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Risk Management Plan

Digitalization As basic Driver for servitization in Industry and Basic Services (DADIBAS)

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<The PM² Methodology originated from the European Commission. Open PM² provides many guidelines and templates to facilitate the management and documentation of your projects.>

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1. INTRODUCTION

The *Risk Management Plan* defines and documents the Risk Management Process for a project. It describes how risks will be identified and assessed, what tools and techniques can be used, what are the evaluation scales and tolerances, the relevant roles and responsibilities, how often risks need to be revisited, etc. The Risk Management Plan also defines the risk monitoring and escalation process as well as the structure of the *Risk Log* which is used to document and communicate the risks and their response actions.

The purpose of this document is:

- To outline the risk approach and process to be used for the project;
- To identify the roles and responsibilities related to risk management;
- To specify the methodology, standards, tools and techniques used to support risk management.

2. RISK MANAGEMENT OBJECTIVES

Risk management brings visibility to risks and accountability as to how they are handled, and ensures that project risks are proactively dealt with and regularly monitored and controlled.

The main objectives of project risk management are:

- Project risks are identified, assessed, approved and reported throughout the project and shared with the subproject "Asset Management in the new Digital Twins environment" (AMADIT)
- All major risks are reported to the Steering Layer;
- Risk response strategies are in line with stakeholders' risk appetite and approved risk level thresholds;
- All risks are monitored and under control;
- Risk response actions are implemented effectively.

3. RISK MANAGEMENT PROCESS DESCRIPTION

As DADIBAS is a subproject within the Digitalization as key enabler for asset management (DIGEST) project, a coordination every three months with the other subproject "Asset management in the new digital twins environment" (AMADIT) is proposed in order to share the risk register and check if identified risks could be common.

The project risk management process defines the activities to identify, assess, prioritise, manage and control risks that may affect the execution of the project and the achievement of its objectives. This process is divided into four steps:

Step 1: Risk Identification

The purpose of this step is to facilitate the identification and documentation of risks that can impact the project objectives.

Various techniques will be used for risk identification which typically focus on past trends or future exposure, on a bottom-up or a top down analysis.

Some organisations have a Risk Typology that groups various types of risks into categories and it will be used as reference.

The techniques that will be used for risk identification are documented in section 4. TOOLS & TECHNIQUES.

Risks are continuously identified throughout the project lifecycle; however, very early during the Initiating phase, an initial risk list will be created which is thereafter frequently updated. The same

process will be followed both for the creation of the *Risk Log* as well as for the inclusion of new risks later in the project.

The *Risk Log* contains the risks identifier, risk name and short description, the risk category and owner, as well as strategies, actions and timing which will facilitate the monitor and control aspects of the project.

In addition to the *Risk Log*, the following tools will be used: Digital Questionnaires in WebForms to assess probability and impact of risks periodically.

Step 2: Risk Assessment

The purpose of this step is to assess the likelihood and impact of the identified risks in terms of their influence to the project objectives. This assessment is necessary before any risk response planning can be done.

Risks are assessed based on their likelihood of occurrence and the impact in project objectives. The product of their likelihood and impact defines the Risk Level, which is then used as a reference for their prioritisation and risk response development.

Depending on the stakeholders' risk appetite, evaluation scales and tolerances will be defined based on which the most appropriate risk response strategies are chosen.

Step 3: Risk Response Development

The purpose of this step is to select the best risk response strategy and identify and plan the actions to control the risks.

The selection of the risk response strategy will be based on the results of the risk assessment (risk level), the type of risk, on the effects on the overall project objectives (e.g. schedule and costs), as well as on the cost of the strategy and its benefits (cost/benefit analysis). The strategy (or strategies) selected for each risk are documented in the *Risk Log*.

There are four strategies to be considered as risk responses: Reduce, Avoid, Transfer, or Accept a risk.

For the risks that have been accepted, contingency plans may be defined to help control their impact in case they occur.

