Quality Assurance and Testing

Case Workshop

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Session Objectives

To analyze a real project case to spot documentation gaps and quality risks

Practice defining Definition of Ready & Done, quality gates, and traceability

Propose corrective actions that are lightweight but auditable

Leave with reusable templates and checklists

Agenda

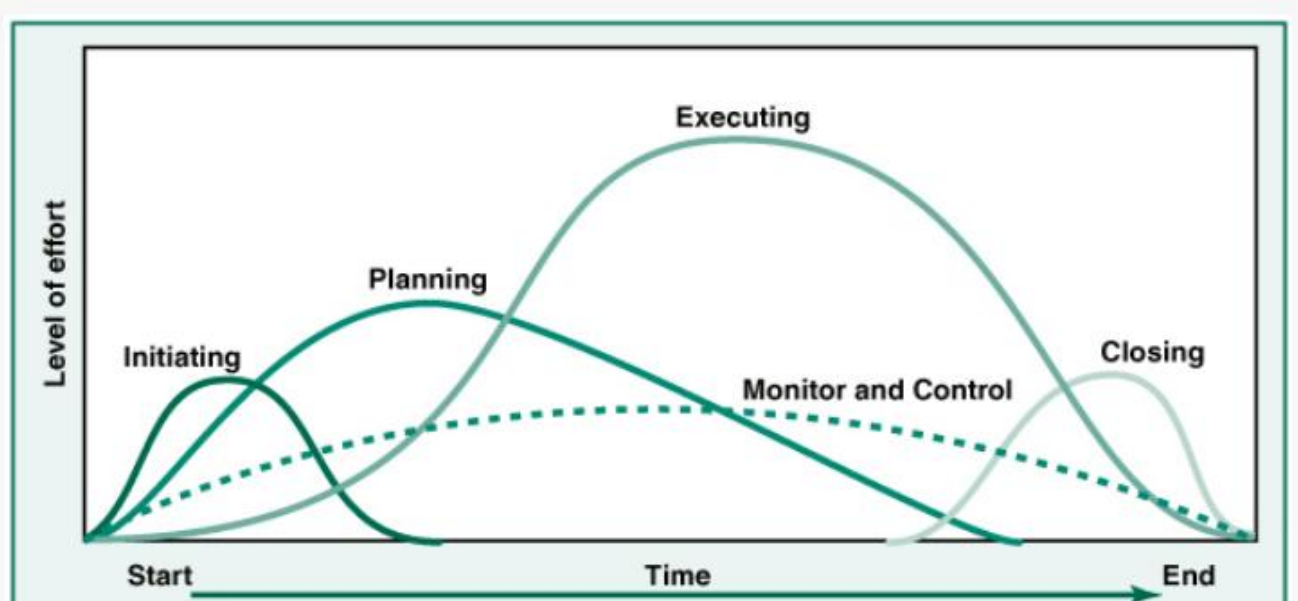
Part I: QA foundations for EU projects

Part II: Case study — Project X (anonymized from a real H2020 project)

Part III: Exercise — gap analysis & fixes

Part IV: Best practices, templates, and next actions

Project life cycle



Initiating
1. Definition of project scope
2. High-level budgets
3. Indicative time-frame
4. Project organisation
5. Establish project charter

Planning
1. Development of the project management plan
2. Detailed schedules
3. Detailed budgets
4. Resourcing
5. Risk analysis
6. Quality definition
7. Communication planning
8. Planning procurement

Executing
1. Change management
2. Quality control
3. Project reporting
4. Delivery of outcomes and outputs
5. Contract management
6. Team management
7. Stakeholder management

Closing
1. Financial closure
2. Final project reporting
3. Final handover to customer
4. Lessons learned
5. Release of resources

Source: McGraw-Hill Education Pty LTD: https://charteraust.axcelerate.com.au/index.cfm/knowledge-centre/the-project-life-cycle/

Project X — Context (anonymized)

