



SmarterEPC

D4.3 Impact monitoring report



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Acronyms

Acronyms	Description
AB	Advisory Board
AEC	Architecture, Engineering, and Construction
CBA	Cost Benefit Analysis
CINEA	European Climate Infrastructure and Environment Executive Agency
D	Deliverable
EC	European Commission
EPBD	Energy Performance of Buildings Directive
EPC	Energy Performance Certificate
EU	European Union
GA	Grant Agreement
GA	General Assembly
KPI	Key Performance Indicator
M	Month
PDCA	Plan - Do - Check - Act

QMS	Quality Management System
SEO	Search Engine Optimization
SRI	Smart Readiness Indicator
T	Task
WP	Work Package

EXECUTIVE SUMMARY

This deliverable establishes the Quality Management framework for the SmarterEPC project, defining the methodology, processes, and performance indicators that will guide the validation of the SmarterEPC Hub and its associated tools. The report sets the foundations for ensuring the platform's technical reliability, usability, and contribution to the project's overarching objectives.

The need for this deliverable stems from the project's ambition to propose an entry-point to a digital environment (the SmarterEPC Hub) that facilitates and enhances the delivery of Energy Performance Certificates (EPCs) and Smart Readiness Indicator (SRI) assessments across Europe. Ensuring the quality, interoperability, and user acceptance of the SmarterEPC Hub is therefore critical to demonstrate its added value and long-term sustainability. The report addresses key challenges such as data acquisition reliability, cross-tool interoperability, and stakeholder engagement, setting the foundation for systematic validation and improvement.

The document introduces the Plan-Do-Check-Act (PDCA) continuous improvement methodology as the core quality management approach and identifies a comprehensive set of Key Performance Indicators (KPIs) across technical, operational, economic, and social dimensions. These KPIs provide a structured basis for monitoring progress, assessing impacts, and aligning the development of the Hub with user expectations and policy goals.

Given the current stage of the project, this deliverable primarily focuses on defining the methodology and establishing the validation framework. The first validation iteration (done by involving the Advisory Board members) serves as a preliminary step, while the great part of the validation activities will be implemented in the following months, as the Hub and tools reach full operational readiness.

A follow-up version of this deliverable will therefore consolidate the outcomes of the following validation rounds, integrating quantitative results, user feedback, and improvement actions. Together, these iterations will ensure a transparent and evidence-based validation process, supporting the continuous enhancement of the SmarterEPC Hub and maximising its long-term impact within the LIFE programme objectives.

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INTRODUCTION

The SmarterEPC project, co-funded by the European Union under the LIFE Programme, aims to pave the way for the implementation of the Smart Readiness Indicator (SRI) in synergy with the Energy Performance Certificate (EPC), in line with the Energy Performance of Buildings Directive (EPBD) recast adopted in 2024. As Member States (MSs) are currently working on the directive transposition into their legislative frameworks, this means getting prepared to implement SRI schemes. It is mainly on this novelty that SmarterEPC supports MSs and end-users (the building assessors across Europe) by facilitating access to innovative EPC and SRI tools while also developing a combined EPC and SRI on-site audit procedure and an integrated digital Hub to enable assessors to collect and process building data efficiently, issuing both EPC and SRI evaluations in a harmonised way.

Within this broader framework, the present deliverable defines the Quality Management framework that will guide the evaluation of the SmarterEPC Hub and its tools throughout the project lifecycle. It introduces the methodological approach, based on the Plan-Do-Check-Act (PDCA) cycle, and establishes the Key Performance Indicators (KPIs) and procedures that will be used to monitor progress, assess usability, and ensure alignment with project goals.

Purpose of the document

The scope of the deliverable is setting the specific methodology and related operative procedures for improving SmarterEPC project effectiveness by an assessment process based on the Quality Management typical approach of Plan-Do-Check-Act. The main goal of this iterative procedure is the optimization of the SmarterEPC Hub and its EPC and SRI tools on time for the project closure.

In relation to this process, the consortium finds itself at the initial stage, so the document focuses on defining the methodology at the basis of the process rather than presenting monitoring results. As the Hub and other outcomes are still under development, the availability of measurable KPIs and process both quantity and quality data remains limited, and these will be progressively addressed in subsequent phases.

Connection with other WPs and Tasks

Task 4.3 “SmarterEPC continuous improvement” is connected to several activities of the SmarterEPC project. In particular, the initial proposal of the KPIs was inspired by the deliverable D1.4 “Extract of the project data from the LIFE KPI webtool” (submitted during the first year of the project). Moreover, the establishment of the Advisory Board in WP1 has provided valuable support for the first validation round of the methodology defined in this report.

WP3 “Development of Smarter EPC Platform towards EPC and SRI uptake” has had an important influence on the development of the quality management approach, as the platform and its tools represent the core of this continuous improvement method. More specifically, the collaboration with CERTH, working on the task T3.3 “SmarterEPC Hub design and development” CERTH, has been fundamental for defining the IT usability KPIs and related monitoring methods.

