D2.2
SME and artists co-creation space
version 1.0

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Abstract

RAMP aims to accelerate production in Manufacturing SMEs by providing access to services and tools for digitization and collaboration. In the Better Factory project, RAMP aims to enhance the co-creation of automation solutions and novel product design services. In order to implement this concept, two tools are developed:

1. Tender tool
2. CAD viewer

The purpose of these tools and directions on how to use them are explained in this report.

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HISTORY OF CHANGES

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26/04/2021	1.0	Panagiotis Bouklis	Version 1.0

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EXECUTIVE SUMMARY

RAMP co-creation tools aim to enhance the collaboration between Manufacturing SMEs and Automation Solution providers as well as between Manufacturing SMEs and artists (a.k.a. product designers). Two tools are developed for this purpose:

1. A tender tool: allows the Manufacturing SMEs to create tenders, describing the service they would like to receive. Then they invite the service suppliers, from which they would like to receive offers. Suppliers submit their offers, and after the Manufacturing SMEs selects one or more out of the submitted ones, the detailed proposal for the service provision is collaboratevely created in RAMP. When finalised, this becomes a contract, a service agreement between the Manufacturing SME and the service supplier.
2. A CAD viewer tool: a collaboration tool, more specialised for the collaboration between the Manufacturing SME and the product designers. This allows product designers to upload their designs in RAMP and Manufacturing SMEs to viewe it online, in a 3D view environment. Comments and versioning allows the tracking of this collaboration.

The current development status for the tender tool is completed, with some improvements remaining for the upcoming development. These include the connection of the tender tool with the account access management in RAMP and the rewrite of the terms and agreements as well as the NDAs. The CAD viewer tool is currently in the initia prototype that demonstrates only the 3D view environment.

Further developments, taking also into account the feedback and bug reports, will be carried out in the follow up.

1 Introduction

1.1 Scope and purpose of this document

RAMP, the Robotics and Automation marketplace, aims to accelerate production in manufacturing SMEs, by facilitating access to automation and digitization technologies. In the context of facilitating collaboration between manufacturing SMEs and artists (a.k.a. 'product designers'), an online 'co-creation space' is planned to be implemented. This is intended to enable manufacturing SMEs and artists to collaborate in an effective way, from specifying a 'challenge' to contracting and delivering the final solution.

The co-creation space, from concept to implementation, and how to use the relevant tools in RAMP, is described in this document.

1.2 Relation to other activities in the Better Factory project

The co-creation space will be utilised for testing through the Better Factory open calls. More specifically, it will be used during the 'Matchmaking' phase, with pre-selected interested parties (manufacturing SMEs, Artists and Technology Providers), as well as in the experiment implementation phase, during the solution development ('co-creation').

1.3 Document structure

Chapter 1: Introduces the document.

Chapter 2: Describes the co-creation concept, and the specific tools that are developed to materialise this concept.

Chapter 3: Describes the 'Tenders' tool.

Chapter 4: Describes the online CAD viewer tool.

Chapter 5: Concludes the document, including the next steps for the co-creation space development.

2 The co-creation space concept

2.1 Vision

The initially 'co-creation space' concept includes the following main features:

1. A module where manufacturing end-users will be able to submit challenges that reflect real problems or opportunities for improvement within their products and services
2. A module where artists will be able to propose solutions to these challenges
3. A module that allows the selection of the preferred solution by the manufacturing end-user from artists and,
4. A module which allows the fine-tuning of the solution encompassing online interaction between the manufacturing end-user and the artist.

It was also found out that any co-creation tool that will have to be offered in RAMP should not substitute the existing tools that artists already used. The adoption rate will be low in such a case for two main reasons: 1) artists would be reluctant to learn new tools for performing their work and 2) most importantly, artists may have diverse methods and approaches for their work, which may include even custom software solutions. These are considered assets by the artists themselves, and their added value in respect to their competition.

So, the online co-creation space should complement the existing tools used by the artists, towards the direction of supporting better the communication during a product design / development between artists and manufacturing SMEs.

2.2 Implementation in Better Factory

Taking into account the co-creation space vision and the constraints, two new tools are offered in RAMP, which together implement the 'Co-creation space' envisioned in Better Factory:

1. The first one is the 'Tenders' tool. This implements the features of challenge and solution submission, as well as the selection of the artists with which the manufacturing SMEs would like to collaborate.
2. The second one is the 'CAD viewer' tool. This implements the part of the online co-creation, by allowing artists to share online designs in-development with their customer, and keeping track of the collaboration work in an one common space.

2.3 Expected outcomes

The tools are implemented in RAMP and will be tested through the Better Factory open call experiments. With these tests, it will be possible to identify strengths and weaknesses of these tools, further improvements, but more importantly their added value and the target groups' willingness-to-adopt.