Goal: Industrialize and commercialize a novel in-wheel electric drive

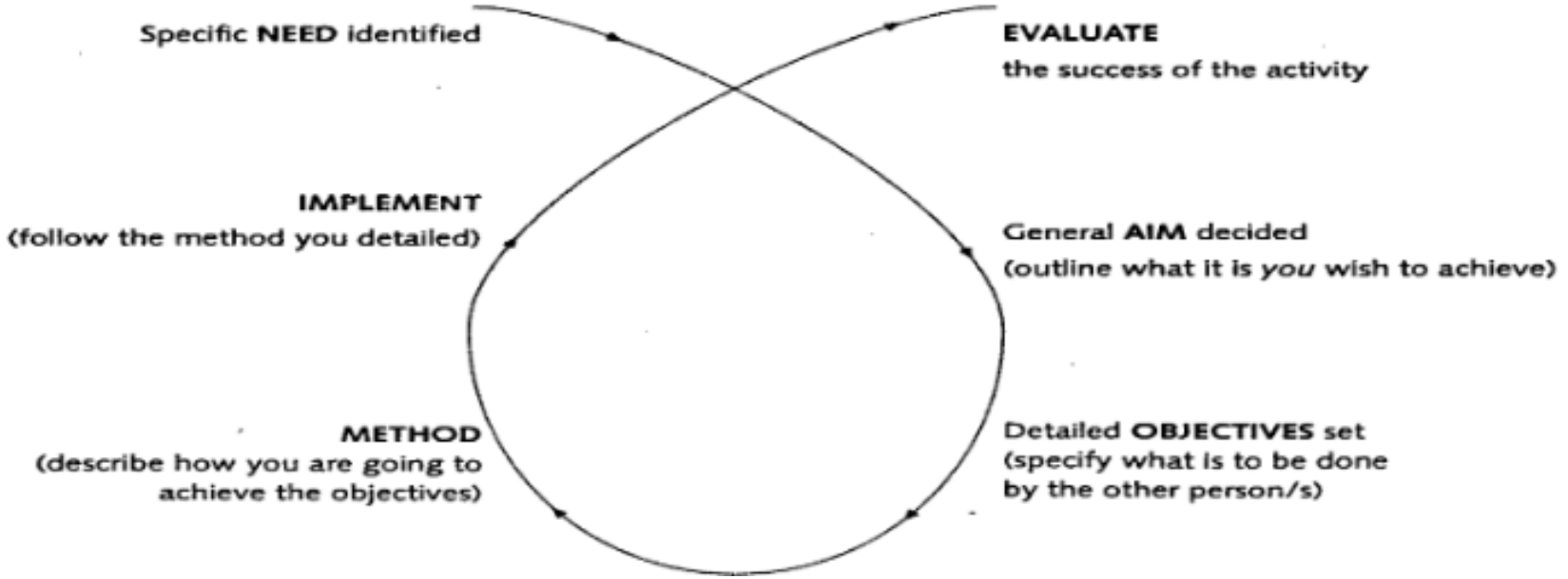
Consortium: P1 (Coordinator), P2, P3, P4, P5 across 3 EU countries

24 months, mixed R&D and industrialization work packages

Multiple confidential deliverables; periodic reporting to European Comission

Project planning model

Project planning model is designed to show clear evidence of all the considerations that must be taken into account when planning
The phases of NAOMIE planning are:
•Needs: What are the needs of the actors participating in the project? What are the needs of the project as a whole?
•Aims: purpose and goals;
•Outcomes: results and effects;
•Methods;
•Implementation;
•Evaluation.