Remarkable interdependencies are also evident with other tasks of the WP4 “Demonstrating the Smarter EPC: Making the instrument work”: in particular, the demonstration activities carried out in Task 4.2 to improve the EPC and SRI Audit processes in real buildings with the use of the Smarter EPC Hub and its tools have been essential.

Finally, Task 6.3 “Exploitation activities, IPR management and post-project sustainability” is specifically relevant for the SmarterEPC Hub value proposition, representing a potential final step of the T4.3 workplan, where the technology acceptance will be assessed through cost-benefit analysis.

Structure

The document consists of five sections, as follows:

- The Introduction provides an overall introduction to the report
- Chapter 1 explains the project quality management approach, focusing on the Plan-Do-Check-Act methodology and the KPIs definition
- Chapter 2 presents the validation phase, through implementation and consequent assessment steps, including preliminary results for the first validation round
- Conclusions and Next Steps set the pathway for the future actions (until the end of the T4.3
- Annexes.

1. SMARTEREPC QUALITY MANAGEMENT APPROACH

The quality management approach adopted in the SmarterEPC project is based on the PDCA cycle, a well-established framework in quality management derived from ISO standards. In particular, the methodology aligns with **ISO 9001:2015**¹, the globally recognized standard for **Quality Management Systems (QMSs)**, formally adopted at the European level as EN ISO 9001:2015. Implementing a QMS ensures continuous improvement of processes, supports the consistent achievement of project objectives, and provides a strong foundation for sustainable development. Among its key benefits are enhanced quality assurance, increased productivity, cost efficiency, and improved overall project value.

To maximize its effectiveness, the QMS was introduced in the early stages of the project, beginning with the assessment phase initiated after the development of the SmarterEPC Hub and its tools. The effectiveness of the process is reinforced by a comprehensive validation involving a broad range of stakeholders, both external and internal, across diverse building typologies. This validation is conducted on real-world projects rather than relying only on theoretical data, ensuring that the approach is robust, applicable, and grounded in practical experience.

The following chapters will explore the application of the PDCA methodology within the project and detail the process of identifying Key Performance Indicators (KPIs) to monitor and evaluate progress effectively.

1.1. PDCA methodology

The PDCA methodology fosters continuous improvement through iterative monitoring, evaluation and adaptation of project processes and tools. Key components of the approach, as applied to SmarterEPC project, are:

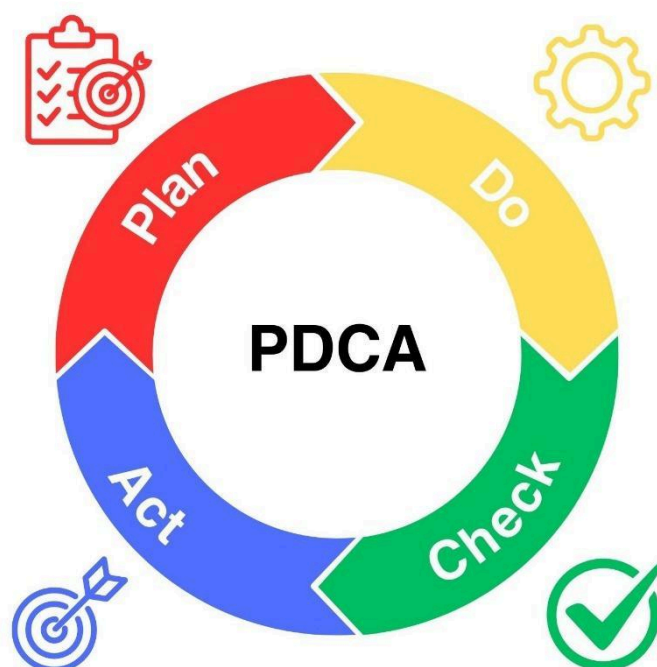
1. **Plan:** define the objectives and expected outcomes of the SmarterEPC project assessment. Establish specific and measurable KPIs, aligned with these objectives. Identify the data required and the instruments or tools needed for monitoring and assessment. Define a timeline for measurement, including baseline, mid-term and final assessments, according to project lifetime. Plan processes, responsibilities and resources necessary to implement and monitor these KPIs effectively.
2. **Do:** implement the processes as planned and apply the EPC and SRI tools in the demo sites. Collect relevant data (technical, operational, economic, energy and

¹ Link: <https://www.iso.org/standard/62085.html>

environmental), with the cooperation of the SmarterEPC consortium. Ensure systematic monitoring and continuous documentation of results.

3. **Check:** analyse and report the measured KPIs against their target values or range. Identify gaps, deviations or issues affecting the performance of the SmarterEPC Hub and its tools. Report initial findings inside the consortium and during monthly updates, while the final results will be available in successive deliverables.
4. **Act:** take corrective or preventive actions based on the previous analysis. Refine processes, tools or KPIs where necessary to improve alignment with SmarterEPC goals. Ensure lessons learned are incorporated into the next planning cycle.

