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Roadmap for the Implementation of the REMOTE Standards and Benchmark in Remote Assessment in STEM

REMOTE
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REMOTE: Assessing and evaluating remote learning practices in STEM

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Roadmap for the Implementation of the REMOTE Standards and Benchmark in Remote Assessment in STEM

31th of October 2025

Executive summary

The increasing relevance of remote and hybrid education in higher education has highlighted the need for robust, transparent, and quality-assured approaches to assessment, particularly in STEM disciplines. In response to this challenge, the REMOTE project developed a set of standards and benchmarks to support higher education institutions and external quality assurance agencies in the design, implementation, and evaluation of remote assessment practices.

This document presents a roadmap for the implementation of the REMOTE standards and benchmark in remote assessment in STEM. Its purpose is to translate the project's conceptual and analytical results into a practical, step-by-step framework that institutions can use to establish, monitor, and continuously improve remote assessment systems that are pedagogically sound, inclusive, and aligned with European quality assurance principles.

The roadmap is structured around the twelve REMOTE standards and organises their implementation into a sequence of interrelated phases. These phases address governance and policy frameworks, assessment design and disciplinary alignment, technological infrastructure and accessibility, capacity building and support, interaction and academic integrity, and quality assurance and continuous improvement. Each phase specifies the indicators and evidence required to demonstrate effective implementation.

The document is addressed to **higher education institu**tions responsible for the delivery of assessment in STEM programmes, as well as to **external quality assurance agencies** involved in evaluation and accreditation processes. By providing a shared reference framework, the roadmap supports coherence between internal implementation efforts and external quality assurance expectations.

The roadmap emphasises that effective remote assessment is a **systemic institutional endeavour** rather than a purely technical solution. Successful implementation depends on clear governance, adequate resources, stakeholder engagement, and the integration of monitoring and feedback mechanisms. The inclusion of a phased implementation timeline and control points supports realistic planning and accountability.

By following the approach outlined in this roadmap, institutions can move beyond ad hoc or emergency solutions and develop **sustainable, transparent, and high-quality remote assessment systems** in STEM. The REMOTE standards provide a stable reference for long-term development, while the roadmap supports adaptation to evolving pedagogical, technological, and regulatory contexts.

This work has been developed by the partnership of the Erasmus+ co-funded project 'REMOTE: Assessing and evaluating remote learning practices in STEM'

1. Purpose, scope, and users of the roadmap

The starting point of the roadmap is the definition of its purpose and scope, together with the identification of its intended users. These elements clarify how the document should be used by higher education institutions and external quality assurance agencies as a practical reference for implementing the REMOTE standards for remote assessment in STEM.

1.1. Objectives of WP5-A11

The objective of WP5-A11 is to provide a practical roadmap for the implementation of the REMOTE standards and benchmark in remote assessment in STEM. The roadmap translates the project results into a structured set of implementation steps, enabling institutions to design, deploy, monitor, and continuously improve remote assessment systems that are robust, fair, and aligned with European quality assurance principles.

This document is not intended to prescribe a single implementation model. Rather, it offers a flexible framework that institutions can adapt to their specific context, regulatory environment, and level of digital maturity, while maintaining coherence with the REMOTE standards.

1.2. Target users: Higher Education Institutions and external Quality Assurance Agencies

The roadmap is addressed primarily to higher education institutions (HEIs) responsible for designing and delivering assessment in STEM programmes, and to external quality assurance agencies (EQAAs) involved in evaluation, accreditation, and review processes.

For HEIs, the document provides guidance on how to operationalise the REMOTE standards through concrete actions, indicators, and evidence requirements. For EQAAs, it offers a shared reference framework that can support the assessment of institutional practices in remote and hybrid assessment, promoting consistency and transparency in evaluation processes.

The use of a common framework by both institutions and agencies facilitates dialogue, mutual understanding, and alignment between internal and external quality assurance.

1.3. Scope and limitations of the document

The scope of this roadmap is limited to the implementation of remote assessment systems in STEM. It focuses on governance, assessment design, technological infrastructure, capacity building, quality assurance, and monitoring mechanisms required to operationalise the REMOTE standards.

The document does not provide detailed technical specifications for platforms or tools, nor does it replace institutional regulations or national legal requirements. It should be used in conjunction with existing institutional policies, quality assurance systems, and regulatory frameworks.

By clearly defining its scope and limitations, the roadmap aims to support practical implementation while allowing institutions the necessary flexibility to adapt the framework to their specific needs and constraints.

2. Using the REMOTE Standards as an implementation framework

The REMOTE standards for on-line assessment provide a coherent and structured reference framework for the development of robust remote assessment systems in STEM. In this roadmap, the standards are not treated as abstract principles, but as operational building blocks that guide institutional action and quality assurance.