After the strategy for each risk has been selected, specific actions to implement the strategy will be defined, described, scheduled and assigned, while a Risk Owner assumes the responsibility for its implementation.

Actions will detail concrete activities, milestones and deliverables and will be documented in the *Risk Log*. Moreover, they will clearly identify the target resolution date, as well as the estimation of resources involved and dependencies. These actions (at least the most effort/cost consuming ones) will be incorporated into the *Project Work Plan*, to have a consolidated view of all project related activities.

Step 4: Risk Control

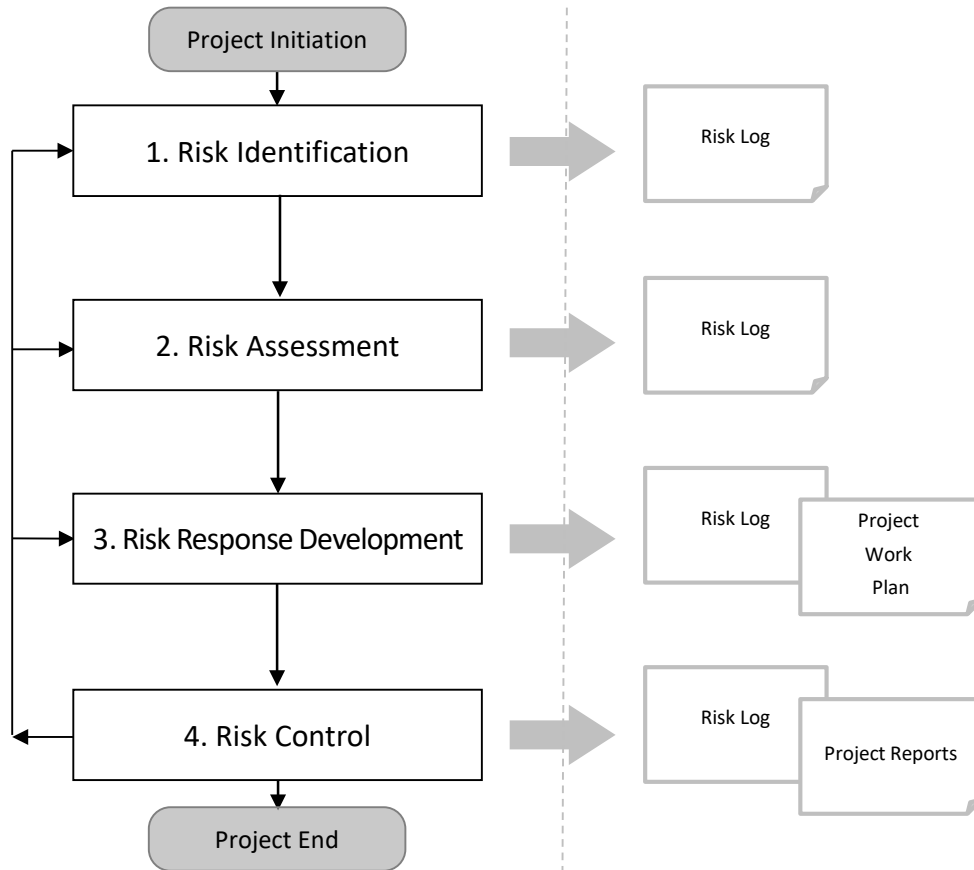
The purpose of this step is to monitor and control the implementation of the risk response activities while continuously monitoring the project environment for new risks or changes (e.g. probability and/or impact) in the risks already identified.

The Project Follow-up Meetings are used to revise the status of risks and related actions, and to identify new risks that can impact project milestones, deliverables or objectives. The review of the *Risk Log* also appears in the agenda of the Project Review Meetings. Risks will be revised at regular predetermined intervals, but also after the occurrence of any event that might have a significant impact on the project environment and hence the project risks. The updating of the *Risk Log* can include adding new risks or actions, updating the status of response activities, changing risk levels based on mitigation actions, changing the assignment of actions, etc.