Figure 01: PDCA representation (R2M elaboration)



This iterative process (Figure 01) helps ensure the SmarterEPC Hub and tools are continuously improved and adapted, maximising their usability, reliability and potential impact on the EPC and SRI assessment processes across different EU contexts.

Figure 02 provides a simplified overview of the SmarterEPC project's PDCA timeline. This timeline is subject to updates as the project develops.

Figure 02: Simplified representation of the PDCA cycle timeline in SmarterEPC

PDCA PHASE	SPECIFIC ACTIVITIES	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30
PLAN_1	PDCA methodology definition											
	KPIs definition and validation											
	Plan monitoring and assessment of the first set of KPIs											
DO_1	Hub initial testing by project partners and AB members											
	Data collection from Hub statistics and stakeholders feedback											
CHECK_1	Result analysis: baseline target values											
	Report findings to the Consortium											
ACT_1	Identify gaps and possible issues											
	Propose and take preventive actions											
PLAN_2	Check for potential new KPIs											
	Plan monitoring and assessment of the whole KPIs identified											
DO_2	Comprehensive Hub testing sessions											
	Monitoring, external stakeholders feedbacks											
CHECK_2	Result analysis: confront the values with the initial ones											
	Report findings to the Consortium											
ACT_2	Identify gaps and possible issues											
	Propose and take corrective actions											
PLAN_3	Plan monitoring and assessment of the whole KPIs list (including the optional ones)											
	Hub final testing by external stakeholders											
DO_3	Data collection from external stakeholders feedbacks											
	Final result analysis: values achieved vs official target values											
CHECK_3	Report findings in the final version of D4.3											
	Propose and take corrective actions											
ACT_3	Hub final delivery											

1.2. KPIs definition

The first step of the *Plan phase* consists of identifying a comprehensive set of KPIs that will guide monitoring and evaluation. The consortium performed this exercise by first checking the specific KPIs of SmarterEPC defined in the Grant Agreement (GA), followed by reasoning on features or elements that are key for the Quality Management assessment.

Within the LIFE Programme, the Key Performance Indicators (KPIs) are defined as:

“Quantitative or qualitative indicators that measure the project’s progress towards achieving its specific objectives and expected impacts, by comparing the baseline situation with the situation after project implementation.”²

According to the official LIFE guidance, KPIs must be:

- **Relevant:** directly linked to the project’s objectives and expected outcomes
- **Measurable:** based on data that can realistically be collected
- **Realistic:** with target values aligned to project scope and activities
- **Time-bound:** tracked consistently over defined monitoring periods

In this way, KPIs serve to quantify and demonstrate the direct and indirect impacts of a given project, by tracking and monitoring their progress over time, they also ensure that project outcomes are measurable, comparable and aggregable at the EU programme level.

² LIFE Programme Regulation (EU) 2021/783; CINEA LIFE Key Performance Indicators Guidance. Link: https://cinea.ec.europa.eu/document/download/92349ba4-87fc-4001-b8ce-512b7cfc50e1_en

Analysing the list of KPIs of SmarterEPC, a selection was made by the consortium in order to monitor, validate and demonstrate the performance and potential impact of the SmarterEPC Hub within its suite of EPC and SRI assessment tools across demo sites. Considering the need to make the Quality Management procedure realistic and to keep it under control, a list of **11 KPIs** was identified covering four key dimensions: 1. IT Usability, 2. Operativity, 3. Economic competitiveness, and 4. Social & Engagement.

This initial list of KPIs, identified during the WP4 workshop held at the 2nd General Assembly in April 2024, has since then been revised to mirror the focus of the Quality Management scope. In the following months a double methodology was applied: the definition of the overall procedure and KPIs was performed thanks to exchanges at the consortium level and online bilateral meetings with specific partners.

Currently, the identified KPIs are organized into four main categories:

1. **IT Usability:** aim to validate the SmarterEPC Hub functionality, by measuring data quality and user satisfaction with the platform and linked tools.
2. **Operativity:** quantifying the general efficiency of the SmarterEPC Hub.
3. **Economic competitiveness:** assessing the potential for economic competitiveness of the SmarterEPC Hub.
4. **Social & engagement:** community reach and user engagement with the SmarterEPC Hub.

To ensure clarity and consistency in monitoring and reporting, each KPI is characterized by a measurable value or a range of targets, accompanied by a specific quantification method and the relative measurement unit.

At the current stage of the project implementation (M25 - October 2025), the KPIs are defined to establish an initial baseline representing the reasoning about the set of this Quality Management procedure.

During the remaining part of the project, the set of KPIs will be continuously monitored and, if necessary, the same KPIs updated to ensure that the project remains aligned with the SmarterEPC's wider expected impacts over its final year. The monitoring process is expected to continue through Month 30 - March 2026, at which point the Consortium will perform a final review of the procedure and derive recommendations to inform the project work until Month 36 - September 2026.

Table 01: Shortened version of the KPIs table.

