WP T3: INNOVATION 4.0 COOPERATION HOTSPOT

D.T3.1.1 - Concept development for the project platform and technical implementation (deployment)

Version 1
11. 2018

Executive Summary

This report provides an overview for the organizational aspects of the third thematic work package in AMiCE. This WP will develop an “Innovation 4.0 co-operation hotspot”, which requires the highest levels of cooperation and linkage of the involved actors from R&D and business support. The AMiCE Hotspot will identify 600 potential project cases. From which, 55 individual support and coaching plans will be developed and implemented during the project runtime. Further 11 teams will be invited to two innovator camps, where the teams will be trained to develop their own competitive projects. The WP will also organize a transnational matchmaking event connected with the final event of the AMiCE project in July 2020.

AMiCE Hotspot platform is described in this report and an overview for the upcoming activities related to this work package are presented. The template for acquiring the project ideas is prepared, and - after its approval by the project management - partners should be able to start collecting these projects from SMEs. Regional tandems will evaluate potential project ideas according to the evaluation criteria that will be provided and the Evaluation Board will be responsible for setting up and implementing the projects selection criteria. Moreover, a suggested modification for the project timeline is presented to allow better organization for the deliverables of this work package.

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Abbreviations

ABBREVIATION	DEFINITION
3DP	3d-printing
AM	Additive Manufacturing
AMiCE	Additive Manufacturing in Central Europe
CE	Circular Economy
CZ	Czech Republic
DE	Germany
EC	European Commission
EEN	Enterprise Europe Network
ES	Spain
EU	European Union
IT	Italy
PL	Poland
R&D	Research and Development
RIS3	Research and Innovation Strategies for Smart Specialisation
RTO(s)	Research and Technology Organisation(s)
SME(s)	Small & Medium sized Enterprise(s)
SK	Slovakia
TRL	Technology Readiness Level

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A. Context and motivation

The third thematic work package of AMiCE "Innovation 4.0 cooperation hotspot" represents a logical step for the evolution of AMiCE activities. After SMEs could gain information on AM technologies in the Innovation 4.0 Knowledge Sharepoint (WP1), they have assessed the transferability and usability of the technologies for their own company in the demonstrator network (WP2), now they will be **teamed up with trainers, experts and researchers in order to develop their individual projects** (WP3). To express this concept from the perspective of "Technology readiness level (TRL)", SMEs will be connected during WP1 with RTOs and their experts in the fields of Additive Manufacturing (AM) and Circular Economy (CE). This tailored Innovation 4.0 Knowledge Sharepoint will contain the basis for TRL 1-4, as demonstrated in Figure 1. Ideas generated during these interactions between SMEs and experts will be validated within the framework of WP2 by creating the prototypes and the technological demonstrators to shift the TRL up to 7. Selected ideas will be supported during WP3 for implementation, where SMEs will be trained on developing their projects and obtaining the tools that facilitate their market penetration (TRL 8 & 9). It is worthy to point out that, this TRL ladder is used here for demonstrative purposes only and no technology development is planned as a core activity of the AMiCE's work packages.

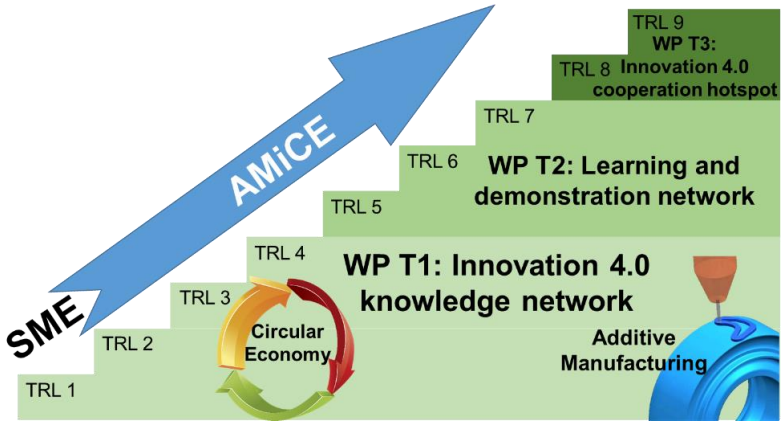

Figure 1. Schematic representation for the role of work packages in progressing SMEs through the TRL ladder

Objectives:

Activities of Work Package 3 aim at:

- Developing and implementing a project platform (Activity A.T3.1),
- Developing and implementing a support scheme for innovation projects (Activity A.T3.2).

