



# SKILLS STRATEGY ROADMAP 2023

PROJECT NO. 601217-EPP-1-2018-1-BE-EPPKA2-SSA-B

SHORT VERSION



## THE SAM PROJECT

**Advanced Manufacturing** is one of the key enabling industries for sustainable economic growth, being Additive Manufacturing (AM), more commonly known as 3D printing, widely used in a wide range of Manufacturing processes or technologies applications.

As Europe seeks to retain its leading position in industrial competitiveness, there is an urgent need to establish a platform for AM skills at European, National and Regional levels. To meet this challenge the project Sector Skills Strategy in Additive Manufacturing (SAM) was undertaken from January 2019 to June 2023.

SAM'S MAIN OBJECTIVES WERE:



A Skills Strategy in Additive Manufacturing providing solutions capable to foster and support the growth, the innovation and competitiveness of the AM sector;

A methodology for a sustainable and continuous assessment of current and future skills needs in AM through the establishment and activity of the Observatory in Additive Manufacturing;

Design, review and deployment of relevant qualifications in the AM sector, built with a learning outcomes approach and linked with EU Frameworks and Tools such as the EQF, e-CF, EntreComp, ECVET and ECTS;

Promotion of the attractiveness of the AM sector as a career choice for primary, general education, Vocational Education and Training (VET) and university's students through a awareness campaign in the field of AM;

One online Qualifications Catalogue to continuously update and enlarge the International Additive Manufacturing Qualification System (IAMQS), integrating all the developed and to be developed sectoral qualifications.

*COVER PHOTO - 'DESIGNER = LUC MERX, LAMP = FALL OF THE DAMNED. MGX, MADE BY .MGX BY MATERIALISE'*

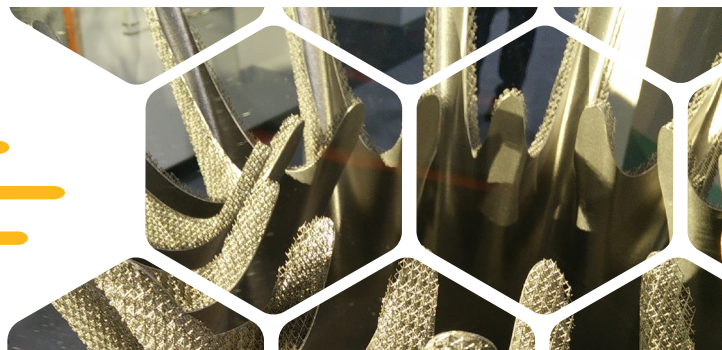
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## 1. INTRODUCTION

Welcome to the updated Additive Manufacturing Strategy Roadmap 2023!

In 2021, a Sector Skills Roadmap was launched to steer the implementation of the activities identified to mitigate a set of 7 Gap Drivers affecting the AM sector.

The 2023 Roadmap is built upon the methodology developed in 2021 to settle the AM Skills Strategy Roadmap, requiring a close collaboration between stakeholders, supported by a wide integration of activities within the European Observatory.

The starting point was the identification of 7 challenges faced by the AM sector in the form of “Gap drivers” (challenges) between what the industry needs in terms of educational/training offer and what is currently available, thus placing forward 7 strategic objectives, breakdown into concrete implementation activities to address each strategic objective.

The update of AM Skills Strategy Roadmap involved a series of validation steps focused on assessment of variations regarding the challenges in AM; advancements related with technological trends and monitoring of the skills strategy implementation.

This Roadmap for 2023 includes an updated version of:

- Impact of the strategy & flagship activity
- Skills Strategy Strategic objectives
- Outline of recommendations and possible examples of actions to achieve the objectives until 2030
- Summary conclusion

This is a short version of the Roadmap, the full Skills Strategy Roadmap is available online: [www.skills4am.eu](http://www.skills4am.eu)

## 2. THE WAY TO... EUROPEAN AM SKILLS STRATEGY ROADMAP 2023

To effectively convey the interaction between the Gap Drivers, their equivalent strategic objectives and relevant activities, the consortium has structured the roadmap in the following way:

- **Challenges in Additive Manufacturing (Gap Drivers)**, which have resulted from the continuous consultation, from the outset of project, with sector professionals and industry representatives, as illustrating the foremost obstacles to the development of the European AM sector.
- **Strategic objectives**, which represent a macro-level approach to a specific challenge. Objectives were defined as purpose statements, grounding the overall sector skills roadmap vision and measurable steps to overcome the challenges faced by the AM sector.
- **Actions**, illustrated the concrete and feasible solutions addressing each gap. For the strategy to succeed, specific Supporting Actions were considered together with support activities helping to maximize the success of the strategy.
- **Impact** represents the expected degree of success at countering each gap driver successfully.
- **Recommendations** were formulated as proposals, best practices, and guidance actions for further implementation by the different target groups, to take the best course of actions.
- **Target groups**, correspond to four main groups of stakeholders (e.g. Education, Industry, EU citizens/workers, legislators and policy makers) responsible for, directly or indirectly, contributing to for the recommendations, as described in table 1(see next page).

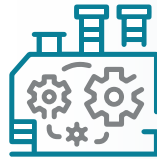


STAKEHOLDERS	TARGET GROUPS
<p><b>EDUCATION</b></p> <ul style="list-style-type: none"> <li>VOCATIONAL EDUCATION AND TRAINING ORGANISATIONS</li> <li>HIGHER EDUCATION INSTITUTIONS</li> <li>ENGINEERING STUDENTS AND PROFESSORS</li> <li>VOCATIONAL EDUCATION AND TRAINING STUDENTS AND TRAINERS</li> <li>PRIMARY SCHOOL AND HIGH SCHOOL STUDENTS</li> </ul>	 <p>The diagram shows the SAM logo (Sector Skills Strategy in Additive Manufacturing) and four target groups represented by icons: Education (graduation cap), Industry (factory), Workers/EU Citizens (person with gear), and Legislators/Policy Makers (gavel).</p>
<p><b>INDUSTRY</b></p> <ul style="list-style-type: none"> <li>INDUSTRY (FULL AND ASSOCIATED PARTNERS)</li> <li>LARGE, SMALL AND MEDIUM ENTERPRISES</li> <li>INDUSTRIAL COMPANIES EMPLOYING MANUFACTURING PERSONNEL, FROM DIFFERENT SECTORS</li> <li>RECRUITMENT AGENCIES FOCUSED ON MANUFACTURING INDUSTRY</li> <li>HR DEPARTMENTS OF INDUSTRIAL COMPANIES</li> <li>INDUSTRIAL TRADE UNIONS</li> <li>INDUSTRIAL EUROPEAN FEDERATION FOR INDUSTRY AND MANUFACTURING WORKERS</li> <li>INDUSTRIAL EMPLOYERS' AND OR WORKERS/EMPLOYEES' ASSOCIATIONS, E.G.: ETF EUROPEAN TRANSPORT WORKERS' FEDERATION</li> </ul>	<p><b>EU CITIZENS / WORKERS</b></p> <ul style="list-style-type: none"> <li>UNEMPLOYED LOOKING TO RE-SKILL;</li> <li>PROFESSIONALS WILLING TO IMPROVE THEIR SKILLS OR GET QUALIFIED IN NEW CUTTING-EDGE MANUFACTURING TECHNOLOGIES;</li> <li>ANYONE INTERESTED TO LEARN MORE ABOUT 3D PRINTING, DESPITE THEIR AGE OR BACKGROUND</li> </ul> <p><b>LEGISLATORS AND POLICY MAKERS</b></p> <ul style="list-style-type: none"> <li>DECISION MAKERS OF EDUCATIONAL POLICY MAKERS AT NATIONAL, REGIONAL AND EUROPEAN LEVELS</li> <li>DECISION MAKERS, MANAGERS AND OTHER PROFESSIONALS OF MANUFACTURING ENTERPRISES</li> <li>NATIONAL EMPLOYMENT AND /OR QUALIFICATION AGENCIES</li> </ul>

### Globally, SAM has contributed for the following impact:

1. Reduced skills gaps and ensure alignment between the training offers and the industry needs
2. Increased number of AM Qualified personnel, being by re-skilling, up-skilling of by training the “new” workforce
3. Increased number of organizations delivering AM Training
4. Enabled a wider pool of qualified personnel that can “move” between different countries and industrial sectors
5. Improved foresight of skills needs for the AM Sector
6. Increased number of people/students trained in AM in the short and long term across Europe
7. Enabled the information and access to funding to support AM-related skills development and sustainment





