MediaVerse

A universe of media assets
and co-creation opportunities

D7.2

Evaluation Methodology and Intermediate Validation Activities Report

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Abstract	The deliverable describes a common framework for the evaluation for pilot phase 1. It also presents a compilation and analysis of intermediate results gathered from the use case pilot activities.

Keywords	Evaluation, Pilots

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Glossary

ABBREVIATION	MEANING
ACSI	American Customer Satisfaction Index
ADL	Activities of Daily Living
AR	Augmented Reality
CCT	Cultural Centre of Thermi
CJ	Citizen Journalist
CMS	Content Manager System
CST	Consorci Sanitàri de Terrassa
CSUQ	Computer System Usability Questionnaire
D	Deliverable
DoA	Description of the Action
ERL	Experience Readiness Level
EUIT	Escola Universitària d'Infermeria I Teràpia Ocupacional
FG	Focus Group
GDPR	General Data Protection Regulation
IADL	Instrumental Activities of Daily Living
ICT	Information and Communications Technology
IJE	Immersive Journalism Experience
IPFS	InterPlanetary File System
ISO	International Standards Organization
KPI	Key Performance Indicators
M	Month
MV	MediaVerse

MVNI	MediaVerse Network of Interest
NFT	Non-fungible Token
NGM	Next-Generation Media
NGO	Non-governmental organizations
SUS	System Usability Scale
TBD	To Be Discussed
UC	Use Case
UEQ	User Experience Questionnaire
UI	User Interface
USE	Usefulness, Satisfaction and Ease-of-Use
WP	Work Package
XR	Extended Reality

Table of Contents

Index of Figures

Index of Tables

Executive Summary

This deliverable presents a common framework for MV evaluation actions, focusing on pilot phase 1, and presents and analyses the results of pre-pilot actions and pilot phase 1 actions.

Section 1 contextualises the document and establishes its relationships with D7.1 - Pilot description and planning[1].

Section 2 summarises the global methodological approach, which is user-centric, iterative, and flexible. It clarifies the main aim of pilot actions and highlights the five key questions the evaluation methodology seeks to reply to: what will be tested, where, when, by whom, and how. The pilots aim to evaluate the user experience when using the MV platform, focusing on four main pilot categories: administration, creation, publication, and monitoring. We list the relevant objectives when designing the methodology and present their associated KPIs. Then we summarise the three use cases (citizen journalism, co-creation of new media formats, hybrid intelligence experimental artwork series) and also refer to actions with external users. In addition, we present the timing for the different pilot actions, and an overview of the users and roles (administrator, manager, producer, and consumer) linked to the different pilots, describing the shared demographic questionnaires designed for the MV project. As for how the evaluation activities take place, we refer to procedural aspects, such as the development of spreadsheets to keep track of the actions, but also to the evaluation methods. Two protocols have been developed: a) a protocol for focus groups and b) a protocol for user experience testing. The selected metrics for the evaluation activities are also justified and presented. These are integrated into the MV questionnaire that will measure the usability, usefulness and satisfaction of the users involved in pilot actions.

Furthermore, Section 3 provides an overview of the pilot activities carried out so far, including both pre-pilot actions and pilot phase 1 actions. Focusing on pre-pilot actions, we describe the guiding questions, the demographics of the participants and the main results agreed in the seven focus groups that were gathered in this initial stage. As for pilot phase 1, we report actions across the different use cases, in which the MV questionnaire allowed partners to gather quantitative input about usability, satisfaction and usefulness but also qualitative feedback and further recommendations that are translated into user requirements in WP2.

Finally, some general insights and a summary of the pilot action findings conclude the document.

[1] https://mediaverse-project.eu/wp-content/uploads/2021/10/MediaVerse_D7.1_Pilot-Description-and-Planning_V1.0.pdf

1 Introduction

The MV platform are demonstrated in several scenarios in a series of tests under WP7 (Large-sale demonstrators and pilots). The scenarios are diverse, but D7.2 aims to present a common evaluation framework for the pilot actions. Additionally, it provides a compilation and analysis of intermediate results gathered from use cases and ad hoc scenarios in T7.5. This document is based on D7.1 - Pilot description and planning[2], where a brief overview of the methodological approach was suggested.

The common evaluation methodology presented in this document will be used across the different pilot actions in the three use cases, namely:

- Use case 1: Citizen Journalism, led by STXT with participation from CERTH, FIN, and DW.
    - UC1.1 Citizen Journalism.
    - UC1.2 Immersive Journalism.

In this use case, citizen and freelance journalists use the MV platform to upload journalistic content and enhance it with additional tools. Publishers can then reuse this content in their own channels taking into account the licensing assigned by the journalists.

- Use case 2: New formats of co-creating media, led by UAB, with participation from CERTH.
    - UC2.1 Co-creation and 360° storytelling towards social inclusion for vulnerable populations.
    - UC2.2 Understanding production/distribution/monetisation of media accessibility assets for 2D.

In this use case, 360º content is developed in different scenarios with a social perspective, from children in socio-economic vulnerable situations co-creating content that enhances their skills to facilitators from an association developing 360º content to make daily activities easier for persons with cognitive disabilities. Additionally, the use case considers accessibility-related aspects at a conceptual level, mainly dealing with the production, distribution, and monetization of media accessibility assets.

- Use case 3: Hybrid intelligence experimental artwork series, performed by AS.
    - UC3.1 The notion of truth in (social) media.
    - UC3.2 The notion of fragmented narrative.
    - UC3.3 The character of media bots.
    - UC3.4 Recent transformations in broadcasting.
    - UC3.5 Recent transformations in broadcasting 2.

Use case 3 deals with the results of human interaction with artificial intelligence and focuses on artistic experimentation taking a critical approach to social media. Five different experiments are planned during the MV project.

The methodology presented in this document is also used in the *ad hoc* scenarios developed under T7.5, which do not fall strictly under any of the use cases above.

Despite the diversity of user profiles within each of the use cases and the specificities of each pilot scenario, a global framework for the evaluation was sought, both for pilot phase 1 and pilot phase 2. As stated in the Description of the Action (DoA), a structured way of gathering data from users and the definition of quantitative

[2] https://mediaverse-project.eu/wp-content/uploads/2021/10/MediaVerse_D7.1_Pilot-Description-and-Planning_V1.0.pdf

and qualitative metrics will allow for a deep analysis of the pilot results and the extraction of sound conclusions from a large number of participants.

This document focuses on the evaluation methodology for pilot phase 1, as the evaluation methodology for pilot phase 2 is due in January 2023. It also reports on the results of pre-pilot and pilot phase 1 actions, which have allowed us to gather user requirements and identify scenarios in which the MV platform can be used. Pre-pilot actions were based on focus group discussions. Pilot phase 1 actions have followed the methodology defined in Section 2 and collect information about usability, usefulness, and satisfaction.

2 Evaluation Methodology

The evaluation methodology was presented as an internal deliverable already in M16 (January 2022). This section reproduces the content of the internal document, with minimal updates. The evaluation methodology focuses on general aspects and the specificities of pilot phase 1.

2.1 Methodological Approach of the Evaluation

The global methodological approach of MV is based on several core concepts.

First, it adopts a user-centric approach. Pilots are a great opportunity to understand how end-users behave when using the MV platform and how the technology performs in realistic scenarios. By focusing on the users and their needs, systems can be made more usable and useful, and user satisfaction and accessibility can be improved (ISO 9241-210:2010).

Second, the approach is iterative. The results from intermediate validations allow for the identification of further user requirements and inform subsequent rounds. In this sense, pre-pilot actions allow for the gathering of information to assess the project's next steps in pilot phase 1 from M19 to M21. In the same way, results from pilot phase 1 can refine user requirements and support the preparation of pilot phase 2.

Third, it is a flexible evaluation approach since it is open to being revised and updated in an agile manner throughout the whole pilot execution as the project evolves and it can be adapted to the specificities of each use case. It is also scalable as it goes from smaller-scale pilot actions to a final large-scale pilot.

The **main aim** of pilot actions is to demonstrate and validate the MV platform in different use cases. To this end, a sound methodology was needed in order to evaluate the MV platform across different use cases and scenarios. To this end, the proposed global methodological framework is based on five **key questions**: what will be tested, where, when, by whom, and how.

- **What?** The MediaVerse platform, which includes core MediaVerse technologies.
- **Where?** In three use cases and associated scenarios, and ad-hoc usage scenarios.
- **When?** In two pilot phases.
- **By whom?** By different end user groups according to the use case.
- **How?** Following a shared methodology across pilots.

All the previous questions are developed in the following sections.

2.2 What: The MediaVerse Platform

Pilot actions mainly focus on evaluating the user experience when using the MV platform. Technical validation is performed before the pilots, but it is outside the scope of this deliverable. The user experience is generally related to the four pilot categories identified in D7.1: administration, creation, publication, and monitoring.

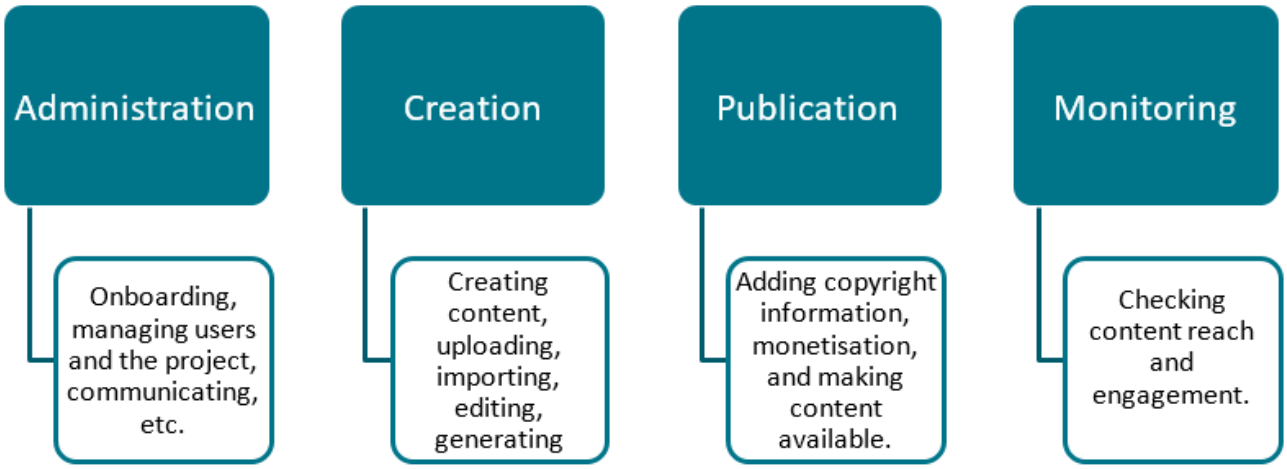

Figure 1: Pilot Categories

When developing pilot actions, the users will perform different tasks depending on their profile and role in each specific use case scenario. The tasks will fall under the four main pilot categories identified above. Therefore, in the protocol to be developed for each pilot action, partners are asked to inform about the user profile and the pilot categories that are addressed.

Some other concrete goals for the developed platform and technologies are also set by the KPIs in the DoA. Beyond the general categories shared across pilots, each use case may adopt specific solutions linked to the MV platform: for instance, use cases 1 and 2 use the XR authoring tool FADER whereas use case 3 uses the authoring tool VRodos. This is in line with the objectives and performance indicators related to the evaluation methodology included in the DoA (see Table 1).

Table 1: Objectives and Related KPIs Linked to the Evaluation Methodology

OBJECTIVE	ASSOCIATED KPI
Provide a decentralized framework of next-generation interconnected digital asset management systems (i.e., MV nodes) for the communication, the query-driven management and exchange of media content at both node- and network levels, with integrated content adaptation services to ensure optimal distribution.	user satisfaction (4/5) measured by the Likert scale
Provide tools that foster accessibility-by-design content creation and enrichment.	user satisfaction (4/5) measured by the Likert scale
Provide innovative XR authoring tools for cost-effective production of immersive media experience.	user satisfaction (4/5) measured by the Likert scale; enable non-experts to build immersive experiences that previously failed to do so

There are also some objectives and KPIs in the DoA linked to pilots that will need to be considered when designing the methodology (see Table 2).

Table 2: Objectives and Related KPIs Linked to Pilots

OBJECTIVE	ASSOCIATED KPI
Perform large-scale pilots with diverse stakeholders and end users.	number of end-users involved in pilots (content creators: ~900; media consumers/prosumers: ~3500); parties engaged in external pilots: ~20 organisations/companies, ~100 individuals.
Improved users' experiences and new solutions for access to media content	user acceptance of next-generation media based on questionnaires (>85%)

Moreover, there are some objectives with related KPIs linked to the use cases (see Table 3), also from the DoA.

Table 3: Objectives and Related KPIs per Use Case

USE CASE	OBJECTIVE	ASSOCIATED KPI
Citizen Journalism	i) connect across media silos; ii) connect content platforms across Europe; iii) generate a new eco-system consisting of a content hub network; iv) engage and attract software engineers and SMEs across Europe to MediaVerse.	Number of content creators/ audience (3,000 creators via communication channels/500 pilot participants via the Hackathons performed. Audience will be SwissInfo viewers, Swiss people outside Switzerland, people interested in Swiss society); type and volume of content/licensing models (15,000 videos –per annum--, rising by more than 100% within the project. Free to consume and republish for a specific period, reuse for commercial providers with pricing model: 45,000); native language of content (Swiss languages, i.e. German, French, Italian, Romansh and English).
New formats of co-creation media	i) explore MediaVerse co-creation and immersive authoring potential with non-professional users; ii) deploy and validate accessibility tools[3]; iii) use of media content production tools for educational and social purposes; iv) engage multiple profiles of users in the pilot to validate it from different perspectives.	Number of content creators/audience (400+ participants at Campus ITACA)/other audience might be involved (i.e., UAB students, the external audience connected with content creators), extending the audience in ~50; type and volume of content/licensing model (footage of different length –40—and full videos made accessible –10—/free); native language of content (Spanish, Catalan and English)
Hybrid intelligence experimental artwork series	i) implement the ICT and Art integration methodology; ii) implement the Experience Readiness Level (ERL); iii) integrate a critical, holistic and humanistic approach to user-driven social media; iv) engage the STARTS community in the MediaVerse experiments.	Number of content creators/audience (selected artists from the STARTS community. Audience: Global STARTS community and wider MediaVerse, number TBD); type and volume of content/licensing model (to be decided through the implementation of the art integration methodology. Licensing model to be decided based on artists' input); native language of content (English).

[3] D7.1 presented the change of approach of UC2 pilot, which will focus on two main aspects: a) co-creation of 360º media content, and b) rights management of media accessibility assets. Thus, UC2.2 is now focused on understanding production/ distribution/monetisation of media accessibility assets for 2D, in which accessibility services will not be tested. Instead, it will discuss the copyright assignment and monetisation of accessibility assets.

The DoA also includes reference to other KPIs that may be considered for later evaluation actions (see Table 4).

