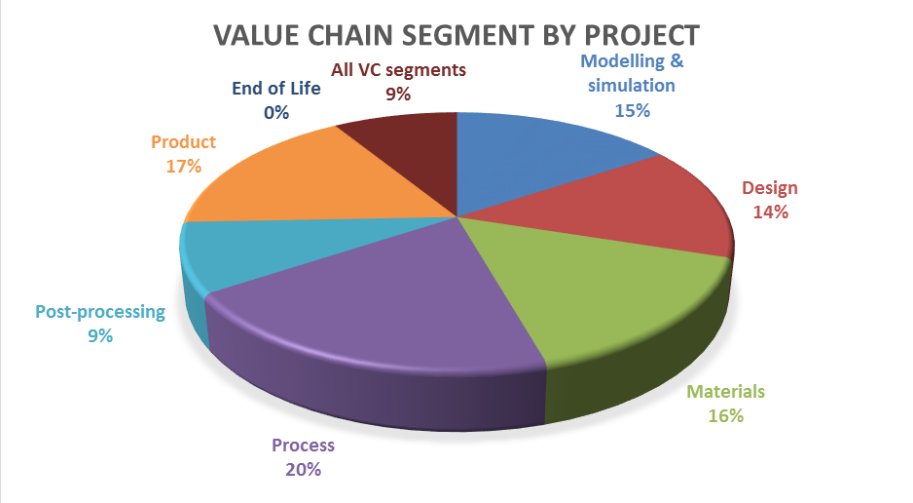


Figure 5. *Value chain segment distribution by project*

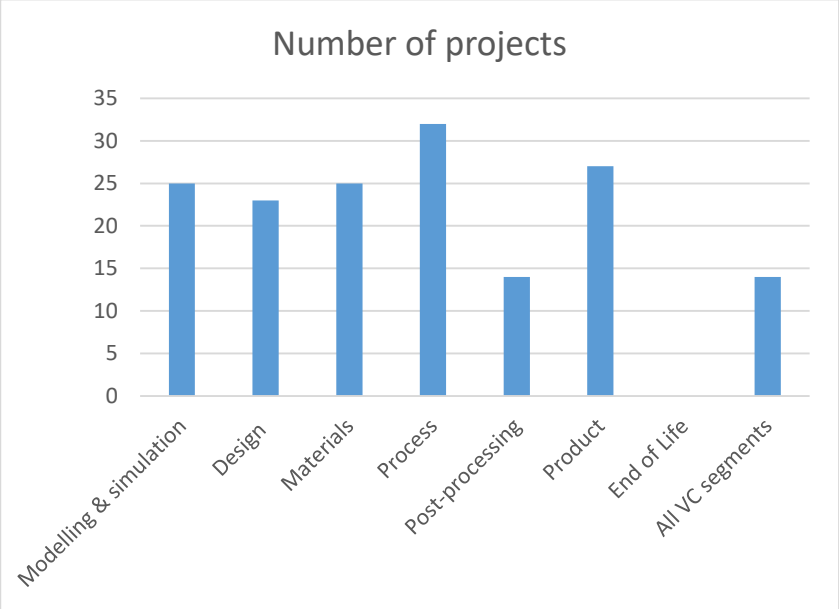


Figure 6. *Number of projects by VC segment*

Figure 5 shows that of the sample of 56 projects, the majority of projects are focused on the processes and products. Modelling & simulation activities as materials' research draw considerable attention and around 25 projects addressed them while End –of life segment is not approached by a single project.

Process, materials and products are the main Value Chains addressed by the EU projects. End of life seems to be a forgotten value chain.

5.3. Analysis of projects by Material's type

Only a sample of 32 projects have completed the information regarding material types addressed in the AM-motion template. The results show that 58% of the projects deal with metals, and 23% of them addressed the polymers (figure 7).

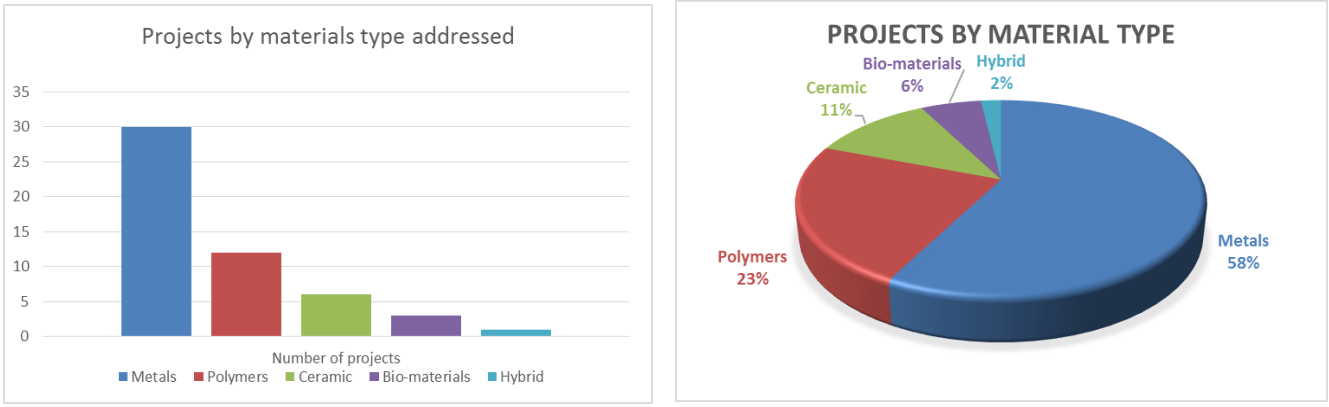


Figure 7. *Projects by material's type*

Metal is the material addressed by more than half of the identified EU projects.

5.4. Analysis of projects by AM process

The information concerning the AM process was completed in the AM-motion Template only by 29 of the identified projects. Powder Bed Fusion and Direct Energy Deposition AM processes are the most commonly used process being addressed by the 24 and 22% of the projects respectively. On the other hand, sheet lamination processes are not addressed by the representative sample of 29 projects. 20 % of the projects analysed show interest by the all AM processes (figure 8).

Powder Bed Fusion and Direct Energy Deposition AM processes are the most frequent AM process.

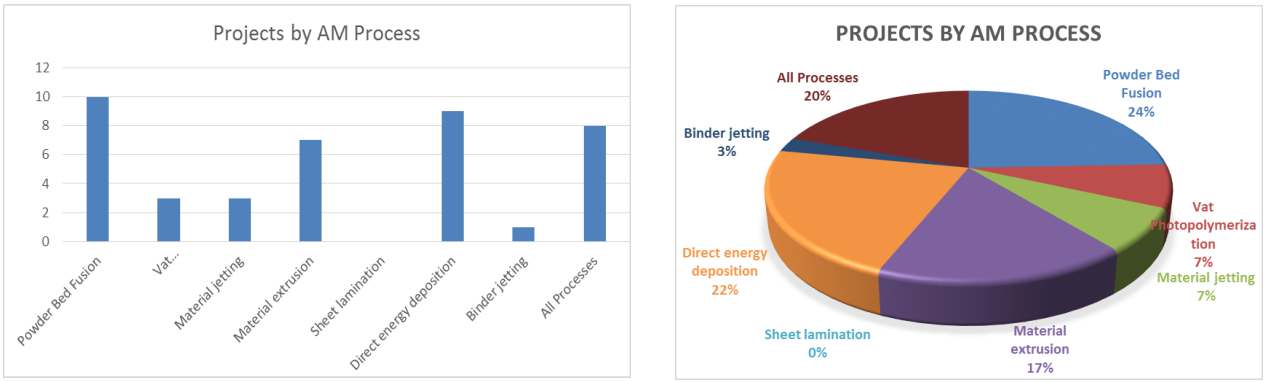


Figure 8. *Projects by AM process*

5.5. Analysis by Non-technological activities addressed

Considering a sample of 31 projects where the information about their involving in non-technological activities was reported, the main non-technological activities addressed by the AM European projects were Technology Transfer and activities linked to Business, commercialisation and Industrial Exploitation for the 21% of them. Activities related to Intellectual Property Rights Protection draw attention for the 20% of the 31 projects identified, and standardisation activities are also seen as a major issue for 18% of the projects.

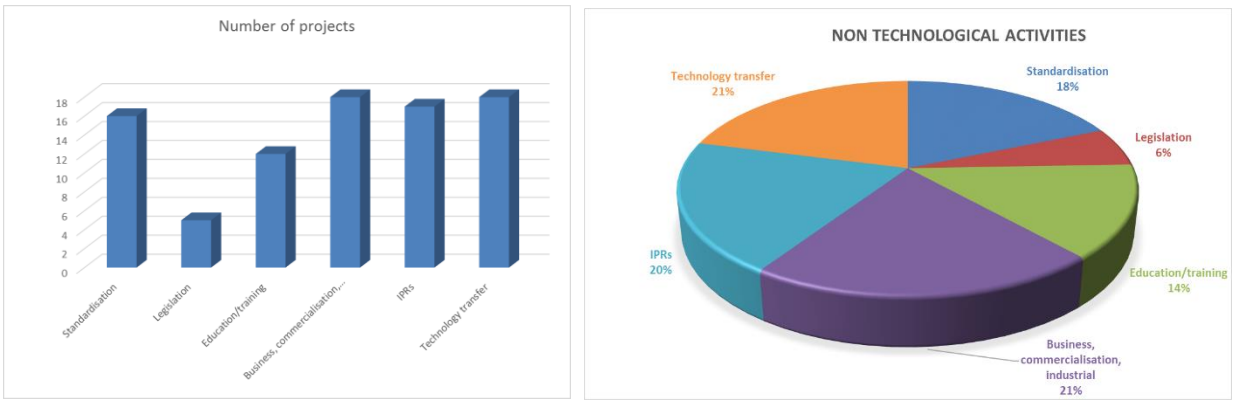


Figure 9. *AM projects by non-technological activities*

6. Projects main findings and knowledge transfer indicators

Very few information was collected regarding the projects main finding and Knowledge Transfer Indicators.

Concerning the information about AM projects main findings, a specific workshop was organised by AM-motion project. Within this event AM-motion organised a projects and poster session inviting to

present their main finding and results to several AM European projects. A total of 25 projects prepared posters to show and share their main findings and prepare the sustainability of such project portfolio data based after the AM-motion project.

The following list contain the projects attending to this workshop. The complete information about the projects main finding can be found in Annex 4, containing the projects posters describing main projects' results for the exploitation session held during the workshop.

Table 5. AM projects attending to AM-motion Workshop

Project Acronyme	CALL	Coordinator
HyproCell	FoF	LORTEK S COOP
iBUS	NMP	UNIVERSITY OF LIMERICK
4DHybrid	FoF	PRIMA ELECTRO SPA
Bionic Aircraft	MG	LZN LASER ZENTRUM NORD GMBH
BOREALIS	FoF	Prima Industrie SpA
CAxMan	FoF	STIFTELSEN SINTEF
DIMAP	NMP	PROFACTOR GMBH
DREAM	FoF	CONSORZIO INTERUNIVERSITARIO NAZIONALE PER LA SCIENZA E TECNOLOGIA DEI MATERIALI
FAST	NMP	UNIVERSITEIT MAASTRICHT
KRAKEN	FoF	FUNDACION AITIIP
LASIMM	FoF	EUROPEAN FEDERATION FOR WELDING JOINING AND CUTTING
MAESTRO	FoF	CENTRE TECHNIQUE INDUSTRIEL DE LA PLASTURGIE ET DES COMPOSITES
OpenHybrid	FoF	THE MANUFACTURING TECHNOLOGY CENTRE LIMITED LBG
PARADDISE	FoF	FUNDACION TECNALIA RESEARCH & INNOVATION
Symbionica	FoF	THE MANUFACTURING TECHNOLOGY CENTRE LIMITED LBG
COMBILASER	FoF	HIDRIA AET d.o.o. Slovenia
ENCOMPASS	FoF	THE MANUFACTURING TECHNOLOGY CENTRE LIMITED LBG
ALFORAMA	JTI-CS	LORTEK S. COOP
AM-motion	FoF	FUNDACION PRODINTEC
BAMOS	MSCA-RISE	University of Las Palmas de Gran Canaria
3DPRISM	ERASMUS	University of Sheffield Advanced Manufacturing Research Centre
ADMIRE	ERASMUS	CRANFIELD UNIVERSITY
SAMT-SUDOE	INTERREG	AIJU
HYLAFORM	Regional	Vrije Universiteit Brussel-VUB

Figure 10. *Exploitation session held during AM-motion project's workshop*

Only three projects provided quantified information concerning the **Knowledge transfer indicators,** these are DIMAP, FAST and BAMOS, which only informed about the number of inventions disclosed. The following table summarises the answers**:**

Table 6. Knowledge Transfer indicators as reported by AM-motion projects

Knowledge transfer indicators	DIMAP	FAST	BAMOS
Agreements with industry	Yes. Industrial project partner directly involved in DIMAP.	No	No
Number of invention disclosures	1	2	-
Related utility model	No	No	No
Related patent	Project partners hold relevant patents in their respective field (e.g. Stratasys for PolyJet technology)	No	No
Licenses executed	No	-	No
Related spin-offs	No	-	No
Other	Sectors: Robotics on-technology activities: nano safety	-	

Previously in FoFAM project only 5 projects revealed the information about the Technology Transfer indicators. For more information, please refer to D 2.1 of FoFAM project.

7. Summary and conclusions

This deliverable document provides a global overview of the AM related projects for two main categories: a) European funded projects from all Programmes encompassing NMBP, Energy, Transport, MSCA, ERASMUS, JTI-Clean Sky, INTERREG; b) AM related projects supported by National and Regional Funds.

The document contains the collected outcomes for 235 projects of the above mentioned categories from which **124** are **European Projects and 111 are National and Regional Projects**. A general description containing information of each project can be found in Annex 2 and Annex 1 of this document.

Annex 2 shows a very detailed table of all 124 EU projects providing information about the project general description: project and consortium general data and relevant information about the Projects technology developments. Indeed, the table of Annex 2 provides data that enables the classification of the projects according to the Value Chain, Application Sectors, and Value Chain segments: manufacturing processes, material type and non-technological activities tackled. The AM European Funded Table of Annex 2 promises to be a very useful tool to classify, to cluster and to map the overall R&D capabilities in Europe.

Annex 3 depicts the information gathered for the 110 AM related National and Regional Projects, collected by means of the regional and National agencies.

As a summary of the main findings of the analysis of the obtained data:

- Three countries hold the majority of identified EU projects: UK, Germany and Spain
- The NMBP Programme holds the majority of projects and funding
- Transport, and in particular Aerospace (23% of the projects) and automotive (17%), is considered by the projects coordinators as one of the most promising sectors where AM could be applied. Health is a rather promising sector, as manifested by 20% of the projects identified.
- Process (20% of the projects), materials (17%) and products (16%) are the main Value Chains addressed by the EU projects. End of life seems to be a forgotten value chain.
- Metal is the material type addressed by 58 % of the identified EU projects
- Powder Bed Fusion and Direct Energy Deposition AM processes are the most popular being addressed by the 24 and 22%. Sheet Lamination does not attract any interest.
- Main non-technological activities are Technology Transfer and activities linked to Business, commercialisation and Industrial Exploitation (21% both)
- Very few information was collected regarding the projects main finding and Knowledge Transfer Indicators.

Common synergies among the different projects have been identified but more information will be progressively incorporated to the AM-motion database.

Annex 1: AM-motion project template

Legend :	Name of data field
	Free text or nummeric field
	Select from a list
	If not in list, please specify

Project general data	
Project acronym	
Project full title	
Please copy and paste project logo if available	
Name of funding programme (chosen out of list)	
Call topic	
Call title	
Project website	

Project details	
Project start date (dd/mm/yy)	
Project end date (dd/mm/yy)	
Total project budget (EUR)	
Funding (EUR)	
Project type (IA, RIA, CSA....)	
Project aim/summary (approx. 150 words)	

Person contact details	
Mr./Mrs.	
Title	
Initials	
First name	
Family name	
E-mail (of the project coordinator)	
Role in project	Co-ordinator

Participants details (only key info)	1 (coordinator)	2	3
Full name of organisation			
Short name of organisation			
Region name in which organisation is located (according to NUTS 2 classification)			
Country			
Web page			
Type of organisation (SME, RTO....)			
Public or private organisation			
Profit or non-profit			
Participant role in project			
Free text explaining partners' role in project			

Project's technology developments

Project sectors adressed	☐ Health ☐ Aerospace ☐ Automotive ☐ Consumer goods ☐ Electronics ☐ Energy ☐ Industrial equipment and tooling ☐ Construction ☐ All sectors ☐ Other, please specify below
Project value chain stage adressed	☐ Modelling & Simulation ☐ Design ☐ Materials ☐ Process, equipment, ICT ☐ Post processing ☐ Product ☐ End of life ☐ All value chain positions
AM processes adressed	☐ Powder Bed Fusion ☐ Vat Photopolymerization ☐ Material jetting ☐ Material extrusion ☐ Sheet lamination ☐ Direct energy deposition ☐ Binder jetting ☐ All AM processes ☐ Other, please specify below
Material types adressed	☐ Metal ☐ Polymer ☐ Ceramic ☐ Food ☐ Bio-materials ☐ All materials ☐ Other material, please specify below
Non-technological activities adressed	☐ Standardisation ☐ Legislation ☐ Education / training ☐ Business, commercialisation, industrial exploitation ☐ IPRs ☐ Technology transfer ☐ No non-technological activities adressed ☐ Other, please specify below

Project's main findings and Knowledge transfer indicators

Knowledge generated (max 5 keywords)					
	Result 1	Result 2	Result 3	Result 4	
Project main results type					
Project main results description					
TRLs of result obtained					
Is this result exploitable? (Yes/No)					

Continuation actions & projects	

Knowledge transfer indicators		
Agreements with industry? (Yes/No)		
Number of invention disclosures		
Related utility model		
Related patent		
Licenses executed		
Related spin-offs		
Others	*Please detail*	

Annex 2: European projects

FP7-PEOPLE: *9 Projects*

Acronym-Project full title	Work programme	ID	Starting date	End date	Total project budget (€) (EU contribution)	Coordinator	Country
D-FOOT PRINT-Personalised insoles via additive manufacture for the prevention of plantar ulceration in diabetes	PEOPLE	329133	14/10/2013	13/10/2015	196.682,10 (196.682,10)	THE GLASGOW CALEDONIAN UNIVERSITY	UK
DiGHiRO-Digital Generation of High Resolution Objects	PEOPLE	256530	01/05/2010	30/04/2014	100.000 (100.000)	AALTO-KORKEAKOULUSAATIO	FI
FlowMat-Exploiting Flow and Capillarity in Materials Assembly: Continuum Modelling and Simulation	PEOPLE	618335	01/09/2013	31/08/2017	100.000 (100.000)	QUEEN MARY UNIVERSITY OF LONDON	UK
INLADE-Integrated numerical modelling of laser additive processes	PEOPLE	230756	01/02/2009	31/01/2013	329.529 (329.529)	THE UNIVERSITY OF MANCHESTER	UK
INTERAQCT-International Network for the Training of Early stage Researchers on Advanced Quality control by Computed Tomography	PEOPLE	607817	01/10/2013	30/09/2017	3.850.553,52	KATHOLIEKE UNIVERSITEIT LEUVEN	BE
PRINT CART -Bioprinting of novel hydrogel structures for cartilage tissue engineering	PEOPLE	272286	01/07/2011	30/06/2014	265.944,80	UNIVERSITAIR MEDISCH CENTRUM UTRECHT	NL
RRD4E2 -Rational Reactor Design for Enhanced Efficiency in the European Speciality Chemicals Industry	PEOPLE	607114	01/10/2013	30/09/2017	668.456,97	LONZA AG	CH
SphereScaff -The Manufacturing of Scaffolds from Novel Coated Microspheres via AM Techniques for Temporomandibular Joint Tissue Engineering	PEOPLE	622414	01/08/2014	31/07/2016	245.897,90	NATIONAL UNIVERSITY OF IRELAND, GALWAY	IE
VINDOBONA -VINyl photopolymer Development Of BONe replacement Alternatives	PEOPLE	297895	01/01/2013	31/12/2014	187.888,20	TECHNISCHE UNIVERSITAET WIEN	AT

