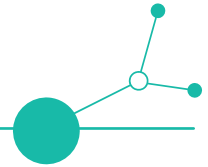


Testing of innovation format of workshops in VR

D3.3.2



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1. Introduction and general information

As part of the VReduMED [pilot actions](#) within Deliverable D3.3.2, a series of innovation-oriented workshops was designed to explore the feasibility and added value of Virtual Reality (VR) as a collaborative medium for cross-regional exchange in the fields of care education, MedTech and VR development.

Two VR workshops were implemented using the established [VReduMED labs](#) network and conducted entirely in Virtual Reality via the [MeetinVR](#) application on Meta Quest devices. The virtual environment offered collaboration tools such as whiteboards, pens, and presentation windows, enabling participants from different regions to work together in a shared digital space.

In addition, one workshop was held in person, with the aim of promoting exchange among care professionals on innovative technologies, including the use of VR in nursing education, through an open and interactive discussion format. This in-person innovation session provided a complementary perspective to the VR-based workshops by enabling face-to-face dialogue and reflection on the role of emerging technologies in care-related training and educational settings.

Together, these three workshops offered valuable insights into the feasibility, practical requirements, and potential added value of VR-supported collaboration and innovation processes in the context of care education and cross-regional cooperation.

1.1. Aim and Purpose of the VR Workshop Format

The goal of the innovative, cross-sectoral, and transnational workshops was to design a VR-based concept and carry out proof-of-concept sessions to determine whether virtual reality is a suitable and effective format for transnational ideation. Through [MeetinVR](#), participants from different partner regions (DE, CZ, HU and AT) were able to meet virtually, exchange ideas, and collaborate without physical presence. The activity also aimed to identify the organizational, technical, and user-related conditions necessary to run such workshops in the [VReduMED labs](#).



Figure 1 Virtual reality auditorium with slide presentation screen and individual breakout session rooms with whiteboards.



2. Digital Collaboration Methods in Transnational Settings

This chapter outlines the digital collaboration approaches relevant for cross-regional cooperation and positions Virtual Reality as the chosen format for the proof-of-concept workshops within the [pilot actions](#) of the [VReduMED](#) project. It summarizes the commonly used online collaboration options, the specific toolset applied in the pilot, and the practical insights gathered from the conducted VR sessions.

2.1. Advantages of Virtual Reality Compared to Traditional Online Collaboration

The VR-based approach provided an immersive, shared environment in which participants from different regions could interact with one another as if they were present together. Compared to conventional online meetings, the virtual reality setting offered:

- **Stronger sense of co-presence:** Participants met in the same virtual room with customized avatars, rather than on separate video tiles, which supported more natural interaction.
- **Hands-on collaboration tools within the VR space:** Whiteboards, pens, and presentation surfaces were part of the environment and could be used jointly and immediately. In VR they offer more haptic feeling, than using a mouse in online meetings.
- **Focused participation:** The immersive format reduced side activities and supported concentrated ideation, which is essential for creative sessions.

These characteristics were central to assessing whether VR is a suitable and effective format for transnational ideation in the context of the [VReduMED labs](#).

2.1.1. Overview of Common Online Collaboration Tools

Due to financial and time constraints, it is often difficult to meet in person for transnational collaborations. Therefore, online tools like Microsoft Teams, Zoom, and Google Meet are being used. These platforms typically offer features such as:

- **Video and audio conferencing**
- **Screen sharing**
- **Chat and file exchange**
- **Breakout rooms**
- **Shared documents via integrated cloud services**

Such tools are highly effective for coordination meetings, information exchange and structured presentations.

However, because they present participants as video windows, they offer limited spatial presence and little tactile interaction, making them less suited for dynamic ideation workshops that require interactions, visual sketching or spatial referencing.

This gap motivated the evaluation of an immersive virtual reality alternative within [Pilot Action 2](#).



2.1.2. Tools Applied in Pilot Action 2

Within [Pilot Action 2](#), the consortium identified [MeetinVR Trial](#) as the collaboration platform. The trial version of the application can be downloaded from the Meta Store and offers a free, easy-to-use method for VR collaboration. The application also offers built-in tools, such as:

- Different layouts of virtual rooms to fit the desired need (e.g., conference and ideation spaces).
- Breakout rooms, Whiteboards and writing/drawing tools
- Presentation screen
- Loading of individual models such as Logos, images and 3D-objects

2.1.3. Data Collection from VR Workshops

Virtual Reality workshops offer several practical options for documenting progress and capturing outcomes. The [MeetinVR](#) platform allows hosts and facilitators to **take screenshots or short video recordings** directly within the virtual environment, which can be used to document group interactions, visual outputs on whiteboards, and relevant moments during the ideation process. These materials support later analysis, reporting, and comparison across sessions.