Table 4: Other Objectives and Related KPIs

OBJECTIVE	ASSOCIATED KPI
Media professionals' productivity improvements about the decentralized framework of next-generation connected digital asset management systems)	Relative decrease in effort (time) spent on media production by 30%.
Improved productivity of media professionals and content creators (about the innovative XR authoring tools)	Relative decrease in effort (time) spent on media production by 30%.
Provide social feedback channels to the creative editorial process and immersive co-creation opportunities, to leverage the collective potential of groups in generating insights and innovation.	Latency of analytics, the usability of analytics dashboard, stakeholder's satisfaction measured by time (for latency) and Likert scale (for usability), user satisfaction, and examination of VR social space. Measured through usability and by Likert scale.

2.3 Where: Use Cases

Pilots will take place in three use cases, with different scenarios, and in actions with external users and NGM projects. To summarise the main features per use case, we reproduce Tables 5 to 8, originally included in D7.1.

Table 5: UC1 Citizen Journalism Pilot Scenarios: Main Features

PILOT SCENARIO	USERS	USER DESCRIPTIONS	PILOT CATEGORIES	TECHNOLOGY
UC1-1	Producers (professionals and non-professionals).	Citizen journalist, freelancer producing user-generated content.	Administration, Creation, Publication and Monitoring	Media Production (CJ-App), Accessibility toolset
	Publisher	Private media publisher, public broadcaster		
UC1-2	Producers (professionals and non-professionals).	Citizen journalist, freelancer producing user-generated content.	Creation, Publication and Monitoring	Media Production (CJ-App), Accessibility toolset, Immersive storytelling toolset
	Publisher	Private media publisher, public broadcaster		

Table 6: UC2 Co-creation of New Media Formats Pilot Scenarios: Main Features

PILOT SCENARIO	USERS	USER DESCRIPTIONS	PILOT CATEGORIES	TECHNOLOGY
UC2-1	Administrators and producers Professionals and non-professionals	Som-Fundació. Facilitators + professionals	Administration, Creation and Publication	Immersive storytelling toolset
		Young migrants + professionals.		
		Young students + professionals from CROMA/EUIT.		
UC2-2	Producer	Professional and non-professional access services providers.	Publication	Accessibility toolset

Table 7: UC3 Hybrid Intelligence Experimental Artwork Series Pilot Scenarios: Main Features

PILOT SCENARIO	USERS	USER DESCRIPTIONS	PILOT CATEGORIES	TECHNOLOGY
UC3-1 **UC3-2** **UC3-3** **UC3-4** **UC3-5**	Artists, Amateur Creators, General Public	MV Partners STARTS community General Public	Administration, Creation, Publication and Monitoring	Media Production (AS-app) Immersive storytelling toolset, Accessibility toolset, Copyright management toolset

Table 8: External Users and NGM Projects Pilot Scenarios: Main Features

PILOT SCENARIO	USERS	USER DESCRIPTIONS	PILOT CATEGORIES	TECHNOLOGY
Ad hoc*	Any user, individual/organisation interested in MV tools & activities (e.g., media artists, industry, Journalists, Producers, Publishers, Content Creators, Developers)	MV Partners, MVNI, other NGM and partner projects	Administration, Creation, Publication and Monitoring	MV technologies (e.g., media annotation and storage, exchange, retrieval, rights management, accessibility authoring, and immersive authoring)

**The nature of this activity is opportunistic by design. As a result, the pilots may adopt one of the existing use case scenarios in any of UC1/2/3 or follow new ad hoc scenarios, defined in line with the project developments.*

2.4 When: Timing

The main pilots take place in two phases. Phase 1 lasted from M13 until M24, with the pilot execution taking place in M19-M21, following the first platform release (Figure 2). Pilot 1 was preceded by a series of pre-pilot actions in November and December 2021. UAB had already organized some initial pre-pilot actions at the beginning of the project, in November 2020-May 2021.

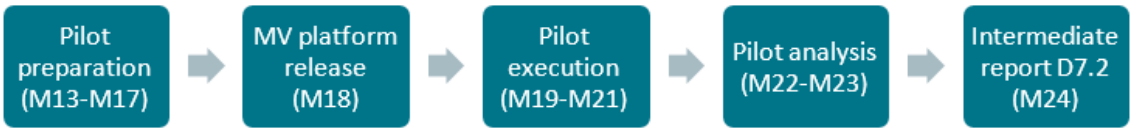

Figure 2: Pilot Phase 1

Phase 2 develops from M25 until M36. It originally included a short period for pilot execution (M34-M35) and pilot analysis (M35-36). Due to the risk of performing and analysing pilot results in such a short period of time, the timeline has been updated as shown in Figure 3. Pilots will start earlier, even if this means that in some cases an earlier version of the platform will be tested. This is necessary to adapt to the timelines of the different stakeholders involved in piloting.

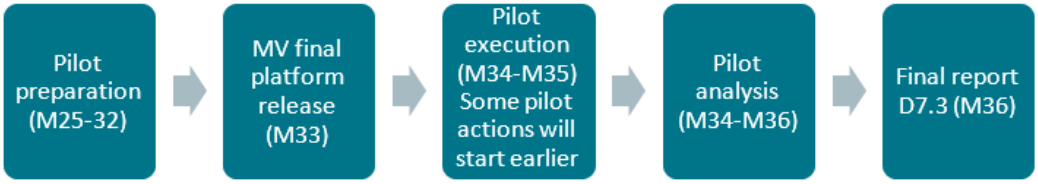

Figure 3: Pilot Phase 2

2.5 By Whom: Users

This section describes the profiles of the users that will participate in the evaluation actions and presents the shared demographic questionnaire.

2.5.1 Users

D7.1 established different user roles, namely:

- Administrator: a user who administers a node
- Manager: a user who manages a project
- Producer: a user who creates content
- Consumer: a user who consumes content

Focusing on the use cases and *ad hoc* actions with external users, a wide variety of user profiles were identified:

- For UC1:
  - Professional journalist
  - Non-professional journalist
- For UC2:
  - Professional facilitator, i.e., person managing a group (of students, persons with cognitive disabilities, of persons in a socioeconomic position of vulnerability, etc.)
  - Non-professional facilitator
  - Professional content creator
  - Non-professional content creator (for instance, students)
  - Professional teacher
  - Professional translator or access services creator
  - Non-professional translator or access services creator
- For UC3:
  - Professional artist
  - Non-professional artist
- For external users and NGM projects:
  - Any user, either individual or an organisation interested in MV tools and activities
  - Creators of multimedia content
  - Journalists
  - Digital media artists
  - Industrial media players of all sizes (from small agencies to large broadcasters).
  - Producers
  - Publishers
  - Content creators
  - Developers of third-party applications

Depending on each pilot, on the specificities of the use case and on the scenario being piloted, the focus will be put on a user profile with a specific user role, which may be carrying different actions. For instance, a non-professional artist (profile) may be a producer (role) who creates and publishes content (pilot categories). A professional artist (profile) may be a manager and producer (roles) who creates a new project, publishes content, and monitors its reach and engagement, covering different pilot categories. The possibilities are many and for each specific pilot action, the target users and pilot categories to be covered will need to be clearly identified.

2.5.2 Demographic Questionnaire

To gather information about the users who take part in the evaluation, a shared demographic questionnaire was developed by partners. The following premises were followed in their preparation:

- Demographic information should be kept to a minimum to a) avoid long questionnaires that may make participants to drop out; b) minimise the collected personal data, following GDPR.
- The questionnaire should be gender-sensitive and give participants the possibility to not reply to the gender question or to select a non-binary option.
- The most relevant information across pilots was deemed to refer to: a) profile, and b) technological proficiency with social media, tools, and blockchain.

After different revision phases, the result is a short questionnaire with the following fields:

- Activity code: individual code for each activity
- Participant code: individual code for each participant
- Gender: female/male/other/I prefer not to say
- Age: 18-30, 31-40, 41-50, 51-60, +60
- Profile:
    - For UC1: Professional journalist / non-professional journalist
    - For UC2: professional facilitator / non-professional facilitator / professional content creator / non-professional content creator / professional teacher / professional translator or access services creator / non-professional translator or access services creator
    - For UC3: professional artist / non-professional artist
    - Other: (open field, in case someone does not identify with any of the previous ones)
- How often do you use the following (options: never, occasionally, at least once a month, at least once a week, every day):
    - social media (for instance, Twitter, Facebook, Instagram, TikTok)
    - video editing tools (for instance, Adobe Premiere)
    - accessibility tools (for instance, subtitling editor)
    - blockchain technologies (for instance, Ethereum)

The questionnaire has been translated into the participant languages and also converted to an online format.

2.6 How: Methods

Any pilot activity needs to follow ethical procedures designed and documented under WP1. For all pilot activities two documents need to be created: a protocol and a report. These documents are based on the templates created for each evaluation method. To keep track of all activities and documents, two shared spreadsheets were created.

- A list of all WP7 documents
- A list of all pilot actions. This list was designed based on a D7.1 proposal, revised and improved after partner discussions:
    - Pilot action code
    - Date
    - Pilot scenario

- Leader
- Number of users
- Method
- Link to protocol
- Link to results
- Comments

2.6.1 Evaluation Methods

Two main methods were identified for MV pilot and pre-pilot actions.

Focus groups

A protocol for focus groups was developed describing the activities to ensure that all focus groups would be conducted in the same manner for better comparability. The protocol includes a template to be used when designing a focus group and a template for reporting on a focus group results (see Annex I).

User Experience Evaluation (UXE)

The partners received an introduction into the methodology of the UXE and a protocol was developed including a template both for the preparation and for the reporting (see Annex II).

2.6.2 Evaluation Metrics

The evaluation approach is based on three main concepts: usability, satisfaction, and usefulness. Our aim was to find a scale that was: a) standardised, to guarantee its reliability; b) short, to guarantee a higher response rate, and c) easy to analyse. UAB performed an analysis of different well-established scales and questionnaires for measuring the user experience (Tullis and Albert 2013), such as:

- System Usability Scale (SUS)
- Computer System Usability Questionnaire (CSUQ)
- User Experience Questionnaire (UEQ)
- USE (Usefulness, Satisfaction and Ease-of-Use)
- American Customer Satisfaction Index (ACSI)

Two scales were chosen (see Annex III): SUS (System Usability Scale), and two items from the usefulness category and two from the satisfaction category from the USE (Usefulness, Satisfaction and Ease-of-Use). The specific four items were considered to be the most comprehensive statements for taking the users of all UC scenarios into account. Although originally meant to be rated on a 7-point Likert scale, in the MV project they were adapted to the 5-point scales for consistency with the SUS ratings.

Usefulness

- It meets my needs.
- It does everything I would expect it to do.

Satisfaction

- I would recommend it to a friend.
- It works the way I want it to work.

The MediaVerse Questionnaire

Table 9 presents the MV questionnaire.

Table 9: MediaVerse Questionnaire

METRICS	ITEMS
5-point Likert scale	I think that I would like to use this system frequently.
	I found the system unnecessarily complex.
	I thought the system was easy to use.
	I think that I would need the support of a technical person to be able to use this system.
	I found the various functions in this system were well integrated.
	I thought there was too much inconsistency in this system.
	I would imagine that most people would learn to use this system very quickly.
	I found the system very cumbersome to use.
	I felt very confident using the system.
	I needed to learn a lot of things before I could get going with this system.
	It meets my needs.
	It does everything I would expect it to do.
	I would recommend it to a friend.
	It works the way I want it to work.
Open questions	What could be improved?
	Add any other comments

3 Intermediate Validation Activities

This section reports on: a) pre-pilot actions, and b) pilot phase 1 actions.

3.1 Pre-pilot Actions

Eight pre-pilot actions were carried out between November 2021 and February 2022. These actions aimed to gain information about user needs and expectations in relation to the MV platform concept in the different UC, gathering user requirements for the platform development and the subsequent pilot design.

Moreover, three initial pre-pilot actions for UC2 had already taken place between November 2020 and May 2021. These are not reported here as they aimed to define potential pilot activities and led to the redesign of UC2 scenarios.

The eight pre-pilot actions were developed as focus groups (FG), following the general protocol agreed by all partners (see Annex I). Four took place online, three were carried out face-to-face and one took a hybrid approach (both face-to-face and online). The languages used were German (2), Greek (1), Greek and English (1), English (1) and Catalan and Spanish (3). The materials used in all of them were:

- Ethical documents (information sheet; consent form; photo, video and sound recording consent form), translated to the corresponding languages.
- Demographic questionnaire, translated to the corresponding languages.
- MV presentation video[4] in English, Catalan or Spanish (with subtitles).
- MV dashboard presentation video[5] in English, Catalan or Spanish.

3.1.1 Guiding Questions

Shared guiding questions in the FG were agreed as a general framework to cover the four main pilot categories as described in D7.1, namely: administration, creation, publication, and monitoring. The guiding questions were as follows:

1. As a user, how would you like the MV platform to be?
    a. When creating content, what would you expect from the platform?
    b. When publishing content, what would you expect from the platform in terms of managing copyright and payment?
    c. When monitoring content, once it is published, what would you expect from the MV platform?
2. For what and how would you use the MV platform in your context?
3. What features would you expect your user profile to include?

Some rephrasing and slight changes in the order of presenting the questions to participants were introduced in each UC scenario. Specific questions to cater for the specificities of each UC were also included (see Annex IV).

[4] https://www.youtube.com/watch?v=puWOViP1PLk
[5] https://www.youtube.com/watch?v=WTklm9w0Dr4

3.1.2 Demographics

Pre-pilot actions in the form of focus groups involved a total of **46 participants**. Two FG were devoted to citizen journalism (UC1). The first one (07/12/21) was led by DW online and involved six participants (3 men, 3 women), proportionally distributed across age ranges: 31-41 (2), 41-50 (2) and 51-60 (2). These were professional journalists, specifically editors, whose main role was commissioning and receiving contributions from journalists, checking and approving them, organising payments, etc. Three were professional content creators, while three were non-professional artists. All report using social media daily, but the use of other technologies (accessibility, video editing, blockchain) is more diverse, with three using video editing and accessibility tools and one using blockchain technologies at least once a week. The second FG (07/12/21), led by STXT, involved seven men aged 31-40 (3), 41-50 (1) and 51-60 (3). All were professional journalists: two editors-in-chief, three freelance journalists, one in-house journalist and one former editor and current professor at a Swiss journalism school. Five also described themselves as professional content creators. Four reported using social media daily.