The Risk Owner will report periodically the status of the risk and any response activities to the Project Manager (PM).

The Project Manager (PM) will report to the Project Steering Committee (PSC) the status of the major risks and to other project stakeholders (as per the project's communications plan). If any of the identified risks occur, then the Project Manager (PM) will ensure the implementation of the contingency plans and communicate the issue to the Project Steering Committee (PSC).

The activities described above are performed by the Project Manager (PM) throughout the project lifecycle in line with the *Risk Management Plan*.



3.1. Risk Management Roles and Responsibilities

Define the roles and responsibilities for the identification, log, approval, follow-up, analysis and evaluation of project risks and related actions. If the number of identified risks to the project – or the nature of the project requires, the Project Manager (PM) may assign a Risk Management Team (RMT). The person in charge for this team has the responsibility to gather and assess risks as they are identified, and for scheduling risk reviews and reporting to the Project Steering Committee (PSC). If this person is appointed, this will be documented in the Project Stakeholder Matrix.

The following RASCI table defines the responsibilities of those involved in risk management:

RAM (RASCI)	AGB*	PSC	PO	BM	UR	SP	PM	PCT
Risk Management Plan	I	C	A	C	I	I	R	I
Manage Risks	I	C	A	S/C	C	I	R	C

*AGB: Appropriate Governance Body. <e.g. for IT projects, this is the IT Steering Committee>.

The contact details of each of the above stakeholders are documented in the *Project Stakeholder Matrix*.

The Project Manager (PM) is responsible for identifying, assessing, managing and monitoring the risks of the project, consulting the project team and other stakeholders, when appropriate (e.g. Project Steering Committee (PSC), Project Owner (PO), Business Manager (BM) representing the business and the users, Solution Provider (SP). The Project Manager (PM) is also responsible for assigning resources to the risk management process, with the approval of the Project Owner (PO). The BM will be undertaken by a researcher responsible for the Use Case with deep knowledge of the use case itself.

The planning of risk management activities is performed by the Project Manager (PM) and documented in the *Risk Management Plan*.

New risks and related actions, as well as changes to identified risks and actions are approved by the Project Owner (PO) and reported to the Project Steering Committee (PSC), according to the escalation procedure.

Risks and related actions will be escalated to the Project Steering Committee (PSC). will validate the identified risks and actions, and plan other actions, if adequate.

4. TOOLS & TECHNIQUES

The following techniques will be used for risk management:

- Desk reviews;
- Questionnaires;
- Interviews;
- Risk checklists:

The following tools will be used for risk management:

- Risk Management Plan;
- Risk Log;
- Risk Likelihood/Impact matrix;

4.1. Risk Log

The *Risk Log* for the project is using PM² *Risk Log* template and no changes have been done to the structure, fields or values, as following:

Risk Identification and Description	
ID	The risk identifier.
Category	Risk category related to the area affected by the risk (e.g. business, IT, people & organisation, external or legal).
Title	A short title for the risk.
Description	A description of the risk, its causes, the kinds of problems that it could result in (potential effects), and risk dependencies.