**FEEDING PACT FOR SKILLS:**  
Transfer of SAM results to Automotive, Aerospace, Defence and Energy Intensive Industries Ecosystems



**CEDEFOP**

European Centre for the Development of Vocational Training

Collaboration with study on "The role of Micro credentials in facilitating learning for employment"  
*Reference in Project Fiches*

**7 SUSTAINABILITY ACTION PLAN** exploitable results;



**2 BOOKLETS:**

- SAM "The new era of Skills in AM"
- 13 Original articles on AM Skills



**METHODOLOGY FOR IAMQS UPDATE**

- Operational guideline for AM context and training tools

**IAMQS NETWORK**

- 17 Authorised Training Centres
- 9 Nominated Bodies
- 8 Countries of implementation



**INTEGRATION IN ESCO METAL AM OPERATOR**



**16** Training modules developed

**24**

Upskilling pathway for **24 candidates**

**+450**

Record of Achievements issued

**64**

Trainers in Train the T



**4**

**FORECAST:**

Methodology supported by 4 foresight kits and 3 Kits to collect feedback on training and impact assessment

**662** hours of training delivered to participants

**930**

**2** Revised Occupations:

**QUALIFICATIONS AND CU**  
Metal AM Process Engineer PBF & Metal AM coordinator

**4** Round pilot c



**1** New Profile **AM DESIGNER FOR POLYMERS**



**OBSERVATORY PLATFORM**

- 1 Online skills needs self-assessment tool "FIND YOUR PATH"
- **Open call** for experts
- Information **calls for funding**



**EUROPEAN AM COMMUNITY NETWORK**

- 17 Full Partners
- 38 Associated Partners
- 9 AM ANBs
- 17 AM ATBs
- Working groups of IAMQC



**OBSERVATORY**

- 2 Councils, one for education and industry
- 82 organizations in the IAMQC
- 35 companies involved in the IAMIC



More than **110 stakeholders** involved in the Strategy Definition

Engagement with **5 blueprints:** MATES, DRIVES, ESSA, ASSETS+, Construction

**3**

**Comic Series** and 2 basic quizzes: **SAM DAM & SAMANTHA**



**8** **PODCASTS**  
+450 views

**6**

**RAISE AWARENESS**  
Posters and videos



**+3700** **WORKERS/PROFESSIONALS** reached with the RAC activities

**8**

**E-NEWS**



**8** **WORKSHOPS** for analysis and validation of Skills needs with **266 participants** in total



**1** **EVENT**  
415

220 followers with over **10K**

**+49.756** **VIEWS**  
**12.250** users **PROJECT WEBSITE**



1

SA

m

SA







Involved in  
trainers



**IAMQS**

**38**

Issuing of **1st International Metal AM Coordinators diplomas**, joined collaboration among **24 trainers from 8 education providers** (both VET and HE) in Europe

Is of  
courses



**+20**



More than **20 training resources** developed, including case studies and assessment questions

**17**



AM ATBs  
(authorized training centres)

ATION  
INING

M  
STRATEGY  
FACTURING

**MARKET  
WORLD**

ENING

**167**

members in combined  
AM LinkedIn groups

**66**

videos on

**YouTube**

**80**  
LETTERS

**+80**



Schools involved in Tech4Kids Activities

**0**  
WEBINARS



**3453**

Participants in AM Open days events

**9**

National Roll out  
ts conducted in 9 countries with  
**58 participants** in total



**4315**

Children and youngsters  
involved in Tech4Kids  
Activities



**38** MILESTONES  
IDENTIFIED

by the Global and Societal  
Milestones reports



**1**  
FORESIGHT REPORT

Mapping of

**84**



AM Initiatives in the Observatory



**30**

STRATEGIC  
RECOMMENDATIONS

for stakeholders to implement until 2030  
▪ 7 Gap drivers linked with 7 strategic objectives  
▪ 29 implemented actions



ENGAGEMENT WITH  
National Initiatives:

- DFAM Network
- CAAR
- NiedersachsenADDITIV

**+8 European Initiatives:**

- AM Platform
- DIGITAL SKILLS & JOBS PLATFORM
- VANGUARD initiative
- EIT RAW Materials
- EIT Manufacturing
- ASA
- World Manufacturing Forum
- EDA

**+8 International Initiatives:**

- MIT
- Innovation America Makes
- 3D Printing Industry
- ASME
- ISO
- CEN
- NADCAP/PRI
- Baker Huger

**1**

GLOSSARY  
with educational  
and pedagogical  
terms



**10**

AM PROFESSIONAL  
PROFILES

addressed by the  
Skills Professional /  
Skills' Roadmap



**38**

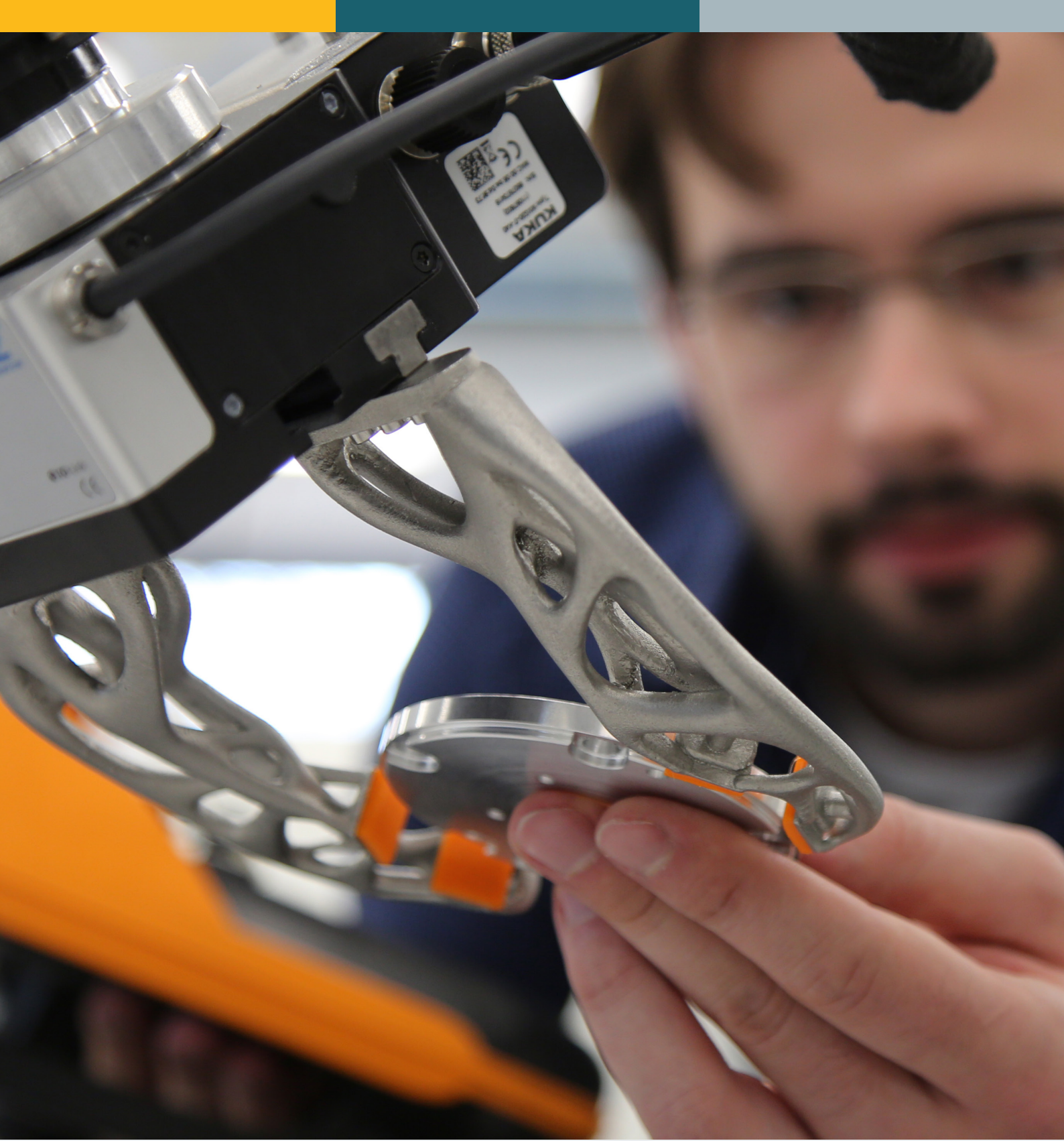
TECHNOLOGICAL TRENDS

promising challenges linked to materials,  
process / manufacturing, post-processing,  
ICT and quality segments

**4**

Reports on  
Skills Needs





The flagship activity of the Skills Strategy Roadmap continues being the deployment of the International AM Qualification System (IAMQS) through a network of training providers, sustained by a strong connection between a wide range of industrial sectors, which are applying AM in their activity or intend to do so (see Figure below).