3 Tenders

3.1 Tendering overview

Figure 1 illustrates the tendering process, in terms of activities of the manufacturing SME and suppliers (suppliers could be artists, automation technology providers or/and consultancy service providers). The steps are explained in more detail for each company type in the following-up paragraphs.
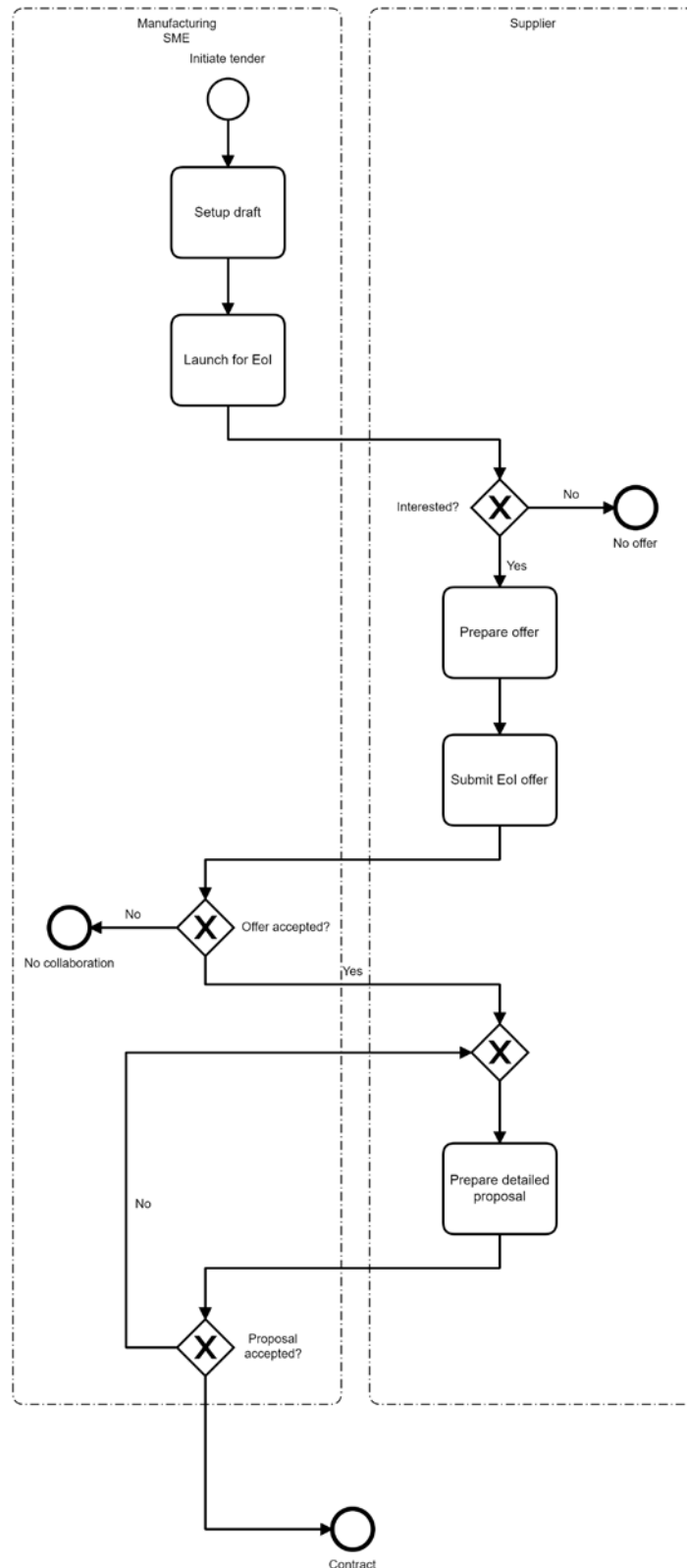
Figure 1: Tender process illustration

3.2 Setting up access to accounts

Only users with the the appropriate access level are able to access the Tenders tool. Access can be given by the administrators of the company account on RAMP, by the 'People' menu, and giving read or read/write access to the relevant company employees. Employees with read access level will be able to only view the tenders, while read/access level allows employees to view, edit and upload files.

