

## WP5-A7. Environment test and technical improvements.



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## 1. INTRODUCTION

Activity WP5-A7 was implemented as the project's *consolidation and refinement step* within WP5, following the publication of the RockChain OER environment and the delivery of the four national pilot courses (WP5-A3 to WP5-A6). In line with the approved work plan, it was carried out as a virtual activity led by DNV, with the purpose of validating the learning environment under real delivery conditions and applying *targeted technical and usability improvements* before the final dissemination milestone.

WP5-A7 was therefore positioned as the bridge between “testing in the field” and “final-ready release”: it translated structured user feedback from pilots into concrete refinements of the OER ecosystem (platform access and usability, clarity of learning paths, trainer deployability, and tool/app readiness). The pilot-course reports explicitly framed the questionnaires as an evidence base to identify adjustments and feed improvements into WP5-A7.

### Pilot-course context feeding WP5-A7

The improvement cycle drew on a coherent pilot design implemented in the four partner countries, each targeting a slightly different profile while using the same training backbone (Units 1–5 + app-supported integrative practice) and a comparable evaluation questionnaire approach:

- Germany (WP5-A3, Aschaffenburg): a mixed audience connected to the natural-stone value chain (including master craftsmen, specialist teachers, and sector members). Overall satisfaction and recommendation intent were positive, and the RockChain App was confirmed as a strong engagement driver under guided use.
- Spain (WP5-A4, Cehegín): a trainer-oriented profile linked to the ornamental-stone sector and continuing training, validating feasibility for VET delivery and confirming that the learning sequence supported non-specialist adult learners.
- Croatia (WP5-A5, Pučišća): VET students and teachers in a traditional stonemasonry setting, highlighting RockChain's value as a bridge between craft-based learning and future-oriented digital/circular practices, while also stressing the need for additional hands-on time and clearer step-by-step facilitator guidance.
- Romania (WP5-A6, Braşov): a multidisciplinary group spanning HE learners, professionals and institutional stakeholders; feedback strongly supported the relevance and coherence of the pathway and reinforced the need for improved trainer support and more time for practice with the app workflows.



Across pilots, satisfaction and recommendation scores were consistently high (e.g., Spain 4.13/5, Croatia 4.25/5, Romania 4.62/5) and app usability was rated positively in guided contexts (e.g., Spain 3.93/5, Romania 4.21/5). These results provided a stable basis for WP5-A7: the core design was validated, and the improvement focus shifted from “what to teach” to “how to ensure adoption and smooth delivery”.

## 2. EVALUATION QUESTIONNAIRE

### Feedback questionnaire of RockChain Pilot Course.

*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*

This questionnaire collects feedback about the RockChain pilot course. Your answers are anonymous and will help us improve content, delivery, and user experience across partners. It takes ~5–7 minutes.

davidcaparrosperez@gmail.com [Cambiar de cuenta](#)



 No compartido



## Feedback questionnaire of RockChain Pilot Course.

davidcaparrospez@gmail.com [Cambiar de cuenta](#)



No compartido

\* Indica que la pregunta es obligatoria

### Attendance and Profile

1. Where did you assist to the course? \*

- ☐ Spain
- ☐ Germany
- ☐ Croatia
- ☐ Romania

2. Gender: \*

- ☐ Male
- ☐ Female
- ☐ Other

3. Role/Background \*

- ☐ VET student
- ☐ VET trainer
- ☐ Industry professional (stone/construction/waste)
- ☐ Reasearcher/Academic
- ☐ Otro: \_\_\_\_\_

4. How did you attended to the course?

- ☐ In person
- ☐ Online
- ☐ Otro: \_\_\_\_\_

5. Previous familiarity with blockchain and circular economy \*

- |      |                       |                       |                       |                       |                       |      |
|------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------|
|      | 1                     | 2                     | 3                     | 4                     | 5                     |      |
| None | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | High |

### Overall Satisfaction

6. Overall, how satisfied were you with the training activity? \*

	1	2	3	4	5	
Not satisfied at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very satisfied

