WP4-A10. External expert Report of WP4 results.

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1. INTRODUCTION

This document presents the outcomes of activity WP4-A10, titled “External Expert Report on WP4 Results”, which forms part of Work Package 4 (WP4) of the RockChain project. WP4 covers the end-to-end technical production and validation pathway of the Interactive RockChain Tool (RockChain App) and its e-learning environment, from the definition of the data layer and functional requirements to testing, refinement and consolidation of a stable version suitable for training delivery across partner contexts.

The report summarised the findings of an independent assessment carried out by an external expert, therefore the CTM enlisted the help of an expert from a Spanish natural stone company (Fósil Mediterránea) to evaluate the contents of WP4.

The evaluation focused on the extent to which WP4 outputs are technically sound and consistent with the stated specifications, and usable, understandable and feasible for implementation in real training settings—particularly adult learning and work-based training environments where participant profiles, digital skills and time constraints vary significantly with the aim of analysing in a practical way whether the contents of WP4, and mainly the educational use of the RockChain App, would be easily understandable by the employees of the external expert's company.

To conduct the review, the evaluator analysed the complete set of WP4 deliverables and supporting outputs, including the database production and tool refinement process, the functional specifications, trainer-oriented guideline notes, the interactive tool build, the pedagogical and technical test cycles and the resulting improvements, the multilingual versions, and the related scientific dissemination work.

Feedback was collected through a structured questionnaire designed to validate internal coherence, assess readiness for facilitated use, and identify practical, actionable improvements to strengthen robustness, accessibility and transferability prior to broader piloting.

2. EVALUATION QUESTIONNAIRE

The questionnaire used for the external review of WP4 was the following:

RockChain. Evaluation of WP4: e-Learning tool based-on Blockchain-Rock Ornamental Waste focused on Circular Economy

TRANSVERSAL TECHNOLOGICAL SKILLS FOR THE ORNAMENTAL ROCK INDUSTRY FOCUSING ON THE
APPLICABILITY OF BLOCKCHAIN IN A CIRCULAR ECONOMY
REFERENCE: 2023-1-DE02-KA220-ADU-000166863

mcarlitos.146@gmail.com Cambiar de cuenta

No compartido

* Indica que la pregunta es obligatoria

ROCKCHAIN

Organisation: *

- ◯ Deutscher Naturwerkstein-Verband e.V. (DNV)
- ◯ Asociación Empresarial de Investigación Centro Tecnológico del Mármol, Piedra y Materiales (CTM)
- ◯ Universitatea Transilvania din Brasov (UNITbv)
- ◯ Klesarska skola (KSK)

1. Overall, how satisfied were you with the management and development of the WP4 (Work Package 4): e-Learning tool based-on Blockchain-Rock Ornamental Waste focused on Circular Economy?

	1	2	3	4	5	
Not satisfied at all	◯	◯	◯	◯	◯	Very satisfied

2. Production of the database for the e-Learning Tool. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The production of the database was comprehensive.	○	○	○	○	○
The database meets the technical and pedagogical requirements of the e-Learning Tool.	○	○	○	○	○
The results were useful for the development of the next WP stages.	○	○	○	○	○

3. Refined of e-learning tool. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The improvements introduced were clearly identified and well implemented.	○	○	○	○	○
The refined version provides a clearer and more effective learning environment.	○	○	○	○	○
The results of the refinement were useful for strengthening the project outcomes at the European level.	○	○	○	○	○

4. Functional specifications. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The functional specifications were comprehensive.	○	○	○	○	○
The requirements were clearly identified and well structured.	○	○	○	○	○
The specifications provided a clear basis for the development phase.	○	○	○	○	○
The results were useful for guiding the project activities at the European level.	○	○	○	○	○

5. Guideline notes. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The guideline notes were comprehensive.	○	○	○	○	○
The content was clearly presented and easy to understand.	○	○	○	○	○
The guidelines provided practical support for the implementation of the project results.	○	○	○	○	○
The results were useful for harmonising approaches across the participating countries at the European level.	○	○	○	○	○

