



## SAM: The solution to AM skills shortage in Europe

### 1. The European context

For the European Industry, it is imperative to provide the European workforce with the right set of skills demanded by the market, in order to foster and remain competitive ahead of future challenges. As highlighted in the recent European Commission New Industrial Strategy “*A competitive industry depends on recruiting and retaining a qualified workforce*”<sup>1</sup>, it is unquestionable that industrial development and skills demand should go hand in hand. Therefore, the European Union has set out several initiatives to help the Member States bridge the gap between skills demand and supply to be able to deliver the 4th Industrial revolution. In 2016, the European Commission issued its guidelines in the “New Skills Agenda” to tackle - with policies and funding - the skills mismatching challenge in Europe. One outstanding initiative presented in the document is the “Blueprint for sectoral cooperation on skills”. As the name suggests, it represents “*a new strategic approach that aims to mobilise a wide range of stakeholders to upskill and reskill the workforce*”<sup>2</sup>. The Blueprint aims to create a strategy applicable at the European level, where the actual industrial needs in term of skills are timely matched with tailored training offers, as well as to foresee future trends and adapt the training offers appropriately.

### 2. SAM, the Blueprint for sectoral cooperation on skills for Additive Manufacturing

As the European Industry 4.0 will become more and more a reality during the next decade, the Additive Manufacturing (AM) sector has been identified as one of its 'Key Enabling Technologies – KETs', i.e. innovation drivers essential to EU's Industrial Policy. As a result of that, the [EU funded project SAM](#) (Sector Skills Strategy in Additive Manufacturing) has been selected under the Erasmus+ framework programme to be the Blueprint in the AM sector. The objective of the project is to develop an effective system to identify and anticipate the skills needed in the AM sector in Europe. With this Blueprint, the consortium also aims to reduce the unemployment rate by providing skilled workers

<sup>1</sup> [A New Industrial Strategy for Europe](#), Communication from the Commission. Brussels, 10.03.2020

<sup>2</sup> [Blueprint for sectoral cooperation on skills - Responding to skills mismatches at sectoral level](#). European Commission, 25.01.2017.



needed by the market and to boost the Industry in Europe. The Blueprint calls for "stakeholders to work together in sector-specific partnerships, called sectoral skills alliances, to develop and implement strategies to address skills gaps in these sectors."<sup>3</sup>

The sectoral cooperation is indeed one of the strengths of the SAM project and, as it can be seen in Figure 1, it includes key actors from across the whole AM value chain and related fields:

- Industries
- Vocational Education and Training Centers and Higher Education Institutes
- Research and Innovation centres



Figure 1: SAM partners' consortium

Each actor plays an essential role in the accomplishment of the project goals.

### 3. SAM and the New Skills Agenda

Being the Blueprint for tackling the skills gap in the AM sector, SAM directly contributes to the achievement of relevant actions identified in the New Skills Agenda by the European Commission.

#### 3.1 Adult Learning

Even if the blueprint is mostly focused on future forecast and anticipation of skills need, the mismatch in the AM skills market - as well as in other competitive sectors - is already perceived at the present date.

<sup>3</sup> [Blueprint for sectoral cooperation on skills - Responding to skills mismatches at sectoral level](#). European Commission, 25.01.2017.



This is why the need for re-skilling of the current workforce, such as adult professionals, is felt as much as the need for building the future generation, to keep the pace with the fast changes brought by AM technologies. Encompassing the first action of the New Skills Agenda, '*Upskilling Pathways: New Opportunities for Adults*', and embracing the challenge that "*in the next five years alone, 120 million Europeans will have to upskill or re-skill*"<sup>4</sup>, SAM addresses the issue by introducing a European harmonized scheme for Recognition of Prior Learning (RPL) in the AM sector, and intends to develop flexible and independent learning modules tailored and aligned with the Industrial requirements, and that will eventually make current professionals available to the labor market quicker.