7. Would you recommend this pilot activity to your colleagues or classmates?

	1	2	3	4	5	
Never	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Of course

### Learning Outcomes

8. To what extent do you agree with the following statements? \*

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
The course contents were relevant to my needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I now better understand circular economy principles applied to natural stone and construction.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I now better understand the basics of blockchain and its role in traceability and waste management.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I improved my ability to use the RockChain app (navigation, actions, in-round decisions).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The course helped me connect market dynamics, mining challenges, and waste valorization in a realistic way.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel more confident to apply what I learned in my studies or job.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. To what extent did the training activity show the following attributes? \*

	Fully disagree	Rather disagree	Neither agree nor disagree	Rather agree	Fully agree
Contents were clearly understandable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contents were interesting and motivating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Balance between theory and practice was adequate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trainer facilitation and guidance were effective.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning materials/slides were clear and helpful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Platform and technical setup were reliable (access, devices, connectivity).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Timing and pacing were appropriate.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The learning environment was inclusive and supportive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

#### RockChain APP

10. Usability of RockChain app during the course

	1	2	3	4	5	
Very hard to use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very easy to use

11. How clear were the in-app round mechanics (timer, market, mining, recycling)?

	1	2	3	4	5	6	7	8	9	10	
Not clear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very clear



## Feedback questionnaire of RockChain Pilot Course.

davidcaparrospez@gmail.com [Cambiar de cuenta](#)



No compartido

\* Indica que la pregunta es obligatoria

### Open Feedback

12. What aspects of the activity did you find most interesting? \*

Tu respuesta

13. Where could it be improved? \*

Tu respuesta

14. Do you have any additional comments, suggestions or opinions about the pilot activity?

Tu respuesta



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[Atrás](#)

[Enviar](#)

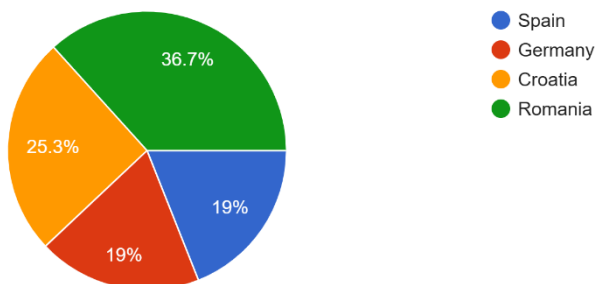
[Borrar formulario](#)

### 3. RESULTS OF THE QUESTIONNAIRE

#### 3.1. GRAPHIC RESULTS

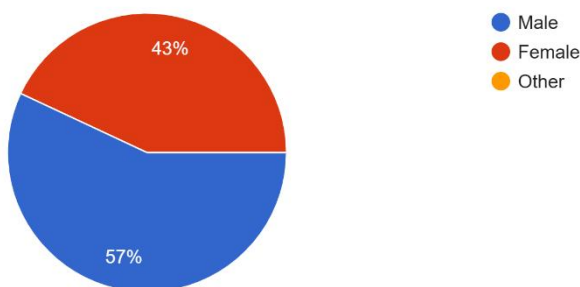
1. Where did you assist to the course?

79 responses



2. Gender:

79 responses



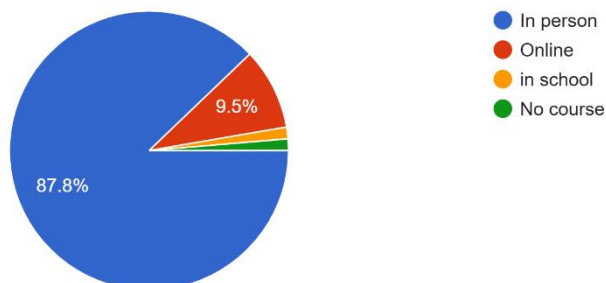
3. Role/Background

79 responses



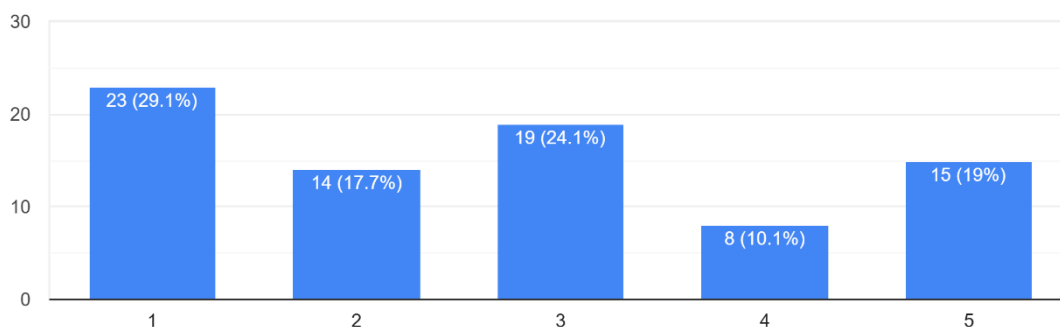
#### 4. How did you attended to the course?

