



## WP4-A4. Guideline notes.



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## 1. INTRODUCTION

This report presents the results of WP4.A4: Guidance notes for trainers using the RockChain learning tool. Based on the technical work carried out in WP4.A1 (data layer and backend), the pilot-ready version developed in WP4.A2, and the functional specifications defined in WP4.A3, this activity focuses not on how the tool is built, but on how it should be used within a training session.

The main objective of this document is to provide clear, practical guidance for those facilitating training: trainers seeking to integrate RockChain into vocational training or adult learning courses on topics related to ornamental stone, construction, and the circular economy. All content is approached from the trainer's perspective: what is needed to prepare a session, how to present the game to small groups of adults with different levels of digital competence, how to accompany participants during one or more games, and how to use the results of the game as a starting point for discussing waste, value, and circular strategies.

In practical terms, this report does not repeat the technical architecture or functional details already covered in other WP4 activities. Instead, it takes that foundation and turns it into concrete recommendations: how to organize the classroom, what format and duration the sessions can have, what the typical step-by-step process of an activity with RockChain is, and what to do in the event of possible incidents. This document acts as an operational bridge between the technical design of WP4 and the pilot activities of WP5, helping project partners to implement RockChain sessions in a consistent, realistic, and pedagogically meaningful way in different educational environments and countries.

## 2. PLANNING A ROCKCHAIN SESSION

This section summarizes how the five theoretical units of the RockChain manual (WP3-A3) connect with the RockChain e-Learning tool, which learning objectives are reinforced, and which practical aspects need to be considered, such as the time available, the size of the group, and the necessary equipment.

### 2.1. Course structure

The RockChain course is organized into five theoretical units, plus a practical block focused on the game:

- *Unit 1 – Introduction to the Ornamental Stone and Mining Industry:* overview of the sector, main materials, value chain and current challenges.
- *Unit 2 – Blockchain Fundamentals:* basic concepts such as blocks, hashes, decentralization, and smart contracts, with introductory examples.
- *Unit 3 – Circular economy in the context of ornamental stone:* pillars of circularity, waste valorisation and the role of digitalisation.
- *Unit 4 – Blockchain applied to waste management:* legal framework, traceability obligations and blockchain-based tools for waste flows.
- *Unit 5 – RockChain. Final practical exercise - integrative project:* introduces the RockChain App and proposes an integrative exercise that connects all previous units.

These units are explained in more detail in the manual developed in WP3-A3. The RockChain app is mainly used in Unit 5, but it is directly based on the concepts covered in the previous units. In practice, trainers can:

- Use Units 1–4 for theoretical or discussion sessions, with short presentations, short readings, or simple exercises.
- Reserve Unit 5 and the game session as an integrative conclusion, where students apply ideas about value chains, circular economy, and traceability using blockchain in a simulated market.

Depending on the training context, the entire course can be offered as a compact module or spread out over a more extensive vocational training or adult education program.



## 2.2. Learning objectives

The RockChain game does not replace theoretical content, but rather serves to reinforce and connect what has been learned in all units. Upon completing the game session, students are expected to be able to:

- *From Unit 1:* identify products, types of waste, and key players in the ornamental stone value chain, now represented as resources within the game (blocks, waste, recycled products).
- *From Unit 2:* understand why transactions are recorded as “blocks,” how proof-of-work challenges work, and what “traceability” means in a distributed environment.
- *From Unit 3:* see how purchasing, processing, and recycling decisions affect both profits and waste, applying the principles of the circular economy in practice.
- *From Unit 4:* relate the game records to real-world concepts such as material passports, traceability obligations, and incentive mechanisms for good waste management.

For trainers, the key message is clear: the game is a safe space to practice the reasoning developed in the theoretical units. Therefore, it is recommended to close the session with a short discussion or review that explicitly connects what happened in the game with the concepts learned.

