Mapping of projects in Additive Manufacturing 2022

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Contents

1. Introduction

The current document addresses the Mapping of projects in Additive Manufacturing (AM) running from 2020 to 2026. The outcome of this report will be displayed online within the European AM Observatory platform, AM Project section [1]. The mapping of projects is a continuous activity during the project, although the updated will occur at the beginning of every civil year starting in 2020 and lasting until 2022. After the SAM project, the mapping of AM projects will be kept by the Observatory (https://www.skills4am.eu/amobservatory_projects.html).

The objective of the mapping of AM projects is to keep an overall perspective about the ongoing research and educational projects and to promote the contact and engagement with each project, especially the ones related to skills for AM which might be technological, digital and/or green skills.

The report includes a list of AM Projects funded in 2020, 2021 and the first half of 2022.

2. Methodology

The methodology applied to the mapping of AM projects consisted of the consultation and analysis of the list of new (e.g., funded in 2020, 2021 and 2022) projects funded by the Erasmus +, Horizon 2020, EIT Raw Materials, EIT Manufacturing and National Funds. Moreover, each project partner was consulted in order to identify the projects related to AM that they are involved in.

The main tools used to undertake the project mapping were:

- CORDIS website for H2020 projects [2]
- EU Dissemination platform for Erasmus+ projects [3]
- EIT Raw Materials Innovation Projects [4]
- EIT Manufacturing Projects [5]

3. AM Projects funded in 2020

Project Acronym	Project Name	Period		Link website	Funding Programme
		Start year	End year		
ACCESS-3DP	Art & Creative Craft Enterprises for Successful Streaming of 3D Printing	2020	2022	https://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/2020-1-FR01-KA202-080183	Erasmus+
CEFAM	Strategic program for the Excellence skilling up on metal Additive Manufacturing	2020	2022	N.A.	Spanish Government – Excelencia Cervera 2019
DESTINE	European Design Technicians League	2020	2022	DESTINE Project	Erasmus+
ACUHRA	Innovative turbine swirl control systems based on additive manufacturing	2020	2022	https://cordis.europa.eu/project/id/886112	Horizon2020
NANOPRINT	A macroscopic resonator for new 3D printing applications	2020	2022	https://cordis.europa.eu/project/id/963890	Horizon2020
POWERFUSE S	POWERFUSE S: Fusing the gap between 3D-printing and Additive Manufacturing – the revolutionary manufacturing method for better products and a more sustainable future	2020	2022	https://cordis.europa.eu/project/id/101009685	Horizon2020
imPURE	Injection Moulding Repurposing for Medical Supplies enabled by Additive Manufacturing	2020	2022	https://cordis.europa.eu/project/id/101016262	Horizon2020
INNOTOOL	Cutting-edge tools for component manufacturing and assembly	2020	2022	https://cordis.europa.eu/project/id/886491	Horizon2020
3D GUIDE	A cost-effective method for air transport safety	2020	2022	https://cordis.europa.eu/project/id/886696	Horizon2020
MotionESt	Plastic bottles to power up our smartphone batteries	2020	2022	https://cordis.europa.eu/project/id/894457	Horizon2020
ALADDIN	Development of a Specific Training on Additive Manufacturing Technologies for Hospitals	2020	2022	https://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/2020-1-ES01-KA202-082449	Erasmus +
THREE-D-PRINT	3D Printing - Training	2020	2022	https://www.3dprint-training.com/	Erasmus +
MULTI-FUN	Enabling Multifunctional Performance through Multi-Material Additive Manufacturing	2020	2023	http://www.multi-fun.eu/	Horizon 2020
ADAM^2	Analysis, Design, And Manufacturing using Microstructures	2020	2023	https://cordis.europa.eu/project/id/862025	Horizon 2020