74 responses



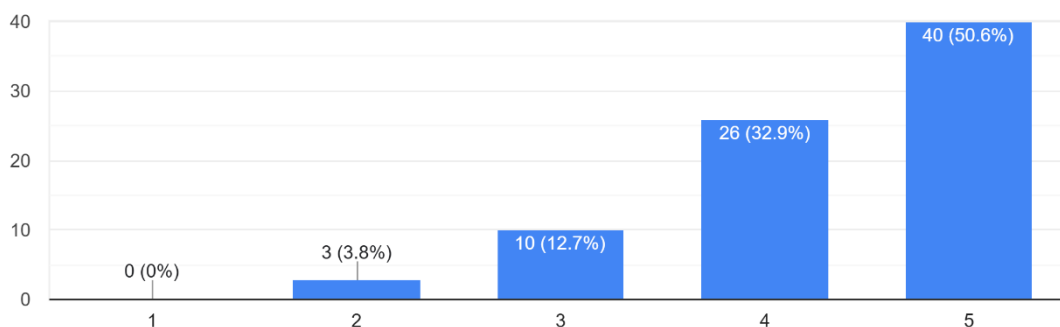
#### 5. Previous familiarity with blockchain and circular economy

79 responses



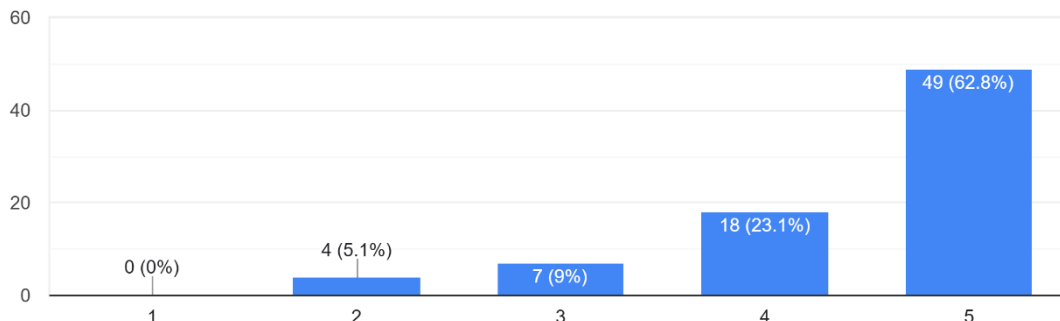
#### 6. Overall, how satisfied were you with the training activity?