2.1. Structure and logic of the REMOTE Standards

The REMOTE framework consists of twelve interrelated standards, each defined through a set of indicators and minimum evidence requirements. Together, these elements articulate what constitutes good practice in remote assessment, covering governance, assessment design, technological infrastructure, capacity building, interaction, integrity, and quality assurance.

The standards are intentionally holistic. Some address structural and regulatory conditions (such as policies, information management, and public information), while others focus on pedagogical processes (assessment objectives, feedback, interaction) or enabling conditions (technology, training, accessibility). This structure reflects the understanding that remote assessment quality emerges from the interaction of multiple institutional dimensions rather than from isolated technical solutions.

2.2. Standards, Indicators, and Evidence as implementation tools

In this roadmap, standards, indicators, and minimum evidence requirements are used as practical instruments for implementation and monitoring. Standards define the objective to be achieved, indicators specify the observable characteristics of effective implementation, and evidence requirements clarify what documentation or data should be available to demonstrate compliance.

Institutions are encouraged to use the indicators to plan actions, assign responsibilities, and define milestones, while evidence requirements support verification and accountability. This approach enables institutions to move systematically from intent to implementation, and from implementation to quality assurance.

2.3. Flexibility and contextual adaptation

While the REMOTE standards provide a common reference framework, they are designed to be context-sensitive. Institutions differ in size, mission, disciplinary focus, and digital maturity, and the roadmap allows for adaptation to these differences.

Flexibility should not, however, undermine coherence. Institutions are encouraged to adapt implementation strategies and timelines while preserving the core logic of the standards and ensuring that all indicators are addressed over time. External quality assurance agencies may also take contextual factors into account when evaluating implementation, while maintaining consistent expectations regarding transparency, integrity, and quality assurance.

3. Institutional preconditions for implementation

The successful implementation of the REMOTE standards requires a set of institutional preconditions to be in place before operational activities begin. These preconditions relate to governance, regulatory compliance, stakeholder involvement, and initial readiness. Addressing them explicitly reduces implementation risks and supports coherent and sustainable adoption of remote assessment practices.

3.1. Governance, regulatory, and ethical preconditions

Institutions should ensure that remote assessment is embedded within a clear governance framework. This includes the formal allocation of responsibilities for policy development, assessment design, technological infrastructure, data protection, and quality assurance. Decision-making structures should enable coordination across academic, technical, and administrative units.

Regulatory compliance constitutes a critical precondition. Institutions must verify that remote assessment practices comply with national and institutional regulations, including those related to assessment validity, student rights, data protection, accessibility, and academic integrity. Ethical considerations, particularly regarding the use of learning analytics, artificial intelligence, and monitoring technologies, must be explicitly addressed through institutional policies and codes of conduct.

Without clear governance and regulatory alignment, implementation efforts risk fragmentation and inconsistency.

3.2. Stakeholder roles and responsibilities

Effective implementation depends on the active involvement of multiple stakeholders. Academic staff, technical support units, quality assurance services, students, and institutional leadership all play distinct but interdependent roles.

Institutions should identify key stakeholders and clarify their responsibilities from the outset. Academic staff are central to assessment design and feedback practices, while technical teams ensure platform reliability, security, and accessibility. Quality assurance units coordinate monitoring and evidence collection, and students provide essential feedback on usability and fairness.

Early and transparent stakeholder engagement fosters shared ownership of the implementation process and supports acceptance of new assessment practices.

3.3. Initial readiness and risk considerations

Before initiating the implementation roadmap, institutions should conduct an initial readiness analysis. This analysis may consider existing digital infrastructure, staff digital competencies, assessment practices, support services, and quality assurance mechanisms.

Potential risks should be identified at this stage, including technical limitations, insufficient staff capacity, resistance to change, data protection challenges, or inequities in student access. Recognising these risks early enables institutions to prioritise actions, allocate resources appropriately, and design mitigation strategies.

Establishing a realistic understanding of institutional readiness ensures that the implementation roadmap is adapted to the institutional context and that progress can be achieved in a controlled and sustainable manner.

4. Step-by-step implementation Roadmap based on the REMOTE Standards

This roadmap translates the REMOTE standards into a structured sequence of implementation phases. Each phase specifies the key indicators that institutions must address to demonstrate effective implementation. The indicators serve both as guidance for action and as reference points for quality assurance and external review. Annex shows the twelve REMOTE standards, brief description, indicators and summary of minimum requirements.

4.1. Phase 1 – Governance, Policies, and Information Management

(Standards 1, 10, 12)

Implementation starts with the establishment of a coherent governance and policy framework. Institutions must adopt institutional policies governing online teaching, learning, and assessment, ensuring alignment with ethical standards, pedagogical models, and legal requirements.