Category	KPIs overview	Unit
IT Usability	1. Average Response Time of the Hub Interface 2. Number of Reported IT Issues / Month (Bug Rate) 3. Task Completion Rate Without Support (Self-Service Success) 4. Users degree of satisfaction (SUS)	Second # % 1-5 Likert scale
Operativity	5. EPC audits performed 6. SRI audits performed 7. Hub efficiency in supporting EPC/SRI complete certificates	# # 1-5 Likert scale
Economic competitiveness	8. Potential economic competitiveness of the Hub	1-5 Likert scale
Social & engagement	9. Number of visitors – Hub 10. Number of registered users – Hub 11. New job opportunities for assessors	# # #

In addition to the KPIs listed in the table, two further indicators have been considered during the design phase of the procedure:

- **Search Engine Optimization (SEO) page quality score:** to assess the Hub's visibility and accessibility in search engines, as part of its long-term usability strategy
- **Eco-friendliness in Hub and tools design:** to evaluate the environmental sustainability of the digital infrastructure and its resource efficiency

These additional KPIs are not yet included in the current measurement plan, as the first validation round (Month 25 - October 2025) is too early to obtain meaningful data. They will be integrated at later stages of the process, when sufficient operational data will be available.

The complete and detailed table with the whole KPIs identified, the relative description, unit, range of targets and measurement methods is available as Annex 1.

2. VALIDATION PROCESS

The Quality Management procedure of SmarterEPC is focused on the Validation process of the SmarterEPC Hub. It ensures that the platform functions as intended, meets users' needs, and can support EPC and SRI-related assessment across different European contexts.

The validation will be conducted through **three iterative assessment rounds** (see timeline in Figure 02), involving initially project partners and progressively external stakeholders (such as members of the project Advisory Board - AB, certified energy assessors, and technical experts). This multi-phase approach will enable structured feedback collection from experts with different backgrounds and geographic provenience, with the goal of continuous improvement of the SmarterEPC Hub.

2.1. Implementation phase: Do

During this phase, the validation process follows the iterative assessment methodology foreseen in the PDCA cycle. Three validation rounds are planned (in Month 25 - October 2025, in Month 28 - January 2026 and in Month 30 - March 2026), with a growing involvement of external stakeholders and an increasing maturity of the SmarterEPC Hub and tools. Each round builds on the results and feedback of the previous one, ensuring continuous improvement and alignment with the project objectives.

Key activities include:

- **Iterative validation rounds:** a total of three structured assessment cycles, progressively moving from internal consortium-led testing to external stakeholder validation are scheduled throughout the project timeline. Each round validates interim results, consolidates improvements, and ultimately assesses whether the expected outcomes have been achieved.
- **Expert engagement and external testing:** in this early phase, the Hub is validated in simulated demo site conditions; from 2026 onwards, real case studies will be introduced, with the direct involvement of external assessors, domain experts and end-users. Hands-on testing activities (e.g. tool walkthroughs, energy audits, guided training) will be structured through guided validation checklists to ensure comparability and consistency.
- **Expert panels and roundtables:** moderated discussions, coordinated with the support of project partners, guarantee broad representation across European countries and building typologies. Open and moderated exchanges with assessors, experts from Energy in Building and Architecture, Engineering, and Construction

(AEC) sectors, including the AB members, will surface practical issues and provide actionable recommendations.

- **Feedback integration:** results from each iteration are going to be presented and discussed with experts during online and in-person workshops. Their comments will not only validate the outcomes, but also inform the next validation round, creating a cumulative state of the art process.

This structured approach ensures that validation is not a one-off activity but rather a continuous cycle of testing, learning, and refinement, fully in line with the PDCA methodology.

2.1.1. *First iteration round*

At this stage, the validation process has been initiated with a dual approach:

- **External validation** was performed during the 2nd AB meeting (held online on October 16th, 2025) and focused on a restricted set of KPIs that can be meaningfully assessed at this early stage.
- **Internal validation** as a follow-up action carried out by consortium partners (led by R2MI with the support of CERTH) to assess technical KPIs related to the Hub development.

During this AB meeting, after the overview by CERTH on the Hub development progress and functionalities, R2MI introduced the Quality Management process informed by the PDCA model and presented the full list of identified KPIs. A structured discussion and a questionnaire-based assessment, to collect qualitative feedback from AB members. The workshop gathered ten different European experts from research institutions, energy agencies, and private companies, representing Belgium, Finland, Italy, Portugal, and Spain. Participants included university researchers, energy assessors, sustainability consultants, and building technology professionals, offering both theoretical and practical perspectives.

The three selected KPIs for external qualitative assessment are (see Table 01): *4. Users' degree of satisfaction (SUS score); 7. Hub efficiency in supporting EPC/SRI complete certificates; 8. Potential economic competitiveness of the Hub.* They cover different dimensions of the SmarterEPC Hub: IT usability, operational efficiency and economic potential. These specific KPIs have been selected as the most relevant ones for early qualitative validation by external experts.

The AB members were invited to complete a short online Likert scale (1-5) survey, including three statements per KPI, developed by R2MI. Table 02 summarizes the questionnaire content and the corresponding KPIs.

