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ROBOtics KNOwledge Transfer Lab Project

ROBO-KNOT

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Quality Manual

Deliverable D4.2

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Deliverable D4.2 Quality Manual

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Abstract:

Deliverable D4.2 defines the Quality Manual of the ROBO-KNOT project, outlining the quality assurance, monitoring, and risk management framework applied throughout the project. It describes procedures for reviewing deliverables, tracking progress against objectives and KPIs, and identifying and mitigating risks. The manual ensures consistent, transparent, and high-quality implementation in line with Horizon Europe requirements.

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*** Deliverable types:**
R: document, report (excluding periodic and final reports).
DEM: demonstrator, pilot, prototype, plan designs.
DEC: websites, patent filings, press and media actions, videos, etc.
OTHER: software, technical diagrams, etc.

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Abbreviations

GA	Grant Agreement
GEA	General Assembly
EC	European Commission
EC PO	European Commission Project Officer
PC	Project Coordinator
PEC	Project Executive Committee
QM	Quality Manager
WPL	Work Package Leader
TL	Task Leader
TSC	Talent Selection Committee
KPI	Key Performance Indicator

1. Executive Summary

Deliverable D4.2 provides the Quality Manual for the ROBO-KNOT project, establishing a coherent approach to quality assurance, monitoring, and risk management throughout the project's implementation. The document defines how quality is planned, assessed, and safeguarded across all work packages, ensuring that activities, deliverables, and learning outputs are implemented in a consistent and reliable manner.

The Quality Manual describes the mechanisms used to monitor progress against planned objectives, milestones, and timelines, including structured review procedures and regular feedback loops among project partners. It supports early detection of potential challenges and enables timely corrective actions through clearly defined governance and decision-making structures.

In addition, Deliverable D4.2 outlines the project's risk management approach, identifying potential operational, organisational, and implementation-related risks and setting out mitigation measures. By providing shared standards, responsibilities, and monitoring tools, the Quality Manual strengthens coordination, accountability, and quality culture within the consortium, contributing to the successful delivery of ROBO-KNOT's objectives in line with Horizon Europe requirements.

2. Introduction

2.1. ROBO-KNOT Project

The ROBOtics KNOwledge Transfer Lab (ROBO-KNOT) is a cross-sectoral and cross-border mobility initiative designed to accelerate knowledge transfer in the Robotics field. By facilitating secondments of Research and Innovation (R&I) talent between academic and non-academic sector organisations, this project aims to promote more attractive and sustainable research careers in Widening Countries, in alignment with the European Commission's ERA Policy Agenda (Action 4). The project will directly involve 24 researchers and 12 R&I support staff from academic institutions in Widening Countries (Greece, Portugal, Slovenia), who will be seconded to non-academic organisations in either Widening countries (Estonia, Greece, Portugal) or to a non-Widening country (Spain). ROBO-KNOT's structured methodology, comprising Pre-secondment, Secondment, and Post-secondment phases, ensures impactful skills development and knowledge exchange. Firstly, talent is carefully selected and matched with opportunities that align with both individual goals and hosting organisations' strategic needs. Secondly, through a modular secondment approach, participants are then immersed in diverse work settings, enhancing their practical knowledge of Robotics technologies' commercial development. Lastly, the post-secondment phase includes targeted training activities and ongoing support to ensure long-term impact of the action, particularly with regards to the innovation-to-

commercialisation pipeline. ROBO-KNOT aims to develop a tailored Skills Development Framework, in line with the European Commission's ResearchComp, as well as a Career Advancement Plan, which ensures a high impact of the project on secondees' employability, future career prospects and knowledge sharing capabilities. ROBO-KNOT not only benefits seconded talent individually, but also increases consortium organisations' R&I support capacity and ability to establish effective cross-sectoral and cross-border collaborations, contributing to a more integrated European innovation ecosystem.

2.2. Work Package 4

Work Package 4 (WP4) is dedicated to the comprehensive management of the ROBO-KNOT project, encompassing operational, administrative, and financial oversight. It ensures effective coordination across consortium partners through structured communication and regular engagement, fostering long-term collaboration. WP4 implements rigorous quality assurance and risk management protocols, while ensuring compliance with ethical, legal, and gender equality standards, including robust data management practices. Collectively, these measures support the timely and on-budget delivery of the project objectives.