Three FG (by UAB) focused on the co-creation of 360º videos towards social inclusion. The first one (09/9/21, face-to-face) involved five women from Escola Universitària d'Infermeria i Teràpia Ocupacional de Terrassa (EUIT), a university school in Occupational Therapy and Nursing near Barcelona. Ages ranged from 31 to 40 (2), 41 to 50 (2) and 51 to 60 (1). They were lecturers and two coordinated university degrees. Three reported using social media daily and one using video and accessibility tools at least once a week. None was familiar with blockchain technologies. The second one (17/77/21, face-to-face) gathered four women and three men from Fundación CEPAIM, an association working with migrants. Age ranges were 18-30 (2), 31-40 (4) and 51-60 (1). They were lawyers and social inclusion facilitators. None used blockchain technologies, while only one used accessibility tools at least once a week. In relation to video tools, their usage was more diverse. Two were reportedly using social media daily, two at least once a week, one occasionally, and two never used. The third FG (24/11/2021) took place online with two female and three male facilitators (social workers, nurses) from Som-Fundació, an NGO working with persons with cognitive disabilities. Age ranges were 31-40 (3) and 51-60 (2). Three participants use social media daily, but one does not use it and one only occasionally. The use of video and accessibility tools is diverse. No participants use blockchain technologies.

In UC3, five participants were recruited: two female and three male participants, 25-40 years old. All work in different companies or are self-employed professionals and artists: one is a 3D motion graphic artist and digital content creator, one is an art director, one is an artist that works with digital tools and 3D objects, and two are creatives – freelance artists and graphic designers. They all use social media every day. Most of them do not use accessibility or blockchain technologies, although one uses blockchain technologies daily.

CERTH organised and led two additional FGs. In the first one (14/12/2021), two women and four men from the School of Journalism and Mass Communications were involved. Ages ranged 18-30 (2), 31-40 (3) and 41-50 (1). One worked at the department of communication and the rest described themselves as professional journalists. Five participants used social media every day and one at least once a week. Video editing tools were used at least once a month by three participants and occasionally by three participants. Regarding accessibility tools, three participants never used them and three participants occasionally. Five participants declared to never use blockchain and one stated an occasional use. In the second FG (15 and 23/02/22), two musicians and two actors from Cultural Center of Thermi, both professional and amateurs, discussed online how to make an immersive product with XR technologies that fits to the needs of actors and musicians. All were male, 41-50 (2) and 51-60 (2), who used social media daily. Two participants use video editing occasionally, one at least once a month and one at least once a week. Two participants never use accessibility tools, one at least one a month and one at least once a week. Regarding blockchain, two participants never use them and two use them occasionally.

3.1.3 Results

The shared goal in **UC1's pre-pilot actions** was to gain information about user needs and expectations of the MV platform concept in the context of citizen journalism.

Pre-pilot action by DW

During the session, the participants were happy to discuss the concept and generally liked it but started comparing it to existing tools and processes, asking where (or whether) the platform would be an added value and compatible with the existing tools. They were impressed to see what already seems to be possible after one year. The need for hi-end video editing would require similar collaboration in different tools and platforms. Any extra tool would have to be significantly better than the existing ones to be considered at all. On the other hand, many aspects they asked for had already been on the MV requirements list. When asked about how they would like the MV platform to be, participants stated that a one-for-all solution would be perfect, i.e., a platform that covers all (or at least many) of the tasks they perform on many different platforms. They expressed their will to connect with legacy systems instead of having to transfer/copy data from one tool to the other. Ideally, the platform should include the following solutions: storage, collaboration (co-creation), licensing, and analytics. As far as editing is concerned, cutting red tape should be quick and simple. The process should be easy to use and should explain complex situations (e.g., licenses). The platform should also need to be useful for communication and exchange in both directions: management of contributions from journalists and distribution of content. It should offer a stable performance. Table 10 includes the main findings from this activity.

Pre-pilot action by STXT

In this FG the participants were quite doubtful about the usefulness of the platform for their current work. They struggled to see a relevant use case in their work with the platform. They wondered why they would want to upload content on the platform without knowing who will use their content; as journalists, they want full control over their content (e.g., who uses it, how). As editors, they want to know exactly who their source is to be able to check facts and trust the person. Trust between publishers and journalists seems to be a key factor and it is built through their networks, personal contacts, common experiences, etc. They doubted that they could build this through the platform. In this context, it was difficult to discuss requirements for precise functions of the platform as participants always shifted back to the basic purpose of the platform. When asked about whether they currently create 360° videos, none of them seemed to use them and mentioned they are used only “on vacation home rental websites in Switzerland so far”. Also, they all had very little experience with cryptocurrency, and none currently had a cryptocurrency wallet. Table 11 includes the main findings from this FG.

Table 10: Main findings from DW pre-pilot action

PROFILE	CREATION	PUBLICATION	MONITORING	USE OF MV PLATFORM
*Admins should be able to manage roles and permissions. *Option for anonymous contributions, especially for investigative journalism where informers do not want to give away their sources (agreed on difficulty regarding fact checking). *Not all editing steps must be visible for all co-creators; roles and permissions should be clearly separated (contributor/creator vs. editor).	*Starting a call to action when looking for content about a certain situation or person. *Fact checking. *Collaboration on various levels: planning, communication, co-editing. *Uploading raw, unedited files, so that others can work on them. *Sharing scripts in the platform, so there is no need for multiple tools side by side. *Comments in the content (attached to time code). *Upload and create on the platform and see what others are doing or have done, incl. preview of 360 content. *International collaboration and communication. Journalists try to avoid flying, so they commission local production teams. *Re-using existing metadata (contributors, creators, licenses...) (existing tool has it). *Applying DW design. *Approval mechanism: shared editing, but only certain people have permission to publish. *Integrated fact checking.	*Easy to track which parts of the content have been re-used and who contributed which piece. *Distribution platform for 360 video content (currently we can produce something but always have to find a way to also make it available to the public). *Publishing directly to DW website would be great (if MV is only for production and results need to be ingested in DW CMS, it is another extra tool).	*Analytics should show which (parts of) content have been re-used by others. *Data of existing apps (StoryClash, CrowdTangle) should be usable, visible in the platform. Otherwise, it would be just another tool.	*Bring together the different creators in one platform (journalists/reporters, editors, subtitlers). *Manage and organise content contributions from call for content to distribution.

Table 11: Main findings from STXT pre-pilot action

PROFILE	CREATION	PUBLICATION	MONITORING	USE OF MV PLATFORM
*As trust is a major aspect for collaboration between journalists and publishers, they would need to find information about the sources to build that trust (e.g., the person's publications, reference projects, media titles).	*User guidance should be extremely clear, for example when uploading a file, users should be guided step by step through the different entry fields that need to be informed to avoid any omissions.	*Automatic fake check is not sufficient. Automated plagiarism checks are far from being enough to trust a content. Really certified contents that you can trust would be of great value. *Users wonder how they would be able to fix prices for their content if they offer it	*Possibility to archive content.	*A collection of journalistic fragments, more like a stock platform, may be relevant rather than complete journalistic stories.

Normally participants build collaborations through their personal networks (recommendations, people they have worked with, personal discussions, etc.), the platform would need to find a way to build this trust. *Information about the person's profession (e.g. is it a trained journalist?), that should also be controlled/somehow certified on the platform. *Possibility to create closed groups within the platform so that they could build their own circle of trust where they can share content with people they trust.	*International collaboration and communication. Journalists try to avoid flying, so they commission local production teams. *Automatic translation to get an overview about a content. For publishing content in a different country, it is necessary to adapt the content to the target context anyways (which may be the job of correspondents in the country). Therefore, automated translation has only limited usefulness. *A platform that unites all the different editing tools they currently used separately would make their content creation much easier (video editing, audio editing, image editing in one place). *Possibility for content creators to promote contents in an attractive way (e.g., with a visual, a short description a bit like on an ecommerce website), so that editors could browse through and find attractive contents to publish. Possibility to contact the source.	internationally on the platform. Price for a story tends to be higher in Switzerland than other countries. *As they mainly create exclusive content, it would be difficult to make it available on such a platform. When creating, they already know who will be publishing it. *Freelance journalists seem concerned to be paid in cryptocurrency, to them the value is too fluctuant. They also wonder how they will be able to declare these incomes to tax authorities. *Knowing the source is very important to the editors and they feel that this would not be given on the platform. From their experience of working with freelance journalists from non-democratic countries they doubt that they would have enough trust in such a platform to upload content. *Publishers say their problem is not to find quantity of content but content that is qualitative. Therefore, a tool that can guarantee quality of the content would be interesting rather than a large quantity of content.		

The shared goal for **UC2 pre-pilot actions** was to gain information about user needs and expectations regarding the MV platform concept, aiming at social inclusion in three different contexts: university students of Nursing and Occupational Therapy, migrants, and persons with cognitive disabilities.

Pre-pilot action by UAB (Nursing and Occupational Therapy School)

Participants were very engaged in this session. When asked how they would like the MV platform to be, they provided different suggestions: it should be usable on any device, especially on mobile phones, and it should be fully accessible (i.e., including all access services). It should be fast, with an intuitive and easy-to-use user interface that does not include much information. The information should be well-organised and clear, and the user interface should use big fonts and images. The platform should offer content related to the search and should be able to filter them by profile. Content should always be updated in a platform that participants would like to be dynamic. They recommend being able to choose the image quality and they also request a notification system that informs you that new content related to your area of interest is available. The name of the platform should be transparent, with a clear brand vision. Participants are interested in the platform being offered in many languages. They also think that an advertising filter should be included to avoid offering content with advertising purposes in the search results. Table 12 includes the main findings from this FG.

Pre-pilot action by UAB (association working with migrants)

The concept of the platform was very new to the participants, and it was not easy to come up with suggestions at the beginning, especially considering that some of their potential end users do not even have a mobile phone and mobile data connection or Wi-Fi access. Still, they saw that the platform could be used for multiple purposes. Table 13 includes the main findings from this FG.

Pre-pilot action by UAB (association of persons with cognitive disabilities)

In this case, participants were not interested in new technologies and social media but focused more on how the platform could be used within their institution. They do not think users with cognitive disabilities could use the platform on their own. In their view, the MV platform should be very easy to use, very visual, accessible, and intuitive. Table 14 includes the main findings from this FG.

Figure 4: Pre-pilot actions at CEPAIM (left) and EUIT (right)

Table 12: Main findings from UAB pre-pilot action 1 (Nursing and Occupational Therapy School)

PROFILE	CREATION	PUBLICATION	MONITORING	USE OF MV PLATFORM
*The profile definition should not prevent the user from accessing any other MV functionalities.	*Possibility of disseminating contents either globally or depending on the user profile. * Inclusion of an integrated editor with the following functionalities: editing any type of content: images, videos, etc.; adding icons, images, text, and changing colors, etc. in videos; adding different tracks in videos (music, voice, etc.); recovering work done; editing in real time. *No limitations in file size. *Possibility of choosing the language of subtitles. *Easy-to-understand tutorials (templates, demos, videos, examples).	*Inability to take screenshots depending on the selected license to prevent misuses or improper/ unlawful uses. *Inclusion of selectable filters: ethical filter, age filter, profile filter (e.g. midwifes); purpose filter (educational). *Clear explanation of copyrights, licenses and economic exploitation possibilities of content and impact on taxes. *The platform should never act as an intermediary with economic profits on the contents.	*Ratings awarded by the public. *Basic statistics (including graphics): visualisations and downloads by country, age, gender, etc.	*Students as creators and consumers. *Educational. *Raising awareness. *Behavioural videos. *Social reintegration videos. *Health promotion and prevention. *Social solutions to populations at risk of social inclusion

Table 13: Main findings from UAB pre-pilot action 2 (associations of migrants)

PROFILE	CREATION	PUBLICATION	MONITORING	USE OF MV PLATFORM
* The definition of the profile should allow the user to restrict the access as much as possible, ensure privacy and profile protection.	*Adding audio instructions for those who cannot read (in any language). * Sound editor with the functionality of adding musical notes and scores. *Adding as many languages and dialects as possible for the audio instructions.	*Transparent management of user copyright via the platform itself, not via an external app or website. * Possibility of adding personal bank details (such as bank account number), so that any copyrights may be directly received there. *High data protection and security. *Creating sort of PayPal within MV for the management of any copyright owed to persons who have no legal documentation or bank account (maybe in the form of vouchers, coupons, etc.).	*Basic aspects such as number of views, shares, downloads, content saved. *Content filter and/or alert system to detect fake news, racism, xenophobia, violent language, insults, etc. *Creation of guides for the establishment of such filters and/or alerts. *Preventing any person who has included forbidden content (mentioned above) from creating any other fake profile in MV.	*Educational: language training purposes *Visual guides and instructions to bureaucratic procedures. *Familiarise with physical and cultural environment. *Tool for young migrants to create their own narratives.

Table 14: Main findings from UAB pre-pilot action 3 (association of persons with cognitive disabilities)

PROFILE	CREATION	PUBLICATION	MONITORING	USE OF MV PLATFORM
*One administrator responsible for different users, who would be given different rights and permissions. *Whenever users upload content, the administrator should receive an alert or notification. *The administrator should be able to decide on the appropriate content licenses. *The administrator should be able to decide on when to make content public.	*Inclusion of a very easy-to-use editor to control the quality of the image, cut it, etc. *Tagging content (location, persons, age, sex, etc.). *Automatically categorising content depending on the tags. *Automatically sharing contents with users depending on their categorisation. *Automatically creating QR codes of contents to share them. *Sharing contents via mail. *Creating and uploading content from the mobile phone. *Storing other file formats (e.g. Excel files).	*Content should remain private until the administrator decides to make them public. *The administrator should decide whether to publish on a blog, newsletter, etc. and control copyright licensing.	No comments were made.	*Both internal videos for employees and external videos to explain their work and create a sense of belonging *Instructive videos on a wide array of topics (airport, bank, residence, etc.), *Social awareness. *Educational videos on: sexual abuse, independent life. *Videos showing natural places, cities, and different locations.

In UC3 pre-pilot actions, participants considered that the video presented with the MV concept is broadly clear, even for people who are not artists or not related to media and creative content creation. However, the video does not provide enough explanation on how the goal of MV would be achieved. Participants are interested in how this infrastructure and architecture will be running and how MV is going to be realistic to the point that it will sustain itself.

Artists ask how their content will be visible to other platforms, how marketplaces, brands and others will see their content and partner with them. Participants expressed some concerns as the project has a big risk of creating a database bubble. The question is how the real MV would work (as part of the blockchain movement) and how to make the process of visibility automated. People can manage copyrights and people, but how to connect to marketplaces, and places where the content can be distributed (metaverse) remains a key aspect.

Participants put forward a key question: are we a database (people come, upload and grab content) or are we a place for community, collaboration and where projects/content can be? Table 15 includes the main findings from this FG in related to the main axes.

Additionally, a specific question was added to this UC: “What kind of monetization solutions for content creation and distribution would you expect to have in the MV platform?”. The replies were:

- At least have basic wallet payments for my content. I expect the MV to have connections to (all) possible buyers and marketplaces. I upload the content there - can I move the content from there? MV should focus on building the ecosystem and connecting it to other ecosystems. MV should exemplify the partnership and monetize it. As a standalone platform, it will not survive. Make a prospect of all the projects doing this, e.g., Algorand (made a partnership with the copyright music institution in Italy - all the content they put online and created a verification system and enabled others to use the music).
- NFTs platforms already do that – help you sell your artworks. However, through MV I could have an assurance, a claim that the artwork is mine (for instance if someone steals my artwork from Instagram and tries to sell it to a NFT marketplace).