3.3   Tendering for Manufacturing SMEs

3.3.1   Tenders overview

The Manufacturing SME is the company that initiates the whole tendering process. To do so, the Manufacturing SME (users with the appropriate access level) has to access the 'Tender' navigation item (Figure 2).
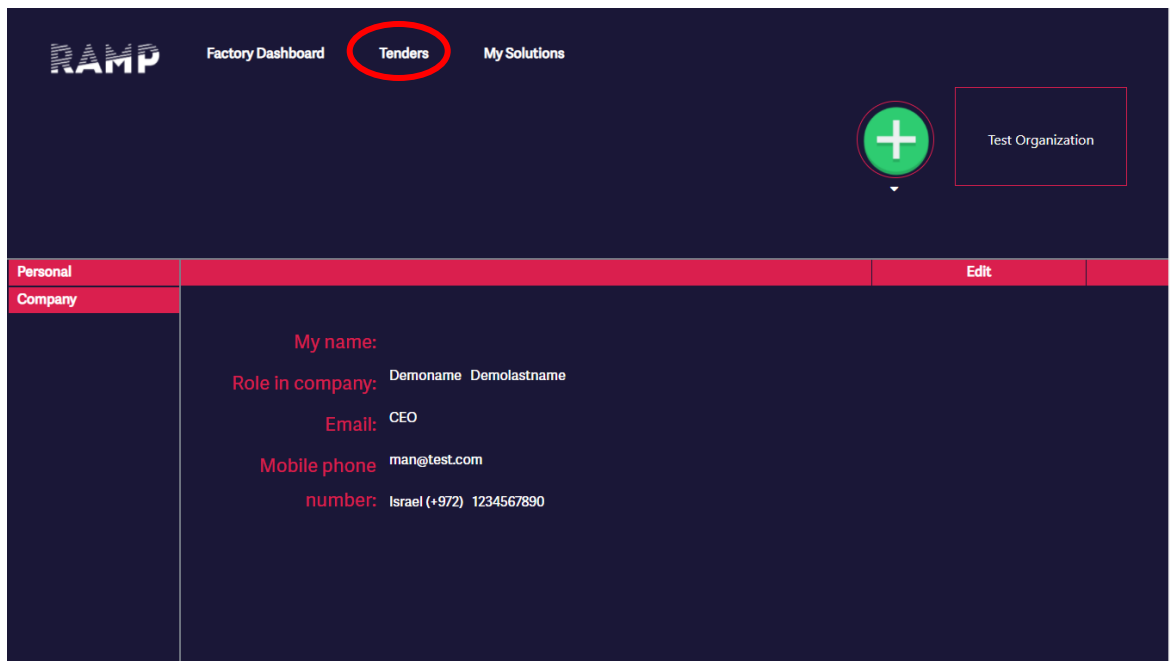

Figure 2: The 'Tenders' navigation item gives access to the Tender tool

The tender tool provides the following overview on the tenders:

- Drafts: Tenders that are currently in the draft stage and have not be launched yet.
- Expressions of Interest: Tenders that have been launched, and are currently accepting expressions of interest by the invited suppliers.
- Proposals: Tenders where an expression of interest has been accepted, and are currently in the detailed proposal drafting, in collaboration with the selected supplier.
- Contracts: Finalised contracts.

3.3.2   Creating the tender

To start drafting the tender, a new name has to be entered in the appropriate field. After writing the tender name, user has to press 'Enter' in order to create the new tender draft (Figure 3).
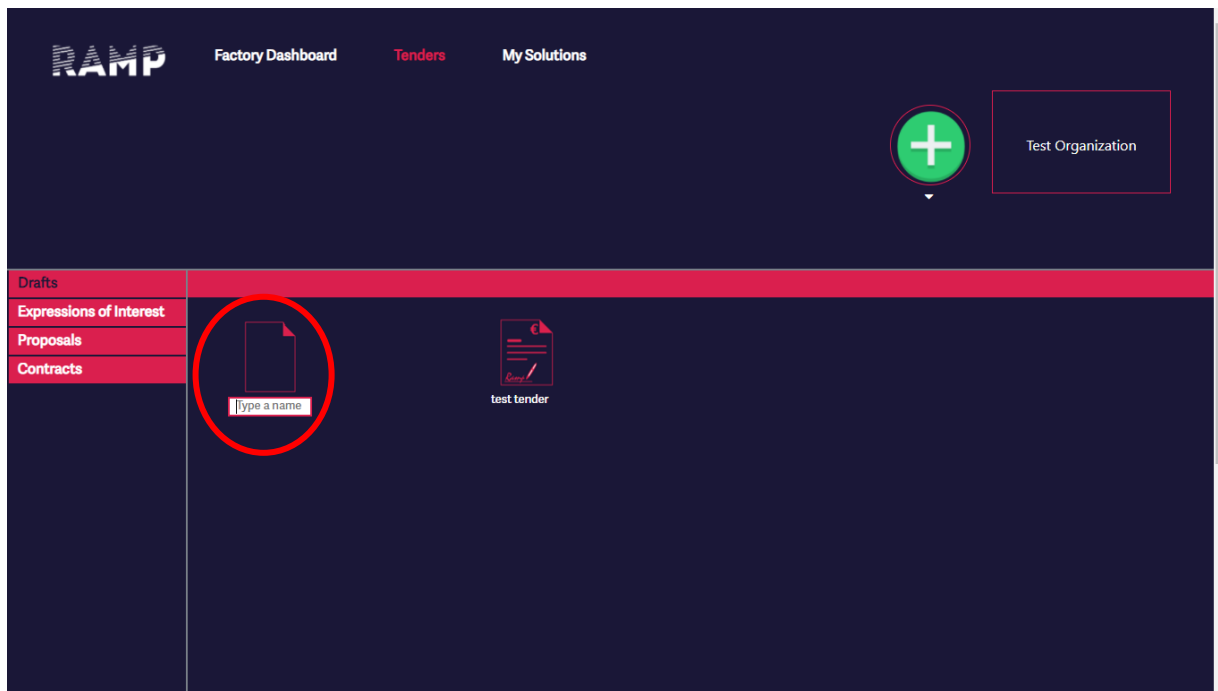
Figure 3: Type a name for a tender and press 'Enter' to create the tender draft