The deliverables of **WP4** are:

- **D4.1 – Project Management Plan**, M3
- **D4.2 – Quality Manual**, M5
- **D4.3 – Data Management Plan**, M6

2.3. Quality Manual (D4.2)

Deliverable D4.2 defines the Quality Manual of the ROBO-KNOT project and establishes the framework for ensuring high-quality implementation, monitoring, and continuous improvement across all work packages. The document sets out the quality assurance principles, procedures, and tools used to assess progress, review deliverables and learning content, and verify alignment with the project's objectives, milestones, and Key Performance Indicators (KPIs).

The Quality Manual introduces a structured monitoring and reporting approach that enables early identification of deviations, risks, or delays, allowing timely corrective actions to be taken. It also defines the roles and responsibilities of the PC, QM, WPLs, and governance bodies in maintaining quality standards throughout the project lifecycle.

In addition, Deliverable D4.2 outlines the project's risk management methodology, including risk identification, assessment, mitigation, and follow-up procedures. By providing a transparent and consistent quality framework, the Quality Manual supports effective coordination, accountability, and compliance with Horizon Europe

requirements, ensuring that ROBO-KNOT delivers impactful, reliable, and transferable results.

3. Preparation of Deliverables and Milestones

To ensure that all deliverables are submitted on time and meet high-quality standards, they will be reviewed by two consortium members and the coordinator before submission and then submitted through the Funding and Tenders Portal.

The person responsible for a deliverable must share a draft (by uploading it to the ROBO-KNOT repository) 4 weeks before the deadline, and a finalized version of the material with the reviewers and the PC 2.5 weeks before the deliverable is due. The reviewers will have 2 weeks to review the material. The responsible person must implement any required modifications within 2 days and share the updated document with the PC 3 days before the deliverable is due.

The ROBO-KNOT Consortium will record all deliverables and their reviewers in a dedicated Excel sheet stored in the project's shared repository.

List of Deliverables:

N°	Deliverable Nº	Deliverable Name	WPs	Lead Participant	Type	DL	Due Date
D1	D1.1	Open call for applications	WP1	AUTH	Report	PU	4
D2	D1.2	First report on secondments	WP1	AUTH	Report	SEN	12
D3	D1.3	Second report on secondments	WP1	AUTH	Report	SEN	27
D4	D2.1	Career Advancement Plan - Handbook	WP2	EITD	Report	PU	6
D5	D2.2	Report on post-secondment skills development R&I support staff	WP2	EITD	Report	PU	31
D6	D2.3	Report on post-secondment skills development for researchers	WP2	EITD	Report	PU	35
D7	D3.1	D&E&C Plan	WP3	ADRA	Report	PU	3
D8	D3.2	Interim report on D&E&C activities	WP3	ADRA	Report	PU	12
D9	D3.3	Executive report, including case studies and policy recommendations on R&I secondments for knowledge valorisation.	WP3	ADRA	Report	PU	32

D10	D3.4	Final report on D&E&C activities.	WP3	ADRA	Report	PU	12
D11	D4.1	Project Management Plan	WP4	EITDH	Report	PU	3
D12	D4.2	Quality Manual	WP4	EITDH	Report	PU	5
D13	D4.3	Data Management Plan	WP4	EITDH	DMP	PU	6

List of Milestones:

N°	Milestones	WPs	Lead Participant	Means of Verification	Due Date
MS1	First selection of R&I Talent to send on secondment	WP1	ULUS	First list of selected talent is finalised and shared among consortium members.	M6
MS2	Conclusion of first round of secondments	WP1	AUTH	Closure of secondments: all secondees returned to their sending institutions.	M14
MS3	Second selection of R&I Talent to send on secondment	WP1	ULUS	Second list of selected talent is finalised and shared among consortium members.	M19
MS4	Conclusion of second round of secondments	WP1	AUTH	Closure of secondments: all secondees returned to their sending institutions.	M27
MS5	Delivery of first SPIN: Explore course	WP2	EITD	Closure completion certificates, list of attendance, reporting.	M15
MS6	Delivery of Innovation Leadership Bootcamp	WP2	EITD	Bootcamp completion certificates, attendance, list reporting.	M30
MS7	Delivery of second SPIN: Explore course	WP2	EITD	Course completion certificates list of attendees	M28
MS8	Delivery of first Robotics Commercialisation Bootcamp at PACT	WP2	PACT	Bootcamp completion certificates, attendance list, reporting.	M32
MS9	Delivery of the second Robotics Commercialisation Bootcamp at CTAG	WP2	CTAG	Bootcamp completion certificates, attendance list, reporting.	M34
MS10	Development of D&E&C Strategy	WP3	ADRA	A detailed written Marketing and Dissemination Plan shared with and rolled out in cooperation with the consortium. Active website (regular updates).	M3
MS11	Kick off meeting, Project Management Plan	WP4	EITDH	Kick-off meeting finalised.	M1