### 3.2 European Qualifications Framework, Digital Skills and Key Competencies

The Commission is currently working on the implementation of the revised 'European Qualifications Framework', with the aim of supporting a better understanding of the qualifications and try to allocate the available skills in the European labor market accordingly. The SAM project is developing a Sectoral Competence Framework that includes:

- Using the descriptors outlined in the European Qualifications Framework to design the qualifications and learning units;
- Reviewing and deploying relevant qualifications in the AM sector;
- Linking the European AM Qualifications System to the European ([EQF](#)) and National Qualifications Frameworks ([NQF](#)), identified by Cedefop, the European Center for the development of Vocational Training<sup>5</sup>.

The project coordinator, EWF, is responsible for the design of the Qualification and Certification system, intended as an open system that ensures that any person, anywhere in Europe, has unrestricted access to education, training, qualification and certification in AM.

According to the two current priorities of the European Commission, namely the *Green Deal* and the *Digital Industry*, the new approach for the identification of AM skills takes into consideration environmental change and digitalization. Those factors represent increasingly important drivers of labor demand and skills supply across sectors, including AM. Such trends are taken into consideration

<sup>4</sup> [A New Industrial Strategy for Europe](#). Communication from the European Commission, 10.03.2020.

<sup>5</sup> More information on Cedefop and the Qualifications Frameworks can be found in the [website](#).



in the project by dividing the skills needed into four core categories: technological, green, digital, and entrepreneurship.

### 3.3 Vocational Education and Training

With this action, the Commission aims to work on a set of measures to support the modernization of vocational education and training (VET) and to offer it as a first choice for students.

The SAM project embraces this action and plays a central role in its development by directly involving the VET providers in the consortium. These partners offer their expertise to foster innovative learning methods and pedagogical approaches - e.g. real case solving methodologies -. The result is to make such trainings more attractive to students and encourage them to opt for careers in AM.

### 3.4 Graduate tracking

While adult learning has a dedicated initiative within the New Skills Agenda, the '*graduate tracking*' has as core objective the assessment of graduates' performance after their education and training experiences to evaluate the quality of the education offered. For this purpose, the SAM project is developing tools to guarantee effective tracking of the students' performances at the end of their education cycle, thus contributing to the monitoring effort of the Commission in the AM sector.

### 3.5 Activities for children and students

Under the label 'Tech4Kids', SAM partners intend also to raise awareness among children and high school students through various activities. Cartoons, animated videos, tailored questionnaires and webinars have been developed to feature the creative aspects of jobs in AM, to inspire the future generation to pick a study path through an AM related career. The partners are also responsible to organize local AM Open Days targeting students, to promote and create awareness towards the AM technologies and their practical use.

## 4. The (S)AM Observatory: beyond the New Skills Agenda

SAM has been selected as the Blueprint for sectoral cooperation in AM, and its scope goes beyond the actions contained in the New Skills Agenda. The holistic approach of the project, in fact, led to



the creation of the [European AM Observatory](#), which is an instrument put in place to ensure that EU stakeholders will have the comprehensive framework of AM skills when the project is over. For an overall idea of its methodology, refer to Figure 2.