In addition to manual documentation, the **virtual room itself remains available to the host after the session**, preserving elements such as sketches, notes, drawings created by participants. This persistent room state enables a more comprehensive review of the workshop's development and allows the content to be revisited during follow-up workshops or in subsequent evaluation steps. As a result, insights generated during the session remain accessible beyond its duration and can be extended or refined in later work phases.

3. Preliminary Testing and Conception

This chapter outlines the preliminary research, internal testing, and the resulting conceptual design of the VR workshop format developed for [Pilot Action 2](#). It focuses on how the project consortium identified suitable tools, evaluated their usability, and translated those insights into a structured workshop design.

3.1. Preliminary Testing and Findings

3.1.1. Tool research and selection

First a short market research was conducted before planning the workshops to evaluate VR meeting applications suitable for immersive, cross-regional collaboration. [MeetinVR](#) was selected because it offered the following:

- an accessible **free trial mode**,
- **simple and easy** to understand onboarding for new VR users,
- essential ideation features such as **virtual rooms, pens, whiteboards and presentation surfaces**, and
- compatibility with the **Meta Quest headsets** available in all [VReduMED labs](#).

This made [MeetinVR](#) a practical option for testing VR-based workshops.



3.1.2. Get to know the application

In order for innovation workshops to be held efficiently in VR, it is important to understand the mechanics of the used VR application and how it works. Therefore, small test sessions with project partners were held beforehand to become familiar with [MeetinVR](#), assess controller handling, and evaluate the support of core interactions such as navigation, pen/whiteboard usage, and content presentation. In addition, partners specifically tested breakout arrangements, collaborative drawing tasks, the loading of 3D models, presenting slide decks within the virtual room, and different meeting-room layouts in order to define the most suitable setting for the workshops. These exploratory tests helped define the minimum feature set required during live workshops and confirmed that only basic functionality should be enabled for participants to keep the environment manageable.

3.1.3. Operational constraints identified

From these early trial sessions, following guidelines were identified, that influenced the design of the subsequent workshop:

- **Hardware preference:** Prefer Meta Quest 3 over Quest 2 due to smoother performance and higher frame rates.
- **Session duration:** Limit continuous VR segments to **approx. 45 minutes**, and plan **10-20-minute breaks** to mitigate eye fatigue or motion sickness, especially for VR-beginner participants. This aligned with the findings of previous VReduMED formats, where stakeholders were involved in VR sessions.
- **Onboarding needs:** Include a structured introduction and familiarisation phase in the agenda, performed individually in each region and tailored to participant needs.
- **Initial acclimatisation:** Reserve a short period at the start so participants can get used to the controllers and the feel of a VR meeting before starting content-related tasks.
- **Small participant group:** Keep participant numbers small, to reduce speaking overlap and keep facilitation efficient.
- **Lean feature set in VR room:** Enable only basic functionality for participants in the [MeetinVR](#) room to avoid confusion and keep interaction manageable for first-time users.

These preliminary insights confirmed feasibility and provided concrete parameters for structuring the full workshops.

3.2. Conceptual Design of the VR Workshop Format

Based on the requirements identified during preliminary testing, the workshop concept relies on a minimal yet functional VR setup that supports cross-regional ideation without overwhelming first-time VR users. The environment is intentionally designed to offer only the tools necessary for collaborative scenario development, such as shared work surfaces and basic interaction instruments, ensuring that participants can focus on content creation rather than on technical complexity. [MeetinVR](#) and the Meta Quest headsets were selected as they meet these needs while remaining easy to deploy across all participating labs.



3.2.1. Participant Configuration

In line with the testing insights, the concept specifies small, mixed participants with a approx. six participants total, typically 1-2 per organisation, to ensure manageable facilitation, minimise interaction interference, and support focused discussion in an immersive setting.

