# ASSISTANCE

**Adapted situation awareneSS tools and taIlored training curricula for increaSing capabiliTie and enhANcing the proteCtion of first respondErs**

European Commission

## assistance

| Project Ref. N° | ASSISTANCE H2020 - 832576 |
|---|---|
| Start Date / Duration | May 1, 2019 (36 months) |
| Dissemination Level[1] | PU (Public) |
| Author / Organisation | Francine Amon/RISE |

# Deliverable D1.3

## Risk & Opportunities Register 1

31/10/2019

---

[1] PU: Public; PP: Restricted to other programme participants (including the EC services); RE: Restricted to a group specified by the Consortium (including the EC services); CO: Confidential, only for members of the Consortium (including the EC services).

## ASSISTANCE

Nowadays different first responder (FR) organizations cooperate together to face large and complex disasters that in some cases can be amplified due to new threats such as climate change in case of natural disasters (e.g. larger and more frequent floods and wild fires, etc) or the increase of radicalization in case of man-made disasters (e.g. arsonists that burn European forests, terrorist attacks coordinated across multiple European cities).

The impact of large disasters like these could have disastrous consequences for the European Member States and affect social well-being on a global level. Each type of FR organization (e.g. medical emergency services, fire and rescue services, law enforcement teams, civil protection professionals, etc.) that mitigate these kinds of events are exposed to unexpected dangers and new threats that can severely affect their personal safety.

ASSISTANCE proposes a holistic solution that will adapt a well-tested situation awareness (SA) application as the core of a wider SA platform. The new ASSISTANCE platform is capable of offering different configuration modes for providing the tailored information needed by each FR organization while they work together to mitigate the disaster (e.g. real time video and resources location for firefighters, evacuation route status for emergency health services and so on).

With this solution ASSISTANCE will enhance the SA of the responding organisations during their mitigation activities through the integration of new paradigms, tools and technologies (e.g. drones/robots equipped with a range of sensors, robust communications capabilities, etc.) with the main objective of increasing both their protection and their efficiency.

ASSISTANCE will also improve the skills and capabilities of the FRs through the establishment of a European advanced training network that will provide tailored training based on new learning approaches (e.g. virtual, mixed and/or augmented reality) adapted to each type of FR organizational need and the possibility of sharing virtual training environments, exchanging experiences and actuation procedures.

## Disclaimer

This document contains material, which is the copyright of certain ASSISTANCE consortium parties, and may not be reproduced or copied without permission.

The information contained in this document is the proprietary confidential information of the ASSISTANCE consortium (including the Commission Services) and may not be disclosed except in accordance with the consortium agreement.

The commercial use of any information contained in this document may require a license from the proprietor of that information.

Neither the project consortium as a whole nor a certain party of the consortium warrant that the information contained in this document is capable of use, nor that use of the information is free from risk, and accepts no liability for loss or damage suffered by any person using this information.

The information in this document is subject to change without notice.

## Executive Summary

This Risks and Opportunities Management Policy (ROMP) describes how risks and opportunities (R&Os) are registered and handled by the ASSISTANCE project management. It also provides guidance for all ASSISTANCE participants about how to bring a risk or opportunity to the attention of the appropriate person. It has been prepared by RISE Research Institutes of Sweden (RISE).

The ROMP enables decision-making that will reduce exposure to harmful events (risks) and increase exposure to beneficial events (opportunities). The ROMP provides the framework for a systematic and transparent approach to planning, assessing, and treating R&Os that have the potential to impact the ASSISTANCE project in a negative or positive way.

The ROMP and the Risk and Opportunity Register are two separate documents. The register is a spreadsheet into which the R&Os are recorded, analysed and tracked. Both documents are posted on the ASSISTANCE file repository so that all project participants can have access to them at any time.

This is the first of three R&O deliverables; it includes the ROMP and the R&O register with the initial R&Os identified in the proposal phase of the project, together with new R&Os identified before M6. The second R&O deliverable (D1.4) is due in M18 and will include all R&Os identified until M17, along with any changes made in the ROMP during this time. The final R&O deliverable (D1.5) will include all R&Os identified during the entire ASSISTANCE project and the final ROMP if any changes have been made since M17.

## List of Authors

| Organisation | Authors |
|---|---|
| RISE | Francine Amon |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

## Change control datasheet

| Version | Changes | Chapters | Pages | Date |
|---------|---------|----------|-------|------|
| 0.1 | First draft | All | 11 | 18/7/19 |
| 0.2 | Internal version updated & distributed to consortium | All | 26 | 27/10/19 |
| 3 | Final draft version for submittal | All | 32 | 29/10/19 |
| 3.1 | Final version for submittal | All | 33 | 30/10/19 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

# Content

## List of Figures

## List of Tables

## Acronyms

| | |
|---|---|
| ASSISTANCE | Adapted situation awareneSS tools and taIlored training curricula for increaSing capabiliTie and enhANcing the proteCtion of first respondErs |
| AB | Advisory Board |
| D#.# | Deliverable number #.# (D1.3 deliverable 3 of work package 1) |
| DoA | Description of Action of the project |
| EC | European Commission |
| EU | European Union |
| EUAB | End User Advisory Board |
| GA | Grant Agreement |
| H2020 | Horizon 2020 Programme for Research and Innovation |
| IPR | Intellectual Property Rights |
| M# | Month of the project (M1=May 2019) |
| PC | Project Coordinator |
| PO | Project Officer |
| PIC | Project Implementation Committee |
| PSB | Project Security Board |
| PSC | Project Steering Committee |
| R&O | Risks and Opportunities |
| ROMP | Risks and Opportunities Management Policy |
| SA | Situational Awareness |
| TL | Task Leader |
| WP | Work Package |
| WPL | Work Package Leader |

# 1. Introduction

This document describes the Risks and Opportunities Management Policy (ROMP) for the ASSISTANCE project. It is linked to a register of the risks and opportunities (R&Os) that occur or are anticipated during the project. This ROMP generally follows the framework of ISO 31000:2018 Risk Management – Guidelines[2].

For the purposes of the ASSISTANCE project, the following definitions are used:

- *Risk*- A potential problem or threat that could affect the project's ability to meet its performance, budget, schedule, or other objectives.
- *Opportunity*- A potential enhancement or positive impact that could improve the project's ability to meet its performance, budget, schedule, or other objectives.
- *Risks and Opportunity Management*- The continuous, proactive process of planning, identifying project R&Os, assessing them for potential action, implementing action plans, monitoring those plans to completion, communicating the results, and improving the process.