After the tender draft has been created, the user may access the tender details by clicking on the tender icon. There are two main steps to launch the tender:

1. Make tender: Fill in the details of the tender
2. Select suppliers: Invite the suppliers who will have access to the tender, and will be able to submit offers.

In the first step the tender details have to be filled in (Figure 4).

Figure 4: Making the tender

These are:

- Title: A descriptive title for the tender.

- Service type: Specific type of the main requested service. This is selected from the following predefined list of service types:
  - Cyber security consultant
  - IPR consultant
  - Ethical consultant

- o Financial consultant
- o Product designer
- o Technology supplier

- Description of the problem: A short description of the problem that is to be solved. This is not intended to include all the details of the case, but a more generic description of the requested service. More details will be exchanged at a later stage of the tendering (in 'Proposals').

- Price: A price to be paid for the requested service. Apart from the amount, it is also indicated if the price is indicative, fixed or maximum.

- Add contact person: Add company employees as contact persons for this tender. Company employees have to be members (previously invited) in the company account. Contact persons' details will be shared with invited suppliers, in case clarifications are needed.

After filling in the above-mention details, reading and accepting the terms and conditions of RAMP, as well as the NDA, user needs to click 'Save' so that the current draft of the tender is saved.

In the second step, user has to select the suppliers who will be invited, and will be able to access this tender. Only invited suppliers will be able to access this tender. The tender will be invisible / inaccessible to all other not-invited RAMP suppliers.

By clicking 'Add or remove suppliers' a window appears which allows the user to add or remove the suppliers who will be invited (Figure 5). Suppliers' list can be filtered by name, expertise or country.
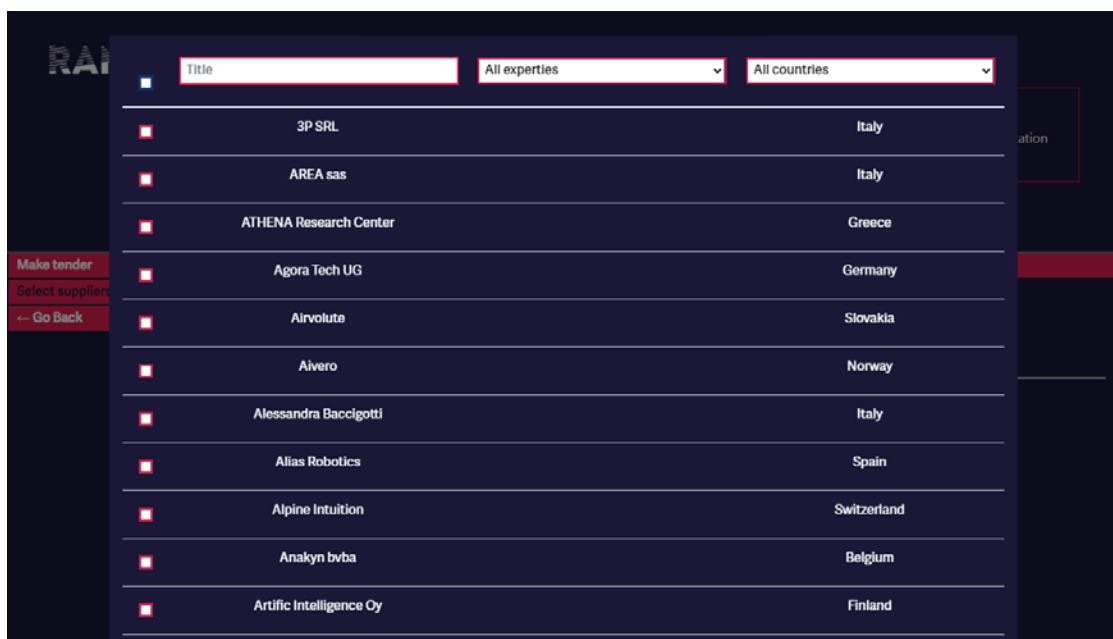

Figure 5: Adding and removing suppliers in the tender

By clicking outside the window, the window closes. It can be reopened if required by clicking again the 'Add or remove suppliers' button. At least one supplier has to be invited to the tender.

