



BETTER FACTORY

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User protection processes and mechanisms 1.0 version 1.0

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Abstract

RAMP provides a range of tools and functionalities which relate to the collaboration between different organisations and companies of the automation value chain, especially regarding the provision of services from different kinds of providers (automation technology, consultants, integrators, etc.) to manufacturing SMEs. As such, RAMP acts as the trusted intermediary between these companies. Additionally, the adoption of RAMP in the companies' activities is highly dependent on how much they trust that the platform goes beyond the technical aspect of protecting their data, but also that the services they receive are of high quality. This deliverable describes the mechanisms for protecting the users in using RAMP, beyond the technical aspect, as well as for enhancing their trust, with an ultimate goal of increasing the adoption of RAMP by the different actors of the automation value chain, i.e., manufacturing SMEs, automation technology providers, consultants, system integrators, robotics developers, etc.

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HISTORY OF CHANGES

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EXECUTIVE SUMMARY

From a legal and business perspective, trust within the RAMP ecosystem as well as the protection of RAMP users is crucial. From a legal perspective, implementing data protection measures and processes is often one of the important aspects that impacts trust and user protection. From a business perspective, however, processes that are aimed to increase the comfort and trust of users in using RAMP is also important.

Protection mechanisms in RAMP aim to ensure the following aspects:

- Confirmation / validation of transactions performed through RAMP
- Enhancement of the credibility of the companies and organisations in RAMP
- Protection of transactions taking place within RAMP
- Protection of the data and information shared within RAMP, and especially in the collaboration spaces
- Trust building for the data processing that takes place within RAMP
- Conflict resolution between RAMP companies
- Logging of actions and providing evidence of the occurrence of actions on RAMP

More specifically, in this first version of the user protection and trust-enhancing mechanisms the following aspects are addressed:

- Transactions and collaboration between different organisations
- Ensuring the credibility of companies that are registered in the RAMP, in terms of uses being authorized to manage these companies account and assuring their quality
- Tools that can be used for collaboration within RAMP
- Conflict resolution between companies

1 Introduction

1.1 Scope and purpose

The purpose of this document is to provide the overview of what approaches RAMP has in place to protect the users and companies in RAMP, especially in regard to their collaboration with other companies within the platform. The document is not concerned with the technical aspects (e.g. technical means for data protection), but is about the processes implemented.

1.2 Relation with work in other Tasks and Work Packages

This document is of Better Factory task T2.4. As such, it is related to the work of other tasks within the same Work Package, but also with other Work Packages of the Better Factory project.

- WP1: Cyber-security aspects, which also play a role in the user trust, take place in this WP, more specifically, the cyber-security of the RAMP IoT platform is addressed (T1.1), the integration of the Digital Twin in RAMP (T1.2) and the cloud infrastructure access (T1.3)
- WP2: T2.1 is concerned about the technical aspect of data protection in RAMP. T2.2 is the collaboration space, which is a part of RAMP that is benefited from enhanced trust, while T2.5 is concerned specifically with the legal aspects.
- WP3 & WP5: Testing of RAMP and feedback and users' concerns on trustworthiness are collected during the matchmaking phase and the Knowledge Transfer Experiments.
- WP4: APPS should also be trustworthy and secure. This is mostly addressed through the work in T1.1.
- WP6 & WP7: Dissemination, but most importantly, business development is supported by ensuring the RAMP trustworthiness.