H2020-MSCA: *6 Projects*

Acronym-Project full title	Work programme	ID	Starting date	End date	Total project budget (€) (EU contribution)	Coordinator	Country
Bamos-Biomaterials and Additive Manufacturing: Osteochondral Scaffold innovation applied to osteoarthritis	MSCA-RISE	734156	01/01/2017	31/12/2020	828.000 (639.000)	University of Kragujevac (Serbia)	SB
DISTRO-Distributed 3D Object Design	MSCA-ITN	642841	01/01/2015	31/12/2018	3.264.733 (3.264.733)	University of Las Palmas de Gran Canaria	ES
NEXT-3D-Next generation of 3D multifunctional materials and coatings for biomedical applications	MSCA-RISE	645749	01/06/2015	31/05/2017	193.500 (193.500)	UNIVERSITY COLLEGE LONDON	UK
PAM 2-Precision Additive Metal Manufacturing	MSCA-ITN	721383	01/12/2016	30/11/2020	3.944.925,36 (3.944.925,36)	THE UNIVERSITY OF BIRMINGHAM	UK

Revolve-Radio Technologies for Broadband Connectivity in a Rapidly Evolving Space Ecosystem: Innovating Agility, Throughput, Power, Size and Cost	MSCA-ITN	722840	01/01/2017	31/12/2020	1.834.895,07 (1.834.895,07)	KATHOLIEKE UNIVERSITEIT LEUVEN	BE
A_Madam-Advanced design rules for optimMAl Dynamic properties of Additive Manufacturing products	MSCA-RISE	734455	01/01/2017	31/12/2020	468.000 (468.000)	HWU- Heriot-Watt University	UK

FP7-NMP: *35 Projects*

Acronym-Project full title	Work programme	ID	Starting date	End date	Total project budget (€) (EU contribution)	Coordinator	Country
A-FOOT PRINT-Ankle and Foot Orthotic Personalisation via Rapid Manufacturing	NMP	228893	01/10/2009	30/09/2013	5.304.317,66 (3729043)	THE GLASGOW CALEDONIAN UNIVERSITY	UK
ArtiVasc 3D-Artificial vascularised scaffolds for 3D-tissue-regeneration	NMP	263416	01/11/2011	31/10/2015	10.467.338,60 (7800000)	FRAUNHOFER	DE
Bio-Scaffolds-Natural inorganic polymers and smart functionalized micro-units applied in customized rapid prototyping of bioactive scaffolds	NMP	604036	01/06/2013	31/05/2016	2.278.935,20 (1799002)	UNIVERSITAETSMEDIZIN DER JOHANNES GUTENBERG-UNIVERSITAET MAINZ	DE
CompoLight- Rapid Manufacturing of lightweight metal components	NMP	213477	01/11/2008	31/10/2011	4.608.786,66 (3508954)	TEKNOLOGISK INSTITUT	DK
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	NMP	213424	01/02/2009	31/01/2012	5.663.047,79 (3576945)	MATERIALISE NV	BE
HydroZones- Bioactivated hierarchical hydrogels as zonal implants for articular cartilage regeneration	NMP	309962	01/01/2013	31/12/2017	13.195.256,71 (9749700)	UNIVERSTAETSKLINIKUM WUERZBURG	DE
IC2-Intelligent and Customized Tooling	NMP	246172	01/10/2010	30/09/2013	4.605.138,52 (3199995)	SINTEF Raufoss Manufacturing AS	NO
IMPALA-Intelligent Manufacture from Powder by Advanced Laser Assimilation	NMP	214380	01/09/2008	31/08/2012	6.376.380,50 (4607490)	TWI LIMITED	UK
LIGHT-ROLLS-High-throughput production platform for the manufacture of light emitting components	NMP	228686	01/07/2009	31/12/2012	5.172.419 (3748323)	FUNDACION PRODINTEC	ES
MULTILAYER-Rolled multi material layered 3D shaping technology	NMP	214122	01/10/2008	31/10/2012	9.032.822,20 (6500000)	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	FR
OXIGEN-Oxide Dispersion Strengthened Materials for the Additive Manufacture of High Temperature Components in Power Generation	NMP	310279	01/02/2013	31/01/2017	5.679.519,75 (3999662)	TWI LIMITED	UK

PILOT MANU-Pilot manufacturing line for production of highly innovative materials	NMP	604344	01/10/2013	30/09/2017	5.354.079 (4014465)	MBN NANOMATERIALIA SPA	IT
PLASMAS-Printed Logic for Applications of Screen Matrix Activation Systems	NMP	604568	01/11/2013	30/04/2017	4.801.521,80 (3635432)	FRAUNHOFER	DE
STEP UP -STEP UP IN POLYMER BASED RM PROCESSES	NMP	213927	01/01/2009	31/12/2012	4.436.178 (3159200)	MBN NANOMATERIALIA SPA	IT
DIGINOVA-Innovation for Digital Fabrication	NMP	290559	01/03/2012	28/02/2014	1.676.173,50 (1265785)	OCE TECHNOLOGIES B.V.	NL
SASAM-Support Action for Standardisation in Additive Manufacturing	NMP	319167	01/09/2012	28/02/2014	682.654,80 (495000)	TNO	NL
3D-HiPMAS -Pilot Factory for 3D High Precision MID Assemblies	NMP-FoF	314293	01/10/2012	30/09/2015	5.350.276,20 (3499600)	HAHN-SCHICKARD-GESELLSCHAFT FUER ANGEWANDTE FORSCHUNG E.	DE
ADDFACTOR-ADvanced Digital technologies and virtual engineering for mini-Factories	NMP-FoF	609386	01/09/2013	31/12/2016	8.919.730,87 (5499959)	SYNESIS-SOCIETA	IT
AMAZE-Additive Manufacturing Aiming Towards Zero Waste & Efficient Production of High-Tech Metal Products	NMP-FoF	313781	01/01/2013	2017-06	18.295.541,46 (10156000)	THE MANUFACTURING TECHNOLOGY CENTRE LIMITED LBG	UK
AMCOR-Additive Manufacturing for Wear and Corrosion Applications	NMP-FoF	314324	01/11/2012	31/10/2015	4.770.044,63 (3000000)	TWI LIMITED	UK
CassaMobile-Flexible Mini-Factory for local and customized production in a container	NMP-FoF	609146	01/09/2013	31/08/2016	8.747.873,19 (5.650.000)	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.	DE
FaBiMed-Fabrication and Functionalization of BioMedical Microdevices	NMP-FoF	608901	02/09/2013	01/09/2016	4.133.747,13 (3.010.000)	ASOCIACION DE INVESTIGACION METALURGICA DEL NOROESTE	ES
Factory-in-a-day	NMP-FoF	609206	01/10/2013	30/09/2017	11.111.309,10 (7968232)	TECHNISCHE UNIVERSITEIT DELFT	NL
Hi-Micro-High Precision Micro Production Technologies	NMP-FoF	314055	01/10/2012	30/09/2015	5.194.962,40 (3499997)	KATHOLIEKE UNIVERSITEIT LEUVEN	BE
HiPR-High-Precision micro-forming of complex 3D parts	NMP-FoF	314522	01/11/2012	31/10/2015	5.013.745 (3317932)	D'APPOLONIA SPA	IT
Hyproline-High performance Production line for Small Series Metal Parts	NMP-FoF	314685	01/09/2012	31/08/2015	4.017.939,50 (2538000)	TNO	NL
MANSYS-MANufacturing decision and supply chain management SYStem for additive manufacturing	NMP-FoF	609172	01/07/2013	30/06/2016	4.405.531,92 (2925000)	TWI LIMITED	UK
MEGAFIT-Manufacturing Error-free Goods at First Time	NMP-FoF	285030	01/12/2011	30/11/2014	10.316.668,70 (6911469)	PHILIPS CONSUMER LIFESTYLE B.V.	NL

NANOMASTER-Graphene based thermoplastic masterbatches for conventional and additive manufacturing processes	NMP-FoF	285718	01/12/2011	30/11/2015	6.253.514,31 (4199974)	NETCOMPOSITES LIMITED	UK
Nextfactory-All-in-one manufacturing platform for system in package and micro-mechatronic systems	NMP-FoF	608985	01/09/2013	31/08/2017	4.758.207,20 (3.483.177)	FRAUNHOFER	DE
OPTICIAN2020-Flexible and on-demand manufacturing of customised spectacles by close-to optician production clusters	NMP-FoF	609251	01/10/2013	30/09/2016	5.770.512,80 (3614999)	FUNDACIO EURECAT	ES
PHOCAM-Photopolymer based customized additive manufacturing technologies	NMP-FoF	260043	01/06/2010	31/05/2013	3.609.446,60 (2455362)	TECHNISCHE UNIVERSITAET WIEN	AT
PLAST 4FUTURE -injection Moulding Production Technology for Multi-functional Nano-structured Plastic Components enabled by NanoImprint Lithography	NMP-FoF	314345	01/01/2013	31/12/2015	9.547.981,11 (6000000)	DANMARKS TEKNISKE UNIVERSITET	DK
SMART LAM-Smart production of Microsystems based on laminated polymer films	NMP-FoF	314580	01/10/2012	31/01/2016	3.633.791,70 (2673000)	KARLSRUHER INSTITUT FUER TECHNOLOGIE	DE
Stellar-Selective Tape-Laying for Cost-Effective Manufacturing of Optimised Multi-Material Components	NMP-FoF	609121	01/09/2013	31/08/2016	4.007.208 (2774266)	NETCOMPOSITES LIMITED	UK

H2020-LEIT NANO +LEIT ADVMANU: *21 Projects*

Acronym-Project full title	Work programme	ID	Starting date	End date	Total project budget (€) (EU contribution)	Coordinator	Country
iBUS – an integrated business model for customer driven custom product supply chains	NMP	646167	01/09/2015	31/08/2019	7.440.361,25 (6065305)	UNIVERSITY OF LIMERICK	IE
DIMAP-Novel nanoparticle enhanced Digital Materials for 3D Printing and their application shown for the robotic and electronic industry	NMP	685937	01/10/2015	30/09/2018	4.997.351,25 (4997351,25)	PROFACTOR GMBH	AT
FAST-Functionally graded Additive Manufacturing scaffolds by hybrid manufacturing	NMP	685825	01/12/2015	30/11/2019	4.916.750 (4916750)	UNIVERSITEIT MAASTRICHT	NL
NANOTUN3D-Development of the complete workflow for producing and using a novel nanomodified Ti-based alloy for additive manufacturing in special applications.	NMP	685952	01/10/2015	31/03/2019	2.936.657 (2936656)	AIDIMME	ES
SYNAMERA-Synergies in Nanotechnologies, Materials and Production in the European Research Area	NMP	645900	01/05/2015	30/04/2017	496.221,25 (496.221,25)	REGION NORD-PAS-DE-CALAIS ET PICARDIE	FR
PRINTCR3DIT-Process Intensification through Adaptable Catalytic Reactors made by 3D Printing	SPIRE	680414	01/10/2015	30/09/2018	5.493.891,00 (5493889)	STIFTELSEN SINTEF	NO

SUPREME-Sustainable and flexible powder metallurgy processes optimization by a holistic reduction of raw material resources and energy consumption.	SPIRE	768612	01/09/2017	2020-08-31	9.810.119 (7959642,89)	CEA	FR
Hyprocell-Development and validation of integrated multiprocess HYbrid PROduction CELLs for rapid individualized laser-based production	FoF	723538	01/11/2016	31/10/2019	6.163.607,50 (3937331)	LORTEK S COOP	ES
Z-Fact0r-Zero-defect manufacturing strategies towards on-line production management for European factories	FoF	723906	01/10/2016	31/03/2020	6.043.018,75 (4206252,88)	ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS CHARILAOU THERMI	GR
4DHybrid-Novel ALL-IN-ONE machines, robots and systems for affordable, worldwide and lifetime Distributed 3D hybrid manufacturing and repair operations	FoF	723795	01/01/2017	31/12/2019	9.429.875 (4990000)	PRIMA ELECTRO SPA	IT
Borealis – the 3A energy class Flexible Machine for the new Additive and Subtractive Manufacturing on next generation of complex 3D metal parts.	FoF	636992	01/01/2015	31/12/2017	7.986.625 (5968875)	Prima Industrie SpA	IT
CerAMfacturing-Development of ceramic and multi material components by additive manufacturing methods for personalized medical products	FoF	678503	01/10/2015	30/09/2018	5.121.799,50 (5.121.799,50)	FRAUNHOFER	DE
HINDCON-Hybrid INDustrial CONstruction through a 3D printing "all-in-one" machine for largescale advanced manufacturing and building processes	FoF	723611	15/09/2016	14/09/2019	4.798.205 (4.798.205)	VIAS Y CONSTRUCCIONES	ES
KRAKEN-Hybrid automated machine integrating concurrent manufacturing processes, increasing the production volume of functional on-demand using high multi-material deposition rates	FoF	723759	01/10/2016	30/09/2019	5.947.836,25 (4711586,25)	FUNDACION AITIIP	ES
LASIMM-Large Additive Subtractive Integrated Modular Machine	FoF	723600	01/10/2016	30/09/2019	4.868.262,50 (4.868.262,50)	EUROPEAN FEDERATION FOR WELDING JOINING AND CUTTING	BE
OpenHybrid-Developing a novel hybrid AM approach which will offer unrivalled flexibility, part quality and productivity	FoF	723917	01/10/2016	30/09/2019	6.643.718,75 (5133381,25)	THE MANUFACTURING TECHNOLOGY CENTRE LIMITED LBG	UK
REProMag-Resource Efficient Production Route for Rare Earth Magnets	FoF	636881	01/01/2015	31/12/2017	5.726.365 (5.726.365)	OBE OHNMACHT & BAUMGARTNER GMBH & CO KG	DE
Symbionica-Reconfigurable Machine for the new Additive and Subtractive Manufacturing of next generation fully personalized bionics and smart prosthetics	FoF	678144	01/10/2015	30/09/2018	7.305.000 (4908750)	THE MANUFACTURING TECHNOLOGY CENTRE LIMITED LBG	UK
ToMAx-Toolless Manufacturing of Complex Structures	FoF	633192	01/01/2015	31/12/2017	3.157.986 (3.157.986)	TECHNISCHE UNIVERSITAET WIEN	AT
AM-motion-A strategic approach to increasing Europe's value proposition for Additive Manufacturing technologies and capabilities	FoF	723560	01/11/2016	31/12/2018	993.052,50 (993.052,50)	FUNDACION PRODINTEC	ES
FoFAM-Industrial and regional valorization of FoF Additive Manufacturing Projects	FoF	636882	01/01/2015	31/12/2016	348.210 (348.210)	FUNDACION PRODINTEC	ES

FP7-ICT: *1 project*

Acronym-Project full title	Work programme	ID	Starting date	End date	Total project budget (€) (EU contribution)	Coordinator	Country
Fabulous-FDMA Access By Using Low-cost Optical Network Units in Silicon Photonics	ICT	318704	01/10/2012	30/06/2016	4.327.394 (2900000)	ISTITUTO SUPERIORE MARIO BOELLA SULLE TECNOLOGIE DELL'INFORMAZIONE E DELLE TELECOMUNICAZIONI	IT

H2020-LEIT ICT: *11 projects*

Acronym-Project full title	Work programme	ID	Startingdate	End date	Total project budget (€) (EU contribution)	Coordinator	Country
AMABLE-AdditiveManufacturABLE	FoF	768775	01/09/2017	31/08/2021	8.217.959 (8001358,75)	FRAUNHOFER	DE
CAXMAN-Computer Aided Technologies for Additive Manufacturing	FoF	680448	01/09/2015	31/08/2018	7.143.300 (7.143.300)	STIFTELSEN SINTEF	NO
Modulase-Development and Pilot Line Validation of a Modular re-configurable Laser Process Head	FoF	723945	01/09/2016	31/08/2019	2.458.465 (2184565)	TWI LIMITED	UK
DREAM-Driving up Reliability and Efficiency of Additive Manufacturing	FoF	723699	01/10/2016	30/09/2019	3.242.435 (3.242.435)	CONSORZIO INTERUNIVERSITARIO NAZIONALE PER LA SCIENZA E TECNOLOGIA DEI MATERIALI	IT
MAESTRO-Modular laser based additive manufacturing platform for large scale industrial applications	FoF	723826	01/10/2016	30/09/2019	3.995.905 (3.995.905)	CENTRE TECHNIQUE INDUSTRIEL DE LA PLASTURGIE ET DES COMPOSITES	FR
PARADDISE-A Productive, Affordable and Reliable solution for large scale manufacturing of metallic components by combining laser-based ADDItive and Subtractive processes with high Efficiency	FoF	723440	01/10/2016	30/09/2019	3.761.402,50 (3.761.402,50)	FUNDACION TECNALIA RESEARCH & INNOVATION	ES
HIPERLAM-High Performance Laser-based Additive Manufacturing	FoF	723879	01/11/2016	31/10/2019	3.756.256,25 (3.756.256,25)	ORBOTECH LTD	IL
Combilaser-COMbination of non-contact, high speed monitoring and non-destructive techniques applicable to LASER Based Manufacturing through a self-learning system	FoF	636902	01/01/2015	31/12/2017	3.439.420 (3.439.420)	HIDRIA AET d.o.o. Slovenia	SL
ENCOMPASS-ENgineering COMPASS	FoF	723833	01/01/2016	31/12/2019	4.040.371 (4.040.371)	THE MANUFACTURING TECHNOLOGY CENTRE LIMITED LBG	UK

DiDIY-Digital Do It Yourself	ICT	644344	01/01/2015	30/06/2017	2.081.767,50 (2.081.767,50)	UNIVERSITA' CARLO CATTANEO - LIUC	IT
SARAFun-Smart Assembly Robot with Advanced FUNctionalities	ICT	644938	01/03/2015	28/02/2018	4.037.266,25 (4.037.266,2)	ABB AB	SE

FP7-TRANSPORT: *2 projects*

Acronym-Project full title	ID	Starting date	End date	Total project budget (€) (EU contribution)	Coordinator	Country
RepAIR -Future RepAIR and Maintenance for Aerospace industry	605779	01/06/2013	31/05/2016	5.979.564,01 (4276277)	UNIVERSITAET PADERBORN	DE
MERLIN- Development of Aero Engine Component Manufacture using Laser Additive Manufacturing	266271	01/01/2011	31/12/2014	7 062 175,83 (4.886.561)	ROLLS ROYCE PLC	UK

H2020-Societal challenge-TRANSPORT: *3 projects*

Acronym-Project full title	ID	Startingdate	End date	Total project budget (€) (EU contribution)	Coordinator	Country
AMOS-Additive Manufacturing Optimization and Simulation Platform for repairing and remanufacturing of aerospace components	690608	01/02/2016	31/01/2020	1.396.188,75 (1.396.188,75)	THE UNIVERSITY OF SHEFFIELD	UK
Bionic Aircraft-Increasing resource efficiency of aviation through implementation of ALM technology and bionic design in all stages of an aircraft life cycle	690689	01/09/2016	31/08/2019	7.968.812 (6.441.062)	LZN LASER ZENTRUM NORD GMBH	DE
EMUSIC-Efficient Manufacturing for Aerospace Components USing Additive Manufacturing, Net Shape HIP and Investment Casting	690725	01/04/2016	31/03/2019	2.193.278,75 (1.799.993,75)	THE UNIVERSITY OF BIRMINGHAM	UK

