

DIGI3D Project – Quality Management Framework

Digital Manufacturing in 3D Printing for Eco-Friendly and Sustainable Aerospace Applications

Erasmus+ KA220-HED-BD2EBF23 | December 2024 – May 2027

■ QUALITY MONITORING TEAM (QMT)

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Quality Monitoring Approach



QMT Methodology

The Quality Monitoring Team (QMT) follows a four-step cycle applied to every Work Package:

01

Define Objectives

Set measurable goals per WP before activities begin.

02

Collect Data

Gather quantitative data from partners and qualitative data via surveys/evaluation forms.

03

Analyze Findings

QMT evaluates indicators and assigns an overall score per WP.

04

Take Actions

If score falls below threshold, improvement action is demanded and reviewed by SC.

Governance Structure

Steering Committee (SC)

Strategic oversight, financial control, final approval of quality results.

Quality Monitoring Team (QMT)

Independent team conducting assessments after each WP. Reports to SC.

Project Management Teams (PMTs)

Operational teams per partner; implement corrective actions when required.



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WP1 – Project Management: Overview

WP1 covers the full administrative, financial, and operational management of DIGI3D across its 30-month duration (Dec 2024 – May 2027), led by ESOGU as coordinator.

Management Activities

01

Kick-off Meeting

Partnership agreement signed, roles confirmed, and collaboration tools set up.

03

Financial Management

Quarterly reviews by SC, real-time expenditure tracking, and interim/final reports to NA.

05

Communication & Coordination

Google Drive, Zoom, and WhatsApp support day-to-day coordination and monthly progress updates.

02

Transnational Project Meetings (TPMs)

4 TPMs held across partner countries for review, alignment, and decision-making.

04

Risk Management

Ongoing risk register, contingency planning, and partner compliance checks.

Quality Monitoring in WP1 (Process-Based)

Timely Deliverables and Reports

Submission milestones are tracked to ensure reports and management outputs are delivered on time.

Partner Attendance and Engagement

Participation in TPMs is monitored to confirm active contribution and shared decision-making.

Financial Compliance and Audit Readiness

Expenditure records, approvals, and supporting documents are maintained for transparent financial control.

Steering Committee Oversight

SC reviews decisions, monitors risks, and records governance actions in formal decision logs.

QMT Internal Audits

QMT conducts internal audits after each WP cycle to check process compliance and management consistency.

❑ WP1 does not have formal quality indicators. Quality assurance is embedded in governance processes and monitored by the QMT through process compliance checks.

WP2 – Educational Curriculum: Overview

WP2 produces the foundational educational curriculum titled "**3D Printing in Aerospace Industry**", including a Trainer's Guide. It sets the educational parameters for all subsequent WPs.

WP2 Activities

TPM-1: Kick-off Meeting

Eskişehir, Turkey – Feb 2025

The first Transnational Project Meeting launches the project officially. Partners sign the Partnership Agreement, confirm roles and responsibilities, set up shared digital tools (Google Drive, Zoom), and align on the curriculum development methodology and timeline.

TPM-2: Evaluation Meeting

Vilnius, Lithuania – Nov 2025

The second TPM reviews the completed IO-1 curriculum. Partners assess quality against the defined indicators, agree on Satisfactory Values for WP2 indicators, and provide feedback to finalize the curriculum before broader dissemination.

IO-1: Curriculum Design

All Partners – Dec 2024 – Aug 2025

All five partners collaboratively design the "3D Printing in Aerospace Industry" curriculum. This includes defining learning outcomes, selecting topics (materials, processes, sustainability, eco-design), structuring modules, and producing the accompanying Trainer's Guide for educators.

ME-1: Conference-1

Aveiro, Portugal – Dec 2025

The first Multiplier Event presents the DIGI3D curriculum to external stakeholders, academics, and industry representatives. It serves as a dissemination milestone and gathers external feedback to validate the curriculum's relevance and quality.