Table 15: Main findings from AS pre-pilot action

PROFILE	CREATION	PUBLICATION	MONITORING	USE OF MV PLATFORM
* Facebook/Instagram should not be used to access the platform: decentralisation and data protection are central in decentralised networks. * Categories should be clear and well structured: front end for a consumer is unclear and looks like the back end, from the content creator/publisher view. *Community feeling is missing: it seems a database to upload content without an audience. *A tag system is needed to put the user in categories that help the user be exposed to partners and brands. *Platform needs to give guidance: a system that detects what the content is about and helps in a more emotional and user-friendly manner where to connect the content. My profile should help me understand the fields I am interested in and on which I hold experience and knowledge. A tag system for my interests. In my 'feed' I would like to get posts from other users related to the tags. *The platform should make the process easier and more intuitive and accessible to everyone (not run on an algorithm. Pinterest is a good example).	*More flexibility on the 3D model platform, in terms of customising the stage (i.e. SketchFab). *Registration of asset should be performed under upload. The platform required a very good UX/Service team to build the interface.	*Age-appropriate content verification - to be curated (for example could be that users moderate new users). *The part where you upload and edit content before you upload it should be simplified (too many buttons and links). *Integration with wallet is not clear. It is one of the biggest game changers in the platform. Also, who pays for the blockchain upload? It is expensive to upload - do the users have to pay?	*Integration to other decentralised platforms. *Plagiarism checker is needed. The platform must recognize whoever is uploading the content is the author somewhere else (website).	*Currently, the participants perceive MV as a place where they can upload content, apply for a license, and claim the content as theirs. The platform provides a certificate that this content is theirs and they can prove using the database, by using the platform to help and claim their rights. However, it is still missing information of how it works, marketplaces, connections, etc.

Two additional pre-pilot actions took place as part of the **task with external users and NGM projects**.

Pre-pilot action 1 by CERTH

Participants welcomed the MV concept and were interested in seeing the added value and compatibility of the platform in comparison with existing tools and processes. They liked the possibility of one platform combining different tools. More specifically, they considered the MV platform should be a free-of-charge one-for-all solution, although some participants thought that it may be too ambitious to cover everything and suggested that the platform could focus on specific features such as content validation, collaboration (co-creation), licensing, user verification. Participants consider that processes should be quick and simple: complex situations such as licenses should be well explained and the interface should be easy to use. The MV platform would be useful for communication and exchanges in both directions: management of contributions from journalists as well as distribution of content. Interaction among users should be encouraged through a chat room, comments, or break-out rooms for co-creation. Finally, they put the focus on credibility: control for originality and authenticity of the content uploaded on the platform is central. Table 16 includes the main findings from this FG.

Figure 5: Pre-pilot action at CERTH

Pre-pilot action 2 by CERTH

This action was related to culture, namely how to make an immersive product with XR technologies that fit the needs of actors and musicians. When asked how they would like the MV platform to be, they mentioned that they would like different technologies and tools in one platform. Remote participation, i.e., a way for the actors to participate from their homes due to pandemic restrictions through MV Multiplaying 3D environment, was mentioned. There was a particular interest in the video storing service of MV nodes, as most of the activities of the Center are not disseminated, not exploited, and not preserved enough. The request for an easy-to-use platform was also mentioned in this action, whose participants focused on quality. The participants were interested in quality and commented on virtual production where 3D graphics can significantly increase the quality of the final result. One requirement was that the platform should be used with smartphone, and they would like its outputs to compete with Cinema movies and 3D games that attract today's audiences (e.g., through virtual production). Table 17 includes the main findings from this FG.

All the recommendations from all pre-pilot actions were transferred to WP2, where they were analysed together with the use case and the technical partners. They were translated, where relevant, into requirements and prioritised for technical development.

Table 16: Main findings from pre-pilot action 1 by CERTH

PROFILE	CREATION	PUBLICATION	MONITORING	USE OF MV PLATFORM
*The user (content creator) should be fully responsible for the content that he/she shares on the platform and to grant rights to other users, in a flexible way. *The user should have an updated profile on the platform with information, which can also be used as a portfolio (for the professional users). Users can search for other users in order to collaborate. *Two types of users: verified users and anonymous users. Each user should be able to become a verified user. Maybe two different interfaces, with different rights and facilities, depending on the type of user.	*Tool: sound recording into text automatically *Collaboration among users would be desirable on various levels: planning, communication, co-creation comments in the content *Use of multiple tools, all gathered together in the MV platform *Suitable for people with disabilities (e.g., automatic generation of subtitles)	*Automated control for content originality and authenticity. Fact checking tools would be desirable. *Licensing and copyright management. This will be useful for other sources to be able to use the content, automatically giving the credits to the content creator. *Connection with other platforms (direct or indirect). *Connection with media organisations and outlets to promote collaborations and directly use the published content after paying the creator. *Media organisations and outlets could also verify content as reliable. *Automatic generation of metadata and/or hashtags depending on the subject of the content.	*MV platform should serve also as a repository, where someone can find previous work and content, sort by content category or user profile (e.g., journalist, artist etc.). *Analytics should show which (parts of) content have been re-used by others.	*Bring together the different creators in one platform (journalists, reporters, editors, subtitlers). *Promote the professional users of the platform, increasing the opportunity to find potential jobs and collaborations through the platform.

Table 17: Main findings from pre-pilot action 2 by CERTH

PROFILE	CREATION	PUBLICATION	MONITORING	USE OF MV PLATFORM
No comments	*Actors should participate with low-end devices such as low-end smartphones or laptops, and these should not be stressed to the limits. The AI methodology to remove the background was stressing their devices a lot and it had artifact in segmentation. *The AI methodology to remove the background is replaced with a green screen methodology, much more lightweight and robust. Appropriate interfaces were made for removing green or blue backgrounds. Need for additional equipment for each user (e.g., a green screen, a tripod, etc.). *Multiplaying 3D environment: focus on the quality of the graphics-as they want a very realistic final product. *Easy navigation in 3D spaces. *Use of multiple tools, all together in the MV platform. *Real-time character of the application as all actors should be in one big stage with a big green screen background. *Easy to use- without specific equipment - WebVR application for users to participate through their selfie video stream from the smartphone or desktop and places all streams in one 3D environment. *The video streams of the actors within the 3D space do not represent the actual dimension of the user. There should be a way to change the panel dimensions. *There can be multiple actors in one stream, especially in the theatre stage of CCT. A quality camera is needed for streaming multiple persons from a higher distance, as well as a wider green screen background. *The video streams of the users are static within the scene, whereas there should be moving at least 4-5 steps to show some theatrical movement. *Various 3D scenes are needed apart from the Brig ship in the ocean demo scene.	*Publishing and storing high quality videos in the platform. * Suitable for people with disabilities (e.g., automatic generation of subtitles).	No comments	*Bring together the different creators (artists) in one platform. *It is of great importance the preservation and the monetization of cultural content through an electronic platform. This will remedy the losses that CCT faces from the diminishing of earnings from theatrical and musical plays due to pandemics.

3.2 UXE - Phase 1

A total **of 8 actions** took place in pilot phase 1, with 90 participants testing the platform and 66 more being involved in the use case analysis (total: **156 participants**). Specific protocols were developed for each action, based on the shared protocol (Annex II), and information on the MV platform and on the specific UC aim was collected. Each pilot action leader created specific reports. These reports have been the basis for the following sections, which describe the main characteristic and results for each pilot action. For external users and NGM projects, actions will start in the second phase.

3.2.1 UC1

Two pilot actions took place under UC1, one led by STXT and another by DW.

The pilot action by STXT aimed to assess the usability, user satisfaction and usefulness of the MV platform in the context of citizen journalism. To this end, specific evaluations were conducted involving the Citizen Journalism app, which is meant to create video content, which will then be uploaded in the MV platform.

After the standard introduction and project presentation, participants were introduced to the Citizen Journalism app and they were requested to do a series of tasks using this app, such as onboarding and uploading a video in the context of a peace or crisis demonstration. A specific questionnaire with open and close questions on a 5-point Likert scale was administered next, as follows:

- Please indicate to what extent you agree or disagree with each statement about the onboarding on Citizen Journalism app.
    - Onboarding helped me understand how the app works.
    - Onboarding helped me understand how the wallet works.
    - The Citizen Journalism App is easy to use.
- Overall, to what extent are you satisfied with the use of the Citizen Journalism App?
- How likely is it that you would recommend the Citizen Journalism App to a friend or colleague?
- Do you think you could use the application in your journalistic work? Please explain why and how.
- Would you feel confident working with the CJ App? Please explain why.
- Are there additional features that you would like to use in the app? If yes, please mention them.

Next, participants were asked to perform different tasks with the MV platform, namely:

- Administration task: create and account and log in the MV platform. Explore the MV platform (Profile section, etc.).
- Creation task: create/choose a video or image and upload it on the MV platform. Fill in some of the metadata of the content you have just uploaded.
- Publishing task: Add copyright information by choosing the desired license for the content uploaded on the MV platform. To do so, select the help offered to choose the license and use the License Advisor provided.

After the task, they replied to the MV questionnaire (see Table 9).

The pilot took place on 29 June 2022 in Bern with six (6) participants. The participants were between 18 and 60 years old. They were five men and one woman. All six participants work in content creation. However, they all have different profiles and working activities. Two work as professional freelance journalists. One journalist is

specialized in crisis journalism. The other journalist is a media educator and freelance journalist specialized on documentaries about social relevant stories. He has also been involved in journalistic projects about crises. The female participant is a trained social worker, lawyer and nursing assistant who is active in the communication field and content creation for Swiss institutions like the Bern hospital. Another participant is a blogger with a focus on financial subjects. One participant works with several publication tools and creates marketing content. The last participant does journalist work for internal publications. Regarding the frequency of use of social media platforms, four of the participants stated they use them once a day while the other two participants stated they consult social media at least once a week. As for the frequency of use of video editing tools, three participants stated they use it at least once a week, one affirmed she never uses it, one participant occasionally and one at least once a month. Concerning the accessibility tools, three participants declared they never utilize such tools, one person at least once a month and the two other participants occasionally. Finally, one participant uses blockchain technologies at least once a week. All the others use blockchain technologies occasionally to never.

Table 18 presents the SUS evaluation of the MV platform. The value was 68.33, which corresponds to a C grade (Good) and is above average. Table 19 reproduces the values related to usefulness and satisfaction.

Table 18: SUS results in UC1-STXT

PILOT	NUMBER OF RESPONDENTS	SUS
STXT	6	68.33

Table 19: Usefulness and satisfaction results in UC1-STXT

PILOT	USEFULNESS (MEAN/STDEV/MEDIAN)			SATISFACTION (MEAN/STDEV/MEDIAN)		
STXT	2.92	1	3	3.08	0.86	3.00

The main recommendations provided by participants can be clustered under the following topics: video upload, metadata, search and filter, and dashboard.

- Video upload: First, the participants found the video upload button quite easy. However, some of them had issues uploading the video on the platform. One user moved the video directly into the file area, which did not work. It only worked when the user clicked on the upload button. Therefore, according to the user it should say “click for upload” instead of “drop your file here”. Furthermore, when two videos were uploaded, only one video appeared, which was confusing to the user. It was mentioned many times that the duration of upload must be visible (feedback about how much time is left). Regarding the video guidelines, they were not always seen by the users and were tedious to read. One user said that he would only read the first three sentences. Another participant stated that the guidelines should not be placed below the video upload, since they might see the guidelines only after uploading the video content. As a suggestion, it was stated that guidelines should be accepted only once to avoid overloading the page at each use.
- Metadata: Metadata was hard to find for the test users. As a suggestion, some of them recommended to display the metadata more efficiently and prominently, for instance by adding a pencil icon to edit the metadata after a video has been uploaded instead of having to click on the video item. Users should be clearly prompted to enter metadata to make sure they do not forget to enter them, Furthermore, users suggested presenting the licenses more clearly. There should be a clear explanation about the licenses

and not only by means of help and questions. Other licenses should also be apparent and should be changeable again. Moreover, some users would like to add information and tags about the location of where the video was recorded. On the platform, the content creation date is equal to the publication date and cannot be changed. However, the creation date does not always correspond to the date of publication. Consequently, it is recommended to be able to adjust the creation date. This is especially important in the context of events or demonstrations. Additionally, the list of labels should be customizable in order to find other similar contents. Another suggestion would be to add descriptive text. One participant suggested the possibility to add metadata about the type of journalistic content (e.g., interview, documentary, etc.).

- Search and filter: According to a participant, it is not clear whether you can filter your own assets. Furthermore, it was said that the filters should be smaller (e.g., with drop down menu).
- Dashboard: The information on the dashboard did not seem to be very useful to users. Instead, they mentioned the importance of promotion of their contents, e.g., display their trending videos on the desktop so that users can discover them. Also, it did not seem clear to some users if and how they could discover the contents of other users and how others could discover their content.

As far as the use-case specific part is concerned, dealing with Citizen Journalism, the results can be split into two parts. One part contains general thoughts and opinions of the test participants, and the second part contains specific recommendations. To provide an overview of the results, the two mentioned parts are brought into connection with the results of the administered evaluation scales.

Generally, every participant was able to upload a video from the smartphone and understood how to take a video to upload it automatically. The handling was described as intuitive. However, participants did not understand the advantages of decentralization. In the settings, the already generated username and password to the IPFS protocol were not clear.

Scores for understanding of onboarding screens and wallet

Table 20: Onboarding evaluation (Citizen Journalism)

Pilot	Onboarding helped me understand how the app works (mean/standard deviation/median)			Onboarding helped me understand how the wallet works (mean/standard deviation/median)		
STXT	3.33	0.82	3.5	3.67	1.2	3.5

Except for one test person, the participants appreciated onboarding screens as it gave them at least a bit of an understanding of how the app works. Whereas most participants state the onboarding helped them understand how the app works, none of them strongly agrees and one participant does not agree. To let users fully benefit from the onboarding and boost learning of the app the screens should be improved, especially with regard to explaining the benefits of blockchain technology, the functionality of decentralization and all related parts. This finding is also supported by the results of the open questions and spontaneous comments of the participants.

Although the results for the wallet are slightly more positive, observations and open questions confirmed that the wallet was not clear to most of the participants, even after they had followed the onboarding screens. This supports the findings from the open question that the functionality of decentralization including blockchain, wallet and IPFS must be better explained. As also indicated in the introductory questions (only one participant uses blockchain), blockchain technology is not well understood by all participants. Therefore, there needs to be specific attention on explaining the benefits and the functioning of blockchain technology.

Ease of use, overall satisfaction, and likelihood to recommend

Although participants state that the app was as easy to use, overall they were not very satisfied with its use, as shown in Table 21. This lack of satisfaction could explain why most of the participants are less likely to recommend the app to their friends or colleagues.