Definition	**1. Project** Any innovative idea (from the knowledge-supply or from the demand side) relevant to the fields of additive manufacturing or circular economy, regardless of its technological level and/or impact. Project ideas can be originated by SME or RTO or during the communication between AMiCE representatives and AM & CE interested parties. The purpose of these project ideas is to enhance the competitiveness of the SME or to identify collaborative research and/or innovation projects in an aligned, coordinated and target oriented manners.

Definition	**2. Project platform** An internal moderated tool that collects and maps the *generic information* on intended innovation projects, aiming at identifying and establishing collaborative projects in the fields of AM and CE. The objective of this platform is to facilitate and support collaborative projects within AMiCE networks. Details of the project and its originator will not be disclosed on this platform and the data will be encrypted and secured.

Definition	**3. SME Support** Any value added to the SME through the interaction with AMiCE team and services. This value might be *generic* - such as the knowledge obtained through the open source Sharepoint developed in WP1 - or *tailored* for a specific SME – such as the assessment for suitable technologies. In some cases, this support might be paid to conform with the "State Aid" regulations. These terms, however, will be structured according to the Project Agreement and its Code of Conduct.

The mechanism for achieving the activities of this work package involve:

- Supporting 55 potential project cases (5 per partner, excluding ES) out of 600 ideas (60 per partner, excluding ES) to reach project proposals with higher maturity levels within AMiCE support schemes.

- Inviting 11 SMEs (1 per partner) to the innovator camps for training on developing their proposed ideas as competitive projects.

The overall expected outputs of this work package are:

- Internal project platform
- Two Innovator camps
- Transnational matchmaking event (project's closing event)

This report focuses on the Deliverable D.T3.1.1: Concept development for the project platform and technical implementation. This includes a documentation for: the concept, content structure, mechanisms, rules, as well as the deployment of the platform to be accessible by all partners.

B. Implementation Process

The implementation of this work package takes into account six integrated steps that complement each other and allow a closed loop process as demonstrated in Figure 2.

Figure 2. Implementation process of AMiCE's Work Package 3

The implementation cycle includes:

- **CONTACT & IDENTIFICATION**

Where AMiCE partners initialize contact with SMEs and RTO in their region through the available databases for local businesses used by the partner. Also, AMiCE events and communication tools will be used to reach out the intended collaborators among SMEs and RTO. The current activities of Enterprise Europe Network (EEN) will be utilized as an outlet for reaching as many SMEs as possible. Moreover, activities of other regional innovation actors (i.e. workshops, conferences, support requests, signposts) will be used to identify the potential SMEs, and their project ideas will be considered under the schemes of Additive Manufacturing (AM) or Circular Economy (CE).

- **ASSESSMENT, IDENTIFICATION OF POTENTIALS**

In this stage, AMiCE partners will generate the information file according to the project templates (provided below in Section C). Also, each AMiCE partner will locally analyse the potentials and perspectives of the project according to the AMiCE diagnosis scheme. Required information for this pre-assessment will be extracted from the second section of the project template (as presented in Section C).

- **DEFINITION OF PROJECT OBJECTIVES AND STEPPING INTO IMPLEMENTATION**

Discussions between AMiCE partners and their communicated SMEs will lead to the formulation of feasible objectives for the projects. Also these discussions will identify the project's innovation, R&D, partnership, resources, organization, time schedule, framework conditions, and the steps that will follow.

- **PLANNING THE SUPPORT**

During this stage of the process, and according to the project requirements, AMiCE partners will identify the suggested support scheme for the project. Other members of the consortium will collaborate with the regional contact point for the projects to specify the project's: measures, tasks allocation, interaction between the partners, milestones, as well as the success/failure criteria.

- **SUPPORT PROVISION**

This is the main action step in the process where the support (according to the plan suggested in the previous step) will take place by the regional AMiCE partner or the planned members of the consortium. Regular team meetings and review activities will take place with the SME to identify the lessons that can be learned from the suggested support and its implementation.

