Enhacing Social Cohesion through Sharing the Cultural Heritage of Forced Migrations

D1.3. List of available solutions

Date- 29th July 2021

Document identifier: D1.3-TEMP_List of available solutions
Version: v.6
Authors: TEMP – Marc Hernández Güell; Elena Ananiadou
Dissemination status: Public

D.1.3 – List of available solutions

Grant Agreement nº:	870939
Project acronym:	SO-CLOSE
Project title:	Enhancing Social Cohesion through Sharing the Cultural Heritage of Forced Migrations
Funding Scheme:	H2020-SC6-TRANSFORMATIONS-2019 (DT-TRANSFORMATIONS-11-2019, Collaborative approaches to cultural heritage for social cohesion)
Project Duration:	2020/01/01 – 2022/12/31 (36 months)
Coordinator:	UNIVERSITAT AUTÒNOMA DE BARCELONA (UAB)
Associated Beneficiaries:	➢ LUNDS UNIVERSITET (ULUND) ➢ STOWARZYSZENIE WILLA DECJUSZA (VDA) ➢ FONDAZIONE SCUOLA DI PACE DI MONTE SOLE (MONTE) ➢ CONSORCI DEL MUSEU MEMORIAL DE L'EXILI (MUME) ➢ ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS (CERTH) ➢ ENGINEERING – INGEGNERIA INFORMATICA SPA (ENG) ➢ TEMPESTA MEDIA SL (TEMP) ➢ ELLINIKO FOROUM PROSFIGON (GFR)

Project no. 870939

SO-CLOSE

Enhancing Social Cohesion through Sharing the Cultural Heritage of Forced Migrations

DT-TRANSFORMATIONS-11-2019: Collaborative approaches to cultural heritage for social cohesion

Start date of project: 01/01/2020   Duration: 36 months

History Chart				
Issue	**Date**	**Changed page(s)**	**Cause of change**	**Implemented by**
1.0	08/06/2020	-	Draft	TEMP- Marc Hernández, Elena Ananiadou
1.0	17/06/2020	All	Review	UAB-Pilar Orero
1.0	18/06/2020	All	Review	ENG-Nicola Mariniello
2.0	23/06/2020	All	v.2	TEMP-Marc Hernández, Elena Ananiadou
2.0	25/06/2020	All	Review	ENG-Nicola Mariniello
3.0	26/06/2020	All	v.3	TEMP-Marc Hernández, Elena Ananiadou
3.0	27/06/2020	All	Review	UAB-Javier Rodrigo (PI)
3.0	25/03/2021	All	Review	Nancy Von Breska Ficovic, Alis Elena Oancea
4.0	28/05/2021	11,12, 22, 26, 27, 35-37, 67, 70, 72	v.4	TEMP-Marc Hernández, Elena Ananiadou
4.0	04/06/2021	All	Review	ENG-Mariniello Nicola
4.0	04/06/2021	-	Review	UAB-Teresa Sordé
5.0	07/06/2021	All	v.5	TEMP-Marc Hernández, Elena Ananiadou
5.0	07/07/2021	All	Review	Nancy Von Breska Ficovic, Alis Elena Oancea
6.0	16/07/2021	8, 11-14, 18, 20-28, 34-38, 69, 72, 79-82	v.6	TEMP-Marc Hernández, Elena Ananiadou
Validation				
No.	**Action**	**Beneficiary**		**Date**
1	Prepared	TEMP		26/06/2020
2	Approved	UAB & ENG		28/06/2020

| 3 | Released | UAB | 29/06/2020 |

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1. Executive Summary

Deliverable 1.3 aims to conduct research on the specific topics and needs of the project, addressing the available solutions through a state-of-the-art digital tools analysis, applied in the cultural heritage and migration fields. More specifically the report's scope is:

•   To define proper tools and proceedings for the interview needs – performing, recording, transcription, translation.

•   To analyse potential content gathering tools for the co-creation workshops including suggested methods to enhance content gathering.

•   To conduct a state-of-the-art sharing tools analysis, applied in the cultural heritage and migration fields, and propose a critically adjusted and innovative digital approach. The sharing tools will be the final shells to be developed and populated with co-created narratives and media content.