Status	<p>The risk status can be any of the following:</p> <p>Proposed: this is the initial status. Use this while the risk is still being specified.</p> <p>Assessing: use this status to initiate an assessment.</p> <p>Waiting for Approval: use this to request approval. Before doing this, make sure that the assessment is complete and that the estimates are reliable.</p> <p>Approved: this status is set once the risk possibility has been accepted.</p> <p>Rejected: this status is set if the risk was rejected as not relevant.</p> <p>Closed: this status is set once the risk has been managed (e.g. mitigation actions have been implemented) and it is not a risk for the project anymore.</p>
Identified by	The person who identified the risk.
Identification date	The date on which the risk was identified.
Risk Assessment	
Likelihood (L)	<p>A numerical value denoting the estimate of the probability that the risk will occur. The possible values are:</p> <p>5=Very high, 4=High, 3=Medium, 2=Low, 1=Very low</p>
Impact (I)	<p>A numerical value denoting the severity of the risk's impact (should it occur). The possible values are (negative risks):</p> <p>-5=Very high, -4=High, -3=Medium, -2=Low, -1=Very low</p> <p>Note: use same scale but positive values for positive risks (opportunities).</p>
Risk Level (L*I)	The risk level is the product of the likelihood and impact (RL=L*I).
Risk owner	The person accountable for managing and monitoring the risk.
Escalation	Whether or not the risk is to be escalated to the Directing or Steering Layers (Yes or No).
Risk Response	
Risk response Strategy	<p>The possible strategies to deal with the identified (negative) risks are:</p> <ul style="list-style-type: none"> - Avoid: risk avoidance, modifying the project or project plan to eliminate the conditions or activities that introduce the risk. - Reduce: risk mitigation or reduction through the proactive implementation of risk reduction activities. - Accept: acceptance of the risk. In this case, contingency plans should be defined in case the risk occurs (active acceptance). - Transfer/Share: transfer or share the risk with other entities, e.g. through insurance, subcontracting etc.
Action details (effort & responsible)	Description of the mitigation action(s), including its objective, scope, deliverables, and the person responsible and estimated effort needed.
Target date	The date on which the action is expected to be implemented.
Traceability/Comments	The ID(s) of the tasks (in the Project Work Plan) that implement the risk response actions, and/or the IDs of related changes, issues or decisions (log entries). Also include any additional information/comments related to the risk.

The location of this artefact is found in the Appendix 1.

4.2. Risk Likelihood/Impact Matrix

This project is using the PM² Risk Likelihood/Impact Matrix, as following:

The risk level will be calculated by the product of likelihood and impact in the following way:

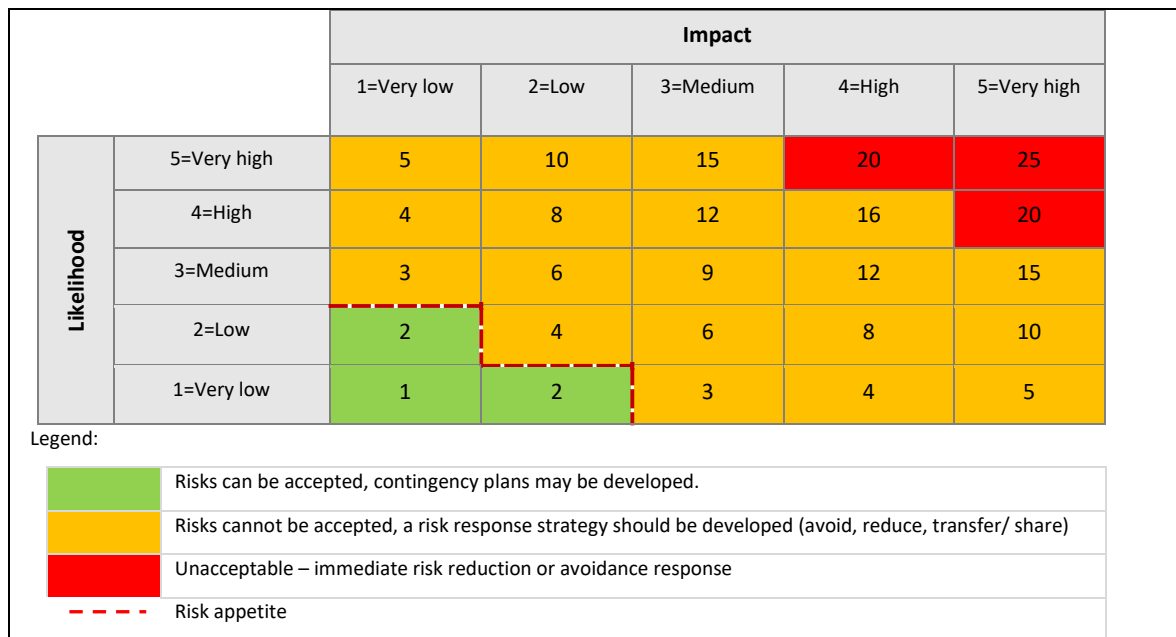


Figure 1: Risk Likelihood/Impact matrix.