This phase requires implementation of indicators related to:

- **Policy framework for e-assessment**, including organisation, administration, academic integrity, accessibility, technical support, and responsible use of AI.
- **Technology governance**, regulating the introduction and use of new digital tools to ensure fairness, reliability, and quality.
- **Security and data protection**, covering privacy, consent, learning analytics, AI-based decision-making, and cybersecurity.
- **Strategic development planning**, defining responsibilities, procedures, and mechanisms for regular review of e-assessment practices.
- **Secure information management**, including authentication, role-based access, secure storage, data retention, and recovery procedures.
- **Public availability of information**, ensuring that assessment procedures, criteria, digital environments, and support services are accurate, transparent, and regularly updated.

Completion of this phase is achieved when policies are formally approved, information management systems are operational, and public information is accessible and reliable.

4.2. Phase 2 – Assessment Design and Disciplinary Alignment

(Standards 2, 5)

Once governance is established, institutions must focus on assessment design and disciplinary alignment. Assessment objectives should be clearly defined, documented, and communicated, and assessment methods must align with learning outcomes and pedagogical approaches.

This phase addresses indicators related to:

- **Clarity and accessibility of assessment objectives**, published through institutional platforms and course documentation.
- **Alignment between learning outcomes, teaching activities, and assessment methods**.
- **Methodological diversity**, including alternative and innovative digital assessment formats adapted to learner diversity.
- **Discipline-specific assessment tools**, ensuring that STEM assessments reflect scientific practices and competencies.
- **Support for applied and practical assessment**, such as simulations, virtual laboratories, coding environments, and problem-based tasks.
- **Continuous evaluation of disciplinary tools**, based on feedback from staff and students.

The phase is completed when assessment portfolios demonstrate clear alignment and disciplinary appropriateness.

4.3. Phase 3 – Technological Infrastructure and Accessibility

(Standards 4, 9)

The third phase focuses on the technical and infrastructural conditions required for remote assessment. Institutions must ensure that technologies are reliable, scalable, and aligned with assessment methods.

Key indicators to be implemented include:

- **Usability and adaptability of platforms**, ensuring ease of use and regular technological updates.
- **Alignment of infrastructure with assessment procedures**, including system compatibility and coverage.
- **Accessibility compliance**, guaranteeing full access for students with disabilities.
- **Scalability and reliability**, ensuring systems function under maximum user load and are tested before deployment.
- **Adequate resource allocation**, including technical staff and maintenance capacity.
- **Equitable access measures**, addressing financial, geographical, or technological barriers.
- **Availability of alternative formats**, when standard digital tools are not accessible.

This phase is completed when infrastructure supports inclusive and stable assessment delivery.

4.4. Phase 4 – Capacity Building and Learner Support

(Standards 6, 7)

Effective implementation requires systematic capacity building for both learners and teaching staff. Institutions must provide structured guidance, training, and support mechanisms.

This phase includes indicators related to:

- **Student guidance on tools and assessment methods**, ensuring informed participation.
- **Orientation and training programmes** for digital platforms and remote assessment practices.
- **Centralised access to resources**, including guidelines, tutorials, FAQs, and troubleshooting tools.
- **Availability of real-time technical support** for students.
- **Academic support services**, including tutoring, mentoring, and digital literacy training.
- **Structured training for teaching staff** in digital pedagogy and online assessment.
- **Continuous professional development**, through workshops, certifications, and peer learning.
- **Dedicated technical support for staff**, ensuring uninterrupted teaching and assessment.

- **Regular evaluation of training programmes**, using staff feedback for improvement.

The phase is completed when students and staff demonstrate readiness to operate within the remote assessment system.

4.5. Phase 5 – Interaction, Feedback, and Academic Integrity

(Standards 3, 8, 11)

This phase ensures the pedagogical quality of remote assessment by addressing interaction, feedback, and integrity.

Institutions must implement indicators related to:

- **Transparency of assessment procedures**, including criteria, timelines, and communication of results.
- **Integrity tools and processes**, such as plagiarism detection, secure delivery, authentication, and proctoring.
- **Codes of conduct and ethical guidelines**, regulating academic behaviour.
- **Multiple interaction channels**, enabling synchronous and asynchronous student–lecturer communication.
- **Structured and timely feedback**, that is constructive and actionable.
- **Collaborative learning activities**, including peer assessment, group work, and problem-based learning.
- **Digital networking opportunities**, such as webinars, guest lectures, and mentoring.
- **Monitoring of engagement and interaction**, using participation data and feedback mechanisms.