The overall methodology used in the deliverable consists of the study of relevant European projects, the review of scientific manuscripts, and the overview of representative tools. The report draws attention to defining tool categories for SO-CLOSE, based on their expected use within the project, and also determines the compliance criteria of the tools involved. The conclusions highlight the importance of first focusing on the user's environment and needs, keeping optimal sharing tool types in mind when defining gathering methods, to allow a better project alignment. The need for interoperability among the components also encourages the use of web-based technologies.

2. Acronyms and abbreviations

Acronym/Abbreviation	Description
AI	Artificial Intelligence
AR	Augmented Reality
AV	Audiovisual
CERTH	Centre for Research and Technology Hellas
CH	Cultural Heritage
CHESS	Cultural Heritage Experiences through Socio-Personal Interactions and Storytelling
DCH	Digital Cultural Heritage
D 1.3	Deliverable 1.3 *List of available solutions*
EDM	European Data Model
ENG	Engineering Ingegneria Informatica
EU	European Union
MCP	Memory Centre Platform
MUME	Exile Memorial Museum
MAM	Media Asset Manager
UAB	Universitat Autònoma de Barcelona
IDN	Interactive Digital Narrative
SG	Serious Games
TEMP	La Tempesta
ViMM	Virtual Multimodal Museum
VR	Virtual Reality
WAI	Web Accessibility Initiative
WCAG	Web Content Accessibility Guideline
W3C	World Wide Web Consortium
WP	Work Package

3. Terms glossary

Content type	The media type of the resource (audio, video, 360° image or video, text, etc.).
DCH Sharing tools	The tools to be created by the project to disseminate digital cultural heritage and migration narratives (web docs, virtual exhibitions, etc.).
Gathering tools	The co-creation methods of the SO-CLOSE workshops and pilots that combine participatory methodologies, digital devices and software.
Interviewing tools	The tools used to perform and edit the SO-CLOSE interviews: recordings, transcriptions, transcriptions editing, translations, and descriptions.
MCP aggregation services	The platform that will aggregate and preserve the media content of the sharing tools, during the project and afterwards.

4. Introduction

The Deliverable 1.3 List of available solutions, presents the digital tools analysis that has been carried out with the overall aim of defining a set of digital tools for the int interviewing project needs, and also collecting the initial state of the art of existing tools for the gathering and sharing SO-CLOSE digital cultural heritage content and project's needs.

As part of WP1 and interconnected to the rest of the project's tasks and work packages, the report provides solid research and analytical steps for the cultural heritage tools to be selected and developed in the following WPs and months.

D1.3 List of available solutions is therefore connected to the ongoing tasks of WP1 and the foreseen tasks of the WPs 2 & 3.

• Regarding "WP1 - Framework Set Up & Design of the co-creation paths", the deliverable selects the interviewing tools and sets the workflow for the WP1 virtually conducted interviews.

• Regarding "WP2- Co-design of the tools for cultural heritage co-creation", it presents the state-of-the-art analysis of the gathering tools and methods to be considered.

• Regarding "WP3 - Toolbox development", it sets the background analysis and options for the sharing tools to be developed in WP3.

Overall, the main part of the work flags state-of-the-art storytelling digital formats and proposes a starting point for the collaborative tools design and technical development.The conceptual background of the present work is at first place framed by the DoA (p.11), "*The main concept of SO-CLOSE is the sharing of the experience of forced displacement and migration between recent refugees and the local communities in Europe where they have resettled. The ambition of the project is to contribute to social cohesion and fight refugee marginalization or exclusion by facilitating the encounters between similar life stories, through the mediation of state-of-the-art digital platforms*." The digital tools acquire a role of an amplifier of new narratives regarding forced displacements, exposing the commonalities and asymmetries of past and present realities. The amplification will contribute to the mutual understanding between refugees and their local communities and will promote collaborative practices for DCH co-creation. The need of "amplification" is conveyed in D1.3 though the definition and state of the art analysis of the sharing tools category.

In addition, D1.3 draws from the theoretical elaboration of the project's core concepts – forced displacements, cultural heritage, inclusion and digital access – of the other WP1 reports, D1.1 Interview report and Service Provision Needs and Gaps Analysis and D1.2 Information gathering report: societal, ethical, cross-cultural. These documents have

been drafted in parallel with D1.3 and their elaboration process provided the relevant theoretical framework.