The major components of the ROMP loosely follow the iterative Plan-Do-Check-Act (PDCA) principle used in other aspects of ASSISTANCE project management. The structure of the ROMP described in this report is as shown in Figure 1, where the core activities of planning, assessment, and treatment are carried out sequentially and the interfacing activities of communication, monitoring, reporting, and reviewing occur continuously throughout the project.

---

[2] ISO International Organization for Standardization, ISO 31000:2018 Risk management - Guidlelines. 2018, Geneva, CH. p. 52.

Figure 1: Diagram of risks and opportunities management process

The ability to identify R&Os in time to deal with them in the most efficient and creative way can not only reduce a potential risk but could possibly transform it into an opportunity if handled cleverly. The goal of this policy is to provide a framework that allows the project participants to "accentuate the positive and eliminate the negative[3]" in a transparent manner.

## 1.1. Responsibilities

The ASSISTANCE project management team, headed by the Risk Manager, are responsible for managing the R&Os identified during the project. The Risk Manager is ultimately responsible for the resolution of all R&Os recorded in the register. Depending on the nature of the risk or opportunity, the Risk Manager may appoint a "Risk or Opportunity Owner" from the people listed in Table 1 or from the task leaders (TLs) or work package leaders (WPLs) if appropriate, who then become responsible for management of all the actions associated with their specific risks or opportunities, although the Risk Manager retains the final responsibility. It is the duty of the Risk or Opportunity Owner and the Risk Manager to collect and assess information covering all aspects relevant to the risk or opportunity, which may involve recruiting help from other project participants that are affected by or are stakeholders in the risk or opportunity.

---

[3] Song written by Johnny Mercer and Harold Arlen in 1944.

Table 1: Risk or Opportunity Owners for the ASSISTANCE project

| Risk or Opportunity Owner | Organization | Function |
|---|---|---|
| Prof. Manuel Esteve | UPVLC | Project Coordinator, leader of the Project Implementation Committee (PIC) and the Project Steering Committee (PSC). |
| Dr. Federico Carvajal | UPVLC | Risk Manager |
| Ms. Eva Muñoz | ETRA | Innovation Manager |
| Mr. Antonio Marqués | ETRA | Exploitation and Business Manager |
| Ms. Florence Aligne | THALES | Quality and Data Manager |
| Ms. Adriana Peduto | e-LEX | Legal Advisor |
| Mr. Antonio Carnevale | CEL | Ethics Advisor |
| Dr. Zeynep Sofuoglu | AAHD | End User Group Coordinator |
| Mr. M. Gómez Chao | MIR-PN | Project Security Officer |

As task leader for *T1.4 Risk and opportunities management and quality assurance,* RISE will write the three deliverable reports and support the Risk Manager by updating and distributing the R&Os register to the consortium on a regular basis and whenever a new risk or opportunity is identified. RISE will also encourage project participants to be vigilante for potential R&Os and to bring them to the Risk Manager. If project participants bring R&Os to RISE, the risk or opportunity will be brought to the Risk Manager immediately and entered in the register as soon as possible.

The Risk Manager is responsible to:
- Implement the ROMP
- Coordinate and provide the focus for all R&O management activities
- Describe each R&O in the register according to the guidelines of this document
- Assign the risk or opportunity to a Risk or Opportunity Owner who has the capacity and expertise to manage the risk or opportunity
- Coordinate, schedule and report the R&O reviews
- Ensure that all R&O decisions and actions are recorded and implemented
- Verify consistency between the R&O action plans and the project calendar
- Generate R&O metrics as required by the project management team
- Communicate the R&Os inside and outside the consortium as determined by the nature of the risk or opportunity

# 2. Core risk and opportunity management activities

The core steps of the ROMP are planning for, assessing, and treating the R&Os that could be reasonably expected to occur. A summary of the core ROMP process is given in section 2.4.

## 2.1. Planning

Planning for the occurrence of R&Os during the project involves implementing a system by which R&Os can be identified and dealt with effectively. This process includes providing a context for the project participants to understand what constitutes a risk or an opportunity, its scope, and the criteria by which to assess it.

Planning the most effective and efficient methods of handling R&Os is essential to the success of the project and has been integrated into the management structure as shown in Figure 2. A checklist is provided in the Appendix to guide project participants through the R&O management process.

### 2.1.1. Context

A ROMP is an expected part of a H2020 project. Potential risks were identified in the project application, even before the project was accepted. The risks identified in the ASSISTANCE proposal phase are listed in Chapter 4. Exploitation plans for results, which might be considered opportunities, are also normally a part of a H2020 project and can be influenced by events and/or new information that affect project outcomes. The occurrence of both risks and opportunities are normal for research and innovation projects. The purpose of establishing a ROMP is to ensure that the ASSISTANCE project management team is prepared to treat the R&Os effectively and ensure that the project outcomes are of the highest possible quality.
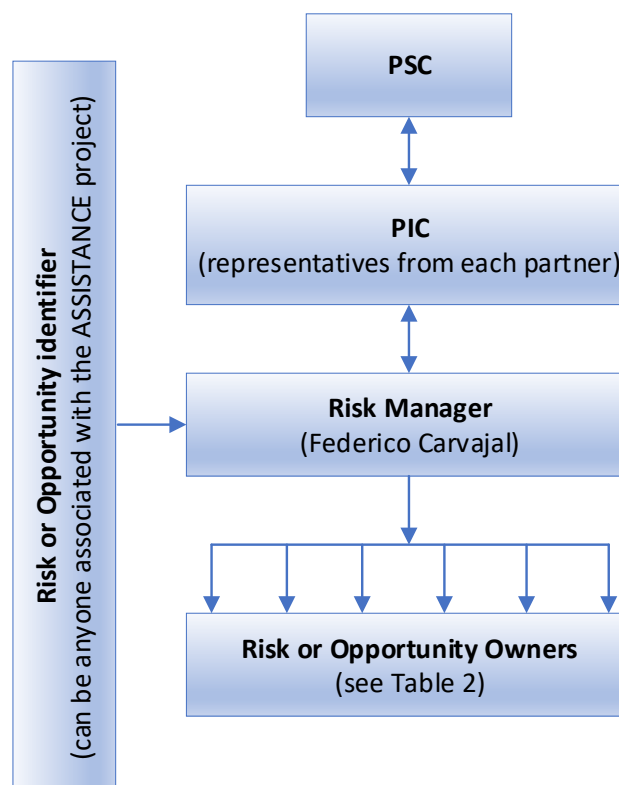
Figure 2: Risk and opportunity management structure

The flow of the R&Os through the project management structure is shown in Figure 2. R&Os may be obvious or subtle. Depending on the nature of the risk or opportunity, the most efficient approach may be for the project participant to first discuss the matter with his/her colleagues, then the TL or WPL, to get clarity about the situation. It may be an issue that can be handled by other means within the project management structure. If there is uncertainty about whether the issue is actually a risk or opportunity, it must be brought to the Risk Manager, who will determine whether the potential risk or opportunity should be registered or handled another way. All unresolved R&Os in the register will be reviewed at each PIC meeting. If the PIC is unable to agree on the treatment of a risk or opportunity, the matter will be brought to the PSC.