**European AM Observatory** is responsible for collecting and analysing data through a forecast methodology for the identification and anticipation of skills needs in the AM sector, as well as manage the implementation of an International Qualification System for AM.



**A Network of Training Centres in AM** is brought together, from both VET and HE, which are implementing the common trans-national curriculum. The training centres belonging to this network also share the same Quality Assurance standards in the assessment of learning outcomes, in accordance with the IAMQS Training Guidelines.



**International AM Qualification System** is composed by a set of qualifications for different proficiency levels in the field of AM technologies, grounded in industry requirements and validated by experts. Within the system, a single syllabus for each level is defined, supported by a harmonized system for assessment and quality assurance, resulting in the same qualification being awarded independently from the country.



**The Qualification of the AM Workforce** is possible through the upskilling (improving existing skills) and reskilling (training in new skills) of workers. The IAMQS uses a modular structure to design its qualifications and training programs. The outcome is that training guidelines can be used in a flexible way, aligned with the specific needs of users.

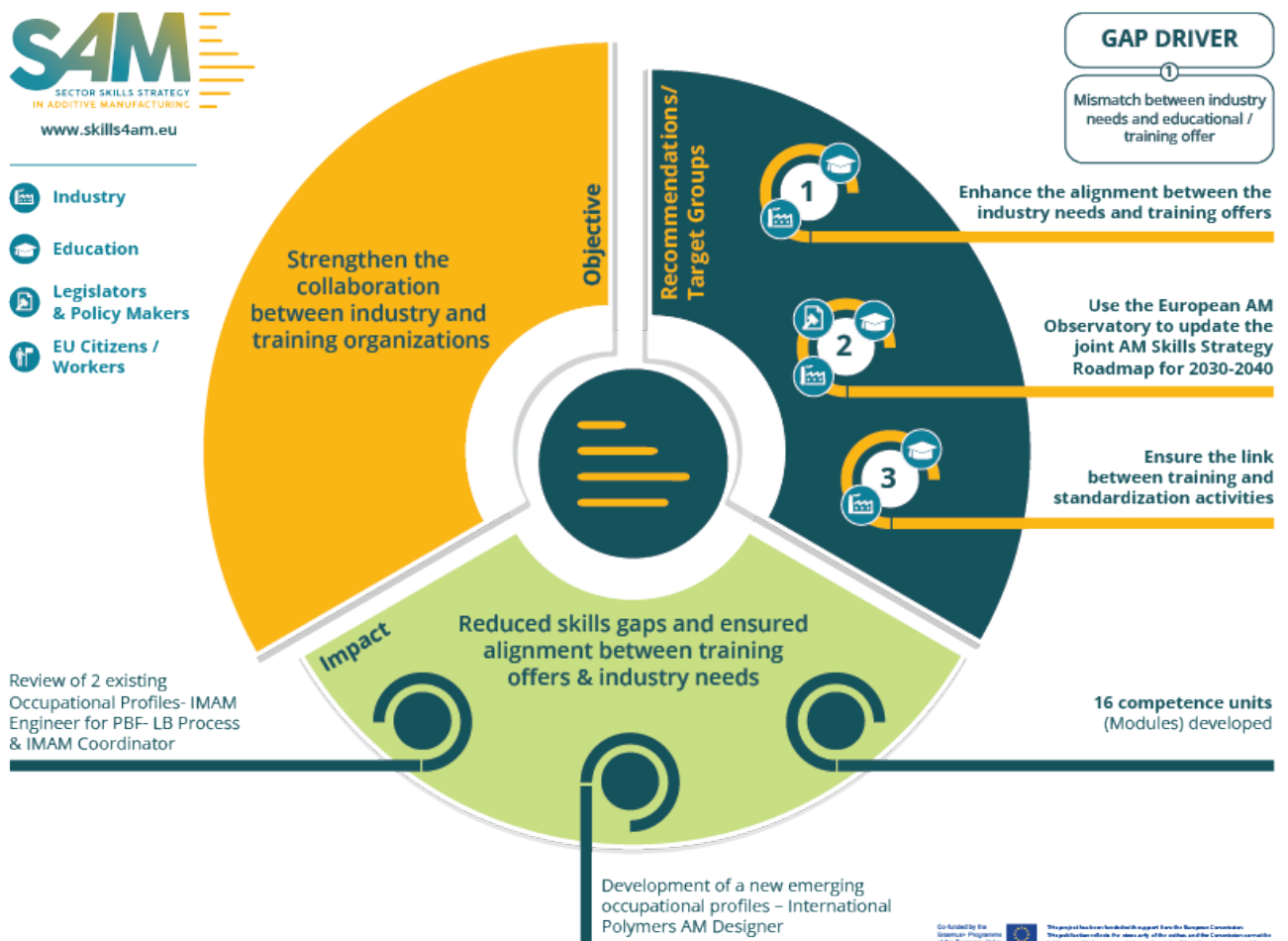


**The existing AM Qualification System** covers Metal AM Qualifications for Operators, Designers, Supervisor, Inspector, Coordinator and Engineers. More are to come namely for Polymers.

# 3. STRATEGIC RECOMMENDATIONS FOR THE AM SECTOR

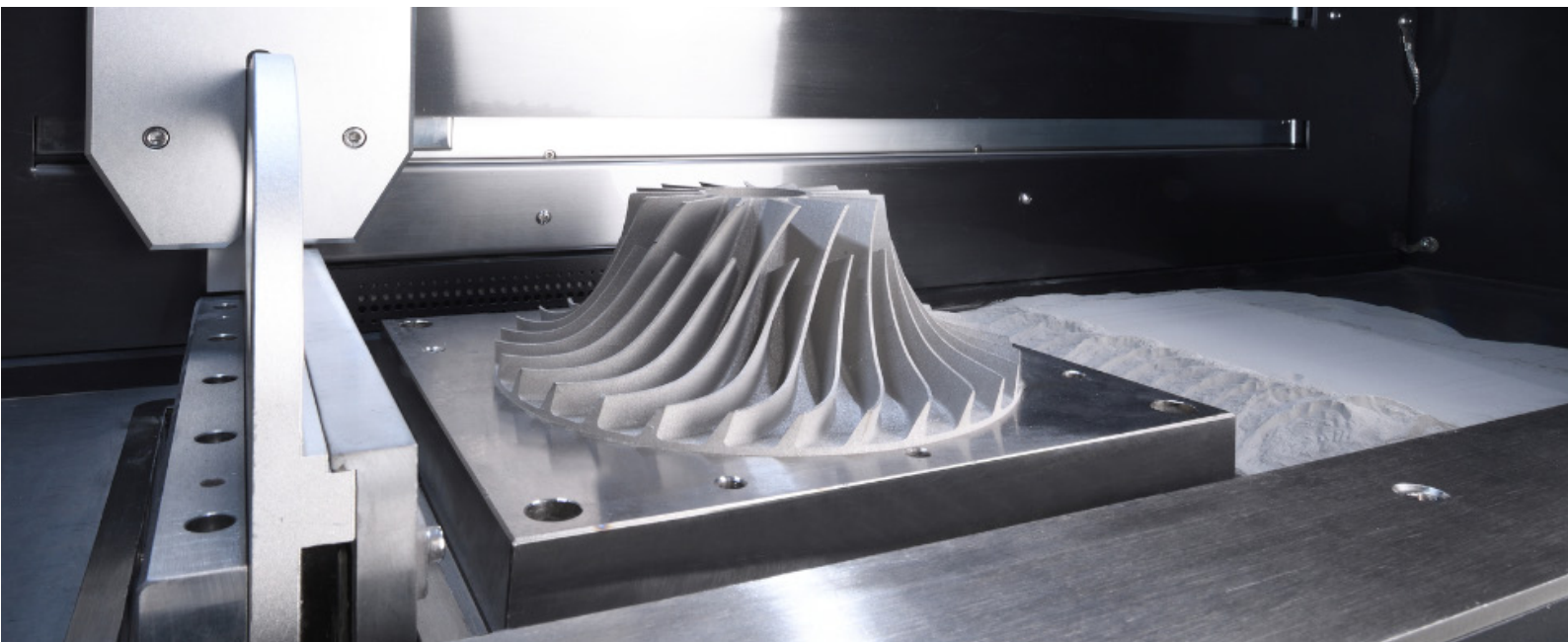
SAM Sector Skills Strategy Roadmap outlines the 30 recommendations to support and guide SAM stakeholders, including partners and associated partners, in carrying out future actions for AM competitiveness and growth until 2030.