Specifically, D1.2 introduces several theoretical perspectives of heritage and heritage making, to finally adopt the following definition (p.7,8): "*In reference to the listed conceptualizations of heritage, SO-CLOSE chose to define it as a changing cultural product and practice that reflects the claims of various actors and is open for cooperation and co-creation. This is the theoretical ground for SO-CLOSE's embracing of a communicative methodology and desire to involve core stakeholders, including migrants, into dialogue with the project partners.*" Cooperation and co-creation are critical dimensions to this definition, and thus central attributes of the present, D1.3, work conceptual approach and practical scope. In SO-CLOSE they will be materialised in two levels: communities of refugees, asylum seekers, migrants, stakeholders and locals (1) are involved in collaborative methodologies to co-design the tools to be developed and (2) they will participate in WP4 content gathering co-creation activities, during the tools deployment.

Furthermore, D1.1 analyses the project's conceptualization of migration and presents the main findings of the sociological analysis of WP1 interviews. Regarding the first, it is argued (p. 14) that "*Overall, in this report, the concept of forced migration has not been conceptualized as a finished and finely-cut dimension of migration journeys, but as unique and specifically contextualized in each case, where human agency handles the constrictions and the opportunities granted to each individual in different ways.*" The report will also provide important evidence on the use of digital tools by recently arrived populations and their empowering potential. The underlined dimensions of agency and contextual diversity are translated in D1.3 as working directions, towards versatile, replicable and easy-to-use storytelling tools.

Considering the outlined dimensions, D1.3 draws upon the ongoing research and conceptual elaboration of SO-CLOSE to set the initial desired criteria and the analytical approach of the state-of-the-art available tools.

5. Tool categories

The generic use of the concept "tool" in SO-CLOSE needs to be addressed, as it creates confusion when used as a generic term without distinguishing when and how it is intended to be used. For this purpose, proper categories and their corresponding definitions are provided to create a solid basis for the understanding of the different components needed in SO-CLOSE.

Glossary of category definitions

• **Interviewing tools**: Involves all the tools that are going to be used to perform and edit the interviews: recordings, transcriptions, transcriptions editing, translations, and descriptions.

• **Gathering tools**: This category includes the co-creation methods (such as art, cookbooks, picture gathering, storytelling, role play, mind maps, …) to be used in the workshops and pilots, together with AV and recording devices (such as scanners, audio recorders, mobile phones and 360 cameras) and specific software (3D scanning app; video editor; whiteboard tool) to record and edit the content. The resulting digital assets

will be uploaded into the Media Asset Manager. All these elements (methods, devices, software and MAM) are under the Gathering tools category.

• **DCH Sharing tools**: These tools will be used to display digital cultural heritage and storytelling narratives, and disseminate the migration heritage content and narratives in the optimal way to achieve the SO-CLOSE objectives. The main technological developments will be focused on these category tool types (webdocs, data visualisation).

• **MCP aggregation services**: The Memory Centre Platform offers a set of services to aggregate and interrelate the content to be preserved. MCP is also able to interact with the Social Media Crawlers for instance Twitter and/or Youtube to get additional content to aggregate and interrelate.

Glossary of other terms used in the document

• **Tool type**: A tool type or form (e.g., Media Asset Manager; webdoc) describes a specific kind of tool inside a category, with a collection of attributes that make one tool different from another.

• **Methodology**: A methodology (e.g., participatory and collaborative design) is the rationale for the research approach.

• **Method**: A method (e.g., role play, mind map) is simply the tool used to answer your research questions — how, in short, you will go about collecting your data.

• **Content type**: Indicates the media type of the resource, that may be audio, video, 360o image or video, text, etc.

5.1. Presentation of the tool categories

Tool categories and their corresponding definitions are provided to create a solid basis for the understanding of the different components needed in SO-CLOSE. The MCP aggregation services are also included, in the tool's scheme presented in figure 1.

The figure reflects the definition of the categories: Interviewing tools; Gathering tools; DCH Sharing tools and MCP aggregation services.