To facilitate analysis of the R&Os during the project and assignment of the Risk or Opportunity Owner, the R&Os will be sorted into these categories: Business, End User, Ethics, Innovation, Legal, Management, Other, Quality & Data, and Security.

## 2.1.2. Scope

R&Os can come from both external and internal sources. Examples of external sources could be changes in EC policies, end user and/or civilian expectations, and world events (disasters). Examples of internal sources are changes within partner organizations, conflicting interpretations of project work, and networking opportunities among partner contacts.

The PIC meets on a regular basis to, among other things, review new R&Os, assess the action plans created by the Risk or Opportunity Owners, monitor ongoing R&Os, and consider potential external sources of R&Os. If the PIC is unable to decide how to resolve a risk or opportunity it will be brought to the PSC for resolution. The PSC will bring any risks or opportunities to the PIC if it becomes aware of them independently from the PIC.

### 2.1.3. Criteria

Estimating the magnitude of the probability and consequences of a risk or opportunity requires consideration of the nature and type of uncertainties that can affect outcomes and objectives (both tangible and intangible), time-related factors, consistency in the use of measurements, and how combinations, dependencies, and sequences of multiple risks will be taken into account.

The magnitude of the probabilities and consequences assigned to R&Os is on a scale of 1 to 5, where 1 is low, 3 is medium, and 5 is high. The Risk or Opportunity Owner will assign the probability and consequence rating during the creation of the action plan. If measurable quantities are available upon which to base the assignments of probabilities and consequences, these will be used and explained in the description of the action plan.

## 2.2. Assessing

This section discusses the process by which R&Os are identified, analyzed, and evaluated.

### 2.2.1. Identification

A proactive approach to finding R&Os will be taken throughout the duration of the ASSISTANCE project, whether or not the sources are within control of the project. The project partners are encouraged to be vigilant so they can recognize a risk or opportunity if presented with one. The regular plenary and PIC meetings will be used to remind partners about the possibility of R&Os and to provoke thought about factors that could indicate their presence, as these meetings take place in a setting where the most relevant, appropriate and up to date information is available.

The Risk Manager will use a range of techniques for identifying R&Os that may affect one or more of the project objectives. These techniques include at least the following:

- Looking at project documentation- timelines and hours charged to the project (work breakdown structure)
- Brainstorming with PIC and PSC members, or other groups as needed
- Providing a mechanism for anyone to communicate R&Os at any time (as described in this document)

- Asking provoking questions (and encouraging TLs and WPLs to do the same), such as: What could go wrong? What can be done to improve the quality of the project outcomes? Follow up with more questions: Why? When? How? Where?
- Requiring PIC members, TLs and WPLs to report anticipated R&Os at all plenary and PIC meetings

When a potential risk or opportunity has been identified, the Risk Manager enters it into the R&O register.

## 2.2.2. Risks and opportunities registry

The registry exists as an interactive spreadsheet and is maintained by the Risk Manager, with support from RISE. It contains the following fields:

- The risk or opportunity statement in the form "If (*risk or opportunity*) occurs by (*trigger*- could be a date or a condition) then (*consequence*) will happen."
- The context of the risk or opportunity, details that help to tell the story (root cause, who, what, when, where and why). If risks and/or opportunities are interconnected, state the nature of their relationship.
- The type of impact to the project, which could be communication, costs, quality of deliverables, resource availability, schedule, subcontractors, security, technical or something else
- The probability that the potential risk or opportunity will occur, estimated using a scale of 1 – 5, where 1 is highly uncertain and 5 is a certainty
- A rating of the magnitude of the consequence(s), based on measurable/transparent information if possible
- The action plan for treating the risk or opportunity
- The status of each step in the action plan
- The status of the risk or opportunity as a whole

An example of a risk entry in the register is given in Table 2 below. Note that the probability and consequence ratings have been arbitrarily assigned for discussion purposes because this risk has not been assigned ratings at the time of writing. The opportunities are entered in the same format on a different worksheet in the register.

## Risk & Opportunities Register 1

Table 2: Example of risk register entry.

| Risk Name | Short description | | | Risk Owner | |
|---|---|---|---|---|---|
| **R1** | Partner performance issues | | | **Name** | Federico Carvajal (FC) |
| **Probability** | **Consequence** | **Overall Status** | **Category** | **Telephone** | +34 963879194 |
| 2 | 4 | monitoring | Management | **Email** | fecarrod@upvnet.upv.es |

| |
|---|
| ***Risk statement in this form:*** *"If [risk] occurs by [trigger, could be a date or a condition], then [consequence] will happen."* |
| If partners do not perform their work on time, then delays in dependent work and deliverables/milestones could occur. |
| ***Context:*** *details that help to tell the story (root cause, who, what, when, where and why). If risks and/or opportunities are interconnected, state the nature of their relationship.* |
| Partners can underperform or leave the project. Key personnel may be temporally unavailable. This can happen to any partner at any time during the project. |
| ***Impact on project if risk is realized****: could include communication problems, costs, quality of deliverables, resource availability, schedule, subcontractors, security, technical or something else* |
| Delayed results can interrupt the flow of work elsewhere in the project, contribute to animosity between partners, and can cause delays in deliverables. |
| ***Resources needed:*** |
| None anticipated at this time. |

| *Action Plan* | | | Responsible person | Start date | End date | Status/ Outcome | New Prob | New Cons |
|---|---|---|---|---|---|---|---|---|
| Step | Description | Dependencies | | | | | | |
| 1 | Use a flexible project management structure. | none | FC | 01-May-19 | 30-Apr-22 | Ongoing | | |
| 2 | Allow resources to be shifted quickly between partners. | Some partners will have less resources | FC | 01-May-19 | 30-Apr-22 | Ongoing | | |
| 3 | Add new partners to the project quickly if necessary. | none | FC | 01-May-19 | 30-Apr-22 | Ongoing | | |
| 4 | Encourage staff with overlapping competence within partners for continuity of effort. | none | FC | 01-May-19 | 30-Apr-22 | Ongoing | | |

In this example the risk is named R1, as the first risk recorded in the management category. It has a somewhat low probability of becoming a problem, but the consequences could be rather high if it does indeed occur. The status of this risk is "monitoring", although these other choices are available: resolved, active, urgent. The Risk Owner is Federico Carvajal, who is also the Risk Manager. The risk statement, context and impact are entered as described in the preceding text. Project resources are not needed at this time, and the steps of the action plan are as indicated. Changes in the probability or consequences of the risk resulting from the execution of the steps are recorded as the action plan is performed.