- **EVALUATION, FOLLOW-UP**

This step will be critical in reviewing the achieved results and the competitiveness of the SME, RTO against the objectives of AMiCE. Moreover, this critical step will identify the follow-up actions.

C. Projects Hotspot Platform

The innovation project platform represents an internal tool with a database for project ideas that will be collected from the SME and stakeholders in the fields of Additive Manufacturing and Circular Economy. Each partner from the ten regional tandems will collect at least 60 project ideas that sum up to 600 ideas by the end of the AMiCE project. Individual participating SME can contribute with multiple project ideas, and they can simultaneously propose ideas under both topics of coverage (i.e. AM & CE). Each project idea will be presented according to the template demonstrated in Figure 3 as a one A4 page.

Project identification			
AMiCE partner contact email		**Project code**	
Proposed name of the project			
Project keywords			
Description:			
Please provide: ▪ Brief description ▪ International dimension of the project ▪ The achievability level of the idea			
Requested support:			
Brief list of challenges (technological challenges, facilities, financing ... etc.)			

Figure 3. Template for project ideas

The project template consists of three sections:

- **Identification:** that includes information about the AMiCE partner who added the project's idea and considered as the contact point for this project. This section will also include keywords and a code number for each project that will be identifiable only by the contact point. The goal here is to make these project ideas anonymous – as possible - and maintain the confidentiality requested by the SMEs. If a partner from different AMiCE region is interested in collaborating on a specific idea, they can reach the contact point with the public code for this idea to initiate the discussions.

  The project code consists of two letters that identify the country (DE for Germany, PL for Poland, CZ for Czech Republic, IT for Italy, SK for Slovakia, and ES for Spain) followed with three digits. The first digit from the left will be either 1 or 2, where the research organization in the tandem of that country will have value of 1 and the business support organization will have a value of 2. The following two digits represent the sequence of the idea on the list of this partner. For example, the first project idea added by the BIC Bratislava will have a code number of SK201 and the code number for their 60th idea will be SK260.
- **Description:** that includes a short summary for the proposed project idea. This project description should include enough details that will help during the project evaluation, and it should – at least - provide information about:
  - Relevance (AM or CE),
  - TRL of the idea and the potential for the technology uptake,
  - International dimension of the project,
  - The achievability level of the idea.
- **Requirements:** that includes a brief list of challenges that face the SMEs to achieve the project's goal within their capabilities. This section might list: technological challenges, facilities, financing ... etc. This section will help the AMiCE Hotspot to map and identify the support that can be offered to individual proposed ideas.

The AMiCE Hotspot platform will identify the support needs for further development of the proposed ideas, and it will signpost the qualified request to experts and/or supporting organisations. The AMiCE hotspot platform is complementary to the Innovation 4.0 Knowledge Sharepoint (WP1) and it will have a restricted access. It will be accessed, updated and maintained by AMiCE partners only.

D. Platform implementation and data management plan:

The Technical University of Liberec (TUL) will create a protected web space, where partners have access to the project platform according to rights. Among the multiple data protection options, the "block-chain technology" might be used as it achieves the highest levels of immutability and security.

- **Data format:**

Project template given in Figure 3 will be handed to the SME in the format of a Microsoft Word document. The SME will fill in the required fields and (in respect of their data confidentiality) they will have the options to turn in their proposal in a physical paper form, or in digital Word / PDF formats. The AMiCE partner who communicated the SME will act as the "contact point" for this project idea and

will use the provided credentials to log-in the platform and input the project details. In this case, each contact point will be responsible for conforming with the General Data Protection Regulation (GDPR). The contact point will also maintain "locally" a list for the project codes and the other details about the SMEs that originated the ideas. This list will be available to the contact points only and will be used in cases of receiving inquires about the project ideas.

- **Data access and sharing policies:**

All projects data will be stored at the servers of the coordinator of Work Package 3 (TUL). The project platform will allow filtering the projects based on their region, keyword, type of actor (SME/RTO)…etc. All partners will have access to the projects from different regions to encourage and promote collaboration on solving these projects. Moreover, keywords of the projects and the essential implementation challenges (from the third section of the template) will be used for matching project requirements with the proper support scheme among the AMiCE networks.

