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## <Quality Management Plan>

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

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*<The PM<sup>2</sup> Methodology originated from the European Commission. Open PM<sup>2</sup> provides many guidelines and templates to facilitate the management and documentation of your projects.>*

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**Configuration Management: Document Location**

The latest version of this controlled document is stored in [the OneDrive DADIBAS repository](#).

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## 1. INTRODUCTION

The PM<sup>2</sup> guide describes a light Quality Management section of the Project Handbook. However, the usage of this *Quality Management Plan* template is advised in case of complex or risky projects where quality activities are of special importance for the project.

The objectives of this document are:

- To outline the quality strategy, approach and process to be used for the project;
- To identify the roles and responsibilities related to project quality management;
- To identify the major project management artefacts and deliverables;
- To define the quality assurance and control activities and to plan them throughout the project;
- To support the agreement on project quality requirements and metrics, and the method to evaluate them;
- To specify the methodology, standards, tools and techniques used to support quality management.

## 2. QUALITY MANAGEMENT OBJECTIVES

Project quality management aims to ensure that the current project will meet the expected results in the most efficient way and that deliverables will be accepted by the relevant stakeholders. It involves overseeing all activities needed to maintain a desired level of excellence. This includes creating and implementing quality planning and assurance, as well as quality control and quality improvement.

This project will follow the PM<sup>2</sup> quality management process that comprises the activities related to the identification, planning, execution, and monitoring & control of project quality related activities.

The main project quality objectives are:

- The project's quality characteristics are defined, agreed and achieved throughout the project;
- Quality assurance activities are performed as planned;
- Assure compliance with the organisation's rules and regulations, as well as with relevant governmental and industry rules, regulations and legislation;
- Any non-conformity (or opportunity for quality improvements) is identified and implemented;
- Deliverables are accepted by the relevant stakeholders based on the defined quality/acceptance criteria.

## 3. QUALITY MANAGEMENT PROCESS

As DADIBAS is a subproject within the Digitalization as key enabler for asset management (DIGEST) project, a coordination every six months with the other subproject "Asset management in the new digital twins environment" (AMADIT) is proposed in order to share the main project quality objectives.

The project quality management process comprises all activities (related both to processes and deliverables) that will increase the ability to meet the project expected results identified in the Project Charter.

The quality management process for this project is comprised of five key steps:

- Define (Project) Quality Characteristics;
- Perform Quality Assurance;
- Perform Quality Control;
- Perform Deliverables Acceptance; and
- Perform Final (Project) Acceptance.

### Step 1: Define Quality Characteristics

The purpose of this step is to identify the objectives, approach, requirements, activities and responsibilities of the project's quality management process and how it will be implemented throughout the project. These are documented in this plan based on the project objectives, approach, deliverables, expected benefits and resources available (as defined in the *Business Case*, *Project Charter*, *Project Work Plan*, and other relevant plans).

The *Quality Management Plan* includes the description of the:

- Quality objectives, approach and requirements;
- Quality standards, guidelines, tools and techniques, e.g. the Quality Review Checklist and the Deliverables Acceptance Checklist;
- Quality assurance activities and related responsibilities, e.g. Project Review Meetings, monthly activities reports, compliance verification and audits to contractors' quality assurance activities, among others;
- Quality control activities for continuous improvement, e.g. project management artefacts review and quality plans reviews;
- Configuration procedure related to project artefacts and deliverables.

Any quality activities related to project management artefacts are documented in the *Quality Management Plan*, while quality assurance and control activities related to project deliverables can be found in separate documents as e.g. test plans. These documents are project domain specific and therefore not part of the PM<sup>2</sup>. Quality Control activities in the context of formal customer acceptance of the deliverables are documented in the Deliverables Acceptance Plan.

The techniques that can be used for quality planning are the following ones:

- Cost of Quality (CoQ)
- Benchmarking
- Ishikawa Diagrams
- Statistical sampling
- Flowcharts

Considering requestor requirements, the Project Manager (PM) determines the balance between cost/time/risk and quality of deliverables based on a cost-benefit analysis, and defines the quality assurance and control activities. For these activities, quality metrics should also be defined along with acceptance tolerances.

The *Quality Review Checklist*, the *Phase-exit Review Checklist* and the *Deliverables Acceptance Checklist* are the tools that will be used to validate compliance with this plan. The above checklists should be defined and created during the planning phase.