## 2.2.3. Analysis

The type of impacts the risk or opportunity could have on the project are analysed by the Risk or Opportunity Owner and the Risk Manager. There could be multiple effects that have complex impacts within the project due to connections and interdependencies between work packages and tasks, time-related factors, security of data or intellectual property, or intangible influences on the first responder community. A well-written context description in the risk or opportunity register facilitates the analysis.

The probability that the risk or opportunity will occur must be determined. A scale of 1 – 5 shall be used, with 1 having a very low probability (implying a high uncertainty about the risk or opportunity) and 5 having a very high probability (low uncertainty). Note that a risk is not a problem until it becomes a reality. The magnitude of the consequences must also be estimated. Again, a scale of 1 – 5 shall be used, with 1 having minor consequences and 5 having catastrophic consequences.

The analysis results are displayed in color-coded tables that highlight the relative priorities, one table for risks and another table for opportunities, as shown in Figure 3. For risks, green indicates relatively low priority (maybe an acceptable level of risk, depending on the specific situation), yellow is a moderate amount of risk, and red indicates a relatively high priority risk. For opportunities, light blue indicates a relatively low priority opportunity, medium blue is a moderate opportunity, and dark blue indicates relatively high priority opportunity. It is possible for a risk to become an opportunity and vice versa; in this case it will exist in both tables.
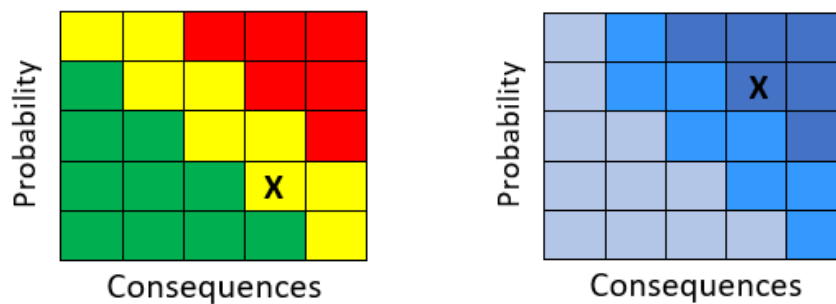
Figure 3: Charts showing the probability and consequence ratings for a risk on the left side and an opportunity on the right side.

Understanding the probability and consequences of the risk or opportunity allows it to be prioritized so that the appropriate level of resources can be assigned to it. If multiple risks or opportunities occur together, this analysis process can be streamlined to use in a qualitative fashion to screen them for further study.

## 2.2.4. Evaluation

Evaluation is the process of deciding whether the issue can be handled adequately by existing project controls (outside the ROMP), whether it should be treated according to the ROMP, whether it should be studied further, or whether the project objectives should be reconsidered. Any course of action that involves changing deliverables, deadlines or the allocation of money must be decided by the PSC and ultimately by the project PO.

The evaluation step recurs at least every 2 months and is conducted by the Risk or Opportunity Owners and the Risk Manager, who have responsibility to monitor the status of the R&Os. The evaluation will also include a decision about whether the existing treatment option is working satisfactorily. The wider context and the actual and perceived consequences to all stakeholders, including those external to the project, are considered in the evaluation of the risk or opportunity.

The outcome of the risk evaluation will be recorded in the register and communicated to the consortium by the Risk Manager. Any member of the consortium that is dissatisfied with the evaluation will be given a chance to express her/his concerns and challenge the decision by appealing to the PIC and/or the PSC.

## 2.3. Treating

Treating the risk or opportunity starts with a decision about the desired outcome of the treatment and is based on the evaluation. The treatment itself is determined by the action plan developed by the Risk or Opportunity Owner or the Risk Manager. Depending on whether the issue is a risk or an opportunity, the treatment options listed

below range from doing nothing to making changes to the project objectives. The rationale for choosing a treatment option is included in the action plan.

Typical risk treatment options may involve one or more of the following:

- Avoiding the risk by deciding not to start or continue with the activity
- Taking or increasing the risk in order to transform it into an opportunity
- Removing the source of the risk
- Decreasing the probability
- Decreasing the consequences
- Sharing the risk (e.g. transfer it somewhere else)
- Accept the risk by informed decision and change project objectives if necessary

Typical opportunity treatment options may involve one or more of the following:

- Enhancing the channel by which the opportunity arises
- Developing teams/networks/partnerships to increase the probability
- Exploiting the opportunity to increase its impact
- Ignoring the opportunity if the payback is determined to be too low

## 2.3.1. Action plan

Treatment of R&Os involves setting up an action plan. An action plan records steps toward the selected solution strategy in small, sequential, measurable, forward-looking tasks, each with a completion date. Each action plan considers at least the following components for each task:

- A statement of the scope of the task, where are the boundaries of its impacts?
- Timing and amount of resources needed
- The timing and context of future decisions that may be required, for example: will the timing of deliverables be changed?
- Implementation criteria for contingency plans
- Expected outcomes and dependencies of the tasks to be taken, including the possibility that new risks may emerge as a result of the action plan
- Assignment of responsibility for the action plan and each of its tasks
- Determination of how progress is measured and recorded, and the monitoring schedule
- Relationships with external factors, such as other related projects, activities and stakeholders

The action plans are not expected to follow a specific process for every possible risk or opportunity. Each plan must be developed for the specific conditions at hand, and the plan must be monitored by the Risk or Opportunity Owner and Risk Manager, and possibly modified, iteratively, until the risk or opportunity has been resolved.

When the action plan has been written its effect on the impact of the risk or opportunity shall be estimated, assuming the action plan is fully successful. If the change in impact is determined by the Risk or Opportunity Owner or Risk Manager to be unacceptable, another action plan shall be developed, or the Risk or Opportunity Owner or Risk Manager may decide to accept the risk or ignore the opportunity. In this case the risk or opportunity shall be recorded and monitored for possible future action.