After the suppliers have been selected, the user needs to go to the 'Make tender' step, in order to review the created tender. If no further changes are needed, the tender can be launched by clicking the 'Launch for EoI' button. (Figure 6)

Figure 6: Launching the tender for EoI

After the tender has been launched, selected suppliers will receive an email notification that they have been invited. The tender moves on the 'Expressions of Interest' page in the 'Tender' tool.

3.3.3 Expressions of Interest

The Expressions of Interest represents the stage where suppliers have expressed their interest in participating in a tender, along with a summary of the service they propose to provide. From the interested suppliers, the Manufacturing SME is able to select one or more to continue in the detailed proposal stage.

The status of the Expressions of Interest for a tender can be viewed by clicking the tender icon.

There are three screens to view the suppliers' responses (Figure 7):

- Submitted: Suppliers who have been invited and expressed interest and have provide a summary of their service.
- Declined: Suppliers who have been invited, but declined to participate in the tender.
- Pending: Suppliers who have been invited but have not responded yet (accepting or declining the invitation).
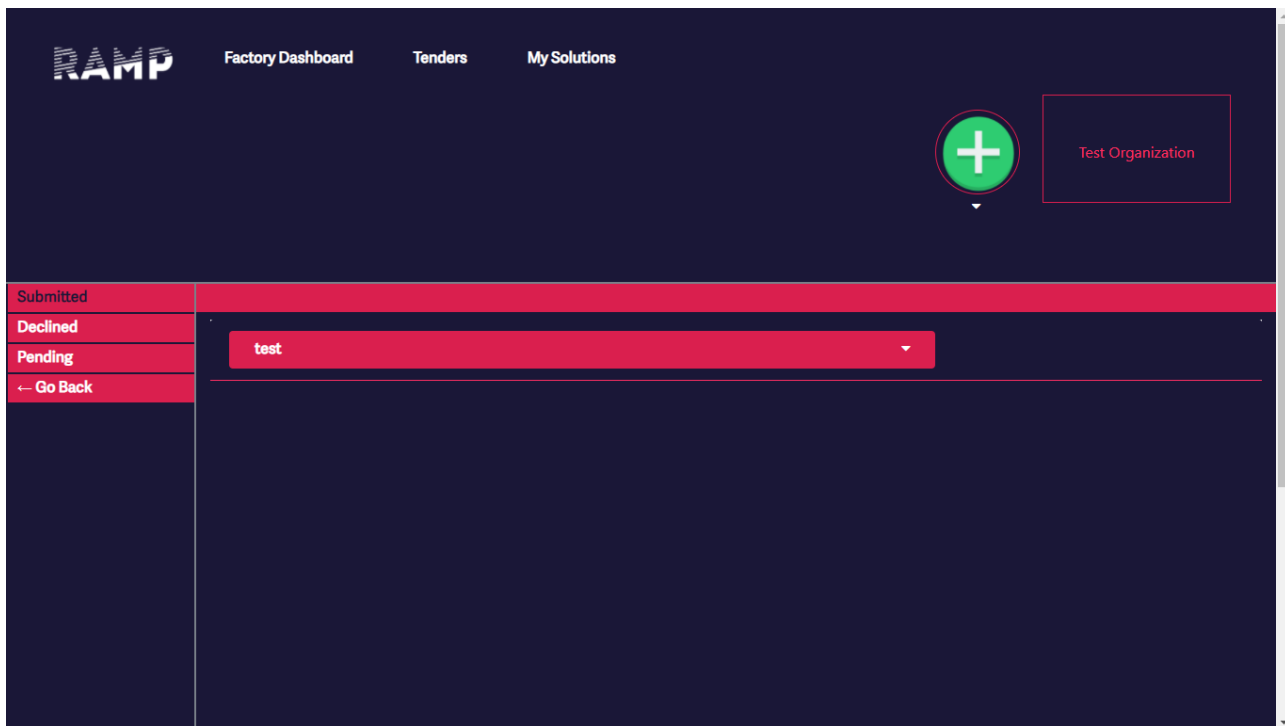
Figure 7: Expressions of Interest responses