Table 02: Hub validation questionnaire for AB members

Reference KPI	Statement
Users' degree of satisfaction	1. The Hub interface is intuitive and easy to understand 2. The Hub is user-friendly and simple to navigate 3. The Hub layout and design are visually clear and pleasant
Hub efficiency in supporting EPC/SRI certificates	1. The Hub provides the necessary functionalities to support EPC and SRI assessment generation 2. The Hub structure facilitates a complete and error-free assessment process 3. The Hub reduces effort compared to traditional/manual processes
Potential economic competitiveness of the Hub	1. The Hub offers unique added value compared to existing platforms (being an Entry-Point to a portfolio of EPC and SRI innovative tools) 2. The Hub has the potential to be competitive in the market 3. The functionalities provided by the Hub would justify its future uptake (e.g., for providing public/private consultancy services)

The full survey is available in Annex 2. Responses were collected through an online Google form and complemented by qualitative comments. The following Table 03 presents the average results per question.

Table 03: Questionnaire results

Questions	Average answers
The Hub interface is intuitive and easy to understand.	3.6
The Hub is user-friendly and simple to navigate.	3.4
The Hub layout and design are visually clear and pleasant.	3.6
The Hub provides the necessary functionalities to support EPC/SRI certificate generation.	3.4
The Hub structure facilitates a complete and error-free assessment process.	3.3
The Hub reduces effort compared to traditional/manual processes.	3.6
The Hub offers unique added value compared to existing platforms/tools.	3.8

The Hub has the potential to be competitive in the market.	4
The functionalities provided would justify a potential market uptake.	4

During the workshop also a fruitful open discussion took place that helped SmarterEPC partners gather several different feedbacks, further detailed in the following section (*Check phase*).

Parallel to this external exercise, consortium partners carried out **internal monitoring** of the remaining technical and engagement KPIs to verify progress against the planned development roadmap. Specifically, five quantitative KPIs have been monitored by CERTH in this first iteration (see Table 01): 1. *Average Response Time of the Hub Interface*, 2. *Number of Reported IT Issues / Month (Bug Rate)*, 3. *Task Completion Rate Without Support (Self-Service Success)*, 10. *Number of visitors - Hub*, 11. *Number of registered users - Hub*. The first three are related to the IT usability and technical performance of the SmarterEPC Hub, while the latter two focus on user engagement and adoption strategies of the project.

Table 04 summarizes the KPI values as of M25.

Table 04: KPIs evaluated during the first iteration

Detailed KPI	Unit	Target value M25
1. Average Response Time of the Hub Interface	second	1.5
2. Number of Reported IT Issues / Month (Bug Rate)	#	4
3. Task Completion Rate Without Support (Self-Service Success)	%	75
4. Users degree of satisfaction (SUS)	1-5 Likert scale	3.5
7. Hub efficiency in supporting EPC/SRI complete certificates	1-5 Likert scale	3.3
8. Potential economic competitiveness of the Hub	1-5 Likert scale	3.9
10. Number of visitors - Hub	#	200
11. Number of registered users - Hub	#	60

The monitoring of the three remaining KPIs, specifically *5. n. EPC audits performed*, *6. n. SRI audits performed*, *9. New job opportunities for assessors* remain pending, as the corresponding activities are in their early stages. The proposal for audit standardisation, initiated by EPBC under Task 4.1, is undergoing pre-evaluation by certified assessors across several Member States and is not yet operational. Similarly, the virtual training center platform has been developed by EPBC under Task 5.1, but its content is still limited at the time of writing (M25 - October 2025).

2.1.2. Next iteration rounds

At the moment of writing this report, the first iteration took place, while the second and the last sessions are planned respectively in Month 28 (January 2026), and by Month 30 (March 2026).

The second iteration round will expand the validation scope to include a larger set of KPIs (up to 11), once the SmarterEPC Hub reaches higher maturity. The last one will take place right after the finalisation of the Hub development (M30 - March 2026), to validate the whole journey, also considering the additional two KPIs and to check if the initially defined impacts have been achieved.

These successive iteration rounds will again involve members of the AB and, provisionally, the selected assessors involved in demonstration activities in WP4 (T4.1 and T4.2), potentially combining online and in-presence sessions.

2.2. Assessment phase: Check

Following each iteration, the consortium consolidates feedback, analyses results against the planned KPIs, and identifies corrective actions. This phase ensures alignment between user needs, technical performance, and project objectives, and informs updates to the SmarterEPC Hub functionalities, supporting documentation, and guidance. The process includes:

- **Evaluation against KPIs:** measuring progress against the defined indicators, identifying gaps, and highlighting areas for improvement.
- **Consolidated reporting:** producing a summary of KPI values, feedback trends, and proposed corrective actions for each iteration.
- **Feedback integration:** using the outcomes of the analysis to inform updates to the Hub, its connected tools, and associated workflows.