Project Acronym	Project Name	Period		Link website	Funding Programme
		Start year	End year		
MOAMMM	Multi-scale Optimisation for Additive Manufacturing of fatigue resistant shock-absorbing Metal Materials	2020	2023	https://cordis.europa.eu/project/id/862015	Horizon 2020
THINKER	Cost- and resource-efficient sensor packaging for autonomous and self-driving cars	2020	2023	https://cordis.europa.eu/project/id/958472	Horizon 2020
cmRNAbone	3D Printed-Matrix Assisted Chemically Modified RNAs Bone Regenerative Therapy for Trauma and Osteoporotic Patients	2020	2023	https://cmrnabone.eu/ 8mngnnnnnnpn	Horizon 2020
UMA3	Cooperation towards market-based innovations for advanced aerospace applications	2020	2023	https://cordis.europa.eu/project/id/952463	Horizon2020
Robot3DP	New Training Resources for the Change of the Industrial Paradigm	2020	2023	https://www.robot3dp.eu/	Erasmus +
Additool		2020	2023	https://www.additool.eu/en/home-2	INTERREG SUDOE
Grade2XL	Developing Innovative Technology Achieving Growth	2020	2024	https://www.grade2xl.eu/	Horizon2020
NUCOBAM	Promoting additive manufacturing for nuclear equipment components	2020	2024	https://cordis.europa.eu/project/id/945313	Horizon2020
MOAMMM	3D printed design optimisation of metamaterials at small scales	2020	2024	https://cordis.europa.eu/project/id/862015	Horizon2020
Change2Twin	Microstructures for qualitative process	2020	2024	https://cordis.europa.eu/project/id/862025	Horizon2020
3D-NANOFOOD	Printing personalised food for the elderly	2020	2024	https://cordis.europa.eu/project/id/867472	Horizon2020
2D4D	Digitalisation as an enabler of decarbonisation	2020	2025	https://cordis.europa.eu/project/id/853487	Horizon2020
3DPartForm	Programmable particle units in 3D-printed microrobotics for biomedical applications	2020	2025	https://cordis.europa.eu/project/id/852065	Horizon2020
3DPBio	Models for designing physical structures with lifelike movements	2020	2025	https://cordis.europa.eu/project/id/866480	Horizon 2020

4. AM Projects funded in 2021

Project Acronym	Project Name	Period		Link website	Funding Programme
		Start year	**End year**		
DEMO or DIE	Develop Engaging Massive Open Online Resources for Designers Innovative Education	2021	2023	Demo or Die	Implementation (demoordieproject.eu)	Erasmus +
Smart-WAAM	Smart WAAM: Microstructural Engineering and Integrated Non-Destructive Testing	2021	2023	Smart WAAM: Microstructural Engineering and Integrated Non-Destructive Testing	EIT RawMaterials	EIT RAW Materials
SOMA	Lightweight solutions for e-mobility by AM of soft magnetic alloys (SOMA)	2021	2023	SOMA: Lightweight Solutions for E-Mobility by AM of Soft Magnetic Alloys (SOMA)	EIT RawMaterials	EIT RAW Materials
METABUILDING LABS	METAclustered, SME oriented European Open Innovation Test Bed for the BUILDING envelope materials industrial sector using a harmonised and upgraded technical framework and living LABS	2021	2026	www.metabuilding-labs.eu	Horizon2020
A2M2TECH	Advanced Materials and Advanced Manufacturing Technologies	2021	2026	Advanced Materials and Advanced Manufacturing Technologies	A2M2TECH Project	Fact Sheet	H2020	CORDIS	European Commission (europa.eu)	Horizon2020
GAMMA	Harnessing solid-state thermal cycling to Guide microstructure evolution of Additively Manufactured Metallic Alloys	2021	2026	Harnessing solid-state thermal cycling to Guide microstructure evolution of Additively Manufactured Metallic Alloys	GAMMA Project	Fact Sheet	H2020	CORDIS	European Commission (europa.eu)	Horizon2020
ADDOPTML	ADDitively Manufactured OPTimized Structures by means of Machine Learning	2021	2025	http://addoptml.ntua.gr/	Horizon2020
AMELI	Voxel Based Material Design: Amalgamation of Additive Manufacturing and Scanning Electron Microscopy	2021	2026	Voxel Based Material Design: Amalgamation of Additive Manufacturing and Scanning Electron Microscopy	AMELI Project	Fact Sheet	H2020	CORDIS	European Commission (europa.eu)	Horizon2020
MA.D.AM	Modelling Assisted Solid State Materials Development and Additive Manufacturing	2021	2026	Modelling Assisted Solid State Materials Development and Additive Manufacturing	MA.D.AM Project	Fact Sheet	H2020	CORDIS	European Commission (europa.eu)	Horizon2020
TopAM	Tailoring ODS materials processing routes for additive manufacturing of high temperature devices for aggressive environments	2021	2024	Tailoring ODS materials processing routes for additive manufacturing of high temperature devices for aggressive environments	topAM Project	Fact Sheet	Horizon2020