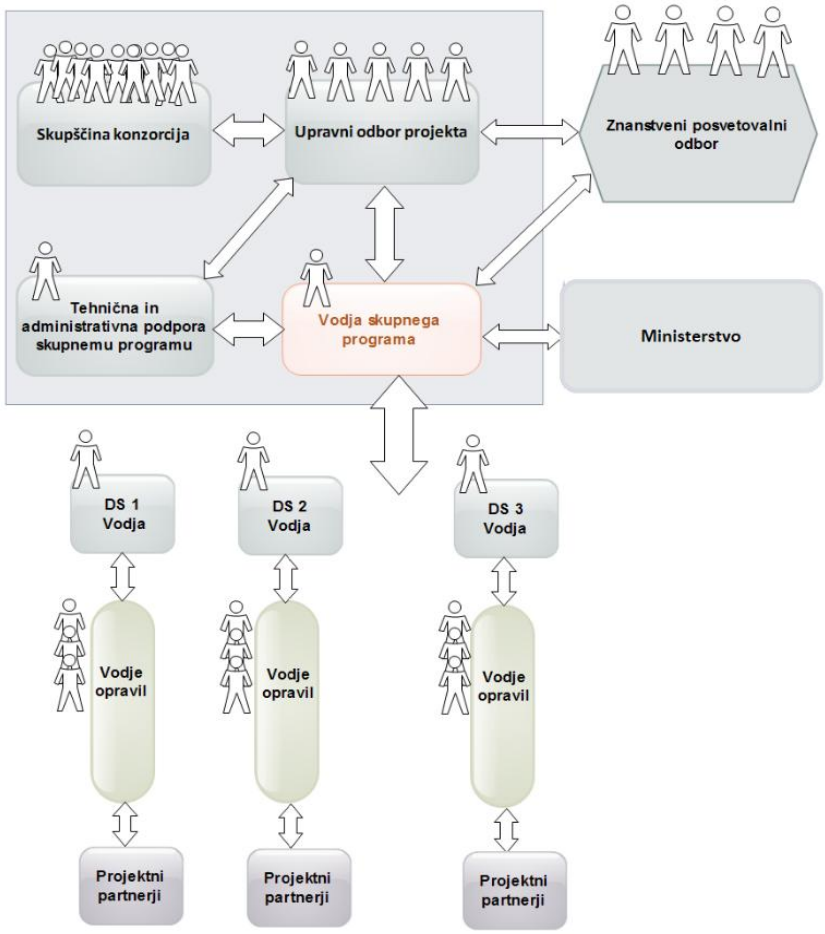
Governance & Roles

Coordinator & PMO: schedule, deliverables, risk & issue logs

WP Leads: scope, quality, budget; Task Leads: acceptance criteria

DPO (Data Protection Officer)/Ethics, Security Lead, Domain experts where relevant

Internal peer review owners per deliverable



QA Pillars You Will Use Today

Quality gates before any external submission

Definition of Ready / Definition of Done (per WP/Task)

Traceability: requirement → task → test/validation → deliverable

Auditable records: versions, reviews, approvals

Documentation Landscape (typical)

Grant Agreement (GA) & Description of Action (DoA) — scope & obligations

Deliverables & milestone evidence — technical & managerial

Periodic reports, expert reviews, auditor reports

Decision, risk, issue logs; change requests; meeting minutes

EUROPEAN COMMISSION
Executive Agency for Small and Medium-sized Enterprises (EASME)
Director

HORIZON 2020

GRANT AGREEMENT

NUMBER —

This **Agreement** ('the Agreement') is **between** the following parties:

on the one part,

*the **Executive Agency for Small and Medium-sized Enterprises (EASME)** ('the Agency'), under the power delegated by the European Commission ('the Commission')*[1],

represented for the purposes of signature of this Agreement by Head of Unit, Executive Agency for Small and Medium-sized Enterprises (EASME), OPERATIONS, H2020 SME, Bernd REICHERT,

and

on the other part,

1. 'the coordinator':

What reviewers actually flagged (Project X)

short deliverables short mmsing context & contribution to objectives

repetition across deliverables without synthesis

Need to begin with task/WP objectives & end with how they were fulfilled

supplier lists lacking decision rationale and criteria

Why Documentation Gaps Hurt

Harder evaluation → questions, delays, possible rework

Weak knowledge transfer → lost lessons & duplicated effort

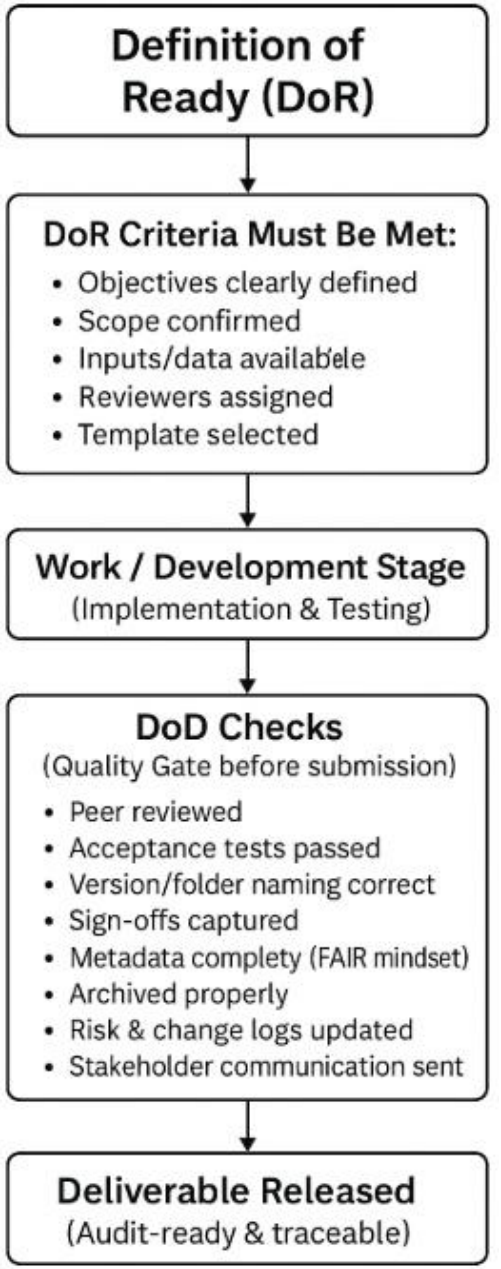
Lower compliance posture → audit findings more likely

Poor traceability → integration and testing suffer

POTENTIAL OF NOT FUNDING DUE TO EVALUATED NON-COMPLIENCE!!