2.2.1. First iteration round

The outcomes of the first validation round (M25 - October 2025) represent a baseline assessment of the SmarterEPC Hub's usability, operational efficiency, and potential economic positioning. The feedback collected from both the AB members and internal monitoring activities serves as the starting point for the subsequent validation cycle, providing a reference for measuring progress and guiding future refinements.

Table 05 presents a comparison between the results achieved during the first evaluation and the value ranges initially defined during the *Plan phase*.

Table 05: KPIs analysis

Detailed KPI	Range	Target value M25	Evaluation
1. Average Response Time of the Hub Interface	≤1 sec excellent 1–2 sec good	1.5	On track
2. Number of Reported IT Issues / Month (Bug Rate)	≤ 2 issues excellent 3 – 5 issues good	4	On track
3. Task Completion Rate Without Support (Self-Service Success)	≥ 90% excellent 75 – 89% good	75	Almost on track
4. Users degree of satisfaction (SUS)	≥4 excellent 3-4 good	3.5	On track
7. Hub efficiency in supporting EPC/SRI complete certificates	≥4 excellent 3-4 good	3.3	On track
8. Potential economic competitiveness of the Hub	≥4 excellent 3-4 good	3.9	Good progress
10. Number of visitors - Hub	≥ 401 excellent 250 - 400 good	200	Needs improvement
11. Number of registered users - Hub	≥ 121 excellent 80 - 120 good	60	Needs improvement

Overall, the results achieved during this first iteration are encouraging and consistent with expectations for this early stage of development. The average KPI values range between

“good” and “on track,” indicating steady technical progress and the Hub’s potential to reach its planned performance targets by the next iteration rounds.

From a qualitative perspective, experts and project partners highlighted several key insights. The **Hub’s usability** shows promising results but still requires further refinement: users found the platform partially intuitive, though some navigation paths and registration procedures need optimization. The **operational efficiency** of the Hub in supporting EPC/SRI assessments is generally positive, as the integrated workflow already simplifies the process compared to traditional approaches. However, data input functionalities should be expanded to include additional file formats beyond IFC, particularly for older buildings. The **economic competitiveness** of the Hub obtained one of the highest average scores, confirming a strong perception of added value and potential for market adoption once the system becomes fully operational.

Quantitative monitoring of performance indicators further confirms that the **Hub’s technical behaviour** (such as response time, bug rate, and self-service completion) aligns with the planned ranges. Conversely, **engagement-related KPIs** (number of visitors and registered users) remain below target values, which is expected at this stage given the limited external visibility and early-stage deployment of the platform.

Taken together, these findings validate the progress achieved so far and clearly indicate where efforts should be concentrated in the coming months. The lessons learned from this first validation cycle will directly inform the “Act” phase of the PDCA process and guide the design of the second assessment round.

2.2.2. *Next iteration rounds*

Priority actions for the next iterations include improving the user interface and navigation flow, enhancing user engagement, and reinforcing dissemination to increase Hub visibility.

The second iteration, provisionally scheduled for Month 28 (January 2026), will expand the evaluation to encompass all KPIs previously defined, ensuring a holistic understanding of the Hub's performance across all functional areas. A crucial aspect of this iteration will be the involvement of external assessors, who will conduct more comprehensive testing. Provisionally, this is going to include practical, real-world case EPC and SRI assessments, allowing for the validation of the Hub's capabilities in simulating and supporting these processes. Additionally, on-site audit procedures are expected to be integrated into the testing, providing an authentic evaluation of how the Hub integrates with and supports physical audit workflows.

The final validation round set for M30 (March 2026) will complete the PDCA cycle, consolidating lessons learned. A primary objective will be to thoroughly verify the Hub’s overall performance against all established benchmarks and requirements, ensuring it meets the highest possible standards of accuracy, reliability, and usability. The findings from this

comprehensive validation will directly inform the final updates and refinements to the Hub before the project officially concludes.

2.3. Use phase: Act

The *Act phase* represents the transition from the first assessment cycle to the implementation of corrective measures and targeted improvements, ensuring that the SmarterEPC Hub evolves in line with user needs and project objectives. Building on the outcomes of the first iteration (M25 - October 2025), this phase will guide the consortium in addressing the gaps identified during the *Check phase* and prioritising actions to enhance the overall performance and usability of the Hub.

The next months will focus on enhancement actions, coordinated between CERTH (responsible for the Hub development) and R2MI (responsible for quality management and validation activities). To ensure the continuous improvement and effectiveness of the SmarterEPC Hub, a series of **priority actions** has been identified for upcoming iterations:

- **Improve user interface and navigation:** refine layout clarity, simplify data entry processes, and ensure that key functionalities are more easily accessible.
- **Expand data input and the level of interoperability as much as feasible:** enable multiple file formats beyond IFC to improve compatibility with existing EPC tools and to better address older or less digitised building datasets.
- **Enhance stability and responsiveness:** optimise technical performance, ensuring smooth tool integration and a consistent user experience.
- **Boost stakeholder engagement:** openly promoting communication and visibility efforts to increase the number of active users and registered professionals.
- **Prepare for the second iteration round:** align the technical updates and validation planning to ensure that the next evaluation cycle can include all defined KPIs.

