



6G Vertical trials for Sustainability

Ecosystem Building Activities and Set Up (Initial)



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Abstract

This deliverable (D7.5) documents the initial set-up of 6G-VERSUS ecosystem-building activities carried out under Work Package 7 under **Task T7.4 (Training programme)** and **Task T7.5 (Acceleration and Scale-up Programme)**. For **T7.4**, D7.5 provides (i) a replicable methodology for course engineering and (ii) the corresponding syllabus structure for a Moodle-delivered, modular training offer supporting sustainability-driven 5G/6G research, experimentation, and innovation. The course comprises four thematic modules (5G fundamentals, evolution towards 6G, 6G use cases and trials, and innovation and entrepreneurship), aligned to a Knowledge–Skills–Abilities (KSA) framework and calibrated using Bloom’s taxonomy. The course corresponds to 2 ECTS (60 hours) and integrates unit-level Problem-Based Learning (PBL) as formative practice, while formal completion evidence is consolidated through Moodle-based auto-graded final evaluations. Unit-level PBL activities are retained as formative and optional applied-learning exercises. The PBL templates and rubrics are maintained as reusable pedagogical instruments for optional feedback, workshops, train-the-trainers replication, or future course iterations. For **T7.5**, D7.5 defines the initial programme scope, target stakeholder funnel, high-level service catalogue, operating model, and initial monitoring indicators, establishing the baseline for execution and outcome reporting in the final iteration deliverable.

Section 3, presented here in full, deals exclusively with T7.5.

T7.5 is organised around three connected strands. The first is the 6G-VERSUS Venture Accelerator: a ten-week virtual cohort programme for 25 EU-based startups and SMEs, combining technical and business workshops with business-development sessions, investor community engagement, and culminating in a public online Pitching Day. The second strand is a Scale-up and Market Expansion Service Lab, which extends support to the accelerator alumni and to an extensive network of more mature SMEs through group workshops, a curated resource toolkit, and a facilitated brokerage event. The third strand is a Knowledge Transfer and Community Partners Network, which uses existing European innovation intermediary networks - EBN, DeepTechAlliance, SERN, ESNA, and the EVOLVED-5G Community Partners Network - to recruit at least ten local Community Partners from five or more EU countries.

For each strand, the document sets out objectives, target stakeholder profiles, the engagement funnel, the service catalogue, the operating model and governance, interfaces. The annexes contain the open call, open call guidelines, open call evaluation, the workshop curriculum outlines, the Community Partners onboarding framework, the Scale-up toolkit structure, and the programme timeline. Execution evidence and outcomes will be consolidated in the final iteration deliverable, D7.8.

Keywords

Sustainable 5G and beyond training programme, 6G-VERSUS experimentation and trials, Moodle-based modular course, KSA and Bloom’s taxonomy constructive alignment, Unit-level PBL for 5G/6G use cases and validation, 6G startup acceleration programme, SME scale-up, knowledge transfer, community partners, Market Expansion Service Lab, 6G-VERSUS ecosystem building, innovation funnel, investor readiness, train-the-trainers, SNS JU ecosystem impact.

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Executive Summary

D7.5 reports the **initial setup of WP7 ecosystem-building activities** in 6G-VERSUS, covering **Task T7.4** and **Task T7.5**. The deliverable has two complementary contributions: (1) a complete and replicable definition of the **training programme** (T7.4) and (2) the structured initial design of an **acceleration and scale-up programme** (T7.5) to support innovation uptake and exploitation-oriented engagement. Task T7.5 is 6G-VERSUS's route-to-market for the project's research results.

For **T7.4**, the deliverable captures the outcome in two ways: (i) a course-building methodology (playbook-style) that can be reused by consortium partners and educators; and (ii) a syllabus blueprint defining the course structure at module, unit, and lesson level, consistent with Moodle delivery. The course (“Sustainable research and innovation in 5G and beyond”) is designed as a 2 ECTS programme (60 hours) structured into four modules: 5G fundamentals; technological evolution towards 6G; 6G use cases and trials; and innovation and entrepreneurship. The design is grounded in 6G-VERSUS technical baselines (architecture and use-case requirements, experimentation environment, trial planning, and KPI/KVI evaluation) and reuses validated curriculum-engineering practices from the 5G-DiGITS project (<https://5g-digits.eu>), which tackles the challenges posed by the rapid advancement of 5G technologies by fostering innovation, entrepreneurship, and knowledge sharing among higher education institutions, vocational education and training (VET) providers, and industry partners. Assessment prioritises applied competence through unit-level PBL used as formative practice in each unit, while formal completion evidence is consolidated through Moodle-based auto-graded final evaluations. Unit-level PBL activities remain formative and optional, supporting applied reasoning, self-checking, optional feedback, workshops, and future course iterations without creating mandatory additional workload.

Where T7.4 builds the knowledge base, T7.5 puts that knowledge to work by supporting startups, SMEs and innovation intermediaries that will carry 6G-enabled, sustainability-driven applications beyond the consortium and into the wider European startup and innovation ecosystem.

For **T7.5**, D7.5 establishes the initial structure required to launch acceleration and scale-up activities during the project: target stakeholder profiles and engagement funnel, a preliminary catalogue of support components (e.g., mentoring, workshops, business clinics, matchmaking and exploitation-oriented guidance), an operating model and governance assumptions, and a set of initial monitoring indicators appropriate for an “initial set-up” deliverable. Execution evidence and outcomes will be consolidated in the final iteration deliverable.

The programme is built around three strands, sequenced but able to run in parallel:

- **Strand 1: 6G-VERSUS Venture Accelerator.** A ten-week virtual cohort for 25 selected EU-based startups and SMEs. The sessions include live technical workshops (built on the 6G-VERSUS architecture, the V/N/AI-App triplet and the KPI/KVI framework), business sessions (Business Model Canvas, SWOT, value proposition, investor readiness), and tailored business support. Teams receive group mentoring from consortium experts, take part in a peer-learning session and a mid-programme review, and close with a public Pitching Day. Selection is managed through an Open Call launched in May 2026 and assessed by a mixed technical-business-investor panel.
- **Strand 2: Scale-up and Market Expansion Service Lab.** Post-acceleration support for cohort alumni, advanced startups, and more mature SMEs. It uses a deliberately group-based format: two market-expansion workshops, a curated toolkit (desk research guides, stakeholder mapping canvas, regulatory briefings), and a facilitated brokerage event that matches teams with consortium industry partners and invited stakeholders.
- **Strand 3: Knowledge Transfer and Community Partners Network.** A train-the-trainers and scouting model that taps the European networks, where consortium partners already belong to – European Business and Innovation Centre Network (EBN) via IPN, the EVOLVED-5G Community Partners Network (<https://evolved-5g.eu/>) via ENV, which helped industries (e.g., manufacturing, robotics, IoT) easily build and use applications powered by 5G networks, turning 5G into an open platform where developers and industries build, test, and deploy advanced network-based applications,

DeepTechAlliance (<https://www.deeptechalliance.org/>) a pan-European alliance of entrepreneurship hubs linked to universities and research institutions, Startup Europe Regions Network (SERN) (<https://startupregions.eu/>), and Europe Startup Nations Alliance (ESNA) (<https://www.esnalliance.eu/>). The target is at least ten Community Partners from at least five EU countries. They receive T7.4 training materials, a facilitation guide, and a scouting brief; in return, they refer candidate startups to the Accelerator and Scale-up Lab on an in-kind basis.

Six interfaces connect T7.5 to the project. D2.1 (architecture and use-case requirements) provides the backbone for the technical workshops with materials and tailored technical support. D3.1 (experimentation environment) informs the testbed-exposure component. D5.1 (trials plan and KPI/KVI framework) structures the evidence-readiness strand. D7.1 and D7.2 shape outreach and investor-readiness content. Relevant materials from the 6G-VERSUS Learning Platform, and in particular Mini-course 4, once available as a Moodle MVP or approved onboarding package, will be distributed to the 6G-VERSUS Venture Accelerator as part of the cohort onboarding material. The Learning Platform will also support the Community Partners train-the-trainers package as modules become available.

Monitoring is initially organised around fifteen KPIs covering applications, cohort completion, workshop delivery, Community Partners onboarding and exploitation pathway initiation. The risk register lists ten programme-level risks. The single highest-priority risk concerns participant expectations around testbed access - a risk the programme design addresses head-on through explicit scope statements repeated at every onboarding touchpoint.

D7.5 delivers the complete baseline needed to launch and run T7.5 during the project. Execution evidence, uptake metrics and lessons learned will be reported in D7.8.

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Acronyms and Abbreviations

Term	Description
3GPP	3rd Generation Partnership Project
AI	Artificial Intelligence
API	Application Programming Interface
B5G	Beyond 5G
BMC	Business Model Canvas

CI/CD	Continuous Integration / Continuous Deployment
DoA	Description of Action
E2E	End-to-End
EBN	European Business and Innovation Centre Network
ECTS	European Credit Transfer and Accumulation System
ESG	Environmental, Social, and Governance
ETSI	European Telecommunications Standards Institute
GA	Grant Agreement
ICT	Information and Communication Technologies
KPI	Key Performance Indicator
KSA	Knowledge, Skills, Abilities
KVI	Key Value Indicator
LMS	Learning Management System
LoS	Line-of-Sight
MANO	Management and Orchestration
MEC	Multi-access Edge Computing
ML	Machine Learning
MLOps	Machine Learning Operations
MNO	Mobile Network Operator
MQTT	Message Queuing Telemetry Transport
MVP	Minimum Viable Product
NFV	Network Functions Virtualization
NTN	Non-Terrestrial Networks
O-RAN	Open Radio Access Network
PBL	Problem-Based Learning
RAN	Radio Access Network
SERN	Startup Europe Regions Network
SLA	Service Level Agreement
SME	Small and Medium-sized Enterprise
SWOT	Strengths, Weaknesses, Opportunities, Threats
UE	User Equipment

1 Introduction

6G-VERSUS is a Horizon Europe research and innovation project under the HORIZON-JU-SNS-2024-STREAM-D-01-01 call. Its purpose is to advance sustainable, inclusive 6G networks through large-scale vertical trials across six European testbeds. At the heart of the project is the 6G Application Triplet, a Vertical Application (V-App), a Network Application (N-App) and an AI-assisted Application (AI-App), used as the organising concept for next-generation service design. The trials span renewable energy management (Bulgaria and Finland), emergency response (Greece), environmental monitoring (Portugal), and water infrastructure management (France) and run at partner sites in the respective countries.

Work Package 7 ensures that these technical results reach a wider audience. It does so through two complementary instruments: Task T7.4, which runs a structured training programme to upskill stakeholders across the value chain, and Task T7.5, which establishes the acceleration and scale-up infrastructure to support innovation uptake by startups, SMEs, and ecosystem actors.

6G-VERSUS develops and validates sustainability-driven 6G capabilities through large-scale vertical trials across multiple European testbeds and stakeholder ecosystems. A key enabler for ecosystem impact is the ability to onboard and upskill diverse participants (students, researchers, industry engineers, vertical stakeholders, and innovation actors) so that they can meaningfully engage with the project's architecture concepts, experimentation environment, and validation practices.

Within this context, WP7 includes two complementary ecosystem-building instruments. **Task T7.4** establishes a structured, reusable training programme that supports onboarding and upskilling of diverse stakeholders (students, researchers, industry engineers, vertical actors, and educators). **Task T7.5** complements this by defining the initial design and set-up of an acceleration and scale-up programme intended to support innovation uptake (e.g., start-ups, SMEs, innovators, and ecosystem actors), leveraging the project's technical assets and WP7 exploitation framing. Accordingly, this deliverable documents the initial set-up of both tasks: a fully specified training methodology and syllabus blueprint (T7.4) and a structured outline of the acceleration/scale-up operating model to be executed and evidenced in the final iteration deliverable.

1.1 Project Overview

6G-VERSUS is a collaborative research project under the HORIZON-JU-SNS-2024 Work Programme. It focuses on advancing sustainable and inclusive 6G networks by integrating results from previous research into a shared experimental infrastructure. The project currently supports both the validation of emerging technologies and the evaluation of relevant use cases across six 6G testbeds in Europe. The work explores key technical directions, including AI-native orchestration, modular and open architectures, and energy-aware network functions. Particular emphasis is placed on the evolution of vertical applications and on the role of machine learning in enabling intelligent, adaptive network behaviour.

Pilots across the project's testbeds target real-world challenges in sectors like renewable energy, emergency response, and water and waste management. These trials also introduce a key innovation: the 6G Application triplet, which combines a Vertical App (V-App), a Network App (N-App), and an AI-assisted App (AI-App). Together, they deliver distributed, AI-enhanced services and represent a shift in how next-generation network services are structured and deployed. The project follows a three-step methodology: transforming use cases into 6G Applications, testing and validating them on the enhanced platforms, and assessing their impact from sustainability (environmental, societal, and economic) perspectives. Alongside the technical work, 6G-VERSUS engages with stakeholders from research, industry, and policy to ensure the outcomes are aligned with broader sustainability and innovation goals.

1.2 Scope and Intended Audience

1.2.1 Scope

D7.5 documents in two sections the **initial set-up** of ecosystem-building activities under WP7, covering **Task T7.4 (Training programme)** in Section 2 and **Task T7.5 (Acceleration and scale-up programme)** in Section 3.

- **T7.4 (Training programme):** The deliverable provides (i) a replicable methodology for building and maintaining the training course, including needs-to-outcomes traceability, KSA mapping, Bloom calibration, Moodle delivery assumptions, unit-level PBL integration, and quality assurance steps; and (ii) a syllabus blueprint specifying the module/unit/lesson structure, workload model (2 ECTS / 60 hours), and assessment approach. The deliverable focuses on syllabus-level definitions and course-engineering logic, rather than full lesson scripts, which are maintained in the LMS.
- **T7.5 (Acceleration and scale-up programme):** The deliverable defines the initial programme structure and interfaces, including objectives and scope, target stakeholder profiles and engagement funnel, a preliminary service catalogue, operating model and governance, interfaces with project assets and WP7 exploitation/dissemination activities, and a set of initial monitoring indicators. As an “initial” deliverable, this section establishes the baseline for programme execution and subsequent outcome reporting in the final iteration deliverable. It defines the structures, methodologies and baseline assumptions needed to launch T7.5 activities, rather than reporting execution results (which will be consolidated in D7.8). The section covers: the strategic scope of T7.5 and its relationship to T7.4 and the broader WP7 impact logic; target stakeholder profiles and the engagement funnel from outreach to outcome; the full service catalogue across the three strands; the operating model, partner roles, governance gates and coordination arrangements; the interfaces with project technical baselines and exploitation outputs; an initial set of monitoring KPIs with targets and data-collection methods; a risk register with mitigations calibrated to the programme's resource envelope; and the roadmap to D7.8 evidence consolidation. The annexes provide the Open Call, the Open Call guidelines, the evaluation rubric, workshop curriculum outlines, the Community Partners onboarding framework, the Scale-up toolkit structure, and the programme timeline.

1.2.2 Intended audience

The intended audience includes:

- 6G-VERSUS consortium partners responsible for ecosystem building, dissemination, and exploitation, who require a clear baseline for implementation and coordination.
- Educators and trainers who may reuse the training methodology and syllabus (train-the-trainers) and adapt modules for local contexts.
- External stakeholders (academia, industry, verticals, start-ups/SMEs and innovation actors) seeking transparency on the ecosystem-building offer, its entry points, and its alignment to project baselines and impact logic.

1.3 Relation to Milestones and Other Deliverables

D7.5 is informed by, and aligned with, the project's technical and WP7 baselines, and it is designed to evolve through the project's iterations.

- **Architecture and use case requirements:** The training content and trial-oriented PBL activities reflect the project's architecture and use case requirements baseline, which informs what learners must understand to engage meaningfully with the project's experimentation and validation logic.
- **Experimentation environment and testbeds:** The practical and trial-facing parts of the training are anchored to the experimentation environment baseline, ensuring that course activities remain consistent with the tools and capabilities available to the consortium and stakeholders.
- **Trial planning and KPI/KVI evaluation frameworks:** Module 3 and its PBL activities are aligned with the project's trial planning logic and KPI/KVI methodology, enabling learners and stakeholders to interpret and structure evaluation consistently.
- **Dissemination, communication, and exploitation framing (WP7):** The training programme and the acceleration/scale-up set-up are positioned as ecosystem-building assets that support stakeholder engagement, dissemination, and exploitation objectives.

D7.5 represents the **initial setup** and therefore primarily references the “initial” versions of technical baselines available at this stage. The final iteration deliverable will consolidate updates resulting from (i) evolution of technical baselines and trial evidence produced during the project and (ii) execution of the ecosystem-building activities, including uptake metrics and improvement actions.

T7.5 sits on top of, and feeds back into, several other project outputs:

- **D2.1** (platform architecture and use-case requirements) the technical backbone for the Accelerator's workshops.
- **D3.1** (experimentation environment) the basis for the testbed-exposure component.
- **D5.1** (trials plan and KPI/KVI framework) structures the evidence-readiness and KPI/KVI literacy content.
- **D7.1** (dissemination and communication plan) aligns outreach and channel selection for the Open Call.
- **D7.2** (standardisation and exploitation plan) shapes the investor-readiness framing and the Learning Platform, and specifically Module 4 content reused from T7.4.
- **D7.5 Section 2** (T7.4 training programme) provides the Learning Platform as accelerator's cohort onboarding content and as the basis for the Community Partners train-the-trainers package.

The deliverable D7.8 will report execution evidence, uptake data and lessons learned once activities have run.

1.4 Structure of the Document

The remainder of this deliverable is organised as follows:

- **Section 2** describes the **Training Programme Design and Set-up (Initial) (T7.4)**, including: (i) a needs assessment, (ii) the course engineering methodology (KSA/Bloom alignment, unit-level PBL, QA), and (iii) the curriculum structure and Moodle implementation approach. The section concludes with a short summary and next steps for the training programme.
- **Section 3** describes the **Acceleration and Scale-up Programme Design, Set-up (Initial) (T7.5)**, including: objectives and scope, target stakeholder profiles and engagement funnel, initial service catalogue, operating model and governance, interfaces with project assets, initial monitoring indicators, risks and mitigations, and an outlook toward the final iteration deliverable.
- **Section 4** provides overall conclusions.
- **Section 5** lists references.
- **Annexes** provide reusable materials supporting the training programme implementation, including the unit-level PBL package template, formative feedback rubric, production control tables, golden unit example, and feedback survey instruments.

2 Training Programme Design and Set-up (Initial)

2.1 Needs Assessment

This section summarises the training needs addressed by Task T7.4, drawing on: (i) the 6G-VERSUS Description of Action and project ambition on sustainability-driven 6G validation; (ii) technical and methodological baselines from 6G-VERSUS deliverables on architecture, testbeds, and trial planning; (iii) evidence and methodology reused from the 5G-DiGITs project needs assessment work, which already consolidated multi-stakeholder education and skills gaps in advanced connectivity; and (iv) an internal consortium survey and the initial course management workbook used to validate priorities, preferred formats, and role-specific expectations.

2.1.1 Target audiences and capacity-building objectives

The training programme is designed as an ecosystem capacity-building instrument for a heterogeneous audience that spans:

- **Students and early-stage researchers**, requiring structured onboarding to advanced 5G/6G concepts, sustainability-oriented design choices, and experimentation practices.
- **Industry and vertical stakeholders**, requiring an actionable understanding of how to engage with the 6G-VERSUS experimentation environment, interpret KPIs/KVIs, and translate trial insights into deployment and innovation decisions.
- **Educators and trainers**, requiring re-usable educational artefacts, learning activities, and assessment patterns suitable for Moodle-based delivery and for “train-the-trainers” replication.

This aligns with the project’s focus on evaluating and validating the sustainability impact across multiple ecosystems and stakeholders, as well as enabling reproducible large-scale trial execution and assessment.

2.1.2 Technical needs: what participants must be able to understand and do

The 6G-VERSUS technical baseline implies that participants must acquire not only conceptual knowledge, but also a working understanding of how sustainability-driven 6G experimentation is structured and operationalised.

Key technical needs include:

1. **Foundation in 5G systems and evolution to 6G**
Participants need a coherent baseline on 5G architecture (RAN/Core/transport), cloud-native principles, slicing, orchestration, and the technology trajectory toward 6G capabilities (e.g., energy-aware operation, AI/ML integration, and new spectrum/air-interface directions). This is a prerequisite for interpreting cluster trial configurations and technical KPIs.
2. **Understanding the 6G-VERSUS architecture and application paradigm**
Participants must understand the project’s layered and modular approach, including the V-App / N-App / AI-App triplet and the role of programmable exposure interfaces and ML-Ops-enabled data handling across the edge–cloud continuum. This enables participants to reason about how use-case intents (e.g., energy efficiency, latency, resilience) are translated into system behaviour.
3. **Experimentation environment and testbed-aware skills**
Given the multi-cluster nature of 6G-VERSUS, participants must understand how experimentation tools and testbeds are organised, what extensions and capabilities exist per site, and how integration evolves over time. This is essential for meaningful engagement with trials, measurements, and replication of experiments across heterogeneous infrastructures.
4. **Trial planning logic and KPI/KVI evaluation literacy**

Participants need practical literacy in trial planning phases and in KPI/KVI reasoning, including why KPIs/KVIs evolve iteratively, how test cases are defined, and how measurement/monitoring tools

support consistent evaluation across clusters. This need is central because the project explicitly targets both technical performance verification and sustainability value validation.

2.1.3 Ecosystem and innovation needs: translating trials into adoption and impact

Beyond technical skills, 6G-VERSUS requires ecosystem actors to translate trial outputs into informed decisions, effective dissemination, and actionable exploitation. Therefore, the programme must also address:

- **Sustainability reasoning and impact framing:** ability to relate technical results to environmental, societal, and economic value dimensions, consistent with KVI-driven assessment approaches.
- **Use-case and stakeholder engagement skills:** ability to understand the roles within clusters (testbed owner, technology provider, end user, use-case champion) and collaborate across them to define, run, and interpret experiments.
- **Innovation and entrepreneurship fundamentals:** ability to frame business models and adoption pathways for sustainability-driven digital use cases, bridging research results and market/operational reality.

2.1.4 Evidence reuse from 5G-DiGITs and consolidation approach

The programme reuses evidence and patterns from the 5G-DiGITs project (<https://5g-digits.eu/>) deliverables to avoid duplicating needs-assessment work already performed with multi-stakeholder participation, and to ensure continuity in competency framing (knowledge/skills/abilities), teaching methods, and assessment design. The 5G-DiGITs needs assessment combined quantitative and qualitative instruments (questionnaires and interviews) and synthesised cross-stakeholder gaps relevant to beyond-5G skills development. The 5G-DiGITs project is selected, since its learning platform in less than 18 months of operations, had over 300 learners with validated 2 ECTS-level content, which was included in university curriculum and validated by 83 students (Bachelor, Masters, PhD).

The internal consortium survey and the initial course management workbook are used as complementary inputs to validate the relative emphasis across modules (e.g., fundamentals vs trials/evaluation vs innovation) and to ensure the delivery model is compatible with a Moodle-based training deployment.

2.2 Methodological Approach

This section describes how the T7.4 training programme is designed, structured, and quality-assured. The approach aligns with best practices previously implemented in 5G-DiGITs (notably the KSA-driven curriculum engineering workflow) and is adapted to 6G-VERSUS constraints: a single course with four modules, heterogeneous audiences, and strong coupling to ongoing trial execution and evaluation.

2.2.1 Overall instructional design approach

The training programme follows a structured instructional design logic based on **constructive alignment**: learning outcomes are defined first, then aligned to (i) knowledge/skills/abilities (KSA) expectations, (ii) learning activities and teaching methods in Moodle, and (iii) assessment instruments that provide evidence of achievement.

The course is organised into **four modules** that correspond to coherent competency blocks: (1) 5G fundamentals, (2) evolution toward 6G technologies, (3) 6G use cases and trials (including KPIs/KVIs), and (4) innovation and entrepreneurship. This modular design supports flexible participation, re-use in train-the-trainers contexts, and progressive learning from foundations to application and ecosystem impact.

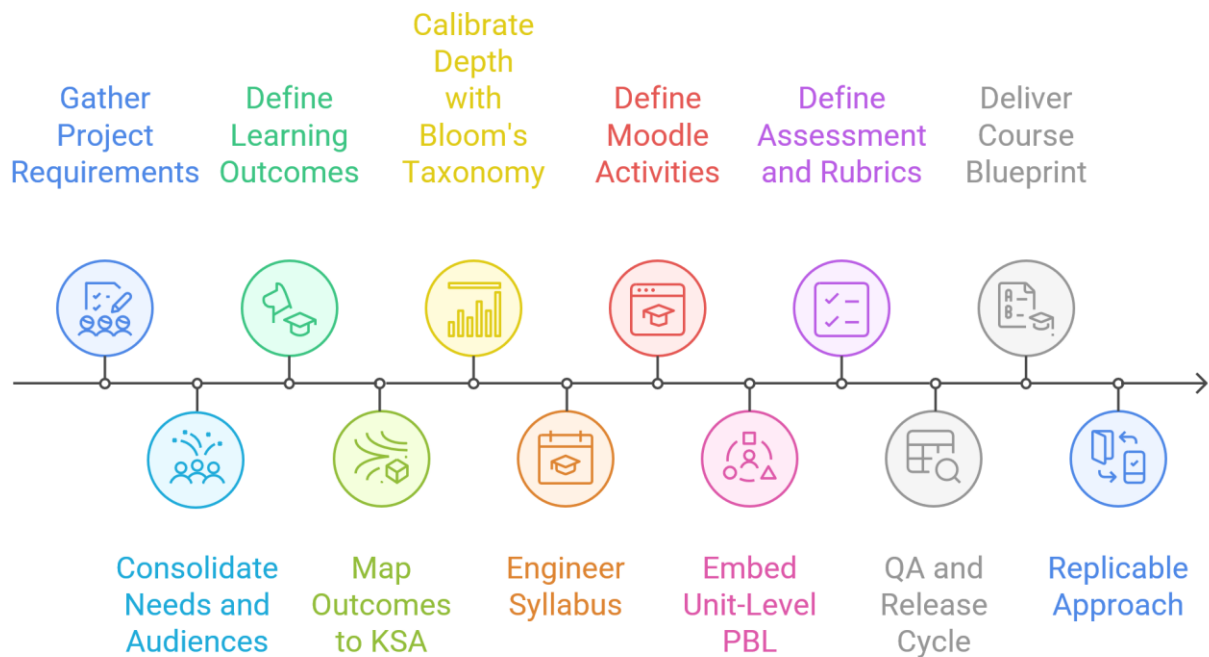


Figure 1. Course engineering workflow

2.2.2 KSA (Knowledge, Skills, Abilities) framework

A KSA framework is used to ensure that the programme moves beyond awareness-building to capability-building:

- **Knowledge** specifies what learners must understand (concepts, architectures, standards, evaluation frameworks).
- **Skills** specify what learners must be able to do (e.g., interpret KPI/KVI definitions, reason about trial plans, map requirements to architectural choices, use structured templates to define test cases or evaluation logic).
- **Abilities** specify transversal competencies (communication, collaboration, decision-making, responsible innovation, sustainability mindset) needed to operate effectively in cross-stakeholder trial ecosystems.

This KSA-based structuring is consistent with the methodology used in 5G-DiGITs, where learning outcomes are systematically mapped to KSA items and then used to build modules, units, and assessment plans.

2.2.3 Alignment with Bloom's Taxonomy

Bloom's taxonomy is applied to calibrate the intended cognitive depth per topic and to ensure appropriate assessment choices:

- Lower Bloom levels (remember/understand) are used for foundational concepts (e.g., core 5G architecture elements, baseline terminology).
- Mid-levels (apply/analyse) are used for trial-related reasoning (e.g., applying KPI definitions to scenarios, analysing trade-offs in energy-aware orchestration).
- Higher levels (evaluate/create) are used for synthesis activities in the later modules (e.g., defining a use-case evaluation plan, proposing sustainability-aligned innovation pathways or business model hypotheses).