WP2 – Quality Indicators Table

#	Indicator	Type	Satisfactory Value
1	Number of publications utilized in curriculum preparation	Quantitative	≥ 20 scientific publications reviewed
2	Number of participants in curriculum preparation	Quantitative	≥ 10 researchers and subject-matter experts
3	Number of hours dedicated to curriculum preparation	Quantitative	100% of planned development hours completed
4	Number of colleagues informed about the curriculum	Quantitative	≥ 20 stakeholders reached through dissemination activities
5	Number of staff aware of the Trainer's Guide	Quantitative	≥ 20 staff members informed and trained
6	Performance of the educational curriculum	Qualitative	≥ 80% positive evaluation score in student surveys (1.1 and 1.2 aspects in the survey)
7	Contribution of partners to curriculum development	Qualitative	≥ 80% positive evaluation score regarding partner contribution
8	Responses from students and staff regarding the curriculum	Qualitative	≥ 80% survey response rate among students and staff
9	Dissemination actions for IO-1	Qualitative	At least 1 dissemination event with ≥ 20 participants

WP3 – Educational Materials: Overview

WP3 is the largest work package – it produces the textbook, supportive materials, and delivers three international student training events.



IO-2: Textbook

Comprehensive reference on 3D printing in aerospace. Open access via Aveiro.



IO-3: Supportive Materials

Presentations, lesson reviews, quizzes.
Publicly available. All partners contribute.



LTT-1,2,3: Student Trainings

One-week trainings at ESOGU (TR), UA (PT), VILNIUS (LT). 18 students per event (6 per partner).



ME-2: Conference-2

Dissemination event at ESOGU. ~20 participants. Aug 2026.



TPM-3: Evaluation Meeting

Aveiro, Portugal – Sep 2026

The third TPM reviews the completed IO-2 and IO-3 results.

WP3 – Quality Indicators: IO-2 Textbook & IO-3 Supportive Materials

#	Indicator	Type	Satisfactory Value
1	Number of papers cited in the textbook	Quantitative	≥ 20 scientific publications reviewed
2	Number of authors in the textbook	Quantitative	8-12 researchers and subject-matter experts
3	Number of hours dedicated to textbook preparation	Quantitative	100% of planned development hours completed
4	Number of colleagues informed about the textbook	Quantitative	≥ 20 stakeholders reached through dissemination activities
5	Number of supportive materials	Quantitative	≥ 3 distinct types of supportive materials developed and made available
6	Number of staff involved in supportive materials preparation	Quantitative	8-12 researchers and subject-matter experts
7	Number of hours dedicated to supportive materials preparation	Quantitative	100% of planned development hours completed
8	Number of colleagues informed about supportive materials	Quantitative	≥ 20 stakeholders reached through dissemination activities
9	Effectiveness and impact of the textbook and supportive materials	Qualitative	≥ 80% positive evaluation score in student surveys (2.2 and 2.3 aspects in the survey)
10	Contribution of partners to textbook and supportive materials	Qualitative	1 textbook chapter and accompanying supportive materials developed by each partner
11	Responses from students and staff regarding the materials	Qualitative	≥ 80% positive evaluation score in student surveys (2.2 and 2.3 aspects in the survey)
12	Dissemination actions such as webpages, conferences, stakeholders visits etc.	Qualitative	Website reaches ≥ 80,000 visitors within 5 years; ≥ 5 stakeholder visits conducted during the project, evidenced by attendance lists and/or photographic records



WP3 – Quality Indicators: LTT Student Training Events

Three one-week training events (LTT-1 at ESOGU, LTT-2 at UA, LTT-3 at VILNIUS).

#	Indicator	Type	Satisfactory Value
1	Number of students participating per training event	Quantitative	Each event hosts 18 students (6 per partner)
2	Number of training hours delivered per event	Quantitative	1 week based on the plan
3	Number of certificates issued	Quantitative	1 certificate per student
4	Pre/post knowledge assessment scores	Quantitative	80% positive evaluation score in student surveys (full 5th aspect in the survey)
5	Student satisfaction with training content	Qualitative	80% positive evaluation score in student surveys (full 3rd and 1.2 aspects in the survey)
6	Quality of hands-on practical sessions	Qualitative	80% positive evaluation score in student surveys (full 2.6 and 2.8 aspects in the survey)
7	Integration of digital tools in training delivery	Qualitative	80% positive evaluation score in student surveys (full 2.5 aspect in the survey)
8	Inclusiveness and accessibility of training events	Qualitative	Inclusive participation criteria applied, ensuring diversity, equal opportunities, and accessibility for all participants.