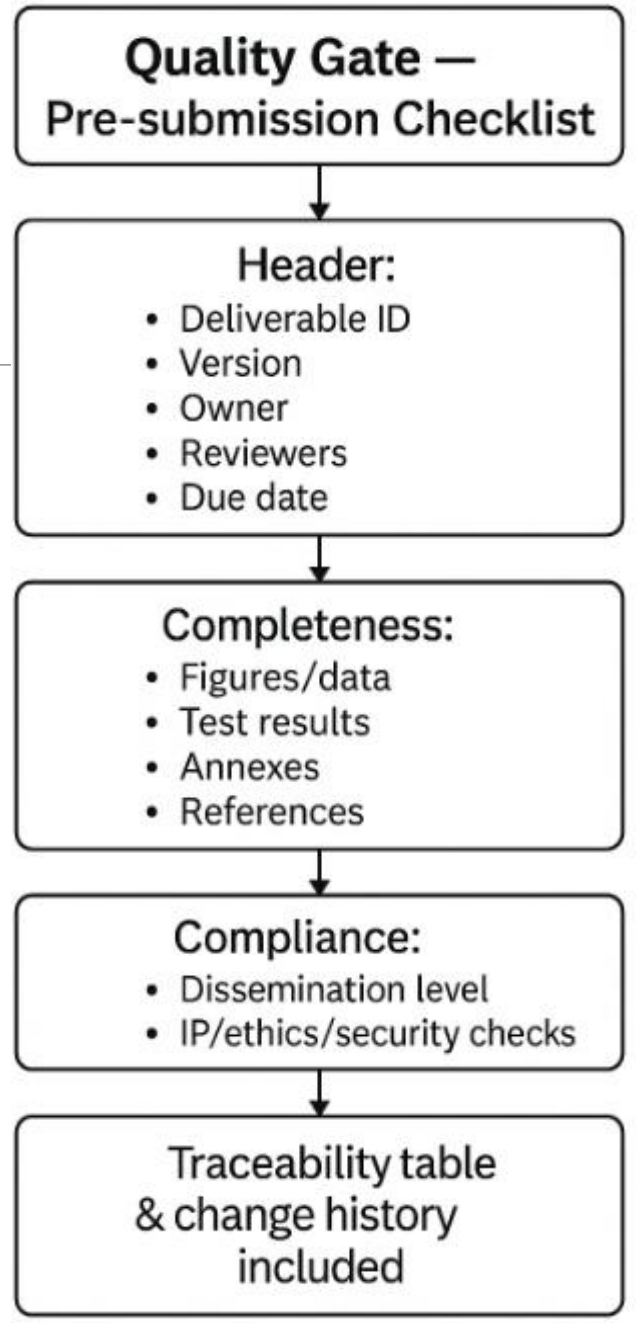
Definition of Ready (DoR) & Definition of Done (DoD)

- DoR: objectives, scope, inputs, data, reviewers, template selected
- DoD: peer reviewed, acceptance tests passed, version/folder naming OK
- DoD: sign-offs captured; metadata complete; archived with FAIR mindset
- DoD: risk & change logs updated; stakeholder communication sent



Quality Gate — Pre-submission Checklist

- Header: deliverable ID, version, owner, reviewers, due date
- Completeness: Executive summary, context to WP/Task objectives
- Evidence: figures/data, test results, annexes, references
- Compliance: dissemination level, IP/ethics/security checks
- Traceability table & change history included



Traceability Matrix — Template

Requirement R1: Performance target documented
Task T1.3 implements R1
Test TE-07 validates R1
Deliverable D3.1 includes results & sign-offs