This alignment ensures that the programme remains accessible, while still enabling advanced learners to reach creation-level competence through targeted activities.

To ensure consistent depth across units and alignment between learning outcomes and assessment, each unit is assigned a dominant Bloom level (and, where needed, a secondary level). The unit-level Bloom mapping and its linkage to learning evidence, optional PBL activities, formative checks, and final evaluation items are provided in **Annex D**.

2.2.4 Integration of needs assessment and market evidence

The training design explicitly integrates evidence from:

- the 5G-DiGITs needs assessment results and curriculum engineering workflow, including its approach to translating stakeholder input into prioritised learning outcomes;
- 6G-VERSUS project baselines on architecture, testbeds, and evaluation frameworks, ensuring that the training content is anchored to the project's actual experimentation and trial logic;
- internal consortium inputs (survey and planning workbook) to validate feasibility, sequencing, and the practicality of Moodle-based delivery for target audiences.

As in 5G-DiGITs, the approach prioritises traceability: each module and unit can be justified by (i) a training need, (ii) a relevant project baseline, and (iii) corresponding learning or completion evidence.

2.2.5 Active learning and micro-PBL integration

To avoid a purely theoretical course, the programme integrates **micro-Problem-Based Learning (micro-PBL)** activities. These are short, bounded scenarios inspired by 6G-VERSUS trials and cluster logic (rather than large capstone projects), enabling learners to apply concepts with limited overhead.

Micro-PBL activities are embedded across the training programme as formative applied-learning activities. In the first Moodle release, corresponding to **Mini-course 1: 5G fundamentals**, each unit includes a guided PBL lecture or scenario walkthrough and a proposed formative PBL exercise. These activities translate foundational 5G concepts into applied design tasks, such as architecture mapping, RAN design, private 5G core/service design, transport network design, and ZSM/MAPE-K automation planning. In later mini-courses, the same approach will be extended to trial planning, KPI/KVI evaluation, sustainability reasoning, and innovation-oriented activities.

2.2.6 Quality assurance and governance of the training

Quality assurance is implemented through a light but explicit governance model that ensures: (i) coherence across the training programme, (ii) technical correctness and project specificity, and (iii) constructive alignment between learning outcomes, learning activities, and completion evidence.

The training programme is coordinated under **T7.4**, led by **UPV**, while mini-course production and validation follow a distributed responsibility model. UPV coordinates the Moodle-based training structure and leads the implementation of the first three mini-courses: **Mini-course 1: 5G fundamentals**, **Mini-course 2: Technological evolution towards 6G**, and **Mini-course 3: 6G use cases and trials**. The third mini-course requires stronger input from pilot leaders, use-case owners, and technical partners, because its content depends on the evolution of the project's clusters, trial scenarios, testbed capabilities, 6G application triplets, and KPI/KVI evaluation activities.

The fourth mini-course, **Innovation and entrepreneurship in 5G, 6G and emerging connectivity**, is led by **ENV**, given its expertise and role in entrepreneurship, innovation support, ecosystem-building activities, and the T7.5 Acceleration and Scale-up Programme.

Partner contribution and validation are organised, through focused review loops. Relevant partners are asked to confirm technical accuracy, terminology consistency, and alignment with project baselines where the training material refers to architecture, experimentation environments, testbeds, trial planning, KPI/KVI evaluation, 6G-VERSUS use cases, or innovation and exploitation topics.

Quality checks are performed at two levels:

- **Pedagogical alignment:** learning outcomes are mapped to KSA items and calibrated using Bloom's taxonomy; formative PBL activities, self-checks, optional exercises, and final evaluation questions are checked for coherence with the intended outcomes.
- **Editorial and delivery consistency:** unit structure, terminology, workload assumptions, navigation, learner instructions, references, and Moodle activity settings are checked for consistency across mini-courses and for plausibility under the 2 ECTS / 60-hour model.

Standardised templates support reproducibility in Moodle. These include lesson packaging templates, PBL scenario templates, optional artefact formats, self-check or feedback guidance, and final evaluation configuration patterns. This reduces variability across mini-courses, supports a consistent learner experience, and facilitates reuse in workshops or train-the-trainers contexts.

Traceability between project baselines, learning outcomes, Moodle activities, optional PBL artefacts, and final evaluation evidence is documented through the traceability matrix. This matrix also acts as a maintenance instrument by enabling targeted updates when upstream project baselines evolve.

2.2.7 Traceability matrix (from project baselines to learning evidence)

To ensure that the training programme is **project-specific** (6G-VERSUS-grounded) rather than generic, and to strengthen replicability of the course engineering approach, the course design follows a traceability principle: **each unit is linked to one or more 6G-VERSUS baselines** (architecture and requirements, experimentation environment, trial planning, KPI/KVI evaluation, and WP7 dissemination/exploitation framing) and is associated with corresponding learning evidence, such as optional PBL activities, formative checks, final evaluation items, or Moodle-based completion evidence. This approach supports constructive alignment by making explicit how the course content and assessment derive from, and contribute to, the project's experimentation and validation logic.

The traceability matrix below operationalises this principle by mapping Module/Unit → primary 6G-VERSUS source(s) → formative applied-learning evidence. In line with the current Moodle implementation model, unit-level PBL exercises are used as formative and optional activities, while formal mini-course completion is based primarily on Moodle-based auto-graded final evaluations. This matrix also serves as a maintenance tool: when a baseline deliverable evolves, the corresponding units, optional PBL activities, quiz questions, references, and final evaluation items can be systematically identified and updated.

Note: The table lists proposed formative unit-level PBL activities. These activities support applied understanding and optional feedback, but they are not mandatory summative assessment instruments in the current Moodle release.

Module / Unit	Unit focus (from syllabus)	Primary 6G-VERSUS baseline (s)	Formative unit-level PBL exercise (proposed)
M1 Unit 1	5G general concepts (architecture, key technologies, use cases, KPIs)	D2.1 (architecture + use case requirements), D5.1 (KPI/KVI evaluation framing)	Worked Smart Factory architecture mapping: complete a one-page structured table moving from workloads and traffic models to requirements, RAN/Core/MEC/DN architecture mapping, justified design choices, candidate KPIs, and at least one KVI linked to sustainability or operational value.
M1 Unit 2	Radio Access Network (NR, spectrum,	D2.1 (requirements/constraints),	Scenario-driven RAN Design Note: define requirements for a

	MIMO/beamforming, O-RAN, slicing)	D3.1 (testbed capabilities relevant to RAN)	smart agriculture or port-monitoring scenario; select spectrum and deployment model, RAN architecture and functional split, MIMO/beamforming configuration, slicing/DSS strategy, KPI targets, and key assumptions.
M1 Unit 3	Core network architecture (SBA, cloud-native, slicing, MEC integration, UPF offload)	D2.1 (architecture baseline), D3.1 (platform/integration baseline)	Private 5G Core and service design artefact: justify the NPN deployment model, map relevant SBA/core functions, define slice intent and PRB allocation, assign QoS/5QI and TSN treatment where relevant, place UPF/MEC functions, and justify traffic, latency, and service-continuity assumptions.
M1 Unit 4	Transport networks (fronthaul/midhaul/backhaul, SDN, TSN, satellite integration)	D3.1 (testbed integration assumptions, connectivity options)	End-to-end 5G transport network design brief: classify service requirements, map fronthaul/midhaul/backhaul segments, select transport technologies, define SDN-controlled slice paths, identify TSN treatment for deterministic traffic, and justify satellite or fallback connectivity options where relevant.
M1 Unit 5	Network & service management (orchestration, ZSM, SLA assurance, APIs)	D3.1 (tooling/orchestration context), D5.1 (measurement/evaluation logic for assurance)	ZSM/MAPE-K automation plan: define SLA/SLO/SLI relationships, monitoring signals, closed-loop analysis, planning and execution logic, and API-based remediation actions; optionally extend the pattern to RAN energy-saving and cell deep-sleep control.
M2 Unit 6	B5G enablers (exposure, triplet model, MLOps/xAI, edge-native/continuum, RIS, NTN, etc.)	D2.1 (B5G technology directions & requirements), D3.1 (AI/ML framework + platform evolution)	Enabler selection rationale (architectural view): select 2-3 enablers (incl. triplet as pattern if relevant), state expected architectural impact (interfaces/exposure), and feasibility constraints (testbed/tooling dependencies)
M2 Unit 7	Sustainability strategies & enablers (energy-efficient RAN, RES, smart grids, green edge/IoT)	D5.1 (sustainability KPIs/KVIs approach), D2.1 (use-case sustainability framing)	“Sustainability intervention plan”: propose 2 measures; specify how you will evidence improvement using KPI/KVI-style indicators.

M3 Unit 8	Advanced 5G and future 6G use cases	D2.1 (use case families & requirements), D5.1 (evaluation framing)	Use case decomposition: map stakeholders + requirements + candidate KPIs/KVIs; identify main technical risks/assumptions.
M3 Unit 9	6G-VERSUS clusters and use cases (Greece/Spain/France/Portugal/Bulgaria/Finland)	D2.1 (cluster use cases & architecture), D3.1 (testbeds), D5.1 (trial planning/evaluation)	Cluster trial “one-pager”: scenario + sustainability challenge + testbed resources + proposed evidence (KPI/KVI + data sources).
M3 Unit 10	Triplets of 6G applications (V-app, N-app, AI-app)	D2.1 (6G application triplet concept and architectural role)	Triplet blueprint: define V/N/AI app responsibilities, interfaces, and flows, and what is measured to show benefit in the selected use case.
M3 Unit 11	KPI & KVI definition methodology (and project KPIs/achievements)	D5.1 (KPI/KVI methodology + measurement logic), plus linkage to D2.1 use-case requirements	KPI/KVI set + measurement plan: define indicators, data sources, sampling, and interpretation; include expected trade-offs.
M4 Unit 12	Innovation & entrepreneurship (idea to business, tools incl. SWOT/BMC, success stories)	D7.2 (exploitation orientation), D7.1 (audience and dissemination logic)	Venture concept pack: problem–solution fit + BMC/SWOT + value proposition incl. sustainability angle; short pitch outline.
M4 Unit 13	Circular economy, regulation, and 5G	D7.2 (sustainability/exploitation context, IPR/open-source orientation where relevant)	Compliance & circularity brief: identify regulatory considerations and circularity/ESG implications for a chosen 5G/6G service.

Table 1. Traceability matrix between D7.5 units, 6G-VERSUS baselines, and formative unit-level PBL activities.

A DoA-level compliance matrix mapping T7.4 commitments to Moodle evidence and D7.8 reporting is provided in Annex C.

2.3 Curriculum Structure

2.3.1 General information

Course Title	Sustainable research and innovation in 5G and beyond
Learning Outcomes	1. Understand the fundamental concepts of 5G 2. Explore the B5G and sustainability enablers that will contribute to the evolution towards 6G 3. Facilitate the onboarding of new researchers and stakeholders in the 5G R&D field 4. Cultivate abilities to innovate and become an entrepreneur related to 5G
ECVET/ECTS Credits	2 ECTS

Total Learning Hours	60 hours (aligned with the ECTS standard workload assumption of 25–30 hours per credit). Structure: • Conceptual lectures: 30 hours • Practical activities, including guided PBL scenarios: 15 hours • Independent study, including references and self-study: 15 hours
Audience	Targeted at engineering students, researchers with non-to-medium background in 5G and beyond technologies, and stakeholders with use cases leveraging 5G and beyond technologies
Prerequisites	• Basic understanding of digital communication systems (Must) • Familiarity with sustainability and environmental concepts (Should) • General knowledge of technological enablers such as AI, edge computing, and virtualisation (Should)
Language of Instruction	English
Coordinator	Polytechnic University of Valencia (UPV)

Table 2. General information about the training course

2.3.2 Course description

This course is part of the 6G-VERSUS implementation work plan, focusing on a set of dimensions that can help students contribute to the research and innovation within the 5G and beyond field. Particularly, the course provides a set of Knowledge, Skills, and Abilities (KSAs), covering fundamental and novel technical aspects, practical implementation of real-world use cases, as well as the innovation and entrepreneurship dimension.

The course is designed to address students with different degrees of knowledge. For instance, students with a low understanding of the 5G field can find the fundamental aspects more useful than the novel, innovative features brought by the novel **sustainability techniques** and **technological enablers** for the upcoming generation. Others might be more interested in the practical aspects, either about **real use case examples and applications** of the technology or in its **entrepreneurship ecosystem**.

The course is structured around four thematic modules:

- **Module 1:** 5G fundamentals
- **Module 2:** Technological evolution towards 6G
- **Module 3:** 6G use cases and trials
- **Module 4:** Innovation and Entrepreneurship in 5G, 6G and Emerging Connectivity

2.3.3 Target audience per module

Primary and secondary target profiles are specified for each module to support selective enrolment and to clarify the intended depth. The mapping is designed to be practical for industry upskilling while remaining accessible to students and educators.

Module 1 (5G fundamentals):

- Primary – academia and industry entrants;
- Secondary – educators/trainers (train-the-trainers).

Module 2 (Technological evolution towards 6G):

- Primary – industry engineers and vertical technology stakeholders;
- Secondary – academia (advanced students/researchers).

Module 3 (6G use cases and trials):

- Primary – industry, testbed users, and vertical stakeholders involved in trials;
- Secondary – academia and educators.

Module 4 (Innovation and entrepreneurship):

- Primary – start-ups and innovators;
- Secondary – industry intrapreneurs and academia.

2.3.4 Workload model and ECTS allocation

The overall training programme corresponds to **2 ECTS**, equivalent to approximately **60 hours** of learner workload. The workload model combines conceptual lectures, practical activities, Problem-Based Learning (**PBL**) activities, optional applied exercises, reference-based study, and independent study.

For workload-calibration purposes, a distinction is made between **conceptual lecture time** and **practical/PBL time**. Although PBL scenarios are sometimes presented through guided lecture-style material in Moodle, they are counted as **exercise/practical time** because their purpose is to guide learners through applied reasoning, scenario analysis, KPI/KVI selection, architecture mapping, or use-case problem solving. This distinction was used in the internal course-tracking workbook to keep the Moodle implementation aligned with the intended workload envelope.

The first Moodle mini-course release, corresponding to **Module 1: 5G fundamentals**, was calibrated through an internal timing table in which each lesson was checked against three workload categories: **lecture time**, **exercise/practical time**, and **self-study time**. References provided at the end of each lesson were counted using a standardised workload assumption of **10 minutes per lesson**, independently of the exact number of references listed. Proposed PBL exercises are included in Moodle as **optional formative activities** and therefore are not counted as compulsory workload for course completion when their inclusion would exceed the intended mini-course workload. This approach preserves the overall **2 ECTS / 60-hour** model while keeping an applied learning pathway available for learners who wish to deepen their engagement with the material.

The tentative workload model is summarised below (final numbers can only be provided when all modules have been implemented).

Workload category	Estimated workload
Conceptual lectures	30 hours
Practical activities, including guided PBL scenarios	15 hours
Independent study, including references and self-study	15 hours
Total	60 hours

Table 3. Workload model and ECTS allocation

Structure Element	Units	Required Internal Learning Flow	Optional Formative Activities	Formal Completion Evidence
Mini-course 1: 5G Fundamentals	Units 1–5	Units → Lessons → PBL lecture / guided scenario → Unit feedback → Final auto-graded evaluation → Mini-course completion	Proposed PBL exercise, Optional formative quiz / knowledge checks, Optional upload or feedback where enabled	Final auto-graded evaluation in Moodle, 25 questions, estimated duration 1 hour
Mini-course 2: Technological Evolution towards 6G	Units 6–7	Units → Lessons → PBL lecture / guided scenario → Unit feedback → Final auto-graded evaluation → Mini-course completion	Proposed PBL exercise, Optional formative quiz / knowledge checks, Optional upload or feedback where enabled	Final auto-graded evaluation in Moodle, Configuration to be finalised in the corresponding Moodle release
Mini-course 3: 6G Use Cases and Trials	Units 8–11	Units → Lessons → PBL lecture / guided scenario → Unit feedback → Final auto-graded evaluation → Mini-course completion	Proposed PBL exercise, Optional formative quiz / knowledge checks, Optional upload or feedback where enabled	Final auto-graded evaluation in Moodle, Configuration to be finalised in the corresponding Moodle release
Mini-course 4: Innovation & Entrepreneurship	Units 12–13	Units → Lessons → PBL lecture / guided scenario → Unit feedback → Final auto-graded evaluation → Mini-course completion	Proposed PBL exercise, Optional formative quiz / knowledge checks, Optional upload or feedback where enabled	Final auto-graded evaluation in Moodle, Configuration to be finalised in the corresponding Moodle release

Figure 1. Course structure and assessment logic: modular Moodle delivery with four independent mini-courses, required unit-level learning flow, optional formative applied activities, and final auto-graded evaluation per mini-course

2.3.5 Detailed learning objectives (instructor-oriented)

Module	Learning objective
Module 1: 5G fundamentals	- To introduce the fundamental concepts related to 5G - To dive into its technical aspects, at the radio, core, transport, and orchestration levels - To present some open source tools for such levels
Module 2: Technological evolution towards 6G	- To present potential technological enablers and link their role within the upcoming evolution of cellular networks - To explain novel sustainability concepts for the telco ecosystem
Module 3: 6G use cases and trials	- To provide an overview of novel and future potential use cases - To describe the 6G-VERSUS clusters and use cases - To delve into the concept of the “triplet” of 6G applications - To develop students’ capacity to define KVIs and KPIs

Module 4: Innovation and Entrepreneurship in 5G, 6G and Emerging Connectivity	• To introduce methodologies that can contribute to accelerating an idea and transforming it into a business • To present principles of the circular economy related to 5G, as well as the regulatory framework
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Table 4. Detailed learning objectives from the instructor's perspective

2.3.6 Detailed learning objectives (student-oriented)

Module	Learning objective. By the end of the course, students will be able to:
Module 1: 5G fundamentals	M1-LO1: Explain the relationship between the 5G Radio Access Network (RAN) and the 5G Core, including key architectural building blocks and interfaces. M1-LO2: Identify and explain the role of network slicing, orchestration, and MANO frameworks in managing a 5G infrastructure. M1-LO3: Deploy and configure a basic 5G learning environment (simulated and/or lab-based) and document configurations and results to support reproducibility.
Module 2: Technological evolution towards 6G	M2-LO1: Explain strategies and technical levers for improving sustainability/energy efficiency in 5G systems, including trade-offs with performance and trustworthiness. M2-LO2: Describe how AI/ML can support network automation and optimisation in 5G/6G (conceptual closed-loop operation). M2-LO3: Deploy a baseline monitoring setup and interpret observability evidence (energy-related metrics, logs, traces) to assess system behaviour and efficiency.
Module 3: 6G use cases and trials	M3-LO1: Analyse 5G/6G use cases and differentiate architectural options based on use-case requirements and constraints. M3-LO2: Define and justify KPIs and KVIs for a selected use case and describe how they can be measured. M3-LO3: Produce a concise trial plan/test case, including objectives, variables, KPI/KVI targets, measurement method, and acceptance criteria. M3-LO4: Synthesize trial outcomes into a structured technical report and justify recommendations using KPI/KVI evidence.
Module 4: Innovation and Entrepreneurship in 5G, 6G and Emerging Connectivity	M4-LO1: Develop a SWOT analysis and a Business Model Canvas (BMC) for a 5G/6G-related concept. M4-LO2: Build and communicate a value proposition and deliver a short pitch tailored to technical and non-technical stakeholders. M4-LO3: Identify regulatory constraints and apply ESG/circularity principles by translating them into implications for design, deployment, and/or business hypotheses.

Table 5. Detailed learning objectives from the student's perspective

The alignment between modules and KSA items is presented in the table below.

Module	Knowledge (General Competencies)	Skills (Specific Competencies)	Abilities (Soft Competencies)
Module 1: 5G fundamentals	M1-K1: Understand core concepts across RAN, core, transport networks, and orchestration. M1-K2: Understand the role of network slicing and orchestration tools.	M1-S1: Deploy and configure a network core. M1-S2: Deploy and configure a MANO framework. M1-S3: Deploy and configure a simulated 5G environment.	M1-A1: Communicate key 5G architecture concepts using appropriate telecom/standards terminology. M1-A2: Collaborate effectively in guided laboratory activities (role allocation, coordination, and issue resolution). M1-A3: Document configurations, assumptions, and results to support reproducibility (versions, parameters, and evidence). M1-A4: Apply basic responsible experimentation practices (data handling and transparent reporting at an introductory level).
Module 2: Technological evolution towards 6G	M2-K1: Explain sustainability/energy fundamentals in networks (where energy is consumed and which levers are available). M2-K2: Describe the role of AI/ML in network automation and optimisation (conceptual AIOps/MLOps and closed-loop control). M2-K3: Identify and explain key B5G/6G technology enablers (e.g., monitoring/observability, new spectrum/NTN, trustworthiness, edge continuum).	M2-S1: Deploy and operate an energy monitoring baseline (e.g., telemetry collection and dashboards). M2-S2: Deploy a relevant cloud-native environment (e.g., baseline Kubernetes/MEC setup aligned with the course labs). M2-S3: Monitor and assess the environment using observability data (metrics, logs, traces) to support diagnosis and efficiency analysis.	M2-A1: Apply a “sustainability-aware engineering mindset” and articulate performance–energy–trustworthiness trade-offs. M2-A2: Interpret monitoring/observability evidence and justify conclusions with data (not only qualitative claims). M2-A3: Collaborate across technical and sustainability viewpoints by making assumptions explicit and aligning on evaluation criteria.

Module 3: 6G use cases and trials	M3-K1: Describe existing and future 5G/6G use cases and applications. M3-K2: Explain the 6G-VERSUS clusters, representative use cases, and associated KPIs/KVIs. M3-K3: Explain the 6G application triplet concept (V-app, N-app, AI-app).	M3-S1: Define KPIs and KVIs and justify their relevance to a use case. M3-S2: Differentiate architectures based on use-case requirements. M3-S3: Produce a concise trial plan/test case (objective, variables, KPIs/KVIs, measurement method, and acceptance criteria). M3-S4: Synthesise evaluation outcomes into a structured technical report (findings, limitations, assumptions, and reproducibility details).	M3-A1: Apply systems thinking to analyse 6G use cases across stakeholders (verticals, MNOs, testbeds, and AI/tooling). M3-A2: Plan experiments collaboratively and communicate assumptions and limitations clearly. M3-A3: Use KPI/KVI evidence to support decisions and recommendations (beyond descriptive reporting). M3-A4: Apply reproducible reporting practices and basic responsible data/AI handling appropriate to the course scope.
Module 4: Innovation and Entrepreneurship in 5G, 6G and Emerging Connectivity	M4-K1: Understand the basics of innovation and entrepreneurship. M4-K2: Get familiar with business fundamentals, sustainability, funding, and collaboration within technology-driven ecosystems.	M4-S1: Build and communicate a value proposition and deliver a short pitch tailored to technical and non-technical audiences. M4-S2: Apply SWOT and Business Model Canvas (BMC) to a 6G-related concept. M4-S3: Apply ESG/circularity principles and translate them into design and operational implications.	M4-A1: Demonstrate entrepreneurial mindset and resilience (iteration, learning under constraints, and constructive response to setbacks). M4-A2: Communicate value and impact (including ESG/circularity considerations) to diverse stakeholders. M4-A3: Negotiate and collaborate within a multi-actor ecosystem (roles, incentives, and conflict management). M4-A4: Iterate business hypotheses using evidence and feedback (customer/partner signals, performance constraints, feasibility considerations).

Table 6. Alignment between the modules and the KSA methodology

2.3.7 Detailed modules and units

Module	Module 1: 5G fundamentals
Unit	Unit 1: 5G General concepts

Learning hours	3 hours
Lessons	• Lesson 1.1: 5G network architecture: RAN, Core, transport, management • Lesson 1.2: Key technologies: Virtualisation, Slicing, MANO, MEC • Lesson 1.3: Use cases categories • Lesson 1.4: KPIs and KVIs: performance indicators vs value/sustainability indicators (with 4G→5G examples)
Teaching methods	Video lectures, reading material
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation consisting of 25 questions with an estimated duration of one hour (summative; auto-graded in Moodle).
Unit	Unit 2: Radio Access Network (RAN)
Learning hours	8 hours
Lessons	• Lesson 2.1: 5G New Radio (NR) fundamentals and standards • Lesson 2.2: Frequency bands (Sub-6 GHz, mmWave, THz) • Lesson 2.3: MIMO, Massive MIMO, and Beamforming • Lesson 2.4: Network slicing in RAN • Lesson 2.5: RAN virtualization (vRAN), Open RAN (O-RAN), and Multi-RAT • Lesson 2.6: Pico cells, Small cells, Macro cells • Lesson 2.7: Dynamic Spectrum Sharing (DSS)
Teaching methods	Video lectures, reading material, and practical sessions
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation consisting of 25 questions with an estimated duration of one hour (summative; auto-graded in Moodle).
Unit	Unit 3: Core network architecture
Learning hours	5 hours
Lessons	• Lesson 3.1: 5G Core architecture (SBA) standards and core components • Lesson 3.2: Cloud Native evolution • Lesson 3.3: Network slicing in the core network • Lesson 3.4: MEC integration • Lesson 3.5: User Plane Function (UPF) offloading • Lesson 3.6: QoS management and traffic prioritization • Lesson 3.7: Non-Public Networks (NPN) and private 5G

Teaching methods	Video lectures, reading material, and practical sessions
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation consisting of 25 questions with an estimated duration of one hour (summative; auto-graded in Moodle).
Unit	Unit 4: Transport networks
Learning hours	2 hours
Lessons	• Lesson 4.1: 5G Backhaul, Midhaul and Fronthaul • Lesson 4.2: SDN in transport networks • Lesson 4.3: Network slicing in transport networks • Lesson 4.4: Time-Sensitive Networking (TSN) for 5G • Lesson 4.5: Terrestrial and satellite integration
Teaching methods	Video lectures, reading material
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation consisting of 25 questions with an estimated duration of one hour (summative; auto-graded in Moodle).
Unit	Unit 5: Network and service management
Learning hours	2 hours
Lessons	• Lesson 5.1: 5G orchestration and automation: standards and technologies • Lesson 5.2: AI/ML-driven network optimisation and Zero-touch Service Management (ZSM) • Lesson 5.3: Intent-based networking in 5G, SLA assurance, and service quality monitoring • Lesson 5.4: API exposure and service enablement (NEF, SEF, CAPIF)
Teaching methods	Video lectures, reading material, and practical sessions
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation consisting of 25 questions with an estimated duration of one hour (summative; auto-graded in Moodle).