The format addresses three essential stakeholder groups for cross-sector ideation in the project context: **care experts, MedTech companies, and VR experts.**

3.2.2. VR innovation workshop concept

Based on these findings, the following workshop block structure was designed and can be used or adopted for future formats:

Introduction Block (30min)	Non-VR introduction to VR technology (handling, navigation, ...) and VReduMED project based on individual needs of participants in each region
Hands-on VR-Block (15 min)	Hands-on MeetinVR - getting to know the controls and navigation
Break (10 min)	short break to prevent early exhaustion or motion sickness
Input from Experts (15 min)	Input from VR/Medtech or care experts for inspiration for the following innovation session
VR Innovation Session (20 min)	Transnational Brainstorming Session via MeetinVR
Feedback (30 min)	Feedback session from participants

4. Conducting the Virtual Reality Workshops

This chapter summarises how the workshops were carried out in practice within [Pilot Action 2](#). While Chapter 3 describes how the workshop format was developed conceptually, this chapter outlines the practical implementation, the preparation steps taken in the [VReduMED labs](#), and the tools used to support interaction and documentation. In addition, visual examples from the workshops illustrate how the VR environment and supporting equipment were employed.

4.1. Setup and Preparation

Prior to the workshop date, the [MeetinVR](#) room was fully prepared and configured by the host, including the activation of only the required core functions and the upload of all presentation materials. Once the room was ready, the access code for participants was generated and distributed so they could join the workshop environment at the scheduled time. In addition, a backup Microsoft Teams call was initiated to ensure that communication could continue seamlessly in case of technical issues or connection interruptions during the VR session.

Before each workshop, a suitable physical room was prepared with free space to allow safe movement while wearing VR headsets. The Meta Quest devices were pre-installed with the [MeetinVR](#) application and tested in advance. To support facilitation and troubleshooting, an external monitor stream was set up to mirror



the participant's virtual reality view. This allowed on-site VReduMED partners and observers to follow what was happening in the virtual room and to support participants with tool handling or navigation when needed.



Figure 2 External monitor setup showing the VR view used for support and facilitation.

4.2. Onboarding

Onboarding followed the conceptual design established in Chapter 3 and unfolded in two stages:

- In-lab introduction: Participants learned basic VR handling, fitted the headset correctly, and received safety and comfort information.
- In-VR familiarisation: After joining the [MeetinVR](#) room, participants spent several minutes practicing navigation, interacting with whiteboards and pens, and adjusting to the environment.

A short break was scheduled early in each session to prevent early fatigue, especially among participants with limited VR experience.

4.3. Execution of Workshop Sessions and Innovation Task

The VR workshops followed a structured sequence that aligns with the conceptual flow defined in section 3.2.2. While the exact timing and focus varied slightly between sessions, each workshop incorporated an **introduction**, a hands-on **familiarisation phase**, an **input segment**, a **collaborative ideation block** in VR, and a concluding **feedback round**.

During the introductory phase, participants were welcomed, briefed on the aims of the session, the [VReduMED](#) project, and supported in onboarding into the VR environment. The hands-on familiarisation phase allowed participants to practice navigation and tool handling before entering the main session flow.

Once all participants were securely connected in the shared [MeetinVR](#) room, the session continued with an input segment from VR experts. Presentation materials were displayed directly inside the VR environment on a large virtual screen to ensure all participants regardless of their geographical location could follow the content clearly.



Figure 3 Presentation of slide sets in the VR meeting room using the virtual screen from VR expert, for inspiration of the upcoming innovation session

The central part of each workshop consisted of the VR innovation session. Participants were assigned to breakout areas within [MeetinVR](#), where they worked together at virtual tables. Here they completed the innovation task, which involved selecting a scenario from nursing, care education, or MedTech and collaboratively sketching it using VR pens. This setup enabled focused group work and supported natural co-creation within the immersive environment.