Project Acronym	Project Name	Period		Link website	Funding Programme
		Start year	End year		
				| H2020 | CORDIS | European Commission (europa.eu)	
SUSTAINair	SUSTAINability increase of lightweight, multifunctional and intelligent airframe and engine parts	2021	2024	CIRCULAR MANUFACTURING | SUSTAINair	Horizon2020
AI2AM	Artificial Intelligence driven topology optimisation of Additively Manufactured Composite Components	2021	2023	Artificial Intelligence driven topology optimisation of Additively Manufactured Composite Components | AI2AM Project | Fact Sheet | H2020 | CORDIS | European Commission (europa.eu)	Horizon2020
DeMANS	Design and manufacture of sustainable materials for additive manufacturing technologies	2021	2025	Design and manufacture of sustainable materials for additive manufacturing technologies | DeMANS Project | Fact Sheet | H2020 | CORDIS | European Commission (europa.eu)	Horizon2020
ADDIFLAP	Additive Manufacturing of Flap Tracks based on Laser W-DED Process	2021	2023	ADDITIVE MANUFACTURING of FLAP TRACKS based on LASER W-DED PROCESS | ADDIFLAP Project | Fact Sheet | H2020 | CORDIS | European Commission (europa.eu)	Horizon2020
BRIGHT	Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period	2021	2023	https://bright-project.eu	Erasmus +
3DPCE	3D Printing: a Cultural accelerator for Education	2021	2023	Erasmus+ project card | Erasmus+ (europa.eu)	Erasmus +
CAPT'N'SEE	CAPTure aNd foStEr additive manufacturing knowlEdge for luxury industry	2021	2021	Additive manufacturing knowlEdge for luxury industry (CAPT'N'SEE) - EIT Manufacturing	EIT Manufacturing
TR-AM	Training on multi-scale modelling simulations for additive manufacturing	2021	2021	Training on multi-scale modelling simulations for additive manufacturing - EIT Manufacturing	EIT Manufacturing
AM-HLP	Additive Manufacturing for Hospitals - Learning Program	2021	2021	Additive Manufacturing for Hospitals - Learning Program (AM HLP) - EIT Manufacturing	EIT Manufacturing
SoftDREAM	Software tools for hybrid robot based additive manufacturing for industrial applications	2021	2021	SoftDREAM – Software tools for Additive Manufacturing (softdream-project.eu)	EIT Manufacturing
REDAMP	REal time monitoring of DED Additive Manufacturing Process for zero defect manufacturing	2021	2021	Redamp: REal time monitoring of DED Additive Manufacturing Process for Zero Defect Manufacturing - EIT Manufacturing	EIT Manufacturing
AMAI	Additive Manufacturing and Artificial Intelligence	2021	2021	Additive Manufacturing and Artificial Intelligence - EIT Manufacturing	EIT Manufacturing
DT FUTURE	Design The Future with Additive Manufacturing	2021	2021	Design The Future with Additive Manufacturing (DT Future) - EIT Manufacturing	EIT Manufacturing