Table 7. Details of module 1: 5G fundamentals

Module	Module 2: Technological evolution towards 6G
Unit	Unit 6: B5G enablers
Learning hours	7 hours
Lessons	• Lesson 6.1: Novel exposure capabilities

	• Lesson 6.2: Triplet model as an architectural enabler: roles, interfaces, and exposure (NEF/NWDAF/CAPIF) and relation to VAE/Network Apps • Lesson 6.3: MLOps and xAI • Lesson 6.4: Continuum integration (Meta-OS, Edge Native) • Lesson 6.5: B5G Network Relays (via UAVs) • Lesson 6.6: Immersive applications • Lesson 6.7: AI-native and quantum networks • Lesson 6.8: Reconfigurable Intelligent Surfaces (RIS) • Lesson 6.9: THz communication • Lesson 6.10: The role of Non-Terrestrial Networks (NTN) • Lesson 6.11: Holistic trustworthiness
Teaching methods	Video lectures, reading material, and practical sessions
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation (summative; auto-graded in Moodle).
Unit	Unit 7: Sustainability strategies and enablers
Learning hours	5 hours
Lessons	• Lesson 7.1: Sustainability fundamentals: consumption patterns, elements breakdown • Lesson 7.2: Energy-efficient RAN solutions (smart antennas, efficient cooling, Massive MIMO, beamforming, two-step RACH, Open RAN controller) • Lesson 7.3: AI-native evolution: Experiential Networked Intelligence (ENI) & Self-optimising Networks (SON) • Lesson 7.4: The role of smart grids and dynamic energy allocation • Lesson 7.5: Renewable Energy Resources (RES) in green-based radio stations and cloud centres • Lesson 7.6: Green edge and IoT (inc. Redcap modems) • Lesson 7.7: Optimisation of NB-IoT systems
Teaching methods	Video lectures, reading material, and practical sessions
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation (summative; auto-graded in Moodle).

Table 8. Details of module 2: Technological evolution towards 6G

Module	Module 3: 6G use cases and trials
Unit	Unit 8: Advanced 5G and future 6G use cases
Learning hours	2 hours

Lessons	• Lesson 8.1: Advanced 5G use cases • Lesson 8.2: Future 6G use cases
Teaching methods	Video lectures, reading material
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation (summative; auto-graded in Moodle).
Unit	Unit 9: 6G-VERSUS clusters and use cases
Learning hours	4 hours
Lessons	• Lesson 9.1: The 6G-VERSUS high-level architecture • Lesson 9.2: Collaborative robotics towards an early wildfire detection concept (Greece) - location, cluster's key resources, targeted vertical, sustainability focus (motivation), use cases, addressed sustainability challenges, KPIs • Lesson 9.3: Enabling remote field management through teleoperation and sensor-equipped vehicles (Spain) • Lesson 9.4: Sewer network monitoring and Smart watering in green space (France) • Lesson 9.5: Monitoring capabilities for environmental quality and safety levels in ports (Portugal) • Lesson 9.6: AI-data driven monitoring and control of distributed renewable sources (Bulgaria) • Lesson 9.7: Sustainable operations for a remote base station with renewable energy sources (Finland)
Teaching methods	Video lectures, reading material
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation (summative; auto-graded in Moodle).
Unit	Unit 10: Triplets of 6G applications
Learning hours	3 hours
Lessons	• Lesson 10.1: 6G-VERSUS V-apps, AI-apps and N-apps (#1) • Lesson 10.2: 6G-VERSUS V-apps, AI-apps and N-apps (#2)
Teaching methods	Video lectures, reading material
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation (summative; auto-graded in Moodle).
Unit	Unit 11: KVI & KPI definition methodology
Learning hours	5 hours

Lessons	• Lesson 11.1: KVI & KPI definition methodology • Lesson 11.2: 6G-VERSUS KPIs and key achievements
Teaching methods	Video lectures, reading material, and case study analysis
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation (summative; auto-graded in Moodle).

Table 9. Details of module 3: 6G use cases and trials

Module	Module 4: Innovation and Entrepreneurship in 5G, 6G and Emerging Connectivity
Unit	Unit 12: Innovation and Entrepreneurship in 5G, 6G and Emerging Connectivity
Learning hours	10 hours
Lessons	• Lesson 12.1: Introduction to entrepreneurship and innovation in 6G and emerging connectivity • Lesson 12.2a: From idea to business - concept and idea validation • Lesson 12.2b: From idea to business - incubation and acceleration pathways • Lesson 12.3a: Innovation tools - SWOT and TOWS analysis • Lesson 12.3b: Innovation tools - Business Model Canvas and Value Proposition Canvas • Lesson 12.4: Success stories from the EU 6G ecosystem
Teaching methods	Video lectures, reading material, and case study analysis
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation (summative; auto-graded in Moodle).
Unit	Unit 13: Circular economy, regulation, and 5G
Learning hours	4 hours
Lessons	• Lesson 13.1a: Regulatory framework - electronic communications and data protection • Lesson 13.1b: Regulatory framework - AI Act, spectrum and standardisation • Lesson 13.2a: Circular economy fundamentals for connectivity • Lesson 13.2b: ESG reporting and applied circularity for 6G ventures
Teaching methods	Video lectures, reading material
Assessment methods	Unit PBL lecture/scenario walkthrough and proposed PBL exercise (formative; optional upload or self-check where enabled); final mini-course evaluation (summative; auto-graded in Moodle).

Table 10. Details of module 4: Innovation and Entrepreneurship in 5G, 6G and Emerging Connectivity

2.3.8 Learning and teaching methods

The course will adopt diverse teaching methods aligned with the KSA framework and tailored to the technical and sustainability-oriented focus of each module:

- **Lectures** will introduce and delve into core concepts, from basic and fundamental aspects to more advanced 5G enablers and sustainability strategies, research, innovation, and entrepreneurship topics.
- **Interactive simulations and software tools** will support hands-on learning through a deliberately bounded “reference toolchain” to ensure reproducibility and workload consistency within the 2 ECTS (60h) model. The minimum reference toolchain is defined as:
 - **Simulation:** Simu5G (or equivalent) for conceptual validation and scenario exploration
 - **Core/deployment baseline:** Open5GS as the reference 5G Core (deployed via lightweight virtualisation/containerization)
 - **Observability baseline:** Prometheus + Grafana for KPI collection and visualisation.

Energy monitoring (e.g., via Kepler) and additional platforms/components (e.g., O-NEF, OSM, alternative cores, partner-specific monitoring tools) are treated as optional advanced extensions and will be clearly marked as such in Moodle, without being required for course completion.

- **Case study analysis** will be used to explore real-world implementations of energy-efficient 5G systems, supported by sustainability strategies, from the technical and business perspectives.
- **Problem-Based Learning (PBL)** will be implemented as practical exercises, where students will assess and address challenges related to 5G, energy, and business aspects. They will be based on the aforementioned tools and case studies.
- **Reading material** will complement all the previous, intended for independent study.

2.3.9 Assessment methods

Assessment evaluates learners’ progression against the intended **Knowledge, Skills, and Abilities (KSAs)** outcomes. Assessment activities are implemented in the **Moodle Learning Management System (LMS)** and combine formative self-check activities, optional applied exercises, and a final auto-graded evaluation for mini-course completion.

Each unit may include a **Problem-Based Learning (PBL)** component consisting of: (i) a guided PBL lecture or scenario walkthrough, counted as **exercise/practical time** because of its applied nature, and (ii) a proposed PBL exercise in which learners apply the unit concepts to a bounded technical, sustainability, use-case, KPI/KVI, or innovation-oriented problem. These PBL activities are designed as **formative learning activities**. They support applied understanding and may be used for self-reflection, optional submission, instructor feedback, workshops, or later course refinement. However, in the Moodle implementation of the first mini-course, the proposed PBL exercises are not mandatory for course completion and are not counted as compulsory graded workload. This decision preserves the intended workload envelope while keeping the applied learning pathway available to learners who wish to deepen their engagement with the material.

Short **formative quizzes** and knowledge checks may also be used within or after selected units or lessons. Their purpose is to reinforce key terminology, concepts, and technical relationships, and to provide immediate feedback to learners. These activities support continuous learning but do not replace the formal final evaluation.

For the first Moodle mini-course release, corresponding to **Module 1: 5G fundamentals**, formal completion evidence is provided through a **final auto-graded evaluation** implemented in Moodle. This evaluation consists of **25 questions** and has an estimated duration of **one hour**. The questions assess the learner’s understanding of the core concepts covered in the mini-course, including 5G architecture, RAN, Core, transport networks, orchestration, management, KPIs/KVIs, and related enabling technologies. The use of an auto-graded evaluation supports scalability, transparent completion criteria, and consistent learner assessment across different participant profiles.

Where practical exercises, reflections, case-study analyses, or PBL artefacts are submitted, they may be reviewed as **optional evidence of applied competence**. The PBL rubric and templates included in the annexes, therefore, remain useful as reusable pedagogical instruments, particularly for instructor-led delivery, workshops, train-the-trainers replication, or future iterations of the course. In the current release, however, they are treated as formative and optional rather than as mandatory summative assessment instruments.

As the remaining mini-courses are implemented, the assessment approach will remain consistent with this logic: formative unit-level activities will support learning, self-checking, and applied reasoning, while formal completion evidence will rely primarily on Moodle-based auto-graded evaluations. Any future activation of rubric-based PBL assessment will be documented in the corresponding course release and consolidated in the final iteration deliverable, **D7.8**, together with uptake data, feedback results, and improvement actions.

2.4 Implementation in Moodle and Course Maintenance

This subsection describes how the syllabus defined in the previous section is operationalised in the Moodle Learning Management System (LMS) and how the course will be maintained over time. The objective is twofold: (i) to ensure the training programme is immediately deployable using a consistent Moodle structure and content packaging approach; and (ii) to provide a replicable implementation pattern that can be reused by partners and educators when extending the course or adopting the methodology in other contexts. While the syllabus defines one course with four modules, the Moodle implementation is organised as **four standalone “mini-courses” (one per module)** to enable flexible uptake by different audiences (e.g., professionals selecting only the most relevant module).

2.4.1. Moodle course structure and navigation

The training programme is implemented in Moodle as **four standalone mini-courses**, each corresponding to one syllabus module:

- Mini-course 1: **Module 1 - 5G fundamentals**
- Mini-course 2: **Module 2 - Technological evolution towards 6G**
- Mini-course 3: **Module 3 - 6G use cases and trials**
- Mini-course 4: **Module 4 - Innovation and Entrepreneurship in 5G, 6G and Emerging Connectivity**

This implementation approach supports two complementary participation patterns:

- **Full pathway (recommended for students/early-stage learners):** learners complete all four mini-courses in sequence to achieve the complete 2 ECTS / 60-hour workload and the full learning outcomes set.
- **Selective pathway (recommended for professionals and domain specialists):** learners enrol in one or more mini-courses depending on role, prior knowledge, and immediate relevance, without requiring completion of the entire programme.

To mitigate prerequisite gaps for selective participants (e.g., professionals enrolling directly in Mini-course 2 or Mini-course 3), each of these mini-courses includes a short “fast refresh pack” at the beginning (estimated 30–45 minutes). The pack is designed as a lightweight onboarding bridge and contains:

- **Key glossary and 1-page cheat sheet** (core terms and architecture blocks needed to follow the module: RAN/Core/MEC, slicing, MANO, exposure/APIs, observability basics).
- **Auto-graded diagnostic micro-quiz (10–12 questions)** to let learners self-assess readiness. Quiz feedback includes direct links to the minimal set of prerequisite lessons (from previous mini-courses) required to close gaps.
- **Reference map (“if you skipped Module 1, review these”):** a short list of links to the most relevant lessons and readings that provide the necessary prerequisites.

For the full pathway, the fast refresh pack remains available but optional; for the selective pathway it is strongly recommended prior to starting the first unit-level PBL exercise of the mini-course (formative), and before attempting the module-level quiz/capstone.

Each mini-course preserves the same internal structure (Units → Lessons → unit-level PBL package) and uses consistent templates to ensure a coherent learner experience across modules.

For the full 2 ECTS recognition, completion criteria apply to the complete pathway (all four mini-courses); selective participation may be supported with module-level completion statements where applicable.

2.4.2 Minimum content package per lesson (standard template)

To ensure consistency across modules and support partner collaboration, each lesson follows a minimum “content package” template:

- **Video lecture** (recorded presentation).
- **Slides** (with transcript in speaker notes where available).
- **Reading material** (curated references, technical notes, or pointers to project outputs).
- **Optional formative quiz** (self-evaluation; auto-graded).

Where a lesson includes hands-on elements, it may also include a **practical worksheet** (instructions, expected outputs, and submission guidance).

Reference toolchain and optional extensions (hands-on scope control)

To prevent over-scoping of practical work and to ensure a consistent learner experience across institutions, hands-on elements in this training programme are designed around a minimum reference toolchain. Unless a lesson/unit is explicitly marked as “optional advanced extension”, practical worksheets and assessed evidence will rely only on the minimum toolchain:

- **Minimum reference toolchain (mandatory for assessed hands-on tasks):**
 - **Simu5G** (simulation baseline)
 - **Open5GS** (reference 5G Core baseline)
 - **Prometheus + Grafana** (monitoring/observability baseline)
- **Optional advanced extensions (not required for completion; partner-specific where applicable):**
 - **Kepler** (energy monitoring add-on)
 - **MicroK8s** (Kubernetes/edge deployment track)
 - **O-NEF** (API exposure/enabler exploration)
 - **OSM** (MANO/orchestration exploration)
 - Any additional platform-specific tools provided by testbeds (explicitly labelled with prerequisites and estimated extra workload)

Optional extensions may be offered as enrichment activities, readings, demos, or partner-led workshops, but they do not gate completion of any mini-course.

2.4.3 Unit-level PBL packaging and formative applied activities

Each unit may include a **Problem-Based Learning (PBL)** component designed to help learners apply the concepts introduced in the unit to a bounded practical scenario. The PBL component normally consists of: (i) a guided PBL lecture or scenario walkthrough, and (ii) a proposed PBL exercise in which learners apply the unit concepts to a technical, sustainability, use-case, KPI/KVI, or innovation-oriented problem.

Although the guided PBL material may be presented in a lecture-like format within Moodle, it is treated as **exercise/practical time** for workload-calibration purposes because its pedagogical function is applied

reasoning rather than passive content delivery. This distinction is particularly relevant for maintaining the overall workload envelope of the mini-course.

The proposed PBL exercises are implemented as **formative learning activities**. Their main purpose is to support applied understanding, self-reflection, and optional deeper engagement with the course material. Where technically enabled in Moodle, optional upload or submission mechanisms may be provided to support feedback, monitoring, workshop use, or future instructor-led delivery. However, for the first Moodle mini-course release, unit-level PBL exercises are **not mandatory for course completion** and are **not graded as compulsory assessment activities**.

To make unit-level PBL activities reusable and auditable, each PBL package follows a standard structure:

- **Scenario context:** short description of the setting and the associated technical, sustainability, or innovation challenge.
- **Task statement:** what learners are invited to do, such as mapping requirements to architecture, selecting KPIs/KVIs, outlining a trial-plan fragment, or justifying a design decision.
- **Expected artefact:** the proposed output, such as a one-page brief, table, diagram, structured worksheet, or short reflection.
- **Self-check or feedback guidance:** criteria, hints, or rubric-inspired guidance that learners and instructors can use to assess the quality of the proposed artefact.

This approach keeps the applied learning pathway visible and reusable while avoiding excessive compulsory workload. The PBL templates and rubric included in the annexes therefore remain part of the pedagogical toolkit, especially for workshops, train-the-trainers replication, optional instructor feedback, or future course iterations. In the current Moodle release, however, formal mini-course completion is based primarily on the final auto-graded evaluation, while unit-level PBL remains formative and optional.

2.4.4 Roles and responsibilities for content production and upkeep

The training programme follows a distributed responsibility model. Overall coordination is provided under **T7.4**, led by **UPV**, while mini-course production and validation are shared according to partner expertise, project role, and dependency on technical outputs.

UPV coordinates the common Moodle structure, learning-design approach, workload logic, quality assurance process, and overall consistency of the training programme. **UPV** is responsible for the implementation of the first three mini-courses: **Mini-course 1: 5G fundamentals**, **Mini-course 2: Technological evolution towards 6G**, and **Mini-course 3: 6G use cases and trials**.

Mini-course 1 has been implemented as the initial stable Moodle release and acts as the operational reference for lesson packaging, workload calibration, optional formative PBL activities, feedback collection, and final auto-graded evaluation.

Mini-course 2 is expected to be implemented mainly through **UPV**-led coordination, supported by available project baselines and targeted partner input where needed.

Mini-course 3 requires stronger input from pilot leaders, use-case owners, and technical partners. This is because its content depends directly on the evolution of the project's clusters, trial scenarios, testbed capabilities, 6G application triplets, and KPI/KVI evaluation activities. Partner review will be particularly important to avoid presenting immature pilot material as final and to ensure that examples reflect the actual status of the trials.

Mini-course 4, focused on innovation and entrepreneurship, is led by **ENV**, given its expertise and role in entrepreneurship, innovation support, ecosystem-building activities, and the **T7.5 Acceleration and Scale-up Programme**. Its implementation should remain aligned with accelerator needs, especially regarding value proposition design, business model development, SWOT analysis, circularity, sustainability framing, regulatory awareness, and market-oriented communication.

Relevant consortium partners may contribute as subject-matter experts, technical reviewers, pilot contributors, or innovation mentors depending on the mini-course. Moodle/platform support is also required for course

configuration, resource uploading, completion settings, feedback surveys, final evaluations, and the privacy notice/acknowledgement flow.

This model keeps the training programme coherent while avoiding the unrealistic assumption that all content production and validation is centralised in one partner.

2.4.5 Release cycle and update triggers

The course is designed for iterative enhancement during the project. A practical release cycle is:

- **Internal release (working version):** materials can be uploaded progressively as units mature.
- **Stable release (vX.Y):** a versioned snapshot that is used for external delivery or reporting.
- **Change log:** short list of changes between versions (updated lessons, revised PBL, updated references).

Updates should be triggered by:

- publication of revised project baselines affecting course content (e.g., updates to trials, KPIs/KVIs, experimentation tooling);
- feedback from learners or partners on clarity and workload;
- new dissemination or exploitation priorities relevant to Module 4;
- improvements identified via Moodle usage analytics (e.g., high drop-off points, repeated quiz errors, low performance on specific PBL tasks).

The following matrix is used by the course owner to prioritise updates and maintain alignment between project baselines, Moodle content, and assessed unit-level PBL artefacts.

Trigger (what changed)	Primary source baseline	Affected mini-course(s) / units (typical)	What to update in Moodle	Course owner action
New/updated use case requirements, architecture assumptions, or cross-cutting constraints	6G-VERSUS D2.1	Mini-course 1 (M1 Units 1–5), Mini-course 3 (M3 Units 8–10)	Lesson content (concepts/assumptions), examples used in PBL lecture, PBL scenario constraints	Validate scope impact; update scenario text + any architecture mappings; version bump
New/updated experimentation environment capabilities, tools, interfaces, or testbed integration details	6G-VERSUS D3.1	Mini-course 1 (M1 Units 3–5), Mini-course 2 (M2 Unit 6), Mini-course 3 (M3 Unit 9)	Practical instructions/worksheet s, tool screenshots/links, “available data/tools” section in PBL template	Coordinate with relevant partner(s) for correctness; update tool-dependent tasks; re-test submission flow
New/updated trial planning process, test case definitions, monitoring approach, or KPI/KVI methodology	6G-VERSUS D5.1	Mini-course 3 (M3 Units 9–11), Mini-course 2 (M2 Unit 7)	PBL exercises (indicator selection, measurement plan), rubrics (Criterion 4), and any KPI/KVI definitions in lessons	Update PBL deliverables/rubric wording; ensure measurability with available tooling; version bump

New dissemination priorities, target audiences, or messaging that affects how the course is positioned externally	6G-VERSUS D7.1	Course landing pages for all mini-courses; module introductions	Intro text, target audience statements, “how to use this mini-course” guidance	Update module intros and enrolment guidance; ensure consistent language across mini-courses
New exploitation/standardisation/open-source priorities impacting Module 4 framing	6G-VERSUS D7.2	Mini-course 4 (M4 Units 12–13)	Innovation tools examples, exploitation references, PBL tasks (value proposition/business reasoning)	Align module narrative and PBL artefacts with the latest exploitation framing; version bump
Learner feedback indicates workload mismatch or repeated misunderstandings	Moodle analytics + feedback	Units with the highest drop-off / lowest rubric scores	Clarify instructions, add scaffolding, adjust estimated time, and add/remodel formative quiz	Apply targeted edits; document the change in a short change log
Partner validation reveals a technical inconsistency or outdated claim	Partner validation round	Any affected unit(s)	Correct lesson content, readings, PBL lecture guidance, and/or rubric wording	Rapid patch release if needed; record change and rationale

Table 11. Baseline-to-update trigger matrix (what changes, what to update in the course)

2.4.6 Monitoring and improvement (learning analytics and feedback)

The Moodle implementation includes a monitoring and improvement approach based on **learning analytics**, **assessment results**, and **structured learner feedback**. The purpose is not only to document participation, but also to identify whether the course structure, workload, explanations, practical activities, and assessment instruments are adequate for the target audiences.

Moodle provides several mechanisms to support continuous improvement, including activity completion indicators, access and participation logs, final evaluation results, and learner interaction with the course materials. For the first Moodle mini-course release, corresponding to **Module 1: 5G fundamentals**, the most relevant monitoring evidence includes learner enrolment, activity completion, completion of the final auto-graded evaluation, quiz performance distributions, and optional engagement with PBL or practical activities where such activities are enabled.

In addition to Moodle analytics, the course integrates two levels of **structured feedback collection**. First, each unit includes a short **unit-level feedback survey** intended to capture immediate learner perceptions about clarity, perceived workload, relevance, and usefulness of the unit materials. This allows the course owner to identify specific issues at the unit level, such as unclear explanations, excessive workload, missing scaffolding, or activities that require adjustment.

Second, the mini-course includes a longer **final course feedback survey** completed at the end of the learning experience. This instrument collects broader evidence on the overall structure of the mini-course, perceived learning gain, usability of the Moodle environment, balance between theory and practice, perceived usefulness for the learner’s role, and suggestions for improvement. The final survey is designed to complement the unit-level feedback by providing a course-level view of the learner experience.

The monitoring approach also supports workload calibration. Feedback and analytics will be used to check whether the estimated workload is realistic, whether references and self-study activities are proportionate, and whether optional PBL exercises are perceived as useful without creating excessive compulsory workload. This

is particularly important because the course is designed for heterogeneous audiences, including students, researchers, industry professionals, vertical stakeholders, and educators.

The results of analytics and feedback collection will be reviewed by the **course owner** and used to define targeted improvement actions. These may include revising lesson explanations, clarifying instructions, adjusting estimated times, improving navigation, refining quiz questions, adding scaffolding to practical activities, or updating references. Where feedback indicates repeated misunderstandings or difficulty with a specific topic, the corresponding lesson, unit overview, or optional PBL activity will be updated.

For public reporting purposes, monitoring results will be handled in **aggregated form**. Individual-level learner data will not be published in project reports or dissemination materials. The final iteration deliverable, **D7.8**, will consolidate the relevant evidence collected during implementation, including uptake data, completion information, aggregated feedback summaries, and the main improvement actions implemented between releases.

2.4.7 Data protection and accessibility considerations

The Moodle implementation of the 6G-VERSUS Learning Platform requires users to register and authenticate before accessing the training materials. As a result, the platform processes personal data associated with account creation, course access, learning activity, technical operation, platform security, and aggregated project reporting. These processing activities are handled in accordance with the **General Data Protection Regulation (GDPR)** and the applicable institutional procedures of the organisation operating the learning platform.

To support transparency, users are presented with the **6G-VERSUS Learning Platform Privacy Notice** during the registration or first-access process. The notice explains the purposes of data collection and processing, the categories of personal data processed, the use of aggregated statistics for project reporting, the possible recipients of the data, and the contact point for privacy-related requests. Users are required to acknowledge that they have read and understood the Privacy Notice before continuing to use the platform.

The categories of data processed may include account registration data, course participation data, technical and security logs, and additional profile information used for aggregated statistical and reporting purposes, such as participant type, study level, primary area of expertise, gender, and country of residence. Where profile fields relate to personal characteristics, suitable options such as “prefer not to say” may be offered. These data are used to support course operation, learner support, monitoring, security, and aggregated reporting on training uptake and stakeholder engagement.

For reporting and dissemination purposes, the project will use only **aggregated or anonymised information** whenever possible. Individual-level personal data, learner identities, quiz results, activity logs, or feedback responses will not be published in project reports, public datasets, or dissemination materials. Access to individual-level data is restricted to authorised persons who need it for platform administration, teaching, learner support, reporting, technical maintenance, or legal/audit obligations.

The detailed privacy documentation, including the full Privacy Notice and the corresponding consent/acknowledgement text implemented in Moodle, is maintained as part of the project’s broader data management and compliance framework. In this deliverable, the relevant point is that the training implementation includes a GDPR-aware registration and acknowledgement process, while the extended privacy and data management details remain aligned with the project’s Data Management Plan.

Accessibility is also considered in the design and maintenance of the Moodle course. Course materials should use clear structure, consistent navigation, readable formatting, descriptive headings, and accessible file formats where possible. Videos, slides, readings, exercises, and quizzes should be prepared so that learners can understand the learning path, identify required and optional activities, and access the content with minimal friction. Accessibility and usability issues identified through feedback surveys or learner support requests will be treated as course improvement triggers and addressed in subsequent releases.

2.4.8 Quality assurance and release checklist (course owner execution)

A lightweight **quality assurance (QA)** process is applied before each stable Moodle release. The purpose of the QA process is to ensure that the course is pedagogically coherent, technically accurate, aligned with the 6G-VERSUS baselines, manageable within the intended workload, and ready for use by heterogeneous learner profiles.

The QA process is coordinated by the **course owner**, with targeted input from relevant consortium partners where technical validation is required. The checklist is intended to support release decisions without creating excessive administrative overhead.

2.4.8.1 Pre-release checklist (content and alignment)

Before a mini-course is released or substantially updated in Moodle, the following checks should be completed.

A. Pedagogical alignment

- The mini-course learning outcomes are aligned with the corresponding **KSA** items.
- The intended cognitive depth of the unit is consistent with the relevant **Bloom level**.
- Lessons, practical activities, optional PBL exercises, and final evaluation questions are coherent with the declared learning outcomes.
- The distinction between mandatory completion activities and optional formative activities is clear to learners.

B. Technical and project-specific validation

- Technical claims are consistent with the relevant 6G-VERSUS project baselines and terminology.
- Architecture, testbed, KPI/KVI, use-case, and innovation-related references are accurate at the time of release.
- Where a unit refers to evolving project assets, the content is marked or phrased in a way that allows later updates without overstating maturity.
- Any project-specific examples are sufficiently clear for external learners while avoiding disclosure of non-public or unstable information.

C. Workload and sequencing

- Estimated workload is consistent with the overall **2 ECTS / 60-hour** course model.
- Conceptual lectures, practical activities, guided PBL scenarios, references, and self-study activities are proportionate.
- Guided PBL scenarios are counted as **exercise/practical time** because of their applied nature.
- Optional PBL exercises are clearly labelled as formative and are not required for course completion unless explicitly activated in a future release.
- Reference-based study time is treated consistently across lessons.

D. Assessment readiness

- The final Moodle evaluation is configured and tested before release.
- The question bank provides adequate coverage of the mini-course learning outcomes.
- Auto-grading settings, attempt rules, completion conditions, and feedback messages are correctly configured.
- Formative quizzes or knowledge checks, where present, are clearly distinguished from the final evaluation.
- Optional PBL activities, where present, include sufficient self-check guidance or feedback instructions, but are not presented as mandatory graded submissions in the current release.

E. Moodle delivery readiness

- The mini-course navigation is consistent, with clear unit structure, naming conventions, and learner instructions.

- All required resources are present, accessible, and correctly linked.
- Videos, slides, readings, quizzes, feedback surveys, and optional exercises display correctly in Moodle.
- Activity completion settings are coherent with the intended learner pathway.
- The unit-level feedback survey and final course feedback survey are available where applicable.
- The privacy notice and acknowledgement/consent flow are correctly implemented for registered users.

F. Accessibility and usability

- Materials use clear headings, readable formatting, and consistent terminology.
- Learners can distinguish required activities from optional activities.
- Instructions are understandable for the expected audience, including learners with different levels of prior 5G/6G knowledge.
- Accessibility and usability issues identified in previous feedback have been reviewed and, where feasible, addressed.