2 Scope of use protection mechanisms

2.1 Scope of the RAMP protection mechanisms

Protection mechanisms in RAMP aim to ensure the following aspects:

- Confirmation / validation of transactions performed through RAMP
- Enhancement of the credibility of the companies and organisations in RAMP
- Protection of transactions taking place within RAMP
- Protection of the data and information shared within RAMP, and especially in the collaboration spaces
- Trust building for the data processing that takes place within RAMP
- Conflict resolution between RAMP companies
- Logging of actions and providing evidence of the occurrence of actions on RAMP

2.2 What is out of the scope of the RAMP protection mechanisms

The following aspects are out of the scope of the RAMP protection mechanisms:

- Any kind of legally-binding mediation in the collaboration or service provision between the organisations in RAMP
- Payments and any other kind of monetary transactions
- User role assignment and credential provisioning, which is the RAMP company's sole responsibility, with the exception of issuing initial user credentials to the user who will set up the RAMP company's account
- Credit worthiness assessment of the companies active on RAMP
- Full use of RAMP on mobile devices
- Verification of accuracy of documents, statements, data and other input uploaded by the RAMP company onto RAMP
- Providing an assessment of, or advice regarding, the legality of RAMP companies' actions, commitments, data or activities on or through RAMP
- Assessing the safety and/or security of the RAMP company's premises, manufacturing line, processes, procedures, products or services
- Assessing the adequacy and compliance of the RAMP company's data governance processes and practices

2.3 Disclaimer of liability

The description of the user protection mechanisms and processes in this document are for information purposes only and shall in no event be construed as a legally binding offering, promise or commitment on the part of the RAMP Consortium Members, nor can it be construed as a legally binding description of the products and services offered by the RAMP Consortium Members through RAMP. The legal relationship between the RAMP Company and the company offering RAMP are solely and exclusively governed by the RAMP Terms and Conditions.

3 Transactions in RAMP

3.1 Current practice

Currently, RAMP does not validate as a third-party the transactions¹. A user-driven process is followed for the transactions' validation, as follows:

1. One of the two parties that have made a transaction, 'claims' that the transaction has happened, through the RAMP 'Partner Catalogue', with a short description of the transaction. (Figure 1)
2. A notification appears to the claim recipient company, along with the description.
3. The recipient company may confirm or reject the transaction. If confirmed, the transaction is validated.

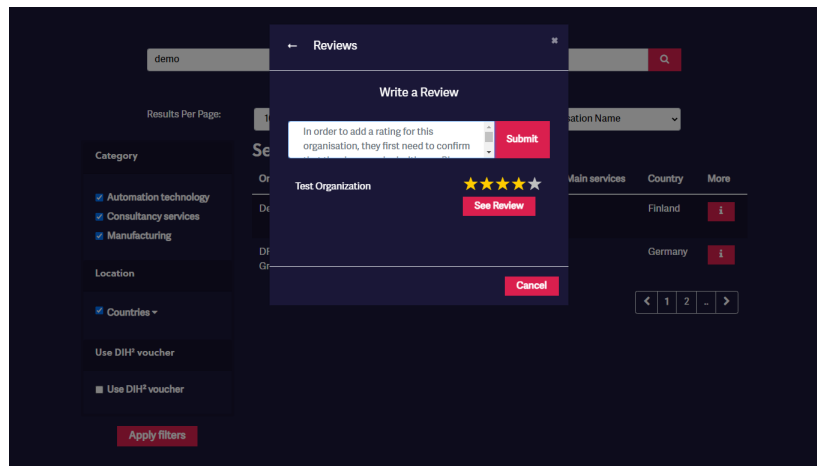


Figure 1: Claiming a transaction in RAMP

3.2 Evaluation

Current practice is user-driven, which is positive. However, it requires additional actions from the user, which are not always clear. In addition, it allows the companies to validate a self-claimed number of transactions, even not real ones. There is no third-party validation on whether the transaction has actually taken place or not.

3.3 Recommendations and action

The rating system itself is currently under evaluation. Beyond that, the current transaction evaluation mechanism is self-claim based, and hence not guaranteed. A new mechanism, connecting the validation of the transactions with the other tools in RAMP is proposed. The new process could be as follows:

1. A manufacturer launches a tender within RAMP, through the 'Tenders' tool
2. After accepting offers, the manufacturer may accept one or more.
3. When a proposal moves to the 'Contracts' phase in the 'Tenders' tool, the transaction is validated within RAMP. The 'Contracts' phase in 'Tenders' includes a legally-binding contract between the manufacturer and the service supplier, signed on a bilateral basis.