## 3.1 Strengthen the collaboration between industry and training organisations

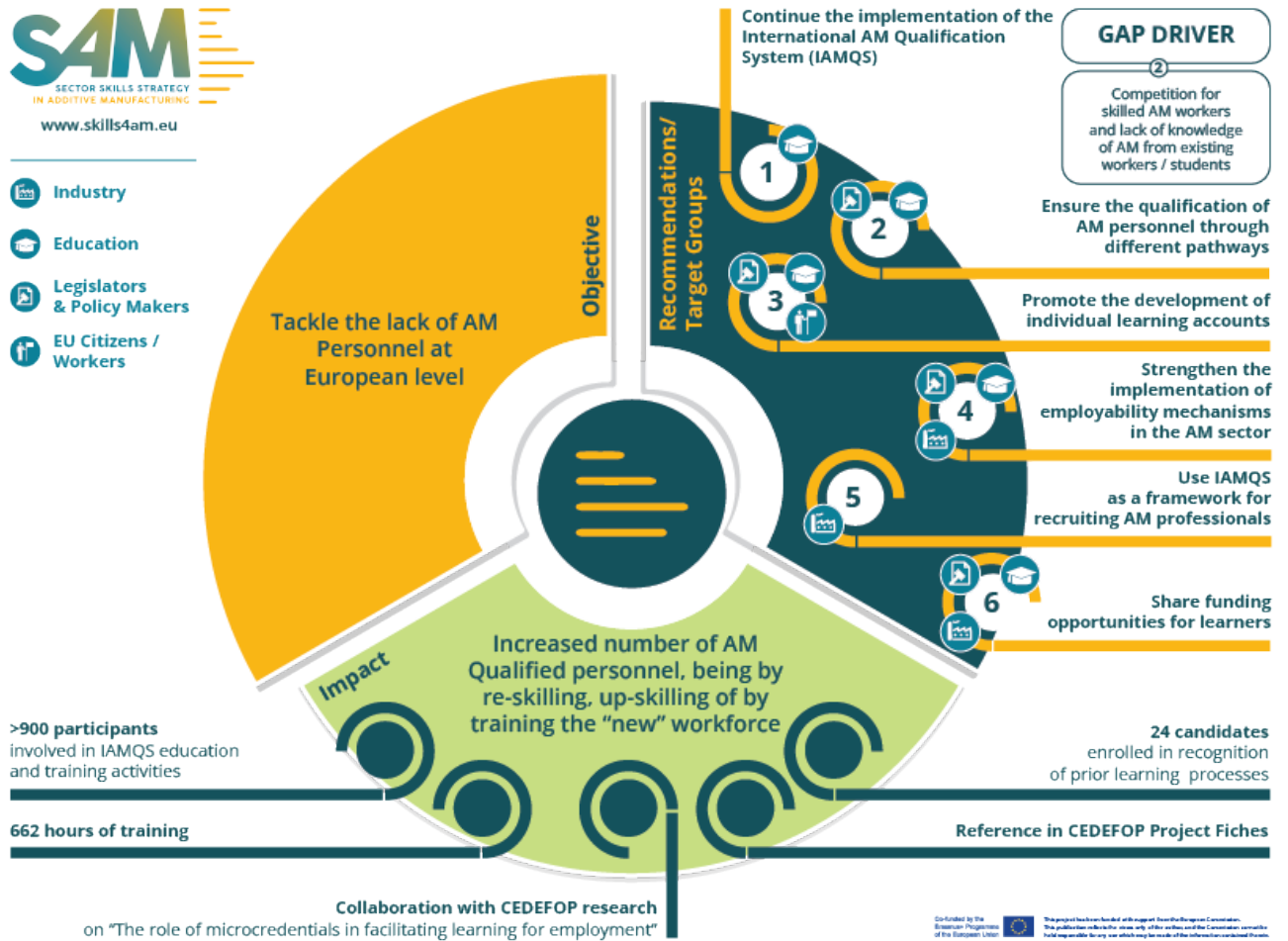


To continue **strengthen the collaboration between industry and training organizations**, it is recommended that the different target groups follow three recommendations:







RECOMMENDATION	TARGET GROUP	EXAMPLES OF FUTURE ACTIONS
<p>ENHANCE THE ALIGNMENT BETWEEN THE INDUSTRY NEEDS AND TRAINING OFFERS</p>		<ul style="list-style-type: none"> <li>• BY CONTINUING THE IMPLEMENTATION OF THE FORECAST METHODOLOGY FOR THE AM SECTOR</li> <li>• BY MOBILIZING THE ENGAGEMENT OF INDUSTRIAL ORGANISATIONS IN THE IDENTIFICATION OF SKILLS AND VALIDATION OF TRAINING PROGRAMMES, THROUGH THE AM OBSERVATORY INDUSTRIAL COUNCILS</li> </ul>
<p>USE THE EUROPEAN AM OBSERVATORY TO UPDATE THE JOINT AM SKILLS STRATEGY ROADMAP FOR 2030 -2040</p>		<ul style="list-style-type: none"> <li>• BY PROMOTING FORECAST WORKSHOPS WITH INDUSTRIAL ORGANISATIONS</li> <li>• BY IMPLEMENTING FORESIGHT SCENARIOS AUSCULTATION WITH INDUSTRIAL EXPERTS</li> <li>• BY ADDRESSING THE LITERATURE REVIEW AS METHOD FOR FORECAST</li> <li>• BY UPDATING OF THE OBSERVATORY DATA ON SKILLS NEEDS</li> </ul>
<p>ENSURE THE LINK BETWEEN TRAINING AND STANDARDIZATION ACTIVITIES (CEN, ISO)</p>		<ul style="list-style-type: none"> <li>• BY IDENTIFYING THE RELEVANT STANDARDS IMPACTING THE AM TRAINING</li> <li>• BY WORKING AND APPROVING ON THE DEVELOPMENT OF STANDARDS FOR THE QUALIFICATION OF AM PERSONNEL</li> </ul>



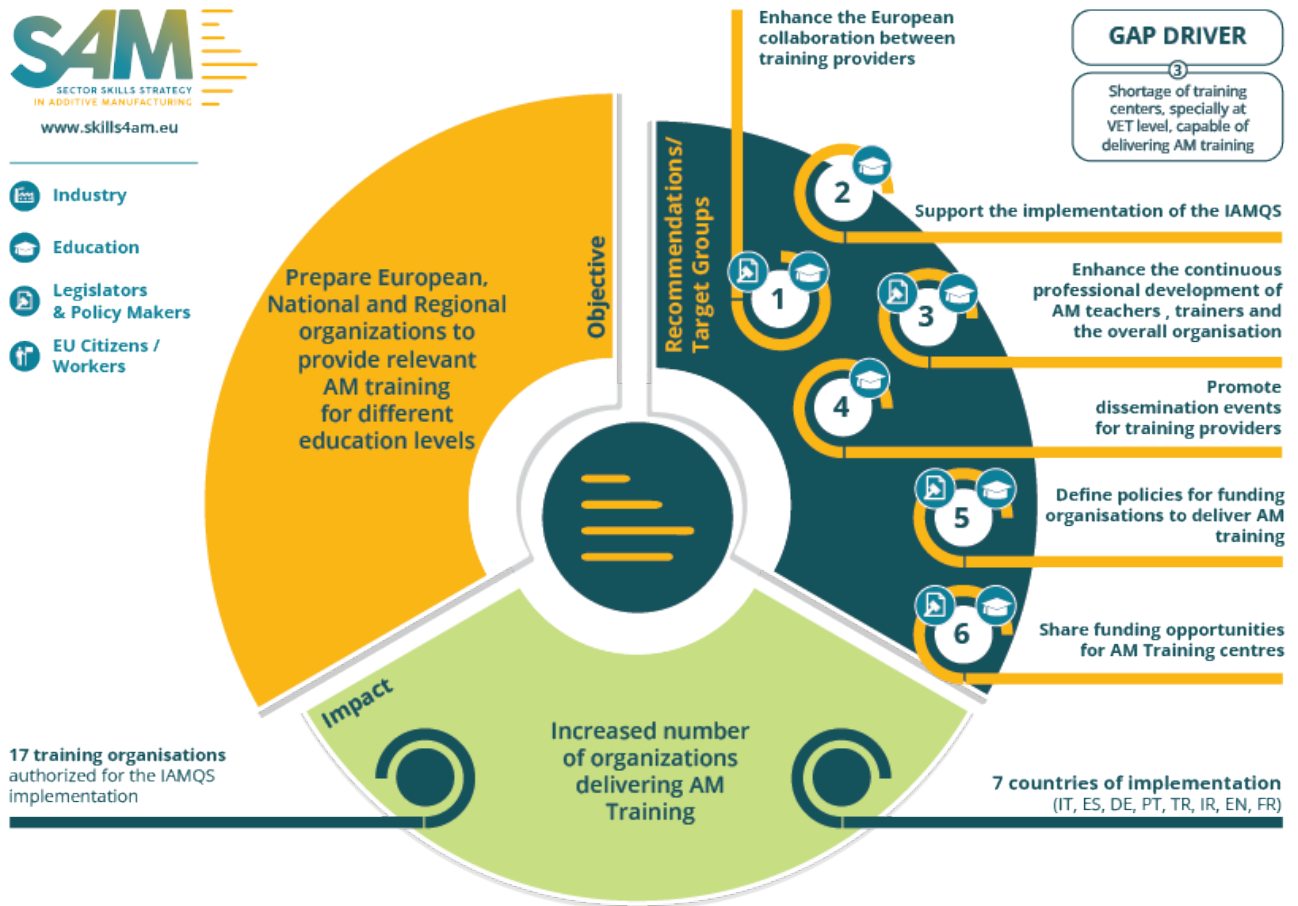
### 3.2 Tackle the lack of AM Personnel at European level