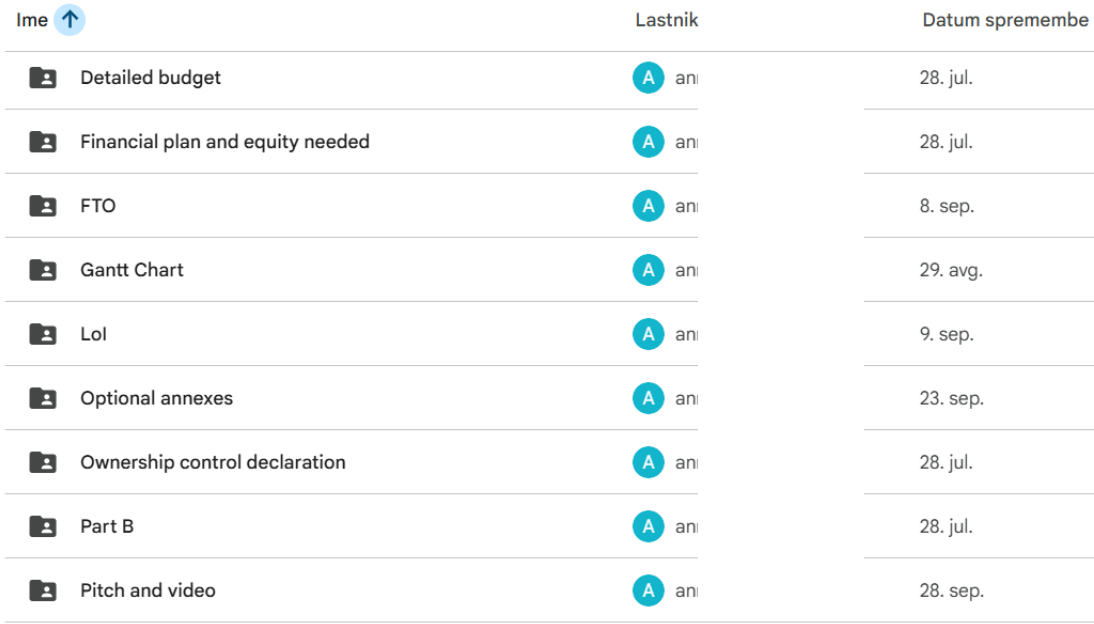
Owner: WP3 Lead
Status: In progress → Accepted
Evidence link: /repo/WP3/D3.1/figures

Requirement R2: Manufacturing readiness (pre-series)
Task T3.2 implements R2
Test TE-12 pilot build review
Deliverable D3.2 controller electronics

Owner: WP1 Lead
Status: Pending validation
Evidence link: /repo/WP1/D3.2/tests

Versioning & Repository Standards

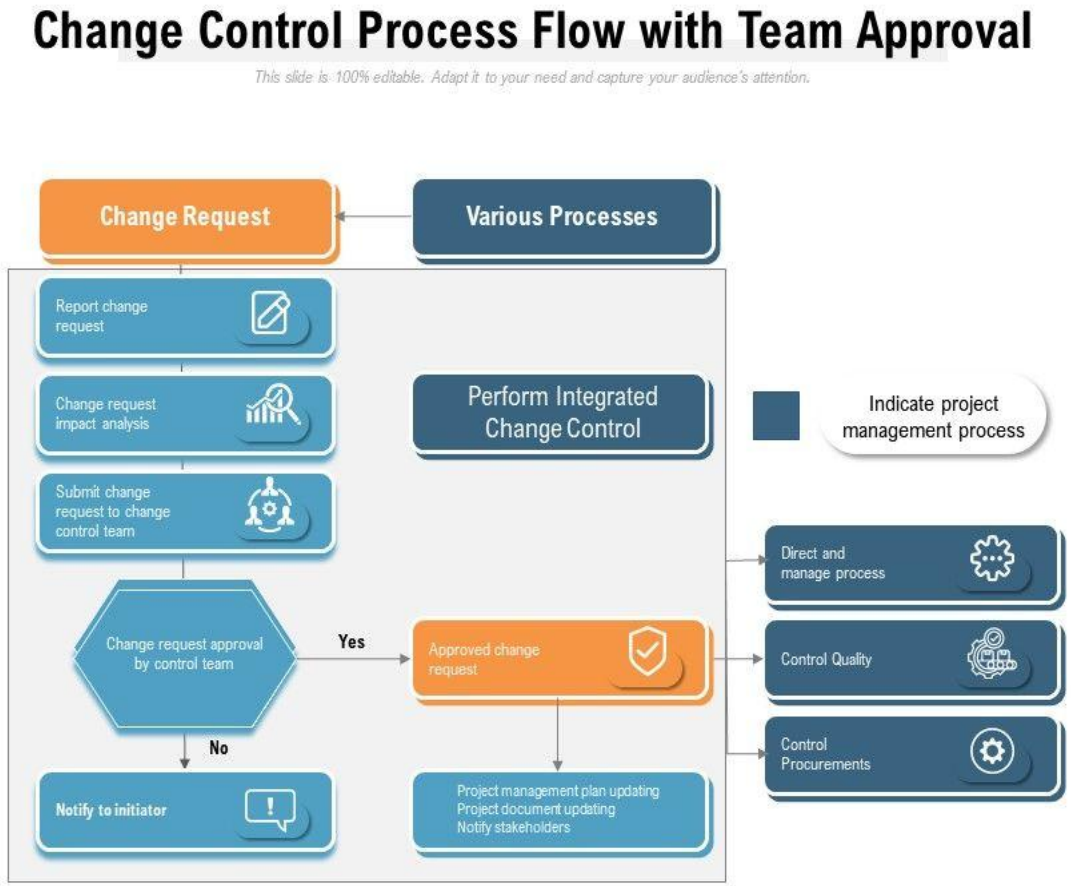
- „Git“-based repo: one source of truth (docs + data + scripts)
- Branching: feature/deliverable branches; merge via Merge Request with reviews
- Naming: D3.1_v1.2_2025-03-10_ProjectX.pdf (no ‘final’ files)
- Release tags per submission; ZIP snapshot archived