¹ 'Transactions' in the context of this document means the service provision by a supplier (Technology provider or consultancy services) to a Manufacturing SME

4 Credibility of RAMP companies

Regarding the credibility of companies in RAMP there are two aspects:

- In terms of if the company is 'officially' signed up in RAMP, and therefore its users are authorized to perform negotiations and transactions in RAMP.
- In terms of if the company is a legit one, and relevant to the RAMP scope. Beyond relevance, ensuring the high quality of the companies, and especially from the suppliers' side is of utmost importance.

4.1 Authorization of companies

This paragraph is concerned with the topic of companies in RAMP, and more specifically about ensuring that its users are authorized to perform negotiations and transaction in RAMP.

4.1.1 Current practice

Currently when a company is signed up in RAMP, the registration is withheld until the RAMP team approves it. To ensure the authorization of the registration, RAMP requires that the company CEO or at least a person who can act as legal representative make the first signing up. A background check is performed. The background check is currently done through online web resources and one-to-one communication with the registrant.

4.1.2 Evaluation

Following the current practice, a number of resources is required by the RAMP team to perform the background checks. There are two main drawbacks:

- Background check performed mainly with information available on the internet. Hence, it's possible for person to make available information about themselves on the internet, that makes it seem as if they are a legal representative of a company, even if it is not true. This is the case mainly for companies that do not have personnel information on their websites.
- The procedure in general is not scalable.

4.1.3 Recommendations and action

It is difficult to completely automate the process of the background check. However, instead of performing this check after the registration, RAMP can request the submission of proof, e.g., a document, that proves that the user that applies for the company is indeed a legal representative. While the manual intervention for the approval registration is not completely removed, the process is now user-driven, while the threat of impersonation, even though not completely eliminated, is reduced.

4.2 Quality of RAMP companies

This paragraph is concerned with the topic of ensuring the high quality of the companies in RAMP.

4.2.1 Current practice

Currently the quality of the RAMP companies is user-driven. A star-rating system allows the users to rate and leave comments on other companies, after a validated transaction. (Figure 2)

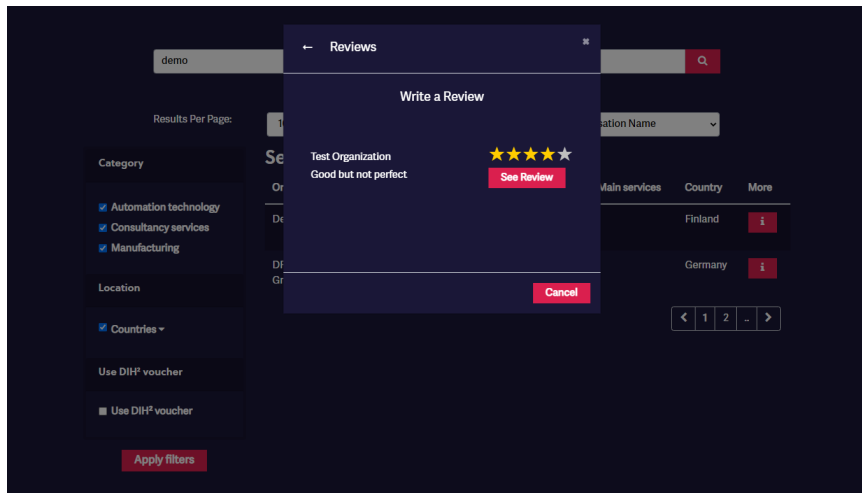


Figure 2: Ratings in RAMP

4.2.2 Evaluation

While the user-driven approach is positive, there are certain issues to consider:

- Companies may abuse the rating system to exchange fake high ratings in order to increase their reputation, or post fake negative comments to competitors.
- In case of a transaction that was problematic, the company that should receive a low rating can reject that the transaction has taken place.
- There may be legal attacks to RAMP from companies that receive negative comments.