This phase is completed when interaction, feedback, and integrity mechanisms are consistently applied across courses.

4.6. Phase 6 – Review, Quality Assurance, and Continuous Improvement

(Cross-cutting across all standards)

The final phase establishes mechanisms for continuous monitoring and improvement of the remote assessment system.

Key indicators addressed include:

- **Systematic monitoring of indicators and evidence** across all standards.
- **Regular collection and analysis of feedback** from students, staff, and stakeholders.
- **Documented improvement actions**, closing the quality loop.
- **Integration with internal quality assurance systems**.
- **Use of standards and evidence by external quality assurance agencies** for evaluation and accreditation.

This phase ensures that implementation is not static but evolves in response to pedagogical, technological, and regulatory developments.

Concluding note on implementation

Although presented sequentially, the phases are interdependent and iterative. Institutions are encouraged to treat this roadmap as a cyclical quality framework, using the REMOTE standards and their indicators as a stable reference for long-term development of remote assessment in STEM.

5. Quality Assurance and control of implementation

The implementation of a remote assessment system in STEM requires a structured quality assurance framework to ensure consistency, transparency, and continuous improvement. This section defines how institutions should monitor, control, and validate the implementation of the REMOTE standards throughout the lifecycle of the system, using indicators and evidence as the core quality instruments.

5.1. Internal Quality Assurance model for Remote Assessment

Institutions should embed the implementation of remote assessment within their existing internal quality assurance (IQA) systems, rather than creating parallel structures. The REMOTE standards provide a coherent reference framework that can be integrated into institutional quality policies, programme reviews, and assessment regulations.

The internal QA model should be based on a cyclical approach comprising planning, implementation, monitoring, review, and improvement. Each standard implemented in Section 5 should be associated with clearly identified responsibilities, defined indicators, and documented evidence. This ensures that quality assurance is not limited to compliance checking but supports informed decision-making and institutional learning.

Governance bodies responsible for teaching and learning, digital transformation, and quality assurance should oversee the process, ensuring coordination across academic, technical, and administrative units.

5.2. Monitoring of Indicators and Evidence collection

Monitoring is centred on the **systematic use of indicators** defined in the REMOTE standards. Institutions should establish procedures to regularly collect, analyse, and review evidence related to:

- the existence and application of policies and regulations;
- the alignment of assessment objectives, methods, and learning outcomes;
- the reliability, accessibility, and security of technological infrastructure;
- the effectiveness of training, support, interaction, and feedback mechanisms;
- the integrity, transparency, and fairness of assessment processes.

Evidence should be proportionate, verifiable, and directly linked to the minimum evidence requirements defined for each standard. Documentation may include policy documents, platform records, training logs, feedback surveys, audit reports, and records of corrective actions. Evidence management systems should ensure traceability and facilitate both internal review and external evaluation.

5.3. Feedback loops and continuous improvement

Quality assurance must include structured feedback loops that enable continuous improvement. Institutions should systematically collect feedback from students, teaching staff, and support services on the functioning and effectiveness of remote assessment practices.

Feedback data should be analysed periodically and translated into documented improvement actions, such as revisions of assessment methods, updates of digital tools, additional training initiatives, or refinements of support services. Importantly, improvement actions and their outcomes should be communicated to relevant stakeholders, reinforcing transparency and trust.

This feedback-driven approach ensures that remote assessment practices remain responsive to evolving pedagogical needs, technological developments, and student expectations.

5.4. Role of external Quality Assurance Agencies

External Quality Assurance Agencies (EQAAs) play a complementary role in validating the implementation of the REMOTE standards. The indicators and minimum evidence requirements defined in the Guidelines can be used by EQAAs as reference points in accreditation, evaluation, or audit processes related to remote and hybrid assessment.

Institutions should be prepared to demonstrate how standards are implemented in practice, how evidence is collected and reviewed, and how quality assurance findings lead to improvement actions. The use of a shared framework enhances consistency between internal and external quality assurance and supports mutual understanding between institutions and agencies.

5.5. Verification of accomplishment and accountability

To ensure accountability, institutions should define control points at key stages of implementation, linked to the phases described in Section 5. At each control point, responsible bodies should verify whether planned actions have been completed, indicators met, and evidence collected.

Regular internal reporting on implementation progress supports informed governance decisions and allows early identification of risks or deviations. Clear accountability mechanisms ensure that responsibilities for quality assurance, monitoring, and improvement are explicitly assigned and sustained over time.

5.6. Concluding remark on quality assurance

The quality assurance system described in this section ensures that the implementation roadmap is measurable, controllable, and sustainable. By grounding quality assurance in clearly defined standards, indicators, and evidence, institutions can move beyond ad hoc digital assessment practices and establish a robust, transparent, and continuously improving system for remote assessment in STEM.