It is possible that there will be residual risk or opportunity after the action plan is completed. The remaining risk or opportunity shall be documented and monitored and, if necessary, a new action plan shall be implemented. Risks or opportunities that have been resolved to the satisfaction of the Risk or Opportunity Owner and the Risk Manager will be marked as resolved in the register but will not be removed from the register.

Contingency plans outline what to do if the risk or opportunity becomes reality or a mitigation plan isn't working. They also specify decision points, especially for steps that require time to implement. The creation of contingency plans follows the same basic procedure as action plans.

## 2.4. Summary of the core ROMP process

The process steps are as follows:

1. Risks or opportunities identified by the project participants are brought to project managers (TL or WPL), or the Risk Manager (Federico Carvajal).
   o External R&Os may be identified by project participants and by the project management, for example the PIC, PSC, the End User Advisory Board (EUAB), or the Project Officer (PO). External R&Os are handled within the project in the same manner as internal R&Os.
2. The Risk Manager will record the risk or opportunity in the register within 10 calendar days of the time it is identified. All R&Os are recorded in the register, regardless of their source or the level of management needed to resolve them.
3. The Risk Manager will assign the risk or opportunity to a Risk or Opportunity Owner or handle it himself.
   o The Risk or Opportunity Owner or the Risk Manager will reach out to all relevant parties needed to resolve the risk or opportunity so that as many aspects as possible of the risk or opportunity are considered.
   o The Risk or Opportunity Owner or the Risk Manager will create an action plan for resolution of the risk or opportunity, including a determination of the management level responsible for the actions.
4. The Risk Manager will present the action plan at the next meeting of the PIC for review, or call an extraordinary PIC meeting if necessary, depending on the urgency of the risk or opportunity.

5.  At each meeting, the PIC will review all R&Os in the register and monitor the progress of their resolution.

    o The Risk or Opportunity Owner or the Risk Manager maintains responsibility for the risk or opportunity throughout its lifecycle.

    o If the PIC cannot agree on the resolution of a risk or opportunity the PSC will become the decision-making body.

6.  Any course of action that involves changing deliverables, deadlines or the allocation of money must be decided by the PSC and ultimately by the project PO.

# 3. Interfacing risk and opportunity management activities

In addition to the core risk and opportunity management activities, other activities are needed to ensure that the ROMP is maintained to provide optimal performance for the project. These activities include communicating information to the consortium and external stakeholders, monitoring the status of the R&Os, reviewing the ROMP, and reporting the results of the treatments. There is no beginning or end to these interfacing activities; they begin at the start of the project and are reiterated throughout the duration of the project. The Risk Manager is fully responsible for these activities; however, RISE will provide support as needed.

## 3.1.1. Communicating

In the context of risk and opportunity management, communication has two goals: to help the consortium and external stakeholders understand R&Os and the reasoning behind decisions that are made to manage them, and to get feedback to support the decision-making process.

The ASSISTANCE project will communicate information about the R&Os identified during the project whenever there is a change in the R&O register. Other communication opportunities will occur during the regular plenary and PIC meetings and dedicated meetings will be convened if necessary. Confidential information and individual privacy will be honoured.

External communication with the PO will be made for transparency reasons in cases where it might be necessary to prepare for future negotiations or amendments to the Grant Agreement.

## 3.1.2. Monitoring

The status of ongoing R&Os will be monitored to ensure that they are being resolved as expected or to flag them for potential changes in their action plans. The monitoring interval for each R&O is specified in its action plan.

The status of each R&O is tracked using a waterfall chart as shown for an example risk in Figure 4, where one can see the reduction in risk (or, conversely, the increase in opportunity) as each step is completed. The numbers on the Risk Level axis are the product of the probability and consequences ratings. This format makes it easy to see whether an action plan is effective or if it needs to be modified.
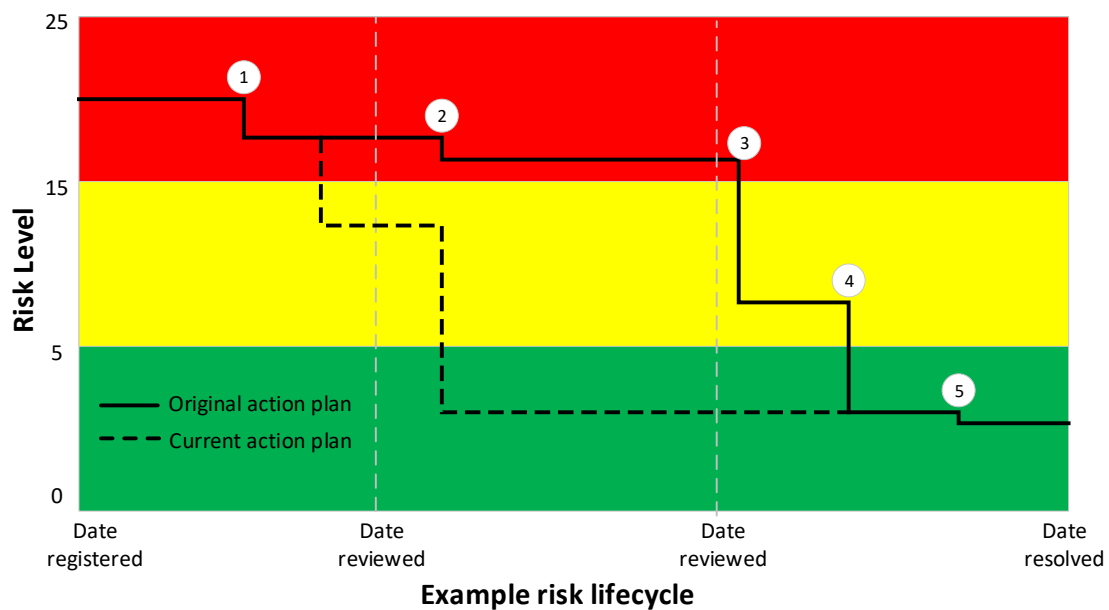
Figure 4: Waterfall chart of individual risks.

In the example risk waterfall chart above, a hypothetical 5-step action plan was created to reduce the risk to an acceptable level. After the first review of the action plan the PIC decided to alter the action plan to reduce the risk much faster, which effectively reduced the risk to an acceptable level.

The R&Os as a whole are monitored using a chart and statistics similar to Figure 5, which shows the current status of all risks. Each risk is identified by its name with its respective position in the chart. There are separate charts for risks and for opportunities.