Table 21: Onboarding evaluation (Citizen Journalism)

Pilot	The Citizen Journalism app is easy to use (mean/standard deviation/median)			Overall, to what extent are you satisfied with the use of the Citizen Journalism app?(mean/standard deviation/median)			How likely is that you would recommend the Citizen Journalism app to a friend or colleague? (mean/standard deviation/median)		
STXT	4.33	0.51	4	2.83	1.1	3	2.83	1.47	2.5

As a recommendation, it can be said that the terms of decentralization should be explained and include clarification concerning the wallet, blockchain and IPFS. Furthermore, the uploading time for videos should be improved, as even short videos need a long time to load. In addition, for a video directly recorded, it should be possible to first watch the video instead of directly uploading it.

Spontaneous comments of the participants showed that they are worried about anonymity, since it is hard to be trustworthy and anonymous at the same time, especially as a journalist. It should be very explicit who can see and publish the uploaded content, for example, a public broadcaster like SRG in Switzerland.

After the pilot, the general observations made by the researchers can be summarised as follows:

Overall navigation and registration

Despite the comments above, the overall navigation including the registration, the profile and the video upload was overall easy to use and met the common standards. Users knew instantly where to register, where to find their profiles in order to complete additional information, and where to upload content on the platform.

Registration page

Users did not have any difficulties registering on the MV platform. However, when they first landed on the registration page of the MV portal, almost all of them did not immediately understand the exact goal and the purpose of the platform, as there were no explanation and information in this regard. Consequently, we would suggest adding a brief explanation about the goal of the platform, so that potential users know what they can do, and which features they can use.

Further comments

Although the test users did not have major difficulties navigating on the platforms, they made some remarks regarding the user experience (see comments above). Some testers said there should be a more modern look and feel on the platform and that the overall user experience should be improved. Furthermore, one participant said there was no indication about the security and the decentralization of the platform and does not know whether the platform is safe or not.

A second pilot was developed in UC1, in this case by DW. DW does not pursue an individual Use Case pilot, but rather supports UC1 by preparing and creating templates and a workflow for creating Immersive Journalism Experiences. The idea is to integrate these templates and the workflow with the Citizen Journalism pilot so that even (Citizen) Journalists with little experience in Immersive Journalism can easily create such experiences, even when using a mobile device.

DW's evaluation activities have been very limited, mainly focusing on the question of how the use of the MV platform would be integrated in the workflow of creating an Immersive Journalism Experience (IJE). In this first pilot phase, the focus was exclusively on the MV platform, while in the following pilot phase the entire workflow is to be evaluated.

Three participants with work experiences in both journalism and creating immersive experiences were invited to take a close and constructively critical look at the MV platform. After a short introduction to the vision and objectives of the MV project, they were introduced to the above idea of a simplified IJE creation workflow based on the MV platform, including rights management and monetisation procedures. Without any further introduction to the platform features, participants were asked to perform different tasks on the MV platform:

- Administration task: Create an account and log in on the MV platform. Explore the MV platform (Profile section, etc.).
- Creation task: Upload multimedia assets on the MV platform. Fill in some of the metadata for the content you have just uploaded.
- Publishing task: Add copyright information by choosing the desired license for the content uploaded on the MV platform. To do so, use the License Advisor provided by the platform.

After these tasks, participants were asked to answer the MV questionnaire and comment on the experience. Table 22 presents the SUS evaluation of the MV platform. The value was 80, which corresponds to grade B (Good, almost Excellent) and is above average. Table 23 reproduces the values related to usefulness and satisfaction.

Table 22: SUS results in UC1-DW

PILOT	NUMBER OF RESPONDENTS	SUS
DW	3	80.00

Table 23: Usefulness and satisfaction results in UC1-DW

PILOT	USEFULNESS (MEAN/STDEV/MEDIAN)			SATISFACTION (MEAN/STDEV/MEDIAN)		
DW	3.33	1	3	3.67	1	4

Participants made many detailed comments on the UX and UI design, which were passed on to the developing partners. Overall, the UX and UI were described as modern, mature, and pleasant, but some of the available features showed room for optimisation. The main comments are listed below.

Selecting Content License

The process was greeted as a helpful feature but can be further improved.

Not enough control over their own assets

Participants were surprised about the remarkable quality of automatic image analysis and resulting metadata, but asked for an option to change the metadata for their own assets, especially when automatic labels and descriptions were wrong or inaccurate.

Add asset/contributor to Project

Participants found the workflows for adding users or assets to a project cumbersome and not intuitive.

3.2.2 UC2

UAB carried out five pilot actions with a shared approach: the aim was to test the MV platform in its prototype version and assess the potential of co-creating 360º videos using FADER for social inclusion. The pilots developed in two stages: in the first stage, they had to test and assess the platform. In the second, which lasted from a few hours to a few months depending on the specific pilot, they co-created a video and assessed the experience, reflecting on how the process could be useful from a social perspective. To this end, they were trained in using Fader. We provide next an overview of each of the scenarios developed by UAB and we then present the results after the description of each scenario.

CROMA

The first pilot was developed as part of the CROMA programme at Fundació Autònoma Solidària (FAS) at Universitat Autònoma de Barcelona (UAB) between February and May 2022. As described on its webpage, CROMA offers face-to-face workshops to raise interest in learning. Children in the fifth or sixth year of primary school (10 to 12 years of age) from 20 public schools in the area surrounding UAB are involved. The children generally live in socioeconomic vulnerable situations and meet one or two afternoons a week with a university student who has been trained by the CROMA programme and who acts as a facilitator. Different activities are offered to the children. The activities are proposed by researchers and are evaluated by the CROMA programme. In this case, UAB presented a proposal to the CROMA programme entitled “Seeing with your ears, hearing with your eyes”. The proposal was assessed and improved with the collaboration of the CROMA experts. It aimed to raise awareness about accessibility and identify solutions to make audiovisual content accessible while co-creating a 360º video with MV tools.

The first step was training the trainers. During the activities, the MV platform was assessed by the facilitators. The training sessions took place on 16 and 17 February and 10 facilitators participated in them. The sessions developed as follows:

- Welcome and introduction to virtual reality and to the project. Consent form signing.
- Presentation of the MV project and platform.
- Tasks with the MV platform:
    - Administration task: Participants are asked to create an account and to log into the MV platform. They are then asked to explore the MV platform.
    - Creation task: Participants are asked to create/choose a video or image and upload it on the MV platform. They are then asked to fill in some of the metadata of the content, if desired.
    - Publishing task: Participants are asked to add copyright information by choosing the desired license for the content they have uploaded on the MV platform. To do so, they are requested to select the help offered to choose the license and use the License Advisor provided.

- After the task, they reply to the MV questionnaire.
- Training on 360º cameras usage and XR authoring tool (Fader).

All facilitators were between 18 and 30 years old. There were seven women, one man, and one non-binary person. There was one professional facilitator and teacher, seven university students of Psychology (one of them described herself as a non-professional facilitator) and one university student of Education Sciences. Nine out of 10 participants stated they used social media every day and only one stated that never used them. As far as the frequency of video editing tool use, one participant declared using it at least once per month, eight participants stated using them occasionally, while one participant stated never using them. In relation with the frequency with which they use accessibility tools, one participant stated using them at least once per week, another one affirmed using them at least once per month and the rest declared never using them. Finally, one participant declared using blockchain technologies at least once per month while the rest (9) stated never using them.

Once the training sessions finished, the activities with the children began with the support of four facilitators (not all 10 of them) as indicated next. The activities developed from February until May 2022.

- Days 1, 2, 3: co-creation of a virtual reality video. Students are explained what virtual reality is and they plan the recording of a video from their schools, including interviews with teachers.
- Day 4: a short video of a blind person is shown to the students. The blind person says that he is very interested in the video that they are co-creating but will not be able to see it. This triggers the process of creating an audio description of some of the spaces.
- Days 5-6: a short video of a person with hearing loss is shown to the students, who become aware of the need to provide subtitles. They learn to subtitle the videos they have created.
- Day 7: a short video of a deaf person who trains them in saying a few words in Sign Language, which are then integrated in the interactive video.
- Day 8: the final video is co-created using Fader.

The result at the end of this process was a series of co-created 360 interactive videos:

- School “El Turó”: https://app.getfader.com/projects/b39f08c1-660d-427e-a62b-642b8aec6001/publish
- School “El Viver”: https://app.getfader.com/projects/7924aad3-b857-473b-afea-5287d60cab95/publish
- School “Josep Ventalló”: https://app.getfader.com/projects/c4d4a1a7-dc39-4ba6-8617-a43c174b7935/publish
- School “Ramón y Cajal”: https://app.getfader.com/projects/0cb3df96-d650-4599-85b6-e66d38cafd58/publish
- Fader content from four schools cannot be shared because image rights were not granted by some of the students.

The co-creation process was assessed by the four facilitators but also by the 66 children who took part in the experience. The CROMA activity concluded with a visit at the UAB on 18 May 2022, where each school presented their interactive videos. Additionally, the children took part in three workshops where, through fun activities, they learned about accessibility. In one of the workshops (“Touch it!”) they had to touch objects in a big bag and guessed what the object was. In the second workshop (“Guess the character”), different characters were shown on screen. One group could see the image and audio described it to the second group who could not see it. By means of this audio description, they had to guess who the characters were. Finally, in the third workshop (“What does he say?”), different sounds and language excerpts were presented, and students had to guess the sound or language.

Figure 6: CROMA children visit at UAB

A video of the CROMA experience is available on https://www.youtube.com/watch?v=T3OMlD505zg with English subtitles. The CROMA programme carried out an independent evaluation on the training session, with very positive results: the global assessment was 4.75 on a 5-point Likert scale. In terms of qualitative feedback, the technical knowledge required was highlighted as one of the main challenges and the proposed solution was to adequately prepare the activities before the session with the children next to an excellent time management.

ITACA

UAB partnered with Fundació Autònoma Solidària (FAS) and organised two one-day workshops with secondary school students. ITACA is a UAB social and educational programme aimed at secondary-school students. They do a camp every year during June and July with a number of pedagogical game-oriented activities organised by the researchers. The aim is to raise interest in staying in formal education after completing compulsory secondary education while learning about current investigations. The beneficiaries are students who are about to begin their last year of compulsory secondary education.

UAB partners organised an activity linked to MV in which the students had to co-create a 360º video. The activity took place with two different groups, on 28/07 and 08/07/2022. Each had 10 students plus one facilitator, who is a university student. The activity was entitled "360º accessible TikToks" and aimed at raising their interest in further studies by putting the focus on accessible communication. The session developed in three 2-hour slots, with breaks, from 09.00 until 17.00. During the day, they learned and discussed about virtual reality, about the MV platform, Fader and accessibility (specifically, audio description and audio introduction). Students decided on a topic, drafted a script, and recorded different videos to create an interactive Fader experience. They also added an additional accessibility layer in the form of an audio introduction. As part of the activities, they were invited to test the MV platform, perform different tasks and assess it. The tasks for the first group were the same as in the CROMA programme: administration, creation and publishing. In the second day, it was decided to focus on administration and creation, as publishing had been too challenging for students in the first session.

Demographic data were collected from all participants (22). There were nine male, 12 female, and one non-binary participant. 20 participants were aged 15 and two were aged 18-30. They were high school students taking part in the ITACA camp. Two facilitators managing the groups also replied to the questionnaire. Most of them (18) use social media daily but the usage of editing tools was not so frequent (12 occasionally, five at least once a month, 3 at least once a week). Regarding accessibility tools, 15 participants never used them and five used them only occasionally. One uses accessibility tools once a month and one at least once a week. All but one have never used blockchain.

Figure 7: ITACA activities: children co-creation (left), MV presentation (right)

One of the main highlights is the high level of engagement all participants showed during the activity. The video outputs they created are listed next and deal with social aspects that interest secondary school students:

- No to bullying: https://app.getfader.com/projects/9af8c50c-c571-44d6-938c-42a02bb10dd6/publish
- 360 TikTok: https://app.getfader.com/projects/a0270888-3b7a-4ac7-a885-e5cab8973e6f/publish
- Healthy Habits: https://app.getfader.com/projects/12640031-19f1-4c63-a19e-6db52797ce8b/publish
- Secondary school versus university: https://app.getfader.com/projects/36b1a57c-a420-4e8c-89a9-f4949255cd38/publish

EUIT

The Escola Universitària d'Infermeria i Teràpia Ocupacional (EUIT) is a university school of Nursing and Occupational Therapy. The MV project and tools were presented to some lecturers, and they were interested in including it in different ways: in the BA in Nursing, the MV project was presented to 120 students in two independent sessions in February 2022 and three students got involved in the co-creation process as an extracurricular activity. In the BA in Occupational Therapy, a lecturer was engaged and decided to include the co-creation process as part of the course on "Health Education" in May 2022. Overall, 26 university students were involved. There were 22 females and four males, aged 18-30 (20), 31-40 (5) and 51-60 (1). 20 reported using social media daily, but the limited use of editing tools (16 occasionally and only 2 at least once a week). Regarding accessibility, 20 had never used them, although four reported using them occasionally and two at least once a week. As for blockchain technologies, two participants used them occasionally, one at least once a month and one at least once a week. The rest of the participants (22) had never used them.