## Step 2: Perform Quality Assurance

The purpose of this step is to verify the performance and compliance of project (and project management) activities with the defined quality requirements. The quality assurance activities are defined based on the overall project management approach (described in the *Project Handbook*) and are part of the *Project Work Plan*.

Quality assurance will be performed by evaluating:

- the design of the project controls, by confirming that they are implemented, and by assessing their operational effectiveness. These activities will consider the project quality objectives along with the project risks.
- compliance with the organisation's rules and regulations, as well as with relevant governmental and industry rules, regulations and legislation.

Quality assurance activities are usually not performed by the Project Manager (PM), but will be carried out:

- Internally: by a Project Quality Assurance (PQA) person, and by the project organization (PCT, BM, SP). In our case the PQA will be selected from the PCT.
- Externally: e.g. outsourcing audits to external entities/auditors when necessary.

The results of the quality assurance activities will be documented in the relevant quality and status reports or/and in relevant project logs. Recommendations for improvements may result from quality assurance and are processed by quality control in the form of change requests.

## Step 3: Perform Quality Control

The purpose of this step is to monitor and consolidate results from the quality assurance activities in order to assess compliance and performance, recommend necessary changes, and plan new or refine existing quality assurance activities. Quality monitoring & controlling is performed throughout the project by the Project Manager (PM).

The *Quality Review Checklist* will be used by the Project Manager (PM) for evaluating the quality control activities and to validate compliance with the plans in terms of scope, time, cost, quality, project organization, communication, risks, contracts, and client satisfaction. Additionally, the Project Manager (PM) will summarize and document the *Quality Review Checklist* findings, their impact, recommendations along with any remediation/improvement actions. The project logs will then also be used to document related risk, issues, decisions and changes.

When controlling and verifying the adequacy of project quality management, the Project Manager (PM) will consider all events that may influence adversely or favourably the achievement of project objectives and refine the *Quality Management Plan* accordingly. Moreover, the Project Manager (PM) will determine the effectiveness of project processes, look for potential improvements in processes efficiencies, analyse measurement results and their effectiveness, and develop *Quality Review Reports* with the consolidation of the results and recommendations.

The results of the quality assurance activities will be used for improving the quality of project activities and so they may generate change requests for corrective or preventive actions, or updates in project documentation, e.g. in *Project Work Plan*.

After the identification of all non-conformities or opportunities to improve, the Project Manager (PM) will elaborate/validate recommendations and establish action plans, consulting the relevant stakeholders.

Actions may result in change requests, identification of new risks and issues, re-scheduling activities or adding new activities to the *Project Work Plan*. It can also identify training and resources needs, additional quality assurance activities, among others. These actions will identify which project documentation should be updated and the ID of the action from the related documents (project logs

or *Project Work Plan*). All these actions will be incorporated (at least the most effort/cost consuming ones) into the *Project Work Plan*, in order to have a consolidated view of all project related activities.

Furthermore, this step also comprises the review and validation of each project work package (defined in the *Project Work Plan*). If results are compliant with project quality requirements, the Project Manager (PM) will obtain approval on the outputs produced in each phase-gate, based on the defined criteria. The *Phase-Exit Review Checklist* is used to support each phase-gate review. Additionally, formal go/no-go decisions for each milestone or phase will be agreed on and accepted by the Project Steering Committee (SC), based on the success criteria.

All changes to the *Quality Management Plan* and *Deliverables Acceptance Plan* will be agreed by the relevant stakeholders and approved by the SC.

#### **Step 4: Perform Deliverables Acceptance**

The purpose of this step is to obtain formal approval from the Project Owner (PO) for each project deliverable. It comprises the verification if deliverables meet the predefined objectives and set of criteria defined in the *Deliverables Acceptance Plan*, so that the Project Owner (PO) can formally accept them, in the Deliverables Acceptance Note.