6. Production of interactive RockChain Tool. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The production of the interactive tool was effective and timely.	○	○	○	○	○
The interactive tool was developed using technology appropriate for the project.	○	○	○	○	○
The technical quality of the interactive tool met the established requirements.	○	○	○	○	○

7. Pedagogical test and implementation of IT improvements of Interactive RockChain Tool. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
Pedagogical testing of the interactive tool was conducted in a rigorous manner.	○	○	○	○	○
The improvements implemented after the pedagogical testing were effective and relevant.	○	○	○	○	○
The educational quality of the tool was improved by the pedagogical recommendations.	○	○	○	○	○
The pedagogical testing helped to ensure that the tool was didactic and effective.	○	○	○	○	○

8. Technical test and implementation of IT improvements of Interactive RockChain Tool. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
Technical testing of the interactive tool was carried out extensively.	○	○	○	○	○
The technical improvements implemented were effective and improved the functionality of the tool.	○	○	○	○	○
Technical issues identified during testing were adequately resolved.	○	○	○	○	○
The implementation of improvements allowed optimizing the end-user experience.	○	○	○	○	○

9. Translations of the e-Learning tool in all partners' languages. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The quality of the translations facilitated the understanding of the results in all participating countries.	○	○	○	○	○
All translations were done in a timely manner and within the established deadlines.	○	○	○	○	○
The translation of the results contributed to better communication between the project partners.	○	○	○	○	○

10. Producing a scientific article related to results of WP4. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The production of the scientific article on RockChain was carried out with academic rigor.	○	○	○	○	○
The scientific article accurately reflected the results and findings of the project.	○	○	○	○	○
The objectives of the article were met according to scientific standards.	○	○	○	○	○
The article contributed to the dissemination of the knowledge generated by the project.	○	○	○	○	○

11. External expert report of WP4 Results. Please rate the following aspects.

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The external expert's report on the results of WP4 provided an objective and detailed assessment.	○	○	○	○	○
The recommendations of the external expert were clear and applicable for the improvement of the project.	○	○	○	○	○
The report highlighted strengths and areas for improvement in the results obtained in WP4.	○	○	○	○	○
The external evaluation was useful to validate the quality and effectiveness of the WP4 results.	○	○	○	○	○

12. Remarks. Please add any comments you consider appropriate about the tasks developed in this WP3.

Tu respuesta

13. Please, tell us what kind of improvement you can suggest for the WP3:

Tu respuesta

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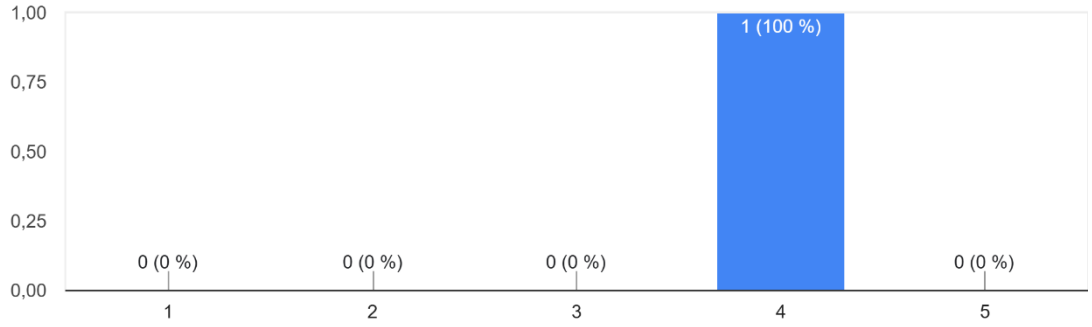
3. RESPONSE