Ime	Lastnik	Datum spremembe
Detailed budget	A ani	28. jul.
Financial plan and equity needed	A ani	28. jul.
FTO	A ani	8. sep.
Gantt Chart	A ani	29. avg.
LoI	A ani	9. sep.
Optional annexes	A ani	23. sep.
Ownership control declaration	A ani	28. jul.
Part B	A ani	28. jul.
Pitch and video	A ani	28. sep.

Change Control Without Bureaucracy

- Change request form: rationale, options, quantified impact
- Timeboxed assessment with accountable decision owner
- Update baselines and communicate widely
- Separate experiments (spikes) from committed scope



From Gap → Fix (Project X)

Deliverables lacked task/WP linkage
- Fix: standard intro/outro blocks mapping to objectives

Repeated content across two manufacturing deliverables
- Fix: synthesis section; cross-reference instead of pasting

Supplier list without rationale
- Fix: add selection criteria table (cost/lead time/quality/risk)

Short reports → missing detail
- Fix: embed test protocols, acceptance criteria annex

Late components → late submission
- Fix: risk trigger & contingency procurement path

Unclear validation ownership
- Fix: assign Validation Owner per deliverable

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Acceptance Test Table — Example

- TE-07: Torque on test bench ≥ spec across duty cycle — PASS/FAIL
- TE-12: Pre-series controller electronics thermal profile — PASS/FAIL
- TE-18: Assembly cycle time ≤ baseline — PASS/FAIL
- Each test links back to requirement ID and deliverable section

Acceptance Test Plan Template

Exhibit 1: Sample Acceptance Test Schedule

Activity	Planned Completion Date	Actual Completion Date	Deliverable/ Checkpoint
Plan Acceptance Testing for <system #N>			Preliminary Acceptance Test Schedule
Identify Test Materials			Preliminary Acceptance Test Matrix
Establish Acceptance Test Environment			Acceptance Test Environment Inventory
Conduct Acceptance Test Readiness Review			Draft Acceptance Test Plan Matrix Completed Test Readiness Review Checklist
Execute Tests			Acceptance Test Progress
Complete Acceptance Testing			Acceptance Test Summary Report
Document Acceptance Testing			Final Acceptance Test Report

Audit-Ready Documentation

- Keep version history, comments, approvals (who/when/what)
- Store reviewer checklists and sign-offs
- Retain raw data and scripts for plots/figures
- Log exceptions and deviations with dispositions

DOCUMENTATION MUST BE KEPT FOR AT LEAST THE TIME STATED IN GRANT AGREEMENT!

Risk Register — Top Items (Example)