5. RISK IDENTIFICATION ACTIVITIES

The purpose of this section is to describe the specific risk identification activities and tools that will be used for this project.

Initial risk identification was first performed when preparing the project's Business Case (for high level business risks) and then again in the Project Charter (for high level project risks). So, these are the starting points of this step.

The identification of risks resulted from: desk reviews, interviews, project team brainstorming, PSC meetings, feedback of the users' workshops, questionnaires, risk checklist analysis, and assumptions analysis.

The following risk categories have been included in the risk identification analysis, considering the type of the project:

- Business: related to policy decisions, strategy and business processes and services;
- IT: related to infrastructure, system development, security, business continuity and availability of IT services;
- People and organisation: related to project staffing, competences and coordination between teams;
- External: related to outsourced activities, external partners and macro environment;
- Communication and Information: related to communication methods and channels and to the quality and timeliness of information.

The PM² Risk Log is the tool used to register and update risks and related risk management actions.

6. RISKS ASSESSMENT APPROACH

The purpose of this section is to describe the specific risk assessment activities and tools that will be used for this project.

The project will use the Risk Likelihood/Impact Matrix referred in section 4.2. The Risk Likelihood/Impact Matrix represents the different combinations of likelihood and impact of project risks on a scale from 1 to 5 and defines risk levels that suggest risk response strategies.

Risk level scale details:

Likelihood:

- **Very low:** less than 5% change of occurrence;
- **Low:** between 5% to 10% chance of occurrence;
- **Medium:** between 10% to 25% chance of occurrence;
- **High:** between 25% to 50% chance of occurrence;
- **Very high:** more than 50% chance of occurrence.

Impact:

- **Very low:** less than 1% of project budget affected, or/and other project baselines are nearly not impacted, or/and few individuals affected (only internal to project team), or/and no reputational impact or/and easy and quick capacity to react and resolve the issue.
- **Low:** 1% to 2% of project budget affected, or/and low impact in other project baselines, or/and only one milestone affected, or/and projects stakeholders may be affected, or/and reputational impact in the organisation or unit or/and sufficient project competencies to resolve the issue (if risk occurs).
- **Medium:** 2% to 5% of project budget affected, or/and medium impact in other project baselines, or/and one or more milestones affected, or/and projects stakeholders will be to some extent affected, or/and project objectives may be affected, or/and reputational impact amongst technical staff in other organisations or units, or/and formal complaints, or/and limited project competencies to resolve the issue (if risk occurs).
- **High:** 5% to 10% of project budget affected, or/and high impact in other project baselines, or/and several milestones affected, or/and projects stakeholders will be affected/concerned, or/and project objectives will be affected, or/and reputational impact in several organisations or units, or/and formal and legal complaints, or/and insufficient project internal competencies to resolve the issue (if risk occurs).
- **Very high:** more than 10% of project budget affected, or/and very high impact in other project baselines, or/and several milestones affected, or/and projects stakeholders will be very affected/concerned, or/and the overall project will be affected, or/and external reputational impact, or/and significant formal and legal complaints, or/and external competencies are needed to address the issue (if risk occurs).

Risk levels thresholds:

- **Green:** risk level ≤ 2 ;
- **Yellow:** risk level ≥ 3 and ≤ 16 ;
- **Red:** risk level ≥ 20 .