4. Risk Mitigation - Risk Management Plan

The Risk Management Plan defines the strategy and procedures for identifying, assessing, monitoring, and mitigating risks that may affect the successful implementation of the ROBO-KNOT project. It applies to all work packages, activities, and partners, ensuring the early detection and proactive management of technical, administrative, financial, ethical, and strategic risks throughout the project lifecycle.

4.1. Objectives:

- **Ensure early identification and assessment** of potential risks across all WPs.
- **Define clear roles and responsibilities** for risk ownership and mitigation.
- **Maintain continuous monitoring** and **timely reporting** of emerging risks.
- **Support informed decision-making** at all project governance levels (WP, PEC, GEA, PC, EC PO).
- **Guarantee compliance** with EU regulations, including ethics, data protection, and financial requirements.

4.2. Roles and Responsibilities

Roles	Responsibility in Risk Management
Project Coordinator (PC)	**Oversees** the overall risk management process; maintains and updates the Risk Register; reports critical risks to the PEC, GEA and EC.
Project Executive Committee (PEC)	**Reviews** major risks and approves mitigation strategies; makes decisions on escalated risks.
Work Package Leaders (WPLs)	**Identify, evaluate, and monitor** risks within their work packages; report monthly to the PC.
Quality Manager (QM)	**Ensures consistency** between risk management, quality control, and corrective measures.
All Partners	**Report** potential risks to the WPL and coordinator and contribute to mitigation efforts.
GEA	**Reviews** major risks and approves mitigation strategies; with the PEC involving the GEA.

4.3. Five-step Risk Management Process

1. **Risk Identification** – Each WPL continuously monitors activities and identifies potential risks related to scope, schedule, resources or external dependencies.
2. **Risk Assessment** – Risks are evaluated based on likelihood (Low/Medium/High) and impact (Low/Medium/High) using a 3x3 matrix.
3. **Mitigation Planning** – Each risk is assigned a mitigation strategy (avoid, reduce, transfer or accept) with an owner responsible for its implementation.
4. **Monitoring and Review** – Risks are reviewed monthly at WP meetings and every 3 months at PEC meetings. The Risk Register is updated accordingly.
5. **Reporting** – High-level risks and mitigation actions are documented in progress reports and, if necessary, communicated to the EC PO.

4.4. Escalation Procedure:

1. WPL identifies and assesses a risk.
2. If unresolved, the risk is escalated to the PC and the QM.
3. PC reviews the issue with QM and decides if it should be escalated to PEC.
4. The PEC determines corrective actions and involves the GEA if necessary.
5. If needed, EC PO must be informed.

4.5. Monitoring and Reporting Tools

1. **Annex 1 Risk register** – living document containing all identified risks, their status, and mitigation measures.
2. **Bi-Weekly WPL reports** – include updates on risk status and emerging issues.
3. **PEC Risk Review Sessions** – held every 3-months for strategic oversight.
4. **Quality Assessments** – Cross-check risks against deliverable quality and project progress.

Risk management is an **iterative and dynamic process**. The consortium commits to reviewing and updating the plan regularly to ensure that new risks are addressed proactively and that mitigation strategies remain effective throughout the project.