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WP4 – E-Learning Platform: Overview

An open-access E-Learning Platform hosting all DIGI3D educational materials: textbook (e-book), presentations, lesson reviews, and quizzes. Structured as an Open Faculty system. Publicly available beyond project end.

IO-4: E-Learning Platform Development

Sep 2025 – Nov 2026. All partners contribute modules.

Each partner develops and uploads learning materials, including e-book chapters, presentations, lesson reviews, and quizzes. ESOGU leads platform development and integration. The platform provides free public access during and after the project.

ME-3: Conference-3

Vilnius, Lithuania – Apr 2027. Dissemination to stakeholders.

Dissemination conference for educators, industry professionals, and policymakers. DIGI3D outputs (textbook, support materials, and e-learning platform) are presented to maximize impact.

TPM-4: Evaluation Meeting

Aveiro, Portugal – Dec 2026. Final review of platform.

TUA hosts the evaluation meeting. The QMT reviews platform quality, accessibility, and curriculum alignment. Partners assess indicators and agree on final improvements.

TPM-5: Closing Meeting

Eskişehir, Turkey – May 2027. Project wrap-up and future plans.

The final Transnational Project Meeting is hosted by ESOGU in EsPartners review project achievements, finalize reporting, and agree on sustainability actions to ensure continued use of DIGI3D results after project completion.

WP4 – Quality Indicators Table

Indicators for the E-Learning Platform work package.

#	Indicator	Type	Satisfactory Value
1	Number of visitors to the E-Learning Platform	Quantitative	Website reaches $\geq 80,000$ visitors within 5 years
2	Number of educational materials hosted on the platform	Quantitative	≥ 6 distinct types of educational materials developed and made available
3	Number of hours dedicated to platform development	Quantitative	100% of planned development hours completed
4	Number of colleagues informed about the platform	Quantitative	≥ 20 stakeholders reached through dissemination activities
5	Number of staff involved in platform preparation	Quantitative	8-12 researchers and subject-matter experts
6	Effectiveness and impact of the E-Learning Platform	Qualitative	Website reaches $\geq 80,000$ visitors within 5 years
7	Contribution of partners to the platform	Qualitative	8-12 researchers and subject-matter experts
8	Responses from students and staff regarding the platform	Qualitative	Positive feedback from independent students and staff collected through a case study evaluating the usability, accessibility, and content quality of the platform.
9	Dissemination actions for IO-4	Qualitative	At least 1 dissemination event with ≥ 20 participants
10	Sustainability of the platform post-project	Qualitative	The E-Learning Platform remains operational and publicly accessible after project completion, ensuring long-term availability of all educational materials