Figure 5: Overall risk chart showing the current state of all risks

### 3.1.3. Reporting

Reporting of R&Os will take place officially via deliverables D1.3 (M6), D1.4 (M18), and D1.5 (M30). If conditions arise that necessitate more frequent reporting to the EC, this will be considered.

Reporting to the consortium will take place at the plenary and PIC meetings and will be in presentation format.
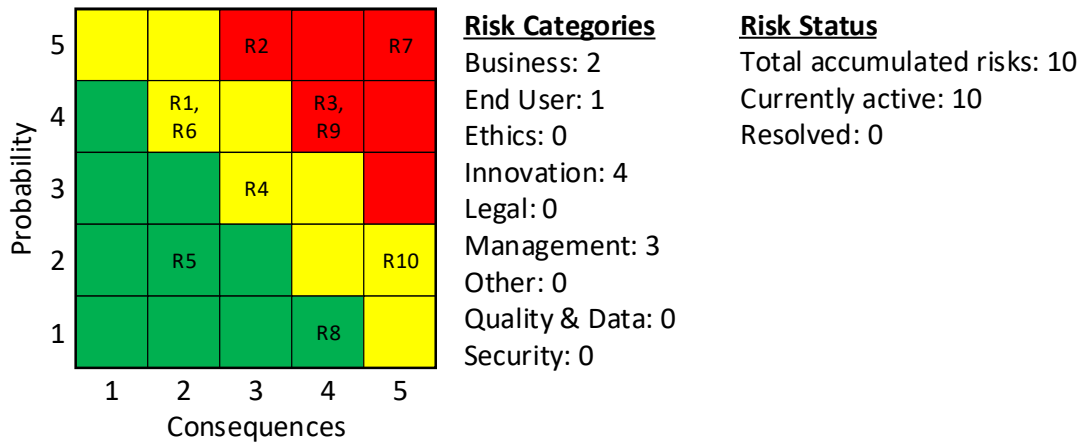
### 3.1.4. Reviewing

Not to be confused with monitoring (the status of the R&Os), reviewing is the process of assuring that the entire ROMP is suitable, adequate and effective and the R&O management framework is well-integrated into the ASSISTANCE project. This includes the core activities as well as interfacing activities. The ROMP will be reviewed at least prior to each deliverable report (D1.3, D1.4, D1.5) and more often if the PIC deems it necessary.

The Risk Manager will be responsible for quality control of the ROMP. RISE will implement changes to the ROMP in accordance with the needs of the Risk Manager. If changes in the ROMP are considered, they will first be discussed within the PIC so that other management policies can be reviewed for consistency prior to implementation of the changes.

# 4. Existing risks and opportunities

The ten original risks that were identified during the proposal phase of the project are listed in Table 3; there were no opportunities identified during the proposal phase. The details of these risks, along with additional R&Os that arise during the project, are recorded in the R&O register as they are identified.

Table 3: Risk register entries as of M6

## RISK Register

| Risk Name | Category | Description | Statement | WP1 | WP2 | WP3 | WP4 | WP5 | WP6 | WP7 | WP8 | WP9 | WP10 | Owner | Prob. | Cons. | Rating | Action plan | Last review date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RM1 | Mgt | Partner performance issues | If partners do not perform their work on time, then delays in dependent work and deliverables/milestones could occur. | X | X | X | X | X | X | X | X | X | X | RM | | | 0 | pending | |
| RM2 | Mgt | Planning issues | If planning during the project is not adequate or timely, then resources may not be used efficiently, and deliverables/ milestones could be delayed. | X | X | X | X | X | X | X | X | X | X | RM | | | 0 | pending | |
| RM3 | Mgt | Collaboration issues | If the consortium cannot work well together, then the quality of the project outcomes is likely to suffer. | X | X | X | X | X | X | X | X | X | X | RM | | | 0 | pending | |
| RI4 | Innov | Obsolete technology | If the state-of-the-art in FR technology evolves beyond the project technology, then the market for and scientific benefit of project results will decline. | X | X | X | X | X | X | X | X | X | X | RM | | | 0 | pending | |
| RI5 | Innov | Pilot/technology mismatch | If the technological approach chosen for a pilot (layer?) does not fulfil the needs of the pilot, then either the technological approach or the pilot must be modified. | X | X | X | X | X | X | X | X | X | X | RM | | | 0 | pending | |
| RI6 | Innov | Technology development delays | If development delays occur, then evaluation work later in the project could fall off schedule as well. | X | X | X | X | X | X | X | X | X | X | RM | | | 0 | pending | |
| RI7 | Innov | Insufficient resources for technology development | If resources are not sufficient to support technical development activities, then the technology may be unavailable or delayed. | X | X | X | X | X | X | X | X | X | X | RM | | | 0 | pending | |
| RU8 | End User | Technology not embraced by end users | If the validation and adoption of the ASSISTANCE concept by the testing stakeholders is difficult, then they may not believe that it has value. | X | X | X | X | X | X | X | X | X | X | RM | | | 0 | pending | |
| RB9 | Business | Results unattractive to end users | If the market environment or end user views change during the project duration, then the results may become obsolete. (See RI4). | X | X | X | X | X | X | X | X | X | X | RM | | | 0 | pending | |
| RB10 | Business | Insufficient exploitation of results | If the results of the project are not fully exploited by the partners, then the benefits of the project will not be fully realized. | X | X | X | X | X | X | X | X | X | X | RM | | | 0 | pending | |

The detailed descriptions of the initial 10 risks are provided in the R&O register and in Table 4 below; the draft action plans for these risks can be found in the R&O register but have not been included in this document because they have not yet been finalized by the Risk Manager/Owner. The Risk Owner is by default the Risk Manager (Federico Carvajal) until the ownership of the risk or opportunity has been assigned to someone else.