The figure's table includes for each tool: the purpose of its use, the inputs it will receive, the tool's functions and, lastly, the expected outputs of each process. It is followed by a detailed description of the tool categories.
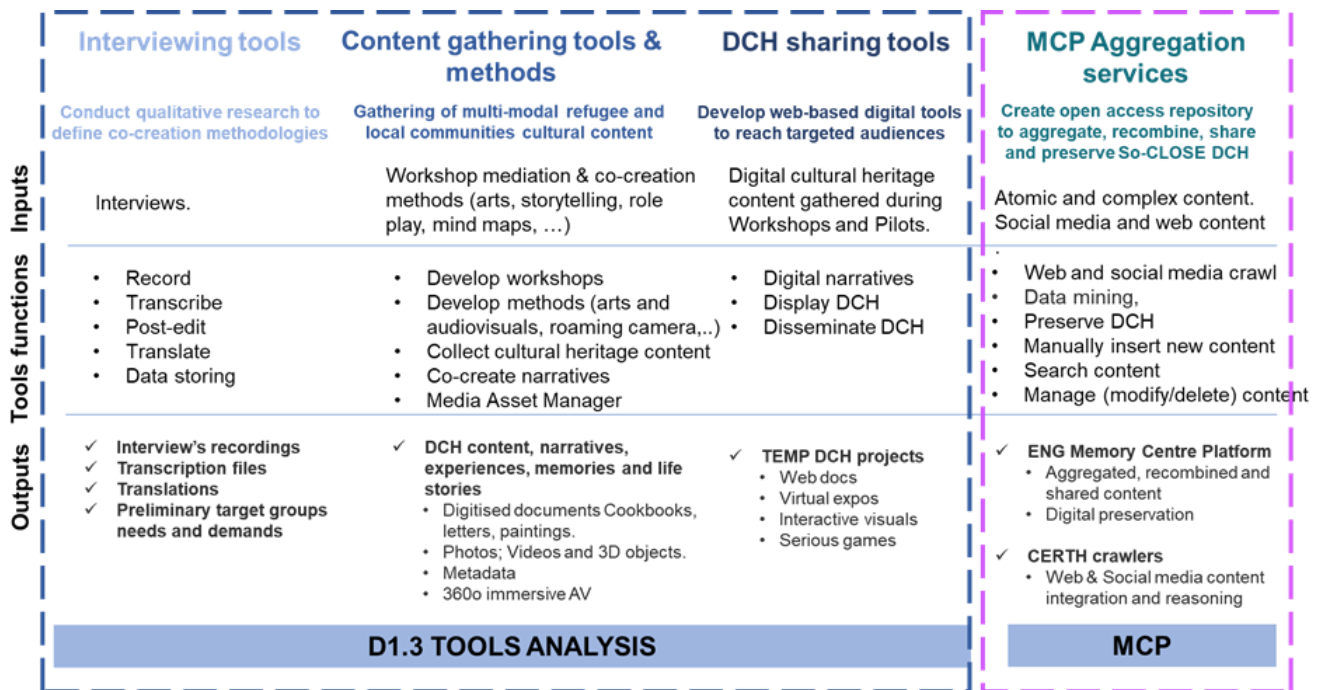
Figure 1. SO-CLOSE tool's categories and the MCP

1.Interviewing tools

"Interviewing tools" category involves all the tools that are going to be used to process the interviews: the recordings, transcriptions, transcriptions editing, translations, description.

As planned in SO-CLOSE program, in each country involved the researchers will conduct a series of qualitative interviews with displaced populations, professionals, cultural institutions and organisations involved in refugee affairs.

The interviews, now having to be conducted virtually as a response to the COVID-19 health crisis, must be supported by tools for online meetings. A common methodology has been defined for the entire interviewing process. Furthermore, the use of the different tools involved has been addressed by defining precise manuals and guidelines and also giving specific training and support to all partners.

2. Gathering tools

The main objective of WP2 is to produce the co-design methodology, including the required practical tools for the mediation of cultural encounters. SO-CLOSE's participative approach draws on the collection and documentation of experiences,

memories, and narratives coming from the testimonies of the participating communities.

Content collection during locally-based activities (workshops and pilots) will be based on the use of workshop mediation & co-creation methods such as art, storytelling, role play, mind maps among others. Technological and AV devices such as scanners, audio recorders, mobile phones or 360 cameras will also be used. All the recorded content will need specific editing software that will also be defined, in accordance with the content types gathered.

A Media Asset Manager will be used during workshops and pilots to temporarily collect content and assign the relevant metadata. A metadata scheme, linked to the digital media assets, is therefore mandatory to guarantee content search services, discoverability by search engines for content published in the sharing tools and the MCP, and proper preservation.

All the produced material will be used to feed the following WP3 and the development of the DCH sharing tools, and will be permanently stored in the Memory Centre Platform.