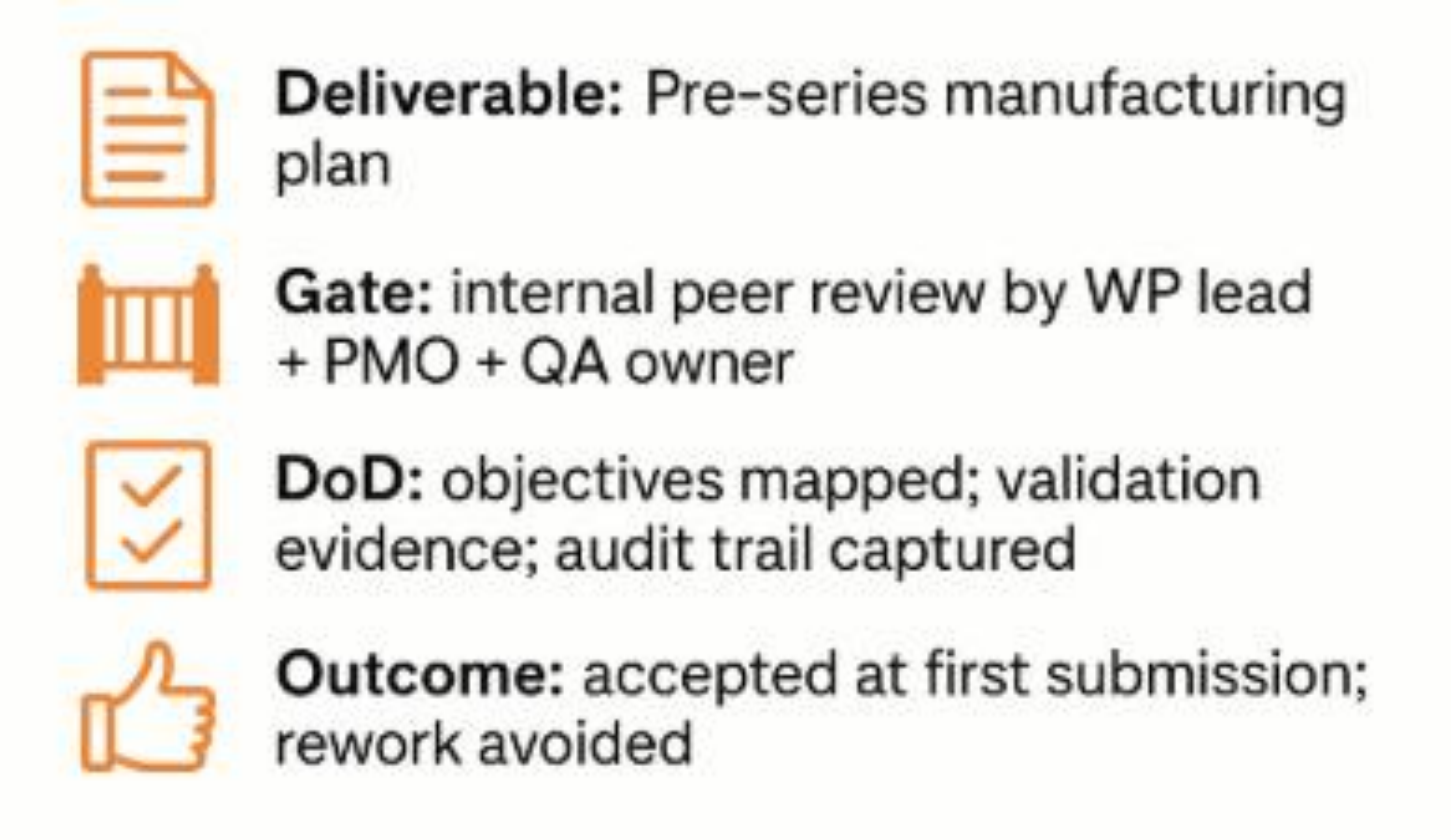
- R1: Data/parts delay → Trigger: supplier slip >14 days → Plan: alt supplier
- R2: Interface change → Trigger: partner major release → Plan: lock spec + adapter
- R3: Budget overrun → Trigger: burn > 80% mid-period → Plan: reallocate + caps
- Each has owner and review cadence

Communication Protocol

- Asynchronous defaults: agendas, minutes, decisions documented
- Cadence calendar; named note-takers; rotating chairs
- Escalation SLAs; resolve conflicts at lowest competent level
- Public vs private channels; compliance-aware tooling

SLA — Service Level Agreement

Quality Management in Practice



Exercise — Instructions

Here is a sample deliverable excerpt

Identify at least 5 gaps against the Quality Gate checklist

Propose concrete fixes (templates, tables, ownership)

Prepare a short report

Quality Gate checklist

Category	Checkpoints	Status (✔ / ✘ / N.A.)
Header & Metadata	Deliverable ID, title, version, owner, reviewers, due date clearly indicated	
Completeness	Executive summary present; context linked to WP/Task objectives	
Evidence	Figures, raw data, test results, annexes, and references included	
Compliance	Dissemination level, IP/ethics/security aspects verified	
Traceability	Requirements → tasks → tests → deliverable clearly mapped; change history updated	
Review & Approval	Peer review completed; comments resolved; sign-offs captured	
Versioning & Repository	File naming per convention; archived snapshot stored; FAIR metadata present	
Communication & Handover	Stakeholders informed; risks/changes logged; final upload confirmed	

Sample Deliverable Excerpt – D3.2 “Controller Prototype Evaluation Report”

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Version: Draft_v0.3
Owner: WP3 Technical Lead

Date: 2025-02-28

1. Executive Summary

The prototype controller was tested in several configurations to validate its performance under normal operation. Early results show the controller meets most functional expectations.