Table 4: Risks identified in the ASSISTANCE proposal

| Risk Name | Short description | | | Risk Owner | |
|---|---|---|---|---|---|
| **R1** | Partner performance issues | | | *Name* | Federico Carvajal (FC) |
| **Probability** | **Consequence** | **Overall Status** | | *Telephone* | +34 963879194 |
| - | - | monitoring | | *Email* | fecarrod@upvnet.upv.es |
| **Risk statement in this form:** *"If [risk] occurs by [trigger, could be a date or a condition], then [consequence] will happen."* | | | | | |
| If partners do not perform their work on time, then delays in dependent work and deliverables/milestones could occur. | | | | | |
| **Context:** *details that help to tell the story (root cause, who, what, when, where and why). If risks and/or opportunities are interconnected, state the nature of their relationship.* | | | | | |
| Partners can underperform or leave the project. Key personnel may be temporally unavailable. This can happen to any partner at any time during the project. | | | | | |
| **Impact on project if risk is realized**: *could include communication problems, costs, quality of deliverables, resource availability, schedule, subcontractors, security, technical or something else* | | | | | |
| Delayed results can interrupt the flow of work elsewhere in the project, contribute to animosity between partners, and can cause delays in deliverables. | | | | | |
| **Resources needed:** | | | | | |
| None anticipated at this time. | | | | | |

| Risk Name | Short description | | | Risk Owner | |
|---|---|---|---|---|---|
| **R2** | Planning issues | | | *Name* | Federico Carvajal (FC) |
| **Probability** | **Consequence** | **Overall Status** | | *Telephone* | +34 963879194 |
| - | - | monitoring | | *Email* | fecarrod@upvnet.upv.es |
| **Risk statement in this form:** *"If [risk] occurs by [trigger, could be a date or a condition], then [consequence] will happen."* | | | | | |
| If planning during the project is not adequate or timely, then resources may not be used efficiently, and deliverables/ milestones could be delayed. | | | | | |
| **Context:** *details that help to tell the story (root cause, who, what, when, where and why). If risks and/or opportunities are interconnected, state the nature of their relationship.* | | | | | |
| Poor planning can lead to wasting resources and delaying work, which in turn reduces the motivation of the partners. | | | | | |

| **Impact on project if risk is realized**: *could include communication problems, costs, quality of deliverables, resource availability, schedule, subcontractors, security, technical or something else* |
| --- |
| Partners may lose confidence in project management. They may also try to solve planning problems themselves, which could lead to chaos. |

| **Resources needed:** |
| --- |
| None anticipated at this time. |

| **Risk Name** | **Short description** | | | | **Risk Owner** | |
| --- | --- | --- | --- | --- | --- | --- |
| **R3** | Collaboration issues | | | **Name** | Federico Carvajal (FC) | |
| **Probability** | **Consequence** | **Overall Status** | | **Telephone** | +34 963879194 | |
| - | - | monitoring | | **Email** | fecarrod@upvnet.upv.es | |

| **Risk statement in this form**: *"If [risk] occurs by [trigger, could be a date or a condition], then [consequence] will happen."* |
| --- |
| If the consortium cannot work well together, then the quality of the project outcomes is likely to suffer. |

| **Context:** *details that help to tell the story (root cause, who, what, when, where and why). If risks and/or opportunities are interconnected, state the nature of their relationship.* |
| --- |
| Partners are expected to communicate their needs and ideas in a professional manner, and to treat each other with respect. When this does not happen, the project can become toxic for everyone. |

| **Impact on project if risk is realized**: *could include communication problems, costs, quality of deliverables, resource availability, schedule, subcontractors, security, technical or something else* |
| --- |
| The quality and timeliness of the deliverables can be affected. Important decisions may be delayed or blocked. WP and/or task interactions could be insufficient or misunderstood. Resources could be wasted. |

| **Resources needed:** |
| --- |
| None anticipated at this time. |

| **Risk Name** | **Short description** | | | | **Risk Owner** | |
| --- | --- | --- | --- | --- | --- | --- |
| **R4** | Obsolete technology | | | **Name** | Federico Carvajal (FC) | |
| **Probability** | **Consequence** | **Overall Status** | | **Telephone** | +34 963879194 | |
| - | - | monitoring | | **Email** | fecarrod@upvnet.upv.es | |

| **Risk statement in this form**: *"If [risk] occurs by [trigger, could be a date or a condition], then [consequence] will happen."* |
| --- |
| If the state-of-the-art in FR technology evolves beyond the project technology, then the market for and scientific benefit of project results will decline. |

| **Context:** *details that help to tell the story (root cause, who, what, when, where and why). If risks and/or opportunities are interconnected, state the nature of their relationship.* |
| --- |
| SA and FR training technology is evolving at a fast pace. The project could fall behind, and the results will not have as much value as anticipated. End users are very careful with their technological choices. |

| | |
|---|---|
| ***Impact on project if risk is realized***: *could include communication problems, costs, quality of deliverables, resource availability, schedule, subcontractors, security, technical or something else* | |

The results of the ASSISTANCE project could be viewed as obsolete by end users, in which case they will not implement them.

| |
|---|
| ***Resources needed:*** |

None anticipated at this time.

| Risk Name | Short description | | | Risk Owner | |
|---|---|---|---|---|---|
| **R5** | Pilot/technology mismatch | | | ***Name*** | Federico Carvajal (FC) |
| **Probability** | **Consequence** | **Overall Status** | | ***Telephone*** | +34 963879194 |
| - | - | monitoring | | ***Email*** | fecarrod@upvnet.upv.es |

***Risk statement in this form:*** *"If [risk] occurs by [trigger, could be a date or a condition], then [consequence] will happen."*

If the technological approach chosen for a pilot (layer?) does not fulfil the needs of the pilot, then either the technological approach or the pilot must be modified.

***Context:*** *details that help to tell the story (root cause, who, what, when, where and why). If risks and/or opportunities are interconnected, state the nature of their relationship.*

First, the pilots should be designed to demonstrate how the project solutions satisfy the needs of the end users. Second, the technological approach for the pilots must satisfy the needs of the pilots.

***Impact on project if risk is realized***: *could include communication problems, costs, quality of deliverables, resource availability, schedule, subcontractors, security, technical or something else*

The pilots may not demonstrate the full potential of the technological approaches to meet the needs of the end users. The end users may not implement the ASSISTANCE solutions.

***Resources needed:***

None anticipated at this time.

| Risk Name | Short description | | | Risk Owner | |
|---|---|---|---|---|---|
| **R6** | Technology development delays | | | ***Name*** | Federico Carvajal (FC) |
| **Probability** | **Consequence** | **Overall Status** | | ***Telephone*** | +34 963879194 |
| - | - | monitoring | | ***Email*** | fecarrod@upvnet.upv.es |

***Risk statement in this form:*** *"If [risk] occurs by [trigger, could be a date or a condition], then [consequence] will happen."*

If development delays occur, then evaluation work later in the project could fall off schedule as well.