Project Acronym	Project Name	Period		Link website	Funding Programme
		Start year	End year		
AMagine	Demand-driven education based on industrial knowledge gaps to increase adoption of AM in the manufacturing sector	2021	2021	Demand-driven education to increase adoption of AM (AMagine) - EIT Manufacturing	EIT Manufacturing
AMHealthyFuture	Manufacturing a healthy future European AM training programme and challenge for primary school teachers & pupils	2021	2021	Manufacturing a healthy future (AM HealthyFuture) - EIT Manufacturing	EIT Manufacturing

5.AM Projects funded in 2022

Project Acronym	Project Name	Period		Link website	Funding Programme
		Start year	End year		
SAMURAI	Soft Amphibious MicroRobot fabricated by Additive Integrated manufacturing	2022	2024	https://cordis.europa.eu/project/id/101032133	HORIZON 2020
AM4BAT	Gen. 4b Solid State Li-ion battery by additive manufacturing	2022	2026	https://cordis.europa.eu/project/id/101069756	Horizon Europe
Ultra3DPrint	Unlocking the potential of laser 3D printing with ultrasound	2022	2024	https://cordis.europa.eu/project/id/101023970	HORIZON 2020
3D-AM-TERA	3D architectures of Mxenes for Terahertz Applications	2022	2024	https://cordis.europa.eu/project/id/101028425	HORIZON 2020
VETRex4D	Virtual experimental toolbox for 3D/4D recrystallization	2022	2024	https://cordis.europa.eu/project/id/101032131	HORIZON 2020
DigiMat	Digital fabrication and integration of Material reuse for environmentally friendly cementitious composite building blocks	2022	2023	https://cordis.europa.eu/project/id/101029471	HORIZON 2020
PhotoPolyCarb	Biodegradable bottlebrush polycarbonates with benzophenone groups for the preparation of tissue engineering scaffolds	2022	2024	https://cordis.europa.eu/project/id/101030883	HORIZON 2020
3D-AM-TERA	3D architectures of Mxenes for Terahertz Applications	2022	2024	https://cordis.europa.eu/project/id/101028425	HORIZON 2020
ROFiDMS	Reliability-oriented Lightweight Optimization Framework for Intelligent Design of Material-structure Integration	2022	2024	https://cordis.europa.eu/project/id/101025743	HORIZON 2020

6. Synergies between SAM and other AM projects

The synergies among AM project identified in this section refer to the cooperation established in order to exchange of information, common promotion and fostering of visibility and impact of the concerned projects. There are 4 main outcomes coming from the synergies established, namely:

- to conduct joint events (for example use the context of another project conference or meeting to present SAM results and vice-versa) ;

- to disseminate/ promote SAM results (e.g., Surveys);

- to give the AM project European visibility through the AM Observatory;

- to deliver training in AM (the idea is not to repeat contents and to have complementary training; for us it would be interesting if other projects addressing training in AM (ERAMUS+) could use and test the Qualifications and learning units developed in SAM;

- To use the outcomes of prior projects (Training modules /materials) in SAM

- to validate projects findings and participate in working sessions based on their expertise

The table below summarizes the outcomes of the synergies.

AM projects	Context of the synergy between projects (what and when?)	Outcome (what was the result)
AMABLE	2 events organised: "Experience Lab-Round Table with Experts (AMABLE-SAM)" in April 2021; and "Industry Transforming with AM" in May 2021	**Dissemination**
DESTINE	Establishment of Metal AM Design Working Group Validation with experts	Several sessions were organised for the **validation** of the European AM Design Technician (EAMDT) profile by the AM Observatory Qualification Council – Metal AM Design sub-working group.
DEMO or DIE	DOD projects is developing a draft curriculum of the course, which is covering topics such design rules, materials characteristics to process applicability, among other topics. An Informative email "NEW project in AM with Polymers - DEMO Or DIE PROJECT" to inform and request feedback regarding I02 on the 12th October 2021.	**Validation** of the "3D Printing Design and Operation Learning Units" (intellectual output) by the AM Observatory Qualification Council – AM Polymers Working group.