## 2.3. Suggested course formats

RockChain is flexible and can be adapted to different types of teaching programs. Here are two basic formats:

### Format A – One integrated session (60–90 minutes)

- 10–15 min: Very brief review of units 1–4 and explanation of the game's objective and how it works.
- 30–50 min: game (about 3 rounds, depending on the pace and number of participants).
- 15–25 min: final reflection and discussion (what worked, what didn't, how it relates to the circular economy and blockchain).

### Format B – Two linked sessions (theory + game)

- *Session 1 (45–60 min):* review focused on the key concepts needed to play (value chain, waste streams, blockchain fundamentals, and traceability). You can show the app and explain the flow of rounds and roles.
- *Session 2 (45–60 min):* game + brief reflection. Students already know how it works, so more time can be devoted to the game and final analysis.

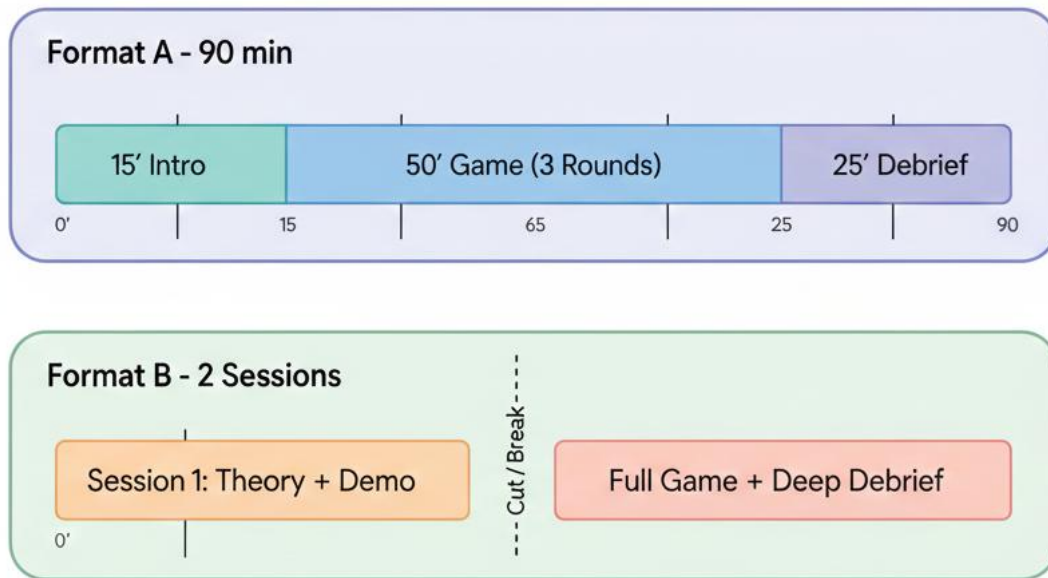


Figure 1: Suggested course formats.

In longer courses, RockChain can also be used on a recurring basis: for example, a short round at the end of several classes, or a full game in the middle of the course and another at the end, to see how the group's strategies evolve.

## 2.4. Group size and roles

RockChain is designed for small groups of up to 5 players per game. The experience works best with 3 to 5 people playing at the same time: there is enough interaction and competition, but the flow remains easy to follow. In very small groups (2 players), the game is still possible, although it will feel less dynamic.

In classrooms with more participants, it is best to divide the class into several small groups, each with its own RockChain game. For example, a class of 20 people can be organized into 4 groups of 5, with one device per person or per pair.

During the game, all players have the same options in the game. There are no special controls for teachers. The only "different" figure within the app is the host, who starts the game. In many cases, the trainer can ask one participant per group to take on this role, while he or she supervises the time and facilitates the final reflection.

### 3. ACCESSING AND SETTING UP ROCKCHAIN

This section provides a simple guide for trainers to access RockChain course materials, install the app, and ensure that everything is technically ready to conduct a session. In the final version of the project, all resources will be available from the official RockChain website.

#### 3.1. Where to find the course materials

All theoretical content for the RockChain course, including the manual and presentations for Units 1 to 5, will be hosted on the project website, in the specific section for “Course Materials” or “Training Resources.” From there, trainers will be able to easily consult and download the materials for each unit, including the one dedicated to the game (Unit 5).