6. Resources, Feasibility, and Organisational Impact

The successful implementation of a system for remote assessment in STEM depends on the availability and effective coordination of appropriate resources. This section outlines the human, technical, and financial resources required, as well as the organisational implications of adopting the REMOTE standards in a sustainable manner.

6.1. Human and organisational resources

Remote assessment systems require the coordinated involvement of multiple institutional roles. Academic staff are central to the design and delivery of assessment, while technical staff ensure the reliability and security of digital platforms. Quality assurance units, teaching and learning centres, and data protection officers play a key role in governance, monitoring, and compliance.

Institutions should clearly define responsibilities for policy development, assessment design, technical support, training, and quality assurance. Where responsibilities are fragmented, coordination mechanisms must be established to avoid duplication and ensure coherent implementation. The appointment of a coordinating function or steering group for remote assessment can support alignment across academic, technical, and administrative units.

Workload implications for teaching staff must be explicitly considered. The design, delivery, and review of remote assessment often require additional effort, particularly during initial implementation phases. Institutions should recognise this workload and, where appropriate, provide workload adjustments, incentives, or institutional recognition to support staff engagement.

6.2. Technical and financial resources

The implementation of remote assessment relies on stable and scalable technological infrastructure. Institutions must ensure adequate investment in learning management systems, assessment platforms, authentication and integrity tools, and accessibility solutions. Ongoing maintenance, system updates, and cybersecurity measures must be planned from the outset.

Financial feasibility depends not only on initial investment but also on long-term sustainability. Institutions should account for recurrent costs related to software licences, infrastructure upgrades, technical support, training activities, and quality

assurance processes. Where external providers are used, contractual arrangements should clearly define service levels, data ownership, and institutional control.

Cost-efficiency can be improved through shared services, strategic procurement, and alignment with existing digital transformation initiatives. However, cost considerations should not compromise accessibility, security, or assessment quality.

6.3. Organisational impact and Change Management

Implementing the REMOTE standards often entails organisational change, affecting established assessment practices, roles, and workflows. Institutions should anticipate resistance to change and address it through transparent communication, stakeholder involvement, and capacity-building initiatives.

Change management strategies should emphasise the pedagogical rationale for remote assessment, the benefits for learning and assessment quality, and the safeguards in place to ensure fairness and integrity. Early involvement of academic staff and students in pilot activities can facilitate acceptance and provide valuable feedback for refinement.

Organisational impact should be monitored as part of the quality assurance cycle. Institutions should assess how remote assessment practices influence teaching cultures, student engagement, and administrative processes, and adjust implementation strategies accordingly.

6.4. Sustainability considerations

Feasibility must be assessed not only in terms of immediate implementation but also in terms of long-term sustainability. Institutions should integrate remote assessment into their strategic planning, quality assurance cycles, and professional development frameworks.

Sustainability also requires periodic review of assessment practices in response to technological developments, regulatory changes, and evolving educational needs. By embedding the REMOTE standards into institutional structures and decision-making processes, institutions can ensure that remote assessment remains robust, relevant, and adaptable over time.

7. Monitoring progress and verifying accomplishment

The implementation of the REMOTE standards requires structured mechanisms to monitor progress, verify accomplishment, and ensure accountability over time. This section defines how institutions should track implementation, verify that objectives have been achieved, and respond to deviations or risks during the rollout of remote assessment systems.

7.1. Implementation milestones and control points

Institutions should define clear milestones aligned with the implementation phases described in Section 5. Each milestone represents a control point at which progress is formally reviewed and decisions are taken regarding advancement to subsequent phases.

Typical milestones include the approval of institutional policies, completion of assessment design reviews, deployment of technological infrastructure, completion of staff and student training, and validation of quality assurance mechanisms. At each milestone, responsible bodies should confirm that the relevant standards and indicators have been addressed and that minimum evidence requirements are available.

The use of milestones supports timely decision-making and prevents the accumulation of unresolved issues that could compromise later stages of implementation.

7.2. Key Performance Indicators for implementation

Monitoring progress requires the definition of a limited but meaningful set of key performance indicators (KPIs) linked to the REMOTE standards. These indicators should focus on implementation status rather than educational outcomes, which are addressed through regular academic evaluation processes.

KPIs may include, for example, the formal adoption of policies, coverage of staff and student training, operational readiness of assessment platforms, availability of integrity and accessibility measures, and completeness of documentation. Indicators should be reviewed periodically and reported to the relevant governance bodies.

The selection of KPIs should balance comprehensiveness with feasibility, ensuring that monitoring activities remain proportionate and sustainable.