The physical sheets of the projects ideas will be maintained by each contact point and they will be stored and archived according to the Interreg CE regulations. All data will be confidential and will be used for the AMiCE objectives only.

E. Projects evaluation

The total number of project ideas will reach 600 cases, which will be impractical to provide complete support for all these ideas within the AMiCE framework. Therefore, a scheme for evaluating and assessing the proposed ideas will be developed according to the regulations that will be provided in deliverable D.T3.1.3: "Documentation of the selection criteria for SMEs/teams for the first test run of the scheme". The selection criteria will take into consideration the evaluation rules implemented in European and regional programs that support SMEs [1]. In this way, these project ideas will go under a preliminary phase of assessment during AMiCE, which will precede the evaluation phases in these programs. The projects will be assessed according to the evaluation scheme on a scale of 1 to 5, and this process will be carried out at two levels:

- Regional pre-assessment, where the tandems in each participating country will evaluate the projects and provide a recommendation for the next stage.
- Evaluation board, where the decision will be made for the entire consortium of all regions participating in AMiCE. The decision at this stage will be taken by the AMiCE Steering Committee who will select the highest 11 project ideas for the innovators camps and the full support scheme.

As demonstrated in Figure 4, the collected 600 ideas will be evaluated and 55 selected cases (about 5 cases per partner) will be selected for AMiCE support. The top 11 ideas (one per partner) will receive a special training scheme to develop these ideas in complete project proposals. The support scheme for the successful project ideas will be described in details in the Deliverable D.T3.2.1: "Description of the AMiCE project development support scheme". The project supporting scheme will also capitalize upon the existing experience of AMiCE partners who provide support to SMEs through programs such as Enterprise Europe Network (EEN), Vanguard Initiative…etc. With the selected cases, EEN representatives will help applicants to find the available funding schemes, find the potential project partners, as well as to provide support through the development of competitive project proposals to programs such as SME Instrument. AMiCE will also support SMEs in searching for financing resources such as Business Angels or Venture Capitalists.

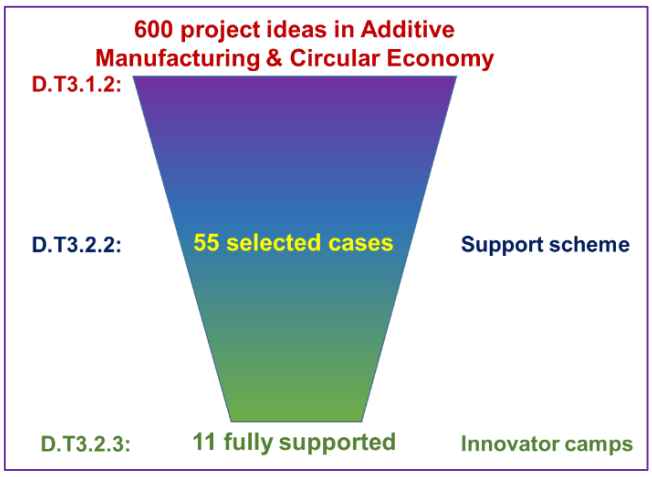

Figure 4. Projects evaluation and filtration for complete support by AMiCE

F. Innovators camps / training program

Two innovator camps will host the SME teams of the selected 11 project ideas, and each camp will extend for two and half days. According to the types and the total number of the successful ideas, the first camp will host teams with proposals focused on Advanced Manufacturing, while the second camp will host the teams for ideas with emphasis on Circular Economy. The targeted number of participants will be six teams for one innovators camp and five teams in the other camp, however, these numbers are not rigid and can be modified during the implementation.

The innovators camps will be the place where experts will provide information and individual training on:

- Development of competitive project teams and proposals,
- Access to finance for innovative teams and SMEs,
- Successful commercialisation of the R&D results.

Moreover, the innovators camps will be integrated in the training portfolios of the business support providers of AMiCE (e.g. EEN, RDAs, clusters).