Each unit will normally include:

- A PDF document or manual with the main content.
- PPT presentation for trainers.

Before a session with RockChain, it is recommended to download at least the materials from Unit 5 and Units 3 and 4, as these are usually the most directly related to the game. This way, if at any point during the session you need to revisit a concept, you can do so quickly.



HERE YOU WILL FIND ALL DOCUMENTS AND REPORTS OF  
THE RockChain PROJECT

WP2 - European common curricular on Waste Management applying Blockchain technologies for Ornamental Rock Industry focused on professionals over 45 years old.

REPORTS	DOWNLOAD OPTIONS
WP2-A1 Roadmap of the Methodology.	Available soon!
WP2-A2 Awareness of needs surveys to identify specific learning difficulties.	Available soon!
WP2-A3 Report of data analysis and conclusions.	Available soon!

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Figure 2: Rockchain website, reports.

## 3.2. Obtaining and installing the RockChain app

During the pilot phase, the RockChain application is distributed as an APK file for Android devices. The process is straightforward and identical for both trainers and participants: simply access the download page, install the file, and log in.

### Prerequisites:

- An Android device.
- Internet connection.

### Step-by-Step Installation Guide:

- 1. Access the Download Page** Open the web browser on your Android device and navigate to the official RockChain tool page: <https://rockchain.eu/tool/>
  - Here you will find the app description and a download button (e.g., "Download Android App" or similar).
- 2. Download the APK File** Tap the download button on the website.
  - Your browser may ask for confirmation to download RockChain.apk.
  - Tap "**Download anyway**" or "**Accept**" to proceed.
- 3. Open the Downloaded File** Once the download is complete, a notification will appear. Tap this notification to open the file. If the notification disappears, you can find the file in your device's Downloads folder.
- 4. Allow Installation from Unknown Sources** If this is your first time installing an app from your browser, Android will prompt you for permission.
  - A security pop-up will appear stating that the phone usually does not allow unknown apps.
  - Tap "Settings" on the prompt.
  - Toggle the switch that says, "Allow from this source" (or "Install unknown apps").
  - Press the Back button to return to the installation screen.
- 5. Install RockChain** You will see the installation prompt for RockChain.
  - Tap "Install".
  - Wait for the process to finish. Once done, you will see a confirmation message: "App installed".
- 6. Launch and Login** Tap "Open" to launch the app immediately or find the "RockChain" icon in your app drawer later. Upon launching, you should see the login screen. The app is now ready to use.

## 3.3. Basic requirements for the session

RockChain is designed to be easy to use, even in contexts with limited resources. However, it is advisable to check a few key aspects before getting started.



### Devices

- Ideally, each person should have a phone or tablet (or one per pair if working in pairs).
- It is recommended that the devices are relatively recent and have enough free space to install and run the app without any problems.
- If it is not possible for students to bring their own equipment, the center should provide some shared devices.

### Connectivity

- It is highly recommended to have stable Wi-Fi in the classroom.
- The network must allow access to <https://rockchain.eu/tool/> and RockChain's backend services (avoid firewalls that block the app).
- Before the session, test the connection in the classroom: open the download page, install the app, and play a test round.

### Physical space and resources

- A standard classroom is sufficient, preferably with a projector or large screen to show presentations or, if desired, a live game.
- A whiteboard or flipchart can be useful for noting down strategies, observations, and conclusions.
- It is advisable to arrange the tables in a way that encourages interaction between groups (U-shape, islands, or small clusters work better than rows).

If for some reason all these conditions cannot be, the trainer can adapt the session: use shared devices, reduce the number of rounds, or project a game for the whole group and use it as a basis for discussion.



## 4. RUNNING A SESSION STEP BY STEP

This section describes a complete RockChain session from the moment the trainer enters the room until the final debriefing. The timings are indicative; they can be shortened or extended depending on the course format described in Section 2.