To continue **tackling the lack of AM Personnel at European level**, it is recommended that the different target groups follow five recommendations:

RECOMMENDATION	TARGET GROUP	EXAMPLES OF FUTURE ACTIONS
CONTINUE THE IMPLEMENTATION OF THE INTERNATIONAL AM QUALIFICATION SYSTEM (IAMQS)		<ul style="list-style-type: none"> <li>BY CONTINUING TO INCREASE THE NETWORK OF AM ANBS/ATBS</li> <li>BY EXPANDING AM ATBS TRAINING OFFERS</li> <li>BY CONTINUING TO DEVELOP/UPDATE AM QUALIFICATIONS BASED ON MODULAR APPROACH</li> <li>BY DISPLAYING THE AM TRAINING CATALOGUE IN THE EUROPEAN AM OBSERVATORY</li> </ul>
ENSURE THE QUALIFICATION OF AM PERSONNEL THROUGH DIFFERENT TRAINING PATHWAYS		<ul style="list-style-type: none"> <li>BY ENSURING ACCESS TO RELEVANT VOCATIONAL EDUCATION AND TRAINING, HIGHER EDUCATION AND RECOGNITION OF PRIOR LEARNING.</li> <li>BY PROMOTING UP-SKILLING AND RESKILLING PATHWAYS</li> <li>BY PROMOTING LIFELONG LEARNING APPROACH TO AM SKILLS DEVELOPMENT</li> </ul>
PROMOTE THE DEVELOPMENT OF INDIVIDUAL LEARNING ACCOUNTS		<ul style="list-style-type: none"> <li>BY ESTABLISHING MUTUAL COOPERATION PROTOCOLS BETWEEN AM ATBS &amp; TRAINING PROVIDERS TO DELIVER A FULL QUALIFICATION PATH</li> <li>BY AWARDING MICRO-CREDENTIALS (E.G. RECORD OF ACHIEVEMENT) FOR EACH COMPLETED UNIT OF LEARNING OUTCOMES</li> </ul>
STRENGTHEN THE IMPLEMENTATION OF EMPLOYABILITY MECHANISMS IN THE AM SECTOR		<ul style="list-style-type: none"> <li>BY CONTINUING THE ACTIVITY OF THE LINKEDIN STUDENTS, TRAINEES AND JOB SEEKERS IN AM GROUP</li> <li>BY SHARING AM RECRUITMENT OFFERS IN THE EUROPEAN AM OBSERVATORY</li> </ul>
USE IAMQS AS A FRAMEWORK FOR RECRUITING AM PROFESSIONALS		<ul style="list-style-type: none"> <li>BY INFORMING HR DEPARTMENTS AND RECRUITMENT AGENCIES ABOUT THE DIFFERENT LEVELS OF SPECIALIZATION AND OCCUPATIONS IN AM</li> <li>BY INTEGRATING IAMQS DESCRIPTION IN JOB ADVERTS</li> </ul>
SHARE FUNDING OPPORTUNITIES FOR LEARNERS		<ul style="list-style-type: none"> <li>BY PROVIDING FUNDING /PROGRAMMES INFORMATION ON THE EUROPEAN AM OBSERVATORY</li> </ul>

### 3.3 Prepare European, National and Regional organizations to provide relevant AM training for different educational levels



Co-funded by the Erasmus+ Programme of the European Union

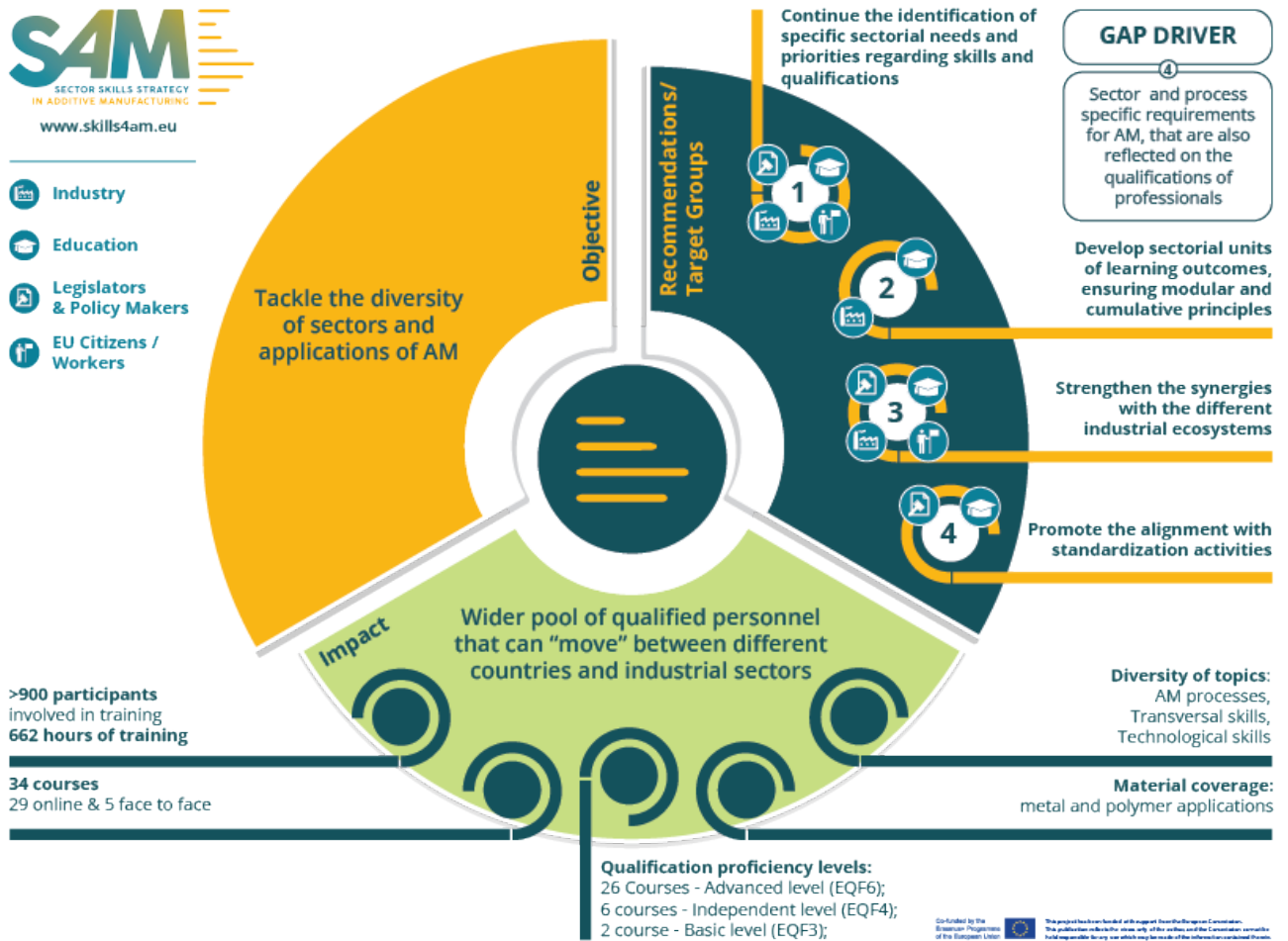
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To continue **preparing European, National and Regional organizations to provide relevant AM training for different educational levels**, it is recommended that the different target groups follow five recommendations:

RECOMMENDATION	TARGET GROUP	EXAMPLES OF FUTURE ACTIONS
ENHANCE THE EUROPEAN COLLABORATION BETWEEN TRAINING PROVIDERS	 	<ul style="list-style-type: none"> <li>BY CONTINUING TO DEVELOP NATIONAL COOPERATION NETWORKS OF AUTHORIZED TRAINING CENTRES IN AM (AM ATBS)</li> </ul>
SUPPORT THE IMPLEMENTATION OF THE IAMQS		<ul style="list-style-type: none"> <li>BY ADOPTING DIVERSE TRAINING METHODOLOGIES, INCLUDING WORK-BASED LEARNING, PROJECT BASED LEARNING, BLENDED LEARNING, DISTANT LEARNING, AMONG OTHERS.</li> <li>BY DISPLAYING THE LIST OF AM ATBS AND THEIR TRAINING OFFER IN EUROPEAN AM OBSERVATORY</li> </ul>
ENHANCE THE CONTINUOUS PROFESSIONAL DEVELOPMENT OF AM TEACHERS, TRAINERS AND THE OVERALL ORGANISATION	 	<ul style="list-style-type: none"> <li>BY IMPLEMENTING CONTINUOUS TRAIN THE TRAINERS COURSES</li> <li>BY IMPLEMENTING SYSTEMATIC PEER-LEARNING ACTIONS</li> <li>BY PROMOTING A LIFELONG LEARNING CULTURE WITHIN THE TRAINING ORGANISATION LEARNING ACTIONS</li> </ul>
PROMOTE DISSEMINATION EVENTS FOR TRAINING PROVIDERS		<ul style="list-style-type: none"> <li>BY PRESENTING THE IAMQS TRAINING OFFERS AND QUALITY ASSURANCE SYSTEM</li> </ul>
DEFINE POLICIES FOR FUNDING ORGANISATIONS TO DELIVER AM TRAINING	 	<ul style="list-style-type: none"> <li>BY DEFINING POLICIES THAT SUPPORT THE CAPACITATION OF STAFF</li> <li>BY DEFINING POLICIES THAT SUPPORT EQUIPPING ORGANISATIONS</li> </ul>
SHARE FUNDING OPPORTUNITIES FOR AM TRAINING CENTRES	 	<ul style="list-style-type: none"> <li>BY PROVIDING FUNDING /PROGRAMMES INFORMATION ON THE EUROPEAN AM OBSERVATORY</li> <li>BY ESTABLISHING PARTNERSHIP IN THE SCOPE OF EU FUNDING PROJECTS</li> </ul>

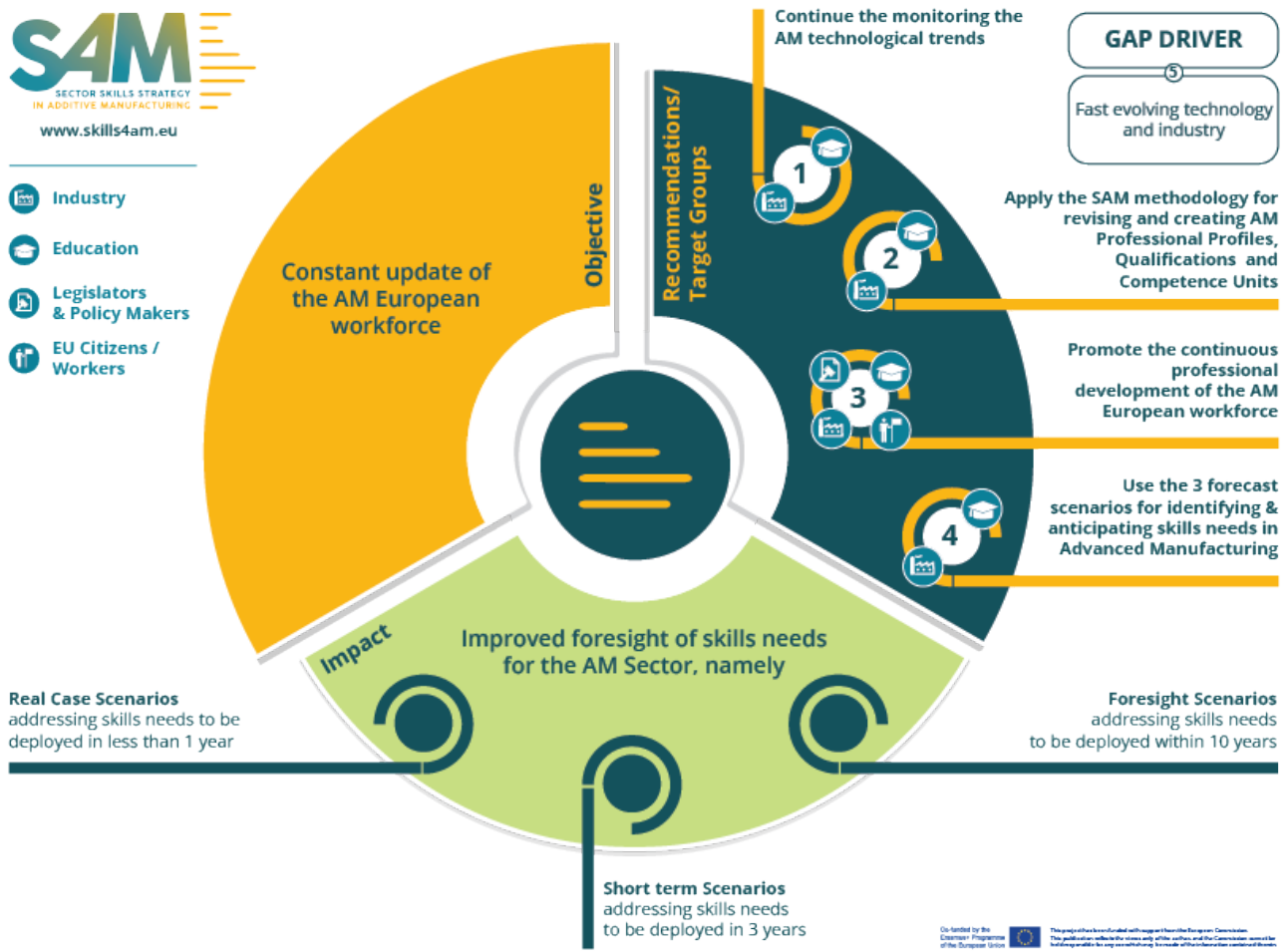
### 3.4 Tackle the diversity of sectors and applications of AM







To continue **tackling the diversity of sectors and applications in AM**, it is recommended that the different target groups follow three recommendations:

RECOMMENDATION	TARGET GROUP	EXAMPLES OF FUTURE ACTIONS
<p>CONTINUE THE IDENTIFICATION OF SPECIFIC SECTORIAL NEEDS AND PRIORITIES REGARDING SKILLS AND QUALIFICATIONS.</p>		<ul style="list-style-type: none"> <li>BY ENSURING THE INVOLVEMENT OF DIFFERENT INDUSTRIAL STAKEHOLDERS IN THE IDENTIFICATION AND VALIDATION OF SKILLS NEEDS</li> </ul>
<p>DEVELOP SECTORIAL UNITS OF LEARNING OUTCOMES, ENSURING MODULAR AND CUMULATIVE PRINCIPLES</p>		<ul style="list-style-type: none"> <li>BY USING A MODULAR APPROACH IN THE DEVELOPMENT OF THE TRAINING WITH SOME SECTOR/ PROCESS SPECIFIC MODULES</li> <li>BY IDENTIFYING COMMON REQUIREMENTS BETWEEN THE DIFFERENT SECTORS</li> <li>BY RECOGNISING UP-SKILLING AND RESKILLING PATHWAYS</li> <li>BY IMPLEMENTING IAMQS COURSES THAT PROMOTE PROFESSIONALS RESKILLING, NAMELY AMONG WELDING PROFESSIONALS</li> </ul>
<p>STRENGTHEN THE SYNERGIES WITH THE DIFFERENT INDUSTRIAL ECOSYSTEMS</p>		<ul style="list-style-type: none"> <li>BY IMPLEMENTING IAMQS TRAINING SUPPORTED BY A QUALITY ASSURANCE SYSTEM AND RECOGNISED BY DIFFERENT SECTORS</li> <li>BY ORGANISING EVENTS AND DISSEMINATE THE INTERNATIONAL AM QUALIFICATIONS TO DIFFERENT INDUSTRIAL SECTORS</li> </ul>
<p>PROMOTE THE ALIGNMENT WITH STANDARDIZATION ACTIVITIES</p>		<ul style="list-style-type: none"> <li>BY IDENTIFYING INDUSTRIAL REQUIREMENTS</li> <li>BY MAKING THE LINKAGE BETWEEN AM PERSONNEL QUALIFICATIONS AND SECTORAL/INDUSTRIAL REQUIREMENTS</li> </ul>