79 responses

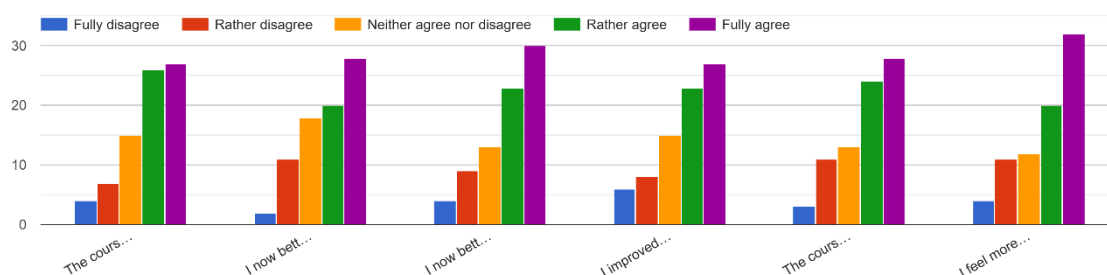


## 7. Would you recommend this pilot activity to your colleagues or classmates?

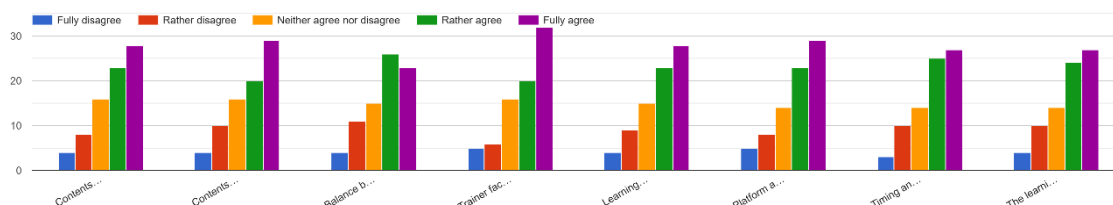
78 responses



## 8. To what extent do you agree with the following statements?

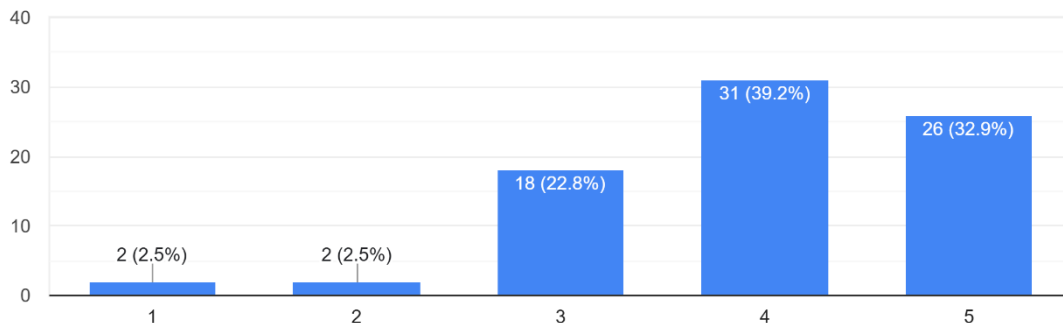


## 9. To what extent did the training activity show the following attributes?



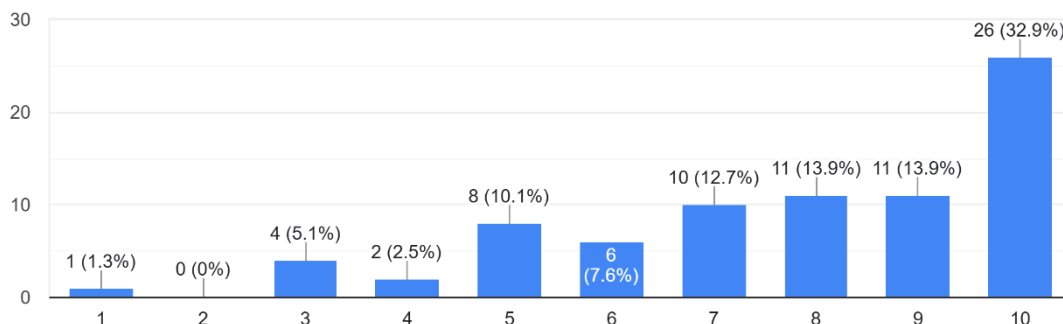
#### 10. Usability of RockChain app during the course

79 responses



#### 11. How clear were the in-app round mechanics (timer, market, mining, recycling)?

79 responses



#### 12. What aspects of the activity did you find most interesting?

*Details in the chapter 3.2.*

#### 13. Where could it be improved?

*Details in the chapter 3.2.*

#### 14. Do you have any additional comments, suggestions or opinions about the pilot activity?

*Details in the chapter 3.2.*

## 3.2. SUMMARY OF THE RESULTS

This section summarises the results of the common RockChain pilot-course questionnaire, completed by 79 participants across the four pilot implementations (Romania No.=29; Croatia No.=20; Spain No.=15; Germany No.=15). Respondents were mainly male (45) and female (34), and most attended in person (65 in-person; 7 online; 5 not specified). The largest background group was industry professionals (33), followed by VET students (12) and VET trainers (12), with smaller shares of academic/research and other profiles.

### 3.1.1. Baseline: prior familiarity (1–5)

Participants reported a moderate-to-low prior familiarity with blockchain and circular economy (mean 2.72/5), indicating that the pilots reached a target group that did not already have advanced knowledge.