### 4.1. Before the students arrive (about 15–20 minutes early)

Ideally, arrive a little early to prepare everything calmly. Turn on the projector and connect the laptop. Open the project page and the app page to make sure they load without any problems and that the APK download link works. If possible, open the app on your phone to check that the backend is responding correctly.

Next, review the presentations for the theory units, especially the key units, and have two or three important slides ready that you can use in your explanation or during the debrief. Arrange the tables so that they form small groups (3–5 people) and leave visible space on the whiteboard or flipchart where you can write down game codes, ideas, strategies, or conclusions.

If you are considering different levels of familiarity with technology, this is the time to decide whether each participant will use their own device or work in pairs, and to plan for extra support for those who need it.

### 4.2. Introduction: introduce RockChain and set the scene for the session (10–15 minutes)

At the beginning, explain clearly and simply what RockChain is. For example:

*"RockChain is a game in which you manage products and waste from the ornamental stone industry. You will buy, transform, and recycle materials under time pressure; then we will see together how your decisions affected waste and profits."*

Tell them how it connects to the content covered in the course (circular economy, traceability, value chain) and emphasize that the goal is not to “win” at all costs, but to apply the concepts learned. Also explain what will happen: a brief review, a few rounds of the game, and a final group reflection. If possible, show a visual preview: screenshots of the login, the market, the results at the end of a round... so they know what to expect.

### 4.3. Getting started: installation, game start, and group connection (10–15 minutes)

Project the RockChain download page and guide the group through the installation (or opening, if it is already installed). Make sure everyone reaches the login screen. Depending on the configuration, each player will log in with their credentials or create a basic account; the important thing is that they have identifiable names so they can comment on results later.

Within each small group, one person will be responsible for creating the game. That person clicks “Create game” or “Host game,” obtains a code, reads it aloud, and you write it on the board. The others select “Join game” and enter that code. Make sure no one gets stuck at login or on hold, and that each group has a host with all players visible. When everyone is ready, remind them how many rounds they will play, that there will be a timer for each round, and that they will discuss the results at the end.

### 4.4. Game time: rounds, decisions, and dynamics (30–50 minutes)

When each group is in the “waiting room,” the host gives the signal and presses “Start round.” After a brief countdown, everyone enters the game screen. There they will see different sections that you should explain: market, mining, recycling, profile, stock.

During the round, players decide: do they buy now or wait? Do they mine to earn extra? Do they recycle waste or leave it for later? You walk among them, answer brief questions, and observe: some may buy a lot but ignore waste; others focus on mining or recycling; some try different strategies.

A full session can have two or three rounds: by the end of the first, many already understand the mechanics, so the following rounds allow them to experiment with new tactics. The goal is not for them to master every button, but to try, fail, learn... and see the consequences in their results.

### 4.5. At the end of each round: quick pause for reflection (3–5 minutes)

After each round, the app displays a summary: earnings, waste generated, who was the “winner,” mining results, winning industry, rankings, etc. This is a good time to ask each group to review their screen and ask questions:

- Who earned the most RockCoins this round?

- Who accumulated the most waste, was it intentional or careless?
- Did anyone recycle? How did that affect their results?
- Did mining change anything this round?

This brief analysis, even if it only takes a few minutes, helps them connect decisions with consequences. If there is time and the format allows it, invite them to adjust their strategy for the next round: perhaps prioritizing recycling, or balancing market and mining.

#### 4.6. At the end of the game: final debriefing and return to theory (15–25 minutes)

When the last round ends, gather the whole group together to reflect. You can project the results of an example game. Ask them to identify:

- Who ended up with the most RockCoins.
- Who generated the least waste.
- Whether there were any extreme strategies: very lucrative but polluting, or very clean but unprofitable.

Then, relate what happened to the theoretical content:

- Which parts of the value chain worked best? What types of waste were common?
- Which strategies were closer to circular practices, and which were more linear?
- How can traceability or validation motivate sustainable decisions?