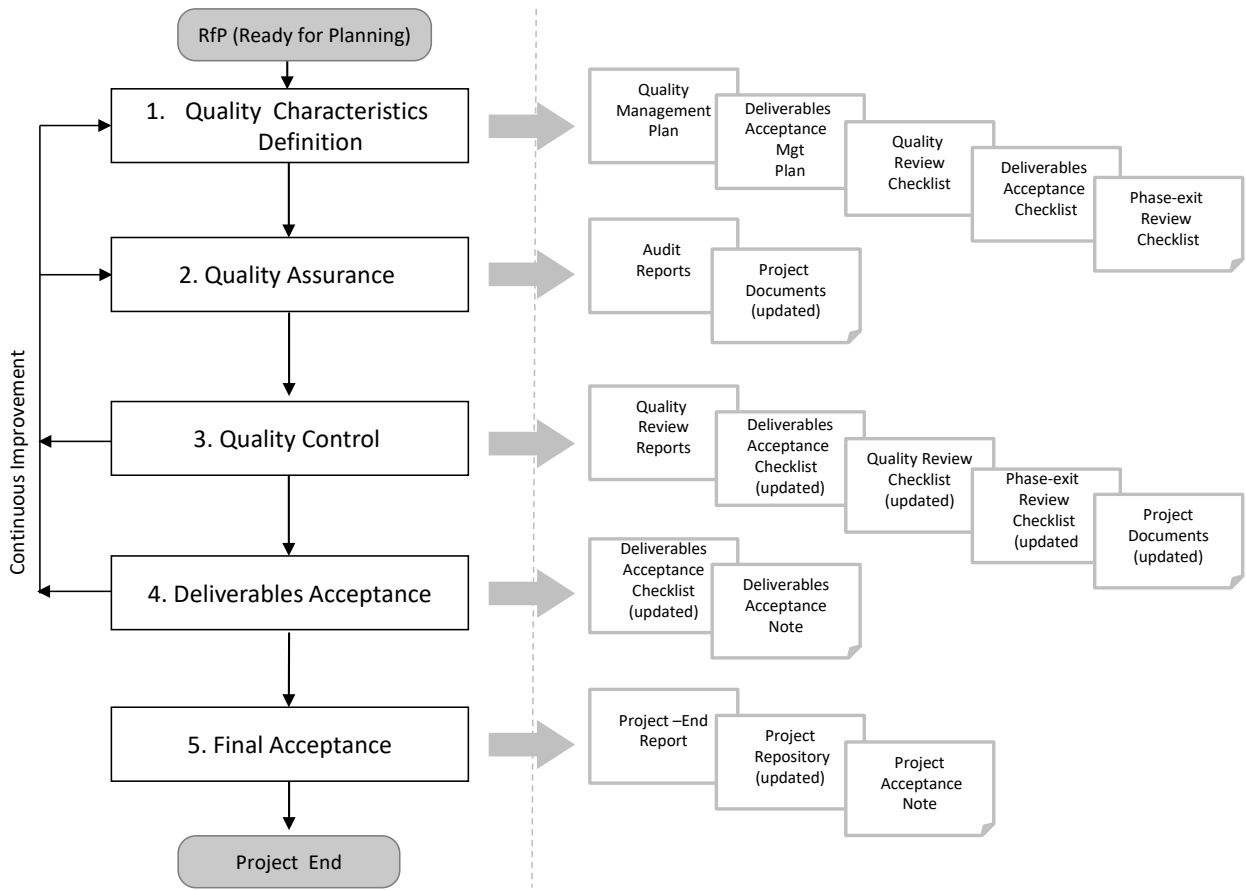
The *Deliverables Acceptance Checklist* supports the monitoring of the status of all activities that are pre-condition to the delivery of project outputs to the Project Owner (PO) and the formal acceptance from him/her. Project deliverables are accepted if the acceptance activities (as described in the *Deliverables Acceptance Plan*) are successfully performed and within the pre-specified tolerances. The Project deliverables may be conditionally accepted even with a set of known issues, provided that these are documented and that there is a plan for addressing them.

#### **Step 5: Perform Final Acceptance**

The purpose of this step is to manage the final acceptance of the project, including the accepted deliverables and to perform the administrative closure of the project. The final acceptance is obtained from the Project Owner (PO), through a formal Project Acceptance Note.

Before the formal project sign-off, the Project Manager (PM) should report on project performance in the Project-End Review Meeting, discuss lessons learned and develop the *Project-End Report*. This report should summarize project performance throughout project lifecycle and describe the main risks, issues, constraints, opportunities and lessons learned identified along the project. It can also identify stakeholders' satisfaction level based on questionnaires or other type of feedback. The pitfalls, best practices and solutions implemented should be maintained in a project repository, accessible for future projects.