4.2.3 Recommendations and action

Rating system is currently considered for removal. The following actions could be taken to ensure the quality of the companies in RAMP:

- Include use cases and past customers in the profiles
- Monitor conflicts between RAMP companies and take actions for potentially problematic ones. That could end even in the removal of a problematic company in RAMP.
- Perform background check on the quality of companies applying to register. Documentation may be asked by the companies upon registration.

5 Online collaboration and data protection

RAMP provides a number of tools that allow online collaboration between organisations, for example between a manufacturer and an automation technology provider, etc. These tools provide functionalities where documentation and media may be shared. This data in may include sensitive information, trade secrets. For example, during a service provision for automation, details and diagrams from the factory could be shared between the manufacturer and the provider, or details about the technologies of the provider that give them competitive advantage, etc. While from the RAMP side this data is protected, from organizational and technical point of view, it is important to also increase the awareness and enhance the trust of the organisations in RAMP, so they can not only 'be', but also 'feel' safe in using these tools and sharing this data through RAMP.

The related tools for collaboration where such data is shared include:

- Tender tool, where tenders are launched by manufacturers, and offers submitted by suppliers
- Projects tool, where partnerships are formed and collaboration on tools, depending on the type of project, is performed.
- Factory Dashboard, a tool in 'Automation' projects, that allows the visualization of data from the factory floor (sensors, equipment, etc.)
- Digital Twin, a tool in 'Automation' projects, which allows the 3D visualization and simulation of the factory floor, a production line or a work cell
- CAD viewer, a tool in 'Product design' projects, that allows online viewing of CAD models (e.g., product models)

The protection of this data is ensured through the work in Task T2.1.

To enhance trust, marketing and dissemination actions are required. This could include informative online articles, videos, or/and dedicated section in user guides and tutorials.

6 Conflict resolution between companies

The presence of clear and dependable conflict resolution mechanism is important for the RAMP sustainability. From a threat-opportunity perspective it can drive more organization to RAMP:

1. Threat: Distrust in collaborating with other organisations through RAMP, as there may be an uncertainty for what will happen if things go wrong. Having conflict resolution procedures, RAMP ensure that any problems in the collaboration through RAMP will be resolved.
2. Opportunity: Use RAMP to ensure the service provision, instead of bilaterally collaborating. In this case, RAMP plays the role of the trusted intermediary that guarantees the quality of the service provided.

Conflict resolution can be a complex process. However, in RAMP there should be only a few simple steps, which should ensure an effective outcome. In the context of this version of the document, the conflict resolution procedures will not be finalized, but the main requirements and core framework is reported

A better understanding on the appropriate procedures is a better understanding of both the potential conflict involved parties, as well as the general steps needed.

6.1 Strategies of disputants

While disputants will always want to resolve a dispute, their strategies may differ, depending on the risks, potential benefits, or even stemming from cultural and social background. Five main conflict strategies can be identified²:

1. Collaborating: Being assertive and cooperative, trying to find common grounds and reduce negative feelings for both sides. Works best when long-term relationship and outcome are important.
2. Competing: Being assertive and uncooperative, pursuing own interests at another disputant's expense. Works best when relationship is not important, but outcome is.
3. Avoiding: Being unassertive and uncooperative, simply withdrawing from any threatening situation. Works when the outcome is not important.
4. Accommodating: Being self-sacrificial, accommodating to satisfy the other disputant. Work when relationship is important, but outcome is not.
5. Compromising: Being assertive and cooperative to some extent, trying to quickly find a mutually acceptable solution. Works when a quick solution is needed, however no one is really satisfied in the end.