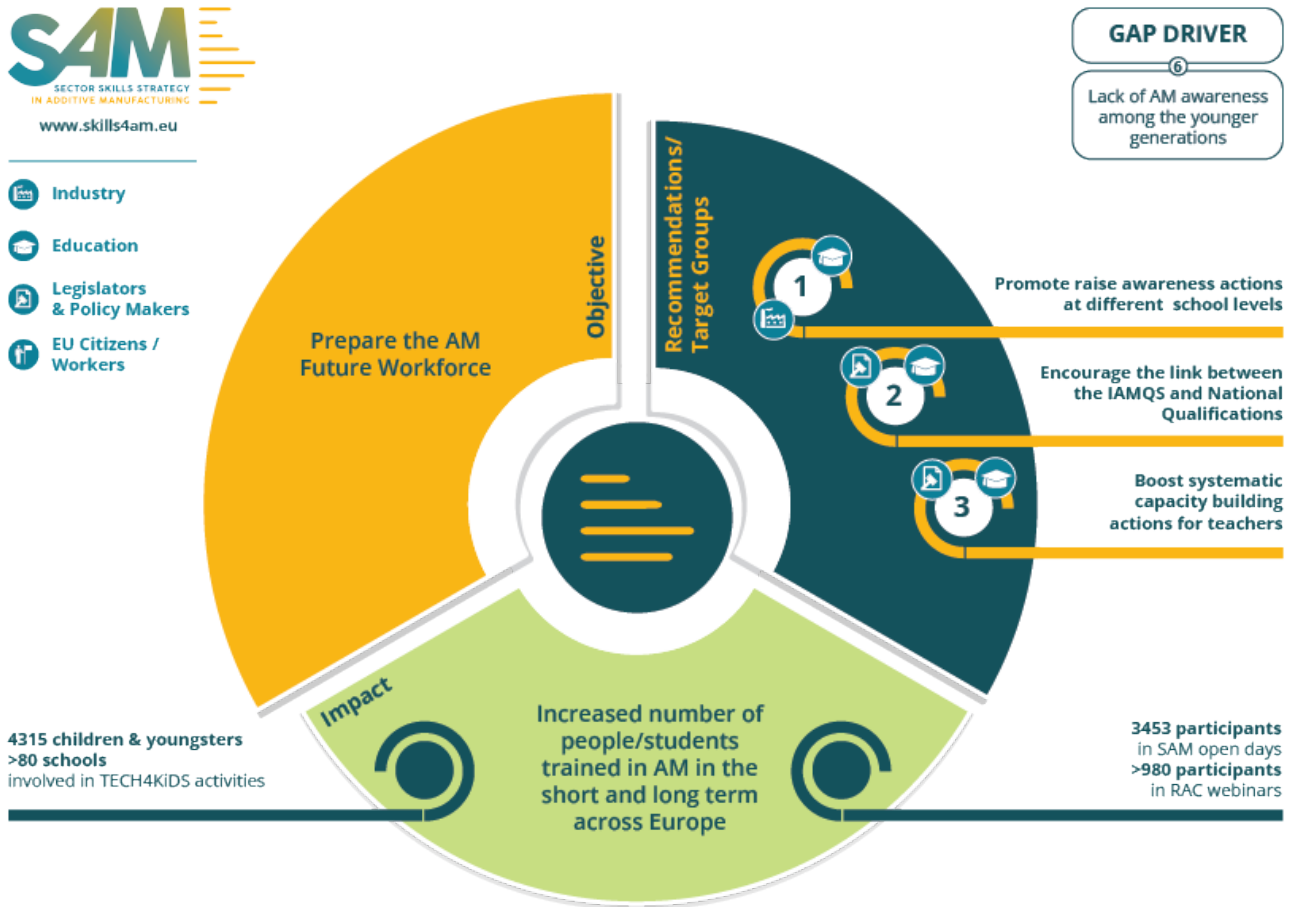
### 3.5 Constant update of the AM European workforce



To **constantly update the AM European workforce**, it is recommended that the different target groups follow three recommendations:

RECOMMENDATION	TARGET GROUP	EXAMPLES OF FUTURE ACTIONS
<p>CONTINUE THE MONITORING THE AM TECHNOLOGICAL TRENDS</p>		<ul style="list-style-type: none"> <li>• BY IDENTIFYING NEW AM TECHNOLOGICAL TRENDS</li> <li>• BY CONTINUING THE IMPLEMENTATION OF THE FORECAST AND SKILLS ANTICIPATION IN AM</li> </ul>
<p>APPLY THE SAM METHODOLOGY FOR REVISING AND CREATING AM PROFESSIONAL PROFILES, QUALIFICATIONS AND COMPETENCE UNITS</p>		<ul style="list-style-type: none"> <li>• BY IDENTIFYING THE SKILLS GAPS ORIGIN</li> <li>• BY MAKING A COMPARATIVE ANALYSIS BASED ON SIMILARITIES AND DIFFERENCES WITH EXISTING PROFESSIONAL PROFILES /QUALIFICATIONS /CUS</li> <li>• CONDUCTING WORKING SESSIONS WITH EXPERTS REVIEWING AM PROFESSIONAL PROFILES AND QUALIFICATIONS</li> <li>• BY DEVELOPING NEW QUALIFICATIONS AND/OR UNITS OF LEARNING OUTCOMES BASED ON AM TECHNOLOGICAL DEVELOPMENTS</li> </ul>
<p>PROMOTE THE CONTINUOUS PROFESSIONAL DEVELOPMENT OF THE AM EUROPEAN WORKFORCE</p>		<ul style="list-style-type: none"> <li>• BY IMPLEMENTING COURSES, WORKSHOPS AND OTHER EDUCATIONAL INITIATIVES TARGETING CURRENT AND FUTURE AM WORKFORCE</li> </ul>
<p>USE THE 3 FORECAST SCENARIOS FOR IDENTIFYING &amp; ANTICIPATING SKILLS NEEDS IN ADVANCED MANUFACTURING</p>		<ul style="list-style-type: none"> <li>• ASSESSING SKILLS NEEDS FOR REAL CASE (LESS THAN 1 YEAR), SHORT TERM (LESS THAN 3 YEARS) AND FORESIGHT SCENARIOS (REQUIRED IN 10 YEARS)</li> </ul>