Identification of possible outcomes resulting for synergies *(Add project name and a cross(x) in the correspondent activities)*

Possible Synergies between projects	Amaze	AMable	REDAMP	MULTI-FUN	CEFAM	LILIAM	DESTINE	DEMO or DIE
Organisation of Joint Events (Conference, meetings)		X		X	X	X		
Common Promotion/dissemination (e.g. Observatory)		X		X	X	X	X	X
Validation of SAM skills needs /results (e.g., answering to surveys and/interviews, participation in external Validation workshop)		X	X	X		X	X	X
To test CUs /Qualification created /revised in SAM			X new training contents about monitoring and control of WAAM		X training activities planned	X LILIAM training		
To use AM projects inputs in terms of technological findings to design CUs /Qualifications	X (case studies; presentations) All processes		X	X	X	X		
To use AM projects Training contents/materials in SAM		X	X		X	X		
Technological trends		M1, M3 PR3, PR11	ICT1, ICT3 Q2, Q3	M2, M5, M8 PR5, PR8, PR9	M1, M2 PP4			
Skills needs		X skill-up of SMEs	X Training	X	X Awareness	X		
Gaps		Mismatch, infrastructures, fast evolving	Shortage of training	Mismatch, infrastructures, fast evolving	Mismatch, infrastructures, fast evolving, shortage of training			

7. Synergies between SAM and other Sector Skills Alliances Blueprint projects

Identification of the outcomes resulting from synergies *with other Sector Skills Alliances Blueprints Projects*

Project Acronym	Name	Description	Outcomes	Website
DRIVES	Development of Research and Innovation Vocational Education Skills	The aim of the project is to implement the Blueprint objectives for the automotive sector, namely the delivery of human capital solutions to value chain (vehicle production, automotive suppliers and automotive sales and aftermarket services) through the establishment of an Automotive Sector Skills Alliance.	• link to Project website in AM Observatory focused on the project outcomes related to Additive Manufacturing / 3D printing • sharing of reports/executive report related with skills needs identification/demand in automotive sector • Establishment of an AM working group in ASA (https://automotive-skills-alliance.eu/) • Alignment between AM framework and DRIVES framework • Raising awareness on AM and identification of specific skills requirements according to the sector – Webinar" Across the AM Industry: The required skills-set by different sectors" (21.10.21) • Capacitation on AM certification, qualification and standardization - Online course for industry on Certification (24.11.21).	www.project-drives.eu
ESSA	European Steel Skills Agenda	The main objective of the project is to develop a Blueprint for a sustainable steel industry driven and coordinated European steel skills agenda and strategy for an ongoing and short-termed implementation of new skills demands.	• link to Project website in AM Observatory focused on the project outcomes related to Additive Manufacturing/3D printing sharing of reports/executive report related with skills needs identification/demand in the sector	www.estep.eu/essa/essa-project/