² B. Benoliel, "What's Your Conflict Management Style?", Walden University, 2017, <https://www.waldenu.edu/news-and-events/walden-news/2017/0530-whats-your-conflict-management-style>

In an early estimation, the following level of RAMP involvement can be foreseen, depending on the two disputants conflict style:

	Collaborating	Competing	Avoiding	Accommodating	Compromising
Collaborating	Low	Medium	High	Low	Medium
Competing	Medium	Very high	High	Medium	High
Avoiding	High	High	Low	High	High
Accommodating	Low	Low	High	Low	Medium
Compromising	Medium	High	High	Medium	Medium

Level of RAMP involvement:

Low: Parties most probably will resolve the conflict themselves. RAMP involvement not foreseen.

Medium: Parties will most probably resolve the conflict, but RAMP involvement will be required as an intermediary.

High: RAMP may need to impose non-legal resolution or even penalty (e.g., temporary removal from RAMP) to a party.

Very high: Indicates a very high involvement of RAMP, which also imposes a high risk for legal consequences. This is the case only when both sides are competing and conflict resolution is difficult. Legal actions from one participant to another may also be taken. RAMP involvement should be avoided in any bilateral legal conflicts.

The following actions can be considered for each level of RAMP involvement:

- Low: No action required by the RAMP team. Only having the dispute space where disputants can discuss and resolve the issue is sufficient.
- Medium: Action by RAMP team is required. RAMP team should monitor the dispute and make suggestions to both parties for resolving the issue.
- High: RAMP team should be more involved, potentially taking one of the two sides in the dispute. Non-legal penalties may be decided.
- Very high: RAMP team should be early involved and try to convince at least one of the two parties to change their conflict style, most probably from 'Competing' to 'Compromising'. If both sides keep their competing style a high risk for RAMP to even be involved in legal actions from one party to the other is foreseen. Legal involvement of RAMP in such bilateral matters should be avoided.

It can be also noted that an avoiding style poses high involvement of the RAMP team. A timeframe for requesting responses may be integrated in the process to avoid this risk.

6.2 General steps for conflict resolution

Conflict resolution can be simplified in 5 main steps³:

1. Define the source of conflict: Allow both parties to explain their side and understand better the situation.
2. Look beyond the incident: Often it is not the situation that causes anger but an underlying source.
3. Request solutions: Help both parties to identify possible solutions to the conflict.
4. Identify solutions both disputants can support: Point out the most acceptable and beneficial solutions for both parties.
5. Agreement: Negotiate the selected solution, that both parties accept.

6.3 Considerations for implementation

An indicative process for a conflict resolution procedure and actions needed can be indicatively considered:

1. (Online tool) Allow a party to open a dispute in RAMP and explain their side and propose solutions.
2. (Online tool) Allow the disputant to explain also their side and either accept one of the proposed solutions (dispute ends) or propose new solutions.
3. (Online tool) Allow 1st party to either accept one of the proposed solutions (dispute ends) or request RAMP team involvement.
4. (RAMP team) Review dispute and proposed solutions. In any case, RAMP team should try to identify and underlying causes of the dispute, as well as both disputants' situation. The type of communication of RAMP team with the parties depends on their dispute style, and hence with the foreseen RAMP involvement.:
 - a. Very high: Live communication (e.g., telephone) with parties to try to change their conflict style from competing to compromising.
 - b. High: Live communication (e.g., telephone) with parties to try to find common ground for the solution.
 - c. Medium & Low: Online communication (RAMP or email) with parties to try to find common ground for the solution.
5. (Online tool) RAMP team proposes one or more solutions to resolve the issue. Both parties can either accept one common solution or reject.
6. (RAMP team) RAMP team should review the dispute, and decide if a specific solution, potential benefiting one of the parties, should be imposed. If yes, the solution is imposed (dispute ends), else the negotiations should be escalated in live meetings.

³ American Management Association, "The Five Steps to Conflict Resolution", <https://www.amanet.org/articles/the-five-steps-to-conflict-resolution/>



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