2.4.8.2 Consistency and editorial checklist

In addition to Moodle-specific checks, the deliverable and the Moodle implementation should remain consistent with each other. Before submission or release, the course owner should verify that:

- Course title, module names, unit numbering, acronyms, and terminology are consistent across the deliverable and Moodle
- The syllabus in the deliverable reflects the actual Moodle implementation status
- Removed, merged, or postponed lessons are no longer presented as active compulsory content
- Tables, figures, annexes, and cross-references are correctly numbered and updated
- References are complete and consistent with the cited project baselines and reused methodologies
- The document version history reflects the main changes introduced since the previous draft or release

2.4.8.3 Release decision rule

Prior to a stable release, the course owner assigns one of the following release statuses:

- **Green (release):** the mini-course is ready for publication. Only minor editorial refinements may remain, and these do not affect learning outcomes, assessment configuration, workload, privacy, or technical correctness.
- **Amber (conditional release):** the mini-course can be released with minor limitations or pending refinements. These issues must be documented and addressed in the next update cycle. Examples include minor wording improvements, additional references, or small navigation enhancements.
- **Red (no release):** the mini-course should not be released because one or more critical issues remain. Examples include incorrect technical claims, missing final evaluation configuration, unclear completion conditions, unresolved privacy/registration issues, broken core resources, or major inconsistencies between the Moodle implementation and the deliverable syllabus.

This QA mechanism ensures that the training programme remains coherent, auditable, and maintainable across iterative releases. It also supports the consolidation of implementation evidence, feedback results, and improvement actions in the final iteration deliverable, **D7.8**.

2.5 Summary and Further Steps

This section summarises what has been established for Task T7.4 in D7.5 and clarifies the concrete next steps required to (i) implement the four mini-courses in Moodle, (ii) validate and improve the learning experience through delivery and stakeholder feedback, and (iii) consolidate evidence and updates in the final iteration deliverable (D7.8). D7.5 provides the syllabus blueprint and the course-engineering methodology anchored to the “initial” technical baselines; D7.8 will consolidate execution evidence (course deployment, delivery, uptake, and improvement actions) and updates resulting from evolving baselines and trial/pilot evidence.

2.5.1 Moodle implementation roadmap (from blueprint to deployed mini-courses)

The Moodle implementation follows an incremental release model. Rather than deploying the four mini-courses simultaneously, the training programme is being implemented progressively so that the first release can be validated, improved, and reused as a template for subsequent releases.

At the time of D7.5, the first Moodle mini-course, corresponding to **Module 1: 5G fundamentals**, has been implemented as the initial stable release. This first release has served to validate the practical Moodle structure, the lesson packaging approach, the workload-calibration method, the use of optional formative PBL activities, the configuration of the final auto-graded evaluation, and the integration of feedback instruments. It therefore acts as the operational reference for the remaining mini-courses.

The roadmap from D7.5 to D7.8 is organised as follows:

Phase 1 - Initial Moodle release and template validation

The first release focuses on **Mini-course 1: 5G fundamentals**. Its purpose is to provide the foundational knowledge required by learners with different backgrounds and to validate the Moodle implementation model. The release includes structured lessons, references, guided practical/PBL-oriented activities, optional formative exercises, unit-level feedback surveys, and a final auto-graded evaluation for completion. Lessons and activities have been checked against the intended workload categories, namely lecture time, exercise/practical time, and self-study time.

Phase 2 - Accelerator-oriented release

The next implementation priority is **Mini-course 4: Innovation and entrepreneurship in 5G, 6G and emerging connectivity**. This mini-course is strategically relevant because it can directly support the 6G-VERSUS acceleration and scale-up activities. Its content will provide participants with introductory material on innovation, business model development, value proposition design, SWOT analysis, circularity, sustainability, and regulatory considerations. This mini-course will be used as asynchronous onboarding or support material where appropriate for the accelerator and related ecosystem-building actions.

Phase 3 - Technical extension and trial-oriented releases

Mini-course 2: Technological evolution towards 6G and **Mini-course 3: 6G use cases and trials** will be implemented and tested. These mini-courses are more dependent on the evolution of project technical baselines, testbed capabilities, use-case maturity, trial planning, and KPI/KVI evaluation practices. Their implementation will therefore benefit from the additional evidence generated as the technical work packages progress.

Phase 4 - Consolidation before D7.8

Before the final iteration deliverable, the four mini-courses will be reviewed for coherence, consistency, and alignment with updated project baselines. This consolidation will include updates to lessons, references, optional PBL activities, quiz questions, feedback instruments, workload assumptions, and Moodle navigation where needed. D7.8 will then report the implementation evidence, uptake data, aggregated learner feedback, main improvement actions, and lessons learned from the deployed training programme.

This staged roadmap reduces implementation risk, allows the first mini-course to act as a tested Moodle template, and supports continuous improvement without overcommitting to premature details for mini-courses that depend on technical results still under development.

2.5.2 Contributors and resourcing (what is realistically needed)

The implementation of the training programme follows a **distributed contribution model**. The overall training task is coordinated under **T7.4**, led by **UPV**, but the responsibility for producing and validating the four mini-courses is shared according to partner expertise, project role, and dependency on technical outputs.

UPV coordinates the overall Moodle-based training structure and is responsible for the implementation of the first three mini-courses: **Mini-course 1: 5G fundamentals**, **Mini-course 2: Technological evolution towards 6G**, and **Mini-course 3: 6G use cases and trials**. This includes maintaining the common instructional design approach, ensuring consistency across the Moodle implementation, checking workload assumptions, managing the quality assurance process, and keeping the training programme aligned with the Description of Action and the relevant 6G-VERSUS technical baselines.

The first mini-course, **5G fundamentals**, has been implemented as the initial stable Moodle release. It is largely self-contained and provides the operational reference for lesson packaging, workload calibration, optional formative PBL activities, feedback collection, and final auto-graded evaluation. The second mini-course, **Technological evolution towards 6G**, is also expected to be implementable mainly through UPV-led coordination, supported by available project baselines and partner expertise where needed.

The third mini-course, **6G use cases and trials**, will require a stronger contribution from **pilot leaders, use-case owners, and technical partners**. This is because its content depends directly on the evolution of the project's clusters, trial scenarios, testbed capabilities, 6G application triplets, and KPI/KVI evaluation activities. In line with the project's phased technical implementation, this mini-course should be developed progressively, incorporating validated material from the first trial phase and later refined with evidence from the second phase. Partner input will be particularly important to ensure that examples, scenarios, trial-planning explanations, and KPI/KVI material reflect the actual implementation status of the pilots without overstating results that are still under development.

The fourth mini-course, **Innovation and entrepreneurship in 5G, 6G and emerging connectivity**, is led by **ENV**, given its expertise and role in entrepreneurship, innovation support, and ecosystem-building activities. This mini-course is also closely connected to the **Acceleration and Scale-up Programme** under T7.5. Its implementation will therefore be coordinated with the accelerator's needs, so that the content can support participants in areas such as business model development, value proposition design, SWOT analysis, circular economy, sustainability framing, regulatory awareness, and market-oriented communication.

At the time of D7.5, ENV has prepared most of the source material for Mini-course 4, while video production, Moodle upload, activity configuration, and final Moodle-level QA remain pending. For this reason, Mini-course 4 is reported as an advanced-production / MVP-oriented release rather than as a fully deployed mini-course.

Under this model, UPV maintains responsibility for the coherence of the overall training programme and the Moodle learning environment, while each content area is supported by the partner or group of partners best positioned to provide technical or methodological expertise. This avoids concentrating all content-production responsibility in a single partner and ensures that the course remains both pedagogically coherent and technically accurate.

The Moodle implementation also requires **platform and learning-design support**. This includes configuring the Moodle course structure, uploading and formatting learning resources, setting activity completion conditions, configuring the final auto-graded evaluations, checking navigation, enabling feedback surveys, and ensuring that the privacy notice and acknowledgement/consent flow are correctly implemented. These activities are coordinated through the training task, with support from the relevant platform or administrative team.

After each release, a limited **monitoring and improvement effort** is required. The responsible course contributors will review Moodle analytics, final evaluation results, unit-level feedback surveys, and final

course feedback survey results in an aggregated form. The objective is to identify practical improvements, such as clarifying explanations, adjusting estimated workload, improving instructions, refining quiz questions, updating references, or correcting Moodle navigation issues.

This resourcing model does not require a fixed numeric staffing plan in D7.5. Instead, it defines the operational responsibilities needed to keep the training programme coherent and maintainable: **overall training coordination, mini-course ownership, technical and pilot-based validation, Moodle/platform support, and feedback-based improvement**. The model will remain flexible during the second phase of the project, when the remaining mini-courses are implemented, tested, and consolidated before the final iteration deliverable, **D7.8**.

2.5.3 Delivery, workshops, and validation moments

The training programme will use a combination of **asynchronous Moodle delivery**, targeted dissemination actions, and selected validation moments to engage learners and collect improvement evidence. The main delivery channel is the **6G-VERSUS Learning Platform**, where mini-courses are released progressively and can be accessed by registered users.

For the initial release, **Mini-course 1: 5G fundamentals** provides the first operational validation point. It allows the consortium to test the Moodle structure, lesson packaging, workload assumptions, optional formative PBL activities, final auto-graded evaluation, privacy acknowledgement flow, and feedback instruments with early users. This first release also provides a reusable implementation model for the following mini-courses.

Additional delivery and validation moments may be organised through **project workshops**, consortium events, webinars, stakeholder sessions, or activities connected to WP7 dissemination and ecosystem-building actions. These moments can be used to present selected units, demonstrate the learning platform, invite early enrolment, collect feedback from representative users, and identify improvements before wider dissemination.

For **Mini-course 4: Innovation and entrepreneurship in 5G, 6G and emerging connectivity**, delivery may also be connected to the **Acceleration and Scale-up Programme** under T7.5. In this case, Moodle materials can support asynchronous onboarding, preparatory learning, or complementary training for accelerator participants and community partners. This connection is particularly relevant because the mini-course is led by ENV and addresses topics directly linked to innovation support, business model development, sustainability framing, and market-oriented communication.

For **Mini-course 3: 6G use cases and trials**, validation should be aligned with the project's phased trial implementation. Rather than presenting immature pilot content as final, the course should progressively incorporate validated examples, trial-planning material, cluster descriptions, KPI/KVI reasoning, and lessons learned from the project's technical work. Pilot leaders, use-case owners, and technical partners should be involved where needed to ensure that the material reflects the actual status of the trials.

The validation approach will remain **proportionate and flexible**. At this stage, D7.5 does not introduce fixed recruitment targets or mandatory participation KPIs for each mini-course. Instead, the project will use available dissemination channels, partner networks, workshops, and related events to attract early learners from relevant profiles, including students, researchers, industry professionals, vertical stakeholders, innovation actors, and educators. Where feasible, consortium partners may promote the course within their own networks and encourage suitable learners to enrol and provide feedback.

Validation evidence will be collected primarily through Moodle analytics, final evaluation results, unit-level feedback surveys, final course feedback surveys, and qualitative comments from workshops or dissemination activities. The purpose is to identify practical improvements, not to overstate impact at the initial release stage. Aggregated uptake, completion, feedback, and improvement evidence will be consolidated in **D7.8**.

2.5.4 Feedback and monitoring (what data to collect and how)

Feedback and monitoring activities are designed to provide a **minimal but sufficient evidence package** for course improvement and for later reporting in **D7.8**. The approach combines Moodle-based analytics, final

evaluation results, structured learner feedback, and qualitative input collected through dissemination or validation activities where available.

For the first Moodle release, corresponding to **Mini-course 1: 5G fundamentals**, the main monitoring evidence will be collected through the following sources.

First, the Moodle platform provides **operational learning analytics**, including enrolment, access to course materials, activity completion, progression through units, completion of the final auto-graded evaluation, and interaction with optional practical or PBL-oriented activities where enabled. These indicators help identify whether learners are progressing through the course as expected and whether any unit or activity creates friction.

Second, the final auto-graded evaluation provides **assessment evidence**. For the first mini-course, this evaluation consists of 25 questions with an estimated duration of one hour. Aggregated results can be used to identify topics where learners perform well, topics where misunderstandings are frequent, and questions that may need clarification, rewording, or replacement in future releases.

Third, each unit includes a short **unit-level feedback survey**. This instrument captures immediate feedback on the clarity, workload, usefulness, and perceived relevance of the unit. The unit-level survey is especially useful for identifying specific improvements, such as lessons that require clearer explanations, references that should be updated, activities that need additional scaffolding, or workload estimates that should be adjusted.

Fourth, the mini-course includes a longer **final course feedback survey**, completed at the end of the learning experience. This survey collects broader information on the overall organisation of the mini-course, Moodle usability, balance between theory and practice, perceived learning gain, usefulness for the learner's profile, and suggestions for improvement. It complements the unit-level surveys by providing an integrated view of the complete learning experience.

Where the course is presented in **webinars, workshops, stakeholder sessions, or consortium dissemination activities**, qualitative feedback may also be collected. This may include comments from students, researchers, industry professionals, vertical stakeholders, educators, accelerator participants, or community partners. Such feedback will be used as contextual evidence to complement Moodle analytics and survey results.

PBL-related data will be treated proportionately. Since unit-level PBL exercises are **formative and optional** in the current implementation, the project will not rely on mandatory rubric-score distributions as formal evidence for D7.8. Instead, optional engagement with PBL activities, learner comments, or instructor observations may be used to assess whether these activities are understandable, useful, and appropriately scoped.

All monitoring and feedback results will be analysed in an **aggregated form**. Individual learner identities, personal data, quiz results, activity logs, or survey responses will not be published in public deliverables or dissemination materials. The purpose of the monitoring process is to support evidence-based improvement of the training programme while remaining proportionate to the initial release stage.

The final iteration deliverable, **D7.8**, will consolidate the relevant evidence collected during implementation, including uptake indicators, completion information, aggregated feedback summaries, assessment trends, and the main improvement actions implemented between D7.5 and D7.8.

2.5.5 Content updates (what triggers changes between D7.5 and D7.8)

D7.5 documents the **initial set-up** of the training programme. Therefore, updates are expected between D7.5 and the final iteration deliverable, **D7.8**, as the Moodle implementation progresses, learner feedback is collected, and the technical work packages produce more mature evidence.

A short **change log** should be maintained for each mini-course. The change log should record the date of the update, the affected module/unit/lesson, the reason for the change, the type of change introduced, and whether the change affects learning outcomes, workload, assessment, Moodle configuration, or only editorial aspects. This will support transparent consolidation in D7.8.

Content updates may be triggered by the following situations.

- **Updated technical baselines.** New or revised project outputs may require changes to lessons, references, examples, optional PBL activities, quiz questions, or explanatory diagrams. This is particularly relevant for content linked to the 6G-VERSUS architecture, testbeds, experimentation environment, 6G application triplet, trial planning methodology, and KPI/KVI evaluation framework.
- **Pilot and trial evidence.** Mini-course 3, **6G use cases and trials**, should be updated progressively as the project pilots advance through their implementation phases. Validated material from pilot leaders, use-case owners, and technical partners may be used to refine cluster descriptions, trial scenarios, KPI/KVI examples, measurement assumptions, and lessons learned. The course should avoid presenting preliminary pilot information as final and should be updated when evidence becomes sufficiently stable.
- **Innovation and acceleration needs.** Mini-course 4, **Innovation and entrepreneurship in 5G, 6G and emerging connectivity**, should be updated in coordination with ENV and the T7.5 acceleration and scale-up activities. Updates may be needed when accelerator participants, community partners, or innovation stakeholders identify additional needs related to value proposition design, business model development, sustainability framing, circularity, regulation, market readiness, or investor-oriented communication.
- **Learner feedback and Moodle analytics.** Unit-level feedback surveys, final course feedback surveys, Moodle activity data, final evaluation results, and qualitative comments from workshops or dissemination activities may indicate the need for targeted improvements. Typical changes may include clarifying instructions, simplifying explanations, adding scaffolding, adjusting workload estimates, improving navigation, refining final evaluation questions, updating references, or better distinguishing mandatory and optional activities.
- **Workload calibration.** If analytics or feedback indicate that learners systematically spend more or less time than expected on a lesson, unit, reference set, practical activity, or optional PBL exercise, the workload assumptions should be reviewed. Updates may include adjusting estimated times, reducing optional material, clarifying what is required for completion, or moving additional material to optional self-study.
- **Technical validation by partners.** Partner review may identify outdated terminology, inaccurate assumptions, missing constraints, or inconsistencies with the current implementation status of the project. In such cases, the affected lesson, unit overview, practical activity, quiz question, or optional PBL scenario should be corrected. Where the issue is significant, a rapid Moodle update may be required before the next planned release.
- **Privacy, accessibility, and usability feedback.** Updates may also be triggered by issues related to the registration process, the privacy acknowledgement flow, course accessibility, Moodle usability, broken links, unclear navigation, or learner support requests. These changes should be treated as release-readiness and quality-assurance improvements.

Each update should be proportionate to the level of maturity of the affected content. Minor editorial corrections may be introduced directly, while substantive technical or pedagogical changes should be reviewed by the responsible mini-course owner and, where relevant, by the appropriate technical or innovation partner. The consolidated list of updates, together with the rationale and improvement evidence, will be reported in **D7.8**.

2.5.6 What D7.8 should consolidate (so we can plan backwards)

The final iteration deliverable, **D7.8**, will consolidate the implementation evidence, uptake information, feedback results, and improvement actions generated after the initial set-up reported in D7.5. To make this consolidation straightforward and auditable, the implementation phase should continuously collect a proportionate evidence package for each mini-course.

For the training programme, D7.8 should consolidate the following elements:

- **Moodle deployment evidence.** D7.8 should document the final Moodle structure of the deployed mini-courses, including module and unit organisation, lesson packaging, learning resources, activity completion logic, feedback instruments, and final evaluation configuration. Where useful, screenshots, exported course structures, or equivalent implementation evidence may be retained internally to support reporting.

- **Mini-course production status.** D7.8 should report which mini-courses have been fully implemented, which have been tested or piloted with users, and which have required updates due to evolving project baselines. This should include the implementation status of the four mini-courses.
- **Uptake and engagement.** D7.8 should provide aggregated information on learner enrolment, participation, activity completion, final evaluation completion, and engagement with optional activities where available. These indicators should be reported carefully and proportionately, avoiding unsupported claims while showing how the platform has been used by the target audiences.
- **Assessment evidence.** D7.8 should summarise aggregated final evaluation results, including completion patterns and general performance trends. The purpose is to identify whether the assessment approach worked as intended and whether certain topics, questions, or learning outcomes require improvement. Individual learner results should not be published.
- **Feedback and improvement evidence.** D7.8 should consolidate the results of unit-level feedback surveys, final course feedback surveys, and any relevant qualitative feedback from workshops, webinars, dissemination actions, accelerator-related activities, or partner-led engagement. The report should identify the main improvement actions implemented between D7.5 and D7.8, such as revisions to lessons, references, workload estimates, quiz questions, optional PBL activities, navigation, or learner instructions.
- **Optional PBL and applied activity evidence.** Since unit-level PBL activities are formative and optional in the current implementation model, D7.8 should not rely on mandatory rubric-score distributions as formal evidence. Instead, it may report optional engagement with PBL activities, examples of how PBL was used in workshops or instructor-led settings, learner perceptions of usefulness, and any refinements made to PBL scenarios or guidance.
- **Traceability maintenance.** D7.8 should confirm that the training programme remains aligned with the latest relevant 6G-VERSUS baselines, including architecture and use-case requirements, experimentation environment, trial planning, KPI/KVI evaluation, dissemination, exploitation, and acceleration-related needs. Where technical baselines or pilot evidence changed substantially, D7.8 should explain how the corresponding mini-course content was updated.
- **Data protection and reporting safeguards.** D7.8 should report monitoring and feedback information only in an aggregated or anonymised form. Individual-level learner data, identities, quiz results, activity logs, or survey responses should not be published in public deliverables or dissemination materials.

This evidence package will allow D7.8 to move from the initial design and set-up described in D7.5 to a defensible account of implementation, uptake, feedback-driven improvement, and alignment with the evolving 6G-VERSUS technical and ecosystem-building activities.

Acceleration and Scale-up Programme Set-up (Initial)

3.1 Objectives and scope

3.1.1 Strategic purpose

T7.5 is the piece of 6G-VERSUS that turns research and validation outputs into ecosystem uptake. Its job is to connect the project's trials, testbed capabilities, and technical baselines to startups, SMEs, and innovation-driven organisations that will take 6G-enabled solutions to market.

Within WP7, T7.5 sits immediately downstream of T7.4. Where T7.4 establishes foundational competencies, T7.5 puts those competencies to work through structured innovation support, including business validation, investor readiness, and a first route to market. Together, they form a pipeline that begins with awareness and ends with market-facing scale-up.

The task also carries a cross-cutting ambition: to demonstrate that the economic, societal and environmental impact of 6G technology extends beyond the consortium to the wider European innovation community, consistent with the SNS JU's ecosystem objectives and the project's sustainability framing.

3.1.2 The three-strand programme architecture

T7.5 is organised into three strands. Each addresses a distinct phase of the innovation lifecycle and a distinct stakeholder segment, but all three draw on the same pool of 6G-VERSUS technical and exploitation assets.

Strand 1: 6G-VERSUS Venture Accelerator. The flagship activity. Targets early and growth-stage startups and SMEs with potential or active 6G-relevant solutions or service concepts. Delivered entirely online over ten weeks, for 25 selected European teams.

Strand 2: Scale-up and Market Expansion Service Lab. For Accelerator alumni, advanced startups, and more mature SMEs, who have already passed technical validation. Provides group-format support for market analysis, partnership development and competitive positioning.

Strand 3: Knowledge Transfer and Community Partners Network. Targets innovation intermediaries across Europe, including ecosystem builders, accelerator and incubator managers, and university technology-transfer officers. The strand equips them as Community Partners, who extend the project's reach, disseminate T7.4 materials to new audiences and act as durable local ecosystem antennas that outlive the project.

3.1.3 Programme Objectives

- **Support 25 selected European startups and SMEs** in developing and validating 6G-relevant solutions, through structured technical and business acceleration.
- **Build investor readiness** among cohort participants, so teams can articulate a value proposition, defend a business model, and engage credibly with investors and strategic partners.
- **Extend market access** for alumni and mature SMEs through the **Market Expansion Service Lab**, using shared tools and knowledge.
- **Establish a network of at least 10 Community Partners from at least 5 EU countries**, equipped to scout candidates, disseminate training materials, and act as local 6G innovation antennas.
- **Ensure traceability between project technical assets and innovation outcomes** by grounding every workshop in the 6G-VERSUS baselines (architecture, testbeds, trials, KPI/KVI methodology) and reporting uptake metrics in D7.8.

3.1.4 Relation to SNS JU and Horizon Europe ecosystem objectives

T7.5 contributes directly to the SNS JU priority of a stronger European 6G ecosystem. Specifically, the programme:

- strengthens European startup and SME capacity to develop and deploy 6G-based solutions, and therefore supports EU technological sovereignty in next-generation connectivity;

- fosters cross-border collaboration and knowledge exchange within the European 6G innovation community, in line with the SNS JU's transnational ambition;
- translates research outputs from SNS JU Stream D projects into viable products and services, 3.2 Target stakeholders and engagement funnel
- contributing to the EU's Digital Decade targets;
- creates durable links between research projects, industry and innovation intermediaries that persist beyond the grant period.

The programme's emphasis on sustainability-oriented 6G applications also aligns with the European Green Deal and with the EU's broader commitment to digital technologies that serve environmental and societal goals.

3.2 Target stakeholders and engagement funnel

3.2.1 Stakeholder profiles

T7.5 works with a mixed set of stakeholders across the 6G innovation lifecycle. The profiles below inform Open Call communication, the weighting of selection criteria, and the calibration of programme content and mentoring.

The target **stakeholders' profiles**, defined for this programme, are presented in the table below:

Stakeholder type	Primary strand(s)	Profile	Value proposition
Early-stage startup	Strand 1	Pre-seed/seed company with a provision of a 5G & beyond -related concept or Minimum Viable Product (MVP). TRL 3–5. Core team of 2–5, technical background. Needs market validation and investor access.	Structured acceleration, Business workshops, group mentoring, 6G-VERSUS technology briefings, technical workshops and support, investment readiness, Pitching Day visibility.
Growth-stage startup / SME	Strands 1 & 2	Series A or post-revenue SME actively piloting beyond 5G adjacent solutions. TRL 5–7. Wants scale-up support, not early-stage incubation.	Scale-up sessions, industry briefings, Market Expansion Toolkit, brokerage with consortium industry partners, and event-visibility guidance.
Independent technology developer	Strand 1	Individual researcher, freelance engineer or solo founder with components, hardware or software relevant to 6G. Looking for a route to commercialisation.	Business modelling, IP orientation, prototype validation feedback, transition-to-venture guidance.
Vertical adopter	Strands 1 & 2	Organisation in a vertical sector (health, mobility, manufacturing, energy, agriculture, media, ports) exploring 6G use cases. May be a pilot partner or market validator.	Use-case co-development insight, technology scouting, and matchmaking with cohort and consortium solution providers.
Student / early researcher moving into entrepreneurship	Strand 1	PhD candidate, postdoc or master's student with a tech idea but limited business skills.	Business modelling, peer learning, early-stage pitch coaching, IP orientation, and Module 4 pre-course access.

Stakeholder type	Primary strand(s)	Profile	Value proposition
Innovation intermediary (Community Partner)	Strand 3	Accelerator manager, incubator director, TTO, innovation hub lead or ecosystem builder with deep local reach.	Train-the-trainers session, T7.4 training pack, facilitation guide, scouting brief, access to 6G-VERSUS network, and regional visibility.

Table 12. Target stakeholder profiles for the programme

3.2.2 Geographic targeting

The Open Call is open to all EU member states and associated countries. Initial outreach concentrates on geographies where consortium partners have direct channels and established networks: Greece, Spain, France, Portugal, Bulgaria and Finland (the trial-site countries), Portugal and Ireland (IPN and ENV home countries, both with active and deeply-rooted accelerator networks); and any additional country reachable through EBN, DeepTechAlliance, EVOLVED-5G, and SERN partners.

3.2.3 Engagement funnel

The engagement funnel below traces the full journey from initial awareness to post-programme outcomes. It is the common reference for communication planning, resource allocation and success measurement across the three strands.

An **engagement funnel** will be used for the **6G-Versus Venture Accelerator**, aiming to provide a structured pathway to **attract, qualify, support, and empower** the participants to achieve meaningful impact.

By clearly mapping the journey from initial outreach to final outcomes, the funnel ensures that communication is targeted, resources are allocated efficiently, and teams receive the level of support that matches their maturity and needs.

The **funnel** helps the programme filter high-potential innovators, maintain consistent engagement, and guide participants through stages of **awareness, onboarding, capacity-building, and measurable results**.

Ultimately, a well-designed **engagement funnel** maximises **programme effectiveness**, strengthens **stakeholder relationships**, and increases the likelihood of **successful innovations reaching the market**.