The administrative closure of the project includes updating, reviewing, organising and archiving all project documentation and records, **with the help of the Project Support Office (PSO)**. It also comprises the release of project resources, the final project acceptance and the communication of project end to the relevant stakeholders. The *Phase-exit Review Checklist* will be used to validate the completion of project activities.



**3.1. Quality Management Roles and Responsibilities**

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

RAM (RASCI)	SC	PO	BM	SP	PM	PCT
Quality Management Plan	A	C	C	C	R	C
Deliverables Acceptance Plan	A	C	S	C	R	C
Perform Quality Assurance	I	I	S	I	A	R
Perform Quality Control	I	I	C	A	R	C
Perform Deliverables Acceptance	I	A	S	I	R	C
Perform Final Acceptance	A	C	C	C	R	I

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

Project quality approach and criteria are agreed by the Project Steering Committee (SC).

The Project Manager (PM) is ultimately accountable for the correct and full completion of the quality assurance activities. Responsible is the person in the role of project auditor or reviewer that maybe internal to the team, to the organisation but outside the team, or external to the organisation.

The Project Manager (PM), supported by the Business Manager (BM), is accountable for scheduling the acceptance activities and ensuring that they are performed according to the plan.

The Project Manager (PM) is also responsible for performing quality control throughout the project under the supervision of the Solution Provider (SP).

The Project Owner (PO) is accountable for deliverables and project acceptance and for ensuring the availability of resources (including people) and guidelines for acceptance testing.

#### 4. TOOLS AND TECHNIQUES

The following techniques will be used for project quality management:

- Audits
- Benchmarking
- Questionnaires
- Peer reviews
- Project Review Meetings

The following tools will be used for project quality management:

- PM<sup>2</sup> Quality Management Plan
- PM<sup>2</sup> Quality Review Report
- PM<sup>2</sup> Project-End Report

#### 5. QUALITY ASSURANCE ACTIVITIES

The Project Manager (PM) is the overall accountable of the quality assurance activities within the project. The Project Manager (PM) is also responsible for scheduling and initiating all formal project audits or reviews.

The quality assurance activities will be performed by the Project Core Team (PCT), by the Project Quality Assurance (PQA) team/person.

The quality assurance activities include the following:

- Compliance verification with the organisation's policies, rules and regulations, as well as with relevant governmental and industry rules, regulations and legislation
- Artefact reviews and approvals
- Monthly activities reports
- Project Status Meetings
- Project Review Meetings
- Project Steering Committee meetings
- Project and process audits;
- Stakeholders' satisfaction questionnaires

The project quality assurance activities are detailed and scheduled in the Project Work Plan.

#### 6. METRICS

This section includes the quality criteria to be collected and reported during the project, for project artefacts (i.e. project management outputs). Note that the criteria related to testing of the project deliverables and their formal customer acceptance are detailed in project domain specific documents as e.g. test plans and the *Deliverables Acceptance Plan*.

Criterion Name	Frequency	Tolerance
Artefacts review (per project phase)	Once	No tolerance.
Status reports distributed	Monthly	Six moths.
Project Review Meetings performed	Monthly	One month.
Project Steering Committee meetings performed	Monthly	Six moths
Project and process audits performed	Yearly or once during the project	No tolerance.

## 7. QUALITY CONTROL

### 7.1. Quality Reviews

Project quality reviews will be performed every *six months* in order to verify that all project plans and processes defined in the Project Handbook have been created and are executed as planned.

A *Quality Review Checklist* will be used to assess the project's compliance with the planned activities (and related outputs) in domains such as scope, time, cost, quality, project organization, communications, risks, contracts, and client satisfaction.

Note that some of the approved, remediation or/and improvement actions may also generate *Change Requests* and updates in project documents and plans.

The findings, recommendations and remediation/improvement actions will be consolidated in the *Quality Review Report*, registered as issues in the *Issue Log* and reported as per the *Communications Management Plan*.

Every time the Quality Control step is executed, the effectiveness of previous cycle recommendations and remediation/improvement actions should be assessed.

### 7.2. Deliverables Reviews

The deliverables reviews by the client will be performed based on the *Deliverables Acceptance Plan* and *Deliverables Acceptance Checklist*.

The findings, recommendations and remediation/improvement actions will be consolidated in the *Quality Review Report* and reported to as per the *Communications Management Plan*.