7.3. Documentation, Reporting, and Evidence Management

Verification of accomplishment depends on systematic documentation and evidence management. Institutions should establish procedures to collect, store, and retrieve evidence demonstrating compliance with the indicators and minimum evidence requirements associated with each standard.

Internal reports should summarise implementation progress, highlight achievements, and identify areas requiring corrective action. Documentation should be organised in a way that facilitates both internal review and external quality assurance processes, ensuring transparency and traceability.

Clear reporting lines and responsibilities enhance accountability and support informed institutional decision-making.

7.4. Risk monitoring and corrective measures

Monitoring systems must also address risk identification and mitigation. Institutions should regularly review potential risks related to technical reliability, data protection, staff workload, student access, or regulatory compliance.

When deviations or risks are identified, corrective measures should be defined, implemented, and documented. These measures may include adjustments to timelines, additional training, technological upgrades, or revisions of assessment procedures. Follow-up reviews should verify the effectiveness of corrective actions.

This proactive approach ensures that implementation remains aligned with institutional objectives and quality expectations.

8. Implementation timeline

The implementation of the REMOTE standards should follow a phased and time-bound approach, allowing institutions to plan, monitor, and adjust activities in a structured manner. This section outlines the temporal logic of the roadmap and provides guidance for translating the implementation phases into an operational timeline.

8.1. Phasing of implementation activities

The six implementation phases described in Section 5 can be organised over a medium-term horizon, typically spanning 12 to 24 months, depending on institutional size, digital maturity, and regulatory context. Early phases focus on governance, policy development, and assessment design, while later phases address capacity building, operational delivery, and quality assurance consolidation.

Institutions are encouraged to adapt the duration of each phase to their specific context, while preserving the logical sequence of dependencies between phases. In particular, governance and policy approval should precede large-scale technological deployment and assessment delivery.

8.2. Gantt Chart and milestones

To support operational planning, institutions should develop a **Gantt chart** mapping implementation phases, key activities, responsibilities, and milestones. The Gantt chart should identify:

- the start and end dates of each implementation phase;
- key milestones corresponding to policy approval, system deployment, training completion, and quality review;
- dependencies between activities;
- control points for verification of accomplishment.

The Gantt chart serves as a practical management tool, supporting coordination across academic, technical, and administrative units. It also provides a transparent reference for internal reporting and external quality assurance, demonstrating that implementation is planned, monitored, and controlled.

8.3. Use of the timeline for monitoring and adjustment

The implementation timeline should be treated as a living instrument, reviewed regularly in light of monitoring results and emerging risks. Adjustments to the timeline should be documented and justified, ensuring that flexibility does not compromise quality or accountability.

By aligning the Gantt chart with the monitoring mechanisms described in Section 8, institutions can ensure that progress is tracked systematically and that corrective actions are introduced in a timely manner.

9. Conclusions and practical recommendations

This roadmap has translated the REMOTE standards and benchmark into a structured and actionable framework for the implementation of robust remote assessment in STEM. By organising the standards into sequential implementation phases, the document provides higher education institutions and external quality assurance agencies with a practical guide for moving from policy and design to operational delivery and quality assurance.

The roadmap emphasises that effective remote assessment is not solely a technological challenge, but a systemic institutional process requiring governance, pedagogical alignment, capacity building, and continuous quality control. The integration of standards, indicators, and minimum evidence requirements ensures that implementation is transparent, verifiable, and aligned with European quality assurance principles.

Based on the implementation logic presented, several practical recommendations can be highlighted. Institutions should prioritise the establishment of clear governance and policy frameworks before investing in large-scale technological solutions. Assessment design must be aligned with learning outcomes and adapted to the specific characteristics of STEM disciplines, ensuring that remote assessment supports both theoretical knowledge and applied competencies. Adequate investment in training and support for students and staff is essential to ensure consistent and high-quality practice.

From a quality assurance perspective, the systematic use of indicators, evidence, and feedback loops is critical to sustain improvement over time. Institutions are encouraged to embed the REMOTE standards into their internal quality assurance systems and to use them as a common reference point in dialogue with external quality assurance agencies. This shared framework can enhance coherence between internal and external evaluation processes and support mutual trust.

Finally, the roadmap underlines the importance of flexibility and adaptability. Remote assessment practices, technologies, and regulatory environments will continue to evolve. Institutions should therefore treat this roadmap as a living reference, periodically reviewed and updated considering new developments, stakeholder feedback, and quality assurance findings.

By following the approach outlined in this document, institutions can move beyond emergency or ad hoc solutions and establish sustainable, fair, and pedagogically sound systems for remote assessment in STEM.