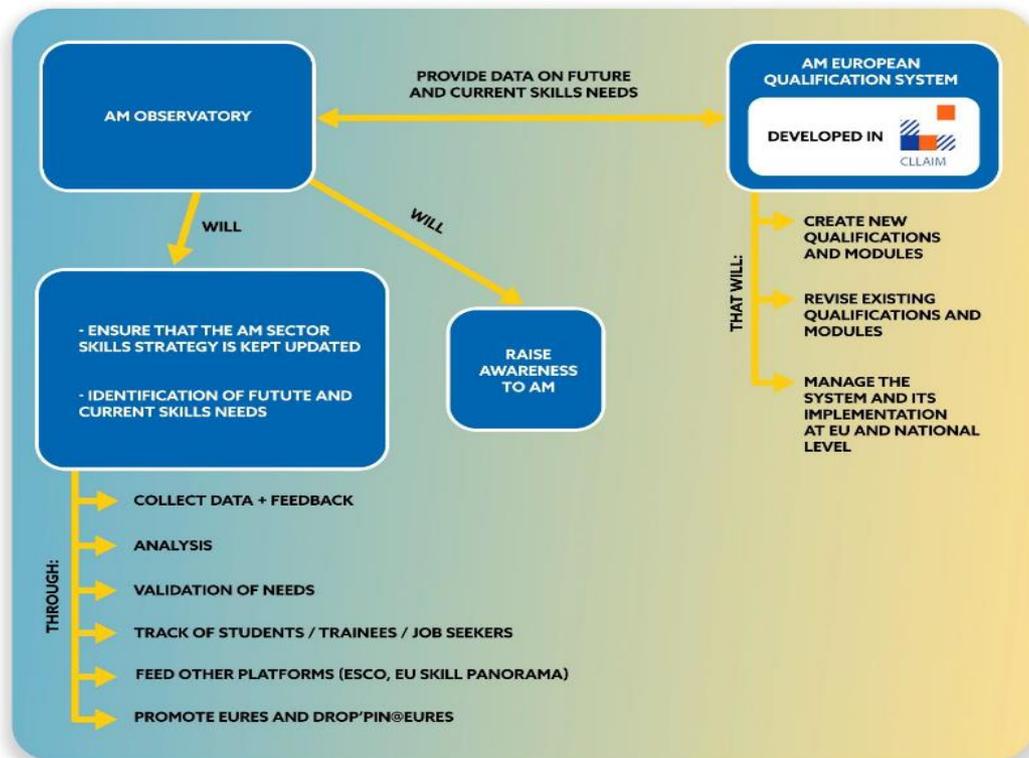


Figure 2: the methodology used to develop and feed the AM Observatory.

The AM Observatory, by directly exchanging data with the European AM Qualification System developed under the EU funded project CLLAIM, supports the development of the AM industry growth and its sustainability after the end of the project, thus also contributing to the European Commission's new *'Pact for Skills'* and to the update of the Skills Agenda for Europe in 2030, as announced in the Industrial Strategy. The AM Observatory will provide industries and policymakers with updated information on technological trends, skills shortages and mismatches at all levels of qualifications, EU and National relevant policies, as well as statistical figures.

The AM Observatory will also feed ESCO and the EU Skills Panorama with data on the AM sector: ESCO is the European multilingual classification of Skills, Competences, Qualifications and Occupations. This will ensure that the initiative is accessible to the broadest audience.



The Skills Panorama is the EU core instrument to help policymakers, policy-experts, researchers, and guidance practitioners to keep up with the latest developments, make useful comparisons to previous trends or identify anticipated changes.

Finally, a consideration of the recent outbreak of the COVID-19 is necessary. This crisis has highlighted the importance of AM technologies, as they provided fast solutions to hospitals in need of vital components, such as valves for ventilators to be used in hospitals and Intensive Care Units (ICU). Therefore, the overall purpose of SAM project becomes now essential to allow a well-prepared workforce to embrace the challenges of fast and sustainable recovery that will adapt to an image of *"Europe that strives for more"*.

### **Get involved!**

Become a cooperation partner and make valuable new network contacts! Support the SAM project in the identification of current and future qualification requirements, as well as in the design of education and training in additive manufacturing throughout EU. Contact details and more information on how you can get involved as an associated partner can be found here:

<http://skills4am.eu/associatedpartners.html>



### More information on SAM Project:

Keep yourself informed about progress and results on the project homepage: <http://www.skills4am.eu>



Follow us on our social media channels for all the latest initiatives related to the SAM project!



### References:

[A New Skills Agenda for Europe](#). *Communication from the European Commission, 10.06.2016*

[Blueprint for sectoral cooperation on skills - Responding to skills mismatches at sectoral level](#).

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[A New Industrial Strategy for Europe](#). *Communication from the European Commission, 10.03.2020.*

[EU Skills Panorama](#). *EU Skills Panorama Website, 2020.*

[AM Observatory](#). *SAM Website, 2020.*

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