The **engagement funnel** is presented in the following table:

Funnel stage	Goal	Target outcome	Key actions and channels
1. Awareness	Reach and attract potential applicants across target profiles and EU geographies.	≥ 200 landing-page visits; ≥ 50 expressions of interest.	LinkedIn, Instagram and X/Twitter campaign; WP7 newsletter; SNS JU project network; Community Partner outreach in ≥ 5 countries; presence at big EU events like WMC, WebSummit and SNS JU events; landing page on 6g-versus.eu.
2. Application	Turn interest into complete, evaluable	≥ 50 complete applications.	Open Call Guide; applicant webinar; Monday.com portal; FAQ; responsive email support through a dedicated email client (ENV/IPN). Info session

Funnel stage	Goal	Target outcome	Key actions and channels
	applications via Monday.com.		scheduled for July 6 th via zoom and other info session at other innovation agencies and SMEs working groups.
3. Evaluation and selection	Identify the 25 highest-potential teams through a transparent process.	25 teams selected; results communicated to all applicants.	Evaluation rubric (Annex A); multi-expert panel (technical + business + investor); results by 10 August 2026; feedback to all applicants; waitlist maintained.
4. Onboarding	Prepare the cohort; align expectations; open access to T7.4 materials.	25 teams confirmed; onboarding pack distributed.	Welcome pack; orientation session (2h); Learning platform and module 4 Moodle link; scope-boundaries briefing; mentor assignment.
5. Acceleration (10 weeks)	Build technical and business capability; support validation; produce an investor-ready pitch.	≥ 50% of teams reach Pitching Day; all teams produce a revised BMC and pitch deck.	9 core workshops (4 TW + 4 BW); 2 rounds of group mentoring; peer-learning session; Gate 3 checkpoint; Moodle async.
6. Pitching Day and graduation	Showcase cohort outcomes to consortium, industry and investors.	All completing teams present; ≥ 10 experts/stakeholders attend.	Half-day virtual event (Zoom); 3-min pitch + 5-min Q&A; panel with consortium industry partners; recording shared with invited stakeholders.
7. Post-acceleration (Scale-up and KT)	Support ongoing growth; activate Community Partners for pipeline continuity.	≥ 30 participants in scale-up activities; ≥ 10 active Community Partners.	Scale-up sessions; toolkit distribution; industry briefings; brokerage event; CP network activation; referral pipeline.

Table 13. Engagement funnel from awareness to post-programme outcomes

3.3 Programme components and service catalogue (initial design)

3.3.1 Overview: the three-strand architecture

The three strands together cover the full innovation uptake lifecycle - from early-stage team acceleration to post-programme market expansion and durable ecosystem networking. Everything is delivered virtually, by consortium partners, within the available project effort.

The strands are sequenced (Strand 1 alumni feed Strand 2; Strand 3 feeds candidates into Strand 1), but also run in parallel: the Scale-up Lab is open to mature SMEs from the start, and Community Partner recruitment begins before the Open Call opens.

3.3.2 Strand 1: 6G-VERSUS Venture Accelerator

Programme structure and week-by-week schedule

The Accelerator runs for ten weeks, from September to November 2026, with a cohort of 25 teams. The weekly rhythm is consistent: live virtual sessions (workshops, mentoring, peer learning) are paired with asynchronous work (pre-recorded materials, team deliverables, and self-paced Moodle content from T7.4). Table 14 gives the week-by-week plan.

Week	Theme	Live session(s)	Asynchronous work	Milestone/gate
1	Orientation and programme framing	Kick-off (2h): roadmap, team intros, scope briefing, mentor assignments.	Learning platform onboarding and Module 4 mini-course (pre-course); team profile submitted on Monday.com.	Onboarding complete (Gate 2)
2	6G-VERSUS architecture and use-case landscape	TW-1 (2h): architecture overview, V/N/AI-App triplet, cluster use cases.	D2.1 summary brief; solution-positioning self-assessment.	-
3	Problem framing and market definition	BW-1 (2h): problem-solution fit, customer discovery, B2B market segmentation.	Team canvas: problem statement, target segment, top 3 competitors.	-
4	6G technical enablers and KPI/KVI literacy	TW-2 (2h): B5G/6G enablers; KPI/KVI framing for value demonstration.	Map value claim to ≥ 2 KPIs and ≥ 1 KVI (reference T7.4 M3 Unit 11).	-
5	Business Model Canvas and Value Proposition	BW-2 (2h): BMC deep-dive, value proposition canvas, sustainability integration. BW-3 (2h): Marketing and sales management; customer journey	First-draft BMC (all 9 blocks) uploaded to Monday.com.	First-draft BMC due
6	Testbed exposure and technology validation	TW-3 (2h): experimentation environment; framing validation claims.	Peer-learning session (1h): cross-team exchange on architecture choices.	-
7	Mid-programme checkpoint and pivot	Gate 3: 1:1 or small-group progress review (30 min/team); written feedback from ENV/IPN.	Revised BMC; updated problem-solution narrative.	Gate 3
8	Sustainability and ESG framing	TW-4 (2h): sustainability and ESG for 6G solutions; circular economy basics.	Identify regulatory constraints + 1 circularity/ESG implication.	-
9	Investor readiness and pitch preparation	BW-4 (2h): investor-readiness framework; investment strategy; pitch structure; EU funding landscape.	First-draft pitch deck (10 slides max) uploaded to Monday.com	First pitch draft due

Week	Theme	Live session(s)	Asynchronous work	Milestone/gate
10	Pitch rehearsal and Pitching Day prep	BW-5 (2h): rehearsal, panel feedback, logistics briefing.	Final revisions to pitch deck and BMC.	All materials final
End	Pitching Day and programme close	Pitching Day (half-day): 5-min pitch + 5-min Q&A per team; stakeholder panel; closing remarks.	Exit questionnaire; Scale-up Lab invitation.	Gate 4

Table 14. 6G-VERSUS Venture Accelerator: 10-week schedule and milestones

Workshop content and design

The Accelerator runs nine core workshops across the ten weeks - four technical (TW) and five business (BW). Each is a facilitated 2-hour live session, recorded where possible for asynchronous catch-up, and structured around a tangible team output (an exercise, a draft deliverable or a revised artefact). Table 15 sets out the catalogue.

#	Title	6G-VERSUS baseline	Learning objectives	Lead partner(s)
TW-1	6G-VERSUS architecture, triplet model and cluster use cases	D2.1	Understand the V/N/AI-App triplet; map own solution to a 6G-VERSUS use case family; identify relevant architectural building blocks.	WP2 technical leads + ENV
TW-2	B5G/6G enablers and KPI/KVI framing	D2.1, D5.1	Identify 2–3 enablers relevant to own solution; define ≥ 2 KPIs and ≥ 1 KVI; distinguish performance from value indicators.	WP5 leads + T7.5 facilitator
TW-3	Experimentation environment and validation approaches	D3.1	Understand testbed capabilities; learn to frame a validation claim; know what evidence is realistic within programme scope.	WP3 testbed leads + T7.5 facilitator
TW-4	Sustainability, ESG and circular economy for 6G solutions	D5.1, D7.2, T7.4 M4-U13	Apply KVI reasoning to sustainability claims; identify regulatory constraints; articulate 1 ESG/circularity implication.	WP5 sustainability leads + ENV
BW-1	Problem-solution fit, customer discovery and market segmentation	D7.2 (exploitation framing)	Articulate the problem in customer terms; identify and prioritise 3 segments; describe the beachhead customer.	ENV + IPN business mentors
BW-2	Business Model Canvas, value proposition and sustainability integration	T7.4 M4-U12, D7.2	Complete all 9 BMC blocks; build a value proposition canvas; integrate sustainability into the value proposition.	ENV + IPN business mentors

#	Title	6G-VERSUS baseline	Learning objectives	Lead partner(s)
BW-3	Marketing & Sales Management	T7.4 D7.2	Understand the basics of marketing and communication strategy; identify sales channels and prioritise sales targets	ENV + IPN + industry partners
BW-4	Investor readiness and EU funding landscape	D7.2 (exploitation framing)	Understand investor readiness; structure a 10-slide pitch; identify 3 relevant EU funding instruments.	ENV + IPN + industry partners
BW-5	Pitch rehearsal and panel feedback	All prior	Deliver a 5-minute investor pitch; take structured feedback; refine key messages.	ENV (facilitation); industry partners (panel)

Table 15. Accelerator workshop catalogue: technical (TW) and business (BW) sessions

Mentoring model

Group mentoring is delivered in two rounds across Weeks 3–4 and Weeks 8–9. Each round is a structured group session of 45–60 minutes with a maximum of five teams per mentor slot. This "1:few" format is chosen deliberately: it lets the consortium's limited mentor availability serve all 25 teams fairly, while still giving each team personalised feedback and shared knowledge, including best practices and common challenges.

Mentors are drawn from the consortium's technical and business experts. The thematic palette covers 6G architecture and application design, KPI/KVI methodology, business model development, investor readiness, IP and licensing, ESG and sustainability framing, and sector-specific domain knowledge (energy, mobility, agriculture, ports, and so on).

Matching is based on team self-assessments completed at onboarding (Week 1). ENV and IPN coordinate the process and make sure each team is paired with at least one technical mentor and at least one business mentor across the two rounds.

Selection criteria and evaluation

Teams are selected through the Open Call process, using the evaluation procedure and criteria described in **Annexes G and J**, and the Open Call design and implementation framework described in **Annex I**. A multi-expert panel applies five equally weighted criteria: sector relevance and 6G technology alignment; team strength and execution capacity; business readiness and scalability; funding readiness and investor attractiveness; and programme fit and commitment.

The Open Call is open from 15 May to 10 July 2026. Evaluation runs from 20 July to 8 August, and results are communicated by 10 August 2026. A waitlist of five to ten teams is kept to fill any slots vacated before kick-off.

3.3.3 Strand 2: Scale-up and Market Expansion Service Lab

The Market Expansion Service Lab provides post-acceleration group support, open to Accelerator alumni and to additional mature startups and SMEs across Europe that did not join the cohort but are ready for scale-up. All activities are group-format, knowledge-based, and delivered without individual consultancy or financial support. Table 16 sets out the catalogue.

Activity	Description	Format and delivery	Eligibility
Market expansion workshop - Session 1: frameworks and tools	Market-entry frameworks (PESTLE, Porter's Five Forces, Jobs-to-be-Done for B2B); EU and international landscape for 6G-adjacent solutions; how to identify beachhead markets.	Virtual (MS Teams) 2h one session recorded.	Accelerator alumni + registered SMEs.
Market expansion workshop - Session 2: go-to-market and positioning	Go-to-market design, competitive differentiation, distribution channel mapping for B2B tech, partnership and channel development.	Virtual 2h one session recorded.	Accelerator alumni + registered SMEs.
Market Expansion Toolkit	Curated toolkit using publicly available frameworks: (1) desk-research guide; (2) stakeholder and ecosystem mapping canvas; (3) regulatory and industry briefings per sector (energy, mobility, health, ports, agriculture, manufacturing); (4) competitive analysis template; (5) partnership development checklist; (6) Investors' readiness & governance checklist.	Asynchronous shared repository (SharePoint/Moodle) available from Gate 4.	All alumni and registered Scale-up Lab participants.
Facilitated brokerage and matchmaking	Half-day virtual event matching scale-up participants with consortium industry partners, testbed owners and invited external stakeholders. Each team submits a 2-page solution profile in advance; each is assigned 3–4 pre-set 15–20 minute meetings with facilitated introductions.	Virtual (MS Teams breakouts) 3h one event post-event summary shared.	Priority to Accelerator alumni; open registration for mature SMEs (20 total).
High-profile event visibility support	Advisory support for participation in WMC (Barcelona), WebSummit (Lisbon) and SNS JU community events: submission guidance, pitch review, introductions to consortium teams at the event, guidance on participation communication and dissemination, and inclusion in 6G-VERSUS alumni communications. No travel funding.	Advisory (email + async) ongoing from Gate 4.	All graduated cohort members.

Table 16. Scale-up and Market Expansion Service Lab: activity catalogue

ENV and IPN facilitate the two workshops using publicly available frameworks (PESTLE, Porter's Five Forces, Jobs-to-be-Done) that carry no licensing cost. The Toolkit is curated from public sources, as well as ENV and IPN resources, and involves no bespoke market research.

3.3.4 Strand 3: Knowledge Transfer and Community Partners Network

The Knowledge Transfer strand does not build a new network. It works through the European innovation intermediary networks in which consortium partners already belong to, most notably IPN's membership of the European Business Network (EBN) and ENV's membership of the EVOLVED-5G Community Partners Network, to recruit, equip and coordinate a set of local Community Partners across Europe.

Activity	Description	Format and delivery	Target and reach
Community Partner recruitment	Proactive outreach to existing contacts in EBN (via IPN), DeepTechAlliance, SERN, ESNA, and the EVOLVED-5G network (via ENV). Recruitment brief highlights T7.4 materials, 6G-VERSUS network access, and regional ecosystem value.	Ongoing email + partner channels from Month 12.	≥ 10 CPs from ≥ 5 EU countries confirmed before Open Call launch.
Train-the-trainers session	Half-day virtual session equipping Community Partners to: understand 6G-VERSUS and its training materials; facilitate Learning Platform and Module 4 (Innovation and Entrepreneurship) in their local ecosystems; use the scouting brief to identify referrals; plug into the CP coordination network.	Virtual 3h 1–2 sessions (for time-zone coverage) recorded.	All Community Partners; ≥ 80% attendance before Gate 1.
CP onboarding pack	Pack distributed to all confirmed Community Partners: (a) Module 4 Moodle export or link; (b) facilitation guide for local delivery; (c) scouting brief and referral form; (d) 6G-VERSUS programme overview deck; (e) FAQ for local audiences; (f) CP badge and communication kit.	Asynchronous SharePoint after train-the-trainers.	All CPs; English; local adaptations welcomed but not required.
CP coordination network	Light-touch coordination: monthly email update (news, pipeline, events); optional quarterly 1-hour virtual touchpoint; shared referral log; recognition of CP contributions in WP7 communications and D7.8.	Monthly email + optional quarterly call ongoing from Month 14.	All active CPs; maintained by IPN/ENV.
Scouting and referral pipeline	CPs identify and refer candidate startups/SMEs from their local ecosystems. Process: CP completes a short referral form; ENV/IPN reviews and contacts the team; eligible teams are invited to apply to the Open Call or join the Market Expansion Service Lab.	Ongoing CP networks + Monday.com referral form.	≥ 20 referrals contributing to the pipeline, from ≥ 5 EU countries.

Table 17. Knowledge Transfer strand: activity catalogue

The Community Partners model is designed to maximise geographic reach, without committing consortium resources in each country. Community Partners contribute local knowledge and network access; in return they receive high-quality reusable training materials (the T7.4 Learning Platform package), visibility in 6G-VERSUS communications, and early access to the project's innovation pipeline - which can, in itself, generate leads and partnership opportunities for their own organisations.

3.4 Operating model and governance

T7.5 operates under a distributed leadership model, where responsibilities are shared across core partners while maintaining clear ownership of key functions. Each strand has a clearly assigned lead partner; other partners contribute in tightly scoped ways. Accountability is concentrated where it is most operational: ENV leads Accelerator and Scale-up design, IPN leads overall coordination and the Community Partners network, while technical and domain content is contributed by whichever partner is best placed to provide it.

The task is led by IPN, with ENV playing a key role by leading the design and implementation of the acceleration programme, the market expansion service lab, and the intermediate network and train-the-trainer programme.

Each partner supports the execution of T7.5 based on its respective **expertise**. Typical contributions are as follows:

- **Technical Partners:** Provide access to 6G testbeds, mentoring, and technological assessments;
- **Business/Innovation Partners:** Deliver business modelling workshops, investor readiness training, and mentorship;
- **Ecosystem Partners:** Lead outreach, community building, and stakeholder engagement;
- **Academic/Research Partners:** Support deep-tech validation, student/researcher pathways, and IP guidance.

3.4.1 Partner roles and responsibilities

T7.5 operates under a distributed leadership model. Each strand has a clearly assigned lead partner; other partners contribute in tightly scoped ways. Accountability is concentrated where it is most operational: ENV leads Accelerator and Scale-up design, IPN leads overall coordination and the Community Partners network, while technical and domain content is contributed by whichever partner is best placed to provide it.

Programme strand	Lead partner	Key contributing partners	Contribution type and scope
Overall T7.5 coordination	IPN	All partners	IPN coordinates across the three strands, maintains the gate log, reports at WP7 meetings, and consolidates monitoring data for D7.8.
Accelerator design and operations	ENV	IPN (oversight); technical WP leads (TW-1 to TW-4); industry partners (BW mentoring, Pitching Day); academic partners (deep-tech validation, IP)	ENV runs the full delivery calendar, onboarding, workshop facilitation and Gates 3/4. Technical partners contribute 2–4 hours per assigned workshop. Industry partners provide 1–2 mentor slots per partner per round (2 rounds).
Scale-up / Market Expansion Service Lab	ENV	IPN (co-facilitation); consortium industry partners (brokerage); use-case leaders (sector-specific input)	ENV facilitates the two workshops and the brokerage event. IPN supports logistics and registration. Industry partners participate in brokerage matchmaking. No deliverables required beyond attendance and facilitation.
Knowledge Transfer and CP network	ENV (design, train-the-trainers); IPN (network coordination)	ENV: Mini-course 4 content and Moodle implementation; IPN: Community Partner coordination; UPV: Moodle/platform support where required; ecosystem/network partners: local outreach and referral; academic partners: researcher pathway support.	ENV prepares and uploads the Mini-course 4 innovation/entrepreneurship content in Moodle and provides the corresponding onboarding package. IPN coordinates the Community Partner network and recruitment process. UPV provides Moodle/platform support where required, including

Programme strand	Lead partner	Key contributing partners	Contribution type and scope
			access, structure, formatting, or configuration guidance.
WP7 dissemination and Open Call outreach	ENV + IPN (co-leads)	All WP7 partners; SNS JU liaison	Open Call dissemination is run as a WP7 communication activity. All WP7 partners amplify Open Call materials through their own channels. The SNS JU project network is activated through the consortium's JWG participation.

Table 18. T7.5 partner roles and responsibilities by strand

3.4.2 Four-gate governance model

Progression through the programme is governed by four gates. Each has defined entry criteria and output decisions. The gates serve two purposes at once: they act as quality checkpoints, and they document programme progress in a form that can be reported in D7.8. Every gate decision is signed off jointly by IPN (task lead) and ENV (programme lead), recorded in the shared gate log, and reported at the next WP7 coordination meeting.

Gate	Timing	Entry criteria	Output/decision
Gate 1 - Outreach Validation	April 2026 (≥ 4 weeks before Open Call launch)	Open Call documentation finalised (eligibility, rubric, Monday.com registration and application form); outreach plan approved by IPN + ENV; ≥ 5 CPs confirmed; Mini-course 4 release plan confirmed; minimum onboarding content package defined; ENV/IPN/UPV responsibilities agreed	Open Call launched; CPs formally activated; Scale-up Lab registration page live. Gate 1 record signed off.
Gate 2 - Selection and Onboarding	August 2026 (results 10 Aug; kick-off 14 Sept)	25 teams selected; all applicants notified; waitlist confirmed; onboarding pack distributed; MS Teams + Monday.com configured; Mini-course 4 Moodle MVP or approved onboarding package activated; access link tested; onboarding instructions distributed; CP train-the-trainers completed.	Cohort confirmed; kick-off delivered; mentor matching completed. Gate 2 record signed off.
Gate 3 - Mid-programme Checkpoint	Week 7 of acceleration (October 2026)	All teams have submitted first-draft BMC (Week 5); progress reviewed for all 25 teams; written feedback distributed; at-risk teams identified and supported; Scale-up Lab brokerage event scheduled.	Continuation confirmed for all active teams; 1–3 at-risk teams addressed; programme calendar adjusted if needed. Gate 3 record signed off.
Gate 4 - Programme Close and Outcomes Validation	November 2026 (Pitching Day, end of November)	≥ 20 teams complete the programme and participate in Pitching Day; exit questionnaire distributed; Scale-up	Pitching Day delivered; outcomes documented; Scale-

Gate	Timing	Entry criteria	Output/decision
		Lab participant list confirmed; CP pipeline status reviewed; D7.8 data collection initiated.	up Lab Phase 2 activated for alumni; D7.8 evidence collection formally starts. Gate 4 record signed off.

Table 19. T7.5 four-gate governance model: criteria and decisions

3.4.3 Coordination and communication protocols

The programme relies on a small set of coordination instruments that keep partners aligned without generating unnecessary overhead:

- **Gate log.** Shared SharePoint document maintained by OULOU University that records gate decisions, entry-criteria status, actions and owners. Updated at each gate and open to all WP7 partners.
- **Bi-weekly T7.5 coordination call.** A 30-minute standing call between IPN, ENV and UPV (T7.4 liaison) to review KPI progress, flag issues, and confirm upcoming activities. Other partners join as needed.
- **WP7 plenary reporting.** T7.5 progress is reported at WP7 coordination meetings (cadence per the project management plan), using the KPI dashboard defined in Section 3.6.
- **Community Partners update.** Monthly email to all active CPs - programme news, pipeline, upcoming events, and materials updates.
- **Cohort channel.** A dedicated MS Teams channel per cohort (set up at Gate 2), used as the central hub for workshop links, async materials, deliverable reminders and peer communication.

3.4.4 Interface with T7.4 governance

T7.5 and T7.4 are coordinated under the WP7 umbrella but keep separate operational governance. The practical interface is **Mini-course 4 / Module 4 of the T7.4 Learning Platform**, focused on **Innovation and Entrepreneurship in 5G, 6G and emerging connectivity**, which will be used by T7.5 as cohort onboarding, preparatory material, and supporting content for Community Partner train-the-trainers activities.

At the D7.5 cut-off date, this interface is defined as a planned/MVP interface because Mini-course 4 is in advanced production, but has not yet completed video production, Moodle upload, activity configuration, and final release QA.

ENV is responsible for producing, maintaining, and uploading Mini-course 4 content in Moodle, using its teacher role for that mini-course. This includes preparing the innovation and entrepreneurship learning materials, configuring the corresponding Moodle resources and activities, updating the content where accelerator needs evolve, and ensuring that the mini-course remains aligned with the T7.5 Acceleration and Scale-up Programme.

UPV supports the Moodle implementation where needed, given its coordination role in the wider T7.4 Learning Platform and its experience with the Moodle structure used for the first mini-course. This support may include guidance on Moodle formatting, navigation consistency, activity configuration, completion logic, feedback instruments, or troubleshooting. However, UPV is not responsible for producing or uploading the Mini-course 4 content.

During programme delivery, T7.5 leads collect any content, usability, access, or onboarding issues identified by accelerator participants or Community Partners. Issues related to innovation and entrepreneurship content are handled by ENV. Issues related to the general Moodle environment, access flow, or platform configuration may be addressed with UPV support where required.

Any significant update to Mini-course 4 that affects the accelerator onboarding experience, for example, following changes in exploitation framing, market-readiness needs, or T7.5 delivery requirements, should be

coordinated by ENV with IPN and, where Moodle-level support is required, with UPV. This ensures that the T7.5 onboarding material remains operational while preserving consistency with the broader T7.4 Learning Platform.

3.5 Interfaces with other WPs and project assets

T7.5 actively consumes outputs from the project's technical and exploitation work packages. This is what keeps the Accelerator content grounded in 6G-VERSUS-specific material rather than generic 6G knowledge. Table 20 sets out the operational interface, trigger and update logic for each source.

Source	Asset consumed	How used in T7.5	Operational trigger	Update dependency
T7.4 - Mini-course 4 / Module 4	Moodle MVP or approved onboarding package covering BMC, SWOT, pitch framing, circular economy, sustainability, and regulatory awareness	Used as asynchronous onboarding/preparatory material for accelerator participants; reused as supporting material for Community Partner train-the-trainers activities where available	ENV confirms Mini-course 4 MVP or fallback onboarding package; ENV/IPN integrate access link and instructions at least 2 weeks before Gate 2; UPV provides Moodle/platform support where required	Updates triggered by accelerator needs, D7.2 exploitation framing, participant feedback, Community Partner feedback, or Moodle access/usability issues. ENV updates Mini-course 4 content and Moodle activities; UPV supports platform-level issues where required
WP2 - D2.1	6G-VERSUS use-case families, V/N/AI-App triplet, architecture blocks, requirements framing.	Backbone of TW-1 and TW-2; cohort members learn to position their solution within the 6G-VERSUS architecture.	WP2 leads confirmed as TW-1 contributors by Gate 1.	Revision → WP2 lead notifies ENV ≥ 3 weeks before TW-1; slides updated.
WP3 - D3.1	Testbed capabilities, tools, site-level descriptions, integration logic.	Informs TW-3 (experimentation environment and validation approaches); briefs the cohort on what testbed knowledge is accessible and what is out of scope.	WP3 lead provides briefing deck or recorded overview ≥ 2 weeks before TW-3.	New capabilities → WP3 updates the deck ahead of delivery; TW-3 slides revised.
WP5 - D5.1	KPI/KVI methodology, trial phases, measurement logic,	Structures TW-2 and TW-4; KPI/KVI exercise used as a cohort deliverable in Week 4.	WP5 lead provides KPI/KVI segment or example set ≥ 2	Revision → WP5 notifies ENV/IPN; TW-2 and TW-4

Source	Asset consumed	How used in T7.5	Operational trigger	Update dependency
	and sustainability value framing.		weeks before TW-2.	materials updated.
WP7 - D7.1	Dissemination channels, target audiences, communication guidelines, and event calendar.	Aligns Open Call outreach with the WP7 plan; Open Call launch is run as a WP7 communication event; programme outcomes feed WP7 outputs.	ENV/IPN align Open Call launch with WP7 dissemination calendar before Gate 1.	New channels/events added to D7.1 → ENV updates outreach plan.
WP7 - D7.2	Exploitation framing, IPR orientation, open-source strategy, business model templates for 6G use cases.	Informs BW-3 (investor readiness) and Module 4 content; anchors the exploitation narrative used in pitch coaching; structures the exploitation-pathway KPI.	ENV reviews the latest D7.2 before BW-3 content development.	Revision → ENV updates BW-3; notifies UPV for any Module 4 adjustment.

Table 20. T7.5 interfaces with project WPs, assets and update dependencies

3.5.1 Interface management principles

Interface management is kept deliberately light so that workshop delivery does not get held hostage to deliverable timelines. Four principles apply:

- **Minimum viable input.** Each workshop needs a defined minimum input from the relevant WP lead: a briefing deck, an example set, or a recorded overview. Full deliverables (D2.1, D3.1, D5.1) are not required; a curated summary prepared by the WP lead is enough.
- **Early notification.** WP leads are notified at Gate 1 (April 2026) of what is expected of them, with a clear schedule of when inputs are needed. Contributions are not expected to be bespoke products; reuse of existing material is encouraged.
- **Update propagation.** When a project baseline is updated, the responsible WP lead notifies ENV for workshop content and Mini-course 4 content, and notifies UPV only where Moodle/platform-level support is required. Updates are prioritised by how close they are to an upcoming delivery.
- **Proportionality.** Minor updates (terminology, new KPI definitions) are batched and applied before the next delivery window. Major updates (new use-case architecture, revised KPI/KVI methodology) are escalated to IPN for a gate-log entry and calendar adjustment.

3.6 Initial KPIs for monitoring (setup-level)

The indicators below define the T7.5 monitoring framework at this initial set-up stage. They describe what will be tracked and reported, not results achieved, where results will be consolidated in D7.8. Targets reflect realistic programme-level expectations given the available effort and the virtual delivery model.

Data collection is designed to run through the programme's existing digital infrastructure via Monday.com, MS Teams, Zoom, survey tools, and the shared coordination space in MS Teams and SharePoint to avoid adding overhead. Targets are labelled "initial" and may be revised at Gate 2 once actual application volumes and cohort composition are known; any revision is recorded in the gate log.