2. Context

This task continues previous WP3 work on hardware integration. Some results are preliminary and still under partner review.

3. Test Results

•Torque measurements show ~10% variance between test benches.
•Thermal stress tests were initiated but not finalized.
•EMC testing to be done after firmware update (planned).
•Figures and logs will be added after data consolidation.

4. Lessons Learned

The assembly process was slower than planned. Supplier delays caused partial delivery of components. Mitigation steps are under discussion.

5. Next Steps

•Complete EMC and thermal tests.
•Submit to PMO for review before final upload.

QA Gaps to Be Detected

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Checklist Category	Expected Gap(s)
Header & Metadata	Missing reviewer list; no dissemination level; unclear version naming (not per convention)
Completeness	Executive summary too vague; no WP/Task linkage; no context to DoA objectives
Evidence	Figures, data, and annexes missing; test evidence incomplete
Compliance	No mention of IP/ethics/security screening
Traceability	No requirement-to-test mapping; no change history
Review & Approval	Not peer reviewed; no sign-offs
Versioning & Repository	Naming not aligned with rule (should be e.g. `D3.2_v0.3_2025-02-28_ProjectX.pdf`)
Communication & Handover	No record of stakeholder communication or risk update

Logotips!

How We Judge Your Fixes

Clarity & traceability

Feasibility & proportionate effort

Auditability & compliance readiness

Reusability as a template

Unified Template — Deliverable Structure

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1️⃣ Intro Block (Start of Deliverable)

🟦 *Purpose & Scope*

•Clearly state objective and scope of the deliverable

•Reference the relevant section of the Description of Action (DoA)

🟦 *Work Package / Task Linkage*

•Identify WP and Task IDs

•Define success and acceptance criteria

🟦 *Change Log*

•Summarize modifications since previous version

•Include version, author, date, and reason for change

🟦 *Contributors & Reviewers*

•List contributors, reviewers, and validation owner with roles

2️⃣ Synthesis & Conclusion Block (End of Deliverable)

🟩 *Objectives Addressed*

•Brief recap: what objectives were achieved and how

🟩 *Evidence Summary*

•Reference figures, tests, annexes, and data sources

•Note validation and acceptance test outcomes

🟩 *Open Risks & Next Steps*

•Identify unresolved issues or ongoing actions

•Point to responsible owners or follow-up WPs

🟩 *Traceability & Links*

•Provide links to repositories, raw data, and sign-off records

•Ensure auditability and FAIR compliance

FAIR Mindset for Docs & Data

Findable: unique IDs, searchable metadata

Accessible: known protocols, even if access-controlled

Interoperable: open formats & vocabularies

Reusable: clear licenses; rich context & methods

Minimal QA Toolchain (Low-Friction)

- **Version Control Repository:**
  Use a version control system such as *GitLab* or *GitHub* to store all project materials — documents, data, and scripts — in a single, traceable repository.
  Include issue tracking and change review workflows for transparency and accountability.
- **Documentation as Code:**
  Maintain all documentation in plain text formats such as *Markdown* or *AsciiDoc*.
  Export finalized versions to PDF for submission and archival purposes.
- **Structured Checklists and Matrices:**
  Keep quality checklists and traceability matrices in structured data files (for example, comma-separated or tab-separated formats).
  Generate analytical charts or summaries directly from scripts to ensure consistency and automation.
- **Automated Quality Checks and Conversion:**
  Implement automated style and link verification tools (“linting”) to detect errors early.
  Set up continuous integration processes that automatically convert documentation and verify formatting

Your 30-Day Action Plan

Adopt Quality Gate checklist

Define DoR/DoD per WP/Task

Stand up a single repo with naming/versioning rules

Pilot traceability matrix on one deliverable

Key Takeaways

Quality ≠ bureaucracy — it’s about clarity, reproducibility, and trust

Write for evaluators & future you: context in, evidence out

Make gaps visible early; fix with lightweight, repeatable patterns

Q&A?