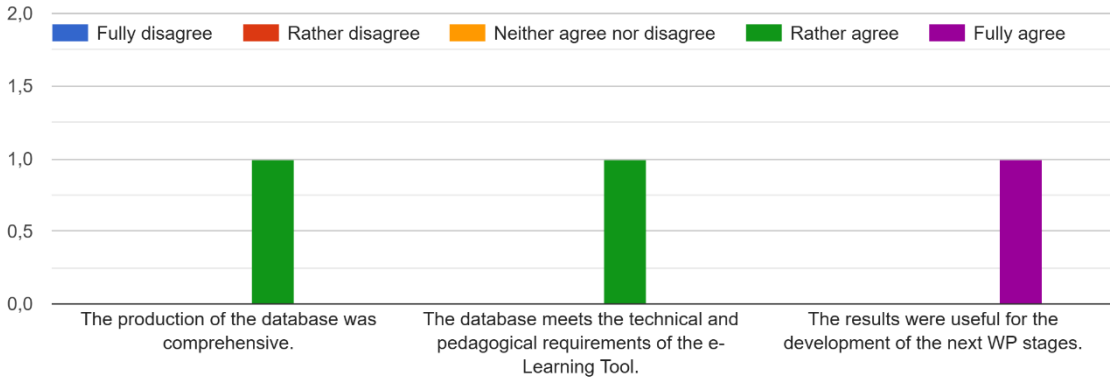
The responses of the survey for WP2 are presented below (print screens of the written replies and graphical representation of the ratings):

1. Overall, how satisfied were you with the management and development of the WP4 (Work Package 4): e-Learning tool based-on Blockchain-...k Ornamental Waste focused on Circular Economy?

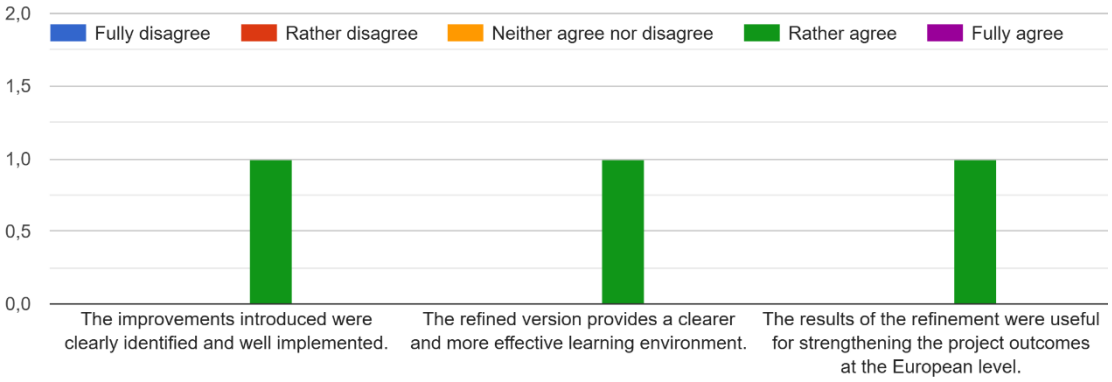
1 respuesta



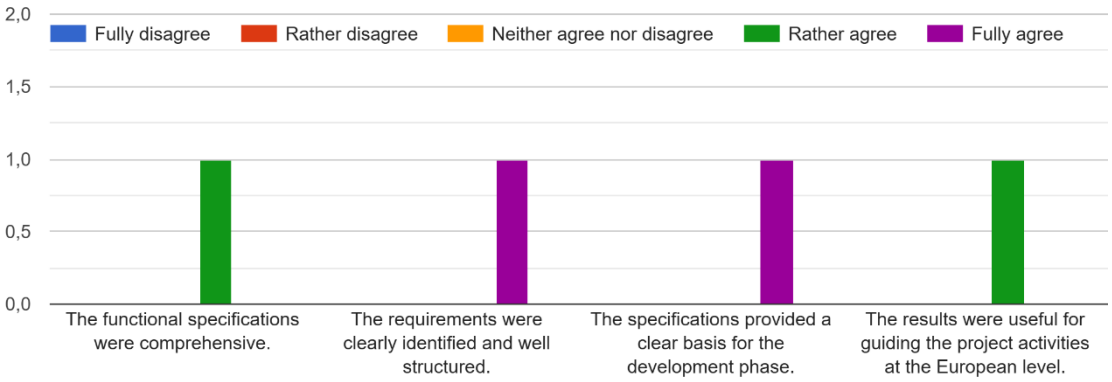
2. Production of the database for the e-Learning Tool. Please rate the following aspects.