For each submitted Expression of Interest, the Manufacturing SME may either accept it, and then a collaboration with the said supplier will be initiated at the 'Proposals' stage or reject it (Figure 8). On both occasions, the supplier will be notified with an email.
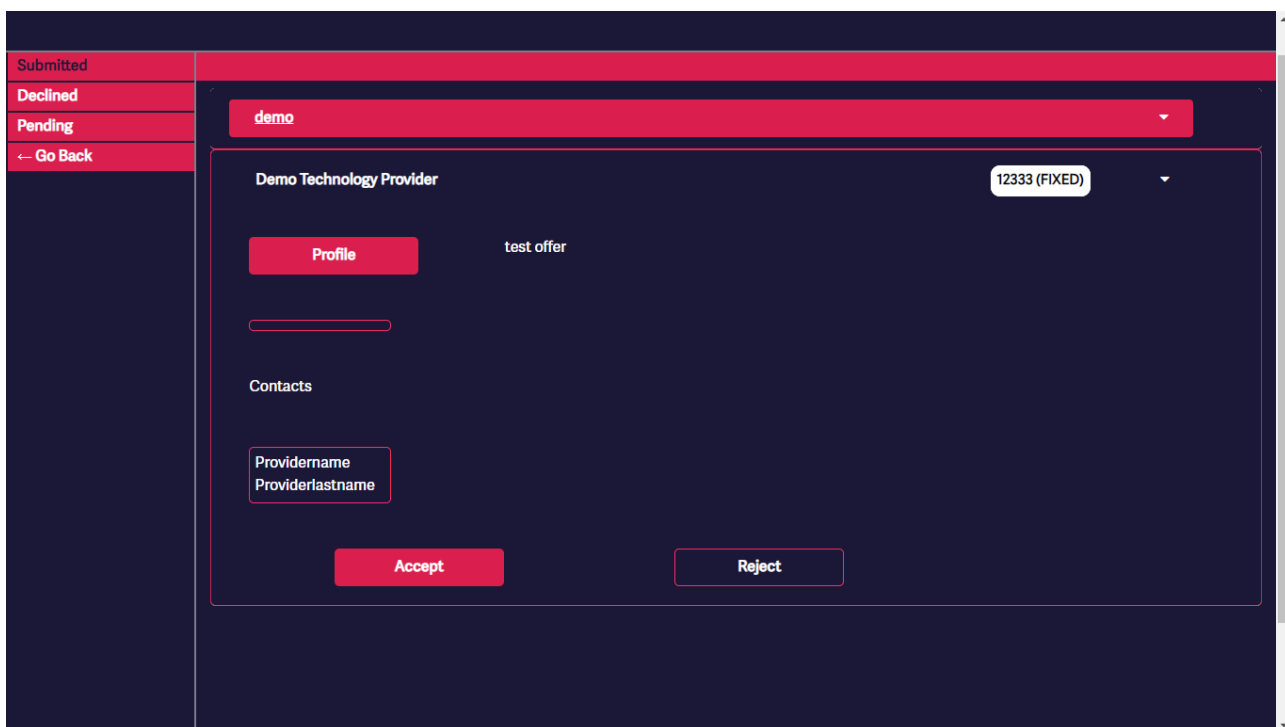

Figure 8: Accepting or rejecting an Expression of Interest for a tender

3.3.4 Proposals

Expressions of Interest that have been accepted move on to the 'Proposals' stage. The Manufacturing SME and the selected supplier have access to a common collaboration space, where the details of the service to be provided need to be defined (Figure 9).
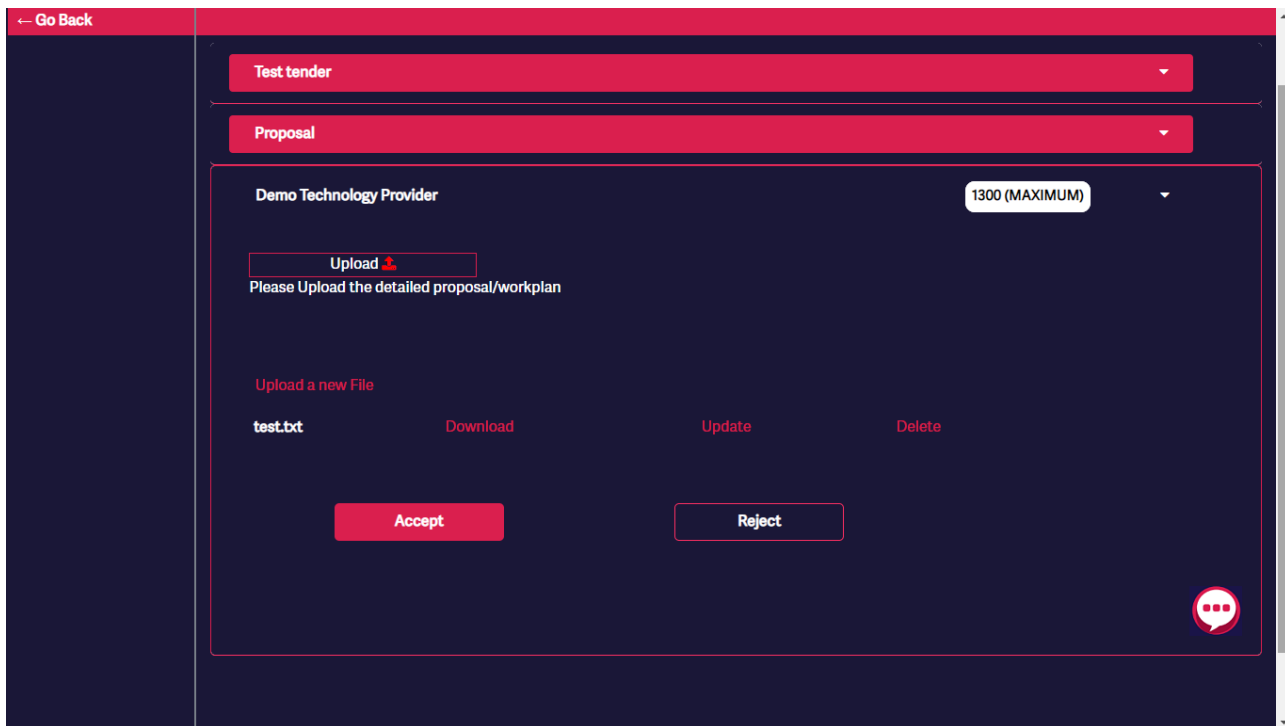
Figure 9: Collaboration between a Manufacturing SME and a Supplier on a 'Proposal'