4.6. Annex 1 Risk register

Risk number	Description	Work Package	Proposed Mitigation Measures
1	Failure to recognise linkages between tasks, and critical paths. **i. Likelihood:** Low **ii. Severity:** Low	WP1, WP2, WP3, WP4	The PC and each WPL must flag task interdependencies and delivery-impacting delays early, and updates are reviewed during monthly coordination calls and quarterly PEC reviews.
2	To produce high-quality results, the consortium will have to dedicate more efforts, corresponding to higher budget. **i. Likelihood:** Low **ii. Severity:** High	WP1, WP2, WP3, WP4	Advanced monitoring mechanisms will be put in place by the PC to track the resources spent. All consortium partners are experienced in this field, being used to work efficiently in organisations that have sufficient resources to predict the amount of work to perform within the time limit of the project.
3	Lack of capacity of hosting organisations to host required number of secondees. **i. Likelihood:** Low **ii. Severity:** Medium	WP1	Modular approach to secondments, together with large number of partners involved in the action, ensures that, in case of necessity, secondments can be reorganised among consortium members to still deliver high quality results.
4	Effort overrun to hit quality. **i. Likelihood:** Medium **ii. Severity:** Medium	WP1, WP2, WP3, WP4	Regular checks of resource usage vs. plan, and if needed, redistribute PM across partners where appropriate.

5	EU visibility non-compliance. **i. Likelihood:** Low **ii. Severity:** High	WP1, WP2, WP3, WP4	Pre-flight checks; auto-insert compliance blocks in all templates; random spot checks before publication.
6	Insufficient number of applicants **i. Likelihood:** High. **Ii. Severity:** Medium to High (depending on the actual number).	WP1, WP3?	Intensify targeted outreach to sending institutions and widen dissemination; if needed, revise call conditions/position matching and extend or reopen deadlines.

5. Monitoring

Monitoring progress against project objectives, Key Performance Indicators (KPIs), and timelines is an essential part of ensuring the effective implementation of the ROBO-KNOT project. KPI monitoring allows the consortium to evaluate performance, identify potential delays or deviations, and take timely corrective actions to maintain quality and impact.

5.1. Monitoring methodology

Progress is monitored through a multi-level system combining continuous reporting, internal reviews, and periodic evaluations coordinated by the PC and WPLs. GEA ensures that project activities are progressing in compliance with the GA.

Monthly Work Package Updates:

- Bi-weekly, each WPL provides a brief progress update in email.
- Monthly, each WPL provides brief progress updates and reports on KPIs during monthly coordination calls.

Monthly Project Executive Committee (PEC) Reviews:

- The PEC reviews cumulative progress, validates KPI performance, and agrees on corrective measures if needed.

Deliverable and Milestone Reviews:

- Each deliverable and milestone contributes to the successful achievement of KPIs. Before submission, results are assessed against target values in collaboration with the QM.

6-monthly Progress Assessment:

- Each participant must provide an Interim Report.
- A consolidated evaluation of all KPIs and objectives is performed annually to ensure overall alignment with the project's Description of Action (DoA).

Reporting to the EC:

- According to the Reporting Periods, the ROBO-KNOT consortium submits technical and financial reports to the EC.

5.2. KPI definition and tracking

Each KPI is **SMART (Specific, Measurable, Achievable, Relevant, Time-bound)**. KPIs are recorded and tracked using a shared monitoring tool (Excel/SharePoint dashboard) maintained by the QM. KPIs are linked to the project's Specific Objectives (SOs).

- **SO1**: Promote cross-border and cross-sectoral secondments, foster academia-industry collaboration, and enhance interoperability of careers across sectors.
- **SO2**: Upskill researchers and innovators.
- **SO3**: Build R&I support staff capacity in academic organisations in Widening countries.
- **SO4**: Increase the impact of knowledge transfer activities in consortium organisations.

Project objective	KPI nr.	KPI Name and Description	Value	Responsible WP	Source of Data	Monitoring Frequency
SO1	KPI 1.1	N° researchers from Widening Countries completing a cross-border and cross-sectoral secondment.	24	WP1	Lists, eligibility check, selection decision, secondment start/end dates, confirmation of secondment completion. Sending Institution's List of secondees.	Continuous, during the application round and after the end of each selection, and completion of secondments.
SO1	KPI 1.2	N° female researchers from Widening Countries completing a cross-border and cross-sectoral secondment.	at least 30%	WP1, WP4	Lists, eligibility check, selection decision, confirmation of secondment completion. Sending Institution's List of secondees.	Continuous, during the application round and after completion of secondments.
SO1	KPI 1.3	N° months of secondment facilitated (aggregated)* **Researcher secondments can between 3 and 5 months long (Methodology Module 2.1).*	**Minimum:** 72 months, assuming 3-month secondment duration. **Average:** 96 months, assuming 4-month secondment duration.	WP1	Lists, selection decision, secondment start/end dates, confirmation of secondment completion. Sending Institution's List of secondees.	Continuous and after each application round, and completion of secondments.