The *Act phase* serves as a bridge between the current baseline and the next validation cycle, ensuring that the SmarterEPC Hub moves from initial testing to full operational readiness. R2MI expects that the second iteration round will mark the practical execution of these corrective actions, validating their impact and preparing the ground for the final iteration, in which the full PDCA cycle will be completed and the project's expected impacts verified.

CONCLUSIONS AND NEXT STEPS

This deliverable has set the methodological and operational foundations for the validation of the SmarterEPC Hub, defining the Quality Management framework of SmarterEPC: the PDCA-based approach and the KPIs that will guide performance monitoring throughout the project lifecycle. The first validation iteration has allowed the consortium to test the proposed methodology, engage external experts from the project Advisory Board, and gather initial qualitative and quantitative feedback on user satisfaction, operational efficiency, and potential economic competitiveness of the Hub.

The results obtained so far indicate that the SmarterEPC Hub is progressing steadily towards its objectives. The first testing phase demonstrated encouraging results in terms of market potential and technical functionality, while also highlighting areas requiring refinement, particularly user interface intuitiveness, data input flexibility, and overall platform stability. These findings confirm both the validity of the adopted PDCA approach and the need for continued iterative development to ensure full alignment between technical performance and user expectations. Nonetheless, they do also reveal the demonstrative nature of the solution. Quantitative evidence remains limited, as the Hub is still under development and several KPIs depend on functionalities that are being progressively integrated. In any case, the evaluation conducted so far validates the methodological soundness of the proposed monitoring framework and sets a clear direction for improvement.

The next steps will focus on implementing the corrective actions identified in the first iteration of the Act phase, to schedule (*Plan phase*) needed improvements of the Hub and its usability, implementing them (*Do phase*) and leading to the launch of the second PDCA iteration (*Check phase*), which will include new user testing sessions and the reassessment of KPIs. This second cycle will strengthen both the technical and operational dimensions of the Hub, while expanding stakeholder engagement and visibility (*Act phase*).

A third and final validation round will complete the PDCA cycle, consolidating all evidence on the Hub's performance and defining its technology acceptance through a dedicated Cost-Benefit Analysis. Although a mature market exploitation is not part of its project goals within its duration, this assessment will provide an informed understanding of the Hub's potential value and long-term sustainability, in connection with the scope of WP, T6.3 (Exploitation activities, IPR management and post-project sustainability).

This deliverable is a key milestone for SmarterEPC's quality management. The methodological framework, initial findings, and next steps establish a structured, evidence-based process to enhance the SmarterEPC Hub, enabling its deployment and use, ultimately improving building energy performance certification and smart readiness assessment in Europe.

ANNEXES

Annex 1: Detailed KPIs table

Annex 2: SmarterEPC Hub - Advisory Board Feedback Survey

DIMENSIONS	DETAILED KPIs of SmarterEPC Hub QUALITY MANAGEMENT	UNIT	RANGE OF TARGETS	BASELINE TARGET M25	TARGET REACHED M28 (2nd ROUND)	OFFICIAL TARGET (3rd ROUND)	BRIEF DESCRIPTION	HOW TO MEASURE
IT usability	1. Average Response Time of the Hub Interface	seconds	≤1 sec excellent 1–2 sec good ≥ 2 sec needs improvement	1.5	-	≤1 sec	Measures how quickly the Hub responds to user actions (e.g., page loading, form submission).	Tests conducted by CERTH
	2. Number of Reported IT Issues / Month (Bug Rate)	#	≤ 2 issues excellent 3 – 5 issues good ≥ 5 needs improvement	4	-	≤ 3	Measures the number of IT-related issues or bugs reported by users or testers each month.	Hub monitoring tool
	3. Task Completion Rate Without Support (Self-Service Success)	%	≥ 90% excellent 75 – 89% good < 75% needs improvement	75	-	≥ 85%	Percentage of users who are able to complete typical tasks (e.g., uploading EPC/SRI files, viewing audit reports) without needing support or helpdesk assistance.	Hub analytics or event funnel monitoring
	4. Users degree of satisfaction (SUS)	1-5 Likert scale	≥4 excellent 3-4 good	3.4	-	≥4	Average satisfaction score from users (assessors and technicians).	System Usability Scale questionnaire (shared among Advisory Board members)
	SEO (Search Engine Optimization) page quality score	1-100 SEO scale	-	-	-	≥ 85	Technical quality and search engine optimization (SEO) performance of the SmarterEPC Hub.	SEO auditing tool.
Operativity	5. n. EPC audits performed	#	-	0	-	100	Number of EPC audits executed with the tools.	Validation rounds result
	6. n. SRI audits performed	#	-	0	-	500	Number of SRI audits executed with the tools.	Validation rounds result
	7. Hub efficiency in supporting EPC/SRI complete certificates	1-5 Likert scale	≥ 4 excellent 3-4 good	3.4	-	≥4	Measures how effectively the SmarterEPC Hub supports assessors in generating complete and valid EPC and SRI certificates.	System Usability Scale questionnaire (shared among Advisory Board members)
Economic	8. Potential economic competitiveness of the Hub	1-5 Likert scale	≥ 4 excellent 3-4 good	4	-	≥4	Potential economic value of the SmarterEPC Hub by comparing it with similar platforms in terms of service offering and associated costs.	Benchmark analysis of 3-5 comparable platforms, focusing on average cost. cfr market analysis in WP6
Social & engagement	9. New job opportunities for assessors	# assessors	-	0	-	200	New roles or upskilling due to tool usage/training delivered.	Training delivered + Hub analytics
	10. Number of visitors - Hub	#	≥ 401 excellent 250 - 400 good ≤ 249 needs improvement	200	-	500	Cumulative number of unique visitors to the SmarterEPC Hub.	Hub analytics provided by CERTH
	11. Number of registered users - Hub	#	≥ 121 excellent 80 - 120 good ≤ 79 needs improvement	60	-	150	Cumulative number of users who completed registration on the Hub.	Hub analytics provided by CERTH
Environmental	Eco-friendliness in Hub and tools design	0-4 scale (checklist-based scoring system)	≥3 excellent 2-3 good	-	-	≥3	How environmentally sustainable the platform and its tools are in terms of design, deployment and usage.	Qualitative scoring system: each item = 1 point.