FP7-SME: *8 projects*

Acronym-Project full title	ID	Starting date	End date	Total project budget (€) (EU contribution)	Coordinator	Country
FastEBM-High Productivity Electron Beam Melting Additive Manufacturing Development for the Part Production Systems Market	729290	01/12/2011	30/11/2013	1.488.264,83	ARCAM AB; TLS TECHNIK GMBH & CO. SPEZIALPULVER KG	DE
HiResEBM-High resolution electron beam melting	286695	01/10/2011	30/09/2015	1.404.732	ARCAM AB	DE
Implant Direct	286762	01/09/2012	31/08/2014	1.497.312,73	TWI LIMITED	UK
INT RAPID-Innovative inspection techniques for laser powder deposition quality control	286577	01/09/2011	31/08/2013	1.442.306,40	TWI LIMITED	UK
KARMA-Knowledge Based Process planning and Design for Additive Layer Manufacturing	283833	01/07/2010	30/06/2013	2.040.417,21	FEMEVAL	ES
Ownerchip-Digital Rights Management Infrastructure For 3D Printed Artifacts	243631	01/10/2014	31/03/2015	71.429	THINGS3D LIMITED	UK
PP-MIPS-An innovative phosphorus rich intumescent oligomer enabling commercially competitive high performance halogen free fire protection of polypropylene	651604	01/11/2010	31/10/2012	1.490.231,80	Advanced Insulation Systems Ltd	UK
TIALCHARGER-Titanium Aluminide Turbochargers – Improved Fuel Economy, Reduced Emissions	262308	01/02/2013	30/06/2015	1.548.216,28	TWI LIMITED	UK

H2020-SME: *1 project*

Acronym-Project full title	ID	Starting date	End date	Total project budget (€) (EU contribution)	Coordinator	Country
3DT Tool-Next Generation of Cutting Tools Using Additive Manufacturing Technology I, Phase 1	729290	01/06/2016	30/09/2016	71.429 (50.000)	DANSKE VAERKTOEJ APS	DK

FP7-ERC: *4 projects*

Acronym-Project full title	ID	Starting date	End date	Total project budget (€) (EU contribution)	Coordinator	Country
CombiPatterning-Combinatorial Patterning of Particles for High Density Peptide Arrays	277863	01/11/2011	31/10/2016	1.494.600	KARLSRUHER INSTITUT FUER TECHNOLOGIE	DE
CopyMe3D: High-Resolution 3D Copying and Printing of Objects	632200	01/09/2014	31/08/2015	1,66166 357,20	TECHNISCHE UNIVERSITAET MUENCHEN	DE
M&M's: New Paradigms for MEMS & NEMS Integration	277879	01/11/2011	31/10/2017	1.495.982	KUNGLIGA TEKNISKA HOEGSKOLAN	SE
ShapeForge: By-Example Synthesis for Fabrication	307877	01/12/2012	30/11/2017	1.301.832	INSTITUT NATIONAL DE RECHERCHE ENINFORMATIQUE ET AUTOMATIQUE DOMAINE DE VOLUCEAU ROCQUENCOURT	FR

H2020-ERC: *2 projects*

Acronym-Project full title	ID	Starting date	End date	Total project budget (€) (EU contribution)	Coordinator	Country
3D2DPrint-3D Printing of Novel 2D Nanomaterials: Adding Advanced 2D Functionalities to Revolutionary Tailored 3D Manufacturing	681544	01/10/2016	30/09/2021	2.499.942	THE PROVOST, FELLOWS, FOUNDATION SCHOLARS THE COLLEGE OF THE HOLY & UNDIVIDED TRINITY OF QUEEN ELIZABETH NEAR DUBLIN	IE
BIO-ORIGAMI-Meta-biomaterials: 3D printing meets Origami	677575	01/02/2016	31/01/2021	1.499.600	TECHNISCHE UNIVERSITEIT DELFT	NL

FP7-JTI: *7 projects*

Acronym-Project full title	ID	Starting date	End date	Total project budget (€) (funding)	Coordinator	Country
AEROBEAM- Direct Manufacturing of stator vanes through electron beam melting	323476	01/10/2012	30/09/2013	134.601,30 (100.950,98)	ASOCIACION DE INVESTIGACION DE LAS INDUSTRIAS METALMECANICAS, AFINES Y CONEXAS	ES
AeroSim- Development of a Selective Laser Melting (SLM) Simulation tool for Aero Engine	287087	01/05/2012	31/07/2015	966.476,40 (700.290)	TECHNISCHE UNIVERSITAET MUENCHEN	DE
ASLAM- Advanced materials for lean burn combustion tiles using laser-Additive Layer Manufacturing (L-ALM)	619993	01/10/2013	31/08/2016	995 398 (745.619)	MATERIALS SOLUTIONS LIMITED	UK
Hi-StA-Part- High Strength Aluminium Alloy parts by Selective Laser Melting	325931	01/02/2013	31/03/2015	120.646,52 (89.711)	TWI LIMITED	UK
MALT - Multilaser Additive Layer Manufacturing of Tiles	336560	01/06/2013	31/12/2016	2.399.662,79 (1.319.664,6)	MATERIALS SOLUTIONS LIMITED	UK
SIMCHAIN- Development of physically based simulation chain for microstructure evolution and resulting mechanical properties focused on additive manufacturing processes	326020	01/07/2013	31/08/2016	946.471,40 (616.305)	UNIVERSITAET BAYREUTH	DE
TIFAN- Manufacturing by SLM of Titanium FAN wheel. Comparison with a conventional manufacturing process	620093	01/10/2013	31/03/2015	199.989,20 (142.000)	LORTEK S. COOP	ES

H2020-JTI: *4 projects*

Acronym-Project full title	ID	Starting date	End date	Total project budget (€) (funding)	Coordinator	Country
BARBARA- Biopolymers with advanced functionalities for building and automotive parts processed through additive manufacturing	745578	01/05/2017	30/04/2020	2.711.375 (2.603.861,25)	FUNDACION AITIIP	ES
Ascent AM- Adding Simulation to the Corporate ENvironmenT for Additive Manufacturing	714246	01/08/2016	31/07/2019	699.375 (699.375)	TECHNISCHE UNIVERSITAET MUENCHEN	DE
DISTRACTION- Design against DISTortion of metallic aerospace parts based on combination of numeRical modelling ACTivities and topology optimisatION	686808	04/01/2016	03/01/2019	449.420 (449.420)	LORTEK S. COOP	ES
ALFORAMA-Innovative Al alloy For aircraft structural parts using Additive MAnufacturing technology	755610	01/07/2017	30/06/2020	598.447,50 (598.447,50)	LORTEK S. COOP	ES

ERASMUS+: *4 projects*

Acronym-Project full title	ID	Starting date	End date	Total project budget (€) (funding)	Coordinator	Country
3DPRISM-3DPRinting Skills for Manufacturing		2014	2018	337.350	University of Sheffield	UK
METALS-MachinE Tool ALliance for Skills		2015	2018	858.080	CECIMO	BE
ADMIRE-Knowlede Alliance for Additive Manufacturing between industry and universities		01/01/2017	31/12/2019	998.035,00	CRANFIELD UNIVERSITY	UK
CLAIMM-Creating knowLedge and skilLs in AddItive Manufacturing		01/01/2018	31/12/2020	997.488 (997.448)	CESOL	ES

INTERREG: *4 projects*

Acronym-Project full title	ID	Starting date	End date	Total project budget (€) (funding)	Coordinator	Country
SAMT-SUDOE- Spread of AM and advanced materials technologies for the pro-motion of KET industrial Technologies in plastic processors and mould industries within sudoe space		27/09/2016	30/06/2019	994.827	AIJU	SPAIN
ADDISPACE- Selection of aerospace components for improving Metal Additive Manufacturing technologies		01/07/2016	30/06/2019	1.774.450,69	ESTIA	FRANCE
TRANSFRONT 3D		01/06/2016	01/06/2019	1.649.649 (1.025.525)	TECNALIA	SPAIN
COMPETITIV'eko					Nouvelle Aquitanio Comerce Chamber	FRANCE

Annex 3: National and regional projects

AUSTRIA: *National and regional projects*

Acronym-Project full title	Funding entity	Starting-date	End date	Total project budget (€) (funding)	Project sectors adressed									Project VC stage adressed							AM processes adressed								Material types adressed						Non technology activities adressed									Coordinator
					Health	Aerospace	Automotive	Consumer goods	Electronics	Energy	Industrial equipment	Construction	Other	Modelling&simulation	Design	Materials	Process, equipment,	Post processing	Product	End of life	Powder Bed Fusion	Vat Photopolymeriza-	Material jetting	Material extrusion	Sheet lamination	Direct energy deposi-	Binder jetting	Other	Metal	Polymer	Ceramic	Food	Bio-materials	Other	Standardisation	Legislation	Education/training	Business, commerciali-	IPRs	Technology transfer	Other	No non technology ac-	
NextGen3D- Next Generation 3D-Printing: Material and process development for the industry-strength application	FFG	01/04/2015	31/03/2018																																							Profactor

BELGIUM: *National and regional projects*

Acronym-Project full title	Funding entity	Starting-date	End date	Total project budget (€) (funding)	Project sectors adressed									Project VC stage adressed							AM processes adressed								Material types adressed						Non technology activities adressed									Coordinator
					Health	Aerospace	Automotive	Consumer goods	Electronics	Energy	Industrial equipment	Construction	Other	Modelling&simulation	Design	Materials	Process, equipment,	Post processing	Product	End of life	Powder Bed Fusion	Vat Photopolymeriza-	Material jetting	Material extrusion	Sheet lamination	Direct energy deposi-	Binder jetting	Other	Metal	Polymer	Ceramic	Food	Bio-materials	Other	Standardisation	Legislation	Education/training	Business, commercia-	IPRs	Technology transfer	Other	No non technology	
HYLAFORM-Hybrid laser-based additive & substractive research platfomr		2017	2020	2.900.000 (2.900.000)	x	x	x			x	x			x	x	x	x	x	x	x																						VUB

FRANCE: *National and regional projects*

Acronym-Project full title	Funding entity	Starting-date	End date	Total project budget (€) (funding)	Project sectors adressed									Project VC stage adressed							AM processes adressed									Material types adressed							Non technology activities adressed								Coordinator
					Health	Aerospace	Automotive	Consumer goods	Electronics	Energy	Industrial equipment	Construction	Other	Modelling&simulation	Design	Materials	Process, equipment,	Post processing	Product	End of life	Powder Bed Fusion	Vat Photopolymeriza-	Material jetting	Material extrusion	Sheet lamination	Direct energy deposi-	Binder jetting	Other	Metal	Polymer	Ceramic	Food	Bio-materials	Other	Standardisation	Legislation	Education/training	Business, commerciali-	IPRs	Technology transfer	Other	No non technology ac-	
OrthofLase-Manufacturing of tricalcium phosphate bone tissue engineered orthopedic implants by selective laser sintering	ANR	01/01/2012	01/01/2015	886.761	X									X	X	X	X	X	X	X	X										X		X										OSSEOMATRIX
ELASTICITE-Titanium alloys elaboration with superelastic properties for cladding tests implants	ANR	01/03/2013	01/03/2015	318.864	X									X	X	X	X	X	X	X	X								X									X					INSA Strasbourg,
MOSART-Processing of architectured structures for transpiration cooling	ANR	01/10/2014	01/02/2018	299.826		X								X	X	X	X	X	X	X	X							X	X									X					Office National des Etudes et de Recherches Aérospatiales
LEMCI-Laboratory of research and modeling for Printed Circuit Boards	ANR	01/03/2015	01/03/2018	300.000					X					X																									X				Laboratory for the study of microstructures and materials mechanics
SISCob-Safety Intelligent Sensor for Cobot	ANR	01/10/2014	01/04/2019	562.435							X			X	X																								X				PPRIME Poitiers university

3D SLS-3D-numerical Simulation of the Laser Sintering processing of thermoplastic powders for the prediction of microstructural features and part warpage	ANR	01/10/2015	01/04/2019	591.809							x			x	x	x	x	x			x									x								x						National Institute of Applied Sciences of Lyon - Laboratoire d'Ingénierie
FA2SCINAE AM and Fatigue of cellular structures integrated in aerospace	ANR	01/10/2015	01/10/2019	651.421		x								x	x	x	x	x	x		x								x								x						SIMAP
MACOY3D -Dielectric composite materials, with optimized microwave properties and prepared by 3D AM	ANR	01/10/2015	01/10/2018	299.150		x			x							x	x	x						x					x	x							x						Institute of Chemistry of Condensed Matter of Bordeaux
MONARCHIES - Molds and cores architectured by sand 3D printing	ANR	01/12/2015	01/12/2018	641.488							x			x	x	x	x	x	x		x								x					x			x						URCA Laboratory of Engineering and Materials Science
3DRX-online - Cathodes CNTs forts courants pour le contrôle RX 3D en ligne	ANR	01/10/2015	01/10/2018	701.013							x		x				x											x										x						Thales Research & Technology
ATOMIQ -Advanced Technologies fOr Millimeterwave Integrated filters in Q and V bands	ANR	01/01/2014	01/01/2018	826.536		x										x												x	x	x						x						THALES ALENIA SPACE FRANCE
Bone printing-Laser-Assisted Bioprinting for bone tissue engineering	ANR	01/11/2010	01/11/2013	597.486	x						x			x	x	x	x	x	x	x	x											x					x						INSTITUT NATIONAL DE LA SANTE ET RECHERCHE MEDICALE - DELEGATION BORDEAUX

Fast printing-New Photosensitive Resins for Fast Printing	ANR	01/10/2015	01/10/2019	401.278							X				X	X	X													X									X				Institute of Materials Science of Mulhouse
Laser printing of organic thin film transistors	ANR	01/01/2012	01/01/2015	520.000					X							X	X	X			X									X									X				CNRS DR Provence et Corse
Micro-geometry Approach of Texture Reproduction for Artistic Legacy	ANR	01/10/2015	01/10/2019	642.307									X																										X				National Institute for Research in Computer Science and Control
Bone of Tomorrow	ANR	01/10/2015	01/10/2018	300.000	X												X												X									X	X				Study Group on Bone Remodeling and BioMaterials
High-performance and lightweight Graphene-CFRP compressed Hydrogen storage tank for aerospace applications	ANR	01/12/2015	01/12/2017	236.047		X								X	X	X	X	X	X	X				X						X					X	X						University of Kiel, Faculty of engineering, Institute for Material Science - Functional Nanomaterials
Modelling progression of enzymes in lignocellulosic assemblies and plant cell walls	ANR	01/10/2014	01/10/2018	236.731								X				X																					X						UMR Fractionnement des Agroressources et Environnement
AM for reactor intensification	BPI																																										
Grand Projet Poudre Multimatériaux	Fonds Uniques Interministerial (FUI)	01/01/2007	01/01/2011	2.300.000 (750.000)	X	X	X							X	X	X					X							X		X							X					CETIM
Développement de MOULes INNOVants à hautes performances pour	Fonds Uniques Interministerial (FUI)	01/01/2013	01/01/2016	4.675.000 (1.927.000)							X		X		X	X	X				X							X	X			X					X		X				SCHNEIDER Electric

l'injection de matières plastiques																																											
Intégration de technologies innovantes pour le développement de moules optimisésthermiquement pour l'injection thermoplastique, la mise en forme des composites et fonderie sous-pression	FUI	01/01/2014	01/01/2018	3.240.000 (1.601.000)							X				X														X	X								X		X			ARRK Shapers
Aluminium Additive Layer Manufacturing pour Equipements Electroniques	FUI					X			X												X																						THALES
3D hybrid- Machine HYBRIDE d'impression 3D métal couplant fonctions additive (SLM) et soustractive (laser ultra-court)	FUI				X	X	X			X											X																						Manutech USD
Dry to flight- Eco-Fabrication 3D imbricative intelligente de pièces de grandes dimensions	INVESTISSEMENT D'AVENIR PSPC	01/01/2015	01/01/2019	12.547.000 (5.011.000)		X	X			X	X	X		X	X	X	X	X											X	X						X			X	X	X			MECACHROME
ALMARIS- Architecturation Laser de MAtéRIaux Superélastiques	ANR	2016	2020	685 591,00		x								x	x	x	x	x	x		x																						ONERA PALAISEAU
MMLED- Modélisation multi échelle et étude expéri-	ANR	2017	2021	635 436,00																	x																						MSME Laboratoire Modélisation et

mentale de l'endommagement dans les matériaux composites architectures obtenus par fabrication additive																																											Simulation Multi Echelle
FAIR- Fabrication additive pour intensification de réacteurs	(CGI) + BPI			10,500,000																																							

ITALY: *National and regional projects*

Acronym-Project full title	Funding entity	Starting date	End date	Total project budget (€) (funding)	Project sectors adressed									Project VC stage adressed							AM processes adressed									Material types adressed						Non technology activities adressed								Coordinator
					Health	Aerospace	Automotive	Consumer goods	Electronics	Energy	Industrial equipment and	Construction	Other	Modelling&simulation	Design	Materials	Process, equipment, ICT	Post processing	Product	End of life	Powder Bed Fusion	Vat Photopolymerization	Material jetting	Material extrusion	Sheet lamination	Direct energy deposition	Binder jetting	Other	Metal	Polymer	Ceramic	Food	Bio-materials	Other	Standardisation	Legislation	Education/training	Business, commercialisa-	IPRs	Technology transfer	Other	No non technology activi-	
Smart Manufacturing 2020	MIUR (Italian Ministry of University and Research)			12 M€			X	X			X			X	X		X	X																							Siemens SpA, Genova Politecnico di Milano
HIGH PERFORMANCE MANUFACTURING	MIUR										X			X	X		X																									MCM SpA, Vigolzone (PC) / Politecnico di Milano
SICO-Control System for Aeronautical and aero-derived engines	European Funds for Regional Development	01/05/2016	31/04/2019	29,3M		X								X	X	X	X	X	X																							Avio Aero
ULTRAHIGH TEMPERATURE CERAMIC MATRIX COMPOSITES BY ADDITIVE MANUFACTURING USING POLYMER PRECURSORS	Ministry of Abroad Affair "La Farnesina"	01/01/2016	2ì31/12/2017	120000 Euro		X				X																			X	X												ISTEC
MANUSPACE- Special components for aerospace applications by additive	Regional-Lazio Region	01/09/2015	31/10/2017	988 850,33		X								X	X	X	X	X	X										X													Consorzio Matris (La Sapienza, Roma 3, Università Tor vercata,

manufacturing and INVESTMENT CASTING																																										Centro Sviluppo Materiale)
MADE4LO-Metal AdditivE for LOmbardy	Regional-Lombardy Region	01/06/2017	31/12/2019	6.6 M€												X	X	X	X										X														Tenova