#	Indicator	Strand	Data source/method	Initial target	Reported in
KPI-1	Complete applications received (Open Call)	Strand 1	Monday.com application log	≥ 50	D7.8
KPI-2	EU countries in the applicant pool	Strand 1	Applicant country field (Monday.com)	≥ 10	D7.8
KPI-3	Teams selected and onboarded	Strand 1	Selection panel record + onboarding confirmation	25 (100% of cohort)	D7.8
KPI-4	Core workshops delivered (TW + BW)	Strand 1	MS Teams session log	≥ 9 (4 TW + 5 BW)	D7.8
KPI-5	Mentor sessions delivered per team	Strand 1	Mentor scheduling + attendance log	≥ 50 (2 rounds × 25 teams)	D7.8
KPI-6	Average participant satisfaction	Strand 1	Post-session feedback form (average across sessions)	≥ 3.5 / 5.0	D7.8
KPI-7	Retention (teams completing to Pitching Day)	Strand 1	Pitching Day attendance vs. Gate 2 enrolment	≥ 50%	D7.8
KPI-8	Teams are producing a revised BMC and pitch deck	Strand 1	Monday.com deliverable log	≥ 20	D7.8
KPI-9	Unique participants in Scale-up Lab	Strand 2	Workshop + event registration/attendance	≥ 30	D7.8
KPI-10	Scale-up Lab activities delivered	Strand 2	Session log	≥ 3 (2 workshops + 1 brokerage)	D7.8
KPI-11	Community Partners onboarded and active disseminating modules, accelerator, scale-up activities to their network	Strand 3	CP onboarding records (ENV/IPN)	≥ 10 from ≥ 5 EU countries	D7.8
KPI-12	Candidate referrals from CPs	Strand 3	Referral pipeline log	≥ 20 contributing to Open Call / Scale-up	D7.8
KPI-13	Train-the-trainers sessions delivered	Strand 3	Session log	≥ 1 (initial CP cohort)	D7.8

#	Indicator	Strand	Data source/method	Initial target	Reported in
KPI-14	Exploitation pathways initiated (cohort self-report)	Cross-cutting	Exit questionnaire	≥ 10 teams reporting ≥ 1 pathway	D7.8
KPI-15	Teams receiving Pitching Day / Demo Day event support	Cross-cutting	Pitching Day organiser records, attendance log and support checklist	100% of Pitching Day participants	D7.8

Table 21. T7.5 initial monitoring KPIs (targets to be confirmed at Gate 2; results reported in D7.8)

3.6.1 Data collection and reporting cadence

KPI data is collected continuously through the programme's digital platforms and consolidated at two points:

- **Gate 3 (mid-programme).** KPIs 1–8 (Accelerator) are reviewed; early data on KPIs 11–13 (Knowledge Transfer) is included.
- **D7.8 (final reporting).** All 15 KPIs are reported with actual values, comparison to initial targets, variance explanation and lessons learned.

Satisfaction data (KPI-6) is collected after each week using a standard 5-item survey: clarity, relevance to own venture, quality of facilitation, actionability of content, and overall rating. Results are averaged across all sessions for D7.8.

3.7 Risks, constraints, and mitigation

Like any ecosystem-building programme, T7.5 faces a mix of operational, strategic and institutional risks across its three strands. The register below identifies the main risks, their likelihood and impact, and the mitigations already embedded in the programme design. Risks are rated on a qualitative Low/Medium/High scale and reviewed at each gate.

Risk R-05: participant expectations around technology and testbed access is flagged explicitly as the highest-priority risk. It is relatively likely (participants new to the consortium may arrive with unrealistic expectations) and disruptive if unmanaged. The programme design addresses it head-on rather than hoping it does not materialise.

ID	Risk	Likelihood	Impact	Mitigation and residual risk
R-01	Open Call undersubscribed: not enough complete applications to fill 25 slots.	Medium	High	Early and wide outreach via the Community Partners network (≥ 10 CPs activated before launch), consortium social media and newsletter, and EBN, DeepTechAlliance, SERN, ESNA and the EVOLVED-5G network. Open Call stays open for 9 weeks (12 May – 10 July 2026). Applicant webinar in mid-June. Rolling waitlist. If fewer than 25 qualified applications are received, the cohort size is reduced to the number of qualifying teams (minimum 15 to proceed). Residual risk: Low - the consortium network reaches 34 partners across 10 countries, and the application window is long.

ID	Risk	Likelihood	Impact	Mitigation and residual risk
R-02	Geographic concentration: applications are dominated by a small number of countries.	Medium	Medium	Targeted outreach by CPs in underrepresented regions; geographic-diversity check at selection (no single country > 30% of selected teams, subject to quality). Communication materials translated into key local languages where CPs can support. Residual risk: Medium - geographic diversity in early-stage 6G ecosystems is structurally uneven, and selection alone cannot fully compensate.
R-03	Low retention: teams drop out mid-cohort.	Medium	Medium	Mandatory commitment statement in the application; Gate 3 checkpoint (Week 7) identifies at-risk teams early; flexible async access to recorded sessions; minimum mandatory live touchpoints (kick-off, Gate 3, Pitching Day). Waitlist activated if > 5 teams withdraw before Week 4. Residual risk: Low-to-medium - participation is unpaid, but a 10-week duration is short enough to maintain motivation.
R-04	Partner capacity constraints affect workshop quality or mentor availability.	Medium	Medium	Workshop contribution requests issued at Gate 1 with clear scope and timeline ($\approx$ 4h prep + 2h delivery per workshop). At least two backup mentors are identified per thematic area. All workshops recorded for async fallback. Module 4 content (UPV/T7.4) reduces pressure on business content development. Residual risk: Low - per-partner load is small and scoped.
R-05	Technology/testbed access expectations exceed programme scope.	High	High	Highest-priority risk. Explicit scope boundary statement in the Open Call Guide, onboarding pack and all programme communications. Scope-boundaries briefing is a mandatory component of the Week 1 orientation. Gate 2 onboarding includes a signed acknowledgement of programme scope. If a team arrives expecting testbed access or financial support and expresses dissatisfaction, the matter is escalated to IPN within 48 hours, and the scope is restated in writing. Residual risk: Medium - expectation management in a heterogeneous cohort cannot be guaranteed, but multi-point communication significantly reduces the probability of material disruption.
R-06	Community Partner recruitment falls short of the target.	Medium	Medium	IPN uses EBN membership (> 200 business support organisations across Europe); ENV uses the EVOLVED-5G Community Partners Network (established precedent). The recruitment brief is short; the CP value proposition is concrete. Onboarding commitment is minimal (half-day session + async pack). If fewer than 10 CPs are

ID	Risk	Likelihood	Impact	Mitigation and residual risk
				confirmed before Gate 1, the Open Call is not delayed - the programme launches with available CPs while recruitment continues in parallel. Residual risk: Low-to-medium.
R-07	Delays to the Open Call launch cascade to the downstream timeline.	Low	High	All Open Call materials (criteria, application form, rubric, outreach pack) finalised by March 2026 - at least 6 weeks before the planned launch date of 4 May 2026. Gate 1 approval (IPN + ENV) takes a maximum of 1 week. Contingency: if launch slips by > 2 weeks, the evaluation period is compressed by 1 week (minimum 3 weeks of evaluation, results by 8 August) and the acceleration kick-off (14 September) is held firm. Residual risk: Low.
R-08	Scale-up Lab engagement from alumni is low.	Medium	Low	Scale-up Lab activities are introduced to cohort members from Week 7 (Gate 3) onwards, and the brokerage event is framed as a high-value post-programme benefit during Pitching Day. Registration is simple (Monday.com form). Activities are group-format and time-efficient (2h workshops). Residual risk: Low - even at reduced engagement, the Accelerator (Strand 1) delivers its full scope independently.
R-09	Inaccurate or outdated technical content (dependency on WP baselines).	Low	Medium	WP leads are notified of their workshop contribution at Gate 1 with clear deadlines. The update-notification protocol (Section 3.5.1) applies. All workshop content is reviewed by ENV against the latest available project baselines before delivery. Residual risk: Low - the programme uses summary-level content inputs, which reduces sensitivity to baseline updates.
R-10	Data protection issues in participant data collection (Monday.com, MS Teams).	Low	Medium	Data collection is limited to what is strictly needed for programme management and monitoring (contact details, application content, attendance, survey responses). Participants are informed of data use at onboarding. Handling aligned with consortium GDPR obligations and the institutional policies of ENV and IPN. Anonymised aggregates used for D7.8. Residual risk: Low.

Table 22. T7.5 risk register (reviewed at each gate; final status reported in D7.8)

3.8 Summary and next steps

Section 3 has defined the full initial set-up of T7.5 across three strands. The design is deliberately calibrated to what the consortium can deliver within its staff effort, its virtual infrastructure and its existing partner networks - without service budgets, financial support to participants or external providers.

Five design choices carry most of the weight:

- **Three-strand architecture.** Accelerator → Scale-up → Knowledge Transfer gives a pipeline logic (CPs recruit for the Accelerator; alumni feed the Scale-up Lab; Scale-up Lab participants strengthen the wider ecosystem network) but allows strands to also run in parallel.
- **Virtual-first, group-format delivery.** Online, session-efficient, recorded where possible, on-demand material, toolkits and resources to maximise reach within the available effort and accommodate participants across EU time zones.
- **In-kind Community Partners.** Using existing memberships (EBN, EVOLVED-5G, SERN) extends geographic reach without creating new financial flows or subcontracts.
- **T7.4 Learning Platform and Module 4 integration.** Re-using the training materials already developed under T7.4 gives the cohort a shared knowledge baseline and removes the need for redundant content development.
- **Explicit scope boundaries.** The programme's feasibility constraints (no financial support, no individual consultancy, advisory-only testbed access) are communicated transparently at every touchpoint. That transparency is itself part of the programme's quality assurance.

D7.5 provides the baseline artefacts needed to launch and manage T7.5. Table 23 sets out the actions required before execution begins.

Action	Description	Owner	Deadline
Community recruitment Partner	Outreach via EBN (IPN), EVOLVED-5G network (ENV), DeepTechAlliance, SERN and ESNA. Confirm ≥ 10 CPs from ≥ 5 EU countries. Distribute onboarding pack; deliver train-the-trainers session.	IPN (coord.); ENV (train-the-trainers)	CPs before Gate 1 (Apr 2026); TTT before Gate 2
Open Call preparation and launch	Finalise eligibility, evaluation rubric (Annex G), Monday.com form, Open Call guide and outreach materials (Annex I). Gate 1 approval by IPN + ENV. Launch 4 May 2026.	ENV (design); IPN (oversight)	Gate 1: Apr 2026; launch: 12 May 2026
T7.4 Module 4 Moodle readiness	ENV prepares, uploads, and configures the Mini-course 4 innovation/entrepreneurship content in Moodle. ENV/IPN integrate the access link into the accelerator onboarding pack and test the access flow before Gate 2. UPV provides Moodle/platform support where required	ENV; IPN for onboarding integration; UPV support where required	Before Gate 2 (Aug 2026)
Workshop development content	ENV coordinates with technical and business partners to develop 9 core workshops (TW-1 to TW-4, BW-1 to BW-5). Reviewed against project baselines before delivery.	ENV (coord.); WP2/3/5 leads (TW); IPN (BW)	Decks ≥ 2 weeks before each delivery (Sep–Nov 2026)
Monday.com + MS Teams environment	Configure application portal (Monday.com), cohort workspace (MS Teams, SharePoint), survey templates and referral form. Test the full workflow before Gate 1.	ENV/IPN	Before Gate 1 (Apr 2026)

Action	Description	Owner	Deadline
Scale-up Lab preparation	Design the Market Expansion Toolkit (curated public resources; SharePoint repository). Prepare two workshop outlines. Plan the brokerage event format and matchmaking.	ENV (design); IPN (logistics)	Toolkit before Gate 4; workshops before Week 9
Evaluation composition panel	Identify and confirm ≥ 5 evaluators for the Open Call (technical, business, investor). Confirm availability for 20 Jul – 8 Aug 2026.	IPN (lead); ENV (support)	Before launch (May 2026)
D7.8 evidence package design	Define the D7.8 evidence template: KPI dashboard, gate-log format, exit questionnaire, and rubric analytics. Align with project monitoring requirements.	IPN (D7.8 lead); ENV (data)	Template before Gate 2; data collection from Gate 2

Table 23. T7.5 next steps: pre-launch actions, owners and deadlines

3.8.1 What D7.8 will consolidate

D7.8 will consolidate execution evidence across the three strands. To make that preparation straightforward, the implementation phase will collect the following artefacts and data continuously:

- **Open Call metrics** - total applications, geographic and sector distribution, evaluation panel scores.
- **Cohort data** - team profiles, onboarding completion, workshop attendance (per session), mentor session logs, deliverable submission rates (BMC, pitch deck), Gate 3 outcomes.
- **Programme outcomes** - Pitching Day participation, exit questionnaire responses, KPI-14 (exploitation pathways), KPI-15 (event support).
- **Scale-up Lab data** - participant registrations, workshop attendance, brokerage participation, toolkit downloads.
- **Knowledge Transfer data** - CP onboarding records, train-the-trainers attendance, referral pipeline log, CP network activity.
- **Quality data** - accelerator sessions satisfaction scores (KPI-6), gate-log entries, any programme adaptations made during delivery and their rationale.
- **Traceability confirmation** - confirmation that the interface with each project baseline (D2.1, D3.1, D5.1, D7.1, D7.2, T7.4 Module 4) was maintained, and any updates that required content revision.

3 Conclusions

D7.5 documents the initial set-up of the 6G-VERSUS ecosystem-building activities delivered under WP7 - Task T7.4 (Training Programme, Section 2) and Task T7.5 (Acceleration and Scale-up Programme, Section 3). This document has presented the full initial design of T7.5.

For T7.4, the deliverable establishes a replicable course-engineering methodology and a complete syllabus blueprint for a Moodle-based training offer that supports onboarding and upskilling across the 5G/6G sustainability-driven experimentation lifecycle. The programme is structured into four mini-courses and is aligned through constructive alignment principles, with learning outcomes mapped to KSA items and calibrated through Bloom's taxonomy. The Moodle implementation prioritises applied competence through formative unit-level PBL activities, while formal completion evidence is provided through Moodle-based auto-graded final evaluations. PBL templates and rubrics remain available as reusable pedagogical instruments for optional feedback, workshops, train-the-trainers replication, and future course iterations.

T7.5 is built around three strands: the 6G-VERSUS Venture Accelerator, the Scale-up and Market Expansion Service Lab, and the Knowledge Transfer and Community Partners Network - that together form a coherent innovation uptake pipeline, from early-stage team acceleration to durable ecosystem networking.

The programme is built against a clear set of feasibility constraints: all activities are delivered virtually, by consortium partners, within available staff effort, and without service vouchers, participant funding or paid external providers. These constraints shape the programme's scope and value proposition rather than limit them. Being transparent about them at every participant touchpoint is, in itself, a quality-assurance mechanism.

The programme interfaces systematically with five project technical and exploitation baselines (D2.1, D3.1, D5.1, D7.1, D7.2) and with the T7.4 training programme (Learning platform and Module 4). That ensures the Accelerator is grounded in 6G-VERSUS-specific content, and that the effort already invested in training development is reused efficiently. The 15 initial monitoring KPIs provide a measurable baseline against which D7.8 will report execution outcomes.

The risk register identifies ten programme-level risks. The highest-priority risk - misaligned expectations around testbed access - is addressed through a multi-point communication strategy that explicitly positions the technology-exposure component as advisory rather than operational. All other risks sit at Low or Low-to-Medium residual with mitigations already embedded in the design.

In short, Section 3 of D7.5 provides the operational baseline needed to launch T7.5 on schedule: Open Call in May 2026, acceleration kick-off in September 2026, programme close in November 2026. Execution evidence, uptake data, outcome metrics and lessons learned will be consolidated in D7.8.

Overall, D7.5 provides the baseline artefacts and operating assumptions needed to launch and manage the ecosystem-building activities during the project. Execution evidence, uptake metrics, and refinements derived from stakeholder engagement and the evolution of technical baselines will be consolidated in the final iteration deliverable.

4 References

6G-VERSUS project deliverables

- [6GV-D21] 6G-VERSUS Consortium, Deliverable D2.1: Platform architecture and use case Requirements - – Initial (public report), 6G-VERSUS (Grant Agreement No. 101192633), v1.0.
- [6GV-D31] 6G-VERSUS Consortium, Deliverable D3.1: 6G-VERSUS Experimentation environment - Initial (public report), 6G-VERSUS (Grant Agreement No. 101192633), v1.0.
- [6GV-D51] 6G-VERSUS Consortium, Deliverable D5.1: 6G Trials Plan and Validation/Evaluation Framework (public report), 6G-VERSUS (Grant Agreement No. 101192633), v1.0.
- [6GV-D71] 6G-VERSUS Consortium, Deliverable D7.1: Dissemination and Communication Activities Plan (public report), 6G-VERSUS (Grant Agreement No. 101192633), v1.0.
- [6GV-D72] 6G-VERSUS Consortium, Deliverable D7.2: Standardization and exploitation plan (public report), 6G-VERSUS (Grant Agreement No. 101192633), v1.1.

5G-DiGITs project deliverables (methodology and needs assessment)

- [5GD-D21] 5G-DiGITs Consortium, Deliverable D2.1: Needs Assessment Report, 5G-DiGITs (Grant Agreement No. 101186590), v1.0.
- [5GD-D22] 5G-DiGITs Consortium, Deliverable D2.2: Modular Curriculum Structure and Learning Materials, sections on KSA/Bloom alignment and course design workflow.
- [5GD-D23] 5G-DiGITs Consortium, Deliverable D2.3: Course design workflow details (mapping, validation, QA steps).

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- [SFDR] European Parliament and Council, Regulation (EU) 2019/2088 on sustainability-related disclosures in the financial services sector. OJEU, 2019.
- [CSRD] European Parliament and Council, Directive (EU) 2022/2464 on corporate sustainability reporting. OJEU, 2022.

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Annex A-Training Programme. Unit-level PBL template

Purpose

This template standardises the unit-level PBL package used across all four mini-courses (modules). Each unit includes (i) a guided PBL lecture introducing the scenario and method, and (ii) a PBL exercise completed by learners as formative practice (optional upload for feedback where applicable).

A1. PBL package metadata

- **Mini-course / Module:** [M1 / M2 / M3 / M4]
- **Unit ID and title:** [e.g., Unit 11 – KPI & KVI definition methodology]
- **Target audience:** [students/researchers/professionals]
- **Estimated time:** PBL lecture [X minutes] + PBL exercise [Y hours]
- **Prerequisites:** [units/lessons required]
- **Primary 6G-VERSUS baseline(s):** [e.g., D2.1 / D3.1 / D5.1 / D7.2]
- **Learning outcomes addressed:** [list LO codes/titles]
- **KSA mapping:**
 - Knowledge: [K...]
 - Skills: [S...]
 - Abilities: [A...]

A2. Scenario context (PBL lecture)

Provide a short scenario (max 250–400 words):

- **Context and setting:** [cluster, testbed type, vertical context]
- **Sustainability/value challenge:** [what is to be improved/validated]
- **Constraints:** [time, resources, regulatory, operational constraints]
- **Available data/tools:** [measurements, dashboards, logs, templates]
- **Stakeholders:** [roles and expectations]

A3. PBL lecture outline (guided)

- **Objective of the lecture:** [what learners should understand by the end]
- **Walk-through steps:**
 1. [Step 1: interpret requirements / define trial objective]
 2. [Step 2: choose approach/map architecture elements / select indicators]
 3. [Step 3: show example reasoning / partial solution]
 4. [Step 4: explain deliverable expectations and rubric]
- **Key takeaways:** [3–5 bullets]
- **Common mistakes/pitfalls:** [2–3 bullets]

A4. PBL exercise task (formative, optional upload)

- **Task statement:** [clear, bounded instructions]
- **Deliverable format:** [one-page brief / table / diagram / worksheet / short report]
- **Submission requirements (if applicable):**
 - length/format: [e.g., max 2 pages + 1 table]
 - evidence required: [e.g., KPI/KVI definitions + measurement plan]
 - citations/data references (if any): [expected]
 - **Tool-based evidence:** If Annex E (Table 28) marks this unit as *tool-based* (B4 required), include the **minimum reproducible evidence package** (Annex B, B4).
 - **Submission size (micro-artefact rule):** Unless explicitly stated otherwise, the unit-level formative artefact should be limited to 1 to 2 pages, or equivalent structured content. This size rule is intended to keep optional PBL activities proportionate and compatible with the workload envelope.
- **Academic integrity note:** Learners may use tools (including LLMs) for drafting or clarification where permitted, but must document their reasoning and ensure the submitted artefact is their own work.

A5. Micro-artefact menu (default submission formats)

To ensure consistent workload and comparable learner outputs, learners may use one of the standard micro-artefact formats below for unit-level formative PBL activities, unless a unit explicitly proposes a different format. These formats can also be reused in workshops, instructor-led delivery, train-the-trainers activities, or future course iterations.

Format	Best used for	Required elements (minimum)	Typical size
F1. One-pager architecture mapping	Foundations (M1), cluster/use case mapping (M3)	(i) Use case statement; (ii) RAN/Core/MEC blocks (diagram or structured list); (iii) 3–5 design choices with justification; (iv) 3–4 candidate KPIs (+ ≥ 1 candidate KVI where required); (v) assumptions/limitations	1 page
F2. Decision table (trade-off matrix)	Enablers & sustainability (M2), management/slicing (M1)	(i) Alternatives compared (≥ 3); (ii) criteria (performance, feasibility, sustainability/value); (iii) weighted decision table; (iv) selected option + rationale; (v) feasibility constraints	1-2 pages
F3. KPI/KVI measurement plan table	Trials & evaluation (M3, esp. KPI/KVI unit)	(i) KPI/KVI definitions; (ii) data source(s); (iii) measurement method & sampling; (iv) expected direction/targets; (v) interpretation logic (what conclusion is supported); (vi) risks/biases	1-2 pages
F4. Trial snapshot	Trial planning, triplet blueprint landing (M3)	(i) Hypothesis (measurable); (ii) trial setup overview (resources, constraints); (iii) variables, metrics, success criteria;	1-2 pages

(experiment brief)		(iv) expected outcomes & reporting view; (v) reproducibility note (what must be recorded)	
F5. Innovation mini-pack	Innovation/exploitation (M4)	(i) Problem–solution; (ii) value proposition; (iii) stakeholder/market; (iv) sustainability/circularity angle; (v) exploitation route (short); (vi) risks/next steps	1-2 pages

Table 24. Micro-artefact formats (choose one per unit)

Evaluator note: Micro-artefacts are primarily formative in the current Moodle release. The Annex B rubric may be reused as optional self-check guidance or instructor-feedback support. Over-length artefacts should be discouraged unless an exception is explicitly stated for that unit.

A6. Mapping to Moodle activity

- **Default Moodle use:** unit-level PBL is implemented as a formative activity, with optional upload, self-check guidance, or instructor feedback where enabled.
- **Current release status:** unit-level PBL is not required for mini-course completion and is not graded as a compulsory assessment.
- **Activity type:** Moodle Page, Assignment, Quiz, or equivalent activity, depending on whether the PBL is used as a self-check, optional upload, or workshop activity.
- **Feedback method:** self-check guidance, exemplar solution, short instructor comment, or optional rubric-inspired feedback where enabled.
- **Future use:** the same templates may be reused for instructor-led delivery, workshops, train-the-trainers activities, or future rubric-based assessments if formally activated and documented in the relevant course release.

Annex B-Training Programme. Formative PBL feedback rubric and optional assessment framework

Purpose

This rubric provides a reusable feedback framework for PBL artefacts and applied learning activities. In the current Moodle release, unit-level PBL activities are formative and optional; therefore, the rubric is not used as a mandatory summative grading instrument. It may be used for self-assessment, optional instructor feedback, workshops, train-the-trainers replication, or future course iterations where rubric-based assessment is explicitly activated

Default weighting profiles (recommended)

Where rubric-based feedback is used, the following default weighting profiles can help reviewers or instructors provide consistent qualitative feedback across different unit types. These profiles are indicative and do not define compulsory grading thresholds for the current Moodle release.

Unit type (typical)	C1 Problem understanding	C2 Technical approach & correctness	C3 Application to 6G-VERSUS context	C4 Evidence/measurement/evaluation logic	C5 Communication & professionalism	C6 Innovation/exploitation reasoning (optional)
Foundations (Module 1)	25%	25%	20%	10%	20%	--
Enablers & sustainability (Module 2)	20%	20%	25%	20%	15%	--
Trials / KPI-KVI / reporting (Module 3)	15%	20%	25%	25%	15%	--
Innovation & entrepreneurship (Module 4)	15%	15%	20%	10%	20%	20% (if enabled)

Table 25. Recommended default criterion weights by unit type

Notes:

- If C6 is enabled (recommended for Module 4), the total score should be computed as a **weighted sum over 6 criteria** (weights sum to 100%).
- Where rubric-based assessment is formally activated in a future release, the responsible mini-course owner may define a minimum threshold and criterion-specific expectations. These thresholds should be documented in the corresponding Moodle release and reported in D7.8 where applicable.

B1. Scoring model

The default scale is 0 to 4 per criterion, where 0 indicates missing evidence, and 4 indicates excellent evidence. In the current Moodle release, the rubric is used only for optional feedback, self-assessment, workshops, or instructor-led activities. Scores, where used, should therefore be interpreted as feedback indicators rather than compulsory summative grades.

If rubric-based assessment is formally activated in a future release, the scoring method, weighting, thresholds, and completion implications must be clearly documented in Moodle before learners start the activity.

B2. Rubric criteria and performance levels

Criterion 1 - Problem understanding and requirements interpretation (K)

- 0 No clear understanding of the problem or requirements.
- 1 Restates the problem with significant gaps/misinterpretations.
- 2 Identifies main requirements; some ambiguity remains.
- 3 Correctly interprets requirements and constraints; coherent framing.
- 4 Excellent framing including assumptions, constraints, and success conditions.

Criterion 2 - Technical approach and correctness (K/S)

- 0 Approach absent or technically incorrect.
- 1 Partially relevant but contains major errors or unsupported claims.
- 2 Mostly correct approach; some issues or missing elements.
- 3 Correct and well-structured approach with justified choices.
- 4 Robust, technically sound approach with clear rationale and trade-off awareness.

Criterion 3 - Application to 6G-VERSUS context (S)

(Use-case, testbed, trials, KPI/KVI logic; alignment to baselines)

- 0 No connection to 6G-VERSUS context.
- 1 Superficial link; generic statements.
- 2 Some project-specific elements; partial alignment.
- 3 Clear application to project baselines and unit topic.
- 4 Strong integration: explicit mapping to baselines, constraints, and measurable evidence.

Criterion 4 - Evidence, measurement, and evaluation logic (S)

(KPIs/KVIs, measurement plan, data sources, interpretation)

- 0 No evidence or evaluation plan.
- 1 Minimal evaluation elements; unclear indicators or methods.
- 2 Basic KPI/KVI/evaluation logic; incomplete measurement detail.
- 3 Solid indicator selection with plausible measurement plan and interpretation.
- 4 High-quality evaluation design including trade-offs, risks, and clear interpretability.

Criterion 5 - Communication quality and professionalism (A)

(clarity, structure, concision, reproducibility)

- 0 Unstructured; hard to follow.
- 1 Significant clarity issues; missing sections; poor formatting.
- 2 Understandable; moderate issues in structure or clarity.

3 Clear, well-structured, concise, reproducible artefact.

4 Excellent clarity, precise language, strong structure; executive-ready output.

High scores (3–4) in this criterion require **clarity and conciseness**, adherence to the micro-artefact size rule (Annex A), and the use of structured formats (tables/one-pagers) where appropriate.

B3. Optional criterion (use for Module 4 units)

If desired for innovation/entrepreneurship units, add:

Criterion 6 - Innovation/exploitation reasoning and sustainability value narrative (A/S)
(align to business model logic, stakeholder value, sustainability impact framing)

B4. Minimum reproducible evidence package (for tool-based units)

For units that include hands-on tooling (e.g., simulation, core/network setup, monitoring/observability), submissions must include a minimum reproducible evidence package. This standardises what counts as “evidence” and reduces grading variability.