You can ask participants to imagine these types of decisions in real-world settings: Where are the pressures for quick profits that generate waste? What tools or data would be needed to make more circular decisions? How can incentives be designed in companies to encourage good practices, taking ideas from the game?

Finally, close the session by highlighting the key messages: RockChain is a safe space for experimentation; waste and profit are connected; digital tools, even those inspired by blockchain, can help manage resources more transparently and sustainably. If the course continues, you can preview how they will use the game experience in future activities: case studies, assignments, other units...

Thus, what began as a game becomes a meaningful practical learning experience.



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## 5. CONCLUSIONS AND NEXT STEPS

This guide translates the technical work developed in WP4 into a practical tool for trainers. It clearly explains how RockChain fits into the overall course, what kind of learning objectives it reinforces, how to prepare a session both technically and organizationally, and how to facilitate and close a game so that it serves as a basis for discussion on the circular economy, waste management, and digitization. In this sense, it complements the RockChain manual developed in WP3-A3 and the technical deliverables of WP4-A1, A2, and A3, focusing on the real needs of those who will use the tool with learners.

From now on, these guidelines will serve as a common reference for all partners when planning and implementing RockChain sessions in different contexts and countries. Although each trainer will be able to adapt them to their reality, the key ideas remain the same: small group play, a good introduction connected to the five units of the course, and a structured reflection at the end. During WP5, trainers in Spain, Germany, Croatia, and Romania will be able to use this document, along with the translated materials and the production-ready app, to design and deliver pilot activities with vocational training students, adults in continuing vocational training, and other profiles defined in the project.

As the pilots progress, feedback from both trainers and participants can be used to improve both the app and this guide: for example, by including more specific examples of planning, screenshots, or a frequently asked questions section. Thus, WP4-A4 not only closes the development phase of RockChain, but also opens the door to its continued, adaptable use with potential for expansion beyond the project, promoting more circular, data-driven waste management within the ornamental stone sector and other related industries.



## ANNEX I. A ROCKCHAIN SESSION STEP BY STEP

### BEFORE THE SESSION (15–20 min before)

- Network and devices: Check the Wi-Fi connection and make sure everyone can download the app from <https://rockchain.eu/tool/>. Do a quick test on your cell phone.
- Materials ready: Have the key slides (Units 3–5) handy. Open the presentation and prepare the space: small groups, visible whiteboard.
- Plan groups: Depending on the group's digital level, decide whether they will use one device per person or per pair.

### PHASE 1 – INTRODUCTION (10–15 min)

- Explain what RockChain is: “A game where you manage ornamental stone products and waste. We will see how your decisions impact waste and profits.”
- Connect with the course: Unit 1 (value chain), Unit 3 (circular economy), Unit 4 (traceability).
- Clear agenda: Install the app → Play 1–3 rounds → Reflect as a group.

### PHASE 2 – INSTALLATION AND ENTERING THE GAME (10–15 min)

- Project the download page and step-by-step guide.
- Each player creates an account or logs in with their username.
- One player per group creates the game (host) and shares the code.
- The others join. Verify that everyone is in.

### PHASE 3 – LIVE GAME (30–50 min)

- Start the round when everyone is ready.
- During the game (approx. 120 sec per round), they can:
  - Shop at the market
  - Recycle waste
  - Participate in mining
- You observe, answer questions, and take note of strategies.



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## PHASE 4 – BRIEF REFLECTION AFTER EACH ROUND (3–5 min)

Ask the group:

- Who earned the most coins?
- Who generated the most waste?
- Who recycled? Was it useful?
- How did mining influence the game?

## PHASE 5 – FINAL DEBRIEFING (15–25 min)

- Analyse results: waste vs. profits, strategies used.
- Return to theory:
  - o Which practices were most “circular”?
  - o What did we learn about traceability?
- Invite participants to relate this to the world of work:
  - o How are similar decisions made in companies?
  - o What incentives can help improve waste management?
- Close with key ideas:

*“RockChain is a space to experiment, connect theory with real decisions, and see how technology can help make them more sustainable.”*