PORTUGAL: *National and regional projects*

Acronym-Project full title	Funding entity	Starting date	End date	Total project budget (€) (funding)	Project sectors adressed									Project VC stage adressed							AM processes adressed									Material types adressed							Non technology activities adressed								Coordinator
					Health	Aerospace	Automotive	Consumer goods	Electronics	Energy	Industrial equipment	Construction	Other	Modelling&simula-	Design	Materials	Process, equipment,	Post processing	Product	End of life	Powder Bed Fusion	Vat Photopolymeriza-	Material jetting	Material extrusion	Sheet lamination	Direct energy deposi-	Binder jetting	Other	Metal	Polymer	Ceramic	Food	Bio-materials	Other	Standardisation	Legislation	Education/training	Business, commercia-	IPRs	Technology transfer	Other	No non technology	
ADIMAQ- Fabrico ADItivo por extrusão e MAQuinagem para produção híbrida de modelos, moldes e moldações de grandes dimensões.	POCI FEDER	01/10/2015	30/09/2018	1 697 519,67 €							x				x	x	x	x	x					x							x								x			CEI Zipor (SME)
SLMXL-Sistemas de fabricação aditiva de peças metálicas de grande dimensão	POCI FEDER	01/10/2015	30/09/2018	2.466.046,9 €							x				x		x		x	x	x								x										x			ADIRA - METAL FORMING SOLUTIONS, S.A.
NExtPArt- Next-Generation of Advanced Hybrid Parts	POCI FEDER	01/07/2016	30/06/2019	1 031 078,880 €	x						x				x	x	x	x	x			x								x	x								x			3DTECH - PRODUÇÃO, OPTIMIZAÇÃO E REENGENHARIA LDA. (SME)
TOOLING4G- Advanced Tools for	POCI FEDER	01/07/2017	30/06/2020	7 701 512,460 €							x			x		x			x		x					x				x									x			ANÍBAL H. ABRANTES - INDÚSTRIAS

Smart Manufacturing																																											DE MOLDES E PLÁSTICOS S.A.
add.AM- Add Additive Manufacturing to Portuguese Industry	POCI FEDER	01/07/2017	30/06/2020	8 811 080,81 €		x	x				x	x		x	x	x	x	x	x	x	x			x		x	x		x	x	x				x					x			ADIRA - METAL FORMING SOLUTIONS, S.A.
PRODUTECH SIF - Soluções para a Indústria de Futuro	POCI FEDER	01/05/2017	30/04/2020	7 805 049,03		X	X	X			X				X						X			X		X	X		X	X	X				X					X			TEGOPI, S.A.
ROBMOLDE- Development of Robotic Cell for Surface Regeneration System using Intelligent Reverse Engineering	ANI	01/10/2002	01/05/2006	746 196,00							x					x	x									x			x												x		ISQ - Instituto de Soldadura e Qualidade (Portugal)
SIRBLADE- Automated Repair of Turbine Blade for Aero Turbine Engine	ANI	01/06/2003	31/05/2005			x										x	x									x			x												x		TAP - Transportes Aéreos Portugueses (Portugal)
BIGPROTO – FABRICO AVANÇADO DE PROTÓTIPOS TÉCNICOS E GRANDE DIMENSÃO		2010	2013				X				X			X	X	X	X	X	X		X		X	X		X			X	X	X						X	X		X			CENTIMFE
HIBRIDMOULDE 21	xx	2010	2013				X				X			X	X	X	X	X	X		X		X	X		X			X	X							X	X		X			CENTIMFE
HIBRIDMOULDE	xx	2003	2005				X				X			X	X	X	X	X	X		X		X	X		X			X	X							X	X		X			CENTIMFE
FRF- FABRICO RÁPIDO DE FERRAMENTAS		2002	2005		X	X	X				X			X	X	X	X	X	X		X		X	X		X			X	X	X						X	X		X			CENTIMFE
RNPR- REDE NACIONAL DE PROTOTIPAGEM RÁPIDA		1997	2000		X	X	X				X			X	X	X	X	X	X		X		X	X		X			X	X	X						X	X		X			CENTIMFE

SPAIN: National and regional projects

Acronym-Project full title	Funding entity	Starting date	End date	Total project budget (€) (funding)	Project sectors adressed									Project VC stage adressed							AM processes adressed									Material types adressed							Non technology activities adressed								Coordinator
					Health	Aerospace	Automotive	Consumer goods	Electronics	Energy	Industrial equipment	Construction	Other	Modelling&simulation	Design	Materials	Process, equipment,	Post processing	Product	End of life	Powder Bed Fusion	Vat Photopolymeriza-	Material jetting	Material extrusion	Sheet lamination	Direct energy deposi-	Binder jetting	Other	Metal	Polymer	Ceramic	Food	Bio-materials	Other	Standardisation	Legislation	Education/training	Business, commerciali-	IPRs	Technology transfer	Other	No non technology ac-	
JAMES BOND-Juncture replacement through Additive Manufacturing & electro-spun scaffolds for human bones	Regional: MANUNET-IDEPA (Institute for Economic Development of Asturias)	01/12/2014	30/11/2016	964.059 (637.812)	X										X	X					X									X	X							X						Cirugía Oral y Maxilofacial Dr. Llorente
FRACTAL-Development of Spanish-Technology-Based Advanced Manufacturing and Prototyping Systems for Strategic Components via Laser Assisted Powder Sintering	CDTI (Spanish Centre for the Development of Industrial Technology)	01/02/2015		>7 M€																																							ETXE-TAR
SELENA-More electrical, safe and reconfigurable systems oriented to a more efficient airplane reducing the pilot load	CDTI	01/09/2015	31/12/2018	7.200.000 (5.400.000)		X								X	X	X		X			X								X								X						CESA

FUTURALVE-Materials and advanced manufacturing technologies for the new generation of high speed turbines	CDTI	01/02/2015	01/03/2019			X								X	X		X	X			X								X									X					MIZAR ADDITIVE MANUFACTURING
ECLIPSE-Structures in composites and lightweight materials for simple assembly processes	CDTI					X																																					EADS CASA
SILENCIO-	CDTI					X																																					EADS CASA
CON3D-Development of an automatized structure manufacturing process using 3D printing technologies for the construction sector	CDTI	01/08/2013	30/06/2015	1.099.695 (824.781)							X	X		X	X	X	X								X									X				X					COPROSA
BUIL3D-PRINT DEVELOPMENT OF An INTEGRAL PRODUCTIVE PROCESS FOR THE CONSTRUCTION INDUSTRY BASED ON AM TECHNOLOGIES	CDTI	01/06/2015	31/12/2017	3.290.813 (1.548.560)							X	X		X	X	X	X								X									X				X					CEMENTOS TUDELA VEGUIN
3DCONS -Novel 3D printing technologies in the construction industry	CDTI	01/11/2014	30/04/2018	8.000.000								X			X	X	X																	X									VIAS Y CONSTRUCCIONES
Keramic-NOVEL PRODUCTS AND TECHNOLOGIES FOR ADVANCE PROCESSES OF ADDITIVE MANUFACTURING BASED ON	National-Koreka	01/10/2015	30/09/2018					X			X					X	X	X	X	X	X			X						X	X											X	TORRECID

CERAMIC COMPOSITIONS																																											
ADVANSEAT -Development of a new concept of advanced, removable and electrified seat for motor vehicles, from new manufacturing processes more flexible, improving its safety performance and comfort	CDTI	01/10/2015	30/09/2018				X								X	X	X		X	X				X	X					X												X	GRUPO ANTOLIN
RECLAMA-Research on laser cladding solutions for turbine blades manufacturing processes	Regional:FICYT (Foundation for promotion of applied research and technology in Asturias)	01/01/2014	31/12/2015	38.695 (19.347)				X							X	X											X	X									X					TALLERES ZITRON S.A.
SOLADI3D-Research on joining steel parts based on 3D printing and AM technologies	Regional:IDEPA Asturias	05/05/2014	31/12/2015	692.668 (346.334)				X							X	X					X							X	X											X			ArcelorMittal España, S.A.
AMFOOD-Research on new textures and formulations in order to develop new food types through AM techniques	Regional:IDEPA Asturias	01/12/2015	21/12/2016	196.398 (85.846)									X			X	X							X								X						X					CASA GERARDO
SLSAero-Research on SLS-based manufacturing processes to be applied in the aeronautics sector	Regional:IDEPA Asturias	01/11/2015	31/10/2016	200.000 (100.000)		X									X	X		X	X		X								X											X			ACITURRI ADDITIVE MANUFACTURING

AM-MEDICO Research on biomedical adaptive design, topological optimization and development of new materials and processes for AM to generate high added-value custom-made solutions in the medical field.	Regional:FICYT Asturias	01/01/2016	31/12/2017	299.525 (232.170)	X									X	X	X					X	X							X	X	X								X			Fundación PRODINTEC
Adaptation of DMLS 3D printing technology for knee prosthesis components	Regional: IDEPA Asturias	01/11/2016	31/12/2017	88.271 (39.722)	X									X	X						X								X													SOCINSER 21 S.A.
Implementation of wear-reduction micro textures through AM technology over joint prosthesis featuring metal/plastic contact.	Regional: IDEPA Asturias	01/11/2017	31/12/2017	162.661 (101.570)	X									X	X			X			X								X													MBA INCORPORADO; INGENIACITY
AM INNOVA-AM TECHNOLOGIES APPLYED TO PRODUCTS, MOULDS AND TOOLS IN AERONAUTICAL SECTOR	Regional:Aragon	01/07/2015	30/06/2017	120.000 (50.000)		X									X	X	X	X	X	X	X	X		X					X	X											X	CLUSTER AERONÁUTICO DE ARAGÓN - AERA
ADDITIVE-New alloys and industrial components through additive manufacturing for strategic sectors	Regional:Etorgai-Basque Country	01/01/2016			X	X	X								X	X			X																							LORTEK S. COOP

FAMOLD-Additive manufacture of molds and inserts with new functionalities for processes of transformation of plastic and aluminium	Regional:Etorgai-Basque Country	03/05/2015					x								x	x			x																										LORTEK S. COOP

SWEDEN: National and regional projects

Acronym-Project full title	Funding entity	Starting date	End date	Total project budget (€) (funding)	Project sectors adressed									Project VC stage adressed							AM processes adressed								Material types adressed							Non technology activities adressed								Coordinator
					Health	Aerospace	Automotive	Consumer goods	Electronics	Energy	Industrial equipment	Construction	Other	Modelling&simulation	Design	Materials	Process, equipment,	Post processing	Product	End of life	Powder Bed Fusion	Vat Photopolymeriza-	Material jetting	Material extrusion	Sheet lamination	Direct energy deposi-	Binder jetting	Other	Metal	Polymer	Ceramic	Food	Bio-materials	Other	Standardisation	Legislation	Education/training	Business, commerciali-	IPRs	Technology transfer	Other	No non technology acti-	
RAMP-UP	VINNOVA - Swedish Innovation Agency	01/10/2016	31/12/2017	0.5 M€	x	x	x	x	x	x	x	x								x					x			x															SWEREA
CAM2-Centre for Additive Manufacture - Metal	VINNOVA - Swedish Innovation Agency	2017	2022	2.4 M€	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x					x			x							x							Chalmers University
SUMAN-Sustainable MANufacturing	The Knowledge Foundation	01/03/2011	28/02/2019	6.1 M€	x	x	x			x	x	x		x	x	x	x	x	x	x	x					x	x		x														University West
SUMANNext-Sustainable MANufacturing through Next-generation additive processes	The Knowledge Foundation	01/01/2017	31/12/2019	3.2 M€	x	x	x			x	x	x		x	x	x	x	x	x	x	x					x	x		x							x							University West

Demonstration environment for flexibel and innovative automation	EU, Region Vaestra Gotaland, Swedish Agency for Economic and Regional Growth	01/02/2017	31/05/2020	1.5 M€									Automation in production						x																								University West
SAMw-Synergy for Additive Manufacturing using laser beam heat source and wire	The Knowledge Foundation	01/11/2017	31/10/2021	2.6 M€		x					x			x		x	x	x	x	x						x			x								x						University West

UK: National and regional projects

Acronym-Project full title		End date	Total proje	Project sectors adressed	Project VC stage adressed	AM processes adressed	Material types adressed	Non technology activities adressed	Coordinator

	Funding entity	Starting date		ct budget (£)	Health	Aerospace	Automotive	Consumer goods	Electronics	Energy	Industrial equipment	Construction	Other	Modelling&simulatio	Design	Materials	Process, equipment,	Post processing	Product	End of life	Powder Bed Fusion	Vat	Material jetting	Material extrusion	Sheet lamination	Direct energy	Binder jetting	Other	Metal	Polymer	Ceramic	Food	Bio-materials	Other	Standardisation	Legislation	Education/training	Business,	IPRs	Technology transfer	Other	No non technology	
TIME-Transforming Infrastructure through Micro-turbine Efficiency	Innovate UK																																									Spirax Sarco Ltd
DIGI-TOOL	Innovate UK																																										Toolroom Technology Limited
3D Screen Printing	Innovate UK																																										Cadscan Limited
Development Improvements in atomising nickel, cobalt & iron based alloys for use in AM	Innovate UK																																										LSN DIFFUSION LIMITED
Metal AM Process Informatics for Improved Surface Finish of Complex Parts	Innovate UK																																										CROFT ADDITIVE MANUFACTURING LTD
RAD-AMP Rapid Development of Additive Manufacturing Powder	Innovate UK																																										L.P.W. TECHNOLOGY LIMITED
PlasMan - High integrity manufacture	Innovate UK																																										AQUASIUM TECHNOLOGY LIMITED
START-Subtractive Technologies for Additively Realised Test-parts Manufactured Parts	Innovate UK	01/06/2017	31/05/2018	51 671,00																																						SCORPION TOOLING UK LIMITED

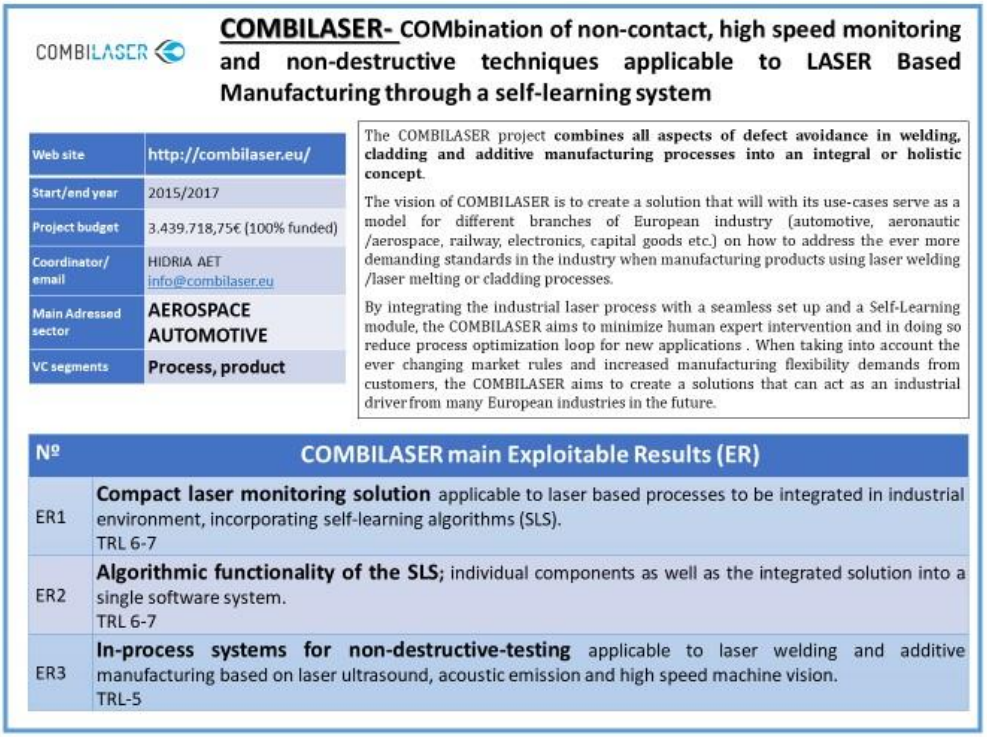
RoboWAAM	Innovate UK																																						KUKA Systems Uk Limited
SEAMLESS Digitally-Enabled, Automated Post-Processing for AM	Innovate UK	01/05/2017	30/04/2020	248 156,00																																			Toolroom Technology Limited
AMSURFIN-AM SURface FINishing - An automated intelligent solution for polymer parts	Innovate UK	01/01/2017	31/12/2018	289 170,00																																			ADDITIVE MANUFACTURING TECHNOLOGIES LTD
CAMBER-Concrete Additive Manufacturing for the Built Environment using Robotics	Innovate UK	01/03/2017	31/03/2019	246 212,00																																			Skanska Technology Limited
ALF- Additive Layer Flexomer Manufacturing	Innovate UK																																						ESP Technology Limited
P**owderCleanse** - Automated powder recycling and quality assurance for enhanced AM material reuse	Innovate UK	01/04/2017	30/09/2019	345 476,00																																			LPW Technology Limited
Tailorable and Adaptive Connected Digital AM	Innovate UK	01/01/2017	31/12/2018	453 129,00																																			HiETA Technologies Limited
Surface Engineering of Additive Manufactured Components	Innovate UK	01/10/2016	30/09/2017	109 758,00																																			Wallwork Heat Treatment Limited
Development and commercialization of 3D-printed ceramic/refractory carbonized items.	Innovate UK	01/05/2017	30/04/2020	386 582,00																																			CAT INTERNATIONAL LTD

Unravelling &addressing orthopaedics & prosthetics problems by human-centred design	Innovate UK																																														Innovative Technology and Science Limited
3D Fashion: Closures and trims	Innovate UK																																														BIOV8TION LIMITED
University of Sheffield and Tripal Ltd	Innovate UK																																														University of Sheffield
Wire Arc Additive manufacturing of near net shapes for Spacecraft propellant tanks	Innovate UK	01/10/2015	28/02/2017	346 343,00																																										Airbus Defence And Space Limited
High temperature, affordable polymer composites for AM aerospace applications	Innovate UK	01/02/2016	31/01/2018	427 812,00																																										Victrex Manufacturing Limited
SHAPE- Self-Healing Alloys for Precsion Engineering	Innovate UK	01/09/2015	31/08/2018	1 177 578,00																																										Ilika Technologies Limited
RAMP-UP Reliable Additive Manufacturing technology offering higher ProdUctvity and Performance	Innovate UK	01/05/2016	30/04/2018	638 978,00																																										Reliance Precision Limited
P**ROMENADE**Plasma Removal of Methane from Natural Gas Dual-Fuel Engines	Innovate UK	01/09/2016	31/08/2019	484 537,00																																										Johnson Matthey Plc
WINDY- WIng DesigN methodologY validation	Innovate UK	01/05/2016	31/10/2019	10 451 390,00																																										Airbus Operations Limited

MEGCAP	Innovate UK																																										Safran Electrical & Power UK Ltd
Advanced Inverted Brayton Cycle exhaust heat recovery with Steam Generation	Innovate UK	01/02/2016	30/04/2017	149 874,00																																							HiETA Technologies Limited
CHARM- Additive Manufacturing for Cooled High-Temperature Automotive Radial Machinery	Innovate UK	01/04/2016	30/09/2017	133 262,00																																							HiETA Technologies Limited
The University of Sheffield and LPW Technology Limited	Innovate UK	01/04/2016	31/03/2018	140 123,00																																								University of Sheffield
Newcastle University and DePuy International Limited	Innovate UK	01/12/2016	31/05/2019	162 655,00																																								Newcastle University
Gravity Sketch - Intuitive 3D Creation	Innovate UK	01/08/2015	31/01/2016	44 681,00																																								Gravity Sketch
A 3D printing solution to solve parents pain with orthotics services	Innovate UK	01/04/2016	31/01/2017	157 710,00																																								Project Andiamo Limited
Prototype Development of a Hybrid Gas and Ultrasonic Powder Delivery Syste,	Innovate UK	01/01/2016	30/06/2017	350 181,00																																								Advanced Laser Technology Ltd
CAM- Carbon Additive Manufacture	Innovate UK																																											LONDON FOREST PRODUCTS LIMITED