ANNEX — REMOTE Standards for On-line Assessment

Standard 1 – Institutional policies on online teaching, learning and assessment

Short description
The institution adopts appropriate policies ensuring that online teaching, learning, and assessment conform to ethical standards, institutional values, pedagogical models, and academic and legal regulations. Achievement of objectives is regularly verified.

Indicators

Indicator label	Indicator description
Policy framework	Institutional policies provide guidance on e-assessment organisation, academic integrity, accessibility, technical support, and ethical conduct, including responsible AI use.
Technology governance	Policies regulate the responsible introduction and use of new technologies, including AI and adaptive tools, ensuring fairness and reliability of e-assessment.
Security and data protection	A code of practice governs electronic security measures, data privacy, consent, learning analytics, AI-based decisions, and cybersecurity.
Strategic development plan	A development plan defines an e-assessment strategy with roles, responsibilities, procedures, and regular review mechanisms.

Minimum evidence requirements
Quality assurance policy for monitoring functionality, performance, and compliance; assessment regulations addressing accessibility, equity, and alternative digital methods; policy for cyclical review and updating of e-assessment; sustainability policy covering data protection, cybersecurity, and financial planning; policies and guidelines for external technology providers and vendor agreements.

Standard 2 – Assessment objectives and methods (fitness for purpose)

Short description
Assessment objectives are clearly defined, aligned with institutional goals and pedagogical models, and supported by varied, flexible, and fair assessment methods appropriate to diverse learners and educational models.

Indicators

Indicator label	Indicator description
Clear objectives	Assessment objectives are documented, communicated, and accessible to learners and staff through institutional platforms and course documentation.
Alignment with learning outcomes	Assessment methods are aligned with learning outcomes, teaching activities, and pedagogical models.
Methodological diversity	A variety of assessment methods is used, including alternative and innovative digital formats adapted to learner diversity.
Feedback and fairness	Assessment processes ensure timely feedback, fairness, and opportunities for review or appeal.

Minimum evidence requirements
Public documentation of assessment objectives, criteria, and procedures; evidence of alignment between learning outcomes, teaching, and assessment methods; guidance for learners on monitoring technologies; records of feedback mechanisms and satisfaction evaluation; complaints and appeals procedures.

Standard 3 – Transparency and integrity

Short description
Measures and processes ensure transparency and academic integrity in e-assessment, with particular attention to secure systems, learner authentication, and anti-plagiarism technologies.

Indicators

Indicator label	Indicator description
Transparent procedures	Assessment criteria, procedures, and timelines are clearly communicated and publicly available.
Integrity tools	Secure platforms, plagiarism detection, authentication, and proctoring systems are implemented.
Academic conduct	Codes of conduct and ethics policies regulate academic integrity and learner behaviour.
Data protection compliance	Assessment processes comply with legal and ethical standards for personal data protection.

Minimum evidence requirements
Published assessment criteria and procedures; records of integrity tools used; academic integrity codes and sanctions; logs of technical or security incidents and mitigation actions; evidence of GDPR-compliant data protection procedures.

Standard 4 – System requirements, technical responsiveness, tools and resources

Short description
The institution uses appropriate technologies for effective e-assessment, aligned with assessment methods, supported by adequate resources and responsive technical support.

Indicators

Indicator label	Indicator description
Usability and adaptability	Systems ensure ease of use, regular updates, and support for diverse assessment tools and learner needs.
Infrastructure alignment	Technical infrastructure aligns with different e-assessment procedures and operating systems.
Accessibility compliance	Platforms ensure full accessibility for learners with disabilities.
Scalability and reliability	Systems operate effectively under maximum user load and are tested before deployment.
Resource allocation	Adequate human and technical resources support continuous system operation.

Minimum evidence requirements
Guidance for learners on digital tools; documentation of infrastructure, testing, and coverage; records of system upgrades; resource plans for sustainability; student and staff feedback on usability, reliability, accessibility, and privacy.

Standard 5 – Scientific disciplines tailored and adaptable tools

Short description
Digital tools and assessment methods in scientific disciplines are adaptable, discipline-specific, and capable of supporting diverse learning and evaluation needs.

Indicators

Indicator label	Indicator description
Discipline specificity	Assessment tools are adapted to the specific needs of STEM disciplines.
Practical assessment support	Tools support practical, applied, and competency-based assessment (e.g. simulations, virtual labs).
Staff preparedness	Teaching staff are trained to use discipline-specific digital tools.
Continuous evaluation	The effectiveness of tools is regularly evaluated and improved based on feedback.

Minimum evidence requirements
Policies for selecting discipline-specific tools; training records for staff; evaluations of virtual labs, simulations, or coding environments; feedback reports on learning outcomes and engagement; documented examples of STEM implementations.