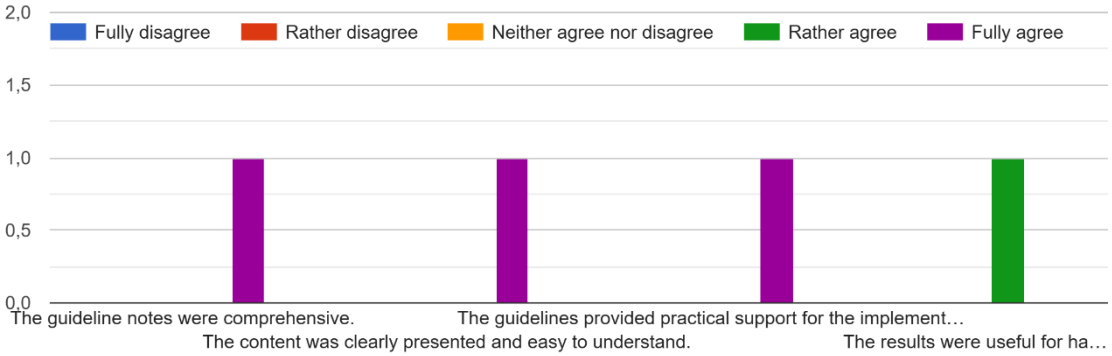
3. Refined of e-learning tool. Please rate the following aspects.



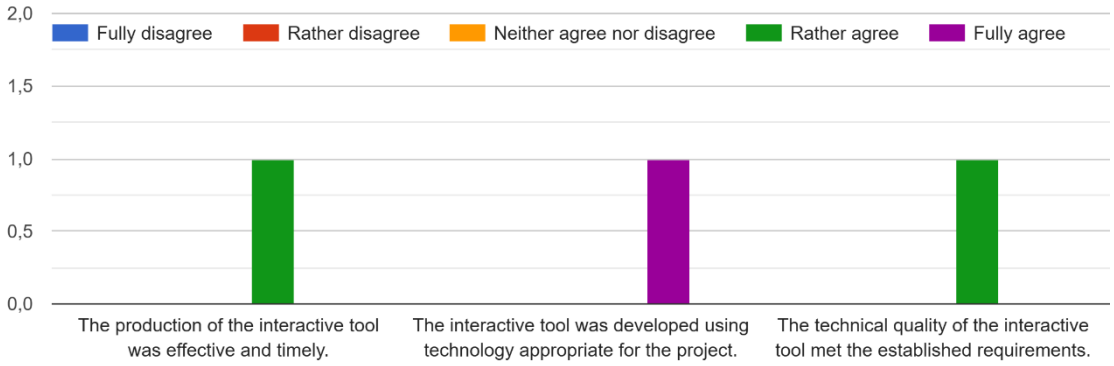
4. Functional specifications. Please rate the following aspects.



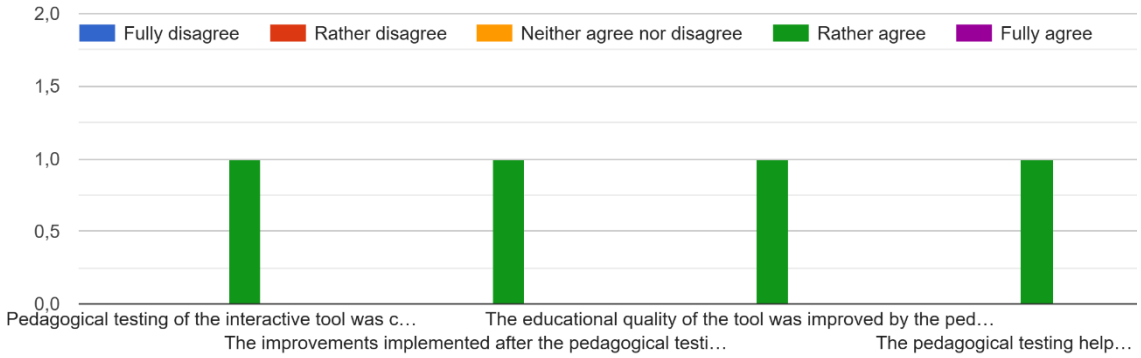
5. Guideline notes. Please rate the following aspects.