Figure 8: EUIT: training session (left), MV presentation (right)

As far as the MV platform testing is concerned, the tasks were consistent with the other UAB tests and involved administration, creation, and publication tasks (see CROMA for further details). As for the co-creation process, the students were instructed to co-create a 360º video with a social impact. They were assigned to a collaboration institution, where they met the final users and professionals and gather their needs and preferences to create the 360º experience. The institutions involved were:

- CST Mútua Terrassa, a medical center
- Centre de Teràpia Infantil Ninaia, a children theraphy center
- Residència Tercera Edat Sant Jaume de Cardona, elderly home in Cardona
- Cardona City Council (Cardona is a city in central Catalonia)
- Historical Cardona Foundation

The outputs they created, cover a wide spectrum of social topics, from tools for parents with neurodiverse children to images that can help people with dementia remember places. A list is provided next:

- Occupational Therapy at Home: https://app.getfader.com/projects/99e760b8-4948-4f26-aa24-43ca9b6862c8/publish
- Tool for parents with neurodiverse children: https://app.getfader.com/projects/d22af616-fc30-4dec-99bd-7b36b2620dcc/publish
- Cultural Heritage for the Elderly in Cardona care home: https://app.getfader.com/projects/a141f647-bbbb-4c50-a7b2-faebdffed159/publish
- La mina (The mine, an important site from a Catalan village): https://app.getfader.com/projects/4829cad4-c088-411c-ad35-e109aaba69df/publish
- Mercat i castell (Market and castle from the same Catalan village): https://app.getfader.com/projects/a50b32f4-da96-4ec3-b5fb-1b30ff64d354/publish
- Festes majors (Festivals): https://app.getfader.com/projects/a922d014-31c2-43a4-b086-e0e15d4504d4/publish
- Immersive experience to reduce anxiety- Mental Health Unit: https://app.getfader.com/projects/ca3a5df8-09f2-438f-b5c9-f87694cf719b/publish
- 360º Nature for Mental Health: https://app.getfader.com/projects/a20bce53-5967-4fe8-a4d9-e21b33442607/publish
- Tour in the hospital for oncology users: https://app.getfader.com/projects/86a15826-008e-4290-a7ed-fade5a6948b6/publish

SOM-FUNDACIÓ

Som-Fundació is an association that provides support to persons with cognitive disabilities. It should be stressed that they were already involved in the pre-pilots, and the co-created video now features a prominent space under the “Who we are” section on their webpage: https://www.somfundacio.org/qui-som/

Professionals from this association were also involved in pilot phase 1: they evaluated the platform and co-created a video. The topic was chosen by them based on their needs. More specifically, the professionals identified that some persons with cognitive disabilities experience difficulties performing their daily life activities, like going to the supermarket or to the bank, so they decided to create a video to facilitate the process of going to a supermarket. The result is available online:

- We help you go to the supermarket: https://app.getfader.com/projects/2c5c399b-aab6-466e-a3c8-9f65119e5fec/publish

Six facilitators took part in the process of evaluation, which included the same tasks as the previous pilots: administration, creation, and publication. There were four male and two female participants, most of them aged 31-40 except for one who was aged 51-60. They were professionals working in Som-Fundació. They had different profiles such as social workers, educators, teachers, and a communication manager. All of them except one used social media daily and limited use of editing tools (50% at least once a month, 50% occasionally). Regarding accessibility, four participants never used them and two only occasionally. None of them has used blockchain technologies. This group experienced some technical challenges and was not comfortable with their IT skills.

Figure 9: Som-Fundació facilitators

CEPAIM

CEPAIM is a foundation that provides support to migrants. CEPAIM aims to promote a more inclusive, cohesive, egalitarian and intercultural society that facilitates full participation in society of vulnerable populations, especially migrants. They saw the potential of co-creating 360º video stories and were involved in the MV project. 11 social workers took part in a first training session on 06/04/2022 but, due to the pandemic and other factors, only three could be involved in the session on 11 July in which the platform was evaluated. The tasks performed were the same as in the other pilots: administration, creation, and publication.

In terms of demographics, two males and a female in three age ranges (18-30, 31-40, 41-50), with profiles from the field of social education and law, were involved. Two use social media daily, one only occasionally. They use accessibility and video editing tools never or only occasionally and none is familiar with blockchain technologies.

The co-created videos are the following:

- 360º tour to show their reception apartments in Barcelona for refugees, which was used to offer European Commission representatives a virtual tour to the apartments: https://app.getfader.com/projects/facf18ab-128d-4e5a-80ed-8c3ebc2bc4ce/publish
- 360º experience on the Pyrenees with other NGOs working with young migrants (in process).

Figure 10: CEPAIM pilot session

Results

Results concerning the usability of the MV platform (SUS) are listed in Table 24 for each of the previous pilots.

Table 24: SUS results in UC2

PILOT	NUMBER OF RESPONDENTS	SUS
CROMA	7	61.07
ITACA (group 1, with publishing task)	11	57.50
ITACA (group 2, without publishing task)	11	67.50
EUIT	26	59.50
SOM-FUNDACIÓ	6	55.83
CEPAIM	3	60.83

Scores between 51 and 67 correspond to a D value, which equals an "Ok/Fair evaluation". The average score is placed at 68. This value needs to be interpreted in the context of a platform prototype, which is in the process of being developed. It is also interesting to note that, when they are not required to perform a publishing task (ITACA, group 2), the value improves. The lowest values (55.83) also correlate with the participants that were struggling more with the technology.

Table 25 presents the data for usefulness and table satisfaction on a 5-point Likert scale.

Table 25: Usefulness and satisfaction results in UC2

PILOT	USEFULNESS (MEAN/STDEV/MEDIAN)			SATISFACTION (MEAN/STDEV/MEDIAN)		
CROMA	2.79	0	3	3.29	0	3
ITACA (group 1, with publishing task)	3.18	1	3	3.77	1	4
ITACA (group 2, without publishing)	3.25	1	3	3.70	1	5
EUIT	3.36	1	4	3.14	1	3
SOM-FUNDACIÓ	3	1.13	4	3.67	1	4
CEPAIM	2.83	1	3	3.33	1	3

Mean values for usefulness are always above 2.7 on a 5-point Likert scale, whereas satisfaction increases to values above 3.1 in all cases.

Qualitative comments included impressions on the platform and suggestions for improvement in each of the pilots and are reproduced next.

CROMA

- Language: Three participants thought the platform should be offered in Catalan, not only in English. Please note that participants tested an early prototype only in English.
- License: One participant suggested that within the License Advisor, when obtaining the results, acronyms should be provided, so that there is no need to deduce to which one it corresponds in the list of options provided. Another participant thought the license could be provided automatically.
- Guidance: a participant suggested a tutorial on how to use the platform should be included just after registering.
- Uploading and metadata: One participant regretted having difficulties when uploading the file, while another one could upload it but metadata for the video were not saved. Another one suggested the whole process (uploading and metadata introduction) should be improved.
- Other aspects: one participant suggested improving its "comfortability". Another one, who declared in the comments field having a bad mobile connection, said speed could be improved.

ITACA

One participant mentions the platform is "very good", another one adds that it is "good" and two indicate that they would change "nothing". A participant finds it "useful". However, some point to some improvements:

- Specific functionalities: "changing the file name when editing a document", "the description should update itself when you click on update, "the automatic annotation is not as effective as it should", "being able to click on the searches because it does not open", "I could not activate the search for 360 photos", "more activities but it is good".
- Language options.
- Guidance: "a screen with the most necessary things you need to do before uploading anything", "better understanding of the different steps", "There are things that I don't know how to do", "better specific where things are".
- Visual layout: "adding something more entertaining", "the page format", "the format could be more direct".

EUIT

Many suggestions were presented by the participants:

- Making the platform more intuitive: "it could be more intuitive to use, it was difficult for me to figure out how to save the image with the data already filled in", "making it more intuitive", "it needs to be more intuitive: it does not indicate if the image has been saved well, it is not clear whether it has been saved or not".
- Languages: participants request Spanish and Catalan (7 participants).
- Specific functionalities: "the name of the file appears in the search engine and not the title that is put in the metadata", "video display", "confirmation that the upload has been successfully completed" (2 participants), "trim videos and remove the sound", "editions, setbacks, copy-paste text boxes, better identify the item you are working on and being able to modify it just by clicking on it, simultaneous

working, being able to edit 360º videos", "being able to upload videos", "some features are not enabled", "saving changes".

- Solving bugs: "at some points it freezes".
- Guidance: "it is difficult to understand", "to have an instructions manual in order to be more accessible", "information points", "an information section where you can ask questions".
- Licensing: "making more use of the project and better understanding licensing", "facilitate the license selection", "being able to see the selected license without seeing a black screen".

SOM-FUNDACIÓ

- Language issue: having the platform in different languages is mentioned by three participants.
- Better guidance is mentioned by one.
- More free functionalities is mentioned by one.
- Icon distribution on screen is mentioned by two.

CEPAIM

- Better initial guidance.
- Better knowledge of how to be used in the specific field.
- Visual design: "improving the graphics so that it is more attractive".

As for the specific UC aim, the assessment of the statements in Table 26 was very positive.

Table 26: UC specific aim results

PILOT	I HAVE ENJOYED CO-CREATING 360º CONTENT			I WOULD LIKE TO DO IT AGAIN			I WOULD RECOMMEND IT TO A FRIEND		
CROMA (66 children)	4.39	0.99	5	4.03	1.25	5	4.21	0.13	5
CROMA (4 facilitators in stage 2)	4	0.71	4	4.25	0.43	4	3.75	0.83	3.75
ITACA	4.60	0.68	5	4.35	1.04	5	4.55	0.89	5
EUIT	4.11	0.94	4	4.05	1.31	5	4.16	1.07	5
SOM-FUNDACIÓ	4.17	0.41	4	4.33	0.52	4	4.17	0.41	4
CEPAIM	4	1	4	4.67	0.58	5	4.33	0.58	4

In this case, all the values are above 4 on a 5-point Likert scale, showing the enjoyment and satisfaction of all participants in all pilot co-creation activities.

The qualitative comments provided to the question "**How do you think co-creating 360º content impacts social inclusion**?" are summarised next:

CROMA (facilitators)

- Team-work, dialogue, empathy.
- New knowledge: technology, accessibility.
- Increased awareness about diversity.
- Enhancing creative skills through a motivating activity (virtual reality and Fader).

ITACA (students)

- Participation and dissemination: “the more we are, the most impactful it is”, “more people should be able to see this video”.
- Usefulness in different environments: travelling (“seeing places away from home”), “to help others”, marketing, health (“it makes it possible to make very realistic scenes for doctors in order to do a good operation”, “healthy habits”, “explaining the difference between secondary school and university”).
- Positive tool for teamwork: “different points of view contribute to a better job”.
- Engagement: “you enjoy others a lot”, “everybody enjoys it equally”.
- Positive impact: “helping people on many different ways”.
- Technological novelty: “that impacts a lot because watching 360º images/videos is new, and it’s a new way of looking at technology”, “more realistic”.
- Impact on vulnerable populations: “It’s good because that way we can help people who are blind.”

ITACA (facilitators)

- It has a social impact because “being cooperative helps disadvantaged groups and those at social risk to participate in both creative and visualization projects”.
- “The diversity of opinions contributes to a better work”.

EUIT

Some replies indicate that it could be very helpful (1) and have a very positive (2), positive (3) or quite positive impact (1) and “facilitate social inclusion” (2) but they do not provide specific examples. Suggestions include:

- Getting closer to an environment or place that participants cannot reach in a more real experience (mentioned by 6).
- Community-work in occupational therapy: “opening doors to creating meaningful activities with an occupational goal”.
- Content is made easier to understand in this format.
- Leisure spaces.
- Accessibility to all groups.

One participant also indicates that it is complex and two mention that we should bear in mind that some users are not skilled in ICT. One participant mentions that “the tool is innovative, fun, attractive and timely. It is a way to involve people without relating them directly with a problem but making it a pleasant activity”.

SOM-FUNDACIÓ

- Positive (2 replies) [no further explanation was given].
- It allows users to express their needs through the co-created video. It gives an added value.
- Creativity increases the interest in the formats and content received. It is more attractive and can generate greater engagement.
- It impacts the visualizations of groups.
- It impacts on improving the user’s quality of life.

CEPAIM

- “It has a positive impact as the platform brings all people closer to the use of technology, but it is also possible to discover realities, it offers learning and access is not discriminating against anyone.”

- "It is an approach of ICT to people in a situation of exclusion."
- "It offers diverse tools through the technology of interaction, participation and learning oriented to autonomy".

To the question "**In which other projects/ways do you think the co-creation of 360º content could be applied?**" the answers were the following:

CROMA

- Students taking the initiative in the educational space: new perspective generating new spaces for reflection and dialogue.
- Creating short videos (like social media posts) as an engaging activity for children.

ITACA

- Entertainment: films, videogames (mentioned by 2), social media (mentioned by 4), including influencers.
- Tourism: hotels, interactive maps.
- Culture: expensive performances such as opera.
- Health: promoting healthy habits.
- Educational: high school workshops, classes (mentioned by 2), essays in this format.
- Activities: driving, dancing, roller-coasting.
- In many jobs.
- Helping people.

EUIT

- Travelling and remembering by four participants: "those who can no longer travel would be a way to get out of their usual environment for a moment", "To people with dementia to remember moments".
- Projects with elderly: "projects dedicated to improving the lives of the elderly could be done".
- Projects with persons with hearing loss: "projects could be carried out for those users who have a hearing disability, as the content is very visual".
- Projects with persons with intellectual diversity.
- Health, mentioned by four participants: "another alternative would be to apply it within the health sector in order to bring patients closer to the processes and techniques that can be performed on patients".
- Education by five participants, from young children to university students, also including risk situations.
- Activities of Daily Living by four participants: "Occupational Therapy in community, social inclusion, ADL (Activities of Daily Living), IADL (Instrumental Activities of Daily Living), the different areas AOTA (Activities of Daily Living, Education, Work, Game, Leisure and Free Time and Social Participation)"; "For example to show a place before going there and so that the person can get acquainted with it beforehand and feel more comfortable when they go there, such as recording the interior of a residence, a school , among others"; "In the Activities of Daily Living".
- Anthropology: "in this way an arrival of information and data could be provided in a more direct way to the human eye, since it would be presented in audiovisual format and not only in written form."
- Six participants mentioned that it can be used "in any project that involves the participation of people and wants to encourage them to do so. With 360º content it is all more understandable and close."

SOM-FUNDACIÓ

- Other public spaces where the user may have difficulties moving (e.g., looking for a book in a library).
- Sensorial experiences.
- IT learning.
- Academic training.
- Providing guidance on how to improve daily activities.
- Tourism.
- Health.
- Communication with the administration.
- All areas: it gives a very close and different vision.

CEPAIM

- "An interesting way is to co-create realities such as situations of vulnerability of some localities, and make mass communication, thereby more details and immerse the recipients (political) realities."
- "To projects with young people because it is a tool they have on hand. They can take advantage of it with quality."
- "In the formal educational field, for the practical learning of science, culture, geography, etc."

3.2.3 UC3

The aim of UC3 pilot was to assess the usability, user satisfaction and usefulness of the MV platform for Artists/Amateur Creators/General Public through an experimental artwork about the role media nowadays play in shaping our perception of reality and the notion of one's own actions with digital content. The aim of this first artistic experience was to raise awareness about deepfakes and how easy it is to create such content.

This pilot had two stages. First, they evaluated the MV platform in terms of administration, creation, and publication. In the second, they evaluated the impact of co-creation of digital content with Fader based on the AR/VR app interaction with artistic purposes. The task was the co-creation of digital video content based on deepfakes.

As for the timeline, there were two phases: Phase I (May -June) - development of the artistic experience in the App context; several tests for face detection and recognition took place in Aveiro and Lisbon, and Phase II (July) - seven one-to-one testing and experimentation sessions covering usability of the MV platform and questions about the artistic co-creation experience.

17 participants were involved. Participants were between 26 and 60 years old. There were eight women and nine men. For the artistic co-creation, four women and two men took part in the experiment. There were two professional facilitators for the pilot execution. All participants come from various backgrounds and work in different companies or are self-employed professionals and artists. Most of the participants work with different digital tools in their everyday life. Nine of the participants have professional technical and ICT backgrounds, while six of them are graphic artists and digital content creators. One of the participants works with data visualizations and storytelling, and five participants are software developers. Around four participants do not have (advanced) digital skills. Most participants use social media tools for gathering information, producing communication or staying connected with their network. Six of the participants are familiar with blockchain technologies and use them for professional and personal operations.