The collaborative activities that can take place in this stage are:

- Upload proposal: defining the detailed proposal (document), which specifies the service to be provided and the agreement between the manufacturing SME and the supplier.
- Upload files: Uploading of additional files (e.g., documents, videos, pictures, etc.) as needed for better understanding the use case to be solved and the service to be provided. Up to 15 additional files can be uploaded. Files can be also deleted, if needed, by both sides.
- Chat: Messages between the two sides for short exchange of clarifications. (chat window opens by the "chat bubble" icon at the bottom right).

When the 'Proposal' has been finalized, the Manufacturing SME can Accept it by clicking the 'Accept' button, and now the proposal becomes a contract (moving on the 'Contracts' stage of the Tender tool) between the Manufacturing SME and the Supplier.

3.4 Tendering for Suppliers

3.4.1 Tenders overview

As tenders are initiated by the Manufacturing SMEs, a supplier has to be first invited to a tender in order to view it. The supplier can view the open tenders, where they have been invited, by clicking the 'Tenders' navigation item. There are 4 options that provide the tenders' overview (Figure 10):

- Pending offers: Tenders where the supplier has been invited, but has not yet responded, either by accepting or rejecting the invitation.
- Submitted offers: Tenders where the supplier has been invited and the acceptance or rejection by the Manufacturing SME is pending.
- Proposals: Tenders where the supplier has participated and Expression of Interest has been accepted. These are now in the detailed proposal definition stage, in collaboration with the Manufacturing SME.
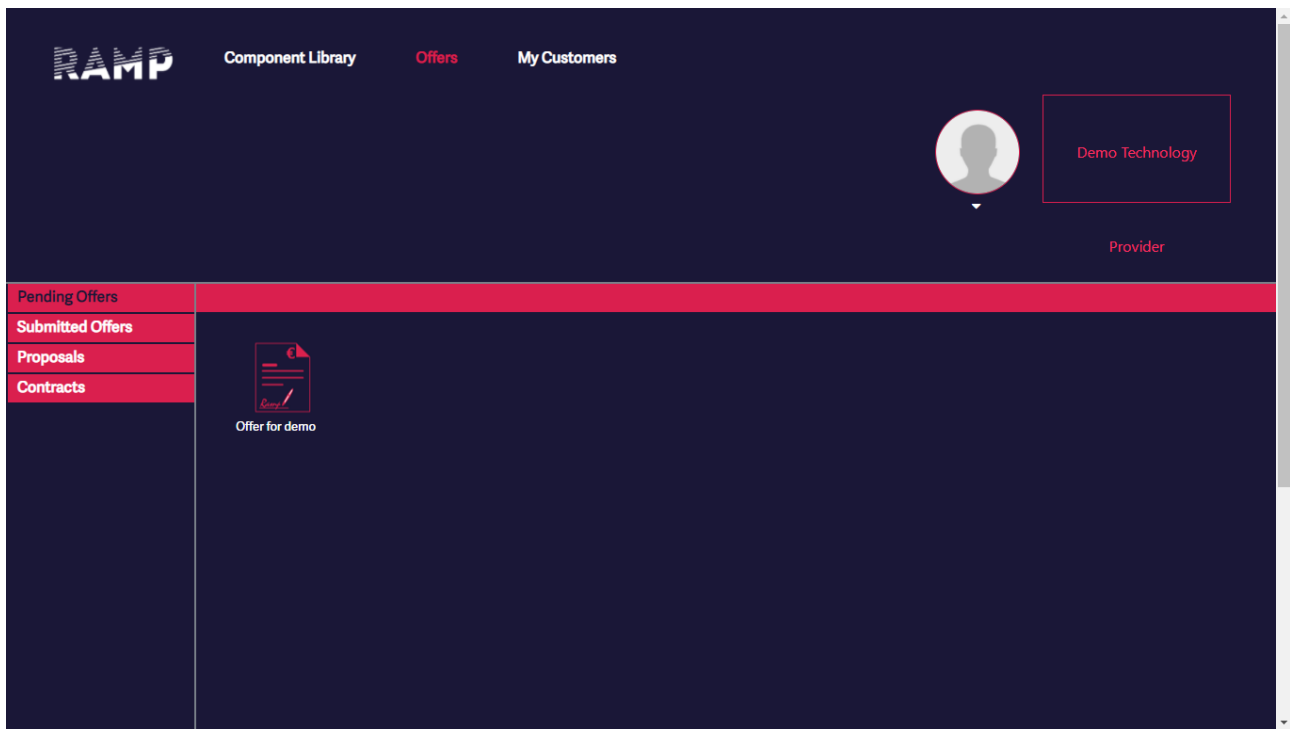- Contracts: The finalised contracts.