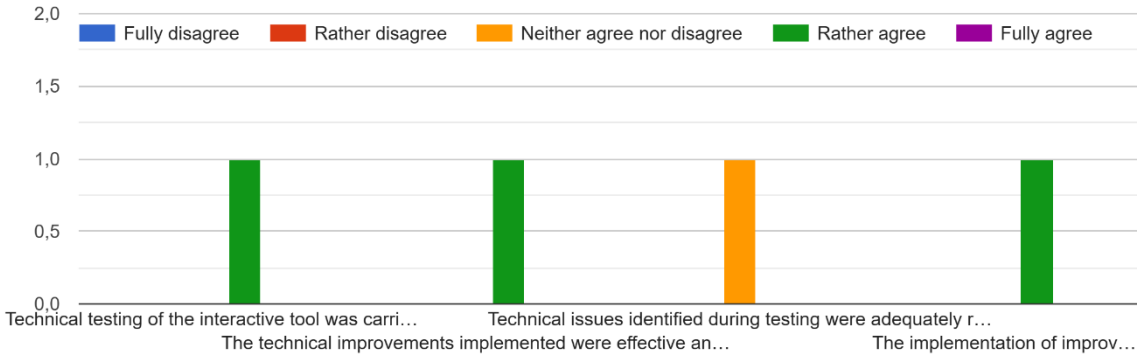
6. Production of interactive RockChain Tool. Please rate the following aspects.



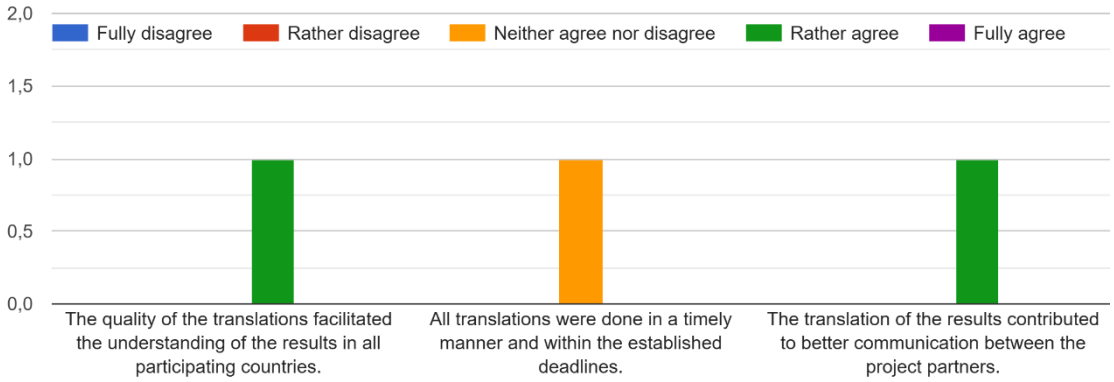
7. Pedagogical test and implementation of IT improvements of Interactive RockChain Tool. Please rate the following aspects.



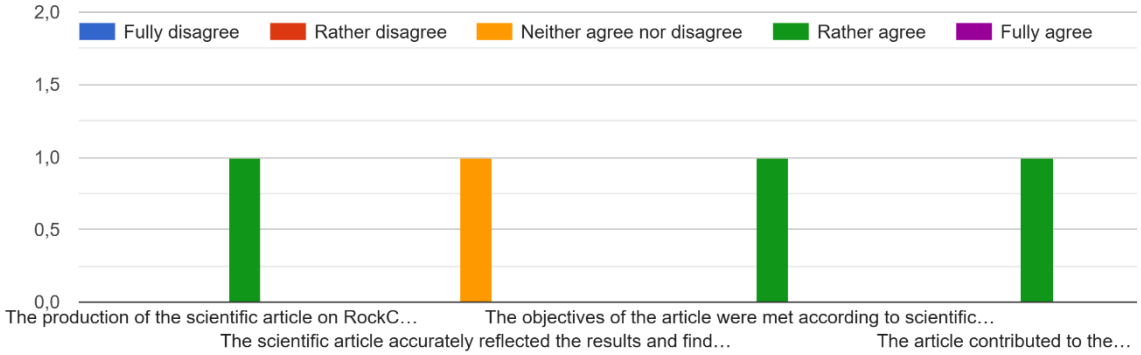
8. Technical test and implementation of IT improvements of Interactive RockChain Tool. Please rate the following aspects.