Annex 4: Project's exploitation posters

COMBILASER



COMBILASER

COMBILASER- COMbination of non-contact, high speed monitoring and non-destructive techniques applicable to LASER Based Manufacturing through a self-learning system

Web site	http://combilaser.eu/
Start/end year	2015/2017
Project budget	3.439.718,75€ (100% funded)
Coordinator/ email	HIDRIA AET info@combilaser.eu
Main Adressed sector	AEROSPACE AUTOMOTIVE
VC segments	Process, product

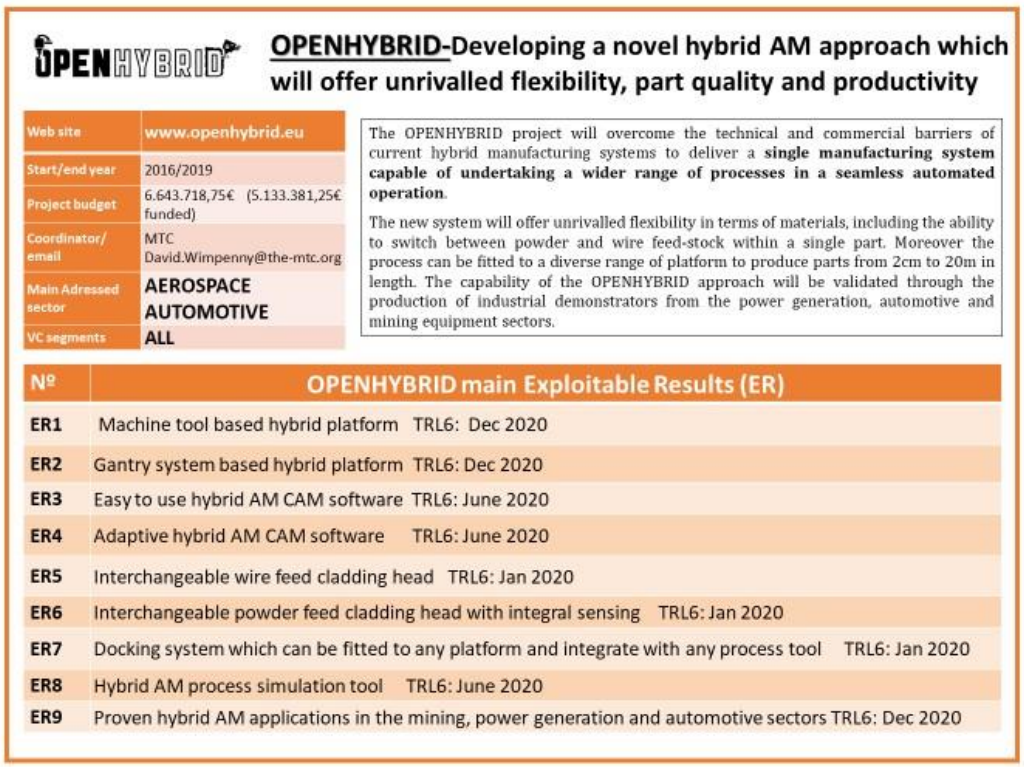
The COMBILASER project **combines all aspects of defect avoidance in welding, cladding and additive manufacturing processes into an integral or holistic concept**.

The vision of COMBILASER is to create a solution that will with its use-cases serve as a model for different branches of European industry (automotive, aeronautic /aerospace, railway, electronics, capital goods etc.) on how to address the ever more demanding standards in the industry when manufacturing products using laser welding /laser melting or cladding processes.

By integrating the industrial laser process with a seamless set up and a Self-Learning module, the COMBILASER aims to minimize human expert intervention and in doing so reduce process optimization loop for new applications . When taking into account the ever changing market rules and increased manufacturing flexibility demands from customers, the COMBILASER aims to create a solutions that can act as an industrial driver from many European industries in the future.

Nº	COMBILASER main Exploitable Results (ER)
ER1	**Compact laser monitoring solution** applicable to laser based processes to be integrated in industrial environment, incorporating self-learning algorithms (SLS). TRL 6-7
ER2	**Algorithmic functionality of the SLS;** individual components as well as the integrated solution into a single software system. TRL 6-7
ER3	**In-process systems for non-destructive-testing** applicable to laser welding and additive manufacturing based on laser ultrasound, acoustic emission and high speed machine vision. TRL-5

OPENHYBRID



OPENHYBRID

OPENHYBRID-Developing a novel hybrid AM approach which will offer unrivalled flexibility, part quality and productivity

Web site	www.openhybrid.eu
Start/end year	2016/2019
Project budget	6.643.718,75€ (5.133.381,25€ funded)
Coordinator/ email	MTC David.Wimpenny@the-mtc.org
Main Adressed sector	AEROSPACE AUTOMOTIVE
VC segments	ALL

The OPENHYBRID project will overcome the technical and commercial barriers of current hybrid manufacturing systems to deliver a **single manufacturing system capable of undertaking a wider range of processes in a seamless automated operation**.

The new system will offer unrivalled flexibility in terms of materials, including the ability to switch between powder and wire feed-stock within a single part. Moreover the process can be fitted to a diverse range of platform to produce parts from 2cm to 20m in length. The capability of the OPENHYBRID approach will be validated through the production of industrial demonstrators from the power generation, automotive and mining equipment sectors.

Nº	OPENHYBRID main Exploitable Results (ER)
ER1	Machine tool based hybrid platform TRL6: Dec 2020
ER2	Gantry system based hybrid platform TRL6: Dec 2020
ER3	Easy to use hybrid AM CAM software TRL6: June 2020
ER4	Adaptive hybrid AM CAM software TRL6: June 2020
ER5	Interchangeable wire feed cladding head TRL6: Jan 2020
ER6	Interchangeable powder feed cladding head with integral sensing TRL6: Jan 2020
ER7	Docking system which can be fitted to any platform and integrate with any process tool TRL6: Jan 2020
ER8	Hybrid AM process simulation tool TRL6: June 2020
ER9	Proven hybrid AM applications in the mining, power generation and automotive sectors TRL6: Dec 2020

FAST

FAST-Functionally Graded Additive Manufacturing Scaffolds by Hybrid Manufacturing

Web site	http://project-fast.eu/en/home
Start/end year	2015/2019
Project budget	4.916.750€ (100%)
Coordinator/ email	Maastricht University l.moroi@maastrichtuniversity.nl
Main Adressed sector	HEALTH
VC segments	Materials, process, product

FAST aims to make a new additive manufacturing (AM) technology available for the manufacture of **implants customized to the patient at affordable cost**. Specific patient implants can promote effective preoperative planning, shortening the time of surgery and improving the lifetime of the implant.

The FAST project aims to integrate design for function in the single AM process. This integration will be obtained by the hybridisation of AM with melt compounding of nanocomposites with bio-functionalised fillers directly in the printing head and atmospheric plasma technologies during the biofabrication process itself.

The final objective of the project is to realize a **demonstrator of the proposed hybrid AM technology** in order to achieve a small pilot production of scaffolds for bone regeneration with the novel smart features to be tested in some in-vivo trials.

Nº	FAST main Exploitable Results (ER)
ER1	**New AM technology** combining new extrusion based systems able to blend different materials with plasma technology-Prototype TRL=7 Time to market: 1 year
ER2	**Scaffolds** generated by the newly developed hybrid technology, able to mimic more closely the physic-chemical and mechanical properties of bone-product TRL=4 Time to market: 3 years
ER3	**In vitro and in vivo validation** of regenerated bone in a critical defect not able to heal by itself- Proof of concept TRL=<3 Time to market: 2 years

DREAM

DREAM- Driving up Reliability and Efficiency of Additive Manufacturing

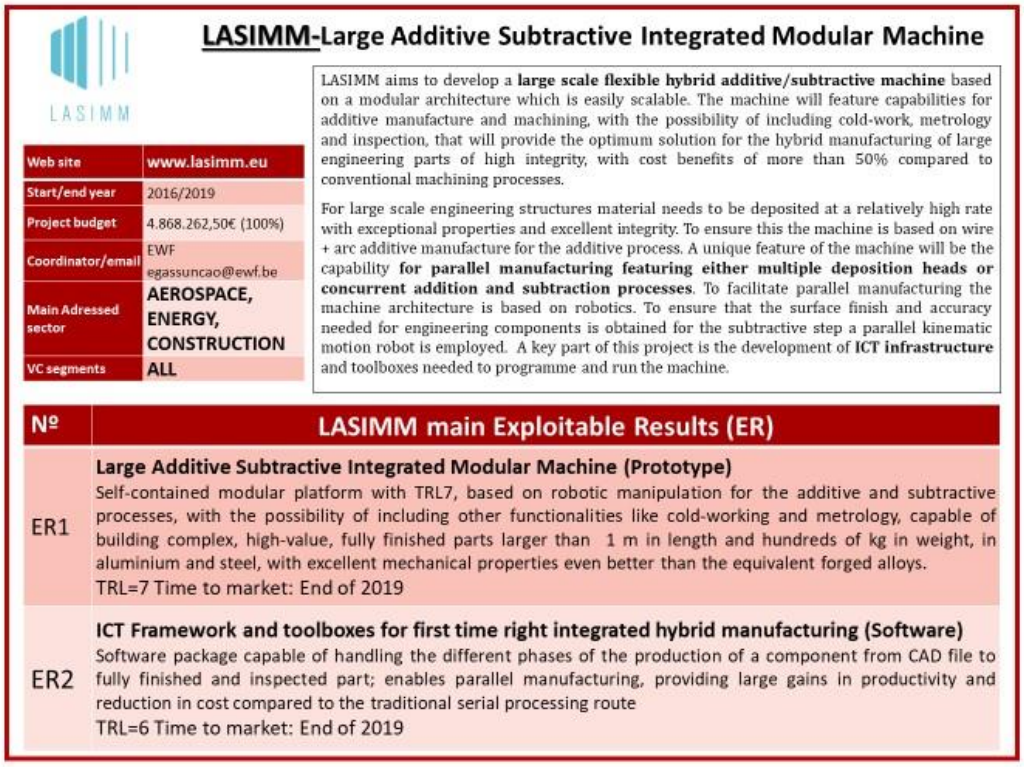
Web site	www.dream-euproject.eu
Start/end year	2016/2019
Project budget	3.242.435€ (100%)
Coordinator/email	INSTM elena.bassoli@unimore.it
Main Adressed sector	HEALTH AUTOMOTIVE
VC segments	ALL

The aim of DREAM is to significantly **improve the performances of laser Powder Bed Fusion (PBF) of Ti, Al and steel** components in terms of speed, costs, material use and reliability, also using a LCA/LCC approach, whilst producing work pieces with controlled and significantly increased fatigue life, as well with higher strength-to-weight ratios.

DREAM targets the development of a competitive supply chain to increase the productivity of laser-based AM and to bring it a significant step further towards larger scale industrial manufacturing.

Nº	DREAM main Exploitable Results (ER)
ER1	**Device**s for the control and removal of contaminants from metal powders for PBF TRL (to achieve at the end of the project) 6 = Time to market (after the end): 3
ER2	**End-user components**: • topologically optimized engine subframe available at shorter time-to-market • topologically optimized orthopaedic implants with reduced risk of bone resorption • high-fatigue mould inserts for extreme productivity injection moulds TRL (to achieve at the end of the project) 6 = Time to market (after the end): 3
ER3	**Laser PBF processing** of nanostructured Titanium powders TRL (to achieve at the end of the project) 5 = Time to market (after the end): 4/5

LASIMM



LASIMM-Large Additive Subtractive Integrated Modular Machine

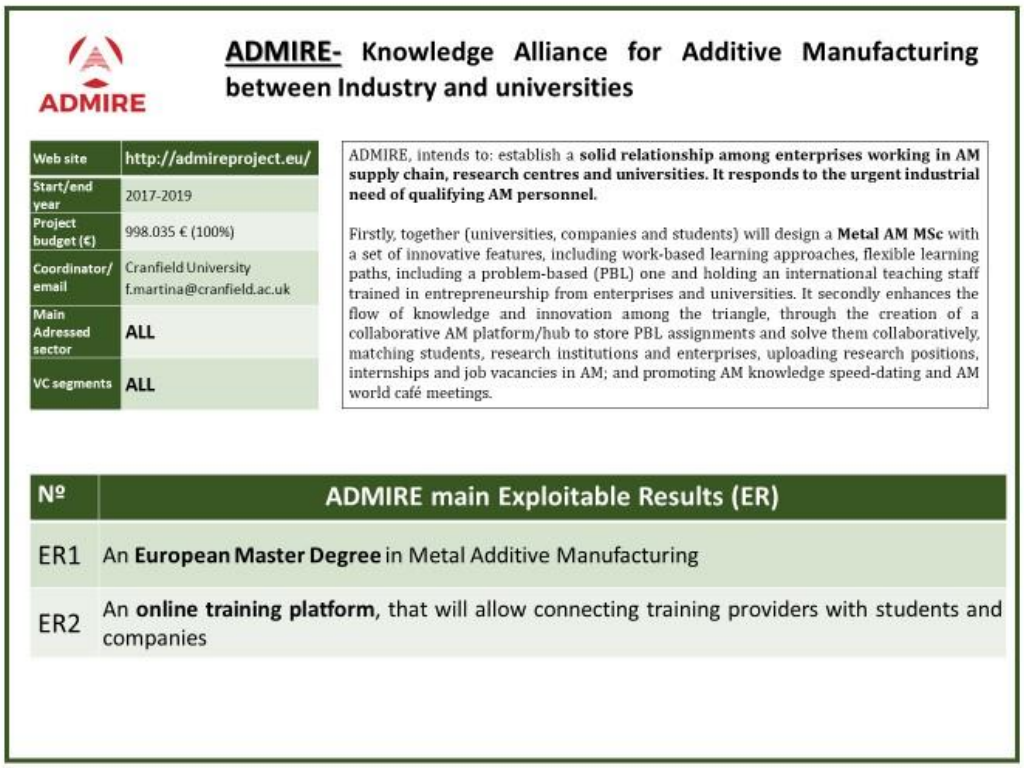
Web site	www.lasimm.eu
Start/end year	2016/2019
Project budget	4.868.262,50€ (100%)
Coordinator/email	EWF egassuncao@ewf.be
Main Adressed sector	AEROSPACE, ENERGY, CONSTRUCTION
VC segments	ALL

LASIMM aims to develop a **large scale flexible hybrid additive/subtractive machine** based on a modular architecture which is easily scalable. The machine will feature capabilities for additive manufacture and machining, with the possibility of including cold-work, metrology and inspection, that will provide the optimum solution for the hybrid manufacturing of large engineering parts of high integrity, with cost benefits of more than 50% compared to conventional machining processes.

For large scale engineering structures material needs to be deposited at a relatively high rate with exceptional properties and excellent integrity. To ensure this the machine is based on wire + arc additive manufacture for the additive process. A unique feature of the machine will be the capability **for parallel manufacturing featuring either multiple deposition heads or concurrent addition and subtraction processes**. To facilitate parallel manufacturing the machine architecture is based on robotics. To ensure that the surface finish and accuracy needed for engineering components is obtained for the subtractive step a parallel kinematic motion robot is employed. A key part of this project is the development of **ICT infrastructure** and toolboxes needed to programme and run the machine.

Nº	LASIMM main Exploitable Results (ER)
ER1	**Large Additive Subtractive Integrated Modular Machine (Prototype)** Self-contained modular platform with TRL7, based on robotic manipulation for the additive and subtractive processes, with the possibility of including other functionalities like cold-working and metrology, capable of building complex, high-value, fully finished parts larger than 1 m in length and hundreds of kg in weight, in aluminium and steel, with excellent mechanical properties even better than the equivalent forged alloys. TRL=7 Time to market: End of 2019
ER2	**ICT Framework and toolboxes for first time right integrated hybrid manufacturing (Software)** Software package capable of handling the different phases of the production of a component from CAD file to fully finished and inspected part; enables parallel manufacturing, providing large gains in productivity and reduction in cost compared to the traditional serial processing route TRL=6 Time to market: End of 2019

ADMIRE



ADMIRE- Knowledge Alliance for Additive Manufacturing between Industry and universities

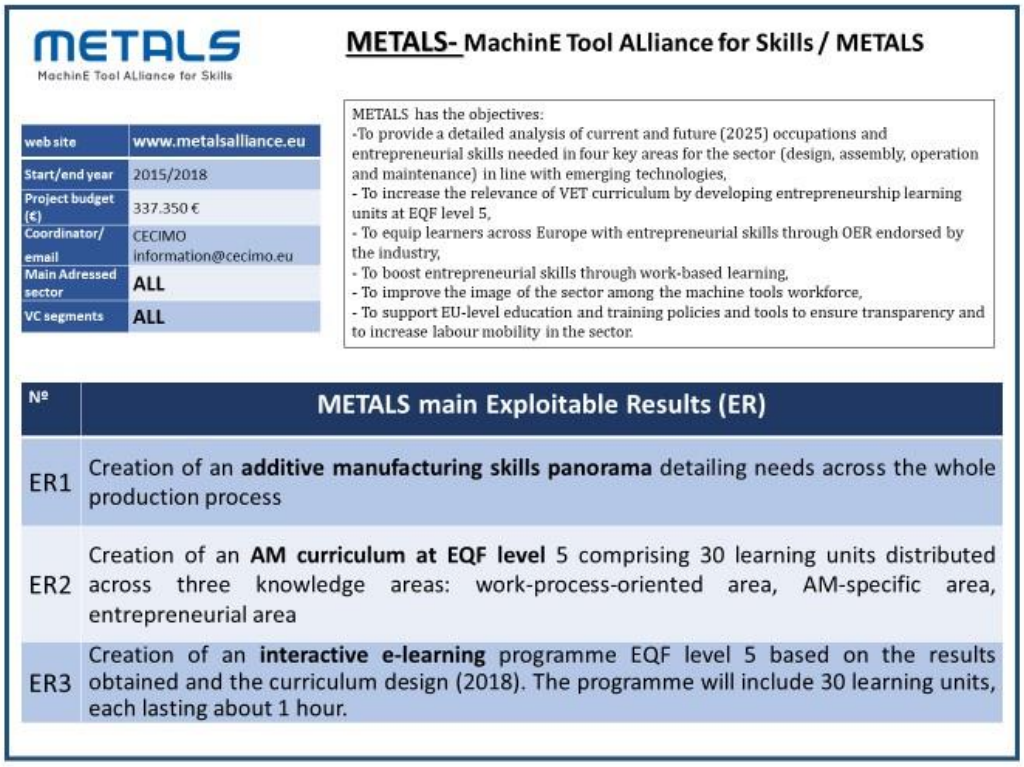
Web site	http://admireproject.eu/
Start/end year	2017-2019
Project budget (€)	998.035 € (100%)
Coordinator/ email	Cranfield University f.martina@cranfield.ac.uk
Main Adressed sector	ALL
VC segments	ALL

ADMIRE, intends to: establish a **solid relationship among enterprises working in AM supply chain, research centres and universities. It responds to the urgent industrial need of qualifying AM personnel.**

Firstly, together (universities, companies and students) will design a **Metal AM MSc** with a set of innovative features, including work-based learning approaches, flexible learning paths, including a problem-based (PBL) one and holding an international teaching staff trained in entrepreneurship from enterprises and universities. It secondly enhances the flow of knowledge and innovation among the triangle, through the creation of a collaborative AM platform/hub to store PBL assignments and solve them collaboratively, matching students, research institutions and enterprises, uploading research positions, internships and job vacancies in AM; and promoting AM knowledge speed-dating and AM world café meetings.