Figure 10: Tenders overview for supplier

3.4.2   Submit an expression of interest

The tenders that are open for expression of interest are accessed through the 'Pending Offers' item. By clicking a tender icon, the supplier can view the tender details, i.e. the service that is requested by the Manufacturing SME. The supplier can submit an Expression of Interest (offer) in the tender after filling the following information (Figure 11):

- Description of the offered solution: A summary of the offered solution / service.
- Define the price: Price of the offered service, as amount and indicating if it is fixed, indicative or minimum.

Figure 11: Submitting an Expression of Interest for a tender

Also, contact persons for this specific tender have to be defined, in the 'Add Contacts' step. Contact persons have to be employees that have been invited in the company's RAMP account.

The Expression of Interest is submitted by clicking the 'Submit Expression of Interest' button. An email notification will be sent to the Manufacturing SME.

If the supplier is not interested in participating in a tender, they can decline the invitation by clicking the 'Decline Invitation' button. An email notification will be sent to the Manufacturing SME.

After the Expression of interest has been submitted, the tender moves to the 'Submitted offers' page, until the Manufacturing SME accepts or rejects the offer. If the offer is rejected, the supplier is notified, and the offer is removed from the submitted page. If the offer is accepted, it moves on to the 'Proposals' stage.

3.4.3   Proposals

Expressions of Interest that have been accepted move on to the 'Proposals' stage. The Manufacturing SME and the selected supplier have access to a common collaboration space, where the details of the service to be provided need to be defined (Figure 9).

The collaborative activities that can take place in this stage are:

- Upload proposal: defining the detailed proposal (document), which specifies the service to be provided and the agreement between the manufacturing SME and the supplier.
- Upload files: Uploading of additional files (e.g., documents, videos, pictures, etc.) as needed for better understanding the use case to be solved and the service to be provided. Up to 15 additional files can be uploaded. Files can be also deleted, if needed, by both sides.
- Chat: Messages between the two sides for short exchange of clarifications.

When the 'Proposal' is accepted by the Manufacturing SME it moves on the 'Contract' page and becomes a service agreement between the Manufacturing SME and the supplier.

3.5 What to do next

After the contract has been confirmed, the service provision needs to be launched. Additionally, further in RAMP tools may be useful in the context of such services, like the Factory Dashboard (visualize sensor readings from the factory floor) and the RAMP CAD viewer (for product design services).

4 CAD viewer

The CAD viewer is intended to be used during product designing services, to enhance the collaboration between artists (product designers) and Manufacturing SMEs. The tool is planned to offer the following functionalities:

- Enable the uploading and online view of CAD files in a 3D view environment.
- Allow online discussion / messaging between the artist and Manufacturing SME, which is documented under the specific collaboration on a product. The discussion is documented in order to be able to track and review the progress of the design.
- Versioning system, to be able to track the different versions – increments during the product design.

An initial prototype has been developed as a demonstration of the work in progress (Figure 12). The initial prototype demonstrates the 3D view environment (including e.g. model rotation / view from different angles, zoom, etc.). The tool is implemented using the three.js JavaScript library (https://threejs.org/).
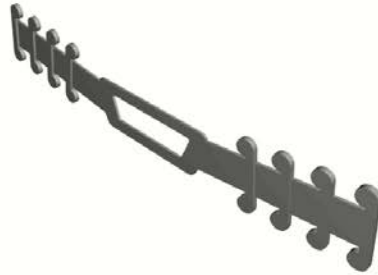

Figure 12: Initial prototype of CAD viewer, with 3D view of model

5 Conclusions

The tender tool has been fully developed, with the exception of connection with the central access management in RAMP, and the terms and NDAs of RAMP which will be rewritten. The CAD viewer tool in the current development status demonstrates only the 3D view environment. Feedback will be also collected and taken into account for further improvements. More specifically, testing and feedback collection starts during the matchmaking phase of the open calls, where interested parties will use the tender tool to find partners and draft the final proposals. The CAD viewer tool will be also tested later, during the execution of the experiments, in the collaboration between the Manufacturing SMEs and product designers.