Quantitative results are presented next. The usability value was 65.15, which corresponds to a D grade (Table 27), whereas usefulness and satisfaction obtained means above 2.6 on a 5-point Likert scale (Table 28).

Table 27: SUS results for UC3

PILOT	NUMBER OF RESPONDENTS	SUS
UC3: AS	17	65.15

Table 28: Usefulness and satisfaction results for UC3

PILOT	USEFULNESS (MEAN/STDEV/MEDIAN)			SATISFACTION (MEAN/STDEV/MEDIAN)		
UC3: AS	2.68	1	3	2.79	1	3

In terms of qualitative feedback, the main findings are summarized as follows:

- Guidance: recommendation for having short explanations for some of the fields and the different functionalities that are/would be available, that give guidance and clarifications regarding certain components and their implication. Better clarification on the licensing and the different options. Also, it is not clear if one is able to change the licensing later. If there are certain limitations to the functionalities and size of files one can operate with, they should be stated clearly. Naming and labels should be properly used and explained without just abbreviations.
- Functionalities: for the moment, the users find the platform quite limited from a professional user point of view. A recommendation for positioning better the community component of co-creating projects where different creators could collaborate. More holistic view of the dashboard. What is currently missing is the connection of the different parts of the platform.
- Sharing: users highlighted the need of better integration of the sharing functionalities on other social media channels, such as Twitter, Instagram, Facebook, etc., where it is easy to share about a project to a bigger community. The fact that the project is about media, should highlight that relation better, as social media plays big role in it.
- Other general comments: there was a general recommendation for having better sign in options and user experience that flows a certain storytelling related to the MV goals.

The researcher could observe that somehow the value proposition at this stage is not very clear to the participants. A general recommendation was to focus on adjusting the functionalities and UX experience according to specific market use case from the different type of users.

As far as the UC specific aim is concerned, Table 29 presents the quantitative data, and the qualitative aspects are gathered next.

Table 29: UC specific aim results

PILOT	I HAVE ENJOYED CO-CREATING AR CONTENT			I WOULD LIKE TO DO IT AGAIN			I WOULD RECOMMEND IT TO A FRIEND		
UC3: AS	4.14	0.88	5	3.57	1.49	3.57	4	0.84	4

To the question "**How do you think co-creating AR content impacts your perception of truth in the real world?**", answers were as follows:

- "It makes me think better about it".
- "I see it's really easy to impersonate someone".
- "A large part of my perception of reality comes from what I see on the net. With this new reality, I'm going to put a lot more on the already unreliable digital sources".
- "Very much".
- "It generates loss of credibility of Internet content".
- "Immensely, I lose my sense of reference of what is right or wrong".
- "Yes, because I know how it is done (deepfake)".

Replies to the question "**In which other projects/ways do you think the co-creation of AR content could be applied? Please explain why**" are listed next:

- Collaborative AR projects in real-time.
- Political manipulation of the electorate.
- Interior design/building.
- In music, to play/pay tribute to artists who are dead.

Two participants did not know and another one thought it was "too soon to answer that question".

4 Conclusions

When designing the methodology for MV pilot actions, our aim has been to develop shared procedures and commonalities while caring for the specificities of each use case. The actions linked to citizen journalism, co-creation of new media formats or hybrid intelligence experimental artwork series will all be different, but they will all be using the MV platform, including different technological solutions. Therefore, a shared methodology was fundamental to guarantee consistency.

MV methodological approach is user-centric because the user experience is fundamental to assess the platform and inform technological development. MV methodological approach is also flexible because the diversity of the different use cases may call for slight adaptations where relevant. This document has provided an answer to five key questions when designing an evaluation methodology: what will be tested, where, when, by whom, and how.

This document has presented some shared instruments and protocols developed within the consortium, namely a shared demographic questionnaire, a protocol (and its associated template report) for focus groups, and a protocol (and its associated template report) for user experience evaluation.

User experience evaluation in MV builds on three core concepts: usability, usefulness, and satisfaction. The MV questionnaire measures these three concepts, and to this end, it incorporates the SUS plus selected relevant questions from other existing questionnaires. It also opens the door to qualitative feedback in the form of open questions, adapted where relevant to the specificities of each action and use case.

This document has also provided an overview of the pre-pilot actions and the pilot phase 1 actions developed in year 1 and 2 of the project. These actions have involved a total of 202 persons and a total of 29 video outputs have been generated. Most importantly, the actions have gathered user requirements for the MV platform and have provided some useful insight on how the MV platform concept could be transferred in different scenarios, including journalistic, social and artistic environments. Some of the main quantitative findings can be summarised next in Tables 30, 31 and 32.

Table 30: SUS results

PILOT	NUMBER OF RESPONDENTS	SUS
UC1: STXT	6	68.33
UC1: DW	3	80.00
UC2: CROMA	7	61.07
UC2: ITACA (group 1, with publishing task)	11	57.50
UC2: ITACA (group 2, without publishing task)	11	67.5
UC2: EUIT	26	59.5
UC2: SOM-FUNDACIÓ	6	55.83
UC2: CEPAIM	3	60.83
UC3: AS	17	65.15

Results are in the “OK/Fair” range (51-67), with those involving professional journalists reaching higher values (“Good”), which shows the potential of the tool in its prototype version.

Table 31: Usefulness and satisfaction results (MV platform)

PILOT	USEFULNESS (MEAN/STDEV/MEDIAN)			SATISFACTION (MEAN/STDEV/MEDIAN)		
UC1: STXT	2.92	1	3	3.08	0.86	3.00
UC1: DW	3.33	1	3	3.67	1	4
UC2: CROMA	2.79	0	3	3.29	0	3
UC2: ITACA (group 1, with publishing task)	3.18	1	3	3.77	1	4
UC2: ITACA (group 2, without publishing task)	3.25	1	3	3.70	1	5
UC2: EUIT	3.36	1	4	3.14	1	3
UC2: SOM-FUNDACIÓ	3	1.13	4	3.67	1	4
UC2: CEPAIM	2.83	1	3	3.33	1	3
UC3: AS	2.68	1	3	2.79	1	3

In terms of usefulness, values are always above 2.6 on a 5-point Likert scale and reach values around 3 in many cases. Satisfaction obtains even better results, with all except one case above 3, getting closer to 4.

Table 32: UC specific aim results

PILOT	I HAVE ENJOYED CO-CREATING 360º/AR CONTENT			I WOULD LIKE TO DO IT AGAIN			I WOULD RECOMMEND IT TO A FRIEND		
UC1: STXT	--	--	--	--	--	--	2.83	1.4	2.5
UC1: DW	--	--	--	--	--	--	--	--	--
UC2: CROMA (66 children)	4.39	0.99	5	4.03	1.25	5	4.21	.13	5
UC2: CROMA (4 facilitators in stage 2)	4	0.71	4	4.25	0.43	4	3.75	0.83	3.75
UC2: ITACA	4.60	0.68	5	4.35	1.04	5	4.55	0.89	5
UC2: EUIT	4.11	0.94	4	4.05	1.31	5	4.16	1.07	5
UC2: SOM-FUNDACIÓ	4.17	0.41	4	4.33	0.52	4	4.17	0.41	4
UC2: CEPAIM	4	1	4	4.67	0.58	5	4.33	0.58	4
UC3: AS	4.14	0.88	5	3.57	1.49	3.57	4	0.84	4

The specific use case experiences generally get high values, mostly above 4 on a 5-point Likert scale. The co-creation of 360 content is assessed very positively in UC2. As for qualitative feedback, participants provide a wide array of suggestions that generally focus on the following aspects, apart from specific functionalities:

- Uploading content.
- Guidance.
- Language localization.
- Dashboard and interface design.
- Licensing process.
- Sharing functionalities.

The feedback from participants has proven that the MV platform is on the right track and that the use cases have potential. WP2 will revise these user needs and recommendations, translate them into user requirements and prioritize them, where relevant. This process will feed into technology development in an iterative process.

5 References

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Annex I: Focus Group Protocol

Introduction: What Is a Focus Group?

A focus group study is a "carefully planned series of discussions designed to obtain perceptions on a defined area of interest" (Casey and Krueger, 2009) from a group of people with some characteristics in common. These individuals are selected according to the variables considered relevant for the purposes of the research.

The main role of the moderator is to stimulate the dialogue between the participants towards the objectives of the study. To this end, the moderator will have a list of guiding questions. The moderator should be neutral during the focus group and should ensure that all group members participate equally. The moderator is not just another participant: it is recommended to avoid expressing opinions.

Focus groups can range between 4 and 10 participants depending on the aim and type of activity. Regarding the minimum and maximum number of participants, it is perfectly feasible to hold a debate with 3 or 4 people, and it is a challenge to moderate and analyse a debate with more than 10 people (Barbour, 2007). In MediaVerse, we aim to include 4-6 participants per focus group. We plan to invite 6 to 7 participants per focus group in the case there are no-shows.

A focus group should last between 60 and 90 minutes. To avoid any hierarchy, it is recommended to set the space in a round table or in a circle. Moderators should create a comfortable atmosphere for the participants. When it is not possible to carry out the focus group face-to-face, online focus groups can also be useful to reach valuable data.

An assistant will take notes during the focus group discussion. The assistant will provide a summary at the end of the dialogue with the key points, which will be validated by the participants. For that reason, it is important to provide and explain the necessary ethical consent forms to the participants.

Information Before the Focus Group

For each focus group, the following decisions need to be made (see Annex 1.1.):

- Goal: main objective according to the object of study.
- Participant pool: characteristics, profile and number of participants of the focus group.
- Recruitment process: how and where we will select the participants.
- Timeline: when the focus group will take place, and when the materials should be ready. Consider if the moderator or assistant needs to be briefed in advance.
- Place: where the focus group will take place (e.g., physical space, online).
- Language: what language(s) the focus group will take place in, and whether translation support will be included.
- Materials: what physical/digital materials we need.
- Preparatory work: whether participants should do some work before the focus group.
- Guiding questions: what questions and activities will guide the focus group.
- Focus group leader: name of the person responsible for the focus group.

Structure of the Focus Group

All focus groups in MediaVerse will follow the same steps:

1. Introduction
    a. Moderator introduces themselves and thanks participants for coming to the study.
    b. Moderator briefly explains the MediaVerse project (if it has not been done before), the goal and procedure of the focus group. The same stimulus (video or slides presentation) should be used to present the MediaVerse project to guarantee consistency across activities.
    c. Moderator describes the type of data that will be collected (e.g., audio, video, notes), that this data will be stored confidentially, and that all data that is collected and published will not directly identify participants.
    d. Moderator explains to participants the three ethical forms, which are maintained in MediaVerse internal repository:
        i. information sheet,
        ii. consent form, and
        iii. disclosure.

        Participants are asked to read the forms and ask questions, and then are asked to consent to the study. Forms should be provided in an accessible format and language, and participants should be given enough time to read and understand the forms before consent. Participants should also be told that they can withdraw consent at any time during the study.
    e. Moderator asks participants to fill in the demographic questionnaire. Focus group participants should be provided with help where needed.
    f. Participants introduce themselves.
    g. Moderator thanks participants, and asks them to speak one at a time during the session. The moderator emphasizes that there are no right or wrong opinions, and that everyone's views are important.
2. Focus group discussion
    a. The moderator facilitates the discussion using a list of guiding questions or activities. The moderator facilitates the discussion, encouraging participants to interact, and to discuss their opinions in a friendly and comfortable tone. As participants discuss each topic, the moderator remains as unobtrusive as possible.
3. Focus group conclusion
    a. The moderator wraps up the discussion by reviewing the session tasks.
    b. If participants agree on a set of ideas or conclusions during the session (e.g., design requirements), the moderator reads these aloud. At the end of the session, participants make final edits and reach an agreement about these suggestions.

After the Focus Group

Focus group leader fills in the focus group report template provided by UAB (Annex 1.2).

Annex 1.1: Template for Each Focus Group Protocol

Focus Group ID:	Methodology:
1. GENERAL INFORMATION	
• Goal:	
• Participant pool:	
• Recruitment process:	
• Timeline:	
• Place:	
• Language:	
• Materials:	
• Preparatory tasks:	
• Focus group leader:	
• Note-taker:	
2. PROTOCOL: guiding questions or activities *(Please make sure this focus group protocol follows the structure indicated in the general MV protocol.)*	
a.	
b.	
c.	

Annex 1.2: Template for Each Focus Group Report

Focus Group ID:	Report:
1. GENERAL INFORMATION	
• Goal:	
• Date:	

• Place:	
• Number of participants:	
• Focus group leader:	
• Note-taker:	

2. Participant profile *(Summarise the profile of the participants.)*

3. Approved conclusions *(Include the main conclusions from the focus group, which have been agreed by participants.)*	
a.	
b.	
c.	
d.	
...	

4. Researcher observations *(Provide any relevant information about the development of the focus group and its results)*

Annex II: User Experience Evaluation Protocol

Introduction: What is User Experience Evaluation (UXE)?

According to the international standard on ergonomics of human-system interaction, ISO 9241-210, user experience is defined as “a person's perceptions and responses that result from the use or anticipated use of a product, system or service", whereas usability is defined as the “extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use”. Thus, user experience is considered a broader term that goes beyond the more pragmatic aspects of usability and includes more subjective aspects such as the user’s feelings when interacting with a product, system or service.

As a broader term, it is often difficult to restrict the scope of user experience and therefore delimit the constructs (i.e., aspects of user experience) it covers. Defining the high-level constructs central for the purpose of the evaluation is key, as constructs will lead to the selection of different methods for the collection of data and metrics to measure such constructs.

There are different **methods** to perform a user experience evaluation. It is important to write down a step-by-step process and pilot the methodology before the study.

It is also important to decide **when** the evaluation will be performed. There can be studies early in the development process, evaluation tests midway in the process, and validation tests at the end of the process. MediaVerse will favour iterative **testing**, with tests at different points in the development of the platform.

Deciding **the goal** of the test and **what measures** you will choose for your particular purpose is key. For example, **self-reported metrics** include rating scales, post-task ratings, post-session ratings, etc., which often involve the use of standard metrics, such as the System Usability Scale (SUS). However, you may want to consider using different types of metrics (qualitative and quantitative), separately or in combination (see Tullis & Albert 2013), to gain a deeper understanding of the results.

Asking participants to perform one or several **tasks** is a common practice when evaluating the user experience. Bear in mind that they should be reasonable, specific, doable, clearly formulated and of a reasonable length (Goodman, Kuniavsky and Moed, 2012).

In MediaVerse, the user experience evaluation tests are conducted **face-to-face or online** with several participants and ideally one evaluation leader. According to Rubin and Chisnell (2008, p. 207-209), the evaluation leader should stay objective but keep a relaxed tone and try not to “rescue” participants when they struggle. The evaluation leader should only assist participants as a last resort, because this would affect the test results in a major way.

It is crucial to collect, analyse and present user experience metrics consistently.