Definition (tool-based unit): For the purpose of this rubric, a unit is considered tool-based if *Annex E (Table 28)* specifies a **mandatory toolchain (minimum)** other than “None”, or explicitly states that measured evidence is required (e.g., “Prometheus + Grafana when measurement evidence is required”). In such cases, the submission must include the minimum reproducible evidence package defined in B4.

Minimum reproducible evidence package (checklist)

Learners must include (as an appendix or embedded in the artefact, as appropriate):

1. **Environment summary:** OS / VM / container baseline; hardware constraints if relevant.
2. **Toolchain versions:** tool names and versions (e.g., Open5GS, Simu5G, Prometheus/Grafana, etc.).
3. **Configuration parameters:** key settings changed from default (or a pointer to config files).
4. **Execution trace:** commands or steps executed (high-level is acceptable; exact commands preferred).
5. **Evidence artefacts:** at least one of the following, depending on the unit:
 - screenshots of dashboards/plots,
 - exported metrics (CSV/JSON),
 - key logs excerpts,
 - scenario configuration files (simulation).
6. **Assumptions & limitations:** what was assumed, what could not be measured, and why.
7. **References:** links to any external sources used (and, if applicable, disclosure of LLM usage - see B5).

Scoring linkage:

- A score of **3–4 in Criterion 4** (Evidence/measurement/evaluation logic) in a tool-based unit should only be awarded if items (2) - (6) are present and coherent.
- A score of **3 - 4 in Criterion 5** (Communication & professionalism) in a tool-based unit should only be awarded if the evidence package is clearly structured and traceable.

B5. Policy for the use of LLMs / generative AI in assessed submissions

Learners may use LLMs or generative AI tools as drafting or clarification aids **where permitted by the course delivery context**. To ensure academic integrity and consistent grading, the following policy applies to all assessed unit-level PBL submissions:

Allowed uses (examples):

- Clarifying concepts, terminology, or the structure of an argument.
- Improving language clarity and formatting of the artefact.
- Generating alternative formulations to compare and refine.

Not allowed (examples):

- Submitting AI-generated content as original work without disclosure.
- Fabricating measurements, results, logs, citations, or tool outputs.
- Generating a complete solution that the learner cannot explain or justify.

Disclosure requirements (mandatory if used):

Learners must include a short “AI usage note” (max 100–150 words) stating:

- which tool was used,
- for what purpose (drafting/clarification), and
- what was changed/validated by the learner.

Impact on scoring:

- Non-disclosure of meaningful AI assistance may be treated as an academic integrity issue and can result in a score of **0** for the affected criterion(s) or submission, according to the course owner’s institutional policy.
- If AI is disclosed appropriately, it does **not** penalise the score. The submission is graded on correctness, evidence, and reasoning.
- In cases where AI use affects reasoning quality, evaluators should reflect this primarily in **Criterion 2 (Technical correctness)** and **Criterion 5 (Professionalism and clarity)**.

Annex C-Training Programme. Traceability from T7.4 DoA Commitments to Course Evidence and Reporting

This annex provides a compliance matrix mapping the main commitments of Task T7.4 as defined in the Description of Action (DoA) to tangible evidence produced within the Moodle-based training environment and to the corresponding reporting evidence to be consolidated in Deliverable D7.8. The objective is to make explicit, auditable, and review-ready the traceability between contractual task requirements and the implemented training assets, complementing the unit-level traceability already provided in Section 2.2.7 (Table 1).

DoA requirement/commitment (T7.4)	Operationalisation in 6G-VERSUS training	Evidence in Moodle (course artefacts/logs)	Evidence in D7.8 (reporting)
Needs assessment/training needs identification	Training scope and target audiences defined; baseline-driven content selection	Course overview page; target audience/prerequisites section; mapping to baselines; initial diagnostic quiz (if used)	Summary of needs assessment inputs; rationale for content scope; adjustments derived from feedback
Multifaceted curriculum (technical + circular economy/sustainability + transversal skills)	Modules cover 5G/6G technical topics, sustainability/energy aspects, and teamwork/documentation/reproducibility	Syllabus pages per module; learning outcomes; dedicated units on sustainability/energy; PBL briefs requiring documentation and reproducibility	Evidence of curriculum coverage; aggregated learning outcomes attainment; examples of sustainability-related learning activities, optional PBL outputs, or feedback-driven improvements
Hybrid delivery model (digital platform + workshops / tutorials)	Moodle as core delivery plus scheduled workshops/tutorial sessions (if applicable)	Moodle course as main delivery; workshop materials uploaded; session announcements; attendance/engagement logs	Number and type of sessions; participation; materials delivered; qualitative feedback from workshops
Hands-on / PBL-based learning producing measurable outputs	Unit-level PBL tasks provide optional formative applied-learning outputs, while final evaluations provide formal completion evidence	PBL templates, optional upload/self-check activities where enabled, final auto-graded evaluation	Aggregated completion data, final evaluation trends, optional PBL engagement where available,

		configuration, golden unit example	feedback summaries, representative improvement actions
Pilot delivery and iterative refinement based on feedback	Pilot cohorts/sessions used to refine content and delivery	Feedback surveys; forum discussions; issue log/change log; release notes	Pilot description; feedback analysis; implemented improvements (before/after)
Continuous evaluation and monitoring (quality and effectiveness)	QA checklist + traffic-light release readiness + analytics	QA checklist, release decision records; Moodle analytics (completion, quiz stats); content versioning	QA summary (issues found/resolved); effectiveness indicators (enrolments, completion, scores, satisfaction)
Collaboration with relevant experts/stakeholders (where required by DoA)	Expert review of selected units; alignment with project outputs and stakeholders	Reviewer notes (if stored); acknowledgements; update triggers linked to project baselines; traceability matrix link (Section 2.2.7)	Summary of expert inputs and changes; alignment of evidence with project evolution/baselines
Scalability and accessibility (selective learning pathways)	Full pathway (students) + selective pathway (professionals)	Moodle course structure with pathways; prerequisites guidance; “fast refresh” units (if implemented)	Uptake by profile; pathway usage statistics; learner segmentation (if available)
Maintenance plan aligned with evolving project baselines	Update triggers tied to baseline deliverables and scheduled refresh cycles	Change log; mapping “trigger → update”; updated readings/labs	Consolidated update history; impact of baseline changes on course content

Table 26. Traceability Matrix from T7.4 DoA Commitments to Course Implementation and Reporting Evidence

Annex D-Training Programme. Unit-Level Bloom Mapping and Assessment Alignment

This annex provides the unit-level mapping of the training programme to Bloom’s taxonomy, specifying a dominant cognitive level per unit (and an optional secondary level where appropriate). The purpose is to standardise instructional depth during lesson production and to guarantee that the unit-level evidence (PBL submissions and formative quizzes) evaluates the intended learning outcomes consistently across the full and selective learning pathways.

Module	Unit	Unit name) (short	Dominant Bloom level	Secondary Bloom (optional)	Learning / assessment evidence	Feedback / rubric focus, where used
M1	U1	5G general concepts	Understand	Apply	Formative quiz (optional) + PBL “use case → architecture mapping” (KPIs + 1 KVI teaser)	C1, C2, C5
M1	U2	RAN	Apply	Analyse	PBL with configuration/parameter choices + interpretation of results	C2, C4, C5
M1	U3	Core network architecture	Apply	Analyse	PBL on SBA/core functions mapping + deployment/operation considerations	C1, C2, C5
M1	U4	Transport networks	Understand	Analyse	PBL focusing on latency/reliability constraints and architectural implications	C1, C2
M1	U5	Network & service management	Analyse	Apply	PBL on ZSM/MAPE-K service automation, SLA/SLO/SLI assurance, monitoring signals, API-based remediation, and optional RAN energy-saving control.	C2, C4, C5
M2	U6	B5G/6G enablers (incl. triplet as pattern)	Analyse	N/A	PBL “enabler selection rationale” (architectural impact, feasibility constraints)	C1, C2, C5
M2	U7	Sustainability strategies & enablers	Evaluate	Analyse	PBL on trade-offs (energy/performance/value) with justification	C2, C3, C5
M3	U8	Advanced 5G / future 6G use cases	Understand	Analyse	PBL comparing use cases and derived requirements	C1, C2

M3	U9	6G-VERSUS clusters & use cases	Analyse	Apply	PBL mapping cluster/use case to architecture, constraints, and expected value	C2, C3
M3	U10	Triplets of 6G applications	Create	Analyse	PBL “triplet blueprint” (V/N/AI roles, flows, constraints, measurable hypothesis)	C2, C3, C4
M3	U11	KPI/KVI definition methodology	Apply	Evaluate	PBL defining KPI/KVI set + measurement plan + interpretation logic	C2, C3, C4
M4	U12	Innovation & entrepreneurship	Create	Evaluate	PBL on opportunity → value proposition → business model/exploitation plan	C2, C3, C5 (+C6 optional)
M4	U13	Circular economy & regulation	Evaluate	Apply	PBL assessing regulatory/circularity implications and recommendations	C2, C3, C5

Table 27. Unit-Level Bloom Targets and Evidence Mapping

Annex E-Training Programme. Unit Production Control Table (Scope Guardrails, Evidence, Tooling, and Selective Pathway Bridging)

This annex defines a concise unit-level production control table used to generate lessons and assessments consistently across the programme. For each unit, it specifies (i) scope guardrails (what is in/out), (ii) the minimum learning or Moodle evidence to be provided, including optional PBL/self-check activities, formative quizzes where used, and final evaluation linkage where applicable, (iii) the mandatory toolchain constraints (minimum reference toolchain where applicable), (iv) optional advanced extensions explicitly labelled as non-mandatory, and (v) selective-pathway bridging requirements. This annex complements the unit-level Bloom mapping in Annex D by operationalising workload consistency and preventing hands-on over-scoping within the 2 ECTS (60h) model.

Module / Unit	Scope guardrails (IN / OUT)	Minimum learning / Moodle evidence	Mandatory toolchain (minimum)	B4 evidence package required ?	Optional advanced extensions (explicitly labelled)	Selective pathway bridging
M1 – Unit 1	IN: 5G/6G overview; RAN/Core/MEC mapping; KPIs + light KVI teaser (definition only) . OUT: full KPI/KVI methodology; trial planning.	Optional PBL/self-check: Worked Smart Factory architecture mapping using a one-page structured table: workloads, traffic model, requirements, RAN/Core/ME C/DN mapping, design choices, candidate KPIs, and at least one KVI. Optional short formative quiz.	None	No	--	--
M1 – Unit 2	IN: RAN fundamentals and design decisions at applied level. OUT: advanced PHY optimisation beyond course scope.	Optional PBL/self-check: scenario-driven RAN Design Note covering requirements, spectrum and deployment model, RAN architecture and functional split, MIMO/beamforming	None (simulation only if explicitly used)	Conditional	Simu5G scenario exploration (if offered as enrichment)	--

		configuration, slicing/DSS strategy, KPI targets, and assumptions. Optional quiz..				
M1 – Unit 3	IN: 5GC SBA concepts; core functions and integration logic. OUT: deep core engineering specifics not required for the course.	Optional PBL/self-check: private 5G core and service design artefact covering NPN selection, SBA/core function mapping, slice intent, PRB allocation, QoS/5QI and TSN treatment, UPF/MEC placement, and traffic/QoS rationale. Optional quiz.	None	Conditional	Open5GS demo lab (only if explicitly included; otherwise, optional)	--
M1 – Unit 4	IN: transport constraints (latency/reliability), segment mapping and architectural implications. OUT: exhaustive transport dimensioning/theory.	Optional PBL/self-check: end-to-end transport network design brief covering service classification, xHaul segment mapping, transport technology selection, SDN-controlled slice paths, TSN treatment, satellite/fallback connectivity, and latency/reliability assumptions. Optional quiz.	None	No	--	--
M1 – Unit 5	IN: orchestration/automation concepts; SLA assurance; exposure basics.	Optional PBL/self-check: ZSM/MAPE-K automation plan	None for completion; Python/Flask mock APIs may be used where	Conditional, only if API/code execution evidence	OSM exploration; Python/Flask REST automation	--

	OUT: complex multi-domain orchestration implementations.	defining SLA/SLO/SLI hierarchy, monitoring signals, closed-loop decision logic, API-based remediation actions, and optional RAN energy-saving/deep-sleep control. Optional quiz.	the optional implementation exercise is enabled.	is requested	lab where enabled	
M2 – Unit 6	IN: B5G/6G enablers; triplet as an architectural enabler/pattern (roles, interfaces, exposure implications). OUT: triplet blueprint as trial artefact (covered in M3).	Optional PBL/self-check: enabler selection rationale (architectural impact + feasibility constraints). Optional quiz.	None	No	O-NEF / CAPIF / NWDAF-related demos; partner-specific labs (optional)	Fast refresh pack recommended when enrolling directly in Mini-course 2
M2 – Unit 7	IN: sustainability strategies; engineering trade-offs and reasoning. OUT: mandatory complex instrumentation.	Optional PBL/self-check: sustainability intervention plan, including how improvement would be evidenced using KPI/KVI-style indicators. Optional quiz.	None by default (use Prometheus/Grafana only if the unit requires measured evidence)	Conditional	Kepler energy add-on; MicroK8s deployment track (optional)	--
M3 – Unit 8	IN: advanced 5G and future 6G use cases; requirements and risks. OUT: full trial design and measurement planning.	Optional PBL/self-check: use case decomposition (stakeholders, requirements, candidate KPIs/KVIs, risks/assumptions). Optional quiz.	None	No	--	Fast refresh pack recommended when enrolling directly in Mini-course 3
M3 – Unit 9	IN: 6G-VERSUS clusters and use cases; testbed-aware constraints	Optional PBL/self-check: cluster trial one-pager (scenario,	None	No	Partner/testbed-specific demos (optional)	Fast refresh pack

	at high level. OUT: detailed measurement instrumentation (covered in Unit 11).	testbed resources, proposed KPI/KVI evidence and data sources). Optional quiz.				recommended
M3 – Unit 10	IN: triplets as a trial-facing artefact (blueprint, measurable benefit hypothesis, constraints). OUT: full KPI/KVI methodology (covered in Unit 11).	Optional PBL/self-check: triplet blueprint (V/N/AI responsibilities, interfaces/flows, what is measured to show benefit). Optional quiz.	None	No	O-NEF and/or MicroK8s (optional)	Fast refresh pack recommended
M3 – Unit 11	IN: KPI/KVI definition methodology; measurement plan; interpretation and reporting logic. OUT: tooling requirements beyond the minimum reference toolchain.	Optional PBL/self-check: KPI/KVI set + measurement plan (data sources, sampling, interpretation, expected trade-offs). Optional quiz.	Prometheus + Grafana when measurement evidence is required	Conditional/ yes when measurement evidence is required	Kepler energy add-on; partner-specific monitoring tools (optional)	Fast refresh pack recommended
M4 – Unit 12	IN: innovation/exploitation framing; concise artefacts (BMC/SWOT/value proposition). OUT: long-form business plans.	Optional PBL/self-check: venture concept pack (problem-solution fit, BMC/SWOT, sustainability angle, short pitch outline). Optional quiz.	None	No	--	--
M4 – Unit 13	IN: circular economy and regulation; implications and recommendations. OUT: exhaustive legal analysis.	Optional PBL/self-check: compliance & circularity brief (regulatory considerations and circularity/ESG implications). Optional quiz.	None	No	--	--

Table 28. Unit-Level Scope, Evidence, Tooling Constraints, and Bridging (Production Control Table)

Annex F-Training Programme. Golden Unit (M1- Unit 1): Moodle Structure, Lesson Packaging, Formative PBL Package, and Final Evaluation Configuration

This annex defines the frozen “golden unit” used as the reference template for producing course units consistently. It provides an implementation-ready instantiation of Module 1, Unit 1, including Moodle structure, lesson packaging, the unit-level formative PBL package, optional upload/self-check configuration, unit feedback, and the final evaluation configuration for the first mini-course. Subsequent units should be created by cloning this golden unit and editing content while preserving the structural conventions and quality controls defined herein.

F1. Moodle implementation blueprint (Unit-level layout)

Moodle section name: M1 – Unit 1: 5G General Concepts (Golden Unit)

Section order (recommended):

1. **Unit overview (Page)**
2. **Learning materials** (Lessons 1.1-1.4)
3. **Formative check** (Quiz, optional but recommended)
4. **Optional unit-level PBL activity** (Page or Assignment + attachments, if upload is enabled)
5. **References & glossary** (optional)
6. **Unit feedback** (Survey, optional)

Naming convention:

- Resources: U1-L1.1, U1-L1.2, U1-L1.3, U1-L1.4
- Formative quiz, if used: U1-Quiz (Formative)
- PBL brief: U1-PBL Brief
- Optional PBL activity: U1-PBL Optional Activity
- Optional upload, if enabled: U1-PBL Optional Upload
- Self-check guide: U1-PBL Self-check Guidance
- Feedback survey: U1-Feedback Survey

F2. Unit overview page (standard structure)

Unit overview (Page) → mandatory fields:

- **Unit purpose** (3–5 lines)
- **Learning outcomes** (can be copied from syllabus; 3-5 bullets)
- **Estimated workload** (e.g., 4-5 hours total for this unit; aligned with the overall 60h plan)
- **Required prior knowledge** (minimal for U1)
- **Deliverables**
 - Formative quiz: optional
 - PBL micro-artefact: formative (recommended; optional upload)
- **Recommended micro-artefact format: F1 - One-pager architecture mapping** (as per Annex A)

F3. Lesson packaging template (applies to each lesson)

For each lesson item (U1-L1.x), include the **minimum content package**:

1. **Short lesson description** (3-5 lines)
2. **Learning objectives** (2-3 bullets)
3. **Core learning asset (one of):**
 - slides (PDF) OR short video OR reading note
4. **Reading/reference links** (2–4 items max)
5. **Checkpoint (optional):** 2-5 self-check questions (embedded or in quiz)

Tone/depth guardrail: Unit 1 must remain **introductory and architecture-oriented**. It introduces **KPI vs KVI** only as a teaser (with definitions and examples), and must not include the full KPI/KVI methodology or trial planning.

F4. Unit 1 content outline (Lessons 1.1-1.4)

U1-L1.1 Introduction to 5G and network evolution

- Purpose: motivate 5G/6G context and why architecture matters
- Key items: evolution drivers, service categories, baseline concepts

U1-L1.2 5G architecture overview (RAN/Core/MEC)

- Purpose: identify main building blocks and roles
- Output: learners can map a use case to RAN/Core/MEC blocks

U1-L1.3 5G services and deployment concepts

- Purpose: relate service requirements to architectural choices
- Output: learners can justify 3-5 design choices for a given use case

U1-L1.4 KPIs and KVIs: performance vs value/sustainability indicators

- Purpose: introduce the conceptual difference early
- Guardrail: define and illustrate; do not teach measurement methodology here

F5. Unit-level PBL package (U1) – complete template instantiation

F5.1. Scenario (PBL brief)

Scenario title: *Use case to 5G architecture mapping (with KPI/KVI teaser)*

Scenario: Choose one representative 5G/6G-VERSUS-relevant use case (or a generic 5G use case if 6G-VERSUS specifics are not yet covered). You are asked to propose a high-level 5G architecture mapping and define how success would be evidenced at the indicator level.

F5.2. Task

Produce a **micro-artefact (1-2 pages)** using **Format F1 (One-pager architecture mapping)**:

1. State the **use case** and its main requirements (latency, throughput, reliability, coverage, etc.).
2. Map the use case to **RAN / Core / MEC** building blocks (diagram or structured list).
3. Provide **3-5 justified design choices** (e.g., MEC placement, QoS assumptions, service exposure needs).
4. Propose **3-4 candidate KPIs** and **at least 1 candidate KVI** aligned with sustainability/value for the same use case.
5. State **assumptions and limitations** (what you do not know yet, what would need trial validation later).

F5.3. Expected deliverable (micro-artefact)

- **Preferred format:** F1
- **Size rule:** 1-2 pages (or equivalent structured content)
- **Appendices:** only if explicitly required (tool-based evidence does not apply by default in Unit 1)

F5.4. Assessment (formative)

This unit PBL is formative. It supports applied reasoning and may be used for self-checking, optional upload, instructor feedback, or workshop delivery. It is not required for mini-course completion in the current Moodle release. Formal completion evidence for Mini-course 1 is provided through the final auto-graded evaluation.

F6. Moodle configuration for optional U1-PBL activity

- **Activity type:** Moodle Page, Assignment, or equivalent activity, depending on whether optional upload is enabled.
- **Submission type, if enabled:** file upload (PDF) or online text.
- **Grading:** no compulsory grade.
- **Feedback:** optional short comment, exemplar, or self-check guidance.
- **Completion tracking:** view/manual completion, or no completion condition if the activity is purely optional.
- **Learner instruction:** clearly state that the activity is formative and not required for mini-course completion.

F7. Final mini-course evaluation blueprint (summative; auto-graded)

- **Purpose:** final mini-course knowledge validation; auto-graded in Moodle.
- **Length:** 25 questions.
- **Estimated duration:** one hour.
- **Question types:** multiple choice, matching, or short auto-graded items where appropriate.
- **Scope:** Unit 1–Unit 5 of Mini-course 1, covering 5G architecture, RAN, Core, transport networks, orchestration, management, KPIs/KVIs, and related enabling technologies.
- **Completion tracking:** configured as the formal completion evaluation for Mini-course 1.
- **Use of results:** aggregated results may be used to identify topics requiring clarification, rewording, or additional scaffolding.

F8. Freeze checklist (what must remain invariant when cloning units)

When cloning the golden unit to create another unit, the following must remain unchanged unless explicitly approved by the course owner:

1. Unit overview page structure and naming conventions
2. Lesson packaging minimum content package
3. PBL brief structure (scenario/task/deliverable/assessment)
4. Micro-artefact size rule (1-2 pages)
5. Optional PBL activity configuration style (ungraded; no compulsory completion condition unless explicitly enabled)
6. Feedback guidance integrity, including optional self-check criteria and any rubric-inspired feedback guidance where used.

Annex G - Open Call Evaluation Rubric

This annex defines the rubric used by the selection panel for the 6G-VERSUS Venture Accelerator Open Call. Evaluators apply it independently; scores are averaged per criterion and summed for an application total (maximum 20 points). Applications scoring below 10/20 overall, or below 2/4 on Criteria C1 or C2, are not considered for selection regardless of total score.

G1. Evaluation panel composition

The selection panel has a minimum of five evaluators covering the following perspectives:

- at least one evaluator with deep knowledge of 6G/B5G technology and the SNS JU landscape;
- at least one evaluator with direct startup investment or acceleration experience;
- at least one evaluator with business-development or go-to-market expertise in a relevant sector (energy, mobility, agriculture, healthcare, ports, manufacturing, or media);
- at least one evaluator from within the 6G-VERSUS consortium (technical or exploitation lead);
- at least one evaluator external to the consortium, to safeguard independence.

All evaluators sign a conflict-of-interest declaration before reviewing any applications. Evaluators with a direct or indirect relationship to an applicant organisation are recused from that application.

G2. Evaluation rubric

Criterion	Weight	Score 4 (Excellent) - Description
C1 - Sector relevance and 6G technology alignment	20%	Solution clearly addresses a 6G-relevant challenge. The team demonstrates specific knowledge of how 6G/B5G capabilities (low latency, massive IoT, AI-native networking, network slicing) are necessary and sufficient for the solution - not merely beneficial. Strong sector fit with one or more 6G-VERSUS use case families.
C2 - Team strength and execution capacity	20%	Core team shows complementary technical and business skills, relevant prior experience, and evidence of execution (prototype, pilot, customer conversations, prior funding). Team leadership is clear. At least one team member has deep technical knowledge of the target application domain.
C3 - Business readiness and scalability	30%	The venture has a defined business model (or well-articulated hypothesis) with a clear revenue logic, identified customer segment and articulated value proposition. The solution is technically and commercially scalable. Evidence of market validation (customer interviews, LOIs, revenue or pilot contracts) is present.
C4 - Funding readiness and investor attractiveness	10%	The team understands its funding needs and stage. The business model supports a credible path to investment or non-dilutive funding. The team is aware of the EU funding landscape (EIC, ERDF, national instruments). The pitch or application shows readiness to engage with investors within 6–12 months.
C5 - Programme fit and commitment	20%	Team goals are clearly aligned with what the programme can offer (technical knowledge, network access, business support). The team shows understanding and acceptance of programme scope constraints (no financial support, virtual delivery, advisory testbed access). The commitment to a 10-week programme is credible given the team's other activities.

Table 29. Open Call evaluation rubric (5 criteria × 4 = 20 points maximum)

G3. Selection process

Evaluation proceeds in two steps. In Step 1 each evaluator independently scores all eligible applications using the rubric. In Step 2 a moderation panel (ENV + IPN + one external evaluator) reviews the ranked list, resolves score discrepancies greater than 2 points on any criterion between evaluators, and applies the geographic-diversity check (maximum 30% of selected teams from a single country, subject to application quality). The rubric also includes a section for evaluator notes and feedback to the applicants. The final selection of 25 teams - and a waitlist of up to 10 - is confirmed by the joint ENV + IPN gate decision at Gate 2.

All applicants receive a brief written summary of their evaluation outcome. Teams placed on the waitlist are told their position. Teams not selected and not on the waitlist receive a concise feedback note - two or three sentences identifying the primary gap in their application.

Annex H - Workshop Curriculum Outlines

This annex gives the minimum curriculum outline for each of the nine core workshops (four technical, five business). Each outline functions as a production brief for the consortium partner(s) developing the workshop. Final materials (slide decks, facilitation guides, team exercise instructions) live in the shared programme coordination space and are not reproduced here.

H1. Technical workshops

TW-1: 6G-VERSUS architecture, triplet model and cluster use cases	
Duration	2 hours (live, virtual)
Responsible	WP2 technical leads + T7.5 facilitator (ENV)
Programme week	Week 2
Learning objectives	(1) Explain the 6G-VERSUS architecture and how it relates to emerging 6G standards. (2) Describe the V/N/AI-App triplet and its role in next-generation service design. (3) Map own solution to a relevant 6G-VERSUS use case family. (4) Identify 2–3 architectural building blocks directly relevant to the own solution.
Session outline	[15 min] Welcome and team warm-up (ENV). [30 min] 6G-VERSUS architecture overview: layers, interfaces, platform design principles (WP2). [20 min] Triplet model deep-dive: V/N/AI-App roles, exposure interfaces, AI-native logic (WP2). [25 min] Cluster use cases - Greece, Spain, France, Portugal, Bulgaria, Finland: themes and technology patterns (WP2). [20 min] Team exercise: 10 min to complete a 'use case positioning card' (which cluster is closest to your solution? which triplet roles does it occupy?) + 10 min group share. [10 min] Wrap-up and preview of Week 4 deliverable (ENV).
Team deliverable	No formal deliverable; outputs feed informally into the Week 4 KPI/KVI exercise.
Minimum content package	Slide deck (max 40 slides); 1-page use case positioning card template; pre-workshop reading (D2.1 summary brief, 2–3 pages, prepared by WP2 lead).