Standard 6 – Information and support for learners

Short description
Learners receive clear, accessible information and comprehensive support to engage effectively with digital learning environments and assessment tools.

Indicators

Indicator label	Indicator description
Student guidance	Clear guidance on tools, assessment methods, and expectations is provided.
Training and orientation	Orientation sessions and training resources support student onboarding.
Centralised resources	A central platform provides access to guidelines, tutorials, FAQs, and troubleshooting tools.
Technical and academic support	Real-time technical assistance and academic support services are available.
Well-being and feedback	Counselling services exist and student feedback is regularly collected and acted upon.

Minimum evidence requirements
Student support policies; participation records in training and support services; feedback surveys and improvement plans; evidence of assistive technologies and alternative formats; records of well-being and engagement initiatives.

Standard 7 – Teaching staff training and technical support

Short description
Teaching staff receive comprehensive training and ongoing technical support to deliver high-quality digital teaching and online assessment.

Indicators

Indicator label	Indicator description
Digital pedagogy training	Faculty receive structured training on digital pedagogy and online assessment.
Continuous development	Workshops, certifications, and peer-learning opportunities are provided.

Technical assistance	Dedicated technical support teams offer real-time assistance.
Inclusive assessment skills	Staff are trained to implement alternative and inclusive assessment methods.
Programme evaluation	Training programmes are regularly evaluated and improved.

Minimum evidence requirements
Faculty training policies; participation records; technical support logs; faculty feedback and evaluation reports; documented best practices and case studies.

Standard 8 – Methods to support peer interaction and networking

Short description
The institution implements strategies and digital tools to support peer interaction and networking, fostering collaborative and engaging learning environments.

Indicators

Indicator label	Indicator description
Digital interaction tools	Platforms support forums, collaborative workspaces, and virtual study groups.
Collaborative learning	Courses include peer assessment, group projects, and problem-based learning.
Networking opportunities	Webinars, guest lectures, mentorships, and alumni initiatives are provided.
Student-led communities	Institutions support student-led communities and interest groups.
Inclusivity and feedback	Inclusivity measures and feedback mechanisms ensure continuous improvement.

Minimum evidence requirements
Policies on peer interaction; documentation of platforms used; participation records; impact reports and student feedback; case studies of effective networking practices.

Standard 9 – Accessibility and equitable access to technologies and resources

Short description
All students have equitable access to digital learning environments, technologies, and resources, regardless of background, location, or individual needs.

Indicators

Indicator label	Indicator description
Accessibility compliance	Platforms comply with accessibility standards.
Equity measures	Measures address financial, geographical, and technological barriers.
Alternative formats	Alternative assessment formats are provided when needed.
Monitoring and improvement	Accessibility is regularly reviewed and improved.

Minimum evidence requirements
Accessibility policies and compliance reports; documentation of assistive technologies; equity measures (device loans, connectivity support); student feedback and action plans.

Standard 10 – Information management and storage

Short description
Digital learning and assessment data are managed securely, lawfully, and ethically, ensuring confidentiality, integrity, and authorised access.

Indicators

Indicator label	Indicator description
Secure data management	Data are stored securely and protected against unauthorised access.
Access control	Authentication and role-based permissions are implemented.
Compliance and audits	Data protection compliance and regular audits are conducted.
Retention and recovery	Data retention, deletion, and recovery procedures are defined.

Minimum evidence requirements
Data protection and storage policies; authentication protocols; audit and risk assessment reports; retention and deletion policies; disaster recovery documentation.

Standard 11 – Student–lecturer interaction and feedback

Short description
Digital tools support effective interaction between students and lecturers, ensuring timely, constructive, and meaningful feedback.

Indicators

Indicator label	Indicator description
Interaction channels	Multiple digital channels enable synchronous and asynchronous interaction.
Feedback quality	Feedback is timely, structured, and actionable.
Monitoring engagement	Interaction and participation are monitored and reviewed.
Continuous improvement	Student feedback informs improvements in interaction practices.

Minimum evidence requirements
Policies on interaction and feedback; documentation of tools used; monitoring reports; records of feedback timelines; student survey results.

Standard 12 – Public information

Short description
Accurate, transparent, and accessible information on digital learning and assessment is publicly available to support informed decision-making.

Indicators

Indicator label	Indicator description
Public availability	Information on curricula, assessment, and digital environments is published.
Clarity and accuracy	Information is clear, up to date, and reliable.
Support visibility	Support services and contact points are publicly communicated.
Regular review	Public information is periodically reviewed and updated.

Minimum evidence requirements
Institutional websites and public documents; published assessment and QA information; documentation of support services; records of periodic review and updates.