Project Acronym	Name	Description	Outcomes	Website
ALBATTS	European Battery Alliance	The Alliance for Batteries Technology, Training and Skills (ALBATTS) is a European funded project with the objective of contributing to the electrification of transport and green energy in Europe, by designing a blueprint for competences and training schemes of the future, in the battery and electromobility sector.	• link to Project website in AM Observatory focused on the project outcomes related to Additive Manufacturing/3D printing sharing of reports/executive report related with skills needs identification/demand in the sector	www.skills4automotive.eu/
ASSETS+	Alliance for Strategic Skills Addressing Emerging Defence Technologies	The project that aims to develop skills in robotics, C4ISTAR and cybersecurity. One of the project core objectives is to ensure that the educational programmes designed for the Defence sector comply with pedagogical requirements and match industrial needs.	• link to Project website in AM Observatory focused on the project outcomes related to Additive Manufacturing / 3D printing sharing of reports/executive report related with skills needs identification/demand in the sector • Raising awareness on AM and identification of specific skills requirements according to the sector - Webinar" Across the AM Industry: The required skills-set by different sectors" (21.10.21)	www.assets-plus.eu/
SPIRE-SAIS	Skills Intelligence for Industrial Symbiosis	The project aims to develop an industry-driven and proactive skills strategy that will assist the wider implementation and exploitation of industrial symbiosis and energy efficiency across the energy intensive industrial sectors represented in SPIRE: chemicals, steel, engineering, non-ferrous metals, minerals, water, cement, and ceramics.	• link to Project website in AM Observatory focused on the project outcomes related to Additive Manufacturing / 3D printing sharing of reports/executive report related with skills needs identification/demand in the sector	https://www.spire2030.eu/sais
EDDIE	Education for the Digitalisation of Energy	The project aims to develop a long-driven Blueprint for the digitalization of the European Energy sector to enable the matching between the current and future demand of skills necessary for the	• link to Project website in AM Observatory focused on the project outcomes related to Additive Manufacturing / 3D printing sharing of reports/executive report related with skills needs identification/demand in the sector	www.eddie-erasmus.eu/

Project Acronym	Name	Description	Outcomes	Website
		digitalization of the Energy sector and the supply of improved Vocational Education and Training (VET) systems and beyond.		
METIS	MicroElectronics Training, Industry and Skills	The project aims to implement a new strategic approach to sectoral cooperation on skills for microelectronics by involving the key players across industry, education & training and regulatory/certification bodies.	• link to Project website in AM Observatory focused on the project outcomes related to Additive Manufacturing / 3D printing • sharing of reports/executive report related with skills needs identification/demand in the sector	www.metis4skills.eu/
Construction Blueprint	Establishing a new strategy on construction skills in Europe	The main objective of Construction Blueprint is to develop a new sectoral strategic approach to cooperate on skills in the Construction industry, and support a better matching between skills need of companies and skills provided by training centres.	• link to Project website in AM Observatory focused on the project outcomes related to Additive Manufacturing / 3D printing • Raising awareness on AM and identification of specific skills requirements according to the sector - Webinar" Across the AM Industry: The required skills-set by different sectors" (21.10.21) • Capacitation on AM certification, qualification and standardization - - Online course for industry on Certification (24.11.21).	Home - Construction Blueprint
MATES	Maritime Alliance for fostering the European Blue Economy through a Marine Technology Skilling Strategy	The main objective is to develop a skills strategy that addresses the main drivers of change to the maritime industry, in particular shipbuilding and offshore renewable energy.	• link to Project website in AM Observatory focused on the project outcomes related to Additive Manufacturing / 3D printing • Raising awareness on AM and identification of specific skills requirements according to the sector - Webinar" Across the AM Industry: The required skills-set by different sectors" (21.10.21) • Capacitation on AM certification, qualification and standardization - - Online course for industry on Certification (24.11.21).	Maritime Alliance for fostering the European Blue Economy through a Marine Technology Skilling Strategy	Project Mates - Project Mates

8. References

[1] "http://www.skills4am.eu/observatory_projects.html," [Online].

[2] " https://cordis.europa.eu/," [Online].

[3] "https://ec.europa.eu/programmes/erasmus-plus/projects_en," [Online].

[4] "https://eitrawmaterials.eu/innovation/courses/," [Online].

[5] "https://eitmanufacturing.eu/activities/eit-projects/," [Online].

[6] d. -. G. P. f. D. a. V. o. E. Projects, "Handbook for Dissemination, Exploitation and Sustainability of Educational Projects," 2009.