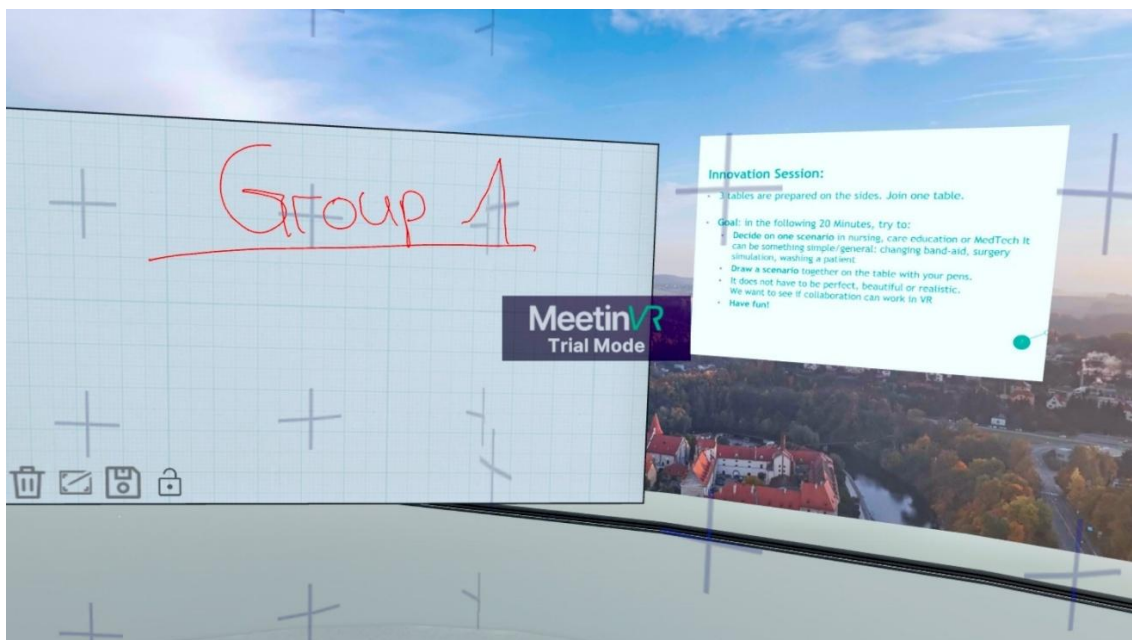


Figure 4 Innovation task in a breakout area: participants are divided into groups and working together on a shared virtual table. The task is pinned next to the whiteboards so that participants can look at it again.

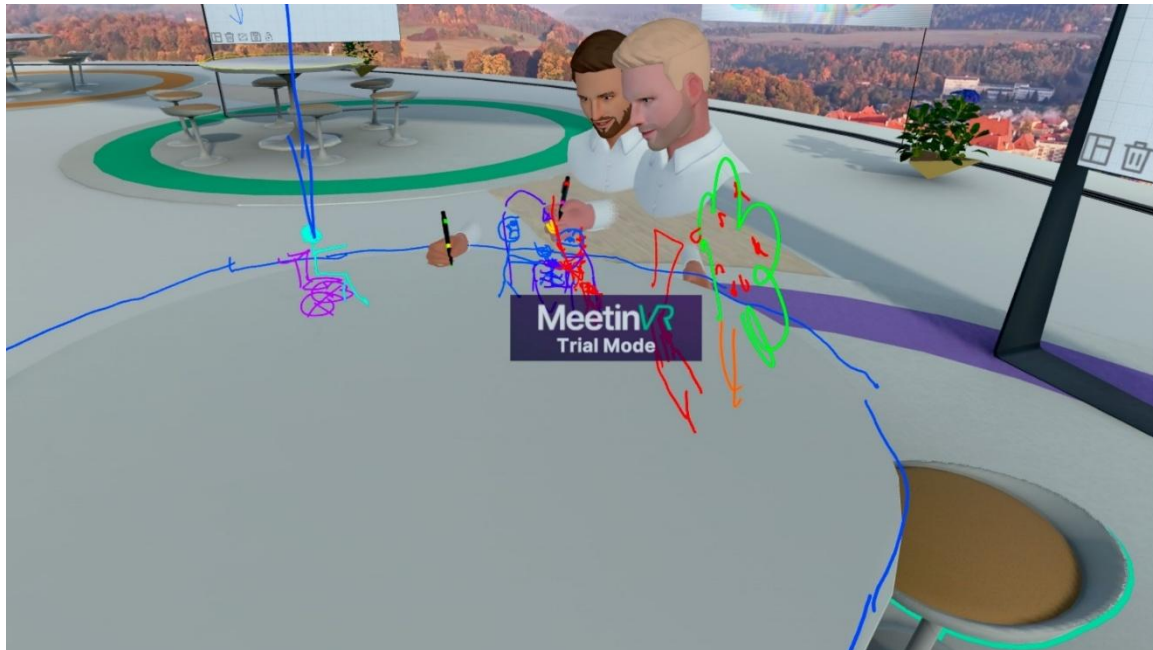


Figure 5 Collaborative sketching and scenario development during the innovation task

After the ideation phase, all participants had the possibility to reflect on the outcomes and share feedback on usability, comfort, and perceived value of the VR setting. This final exchange supported the evaluation of the session and provided important input for the workshop format.