Nº	ADMIRE main Exploitable Results (ER)
ER1	An **European Master Degree** in Metal Additive Manufacturing
ER2	An **online training platform**, that will allow connecting training providers with students and companies

METALS



METALS- MachinE Tool ALliance for Skills / METALS

web site	www.metalsalliance.eu
Start/end year	2015/2018
Project budget (€)	337.350 €
Coordinator/ email	CECIMO information@cecimo.eu
Main Adressed sector	ALL
VC segments	ALL

METALS has the objectives:
-To provide a detailed analysis of current and future (2025) occupations and entrepreneurial skills needed in four key areas for the sector (design, assembly, operation and maintenance) in line with emerging technologies,
- To increase the relevance of VET curriculum by developing entrepreneurship learning units at EQF level 5,
- To equip learners across Europe with entrepreneurial skills through OER endorsed by the industry,
- To boost entrepreneurial skills through work-based learning,
- To improve the image of the sector among the machine tools workforce,
- To support EU-level education and training policies and tools to ensure transparency and to increase labour mobility in the sector.

Nº	METALS main Exploitable Results (ER)
ER1	Creation of an **additive manufacturing skills panorama** detailing needs across the whole production process
ER2	Creation of an **AM curriculum at EQF level** 5 comprising 30 learning units distributed across three knowledge areas: work-process-oriented area, AM-specific area, entrepreneurial area
ER3	Creation of an **interactive e-learning** programme EQF level 5 based on the results obtained and the curriculum design (2018). The programme will include 30 learning units, each lasting about 1 hour.

BIONIC AIRCRAFT

BIONIC AIRCRAFT- Increasing resource efficiency through implementation of ALM technology and bionic design in all stages of an aircraft life cycle

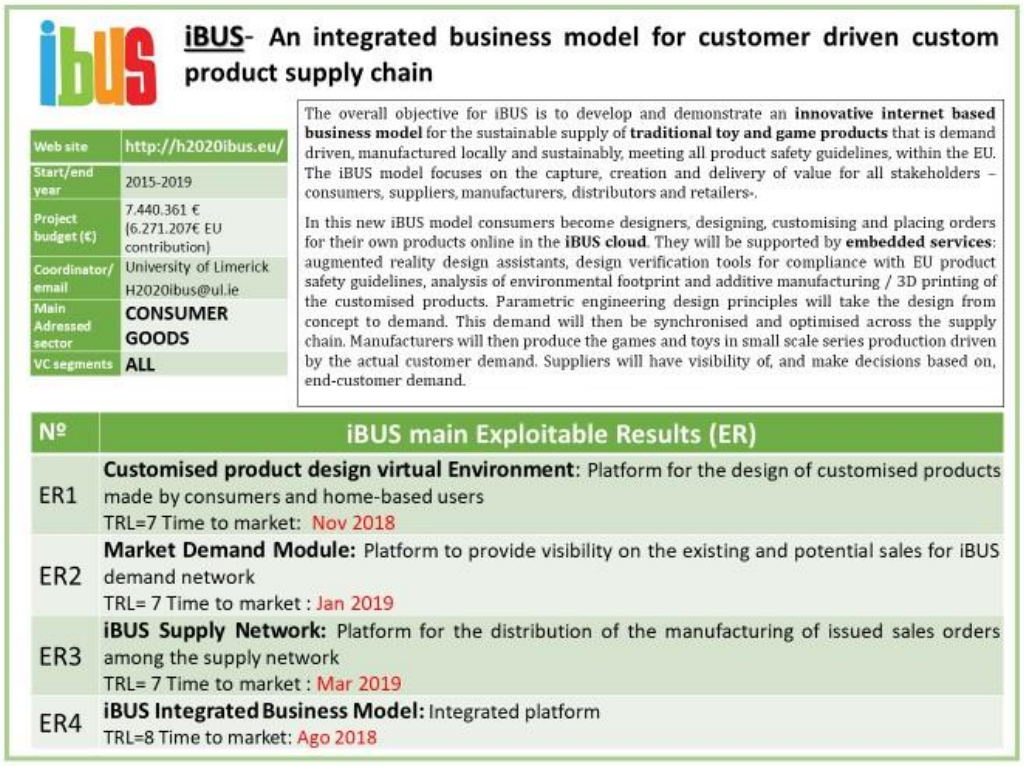
Web site	www.bionic-aircraft.eu
Start/end year	2016-2019
Project budget (€)	7.95 M€ (6.44 M€ funding)
Coordinator/e mail	LZN Laser Zentrum Nord philipp.imgrund@lzn-hamburg.de
Main Adressed sector	AEROSPACE
VC segments	ALL

Due to the new possibilities of Additive Manufacturing (AM) and the weight saving potential of bionic design, the BionicAircraft consortium identified **topology optimized and bionic structures as one key enabler to create competitive air vehicles in the future**. In addition to introducing optimized single components, Airbus already envisions creating entire airplanes based on bionic design concepts, which can be realized by utilization of AM on a broad scale and promise weight savings of up to 30%. Furthermore, the design freedom of AM can be used to optimize the functionalities of parts and integrating multiple conventional manufactured components in a single part.

The BionicAircraft project will develop the technologies, methodologies and concepts for Additive Manufacturing, to increase the resource efficiency of future aircrafts along the complete life-cycle.

Nº	BIONIC AIRCRAFT main Exploitable Results (ER)
ER1	Optimized and standardized **design process** for biomimetic lightweight products TRL=3-5 Time to market: 1-2 years
ER2	**New high-strength Al-Li alloys**, including design guidelines for superior lightweight aluminium ALM structures TRL=3-6 Time to market: 2 years
ER3	**CATIA V5/V6 based toolset** for an automated bionic design and related manufacturing processes TRL=2-5 Time to market: 2-3 years
ER4	Energy efficient and highly productive **ALM Process** with Beam Shaping Optics TRL=2-5 Time to market: 2-3 years
ER5	**In-line monitoring and in-process integrity systems** for ALM TRL=2-4 Time to market: 3-4 years
ER6	Resource efficient and cost competitive **repair procedures** for complex lightweight Al-based parts manufactured by ALM. TRL=1-4 Time to market: 4-6 years

IBUS



iBUS- An integrated business model for customer driven custom product supply chain

Web site	http://h2020ibus.eu/
Start/end year	2015-2019
Project budget (€)	7.440.361 € (6.271.207€ EU contribution)
Coordinator/ email	University of Limerick H2020ibus@ul.ie
Main Adressed sector	CONSUMER GOODS
VC segments	ALL

The overall objective for iBUS is to develop and demonstrate an **innovative internet based business model** for the sustainable supply of **traditional toy and game products** that is demand driven, manufactured locally and sustainably, meeting all product safety guidelines, within the EU. The iBUS model focuses on the capture, creation and delivery of value for all stakeholders – consumers, suppliers, manufacturers, distributors and retailers».

In this new iBUS model consumers become designers, designing, customising and placing orders for their own products online in the **iBUS cloud**. They will be supported by **embedded services**: augmented reality design assistants, design verification tools for compliance with EU product safety guidelines, analysis of environmental footprint and additive manufacturing / 3D printing of the customised products. Parametric engineering design principles will take the design from concept to demand. This demand will then be synchronised and optimised across the supply chain. Manufacturers will then produce the games and toys in small scale series production driven by the actual customer demand. Suppliers will have visibility of, and make decisions based on, end-customer demand.

Nº	iBUS main Exploitable Results (ER)
ER1	**Customised product design virtual Environment**: Platform for the design of customised products made by consumers and home-based users TRL=7 Time to market: Nov 2018
ER2	**Market Demand Module:** Platform to provide visibility on the existing and potential sales for iBUS demand network TRL= 7 Time to market : Jan 2019
ER3	**iBUS Supply Network:** Platform for the distribution of the manufacturing of issued sales orders among the supply network TRL= 7 Time to market : Mar 2019
ER4	**iBUS Integrated Business Model:** Integrated platform TRL=8 Time to market: Ago 2018

BAMOS

BAMOS- Biomaterials and Additive Manufacturing: Osteochondral Scaffold innovation applied to osteoarthritis

Web site	www.risebamos.eu
Start/end year	2017-2020
Project budget (€)	828.000 € (639.000€ EU contribution)
Coordinator/ email	ULPGC mario.monzon@ulpgc.es
Main Adressed sector	HEALTH
VC segments	Modelling, design, materials

Osteoarthritis (OA) is a degenerative joint disease, typified by a loss of quality of cartilage and changes in bone at the interface of a joint, resulting in pain, stiffness and reduced mobility. BAMOS particularly addresses **the challenges in OA treatment by providing novel cost effective osteochondral scaffold technology for early intervention of OA to delay or avoid the joint replacement operations**.

This project has the potential to relieve pain in patients with OA improving their quality of life by keeping people active. It fits with the scope of EU Societal Challenges to encourage the provision of improved clinical care for patients in the field of healthcare, especially for elderly patients.

Novel biopolymeric composites, processed by AM, will be characterized and tested as well as coatings on titanium scaffolds. Also, thermal welding technique will be used to join the cartilage component with the bone component to form an osteochondral unit.

Nº	BAMOS main Exploitable Results (ER)
ER1	New **osteochondral scaffold biomaterials** that can provide appropriate mechanical environment for support bone and cartilage formation simultaneously. TRL=4 Time to market: 2 years
ER2	New **methodology for assembling** of cartilage section and subchondral bone section, and manipulate the junctions TRL=4 Time to market: 2 years
ER3	Innovative **additive manufacturing techniques** to produce patient-tailored osteochondral scaffold for large osteochondral defect repairs. TRL=5 Time to market: 2 years

3D PRISM

3DPRISM- 3D printing Skills for manufacturing

web site	https://3dprism.eu/
Start/end year	2015/2018
Project budget (€)	337.350 €
Coordinator/ email	University of Sheffield info@3dprism.eu
Main Adressed sector	ALL
VC segments	ALL

3DPRISM aims to improve the quality of VET and the employability of learners, with outputs that emphasize on the applied aspects of 3D printing.

In this sense, the combined expertise and aligned interests of partners will deliver outputs that will empower VET providers to accurately monitor and respond to ongoing and emerging challenges in manufacturing, so as to equip the workforce with much demanded 3D printing skills in the job market. 3DPRISM will also provide learners with **online learning materials** (i.e. MOOC and open educational resources), and provide evidence and recommendations for the advancement and development of **policies in skills-related aspects of advanced manufacturing and 3D printing**. It will also establish a network for a follow-up project on certification and accreditation of 3D printing programmes and courses.

The 3DPRISM has the objectives:
-To support VET provision on 3D printing skills with guidelines, resources, OERs and a hands-on training methodology.
-To identity new occupational profiles in the manufacturing sector, to facilitate & accelerate the integration of new skills and qualifications in VET.
-To contribute to the implementation of EU policies on qualifications, transparency, mobility and a European industrial renaissance, creating secure & sustainable jobs.

Nº	3DPRISM main Exploitable Results (ER)
ER1	Creation of **two occupational profiles** in the field of 3D printing (entry-level technician and experienced technician)
ER2	**VET programes** and course guide for VET occupational profiles in the field of 3D printing
ER3	**3D printing learning units** and resources for initial and continuous VET programs on 3D printing manufacturing jobs (including a MOOC)

PARADDISE

PARADDISE- A Productive, Affordable and Reliable solution for large scale manufacturing of metallic components by combining laser-based ADDItive and Subtractive processes with high Efficiency

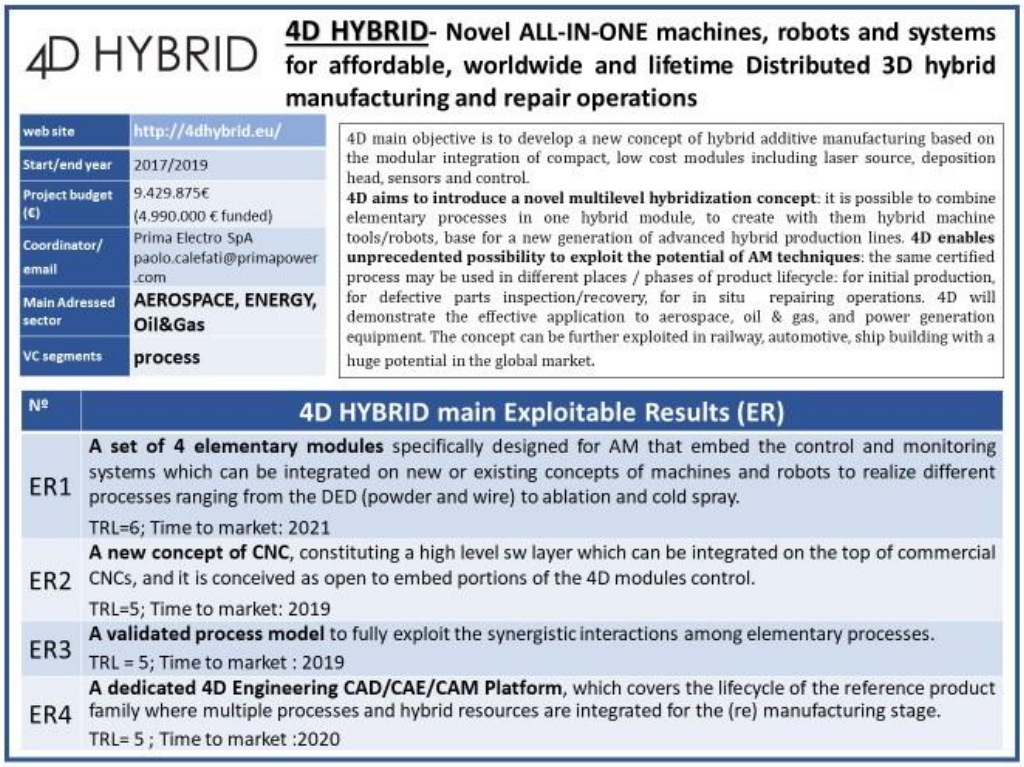
web site	www.paraddise.eu
Start/end year	2016/2019
Project budget	3.761.403€ (100%)
Coordinator/ email	Tecnalia amaia.alberdi@tecnalia.com
Main Adressed sector	AEROSPACE AUTOMOTIVE METALWORKING
VC segments	Modelling, process

The overall objective of PARADDISE project is to **rationalize, to structure and to make available the knowledge and the tools for combining two antithetical processes: Laser Metal Deposition (LMD) and Machining** The project will develop expert CAx technologies, smart components and monitoring and control systems tailored for the hybrid process in a cost-effective way and with structured knowledge about LMD process.

The PARADDISE solution will offer a synergetic combination among:
i) the high flexibility for the designs and for the materials to be used, the high material efficiency and the high savings in material resources and its associated costs of the LMD operations;
ii)the high accuracy, the high robustness and the high productivity of subtractive operations.

Nº	PARADDISE main Exploitable Results (ER)	TRL	Time to market
ER1	**Hybrid machine for production of large scale metallic parts**, with capabilities for: - 5 axis machining with A+B and A+C axes - turning in horizontal and vertical plate - LMD processing	8	June 2020
ER2	**On-machine measurement and inspection system** based on Structured Light technology	6	January 2020
ER3	**Integrated closed loop control system** for building height control: - Monitoring system based on on IDM (In-process Depth Measurement) technology for height measurement integrated in LMD head - Based on an identified model - Control signals: laser power, feed drive velocity and powder feed rate.	6	June 2021
ER4	**CAx technologies for LMD+ machining process:** - CAD from Siemens NX, work environment mounted virtually for verification - CAE module capable of estimating the geometry of added material, based on Matlab®. - CAM module for generating LMD paths, based on API for Siemens NX	8	January 2020

4D HYBRID



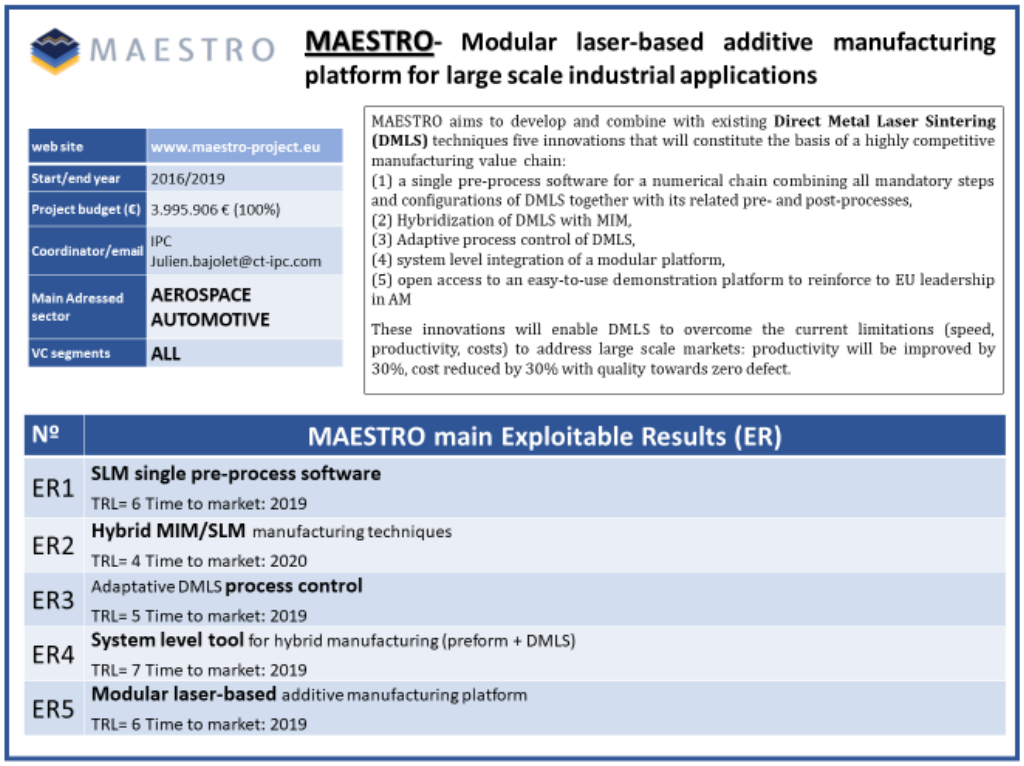
4D HYBRID- Novel ALL-IN-ONE machines, robots and systems for affordable, worldwide and lifetime Distributed 3D hybrid manufacturing and repair operations

web site	http://4dhybrid.eu/
Start/end year	2017/2019
Project budget (€)	9.429.875€ (4.990.000 € funded)
Coordinator/ email	Prima Electro SpA paolo.calefati@primapower.com
Main Adressed sector	AEROSPACE, ENERGY, Oil&Gas
VC segments	process

4D main objective is to develop a new concept of hybrid additive manufacturing based on the modular integration of compact, low cost modules including laser source, deposition head, sensors and control.
4D aims to introduce a novel multilevel hybridization concept: it is possible to combine elementary processes in one hybrid module, to create with them hybrid machine tools/robots, base for a new generation of advanced hybrid production lines. **4D enables unprecedented possibility to exploit the potential of AM techniques**: the same certified process may be used in different places / phases of product lifecycle: for initial production, for defective parts inspection/recovery, for in situ repairing operations. 4D will demonstrate the effective application to aerospace, oil & gas, and power generation equipment. The concept can be further exploited in railway, automotive, ship building with a huge potential in the global market.