SO2	KPI 2.1	N° hours of entrepreneurial and research commercialisation training delivered through SPIN: Explore and Robotics Commercialisation Bootcamps.	100 hours: 20 hours online training + 80 hours in-person training (i.e. 2 weeks full time)	WP1, WP2	Attendance, contribution, certificate records. ROBO-KONOT Bootcamp training List.	Continuous and after each application round, and completion of secondments.
SO2	KPI 2.2	N° researchers and innovators trained in commercialisation skills through Robotics Commercialisation Bootcamps.	24	WP1, WP2	Attendance, contribution, certificate records. ROBO-KNOT Bootcamp training List.	Continuous and after each application round, and completion of ROBO-KNOT Bootcamp.
SO2	KPI 2.3	Number of researchers expressing an interest in starting a spin-off or start-up company.	12+	WP2, WP4	Attendance, contribution, certificate records. ROBO-KONOT Bootcamp training List.	Continuous and after each completion of ROBO-KNOT activities (secondment, SPIN, Bootcamp).
SO2	KPI 2.4	Number of researchers undertaking knowledge transfer activities within their sending institutions.	24	WP1, WP4	Interim, final technical reports of sending institutions. Sending Institution's List of secondees.	Continuous, after each application round, and completion of ROBO-KNOT activities (secondment, SPIN, Bootcamp).
SO3	KPI 3.1	N° R&I support staff members from Widening Countries completing a cross-border secondment	12	WP1	Lists, eligibility check, selection decision, secondment start/end dates, confirmation of secondment completion. Sending Institution's List of secondees.	Continuous, during the application round and after the end of each selection, and completion of secondments.
SO3	KPI 3.2	N° female R&I support staff members from Widening	at least 30%	WP1, WP4	Lists, eligibility check, selection decision, confirmation of	Continuous, during the application round and

		Countries completing a cross-border secondment.			secondment completion. Sending Institution's List of secondees.	after completion of secondments.
SO3	KPI 3.3	N° months of secondment for R&I support staff facilitated (aggregated) *R&I Support Staff secondments can between 1 and 2 months long (Methodology Module 2.1).	Minimum: 12 months, assuming 1-month secondment duration. Average: 18 months, assuming 1.5-month secondment duration.	WP1	Lists, eligibility check, selection decision, secondment start/end dates, confirmation of secondment completion. Sending Institution's List of secondees.	Continuous, and after completion of secondments.
SO3	KPI 3.4	N° R&I support staff members trained through Innovation Leadership Bootcamp.	12	WP1, WP2, WP4	Attendance, contribution, certificate, records. ROBO-KONOT Bootcamp training File.	After each ROBO-KNOT Bootcamp.
SO4	KPI 4.1	N° EU member states directly or indirectly impacted by the action	at least 7	WP4	Interim and final technical reports of partners, WPLs and PC.	Continuous, internal reports every 6 months, report to EC as described in the GA (M12, M36).
SO4	KPI 4.2	N° events organised for dissemination activities that raise awareness of the action with relevant stakeholders	3	WP3	List of events and dissemination activities and report.	Continuous, during and after each event.
SO4	KPI 4.3	N° relevant conferences attended to present results from the action	5, >2000 people reached	WP2, WP4	Event reports, lists of participants.	Continuous, during and after each event.
SO4	KPI 4.4	N° report on best practices for cross-border and cross-sectoral talent sharing published	1 executive report and 1 policy brief >2 policy-making bodies engaged.	WP2, WP3	The report itself.	When the report is finalised.

SO4	KPI 4.5	Connections and synergies	Establishment of collaborations with at least 3 related initiatives or networks. Formation of synergies with at least 1 other project funded by ERA Talents. Organisation of at least 2 joint clustering and/or dissemination activities.	WP3, WP4	Reports on cooperations and joint initiatives.	Whenever each joint activity organised.
SO4	KPI 4.6	Website	1 news item/resource published per month. >20 website visitors monthly. >1000 site access times annually.	WP3	Website analytics.	Every 3 months.
SO4	KPI 4.7	Social media: social media impressions:	>500/month. number of posts using project-specific hashtags: >3/month. >10 new followers on LinkedIn monthly.	WP3	Social media tools.	Every 3 months.