TW-2: B5G/6G enablers and KPI/KVI framing for innovation	
Duration	2 hours (live, virtual)
Responsible	WP5 leads + T7.5 facilitator
Programme week	Week 4
Learning objectives	(1) Identify 2–3 B5G/6G enablers from the 6G-VERSUS catalogue (AI-native networking, MEC, NTN, RIS, O-RAN, etc.) directly relevant to own solution. (2)

TW-2: B5G/6G enablers and KPI/KVI framing for innovation	
	Define at least 2 KPIs and 1 KVI. (3) Distinguish between performance indicators and value indicators. (4) Understand how KPIs/KVIs are used in the 6G-VERSUS trial and evaluation methodology.
Session outline	[10 min] Recap of TW-1 positioning cards (ENV). [25 min] B5G/6G enablers overview: architectural patterns, exposure interfaces, AI/ML integration, sustainability enablers (WP5/WP2). [25 min] KPI/KVI methodology: definitions, selection logic, measurement principles, sustainability value framing (WP5). [30 min] Team exercise: define your KPI set (2 KPIs + 1 KVI) using the template; 15 min team work + 15 min group review with facilitator. [10 min] Debrief and preview of BMC (Week 5).
Team deliverable	KPI/KVI card: 2 KPIs + 1 KVI with definitions and measurement approach (due by the end of Week 4). Uploaded to Monday.com for mentor review before BW-2.
Minimum content package	Slide deck (max 30 slides); KPI/KVI definition template (1 page); reference list linking to D5.1 key definitions.

TW-3: 6G-VERSUS experimentation environment and validation approaches	
Duration	2 hours (live, virtual)
Responsible	WP3 testbed leads + T7.5 facilitator
Programme week	Week 6
Learning objectives	(1) Understand the 6G-VERSUS testbed landscape: capabilities, sites, trial organisation. (2) Learn to frame a technical validation claim for a startup's solution. (3) Know which evidence types are realistic within programme scope. (4) Understand the distinction between academic/research validation and commercial pilot validation.
Session outline	[10 min] Context: why evidence matters for investor readiness (ENV). [30 min] 6G-VERSUS testbed overview: capabilities at each of the 6 sites; experiment design; trial types (WP3). [20 min] Validation frameworks: evidence types (simulation, lab, pilot, deployment); making credible claims with limited resources. [30 min] Panel Q&A: team questions on validation approaches for their use case. [10 min] Synthesis: what each team should include as 'validation evidence' in its pitch.
Team deliverable	No formal deliverable; insights feed into pitch deck Section 4 (traction/validation evidence).
Minimum content package	Testbed overview deck (max 20 slides, prepared by WP3 lead); validation evidence reference card (1 page).

TW-4: Sustainability, ESG framing and circular economy for 6G solutions	
Duration	2 hours (live, virtual)
Responsible	WP5 sustainability leads + ENV
Programme week	Week 8
Learning objectives	(1) Apply KVI reasoning to sustainability impact claims (building on TW-2). (2) Identify the ESG dimensions relevant to the own solution. (3) Articulate at least one circular-economy implication. (4) Understand how sustainability framing strengthens investor and corporate-buyer engagement.
Session outline	[15 min] Why sustainability matters to investors and enterprise buyers in 2026 (ENV). [25 min] ESG framing for 6G solutions: environmental (energy, emissions), social (connectivity equity, safety), governance (transparency, data sovereignty). [20 min] Circular-economy basics for ICT: product-as-a-service, device longevity, software-defined hardware, data lifecycle (ref. T7.4 M4-U13). [30 min] Team exercise: identify your ESG angle and draft one ESG/circularity claim for your pitch. [10 min] Group review and debrief.
Team deliverable	ESG/circularity claim card (≤ 150 words). Integrated into pitch deck Section 6 (impact and ESG).
Minimum content package	Slide deck (max 30 slides); ESG claim template (1 page); list of EU ESG reporting frameworks relevant to startup investors (SFDR, CSRD, EU Taxonomy).

H2. Business workshops

BW-1: Problem-solution fit, customer discovery and market segmentation	
Duration	2 hours (live, virtual)
Responsible	ENV + IPN business mentors
Programme week	Week 3
Learning objectives	(1) Articulate the problem in the customer's language, not the engineer's. (2) Identify and prioritise 3 market segments. (3) Describe the beachhead customer and their primary pain point. (4) Understand customer-discovery methodology - and why it matters before building a full BMC.
Session outline	[15 min] Common startup failure modes: building what nobody wants (ENV). [20 min] Customer-discovery methodology: JTBD, problem vs. symptom, pain ranking. [20 min] Market segmentation for B2B tech: TAM/SAM/SOM, B2B buyer journey, enterprise vs SME vs public sector. [30 min] Team exercise: write a problem

BW-1: Problem-solution fit, customer discovery and market segmentation	
	statement + identify 3 segments + select beachhead customer. [15 min] Group share and facilitator feedback.
Team deliverable	Problem-segment card (submitted on Monday.com before BW-2): problem statement (max 3 sentences) + 3 segments + beachhead description.
Minimum content package	Slide deck (max 25 slides); JTBD template; problem-statement template; market-sizing worksheet.

BW-2: Business Model Canvas, value proposition and sustainability integration	
Duration	2 hours (live, virtual)
Responsible	ENV + IPN business mentors
Programme week	Week 5
Learning objectives	(1) Complete all 9 BMC blocks. (2) Develop a value-proposition canvas aligned to the beachhead customer. (3) Integrate the sustainability/ESG angle from TW-4 into the value proposition. (4) Identify the top 3 risks in the current business model.
Session outline	[10 min] Recap of the problem-segment card (ENV). [20 min] BMC walkthrough: each block with 6G startup examples. [20 min] Value-proposition canvas: jobs/pains/gains. [30 min] Team exercise: complete BMC + identify top 3 risks. [20 min] Group share (2 teams present; others give feedback). [10 min] Debrief and first-draft BMC submission instructions.
Team deliverable	First-draft BMC (9 blocks + 3 identified risks). Due: end of Week 5 via Monday.com. Reviewed by the assigned mentor before Round 1 mentoring.
Minimum content package	Slide deck (max 25 slides); editable BMC template; value-proposition canvas template; risk identification checklist.

BW-3: Marketing & Sales Management	
Duration	2 hours (live, virtual)
Responsible	ENV + IPN business mentors
Programme week	Week 5

BW-3: Marketing & Sales Management	
Learning objectives	(1) Understand the basics of designing a Marketing Strategy (2) Design the customer journey map. (3) Understand sales strategy. (4) Identify top sales and marketing channels, target audiences and sales targets.
Session outline	[20 min] Marketing Management [20 min] Sales Management. [10 min] Intro to Customer Journey Map [30 min] Team exercise: Draft Customer Journey Map [20 min] Group share Sales & Marketing Channels, target audiences [10 min] Feedback.
Team deliverable	Identify top sales and marketing channels, target audiences and sales targets.. Reviewed by assigned mentor by Round 2 mentoring.
Minimum content package	Slide deck (max 10 slides); Marketing channels, sales targets, target audiences, key marketing messaging.

BW-4: Investor readiness and funding landscape for 6G tech startups	
Duration	2 hours (live, virtual)
Responsible	ENV + IPN + invited consortium industry partners
Programme week	Week 9
Learning objectives	(1) Understand the investor-readiness framework and what investors look for at each stage. (2) Structure a 10-slide investor pitch. (3) Identify 3 relevant EU funding instruments (EIC Accelerator, Horizon TechInvest, national schemes, strategic investors). (4) Distinguish financial investors, strategic investors and corporate venture arms.
Session outline	[20 min] The investor's perspective: what VCs, CVCs and strategic investors look for in a 6G startup (industry-partner guest). [20 min] Investor-readiness framework: team, technology, market, traction, business model, ask. [20 min] EU funding landscape for deep-tech startups: EIC Accelerator, Horizon TechInvest, national schemes, EIF instruments. [30 min] Pitch structure workshop: 10-slide structure, key messages per slide, common mistakes. [10 min] First pitch draft submission instructions (due end of Week 9).
Team deliverable	First pitch deck draft (10 slides, uploaded to Monday.com). Reviewed by assigned mentor before BW-4.
Minimum content package	Slide deck (max 30 slides); 10-slide pitch structure template; EU funding landscape overview (1-page reference); list of relevant investors/CVCs in the 6G/connectivity space.

BW-5: Pitch rehearsal, panel feedback and Pitching Day preparation	
Duration	2 hours (live, virtual) + individual team prep time
Responsible	ENV (facilitates); consortium industry partners (panel)
Programme week	Week 10
Learning objectives	(1) Deliver a 5-minute investor pitch. (2) Respond to challenging questions from a panel with confidence and precision. (3) Identify the top 2–3 revisions needed in the pitch deck before Pitching Day.
Session outline	[10 min] Ground rules and session format (ENV). [80 min] Pitch rehearsal: each team delivers a 3-minute abbreviated pitch + 3 minutes of panel questions (10 teams per session; 2 parallel sessions with different panels). [20 min] Group feedback: common themes and top improvements. [10 min] Final materials submission instructions (deck + revised BMC due 48h before Pitching Day).
Team deliverable	Revised and finalised pitch deck + final BMC (due 48h before Pitching Day via Monday.com).
Minimum content package	Pitch feedback rubric (for panel use); panel facilitation guide (ENV); timing clock visible to all participants during rehearsal.

Annex I – Open Call Design & Implementation

This annex describes the design, launch and execution model of the Open Call for the Acceleration Program, used to select startups and SMEs for participation in the 6G-VERSUS Venture Accelerator. This annex describes how potential applicants are identified, engaged and guided through the application funnel. The objective is not only to attract applications but to position the 6G-VERSUS Venture Accelerator as a high-value European opportunity combining technical depth and business acceleration. With supporting material and user-focused messaging, it is also an operational reference for consortium partners responsible for outreach, application management, evaluation and onboarding. The Open Call Guide, evaluation rubric and application templates are maintained in the shared coordination space and are not reproduced for the broader public.

I1. Open Call Overview

Purpose

To identify and select the **25 highest-potential EU-based startups and SMEs** developing 6G-relevant solutions for participation in the 10-week Venture Accelerator.

Target applicants

- Early-stage startups (TRL 3–5)
- Growth-stage startups / SMEs (TRL 5–7)
- Independent tech developers and researcher-entrepreneurs
- Vertical adopters exploring 6G use cases

Geographic

Open to all EU Member States and associated countries, with targeted outreach in trial-site countries and through European innovation networks.

scope

Cohort

25 selected teams + 5–10 teams on reserve list.

size

I1.1. Open Call timeline

Phase	Timing	Key outputs
Preparation	Jan–Apr 2026	Guide, application form, rubric, outreach plan
Launch (Gate 1)	15 May 2026	Open Call published (https://6g-versus.eu/ecosystem-building-and-accelerator/)
Application period	15 May – 10 July 2026 (≈9 weeks)	≥ 50 complete applications targeted
Evaluation	20 July – 8 August 2026	Ranked list of applicants
Results announcement	by 10 August 2026	Selected cohort + waitlist
Onboarding (Gate 2)	September 2026	Cohort confirmed and ready. Access to Learning Platform

11.2 Application process

Submission platform

Applications are submitted via a structured form hosted on Monday.com, ensuring standardised data collection and evaluation readiness, whilst also providing a clear structure for applicants.

Application components

- Team profile and expertise
- Solution description and 6G relevance
- Market opportunity and business model
- Technology maturity (TRL)
- Motivation and programme fit

Eligibility principles

- EU-based entity or individual
- 6G/B5G relevance (technology or use case)
- Ability to commit to a 10-week virtual programme

In order to submit an application, the users must also include a pitch deck document (PPT, PDF, other), where they will describe their venture, aligning to the experience expected from SMEs and startups, who participate in acceleration and business support programmes.

6G-VERSUS

6G-VERSUS Venture Accelerator Application

The application form has 4 steps and it requires to attach a short pitch deck to be considered.

Application Submission Deadline: 10 July 2026

For more information about 6G-VERSUS visit: <https://www.6g-versus.eu>

6G-VERSUS has received funding from the Smart Networks and Services Joint Undertaking (SNS JU) under the European Union's Horizon Europe research and innovation programme under Grant Agreement No. 101156313. Co-funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or SNS JU. Neither the European Union nor the granting authority can be held responsible for them.

Start

6G-VERSUS

6G-VERSUS Venture Accelerator Application

General Information

1. Name & Surname *

2. Email *

3. Phone

4. Country *

Save as draft **Next**

6G-VERSUS

6G-VERSUS Venture Accelerator Application

Company Information

6. Company Name *

7. Role/Job Title

8. Website (if available)

9. LinkedIn (if available)

10. Is your company registered already? *

11. Current stage of development

Back **Save as draft** **Next**

6G-VERSUS

6G-VERSUS Venture Accelerator Application

Solution

12. Describe your product/service (max 300 words) - What problem are you solving & how? *

13. How does your venture incorporate or plan to incorporate 6G technologies? How will you align to 6G-VERSUS Venture Accelerator? *

14. Who are your key team members? * Share their Names, Role and respective LinkedIn Pages.

15. Have you participated in an acceleration programme in the past? *

16. Please upload your pitch deck (max 15 pages) *

Back **Save as draft** **Next**

6G-VERSUS

6G-VERSUS Venture Accelerator Application

Declaration

17. Terms and Conditions *

By submitting this form, the participant acknowledges and agrees to comply with all rules, guidelines, and requirements set forth by the organizing body of the 6G-VERSUS project. Participation is subject to eligibility criteria, availability of spaces, and acceptance by the organizing team. The participant consents to the collection and use of personal data in accordance with applicable data protection laws (GDPR and EU data privacy regulations), solely for the purposes of managing participation and evaluating project outcomes. The organizers reserve the right to modify, postpone, or cancel the activity if necessary. The participant has the right to access, rectify, or erase their personal data, as well as to restrict or object to its processing, in accordance with Articles 15-22 of the GDPR. By applying, the participant confirms they have read and understood these Terms & Conditions.

I agree ☐

18. Commitment Statement *

I commit to fully engaging in the acceleration programme by attending all required sessions, completing assignments and milestones, and actively collaborating with mentors, peers, and programme partners throughout its duration.

I agree ☐

☐ I'm not a robot

Back **Save as draft** **Submit**

Figure 2. Application Platform - User Experience

11.3 Onboarding and transition to programme

Objective

Ensure selected teams are fully aligned with programme expectations before acceleration begins.

Key components

- Welcome pack and onboarding guide
- Orientation session (2 hours)
- Access to Learning Platform (Module 4 pre-course)
- Mentor matching
- Scope clarification (critical for expectation management)

Output

- 25 confirmed teams entering the accelerator programme

12. Strategic approach to outreach

The Open Call outreach is designed as a **multi-channel, funnel-based engagement strategy**, moving potential applicants from awareness to application, and from application to fully onboarded cohort members.

The approach combines:

- Targeted digital communication campaigns
- Activation of consortium and partner networks
- Community Partner referrals across EU ecosystems
- Clear and structured application materials (Open Call Guide)

A central design principle is **alignment between promotion and programme reality**: all outreach content reflects the actual value proposition of the programme (technical depth, business support, and ecosystem access), ensuring **high-quality and well-informed applicants**.

The outreach positions the programme as:

“A European 6G acceleration programme combining technical depth, real-world relevance and investor readiness.”

Three core value pillars are consistently communicated:

1. Technical acceleration

- Exposure to 6G-VERSUS architecture, enablers and testbed ecosystem
- Understanding of KPI/KVI frameworks and validation approaches

2. Business acceleration

- Business model development, go-to-market strategy, investor readiness
- Structured mentoring and peer learning

3. Ecosystem access

- Direct connection to a **multi-country consortium** of:
 - Research institutions
 - Industry players

- innovation organisations
- Exposure to investors and stakeholders via Pitching Da

All campaign content is tailored to a **professional, tech-savvy audience**, with:

- clear terminology (6G, AI-native networking, validation, KPIs)
- concise messaging
- strong emphasis on outcomes rather than generic benefits

I3. Open Call Guide

The Open Call Guide is a **central instrument bridging outreach and application**, ensuring that the communication strategy translates into **clear, high-quality and aligned submissions**.

Unlike outreach materials (which generate interest), the Guide is designed to:

- standardise applicant understanding
- minimise ambiguity
- reduce evaluation inefficiencies
- ensure alignment with programme scope and constraints
- Within the engagement funnel, the Open Call Guide operates at the conversion and qualification stage:

Stage	Function
Awareness	The campaign generates applicants
Interest	Landing page explains value
Application (Guide)	Aligns expectations + ensures quality input
Evaluation	Structured data enables fair scoring

I3.1 Core content structure

The Guide includes the following key sections:

1. Programme overview

- Objectives of the accelerator
- Structure (10-week format)
- Workshops and mentoring

2. Value proposition

- Technical acceleration (6G exposure)
- Business support (BMC, investor readiness)
- Ecosystem access

3. Eligibility criteria

- Applicant profiles
- TRL ranges
- Geographic scope

4. Application process

- Timeline and deadlines
- Submission platform (Monday.com)
- Application components

5. Evaluation process

- Evaluation criteria and scoring
- Panel composition
- Selection steps

6. Programme commitments

- Participation requirements
- Expected time investment
- Deliverables

7. FAQs and support

- Clarification of common misunderstandings
- Contact point for applicants



Figure 3. Open Call Guide

Annex J – 6G-VERSUS Venture Accelerator Applications Evaluation Process

J.1 Evaluation Process

A multi-expert panel applies five equally weighted evaluation criteria, ensuring a balanced assessment of both technical and business aspects of each application. The evaluation process is conducted in two distinct stages.

Stage 1 – Eligibility Screening

In the first stage, Envolve Entrepreneurship (ENV) assesses the eligibility of each applicant. This includes a thorough review of the submitted application to ensure that all required materials have been provided, including the pitch deck. ENV may request additional documentation or clarifications from applicants, where necessary, to support the subsequent evaluation stage.

Applications at this stage are evaluated on a binary basis: YES (eligible) or NO (non-eligible). Applications marked as “YES” progress to the second stage of evaluation. Applications marked as “NO” are rejected, and **applicants will be informed accordingly about their non-eligibility.**

Stage 2 – Jury Evaluation

The second stage is conducted by a five-member jury comprising representatives from Envolve Entrepreneurship (ENV) and the broader startup and innovation ecosystem. This composition ensures complementary expertise and a well-rounded evaluation perspective.

At this stage, jury members review all eligible applications based on the predefined Evaluation Criteria. Each criterion is scored on a scale from 1 to 5. The final score for each application is automatically calculated as the sum of all individual scores across the criteria. In addition to scoring, jury members provide qualitative feedback, including comments summarizing their evaluation and justifying the assigned scores.

Final Selection and Ranking

Upon completion of all evaluations, a consolidated ranking is generated based on the total scores awarded to each application. The top 25 startups will be selected for participation in the acceleration program. In addition, a shortlist of five (5) companies will be identified as runners-up for potential admission.

In the event of equal scoring at the selection threshold, the project reserves the right to admit more than 25 startups to the program, in order to ensure fairness and equal treatment of applications with identical evaluation results.

J.2 Evaluation Criteria

The criteria reflect both the strategic objectives of the programme and the key success factors for early-stage ventures in the 6G and deep-tech ecosystem.

The evaluation framework aims to capture not only the technical merit of the proposed solution, but also the strength of the team, the level of business maturity, and the startup’s readiness to benefit from and contribute to the programme. Each criterion is equally weighted, ensuring a fair and holistic assessment across all dimensions.

Reviewed by an expert committee:

- **Sector relevance**

The extent to which the startup’s solution aligns with the thematic focus of the programme, particularly in relation to 6G technologies and associated innovation domains. This includes the relevance, applicability, and potential impact of the solution within the targeted sector(s).

- **Team strength**
The quality, experience, and complementary skill set of the founding team. This includes technical expertise, business acumen, execution capability, and the team's demonstrated commitment to the venture.
- **Business readiness & scalability potential**
The maturity of the business model, clarity of value proposition, and evidence of market validation. This criterion also considers the startup's ability to scale its solution across markets and its potential for sustainable growth.
- **Funding readiness**
The degree to which the startup is prepared to attract investment. This includes the clarity of financial planning, understanding of funding needs, investor readiness, and overall investment potential.
- **Programme fit**
The alignment between the startup's needs, objectives, and stage of development with the offerings of the accelerator programme. This includes the extent to which the startup is expected to benefit from the programme and actively engage in its activities.

J.2 Evaluation Timeline

The evaluation period will take place from Monday, 20 July to Friday, 8 August 2026.

During this period, both stages of the evaluation process will be conducted in sequence. The first stage (eligibility screening) will be carried out by Envolve Entrepreneurship (ENV) at the beginning of the evaluation period. This will be followed by the second stage, during which the jury will review and score all eligible applications based on the established evaluation criteria.

All evaluations, scoring, and ranking processes are expected to be completed within this timeframe, ensuring a timely and efficient selection process.

Annex K - Training Programme. Unit mini-feedback survey

This annex documents the short unit-level feedback survey used in Moodle after each unit. The purpose of this survey is to capture immediate learner feedback on clarity, relevance, workload, technical level, and suggestions for improvement. The survey supports targeted unit-level improvement between Moodle releases.

Suggested Moodle activity: Feedback / Questionnaire

Estimated completion time: 3 minutes

When to deploy: after completion of each unit within each mini-course/module

Scale for most items:

1 = Strongly disagree · 2 = Disagree · 3 = Neither agree nor disagree · 4 = Agree · 5 = Strongly agree · N/A = Not applicable

Mode: anonymous

1. **The unit was clear and easy to follow**
2. **The content of this unit was relevant and useful for understanding 5G/B5G**
3. **The technical level of this unit was**
1 = Too basic · 2 = Slightly basic · 3 = Appropriate · 4 = Slightly Advanced · 5 = Too Advanced
4. **[Optional] What would you change, add or remove from this unit? You may also comment on the duration, technical levels, examples, activities or learning materials**
Long answer

Annex L - Training Programme. Global mini-course feedback survey template

This annex documents the final mini-course feedback survey used in Moodle after completion of the learning experience. The purpose of this survey is to collect course-level feedback on organisation, Moodle usability, perceived learning gain, workload, technical level, usefulness for the learner's profile, and improvement suggestions. Results will be analysed in aggregated form and used to support D7.8 reporting.

Suggested Moodle activity: Feedback / Questionnaire

Estimated completion time: 7–10 minutes

When to deploy: after completion of each mini-course/module

Scale for most items:

1 = Strongly disagree · 2 = Disagree · 3 = Neither agree nor disagree · 4 = Agree · 5 = Strongly agree · N/A = Not applicable

Introductory text for learners

Thank you for completing this mini-course. This questionnaire collects feedback to improve the 6G-VERSUS training programme. Your responses will be analysed in aggregated form to improve course structure, learning materials, workload, Moodle implementation, quizzes, and Problem-Based Learning activities. Please answer honestly based on your experience.

Mode: anonymous

A. Learner profile and participation

1. Learner profile

Single choice: Bachelor student / Master student / PhD student / Researcher / Industry professional / Vertical stakeholder / Educator or trainer / Public-sector or policy stakeholder / Other

2. Main background or discipline

Short answer.

3. Prior familiarity with this mini-course topic before starting

1 = Very low · 2 = Low · 3 = Moderate · 4 = High · 5 = Very high

4. Main motivation for taking this mini-course

Multiple choice: Academic learning / Research support / Professional upskilling / Understanding 5G/6G technologies / Understanding 6G-VERSUS trials or testbeds / Sustainability and KPI/KVI evaluation / Innovation and entrepreneurship / Other

5. How much of the mini-course did you complete?

Single choice: All units / Most units / About half / Only selected units / I only reviewed some materials

6. Approximate total time spent on the mini-course

Single choice or numeric: Less than expected / About as expected / More than expected / Much more than expected / Not sure

B. Course structure, organisation, and Moodle navigation

7. The mini-course objectives and expected learning outcomes were clear from the beginning
8. The sequence of units and lessons was coherent and easy to follow
9. The Moodle structure made it easy to locate videos, slides, transcripts, quizzes, PBL activities, and submissions
10. The course workload was reasonable for the expected learning effort
11. The estimated workload matched the real time required to complete the mini-course
12. The balance between video lectures, slides/transcripts, quizzes, self-study, and PBL activities was appropriate
13. [Optional] Open comment: What should be improved in the course organisation, navigation, or workload?

C. Learning objectives, knowledge gain, and technical level

14. The mini-course improved my understanding of the topic
15. The technical level of the mini-course was appropriate for my background
16. The terminology, acronyms, and key concepts were explained clearly
17. The learning activities supported the stated learning outcomes
18. The mini-course helped me connect theoretical concepts with practical 5G/6G experimentation or use-case contexts
19. After completing the mini-course, I feel more confident discussing this topic with peers, instructors, or technical stakeholders
20. Technical level overall
Single choice: Too basic / Slightly basic / Appropriate / Slightly advanced / Too advanced
21. [Optional] Open comment: Which concept, skill, or activity contributed most to your learning?

D. Learning materials and accessibility

22. The video presentations were clear and useful
23. The slides and speaker notes/transcripts supported my understanding
24. The self-evaluation quizzes helped me check whether I understood the key concepts
25. The readings and references were useful and not excessive
26. The visual quality, audio quality, and formatting of the materials were adequate
27. The materials were accessible and easy to review, including readable slides, transcripts or speaker notes, and a clear document structure
28. [Optional] Open comment: Which material format was most useful: video, slides, transcript/speaker notes, quiz, readings, PBL case, or other?

E. Problem-Based Learning and Assessment

29. The PBL activity was relevant to the mini-course topic
30. The PBL scenario or case study was realistic and understandable
31. The PBL activity helped me apply concepts rather than only memorise them
32. The PBL instructions clearly explained the expected task and deliverables, if needed
33. The assessment criteria or rubric were clear
34. The time required for the PBL activity was reasonable
35. The PBL activity helped me understand how the topic relates to 6G-VERSUS use cases, trials, testbeds, KPIs/KVIs, or sustainability goals
36. [Optional] Open comment: How could the PBL activity be improved?

F. Relevance to 6G-VERSUS and sustainability-driven 5G/6G

37. The mini-course content was relevant to current 5G, Beyond 5G, and 6G trends
38. The mini-course helped me understand how 5G/6G technologies can support sustainability-oriented use cases
39. The course made clear links between technical performance indicators and broader value or sustainability indicators
40. The examples were sufficiently connected to real experimentation, trials, or vertical use cases
41. The mini-course is relevant to my academic, research, or professional goals
42. [Optional] Open comment: Which additional 6G-VERSUS example, use case, testbed, KPI/KVI, or sustainability topic should be included?

G. Overall satisfaction and improvement priorities

43. Overall, I am satisfied with this mini-course
44. I would recommend this mini-course to someone with a similar background
45. This mini-course prepared me to continue with the next 6G-VERSUS mini-course
46. Overall rating
1 = Very poor · 2 = Poor · 3 = Acceptable · 4 = Good · 5 = Excellent
47. [Optional] What should be kept unchanged in future versions?
Long answer
48. [Optional] What should be changed, added, or removed?
Long answer
49. [Optional] Any additional comments or suggestions?
Long answer

Mini-course-specific question block

Module 1 - 5G Fundamentals

M1.1. After completing this mini-course, I can explain the relationship between 5G RAN, Core, transport networks, and management/orchestration functions.

M1.2. This mini-course gave me a sufficient foundation to follow later modules on evolution towards 6G, 6G use cases and trials, and KPI/KVI evaluation.

Module 2 - Technological evolution towards 6G (Tentative)

M2.1. After completing this mini-course, I can identify key technological enablers in the evolution from 5G/B5G towards 6G.

M2.2. The mini-course helped me understand how AI/ML, observability, energy-aware operation, and sustainability considerations influence future network design.

Module 3 - 6G use cases and trials (Tentative)

M3.1. After completing this mini-course, I can define and justify KPIs and KVIs for a 5G/6G use case

M3.2. The mini-course helped me understand how V-App, N-App, and AI-App concepts support 6G-VERSUS trial design and evaluation.

Module 4 - Innovation and Entrepreneurship in 5G, 6G and Emerging Connectivity (Tentative)

M4.1. After completing this mini-course, I can use basic innovation tools such as SWOT, Business Model Canvas, value proposition, or pitch framing for a 5G/6G concept.

M4.2. The mini-course helped me connect advanced connectivity solutions with responsible innovation, sustainability, ESG, circularity, and exploitation pathways.