### 3.2 Overall satisfaction and recommendation (1–5)

- Overall satisfaction with the training was high (mean 4.30/5).
  - Distribution: 5/5 (40), 4/5 (26), 3/5 (10), 2/5 (3) → 83.5% rated the activity 4–5/5.
- Recommendation intent was also high (mean 4.44/5, n=78 due to one missing response).
  - 85.9% rated recommendation 4–5/5.

### 3.3 Per-pilot headline results

Pilot country	No.	Satisfaction (over 5)	Recommend (over 5)	App usability (over 5)	In-app clarity (over 10)
Romania	29	4.62	4.86	4.21	8.79
Croatia	20	4.25	4.35	3.70	6.95
Spain	15	4.13	4.13	3.93	7.33
Germany	15	3.93	4.07	3.93	7.33

### 3.4 Agreement with learning outcomes and relevance

For the “agreement” block (Fully disagree → Fully agree), results were consistently positive:

- Across the six statements, item means ranged 3.72–3.84/5, with ~61–67% of respondents selecting Rather/Fully agree per item.
- Highest-rated statements related to understanding blockchain’s role in traceability and overall relevance of contents.
- The statement on improving ability to use the app also scored positively (mean 3.72/5).

### 3.5 Perceived training quality attributes

Across eight quality attributes (clarity, motivation, balance theory/practice, trainer guidance, materials, technical reliability, timing, inclusiveness), the results were stable:

- Item means ranged 3.67–3.86/5 with ~62–66% agreement on most attributes.
- Trainer facilitation and guidance was the strongest-rated attribute (mean 3.86/5).
- The lowest-rated (still positive) attribute was balance between theory and practice (mean 3.67/5).

### 3.6 RockChain App usability and mechanics clarity

- App usability during the course (1–5): mean 3.97/5; 72.2% scored 4–5/5.
- Clarity of in-app round mechanics (1–10): mean 7.77/10; 60.8% scored 8–10/10, and 73.4% scored 7–10/10.

### 3.7 Open-ended questions

A substantial share of respondents left the open questions blank (approximately half). Among those who provided comments, the most frequently mentioned “interesting aspects” related to: *the game/app component, circular economy and waste management content, and the link between traceability and real operational decision-making. Where improvements were suggested, they most often pointed to the need for more time / more hands-on practice, and clearer step-by-step guidance when running the app-based exercise.*

## 4. CONCLUSIONS

Across the four RockChain pilot courses (Germany, Spain, Croatia and Romania), the 79 questionnaires confirmed that the training design worked well for mixed adult profiles (industry professionals, trainers and learners) and VET students: satisfaction and willingness to recommend the activity were consistently high, despite only moderate prior familiarity with blockchain/circular-economy concepts.

The game-based RockChain App was repeatedly perceived as the main enabler for turning “abstract” traceability and circularity principles into practice-oriented decision-making, while the unit sequence and facilitation approach supported replication in training settings beyond the pilots.

Importantly, the pilots also generated a clear, convergent improvement signal, which was then translated into concrete refinements within WP5-A7:

- more structured time-on-task and additional hands-on practice windows (including short-session variants);
- richer sector-grounded micro-cases (reuse/valorisation pathways, quarrying perspective where relevant, traceability labelling logic);
- and clearer “trainer-ready” deployment guidance (step-by-step scripts, clearer instructions and troubleshooting to reduce friction during delivery).

In parallel, usability-oriented adjustments were prioritised to make first-time onboarding smoother and to better support adult learners with lower digital confidence, so that the OER and associated materials could be adopted with less setup effort and more consistent training quality across contexts.

Based on the pilot evidence, WP5-A7 focused on *environment-level* and *deployment-level* enhancements, such as:

- strengthening onboarding and navigation so that new users (particularly adult learners) could enter the OER and follow a clear path with minimal friction;
- improving trainer deployability (clarity on short-session delivery formats, better guidance assets, and troubleshooting readiness);
- refining usability and accessibility aspects to support mixed digital-confidence profiles and;
- resolving minor technical issues and consistency points identified during real pilot delivery.





This improvement logic was consistent with the wider WP5 objective: to ensure the OER ecosystem was not only published, but *usable, transferable and sustainable* for adoption by trainers, learners and sector stakeholders after project funding.