### 3.6 Prepare the AM future workforce

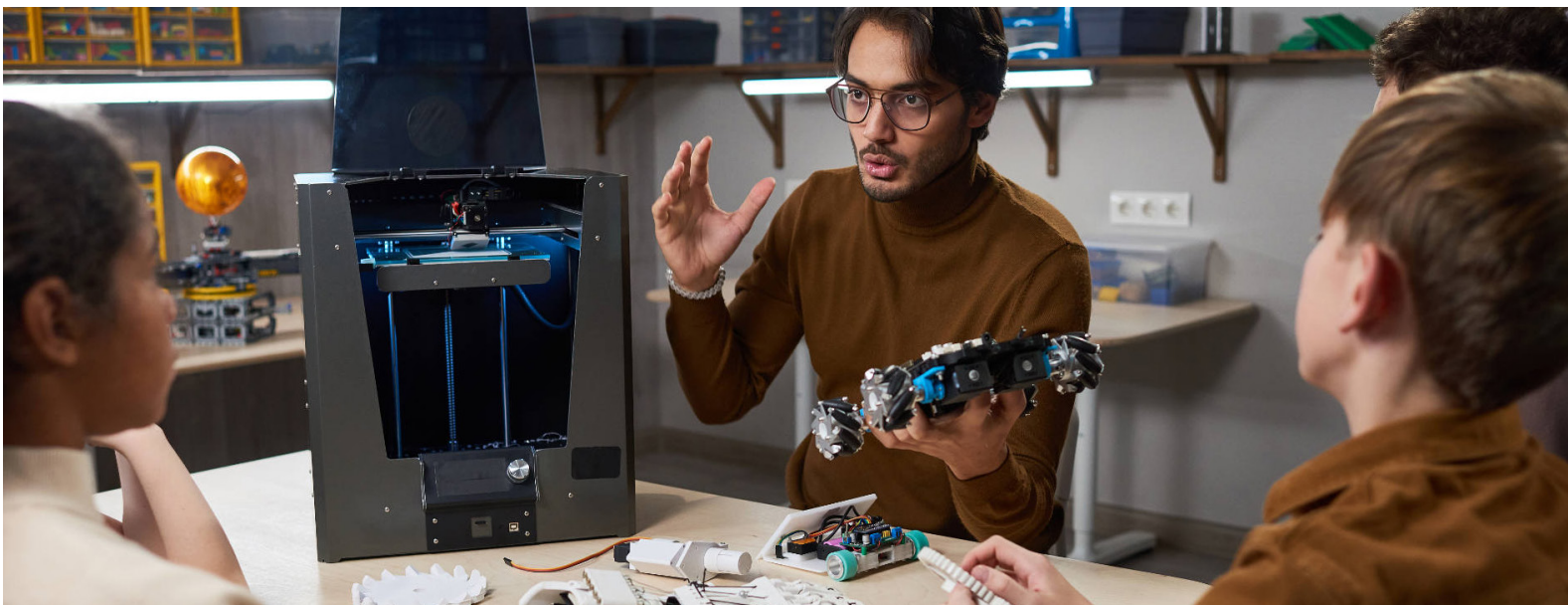


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To continue **preparing the AM future workforce**, it is recommended that the different target groups follow three recommendations:

RECOMMENDATION	TARGET GROUP	EXAMPLES OF FUTURE ACTIONS
PROMOTE RAISE AWARENESS ACTIONS AT DIFFERENT SCHOOL LEVELS		<ul style="list-style-type: none"> <li>• BY SHARING TECH4KIDS TOOLS</li> <li>• BY ORGANIZING EVENTS TO RAISE AWARENESS OF AM AND ITS CAPABILITIES, FOCUSING ON CREATIVITY, FOR YOUNG STUDENTS</li> <li>• BY ENSURING THE FREE ACCESS TO RAISE AWARENESS MATERIALS/TOOLS IN THE AM OBSERVATORY</li> <li>• BY BOOSTING THE IMPLEMENTATION OF THE CU "AM FOR YOUR CAREER" TO INCREASE THE ATTRACTIVENESS OF THE SECTOR AMONG YOUNGSTERS AND KNOWLEDGE ABOUT AM TRAINING OFFERS</li> </ul>
ENCOURAGE THE LINK BETWEEN THE IAMQS AND NATIONAL QUALIFICATIONS		<ul style="list-style-type: none"> <li>• BY FOLLOWING UP NATIONAL ROLL OUT STRATEGIES</li> <li>• BY REACHING NEW COUNTRIES IN IAMQS</li> <li>• BY INTEGRATING AM QUALIFICATIONS IN NATIONAL QUALIFICATION SYSTEMS</li> </ul>
BOOST SYSTEMATIC CAPACITY BUILDING ACTIONS FOR TEACHERS		<ul style="list-style-type: none"> <li>• BY SHARING THE EDUCATIONAL KIT FOR SCHOOLS</li> <li>• BY IMPLEMENTING SYSTEMATIC PEER-LEARNING ACTIVITIES</li> <li>• BY PROMOTING DISSEMINATION EVENTS WITH TEACHERS</li> </ul>



### 3.7 Leverage on existing funding programs and mechanisms













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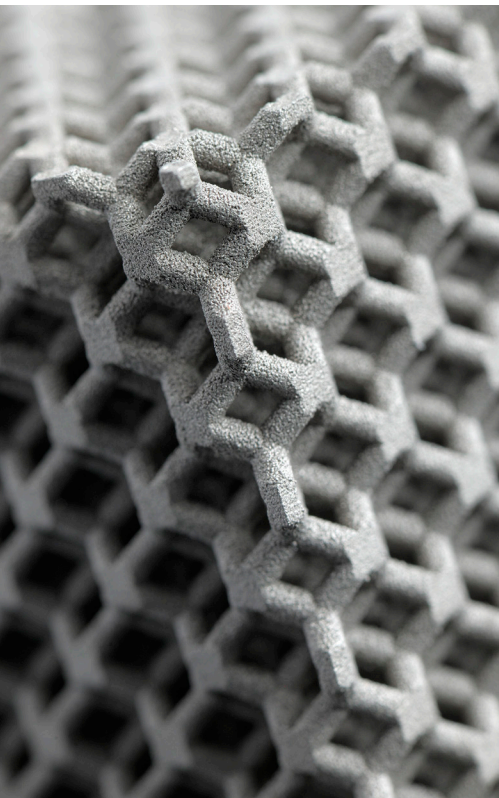
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To continue **leveraging on existing funding programs and mechanisms**, it is recommended that the different target groups follow two recommendations:

RECOMMENDATION	TARGET GROUP	EXAMPLES OF FUTURE ACTIONS
GUIDE THE AM SECTOR TO SKILLS/TRAINING/ QUALIFICATION FUNDING OPPORTUNITIES	 EDUCATION  INDUSTRY  LEGISLATORS & POLICY MAKERS	<ul style="list-style-type: none"> <li>BY SHARING INFORMATION ON FUNDING PROGRAMMES THAT CAN ENABLE TRAINING CENTRES AND SCHOOLS WITH AM EQUIPMENT AND SOFTWARE</li> <li>BY MAPPING AND PROMOTING FUNDING RELEVANT FOR AM SKILLS AND QUALIFICATIONS</li> <li>BY ORGANISING EVENTS TO FACILITATE NETWORKING AND COLLABORATION IN EU AND NATIONAL CALLS FOR AM</li> </ul>
MOBILISE SKILLS-RELATED PROGRAMMES AT EU AND NATIONAL LEVEL FOR AM SPECIFIC NEEDS	 EDUCATION  INDUSTRY  LEGISLATORS & POLICY MAKERS	<ul style="list-style-type: none"> <li>BY SHARING INFORMATION ON CALLS FOR AM-SPECIFIC ACTIVITIES</li> </ul>
UPTAKE OF INTERNATIONAL AM QUALIFICATIONS BY NATIONAL EDUCATION SYSTEMS	 EDUCATION  LEGISLATORS & POLICY MAKERS	<ul style="list-style-type: none"> <li>BY UNDERTAKING THE DIRECT REFERENCING OF IAMQS TO EQF</li> <li>BY RECOGNISING TECHNOLOGICAL SCOPE FORESEEN IN THE IAMQS IN NATIONAL QUALIFICATIONS</li> </ul>
ENSURE FUNDING MECHANISMS FOR IAMQS NATIONAL ROLL OUT	 EDUCATION  LEGISLATORS & POLICY MAKERS	<ul style="list-style-type: none"> <li>BY OPENING SPECIFIC CALLS FOR SUPPORTING THE IMPLEMENTATION OF AM TRAINING</li> </ul>



## 4. CONCLUSIONS

This booklet has provided an overview on the AM Skills strategy update, as well as an analysis on how the SAM project addressed the strategy implementation.

During the update of the 2023 Skills Roadmap no new gap drivers and strategic objective were identified, although it was suggested to clarify the target group focus between strategic objectives 2 (people) and 3 (organizations), which was integrated in the current version of the Roadmap.

SAM defined strategic objectives to face up to these challenges and mitigate its impact on the sector. The flagship activity of the Skills Strategy Roadmap will continue to be the deployment of the International AM Qualification System (IAMQS) through a network of training providers, sustained by a strong connection between a wide range of industrial sectors, which are applying AM. The 2023 roadmap expanded on 30 key recommendations supported by concrete examples on how to carry on with future actions that will enable to achieve the strategic objectives by 2030..



The **European Additive Manufacturing Skills Strategy and Roadmap** is public and open to all organisations wishing to support it.



If you would like to be involved in the **IAMQS** or be part of the **European AM Observatory**, please contact us at [ewf@ewf.be](mailto:ewf@ewf.be) or follow the SAM Project [www.skills4am.eu](http://www.skills4am.eu)

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The European Additive Manufacturing Skills Strategy is supported by:



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SECTOR SKILLS STRATEGY  
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