The Project Steering Committee approved / stated that the project risk appetite is limited to risk level ≤ 2 , likelihood $< 10\%$ and potential losses $< x\text{€}$.

6.1. Escalation

The risk escalation:

- All new risks, proposed risk response strategies and proposed actions are approved by the Managing Layer, if the risk level is < 10 ;
- If the risk level is ≥ 10 and < 16 , new risks, proposed risk response strategies and proposed actions are approved by the Project Owner (PO);
- If the risk level is ≥ 16 , new risks, proposed risk response strategies and proposed actions are approved by the Project Steering Committee;
 - Depending on the risk category, higher risks (risk level is ≥ 10) will be reported to Management meetings: risks related to business domains and that have dependencies with other projects or departments / organisations or units;

7. RISK RESPONSE STRATEGIES

The purpose of this section is to define the available risk response strategies to be used for this project.

The risk response actions are documented and updated in the PM² *Risk Log* throughout the project lifecycle (and then incorporated in the *Project Work Plan*) and revisited at least, in the Project Follow-up Meeting.

The possible risk response strategies are:

- **Avoid:** risk avoidance, working the project or project plan around those conditions or activities which introduce the risk;
- **Reduce:** risk mitigation or reduction through the proactive implementation of risk reduction activities;
- **Accept:** acceptance of the risk (the impact/loss is accepted if the risk occurs). When accepting risks, there are two possible reactions:
 - Acceptance of the risk and no special action required, except continue to monitor the risk (passive acceptance);
 - Accept and develop contingency plans in case the risk occurs (active acceptance).
- **Transfer/Share:** transfer a risk to, or share a risk with other entities, e.g. through insurances, sub-contracting, partnering etc.

The following table describes the risk response approach for this project:

Scenario	Risk Response Strategy
Very high impact and high or very high likelihood or high or very high impact and very high likelihood.	Avoid or implement an immediate reduction
Very high impact and very low likelihood.	Transfer/Share
All other risk levels.	Reduce
Low or very low likelihood and very low impact or very low likelihood and low impact.	Accept (monitor and plan contingency if deemed necessary)

8. RISK CONTROL ACTIVITIES

The purpose of this section is to define the activities performed for monitoring and controlling risks, as well as their frequency.

The Project Manager (PM) monitors and controls risks based on Project Follow-up Meetings or on information received from other project stakeholders, in result of:

- Identification of new risks by the Project Core Team (PCT) or by other project stakeholders, in consequence of changes in the project environment;
- New proposed ways to deal with a risk (adding/changing actions);
- Implementation of any of the given actions or on general events or developments that will change the values for likelihood and/or impact of the identified risks;
- Other changes.

Frequency of Revisiting the Risk Log: The PM² *Risk Log* is updated at least once a semester by the Project Manager (PM).

Additionally, before each Project Steering Committee (PSC), there is a procedure in place to collect the status of each risk and action and the comments related to the effectiveness, quantification of resources spent, difficulties, potential problems and dependencies of the actions. This information is consolidated and updated in the *Risk Log*, and presented to the PSC. The project review planned at the end of each milestone also includes a deep review of the *Risk Log*.

The Risk Communication activities are part of the project *Communications Management Plan*.

The communication items identified are:

- Collection of new risks or changes to risks/actions in the monthly Project Follow-up Meeting;
- Report of risks (risk level ≥ 16) and related actions status in the monthly meeting of the Project Steering Committee (PSC);
- Request of risk or action approval to the Project Owner (PO) or to the Project Steering Committee (PSC) (risks with a risk level ≥ 16);
- Report risks list in the yearly Project Progress Report;
- Communication of the risks that have turned into issues (had occurred) in the monthly PSC meeting.

APPENDIX 1: REFERENCES AND RELATED DOCUMENTS

ID	Reference or Related Document	Source or Link/Location
1	Communications_Management_Plan.D ADIBAS.07-12-2023.v1.2.pdf	OneDrive Project Repository