***Context:*** *details that help to tell the story (root cause, who, what, when, where and why). If risks and/or opportunities are interconnected, state the nature of their relationship.*

The technical development work must be completed before evaluation work can begin. Delays in the technical work could propagate delays in evaluation, which does not have much scheduling flexibility.

| | |
| --- | --- |
| *Impact on project if risk is realized: could include communication problems, costs, quality of deliverables, resource availability, schedule, subcontractors, security, technical or something else* | |
| Worse case: there is no time left in the project for evaluation. The project end date may need to be postponed. Partners may need to work beyond their budgeted time. | |
| *Resources needed:* | |
| None anticipated at this time. | |

| Risk Name | Short description | | | | Risk Owner | |
| --- | --- | --- | --- | --- | --- | --- |
| **R7** | Insufficient resources for technology development | | | | **Name** | Federico Carvajal (FC) |
| **Probability** | **Consequence** | **Overall Status** | | | **Telephone** | +34 963879194 |
| - | - | monitoring | | | **Email** | fecarrod@upvnet.upv.es |

**Risk statement in this form:** *"If [risk] occurs by [trigger, could be a date or a condition], then [consequence] will happen."*

If resources are not sufficient to support technical development activities, then the technology may be unavailable or delayed.

**Context:** *details that help to tell the story (root cause, who, what, when, where and why). If risks and/or opportunities are interconnected, state the nature of their relationship.*

The technology requirements for the project may include many formats and standards. It may not be possible to comply with all these requirements.

**Impact on project if risk is realized**: *could include communication problems, costs, quality of deliverables, resource availability, schedule, subcontractors, security, technical or something else*

The pilots could be compromised due to lack of technical development. The technological results of the project could be unsatisfactory.

**Resources needed:**

None anticipated at this time.

| Risk Name | Short description | | | | Risk Owner | |
| --- | --- | --- | --- | --- | --- | --- |
| **R8** | Technology not embraced by end users | | | | **Name** | Federico Carvajal (FC) |
| **Probability** | **Consequence** | **Overall Status** | | | **Telephone** | +34 963879194 |
| - | - | monitoring | | | **Email** | fecarrod@upvnet.upv.es |

**Risk statement in this form:** *"If [risk] occurs by [trigger, could be a date or a condition], then [consequence] will happen."*

If the validation and adoption of the ASSISTANCE concept by the testing stakeholders is difficult, then they may not believe that it has value.

**Context:** *details that help to tell the story (root cause, who, what, when, where and why). If risks and/or opportunities are interconnected, state the nature of their relationship.*

The testing stakeholders are primarily the end users of the technology and training platforms. The project results must fulfil their needs.

| | | |
|---|---|---|
| ***Impact on project if risk is realized****: could include communication problems, costs, quality of deliverables, resource availability, schedule, subcontractors, security, technical or something else* | | |

The testing stakeholders (end users) will not implement the ASSISTANCE solutions if they do not believe that sufficient value has been added to their operations.

| | | |
|---|---|---|
| ***Resources needed:*** | | |

None anticipated at this time.

| Risk Name | Short description | | Risk Owner | |
|---|---|---|---|---|
| **R9** | Results unattractive to end users | | **Name** | Federico Carvajal (FC) |
| **Probability** | **Consequence** | **Overall Status** | **Telephone** | +34 963879194 |
| - | - | monitoring | **Email** | fecarrod@upvnet.upv.es |

***Risk statement in this form****: "If [risk] occurs by [trigger, could be a date or a condition], then [consequence] will happen."*

If the market environment or end user views change during the project duration, then the results may become obsolete. (See RI4).

***Context:*** *details that help to tell the story (root cause, who, what, when, where and why). If risks and/or opportunities are interconnected, state the nature of their relationship.*

SA and FR training technology is evolving at a fast pace. The project could fall behind, and the results will not have as much value as anticipated. End users are very careful with their technological choices.

***Impact on project if risk is realized****: could include communication problems, costs, quality of deliverables, resource availability, schedule, subcontractors, security, technical or something else*

The results of the ASSISTANCE project could be viewed as obsolete by end users, in which case they will not implement them.

***Resources needed:***

None anticipated at this time.

| Risk Name | Short description | | Risk Owner | |
|---|---|---|---|---|
| **R10** | Insufficient exploitation of results | | **Name** | Federico Carvajal (FC) |
| **Probability** | **Consequence** | **Overall Status** | **Telephone** | +34 963879194 |
| - | - | monitoring | **Email** | fecarrod@upvnet.upv.es |

***Risk statement in this form****: "If [risk] occurs by [trigger, could be a date or a condition], then [consequence] will happen."*

If the results of the project are not fully exploited by the partners, then the benefits of the project will not be fully realized.

***Context:*** *details that help to tell the story (root cause, who, what, when, where and why). If risks and/or opportunities are interconnected, state the nature of their relationship.*

Maximizing the benefits of participating in the project is in the best interest of the consortium, the project as a whole, and the EU.

| **Impact on project if risk is realized**: *could include communication problems, costs, quality of deliverables, resource availability, schedule, subcontractors, security, technical or something else* |
| --- |
| The partners/consortium may not experience the full benefits of participating in the project. The EU may decide that the resources used in the project were not worth the effort. |
| **Resources needed:** |
| None anticipated at this time. |

# Appendix: Checklist of R&O management steps

The checklist in Table 5 can be used by anyone participating in the project to track a risk or opportunity through the ROMP. The R&O register is also available for viewing and tracking on the project repository, in the T1.4 folder.

Table 5: Checklist of R&O steps in the ROMP process

| Check when done | Step Number | Who | Description |
|---|---|---|---|
| | 1 | Anyone in project | Notice something that might be a risk or opportunity for the project |
| | 2 | Anyone in project | Discuss the issue with someone that can help clarify the situation (e.g. colleague) |
| | 3 | Anyone in project | Bring the issue to project management (e.g. TL, WPL, Risk Manager) |
| | 4 | Project manager | Determine whether the issue is a risk or opportunity or something else that can be handled by other means within project structure |
| | 5 | Project manager | Bring the risk or opportunity to the Risk Manager |
| | 6 | Risk Manager | Enter the risk or opportunity in the register |
| | 7 | Risk Manager | Appoint a Risk or Opportunity Owner (which could be the Risk Manager) |
| | 8 | R&O Owner | Evaluate the risk or opportunity |
| | 9 | R&O Owner | Develop an action plan to handle the risk or opportunity |
| | 10 | R&O Owner | Monitor and update the status of the risk or opportunity action plan |
| | 11 | PIC | Review all unresolved R&O at each meeting |
| | 12 | PSC | Determine the action plan for R&O that cannot be agreed upon at lower management levels |
| | 13 | Anyone in project | Challenge treatment of the risk or opportunity if dissatisfied |