Nº	4D HYBRID main Exploitable Results (ER)
ER1	**A set of 4 elementary modules** specifically designed for AM that embed the control and monitoring systems which can be integrated on new or existing concepts of machines and robots to realize different processes ranging from the DED (powder and wire) to ablation and cold spray. TRL=6; Time to market: 2021
ER2	**A new concept of CNC**, constituting a high level sw layer which can be integrated on the top of commercial CNCs, and it is conceived as open to embed portions of the 4D modules control. TRL=5; Time to market: 2019
ER3	**A validated process model** to fully exploit the synergistic interactions among elementary processes. TRL = 5; Time to market : 2019
ER4	**A dedicated 4D Engineering CAD/CAE/CAM Platform**, which covers the lifecycle of the reference product family where multiple processes and hybrid resources are integrated for the (re) manufacturing stage. TRL= 5 ; Time to market :2020

MAESTRO



MAESTRO- Modular laser-based additive manufacturing platform for large scale industrial applications

web site	www.maestro-project.eu
Start/end year	2016/2019
Project budget (€)	3.995.906 € (100%)
Coordinator/email	IPC Julien.bajolet@ct-ipc.com
Main Adressed sector	AEROSPACE AUTOMOTIVE
VC segments	ALL

MAESTRO aims to develop and combine with existing **Direct Metal Laser Sintering (DMLS)** techniques five innovations that will constitute the basis of a highly competitive manufacturing value chain:
(1) a single pre-process software for a numerical chain combining all mandatory steps and configurations of DMLS together with its related pre- and post-processes,
(2) Hybridization of DMLS with MIM,
(3) Adaptive process control of DMLS,
(4) system level integration of a modular platform,
(5) open access to an easy-to-use demonstration platform to reinforce to EU leadership in AM

These innovations will enable DMLS to overcome the current limitations (speed, productivity, costs) to address large scale markets: productivity will be improved by 30%, cost reduced by 30% with quality towards zero defect.

Nº	MAESTRO main Exploitable Results (ER)
ER1	**SLM single pre-process software** TRL= 6 Time to market: 2019
ER2	**Hybrid MIM/SLM** manufacturing techniques TRL= 4 Time to market: 2020
ER3	Adaptative DMLS **process control** TRL= 5 Time to market: 2019
ER4	**System level tool** for hybrid manufacturing (preform + DMLS) TRL= 7 Time to market: 2019
ER5	**Modular laser-based** additive manufacturing platform TRL= 6 Time to market: 2019

KRAKEN

KRAKEN-Hybrid automated machine integrating concurrent manufacturing processes, increasing the production volume of functional on-demand using high multi-material deposition rates

web site	
Start/end year	2016-2019
Project budget (€)	4.711.586 € (100% funded)
Coordinator/email	AITIIP joseantonio.dieste@aitiip.com
Main Adressed sector	**AUTOMOTIVE CONSTRUCTION**
VC segments	**ALL**

KRAKEN will develop a **disruptive hybrid manufacturing concept** to equip SME and large industries with affordable All-in-one machine for custom design, production/reparation and quality control of functional parts (made in aluminum, thermoset or both materials combined from 0,1m till 20m) through subtractive and novel additive technologies in vast working areas without floor space requirements.

Nº	KRAKEN main Exploitable Results (ER)
	The KRAKEN Consortium is considering already several Key ERs (13), which are in the process of continuous appraisal and revision. Three of the most prominent of those KERs up to date are listed below:
ER1	**KRAKEN Hybrid Robotic Machine (Product & Services) (KRAKEN Consortium)** The consortium considers the possibility to establish a spin-off company for further developing the KRAKEN Machine and offering it as a product and/or associated services to the EU and Global Markets. TRL (at project end): 5-6; Go to Market: 12-18 months
ER2	**CAM Software for hybrid manufacturing (AM and/or subtractive) (VERO)** Direct Sell of the CAM package for additive manufacturing and hybrid manufacturing altogether TRL (at project end): 6-7; Go to Market: 6 months
ER3	**Extrusion Resin adapted to AM (ALCHEMIE)** Direct sell from Alchemie, they would include the resins developed on their catalogue and sell them for these especial applications TRL (at project end): 6-7; Go to Market: 6 months

SAMT SUDOE

SAMT SUDOE- Spread of AM and advanced materials technologies for the promotion of KET industrial technologies in plastic processor and mould industries within SUDOE Space

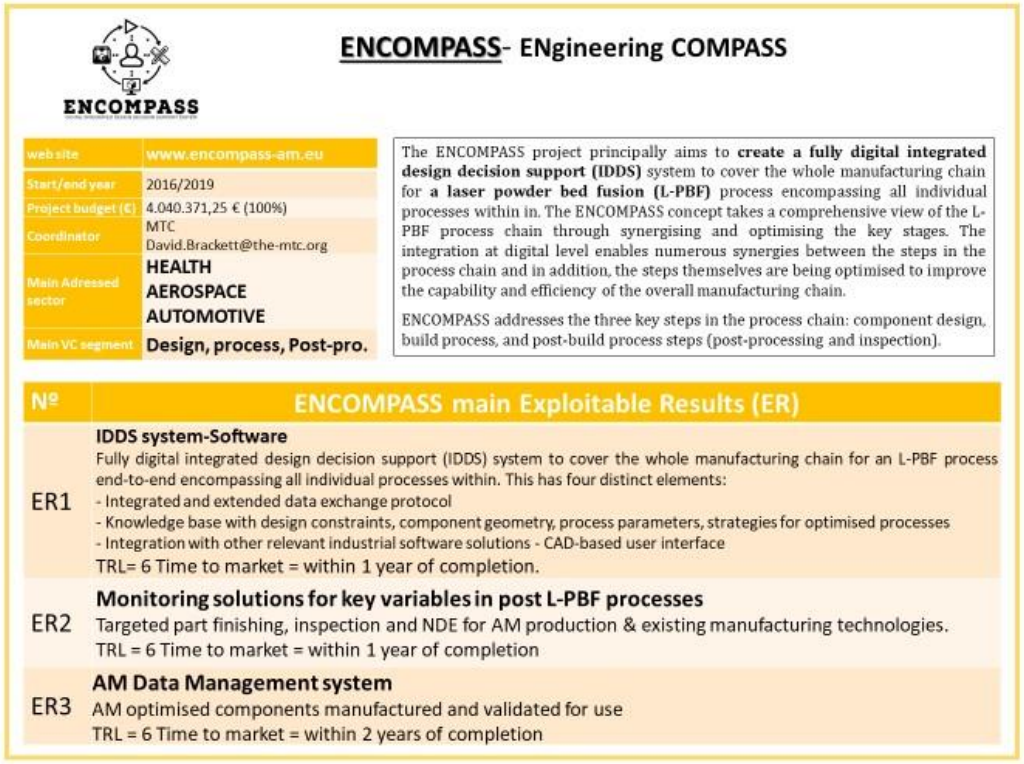
web site	www.samtsudoe.com
Start/end year	2016/2019
Project budget (€)	994.827€
Coordinator	AIJU samt@aiju.info
Main Adressed sector	**ALL**
Main VC segment	**ALL**

The project aims at developing **links and synergies between enterprises, R&D centers, clusters, higher education and R&D+i governmental & regional** institutions to promote new KET in SUDOE space. Particularly, **AM technologies** (3D printing) and **Advanced Materials** will be the project focus in order to facilitate their implementation throughout the regions present in the project (France, Portugal and Spain).

These new technologies will be spread over **the plastic processor and mould industries**, which are well established technological industries that work within a broad range of sectors including the automotive, health, creative industries, textile, clothing and footwear and consumer goods industries.
The principal means for this transfer will be the main exploitable results which are shown below, and will serve as tools for this technology transfer.
Most of the results will be avaiable for public use.

Nº	SAMT main Exploitable Results (ER)
ER1	**Roadmap**. A document gathering existent technologies and future trends according to the sectors needs
ER2	**Transnational collaborative SAMT web Platform**. This platform will allow companies to connect among them matching needs regarding Additive Manufacturing and advanced materials. It will be open for general use.
ER3	Creation of training material in the form of **Open Educational Resources (OER).** This material will be open for use.
ER4	Development of **Multi- KET demonstrators**. Demonstrators that will help companies understand and facilitate the uptake of these technologies.

ENCOMPASS



ENCOMPASS- ENgineering COMPASS

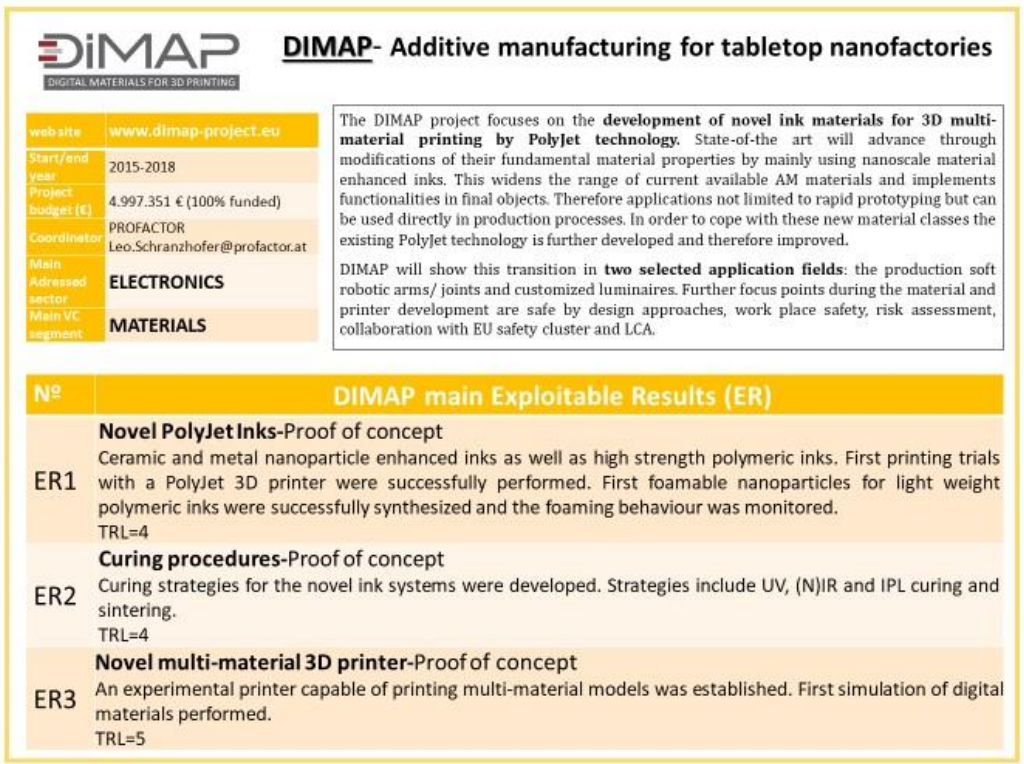
web site	www.encompass-am.eu
Start/end year	2016/2019
Project budget (€)	4.040.371,25 € (100%)
Coordinator	MTC David.Brackett@the-mtc.org
Main Adressed sector	HEALTH AEROSPACE AUTOMOTIVE
Main VC segment	Design, process, Post-pro.

The ENCOMPASS project principally aims to **create a fully digital integrated design decision support (IDDS)** system to cover the whole manufacturing chain for **a laser powder bed fusion (L-PBF)** process encompassing all individual processes within in. The ENCOMPASS concept takes a comprehensive view of the L-PBF process chain through synergising and optimising the key stages. The integration at digital level enables numerous synergies between the steps in the process chain and in addition, the steps themselves are being optimised to improve the capability and efficiency of the overall manufacturing chain.

ENCOMPASS addresses the three key steps in the process chain: component design, build process, and post-build process steps (post-processing and inspection).

Nº	ENCOMPASS main Exploitable Results (ER)
ER1	**IDDS system-Software** Fully digital integrated design decision support (IDDS) system to cover the whole manufacturing chain for an L-PBF process end-to-end encompassing all individual processes within. This has four distinct elements: - Integrated and extended data exchange protocol - Knowledge base with design constraints, component geometry, process parameters, strategies for optimised processes - Integration with other relevant industrial software solutions - CAD-based user interface TRL= 6 Time to market = within 1 year of completion.
ER2	**Monitoring solutions for key variables in post L-PBF processes** Targeted part finishing, inspection and NDE for AM production & existing manufacturing technologies. TRL = 6 Time to market = within 1 year of completion
ER3	**AM Data Management system** AM optimised components manufactured and validated for use TRL = 6 Time to market = within 2 years of completion

DIMAP



DIMAP- Additive manufacturing for tabletop nanofactories

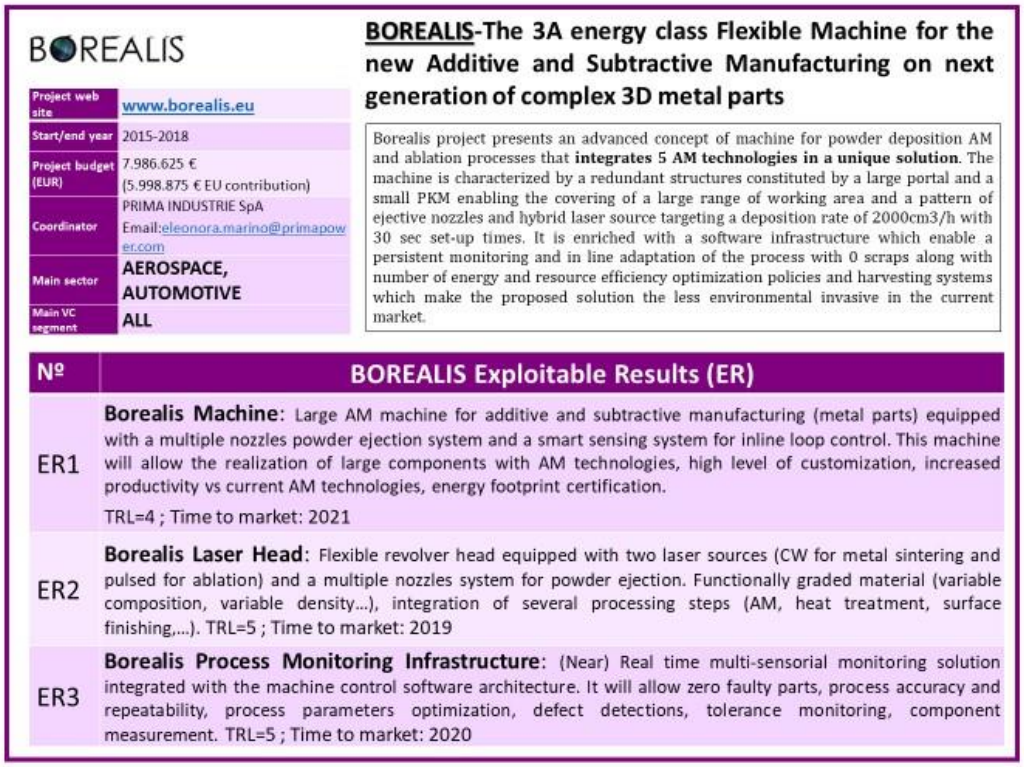
web site	www.dimap-project.eu
Start/end year	2015-2018
Project budget (€)	4.997.351 € (100% funded)
Coordinator	PROFACTOR Leo.Schranzhofer@profactor.at
Main Adressed sector	ELECTRONICS
Main VC segment	MATERIALS

The DIMAP project focuses on the **development of novel ink materials for 3D multi-material printing by PolyJet technology.** State-of-the art will advance through modifications of their fundamental material properties by mainly using nanoscale material enhanced inks. This widens the range of current available AM materials and implements functionalities in final objects. Therefore applications not limited to rapid prototyping but can be used directly in production processes. In order to cope with these new material classes the existing PolyJet technology is further developed and therefore improved.

DIMAP will show this transition in **two selected application fields**: the production soft robotic arms/ joints and customized luminaires. Further focus points during the material and printer development are safe by design approaches, work place safety, risk assessment, collaboration with EU safety cluster and LCA.

Nº	DIMAP main Exploitable Results (ER)
ER1	**Novel PolyJet Inks**-Proof of concept Ceramic and metal nanoparticle enhanced inks as well as high strength polymeric inks. First printing trials with a PolyJet 3D printer were successfully performed. First foamable nanoparticles for light weight polymeric inks were successfully synthesized and the foaming behaviour was monitored. TRL=4
ER2	**Curing procedures**-Proof of concept Curing strategies for the novel ink systems were developed. Strategies include UV, (N)IR and IPL curing and sintering. TRL=4
ER3	**Novel multi-material 3D printer**-Proof of concept An experimental printer capable of printing multi-material models was established. First simulation of digital materials performed. TRL=5

BOREALIS



BOREALIS

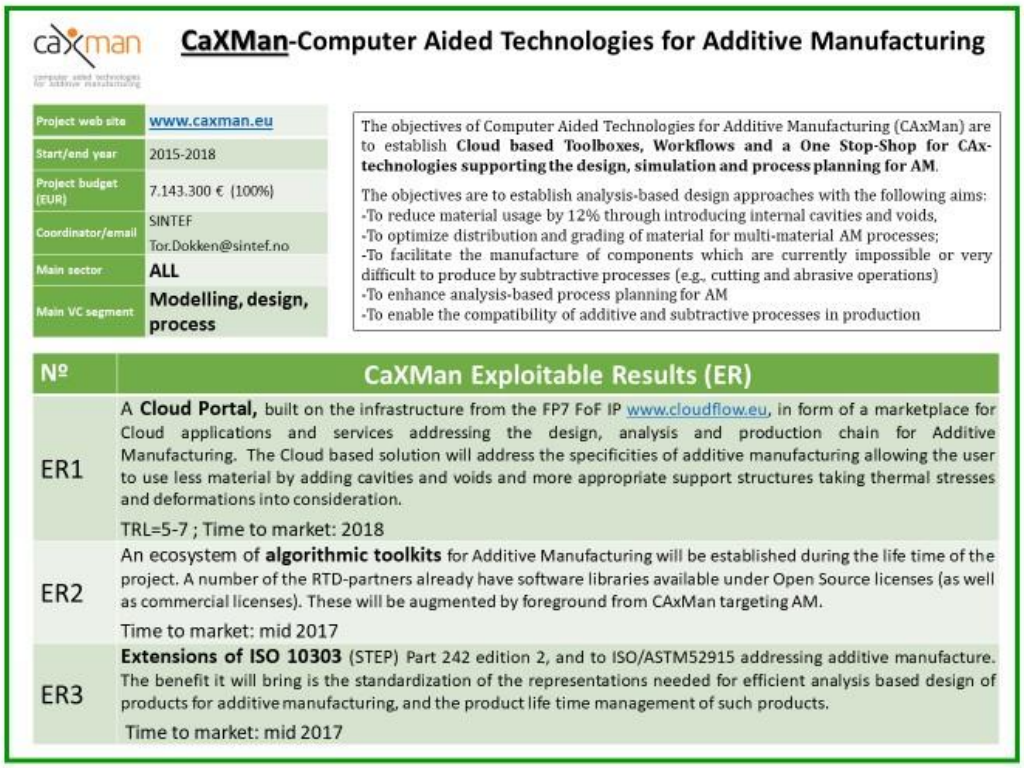
BOREALIS-The 3A energy class Flexible Machine for the new Additive and Subtractive Manufacturing on next generation of complex 3D metal parts

Project web site	www.borealis.eu
Start/end year	2015-2018
Project budget (EUR)	7.986.625 € (5.998.875 € EU contribution)
Coordinator	PRIMA INDUSTRIE SpA Email:eleonora.marino@primapower.com
Main sector	AEROSPACE, AUTOMOTIVE
Main VC segment	ALL

Borealis project presents an advanced concept of machine for powder deposition AM and ablation processes that **integrates 5 AM technologies in a unique solution**. The machine is characterized by a redundant structures constituted by a large portal and a small PKM enabling the covering of a large range of working area and a pattern of ejective nozzles and hybrid laser source targeting a deposition rate of 2000cm3/h with 30 sec set-up times. It is enriched with a software infrastructure which enable a persistent monitoring and in line adaptation of the process with 0 scraps along with number of energy and resource efficiency optimization policies and harvesting systems which make the proposed solution the less environmental invasive in the current market.