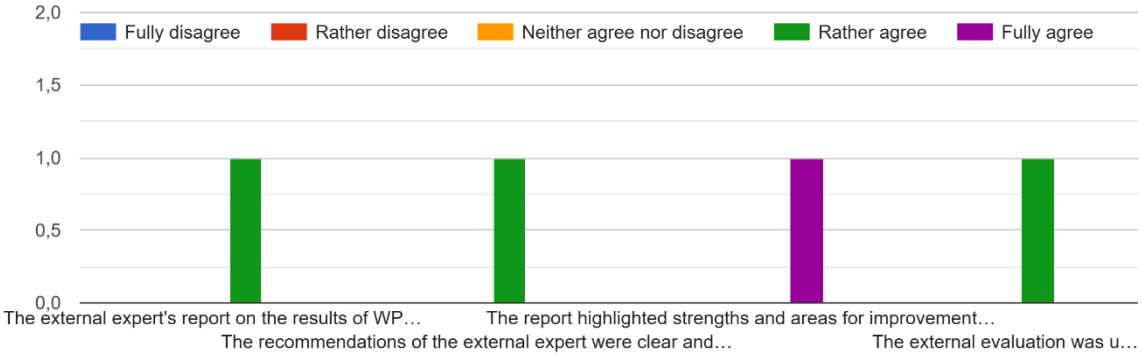
9. Translations of the e-Learning tool in all partners' languages. Please rate the following aspects.



10. Producing a scientific article related to results of WP4. Please rate the following aspects.



11. External expert report of WP4 Results. Please rate the following aspects.



12. Remarks. Please add any comments you consider appropriate about the tasks developed in this WP4.

WP4 delivers a coherent and well-structured sequence—starting from the data layer, progressing through tool refinement and technical specifications, and culminating in trainer guidelines and a tested, improved build. Based on pedagogical feedback, the tool is considered "classroom-ready" for use in facilitated group settings. However, inclusiveness and accessibility remain underdeveloped—particularly for learners with special needs or limited digital skills.

From the perspective of industry-based training, the main risks to adoption are operational rather than pedagogical. These include: Device limitations, as the tool is currently available mainly as an Android APK, restricting flexibility; Connectivity variability in training rooms or workshops, which may disrupt sessions; and The absence of a trainer-facing dashboard, which would be useful for session control, monitoring learner progress, and providing basic troubleshooting support.

On the technical side, the tool appears stable enough for pilot use, but results from the functional testing still highlight edge cases that could negatively affect user experience under real-world conditions.

Lastly, while the scientific publications produced under WP4 add value in terms of dissemination and credibility, part of the publication focus remains somewhat academic or general in tone. This may limit its practical resonance with SMEs and trainers working in the ornamental stone sector. A stronger alignment between the publication narratives and the actual learning outcomes of the RockChain tool would likely increase impact and facilitate broader industry uptake.

13. Please, tell us what kind of improvement you can suggest for the WP4:

Add an explicit accessibility & inclusion package: simplified language mode, and clear trainer adaptations for mixed-ability groups (incl. special needs).

Provide a trainer dashboard / facilitator controls (start/stop, round status, participant overview, basic learning analytics export) and a short troubleshooting checklist for low-connectivity or app restarts.

4. CONCLUSIONS

The external evaluation reports an overall satisfaction score of 4 out of 5, confirming that WP4 delivers a coherent and largely mature technical pathway for the RockChain Tool: from the definition of the data layer and requirements, to tool production, testing and iterative improvements. The package is assessed as sufficiently consolidated to support facilitated training delivery and to move confidently towards broader piloting across partner contexts.