SmarterEPC Hub - Advisory Board Feedback Survey

 Access the SmarterEPC Hub <https://smarterepchub.iti.gr/homepage>

 Deadline: October 20, 2025

Thank you for taking the time to provide your feedback on the SMARTEREPC Hub. Your insights are essential for validating the project's progress and improving the platform's usability and functionality.

This short survey will take approximately **5 minutes** to complete.

* Indicates required question

Data Protection Disclaimer

This Google Form has been specifically designed by R2M Solution Srl as part of the activities foreseen within the SmarterEPC project, co-funded by the EU LIFE Programme, GA n. 101121034.

The participants invited to fill in have been informed about its scope and use during a project meeting held on 16 October 2025.

According to the EU GDPR Regulation (in Italy implemented through the D.Lgs. 101/2018), R2M Solution Srl is committed to ensuring the security and protection of the personal information that we process, and to providing a compliant and consistent approach to data protection. Data collected will be anonymized and no information about personal data will be used for the scope of Task 4.3, under Work Package 4 *Demonstrating the Smarter EPC: Making the instrument work*. If you have any questions related to our GDPR compliance for SmarterEPC Project, please contact Sara Momi (sara.momi@r2msolution.com).



SmarterEPC Hub - Advisory Board Feedback Survey

* Indicates required question

KPI: Users' degree of satisfaction

The SmarterEPC Hub interface is intuitive and easy to understand. *

	1	2	3	4	5	
Strongly Disagree	☐	☐	☐	☐	☐	Strongly Agree

The SmarterEPC Hub is user-friendly and simple to navigate. *

	1	2	3	4	5	
Strongly Disagree	☐	☐	☐	☐	☐	Strongly Agree

The SmarterEPC Hub layout and design are visually clear and pleasant. *

	1	2	3	4	5	
Strongly Disagree	☐	☐	☐	☐	☐	Strongly Agree



SmarterEPC Hub - Advisory Board Feedback Survey

* Indicates required question

KPI: SmarterEPC Hub efficiency in supporting EPC/SRI certificates

The SmarterEPC Hub provides the necessary functionalities to support EPC and SRI assessment generation. *

	1	2	3	4	5	
Strongly Disagree	☐	☐	☐	☐	☐	Strongly Agree

The SmarterEPC Hub structure facilitates a complete and error-free assessment process. *

	1	2	3	4	5	
Strongly Disagree	☐	☐	☐	☐	☐	Strongly Agree

The SmarterEPC Hub reduces effort compared to traditional/manual processes. *

	1	2	3	4	5	
Strongly Disagree	☐	☐	☐	☐	☐	Strongly Agree





SmarterEPC Hub - Advisory Board Feedback Survey

* Indicates required question

KPI: Potential economic competitiveness of the SmarterEPC Hub

The SmarterEPC Hub offers unique added value compared to existing platforms/tools. *

	1	2	3	4	5	
Strongly Disagree	☐	☐	☐	☐	☐	Strongly Agree

The SmarterEPC Hub has the potential to be competitive in the market. *

	1	2	3	4	5	
Strongly Disagree	☐	☐	☐	☐	☐	Strongly Agree

The functionalities provided by the SmarterEPC Hub would justify its future potential market uptake. *

	1	2	3	4	5	
Strongly Disagree	☐	☐	☐	☐	☐	Strongly Agree



SmarterEPC Hub - Advisory Board Feedback Survey

Do you have any other suggestion or feedback?

Your answer

Final message

Thank you for your valuable feedback!

Your input will directly contribute to the improvement of the SmarterEPC Hub.

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