Nº	BOREALIS Exploitable Results (ER)
ER1	**Borealis Machine**: Large AM machine for additive and subtractive manufacturing (metal parts) equipped with a multiple nozzles powder ejection system and a smart sensing system for inline loop control. This machine will allow the realization of large components with AM technologies, high level of customization, increased productivity vs current AM technologies, energy footprint certification. TRL=4 ; Time to market: 2021
ER2	**Borealis Laser Head**: Flexible revolver head equipped with two laser sources (CW for metal sintering and pulsed for ablation) and a multiple nozzles system for powder ejection. Functionally graded material (variable composition, variable density…), integration of several processing steps (AM, heat treatment, surface finishing,…). TRL=5 ; Time to market: 2019
ER3	**Borealis Process Monitoring Infrastructure**: (Near) Real time multi-sensorial monitoring solution integrated with the machine control software architecture. It will allow zero faulty parts, process accuracy and repeatability, process parameters optimization, defect detections, tolerance monitoring, component measurement. TRL=5 ; Time to market: 2020

CAXMAN



caxman

CaXMan-Computer Aided Technologies for Additive Manufacturing

Project web site	www.caxman.eu
Start/end year	2015-2018
Project budget (EUR)	7.143.300 € (100%)
Coordinator/email	SINTEF Tor.Dokken@sintef.no
Main sector	ALL
Main VC segment	Modelling, design, process

The objectives of Computer Aided Technologies for Additive Manufacturing (CAxMan) are to establish **Cloud based Toolboxes, Workflows and a One Stop-Shop for CAx-technologies supporting the design, simulation and process planning for AM**.

The objectives are to establish analysis-based design approaches with the following aims:
-To reduce material usage by 12% through introducing internal cavities and voids,
-To optimize distribution and grading of material for multi-material AM processes;
-To facilitate the manufacture of components which are currently impossible or very difficult to produce by subtractive processes (e.g., cutting and abrasive operations)
-To enhance analysis-based process planning for AM
-To enable the compatibility of additive and subtractive processes in production

Nº	CaXMan Exploitable Results (ER)
ER1	A **Cloud Portal,** built on the infrastructure from the FP7 FoF IP www.cloudflow.eu, in form of a marketplace for Cloud applications and services addressing the design, analysis and production chain for Additive Manufacturing. The Cloud based solution will address the specificities of additive manufacturing allowing the user to use less material by adding cavities and voids and more appropriate support structures taking thermal stresses and deformations into consideration. TRL=5-7 ; Time to market: 2018
ER2	An ecosystem of **algorithmic toolkits** for Additive Manufacturing will be established during the life time of the project. A number of the RTD-partners already have software libraries available under Open Source licenses (as well as commercial licenses). These will be augmented by foreground from CAxMan targeting AM. Time to market: mid 2017
ER3	**Extensions of ISO 10303** (STEP) Part 242 edition 2, and to ISO/ASTM52915 addressing additive manufacture. The benefit it will bring is the standardization of the representations needed for efficient analysis based design of products for additive manufacturing, and the product life time management of such products. Time to market: mid 2017

SYMBIONICA

SYMBIONICA

SYMBIONICA-Reconfigurable Machine for the new Additive and Subtractive Manufacturing of next generation fully personalized bionics and smart prosthetics

Project web site	www.symbionicaproject.eu
Start/end year	2015/2018
Project budget (€)	7.305.000 € (4.908.750 €)
Coordinator	SINTEA PLUSTEK email: simona.tusacciu@irissrl.org
Main sector	**HEALTH**
Main VC segment	**Design, Process, product**

Symbionica project focuses on the **manufacturing of personalized bionics, smart endoprosthetics and exo-prosthetics** that require geometric and functional customization. The concept integrates an **innovative machine** performing deposition of advanced materials and subtractive processes along with a supply chain distributed co-engineering platform for advanced design and full personalization, design and engineering of the products and through-life services. The manufacturing solution is conceived as a multi-material AM machine for material deposition and ablation, flexible and reconfigurable in the working cube, the material processing, the technology and the manufacturing strategy.

Nº	SYMBIONICA Exploitable Results (ER)
ER1	**Hybrid Machine:** Reconfigurable Machine for the new Additive and Subtractive Manufacturing of next generation fully personalized bionics and smart prosthetics. It will ensure the capability to process all the different materials use for prosthesis, thus reducing production cost of customized solution. Symbionica will offer super light structure, energy efficient process modulation, high power with high beam quality laser source and a fully adaptive process planning to minimize any energy loss. TRL=5; Time to market: 2021;
ER2	**Prosthetics designed for AM with a bionic Through-life Sensing System:** design and manufacturing of a medium-small sculptured and structural parts characterized by a high level of customization in terms of shape (design is based on pre-implantation sensors data related to the anatomical characteristics of the patient), internal structure (homogeneous where needed, variable density to reduce weight) and surface requirement (controlled porosity, superficial micro texturing to ensure adhesion to organs). As a result, it will be also possible to nest sensor systems in the prosthetics along using smart materials. TRL= 5; Time to market: 2021
ER3	**Co-Engineering Platform:** translating any 3D representation of an object in an executable file ready for Numerical Controllers of AM machines. It constitutes a framework integrating the CAD-CAM-CAPP chain that multiple users in multiple sites can utilize. The 1st step is to translate a 3D scan, Computer Tomography or MRI into a processable 3D CAD; the file will be analyzed by the platform-CAD generator module to identify, in cooperation with the patients and the doctors, the prosthesis model and typology to be personalized. Successively the prosthesis is customized by the co-engineering platform-CAD development module, thus customizing the components of the assembly to fit the physical and functional characteristics of the patient.

HYPROCELL

HyProCell

HyProCell - Development and validation of multiprocess HYbrid PROduction CELLs for rapid individualized laser-based production enabled by ICT

Project web site	www.hyprocell-project.eu
Start/end year	2016/2019
Project budget	€6.2m (€3.9m EU funding)
Coordinator/ email	LORTEK rabad@lortek.es
Main Adressed sector	**AEROSPACE, ENERGY, TURBOMACHINERY & MANUFACTURING**
Main VC segment	**Process, Product**

Motivation

- End-to-end digitisation of production lines
- Automation that overcomes fragmentation and manual operations in LBAM workflows
- Control production across design, fabrication, post processing, quality assurance and delivery stages

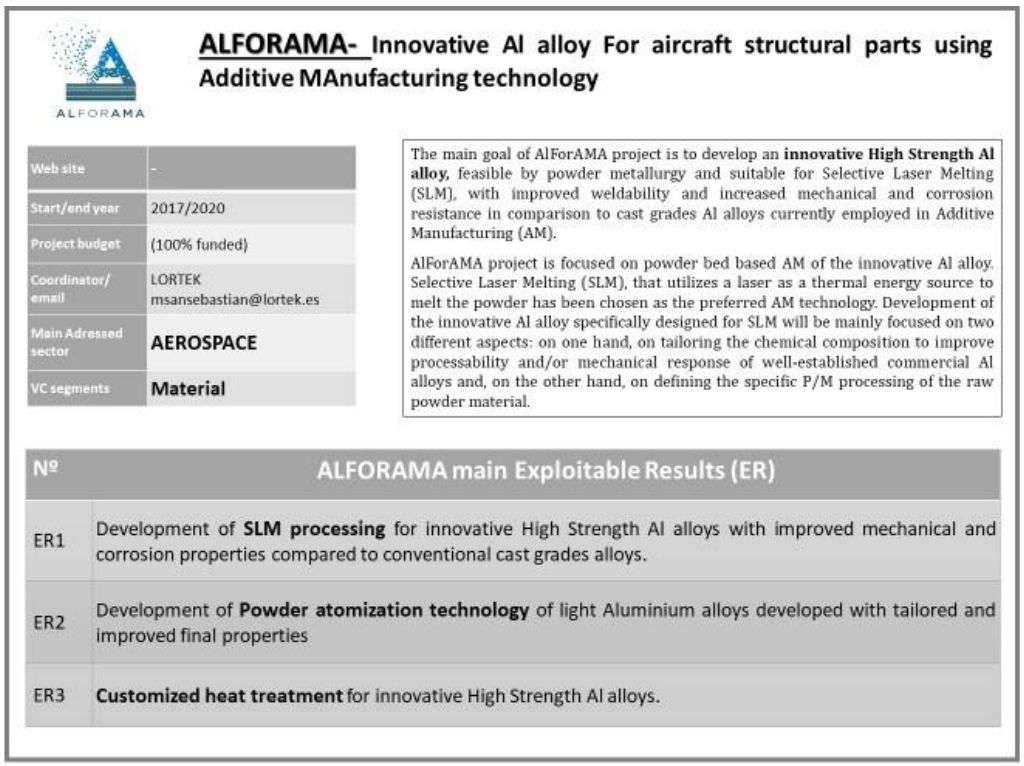
Objectives

-Develop and demonstrate a new concept of multiprocess production cell, featuring both additive & subtractive manufacturing connected over ICT

-Implement the concept at industrial (pilot facility) level to validate it in real settings, manufacturing real parts and measure the benefits

Nº	HyProCell Exploitable Results (ER) & Key Partners
ER1	**CAx Tools:** Software that streamlines additive workflow and allows to get from a 3D model to successfully printed parts (TRL6) [Partner: **Autodesk**]
ER2	**MES (Machine Execution System) & Automation:** Software that handles the product management, including traceability and data from individual manufacturing processes and the machine-machine communication (TRL6) [Partners: **TTS & smartFactory**]
ER3	**LBAM Adaptation:** LBAM machine alterations enabling external control & novel features, thus working as connected modules within an integrated production process (TRL5) [Partners: **Adira, Hamuel, Fraunhofer**]
ER4	**Part Handling:** Robot and pallet systems for part handling, meeting M2M communication and high precision positioning specifications (TRL5) [Partner: **Erowa**]

ALFORAMA



ALFORAMA- Innovative Al alloy For aircraft structural parts using Additive MAnufacturing technology

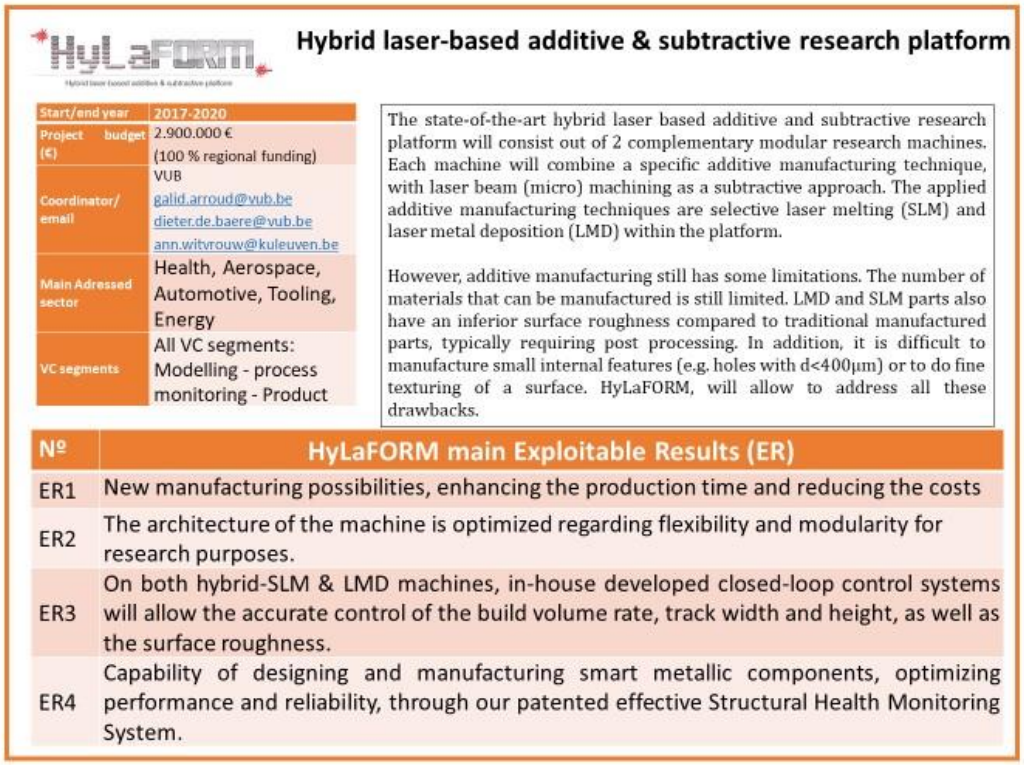
Web site	-
Start/end year	2017/2020
Project budget	(100% funded)
Coordinator/ email	LORTEK msansebastian@lortek.es
Main Adressed sector	**AEROSPACE**
VC segments	**Material**

The main goal of AlForAMA project is to develop an **innovative High Strength Al alloy,** feasible by powder metallurgy and suitable for Selective Laser Melting (SLM), with improved weldability and increased mechanical and corrosion resistance in comparison to cast grades Al alloys currently employed in Additive Manufacturing (AM).

AlForAMA project is focused on powder bed based AM of the innovative Al alloy. Selective Laser Melting (SLM), that utilizes a laser as a thermal energy source to melt the powder has been chosen as the preferred AM technology. Development of the innovative Al alloy specifically designed for SLM will be mainly focused on two different aspects: on one hand, on tailoring the chemical composition to improve processability and/or mechanical response of well-established commercial Al alloys and, on the other hand, on defining the specific P/M processing of the raw powder material.

Nº	ALFORAMA main Exploitable Results (ER)
ER1	Development of **SLM processing** for innovative High Strength Al alloys with improved mechanical and corrosion properties compared to conventional cast grades alloys.
ER2	Development of **Powder atomization technology** of light Aluminium alloys developed with tailored and improved final properties
ER3	**Customized heat treatment** for innovative High Strength Al alloys.

HYLAFORM



Hybrid laser-based additive & subtractive research platform

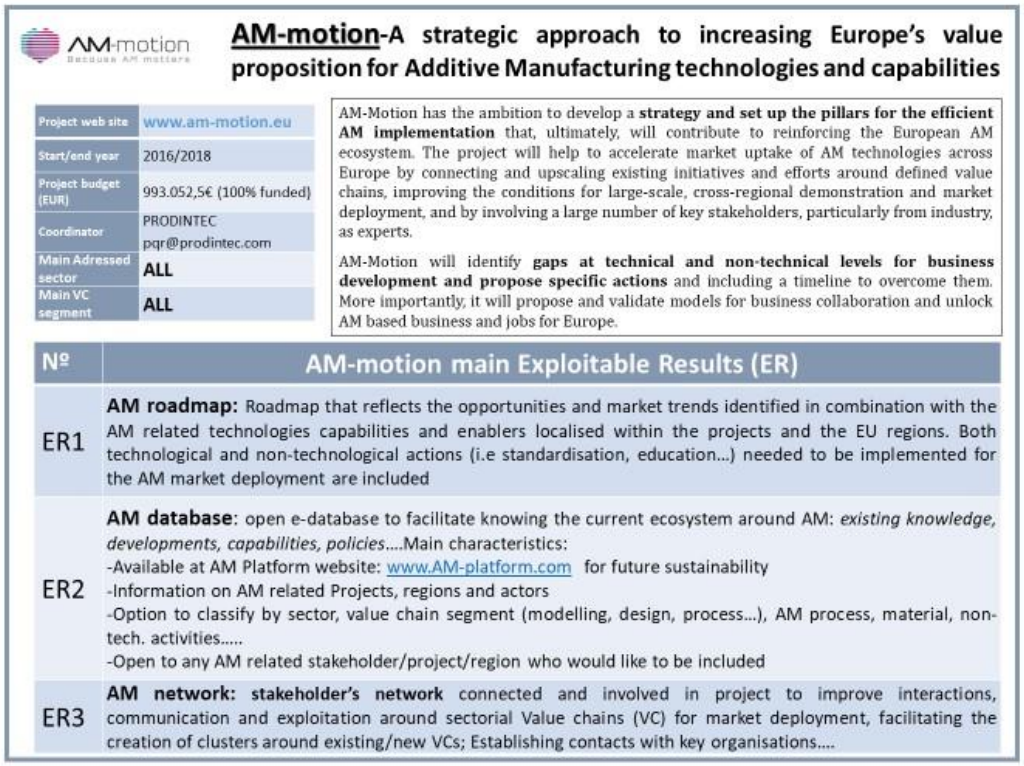
Start/end year	2017-2020
Project budget (€)	2.900.000 € (100 % regional funding)
Coordinator/ email	VUB galid.arroud@vub.be dieter.de.baere@vub.be ann.witvrouw@kuleuven.be
Main Adressed sector	Health, Aerospace, Automotive, Tooling, Energy
VC segments	All VC segments: Modelling - process monitoring - Product

The state-of-the-art hybrid laser based additive and subtractive research platform will consist out of 2 complementary modular research machines. Each machine will combine a specific additive manufacturing technique, with laser beam (micro) machining as a subtractive approach. The applied additive manufacturing techniques are selective laser melting (SLM) and laser metal deposition (LMD) within the platform.

However, additive manufacturing still has some limitations. The number of materials that can be manufactured is still limited. LMD and SLM parts also have an inferior surface roughness compared to traditional manufactured parts, typically requiring post processing. In addition, it is difficult to manufacture small internal features (e.g. holes with d<400µm) or to do fine texturing of a surface. HyLaFORM, will allow to address all these drawbacks.

Nº	HyLaFORM main Exploitable Results (ER)
ER1	New manufacturing possibilities, enhancing the production time and reducing the costs
ER2	The architecture of the machine is optimized regarding flexibility and modularity for research purposes.
ER3	On both hybrid-SLM & LMD machines, in-house developed closed-loop control systems will allow the accurate control of the build volume rate, track width and height, as well as the surface roughness.
ER4	Capability of designing and manufacturing smart metallic components, optimizing performance and reliability, through our patented effective Structural Health Monitoring System.

AM-motion



AM-motion-A strategic approach to increasing Europe's value proposition for Additive Manufacturing technologies and capabilities

Project web site	www.am-motion.eu
Start/end year	2016/2018
Project budget (EUR)	993.052,5€ (100% funded)
Coordinator	PRODINTEC pqr@prodintec.com
Main Adressed sector	ALL
Main VC segment	ALL

AM-Motion has the ambition to develop a **strategy and set up the pillars for the efficient AM implementation** that, ultimately, will contribute to reinforcing the European AM ecosystem. The project will help to accelerate market uptake of AM technologies across Europe by connecting and upscaling existing initiatives and efforts around defined value chains, improving the conditions for large-scale, cross-regional demonstration and market deployment, and by involving a large number of key stakeholders, particularly from industry, as experts.

AM-Motion will identify **gaps at technical and non-technical levels for business development and propose specific actions** and including a timeline to overcome them. More importantly, it will propose and validate models for business collaboration and unlock AM based business and jobs for Europe.

Nº	AM-motion main Exploitable Results (ER)
ER1	**AM roadmap:** Roadmap that reflects the opportunities and market trends identified in combination with the AM related technologies capabilities and enablers localised within the projects and the EU regions. Both technological and non-technological actions (i.e standardisation, education…) needed to be implemented for the AM market deployment are included
ER2	**AM database**: open e-database to facilitate knowing the current ecosystem around AM: *existing knowledge, developments, capabilities, policies*….Main characteristics: -Available at AM Platform website: www.AM-platform.com for future sustainability -Information on AM related Projects, regions and actors -Option to classify by sector, value chain segment (modelling, design, process…), AM process, material, non-tech. activities….. -Open to any AM related stakeholder/project/region who would like to be included
ER3	**AM network: stakeholder's network** connected and involved in project to improve interactions, communication and exploitation around sectorial Value chains (VC) for market deployment, facilitating the creation of clusters around existing/new VCs; Establishing contacts with key organisations….