## 8. QUALITY RECORDS

The quality records (evidence that quality management activities have been performed) are archived in the project repository, under the "Monitor & Control" folder. The different versions of the project artefacts (created at each artefact update) will provide evidence of the performance of these activities.

## 9. CONFIGURATION MANAGEMENT

The project configuration management procedure comprises the identification of project configuration items (CIs), their attributes and status codes, the establishment of baselines, the

definition of roles and responsibilities for authorised changes to CIs, and the maintenance and control of a project repository.

The project configuration management covers:

- Definition of project CIs;
- File and email naming conventions;
- Versioning and tracking of project documents;
- Control of the release of project artefacts and deliverables and changes to them;
- Periodic reviews to CIs records, to see if the configuration procedure is being undertaken and if records match the actual status;
- Storage and archiving of project management artefacts, including folder structure and naming conventions;
- Security of the CIs, i.e., CIs access management, CIs copies / backups, fall-back procedures and retention period.

The periodic review of CI records will verify if all CIs are correctly identified, related changes are registered, approved, tracked and correctly implemented. For this purpose a configuration registry will be used. The fields of the configuration registry are:

- Project identifier;
- Item identifier;
- Description;
- Status;
- Date of last status change;
- Version;
- Type;
- Item attributes;
- Owner;
- Reference to location;
- Details of the relationship between items;
- History of changes to CI (this information can be referenced to the Change Log).

The location of the configuration registry is found in the Appendix 1.

### **PM<sup>2</sup> project management files naming convention**

This project follows PM<sup>2</sup> methodology and uses the following naming convention:

**Files:** (DocumentName).(ProjectName).(dd-mm-yyyy).v(x.x)

Explanations:

- x.x is referring to the version of the document. If it begins with a "0.x" it means that the document hasn't yet been approved; minor changes can be reflected in the decimal (revisions number) and major changes (formal reviews) in the number.

When creating a project document, the Project Manager (PM) will include:

- The title of the document;
- The document type (e.g. plan, check list, log, guide, template, study, report);
- The version number;
- The issue date;
- The document control information, document approver(s) and reviewers and document history and location;
- The confidentiality classification of the document.

**Project email subject tag:** (ProjectName), (Topic), (type of communication, e.g. for approval, for information, for review, for action), (FreeText – if needed).

### **Versioning and release of artefacts and deliverables**

The location of the last versions of project artefacts and deliverables is referred in the configuration registry.

### **Storage and archiving of project management artefacts and deliverables**

The Solution Provider's (SP) or Project Owner's (PO) organisation may have an internal policy with regard to records management and archives, and projects should follow these procedures. Organisations or Units may have a Document Management Officer (DMO) who is responsible to implement a document and records management system.

For this project, the Project Manager (PM) will structure the project management artefacts per PM<sup>2</sup> phase, following the below folder convention:

- 01 Initiating
- 02 Planning
- 03 Executing
- 04 Monitor & Control
- 05 Closing

*The configuration management scope is limited to the publications and deliverables, and it will determine the procedures to be applied to change, approval, maintenance (including retention periods) and archive of the project CIs.*

*It is recommended to agree on security procedures that include access to project files, copies of project data, archive location to guarantee continuity, storage devices to be used, retention periods and sanitization of data (when data is no more needed). These procedures should be mentioned in this section or referenced to other documents.*

## **10. RELATED PM<sup>2</sup> PLANS**

### **Communications Management Plan**

The *Communications Management Plan* helps to ensure that all project stakeholders have the information they need to perform their roles throughout the project. It defines and documents the communication items content, format, frequency, the audience and expected results. The location of this artefact is referred in the Appendix 1.

### **Issue Management**

The management of issues and decisions is described in the *Issues Management Plan*. This artefact defines how issues are identified, evaluated, and assigned for resolution and how decisions are implemented. Issue management supports the resolution of issues before deliverables / project acceptance. The location of this artefact is found in the Appendix 1.

## APPENDIX 1: REFERENCES AND RELATED DOCUMENTS

<Use this section to reference (or append if needed in a separate annex) any relevant or additional information. Specify each reference or related document by title, version (if applicable), date, and source (e.g. the location of the document or the publishing organisation).>

ID	Reference or Related Document	Source or Link/Location
1	Communications_Management_Plan.D ADIBAS.07-12-2023.v1.2.pdf	<a href="#">OneDrive DADIBAS Project Repository</a>