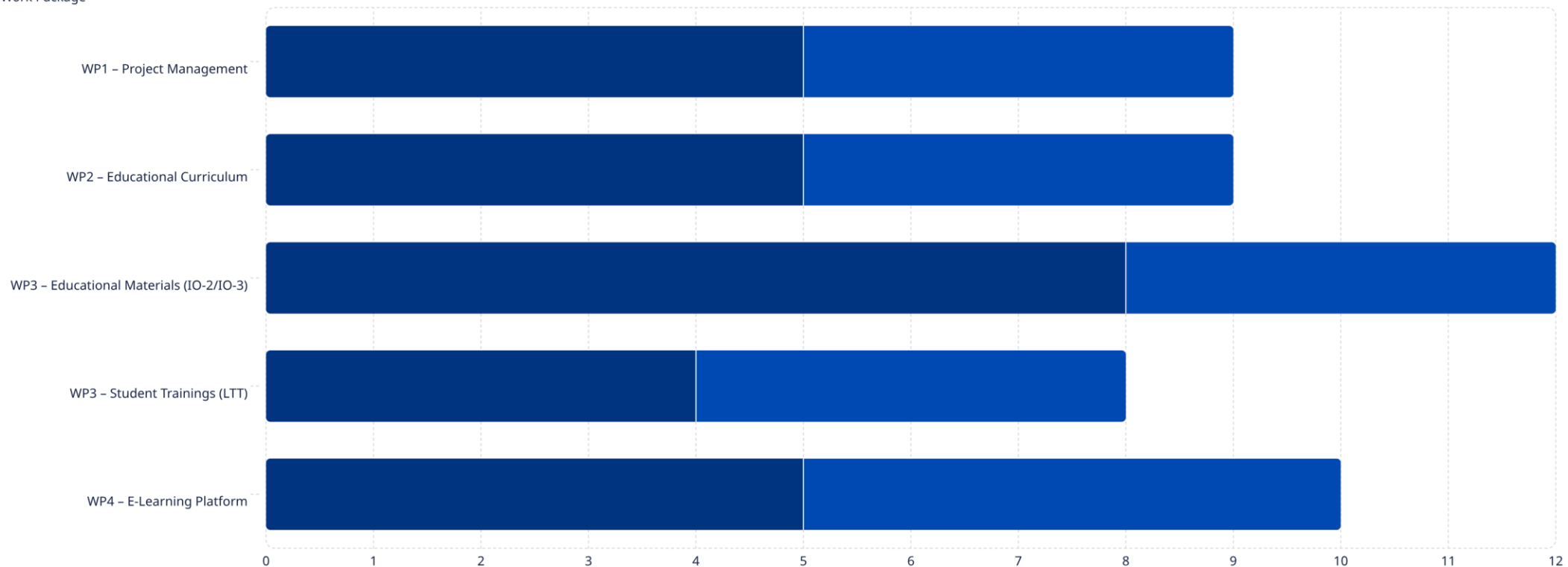
 Platform visitor data will be collected automatically. All other quantitative data will be gathered from partners by PMTs and submitted to QMT at each reporting interval.

Consolidated Indicator Summary by Work Package

Overview of the total number of indicators per WP and their distribution between quantitative and qualitative types.

■ Quantitative Indicators ■ Qualitative Indicators

Work Package



WP3 carries the highest indicator load, reflecting its complexity as the largest work package. All WPs maintain a balanced mix of quantitative (measurable counts/rates) and qualitative (evaluative/feedback-based) indicators to ensure comprehensive quality assessment.

Data Collection Methods by Indicator Type

Quantitative Data Collection

- **Partner Reporting**
PMTs submit logged hours, participant counts, and other counts directly to QMT at each reporting interval.
- **Automated Tracking**
Platform visitor counters, financial tracking systems, and milestone trackers provide real-time data.
- **Event Records**
Attendance lists, certificate registers, and conference participant counts collected by event organizer.

Qualitative Data Collection

- **Surveys & Evaluation Forms**
QMT designs surveys for each WP. Distributed to students, staff, and partners after key activities.
- **Peer Review by QMT**
QMT independently reviews outputs (curriculum, textbook, platform) against defined quality criteria.
- **Feedback at Events**
Structured feedback collected at all conferences, training events, and evaluation meetings.



All data collected feeds into the QMT's overall WP score. If the score falls below the agreed satisfactory threshold, SC is notified and PMTs are required to implement corrective actions.

Quality Evaluation Timeline

Key QMT evaluation points aligned with project milestones across the 30-month project duration.



NEXT STEPS

Action Items for Partners

To activate the quality management framework, the following actions must be completed by all partners.

Ongoing Responsibilities

- ☐ Submit quantitative indicator data to QMT at each reporting interval.
- ☐ Distribute and collect evaluation forms at all events and training sessions.
- ☐ Log dedicated hours for each IO activity and report to PMT lead.
- ☐ Complete satisfactory value columns for activity indicators before respective evaluation meetings.
- ☐ Participate in quarterly SC financial reviews and provide expenditure reports.

✔ This document serves as the working template for QMT operations throughout the project lifecycle.