For the support scheme and training topic, it might be useful to utilize the expertise of LEITAT, ES and their SME diagnostic process that include:

1. **Benefits assessment:** Which steps of the value chain?
2. **Analysis of organization:** markets, products, materials, requirements, standards, budget, production batches/series.
3. **Technology assessment:** materials, AM technologies, production size and cost.
4. **Benchmarking:** testing and validation.
5. **Business development:** *Technological* end-to-end solutions, design and implementation. *Economical* business design, business plan, market studies, IP rights.
6. **Decision taking** in terms of implementation or outsourcing.

According to the discussions during the meeting in Genoa, IT, individual partners showed experience in providing training on these topics as shown below:

1. **Benefits assessment:** LEITAT, TUC
2. **Analysis of organization:** TUC, RDA-UR, UCLIG, BIC, UNIGE, LETIA
3. **Technology assessment:** LETIA, TUC, TUL, UNIGE
4. **Benchmarking:** UNIGE, LETIA, TUC, TUL
5. **Business development:** UNIGE, BIC, TUC, TUL
6. **Decision implementation** TUC, outsourcing

Furthermore, other topics are suggested as training topics that include:

- Project management
- Risk management
- Financing schemes
- IPR management
- Quality control and design of experiments
- Advances and trend of the technologies (will add a meaning for separating the teams into two groups according to the topic of the project: AM or CE)

G.Matchmaking event

A transnational matchmaking event (Deliverable D.T3.1.4) will be connected with the final event of AMiCE, where partnering and building of innovation teams from researchers and SMEs will be facilitated and initialized. It is recommended to organize this matchmaking event in connection with a specialized scientific conference that will bring experts - with their work papers - to the specialized groups of audience. It is possible to utilize the "3Dtrends" conference (www.3dtrends.tul.cz) that is organized regularly by the Technical University of Liberec to map the latest advances and trends in 3D printing and 3D scanning. The conference brings together experts from multidisciplinary scientific areas as well as a significant participation from the industry.

H. Assessment

All activities of the work package will go through continuous assessment within the AMiCE's workgroups to identify the good practices, the pitfalls and the lessons that can be learned. This assessment is critical to the success of AMiCE and will provide corrective actions and immediate feedbacks to handle any emergent challenge. Recommendations from this assessment will be documented and will be used for setting up the sustainability roadmap of AMiCE (D.T3.2.4).

I. WP T3 Timeline

The two main activities of WP T3 are shown in the middle of Figure 5 with their associated deliverables. According to the project application form, these deliverables are distributed as shown in the timeline at the top of Figure 5. This distribution may result in some congestion of the deliverables by the end of the project duration. Hence, we suggest an organizational modification by adding two new intermediate deadlines in February and in June 2019. These added deadlines will be followed internally and no need to create any official change request for them. The draft for the support scheme (D.T3.2.1) will be delivered by the new deadline in February to be implemented in a first-run test until its validation at its original deadline (9.2019). The suggested organization of deliverables allow a funnel shape for the number of subjects that will be handled during this time frame.

While the project ideas will be due by the end of the project (7.2020), a critical mass of – at least - 300 cases should be ready by June 2019 to allow their evaluation and the selection of the 55 projects that will be supported. Also, the most innovative 11 ideas will be announced and communicated to participate in the upcoming innovators camps. By September 2019 deadline, the first group of the supported ideas will receive their training through the first innovators camp. By the end of the project, the second group will also receive their training and the matchmaking event is conducted. Moreover, the sustainability strategy of the AMiCE project and its roadmap will be delivered by the final deadline of the project.