Information Before the User Experience Evaluation (UXE)

For each user experience test, the following decisions need to be made to plan for the test:

- **Goal**: what is the goal of the user experience evaluation.
- **Stages (if relevant)/tasks**: the different stages in which evaluation is divided (if relevant) and the tasks to be performed in each of them.
- **Method/metrics**: the specific method and metrics that will be used in the user experience evaluation. Most user experience evaluations require a list of tasks to be performed, and it is important to decide how outcomes will be measured.
- **Participant pool**: who will participate (participant profile), and how many participants should be included in each user experience evaluation. Special care should be taken with vulnerable participants.
- **Recruitment process**: how will participants be contacted.
- **Timeline**: when the user experience evaluation will take place, and when the materials should be ready.
- **Place**: where the user experience evaluation will take place (e.g., physical space, online).
- **Language**: what language(s) the test will take place in, and whether translation support will be included.
- **Materials**: what physical/digital materials should be ready.
- **Preparatory work**: whether and what prep materials should be done.
- **User experience evaluation leader**: person in charge of leading the test.

The user experience evaluation leader needs to fill in a protocol using the template in Annex 2.1.

Structure of the User Experience Evaluation

User experience evaluation in MediaVerse should include the following:

1. Introduction
2. Presentation of the MV project and platform, if not previously done, and the specific aim of the UC scenario.
3. Instructions of the tasks that participants will be asked to perform to test the MV platform. Tasks relating to the pilot categories (i.e., administration, creation, publishing and/or monitoring) of each specific use case scenario should be carefully planned, to the extent to which the platform release allows (please check the example developed by UAB for UC2.1).
4. MV questionnaire (user experience evaluation of the MV platform) after the tasks with the MV platform.
5. Presentation of and training in, if deemed necessary, the tool/s involved in each specific pilot scenario.
6. Instructions of the tasks that participants will be asked to perform in relation with the tool/s involved in each specific pilot scenario.
7. Questionnaire after the tasks with the tool/s for the evaluation of the specific aim of the UC scenario.

Depending on the profile of the participants and the number of tools for which training is needed, separate sessions may be arranged.

The next steps should be followed when conducting the evaluation:

1. **Introduction**
    a. Evaluation leader introduces themselves.
    b. Evaluation leader briefly explains the MediaVerse project, and the goal and procedure of the user experience evaluation.
    c. Evaluation leader explains to participants the three ethical forms: information sheet, consent form, and disclosure.

d. Participants are asked to read the forms and ask questions, and then are asked to consent to the study. Forms should be provided in an accessible format and language, and participants should be given enough time to read and understand the forms before consent. Participants should also be told that they can withdraw consent at any time during the study.
e. Evaluation leader provides participants with the activity code and their unique participant code and asks them to fill in the demographic questionnaire. The unique participant code should include the acronym of the partner, for instance, UAB-p1, UAB-p2, etc. **Participants are told to remember their participant code, as they will need it at later stages of the evaluation process.** Participants should be provided with help where needed.
f. Evaluation leader thanks participant(s) and the user experience evaluation begins.

2. **Presentation of the MV project and platform**
   a. The evaluation leader presents the MediaVerse project and platform through the general video MV. The same stimulus (video or slides presentation) should be used to present the Mediaverse project to guarantee consistency across activities.
   b. The evaluation leader explains the specific aim of the UC scenario.
3. **Instructions: tasks to be performed with the MV platform**
   a. The evaluation leader asks participants to perform different tasks within the MV platform linked to the pilot categories concerning the specific UC scenario (administration, creation, publishing and/or monitoring).
   b. The evaluation leader asks participants to read the instructions of the tasks to be performed, which will be provided either in paper or online, and explains them to participants.
4. **MV questionnaire: after the tasks with the MV platform**
   a. Once the tasks have been performed, the evaluation leader asks participants to evaluate the platform.
   b. For the user experience evaluation of the MV platform it is compulsory to use the agreed MV questionnaire (see D7.2) including the metrics for usability, user satisfaction and usefulness subjective self-reported ratings (SUS and USE questionnaires) plus two open questions, namely:

Table 33: MediaVerse Questionnaire

METRICS	ITEMS
5-point Likert scale	I think that I would like to use this system frequently.
	I found the system unnecessarily complex.
	I thought the system was easy to use.
	I think that I would need the support of a technical person to be able to use this system.
	I found the various functions in this system were well integrated.
	I thought there was too much inconsistency in this system.
	I would imagine that most people would learn to use this system very quickly.
	I found the system very cumbersome to use.
	I felt very confident using the system.
	I needed to learn a lot of things before I could get going with this system.
	It meets my needs.
	It does everything I would expect it to do.
	I would recommend it to a friend.
	It works the way I want it to work.
Open questions	What could be improved?
	Add any other comments.

c. The evaluation leader provides participants with the user experience evaluation form containing the MV questionnaire either in paper or online. See the English GoogleForm version of the MV developed by UAB. Templates for the translations into other languages have been prepared. Some validated translations for the SUS questions are also available for: German (DE), French (FR), Spanish (SP) and Portuguese (PT).

5. **Presentation of and training in the tool/s**
   a. The evaluation leader presents the tool/s that will be used in the specific UC scenario and provides training in them if deemed necessary.
6. **Instructions: tasks to be performed with the tool/s**
   a. The evaluation leader asks participants to perform one or several tasks with the tool/s involved. Participants are given a deadline to do so.
7. **Questionnaire: after the tasks with the tool/s**
   a. For the evaluation of the specific aim of each UC scenario, other questions may be necessary (see the example developed by UAB for UC2.1, in which both open-ended and Likert scales have been chosen). In the case of open-ended questions, it is recommended that no more than 3 questions are added.
   b. The evaluation leader asks participants to answer the questionnaire, which will be provided either in paper or online.

After the User Experience Evaluation

The analysis is performed and the user experience evaluation leader fills in the user experience evaluation report (Annex 2.2) to highlight the main findings.

Annex 2.1: Template for Each User Experience Evaluation (UXE) Protocol

UXE ID:	Specific protocol
1. GENERAL INFORMATION	
• Goal:	
• Stages (if relevant)/ tasks:	
• Method/metrics:	
• Participant pool:	
• Recruitment process:	
• Timeline:	
• Place:	
• Language:	
• Materials:	
• Preparatory work:	
• User experience evaluation leader:	

2. PROTOCOL: step-by-step description of the User Experience Evaluation (UXE) *(Please make sure this plan follows the structure indicated in the general MV user experience evaluation protocol.)*	
a.	
b.	
c.	

Annex 2.2: Template for the User Experience Evaluation Report

UXE ID:	Report
1. General information	
• Goal:	
• Stages (if relevant) / Tasks:	
• Methods/metrics:	MV Questionnaire: Usability, user satisfaction and usefulness subjective self-reported ratings (SUS and USE) + open questions. Questionnaire on UC specific aim.
• Timeline:	
• Place:	
• Number of participants:	
• UXE leader:	
2. Results: raw data and first analysis	
Download the MV_DataCollection_UXE1.xslx file and provide all the raw data collected in the activity in the corresponding tab. Rename the document by adding the corresponding activity code in the end (e.g., MV_DataCollection_UXE1-UAB-CROMA.xlsx) and add the link to it here. **Tab 1. Demographics**: Fill in the raw data in the Demographics tab of the file. Please make sure all answers are in English. **Tab 2. MV Questionnaire:** Fill in the raw data of the MV Questionnaire. In the case of open-ended questions (columns R and S), please provide the translations of the answers into English in columns T and U. **Tab 3. UC Specific Aim Questions:** Fill in the raw data of the questions/ratings created for the specific aim of the UC scenario. Please add as many columns as needed depending on the final number of questions created. In the case of open-ended questions, please provide the translations of each of the answers into English in the appropriate columns (now columns K to N). **Tab 4. UXE forms tracking:** Fill in the information for the tracking of the demographic and consent forms.	

3. Results: written summary
Participant profile. Provide a written summary of the demographics results for gender, age, profile and frequency of use of social media, video editing tools, accessibility tools and blockchain technologies. **Qualitative responses for question 15 and Any other comments.** Cluster under different topics, if possible, all qualitative answers of the responses gathered. Provide a summary of the main findings. **UC Specific Aim Questions.** Cluster under different topics, if possible, all qualitative answers of the responses gathered. In case there are also close-ended questions or Likert scales, please provide the results according to the type of data (frequency of answers). Provide a summary of the main findings.
4. Researcher observations
Provide any relevant information about the development of the evaluation and its results.

Annex III: SUS and USE Scales

SUS (System Usability Scale)

The SUS[6] was designed to evaluate the usability of a wide range of products and services, including applications and websites. It consists of 10 items to be measured on a 5-point Likert scale, in which responses range from strongly agree to strongly disagree:

1. I think that I would like to use this system frequently.
2. I found the system unnecessarily complex.
3. I thought the system was easy to use.
4. I think that I would need the support of a technical person to be able to use this system.
5. I found the various functions in this system were well integrated.
6. I thought there was too much inconsistency in this system.
7. I would imagine that most people would learn to use this system very quickly.
8. I found the system very cumbersome to use.
9. I felt very confident using the system.
10. I needed to learn a lot of things before I could get going with this system.

USE (Usefulness, Satisfaction and Ease-of-use)

The USE (Lund 2001) was designed to measure aspects of the user experience, and the user's reactions to the usability across domains (software, hardware, services, and user support materials). It consists of 30 rating scales grouped under four categories, namely usefulness, ease of use, ease of learning and satisfaction.

Usefulness

- It helps me be more effective.
- It helps me be more productive.
- It is useful.
- It gives me more control over the activities in my life.
- It makes the things I want to accomplish easier to get done.
- It saves me time when I use it.
- It meets my needs.
- It does everything I would expect it to do.

Ease of use

- It is easy to use.
- It is simple to use.
- It is user friendly.
- It requires the fewest steps possible to accomplish what I want to do with it.
- It is flexible.
- Using it is effortless.
- I can use it without written instructions.
- I don't notice any inconsistencies as I use it.

[6] https://www.usability.gov/how-to-and-tools/methods/system-usability-scale.html

- Both occasional and regular users would like it.
- I can recover from mistakes quickly and easily.
- I can use it successfully every time.

Ease of learning

- I learned to use it quickly.
- I easily remember how to use it.
- It is easy to learn to use it.
- I quickly became skillful with it.

Satisfaction

- I am satisfied with it.
- I would recommend it to a friend.
- It is fun to use.
- It works the way I want it to work.
- It is wonderful.
- I feel I need to have it.
- It is pleasant to use.

Annex IV: Specific Guiding Questions (pre-pilot actions, focus groups)

UC1- STXT

- As a user, how would you like the MV platform to be?
- When creating content, what would you expect from the platform?
  - How could the MV platform be useful to you when creating content? What tools do you currently use to create your journalistic content?
  - What devices would you use to upload content to the MV platform? (e.g., mobile, desktop, other)
  - What devices would you use when editing content on the MV platform? (e.g., mobile, desktop, other)
  - Do you have any needs in terms of accessibility for your public? (e.g., would it be useful for you if the platform offered subtitles or translation? others?)
  - Do you currently create 360° videos? Would it be useful for you to be able to create those on the MV platform?
- When publishing content, what would you expect from the platform in terms of managing copyright and payment?
  - How could the MV platform be useful to you with regard to managing copyright and payment?
  - What tools do you currently use to manage copyright and payment of your content?
  - As you have seen in the video, you can check contents with regard to different criteria, e.g., should your content be validated for fake news before being used in other platforms and communication channels? Are there other criteria you would need to be able to do checks on?
  - With the MV tool one could imagine different business models for the publication of journalistic content; would you be interested in new business models for your journalistic contributions? E.g. instead of a fixed price auction/donation/content for free use?
  - MV will use blockchain technologies. Can you explain if you are familiar with any blockchain-based application and if you have experience with cryptocurrency (e.g., do you have a cryptocurrency wallet, do you accept payments in cryptocurrency)? Do you trust these technologies?
- When monitoring content once it has been published, what would expect from the MV platform?
  - How could the MV platform be useful to you when monitoring your published content?
- For what and how would you use the MV platform in your context?
- What features would you expect your user profile to include?

UC1-DW

- As a user, how would you like the MV platform to be?
- When it comes to managing content contributions, what would you expect from the platform?
  - communication with journalists
  - co-creating/co-editing of content
  - importance/relevance of 360° content
- What would you expect from the platform in terms of managing copyright and payment?
  - How could the MV platform be useful to you with regard to managing copyright and payment?
  - What tools do you currently use to manage copyright and payment of your content?
- When monitoring content once it has been published, what would expect from the MV platform?
  - How could the MV platform be useful to you when monitoring your published content?
- For what and how would you use the MV platform in your context?
- What features would you expect your user profile to include?

UC1- UAB

- How can the MV platform (and the creation of 360º videos in your case) contribute to social inclusion in your context?

UC3-AS

- As a user, how would you like the MV platform to be?
  - With the MV tool one could imagine different business models for the publication of journalistic content, what features would you expect your user profile to include?
  - When creating content, what would you expect from the platform?
  - When publishing content, what would you expect from the platform in terms of managing copyright and payment?
  - When monitoring content once it has been published, what would expect from the MV platform?
- For what and how would you use the MV platform in your context?
- What kind of (social) media analytic tools and functionalities would you expect from your MV user profile?
- What kind of monetization solutions for content creation and distribution would you expect to have in the MV platform? (Please share some example or suggestions).

External Users and NGM Projects-CERTH

- When creating content, what would you expect from the platform?
  - How could the MV platform be useful to you when creating content?
  - What tools do you currently use to create your journalistic (or other) content?
  - What devices would you use to upload content to the MV platform? (e.g., mobile, desktop, other)
  - What devices would you use when editing content on the MV platform? (e.g., mobile, desktop, other)
  - Do you have any needs in terms of accessibility for your public? (e.g., would it be useful for you if the platform offered subtitles or translation? others?)
  - Do you currently create 360° videos? Would it be useful for you to be able to create those on the MV platform?
- When publishing content, what would you expect from the platform in terms of managing copyright and payment?
  - How could the MV platform be useful to you with regard to managing copyright and payment?
  - What tools do you currently use to manage copyright and payment of your content?
  - As you have seen in the video, you can check contents with regard to different criteria, e.g., Should your content be verified before being used in other platforms and communication channels? Are there other criteria you would need to be able to perform checks on?
  - With the MV tool one could imagine different business models for the publication of journalistic content, would you be interested in new business models for your journalistic contributions? (e.g., instead of a fixed price auction/donation/content for free use?).
  - MV will use blockchain technologies. Can you explain if you are familiar with any blockchain-based application and if you have experience with cryptocurrency (e.g., do you have a cryptocurrency wallet, do you accept payments in cryptocurrency)? Do you trust these technologies?
- When monitoring content once it has been published, what would you expect from the MV platform?
  - How could the MV platform be useful to you when monitoring your published content?

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