5. Findings and Recommendations

The three VR-based workshops conducted within [Pilot Action 2](#) generated several practical insights concerning technical performance, user comfort, content-related aspects of collaboration, and the effectiveness of tools within the virtual environment. The following sections summarise the key findings and resulting recommendations.

5.1. Technical Aspects

A **stable and fast internet connection** proved essential for the smooth operation of the VR workshops with multiple participants. During one of the sessions, the virtual room collapsed due to insufficient bandwidth, forcing the group to switch to Microsoft Teams as a temporary backup solution. Slow connections also affected the loading times of 3D models, which significantly delayed parts of the workshop flow.

Based on these experiences, it is recommended to:

- Ensure **high-speed internet** at all involved locations.
- **Meta Quest 3 devices** are preferred over older generation for better frame rate
- Include a **backup communication channel** (e.g., MS Teams) in the planning to maintain contact in case of connection failures.
- Allow **additional time for loading heavier VR assets** such as 3D models, or preload them prior to the workshop.
- Provide an **external display** (screen or projector) streaming a participant's VR view, so that on-site staff and observers can see what participants are viewing in real time and provide immediate guidance if questions arise or issues occur.

These considerations are particularly relevant for future VR-based sessions with multiple participants joining from different regions.

5.2. Participant Health & Comfort Aspects

The Meta Quest headsets provided a comfortable fit and were generally suitable for longer sessions. However, experience from the workshops showed that extended or continuous VR usage can lead to **eye fatigue** and symptoms of **motion sickness**. These observations were consistent with feedback from earlier VR activities in the project.

To address this, the agenda frequently included **regular breaks**, which allowed participants to rest and return to the session refreshed. The breaks were particularly important for users without prior VR experience.

Recommendations include:

- Integrating scheduled breaks into the workshop structure.
- Monitoring participant comfort throughout the session.
- Providing clear guidance during onboarding regarding how to handle discomfort.



5.3. Content-Related Observations

The presentation of slides within the VR environment worked very well and supported clear, structured communication. The use of defined **breakout sessions** for ideation tasks proved effective, offering participants a quiet and focused space to collaborate without interruptions.

However, it took some time for participants to familiarise themselves with the available tools, especially the **VR pens** used for writing on virtual whiteboards. After a short adjustment period, participants were able to use the tools effectively, but onboarding and practice time remain essential components of the workshop setup. Based on the observations from the workshops, the following recommendations are derived:

- **Allocate sufficient onboarding time** to allow participants to familiarise themselves with VR tools, the pens used for writing and drawing on virtual whiteboards.
- **Provide a short, guided tool-practice phase** before starting ideation tasks, ensuring that all participants can use the VR interaction features confidently.
- **Use clearly defined breakout rooms** for ideation, as they support uninterrupted and focused collaboration.
- **Continue using slide presentations in VR**, as they proved effective for communicating information and structuring the workshop flow.
- **Offer quick support during the tool-learning phase**, especially for participants with no prior VR experience.
- **Keep instructions concise and visual**, as this helps participants navigate and operate the tools more easily within the virtual environment.

5.4. Tools Identified as Useful

Several tools within the VR environment were highlighted as particularly valuable:

- **Virtual presentation screen**, which supported clear slide-based inputs.
- **Pens**, enabling participants to draw and write directly in the virtual space.
- **Logo and asset loading**, which allowed the inclusion of visual materials relevant to the workshop content.
- **Documentation tools**, such as screenshots and videos, allow hosts to document workshop progress, capture visual outputs, and revisit the virtual room after the session for follow-up analysis or subsequent workshops. These tools enhanced the collaborative experience and contributed to a more natural, hands-on form of interaction.

5.5. Contribution of the Workshop Format to VR Adoption in Care Education

The workshop design tested within [Pilot Action 2](#) can serve as a scalable and transferable format for introducing VR technologies into care education. By enabling participants to interact directly with VR tools, collaboratively develop care-related scenarios, and become familiar with immersive learning environments, the workshops create a practical bridge between innovation and educational application.

The structure of the workshops, particularly the onboarding, scenario-based ideation and hands-on tool usage, offers a blueprint that educational institutions can adopt to explore new teaching formats, stimulate digital competencies in learners, and support the integration of VR-based training modules into curricula.