He also concluded that WP4 delivered a coherent, well-sequenced and implementation-oriented package, progressing logically from the database layer and tool refinement to functional specifications, guideline notes and—crucially—a tested and improved version of the RockChain App. The overall workflow was judged robust, and pedagogical feedback indicated that the tool was "classroom-ready" for facilitated group use, meaning it could be reliably integrated into training sessions when properly supported by a trainer.

At the same time, the expert identified two main areas limiting wider adoption and scalability:

- First, inclusion and accessibility were assessed as underdeveloped, particularly for learners with special needs and for adult learners with limited digital confidence. The expert considered this a material gap, because RockChain explicitly targeted adult learners (including 45+) and therefore required stronger adaptation mechanisms for mixed-ability groups.
- Second, the expert stressed that the main adoption risks were operational rather than pedagogical: the distribution model (primarily an Android APK) reduced flexibility; variable connectivity in training rooms could disrupt sessions; and the lack of a trainer-facing dashboard limited session control, progress monitoring and basic troubleshooting support. While the tool was seen as sufficiently stable for pilot use, functional testing still revealed edge cases that might negatively affect the user experience under real-world conditions.

Finally, the expert observed that WP4's scientific outputs added credibility and dissemination value, but the publication narratives remained somewhat academic or general, which might reduce resonance among SMEs and trainers in the ornamental-stone sector. A closer alignment between scientific communication and the tool's concrete learning outcomes was therefore seen as an opportunity to increase practical impact and industry uptake.

Priority improvements suggested by the expert of WP4:

- Introduce an explicit accessibility and inclusion package, including simplified-language options, and clear trainer adaptations for mixed-ability groups (including special needs).
- Develop trainer dashboard / facilitator controls (e.g., start/stop session, round/status view, participant overview, basic exportable learning analytics), accompanied by a concise troubleshooting checklist for low-connectivity conditions and app restarts.

Implementation of recommendations in WP4:

With targeted improvements focused on accessibility, deployability and robustness, the WP4 results can support credible, consistent and scalable implementation across partner countries and training settings, specifically:

1) Inclusion and accessibility for mixed-ability groups: The consortium addressed the “material gap” flagged by the expert by building accessibility into the tool requirements and then translating them into concrete UX and delivery supports. In WP4-A3, usability/accessibility requirements for adults with heterogeneous digital skills were formalised (simple navigation, minimal jargon, stable placement of key information, predictable behaviour, clear feedback, multi-language support). Those requirements were then implemented through iterative refinements in WP4-A2 (simplified texts and layout, clearer phase transitions, stronger feedback in loading/waiting states, improved error handling and recovery), explicitly aiming to reduce facilitator burden and help first-time adult users. In addition, delivery inclusiveness was strengthened through device and format flexibility: the production build supported use on standard phones and tablets (Android/iOS) and trainers could also run sessions via a laptop emulator and/or projected view to scaffold groups. Finally, WP4-A4 provided trainer adaptations for constrained contexts (shared devices, projected play, reduced rounds, pre-session checks), which functioned as a practical inclusion layer for cohorts with lower digital autonomy.

2) Trainer dashboard / facilitator controls + troubleshooting for connectivity/app restarts: A dedicated “trainer dashboard” (separate control panel) was not introduced as a standalone module; WP4-A4 explicitly stated that there were no special teacher controls inside the app beyond the host role, and facilitation relied on structured session management and classroom orchestration. However, the recommendation was partly implemented through functional and operational equivalents: trainers could act as hosts to start sessions and manage timing more tightly, and the tool exposed core session indicators and end-of-round results to support debriefing and monitoring. For reliability under real training conditions,

WP4 implemented connectivity resilience and restart mitigation at two levels: (i) technical fault-handling mechanisms (automatic socket reconnection, state resynchronisation, idempotent server operations and round locks) to tolerate brief interruptions without breaking a session, and (ii) a trainer-facing operational checklist in WP4-A4 (connectivity testing in the room, minimal requirements, and concrete actions such as using shared devices or projecting a game if conditions were limited).