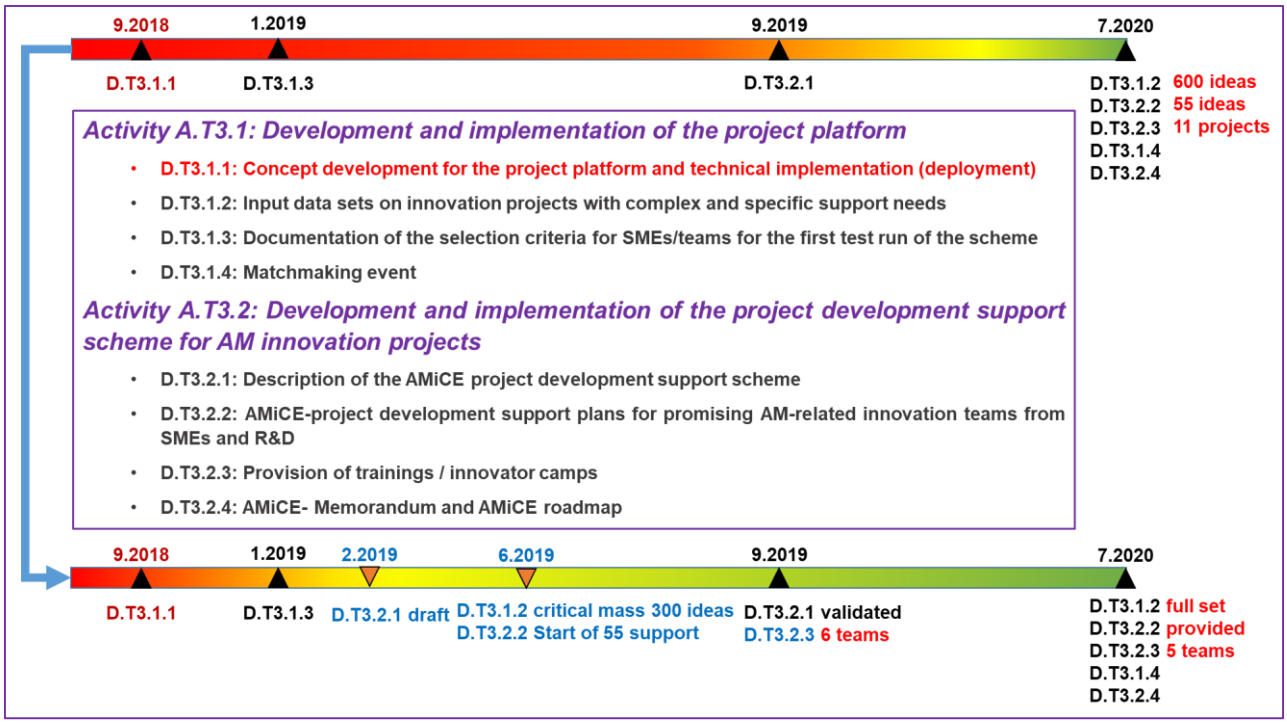

Figure 5. A list for the activities of WP3 with their deliverables are shown in the middle of the figure. The timeline at the top represents the current distribution for deliverables as written in the application form, while the bottom timeline is a suggested modification for distributing these deliverables throughout the remaining period.

J. Partners contributions

Partners should start communicating their network of SMEs and prepare 60 cases according to the template given in Figure 3 (which will also be provided as a separate Microsoft Word file). The deadline for collecting the at least half of these ideas is June 2019 and these duties will be checked during the next AMiCE meeting in Bratislava in March/April 2019. During that meeting also, all partners will discuss the evaluation criteria (D.T3.2.1.3 which is due in January 2019) to reach a consensus on their implementation. Each country tandem will apply these evaluation criteria to nominate – at least - 30 innovative cases that will receive the support. Workgroup meetings for the Evaluation Board to select the 11 cases will be organized separately after the next AMiCE meeting. AMiCE partners who can host one of the innovators camps are encouraged to express that desire during the next AMiCE meeting.

K. Conclusion

An overview for the third work package was presented in this report. The template for collecting inputs for the project platform is prepared and partners should start communicating their networks of SMEs to prepare their suggested ideas. The regional evaluation for project ideas should start after the next AMiCE meeting, and the Evaluation Board will be responsible for setting up the projects selection criteria as well as selecting the 11 projects that will be invited to the innovators camps. The modifications on the project timeline are suggested for the purpose of organization and do not require official changes in the project plan. Following the conceptual guidelines in this report should lead to a smooth implementation for the planned deliverables with a successful accomplishment.

References

[1] SME Instrument, “Evaluations EIC SME Instrument | EASME.” [Online]. Available: https://ec.europa.eu/easme/en/section/sme-instrument/evaluations-eic-sme-instrument. [Accessed: 24-Nov-2018].