The specification of the co-design methods (arts, role play…) in WP2 will shape the specific needs and gathering tools to be used (recording and AV devices, editing and recording software).

The gathering tools will be selected depending on the input mediation methods of the co-creation workshops and the material that it is aimed to be produced and collected. The final output will be the DCH content, namely the narratives, experiences and life stories of the involved communities, having a content type (photos, videos, 360° immersive AV) and their respective metadata identification.

3. DCH sharing tools

One of the main outputs of the project will be the creation of a set of DCH sharing tools that will be used to display digital cultural heritage and storytelling narratives and disseminate the migration heritage content and narratives, in an optimal way to fulfil the SO-CLOSE objectives.

The specific DCH sharing tools that will be developed will include a variety of tool types to offer alternative options, and to adapt to the project's narrative needs, presenting hybrid display forms.

In correspondence with these objectives, the tools have to guarantee several core aspects such as:

- *Digital Storytelling*. The tools must enable both of the components inherent in digital storytelling, digital format, and the act of storytelling.
- *Interoperability*. The interoperability function permits communication and interaction between different tools and the MCP.
- *Accessibility*. The tools must be adaptable to internationally established accessibility standards.
- *Engagement*. The capacity of engaging users into the digital experience is inherently connected with its capacity to communicate content and achieve the expected transformative impact.
- *Hybridisation*. The convergence of different types into new digital resources, containing elements of combined media.
- *Adaptability*. One of the requisites of the SO-CLOSE tools is their ease of use and their potential to be adopted by present and future cultural institutions.

The input of the DCH sharing tools will be the digital content gathered during the Workshops and Pilots of SO-CLOSE (scanned documents, photos, videos, 360°or immersive AV..). The output will be the development of the DCH sharing tools of SO-CLOSE as web-docs, virtual expos, interactive visuals, serious games etc., able to display and disseminate the DCH narratives.

4. MCP aggregation services

The MCP is the technical component that will deliver the aggregation and preservation services of SO-CLOSE. Figure 1 maps the two associated and interrelated frameworks, the tools and the MCP, to better illustrate the different parts of the project's architecture. For this reason, although the MCP's aggregation services are not part of the deliverable, they are stated for a better understanding of the programme scope:

i) The material and content to be gathered for public display is intended to be preserved into the MCP platform, and guarantee the preservation of the cultural heritage content created using the rest of the digital tools, even after the project's end.

ii) Semantic integration and reasoning: In SO-CLOSE the system's Knowledge Base will be created in the form of a cultural heritage ontology model that will be populated with data acquired from multiple resources (e.g. audio-visual and textual content retrieved from the web, archives, user-generated content). This model will be uploaded to proper repositories to enable common data modelling in the platform, thus facilitating content retrieval.

Accordingly, the inputs, the cultural content gathered (being a simple digital asset or an enriched content) will feed the Memory Centre Platform and also the social media and web crawling services that will allow data mining, semantic integration and video retrieval, among others.

6. Methodological approach

The implemented methodological approach has specific elements for the three different tool categories analysed (Interviewing tools, gathering tools and digital sharing tools) and also a shared basis:

•   Review of relevant European projects in the digital heritage and refugee field, and the global vision of social transformation applied in the cultural heritage, though digital narrative tools.

•   Review of the previous knowledge acquired in the intersection of heritage studies and practice, and digital media narratives, through scientific manuscripts. The themes of the literature reviewed are situated in the intersection of heritage, digital media, refugees and migration.

•   Targeted state-of-the-art tools review as example-based synthesis that gives coverage of existing content gathering and DCH tools applications. The resulting list of available solutions exemplifies the diverse tool types existing in each category. The tools included in the list have been assessed by their potential to be used for content co-creation and dialogue between intangible heritage: experiences, memories, and narratives.

The consequent project stages will build upon the current report, assessing the enlisted state-or-the-art tools in relation to the user needs that will be revealed by the ongoing interviews and the future focus groups.

The specific approach for the different tool categories analysed were:

<u>Interviewing tools</u>

The objective of the research conducted was to cover the interviewing specific needs that were identified as the interviews were about to begin during the WP1. The

interviewing process was then detailed in the tasks of: performing, recording, transcription, transcription editing, translation. Different user tests and spec's analysis on different tools were conducted, to describe the available best-of-breed tools.

The desired requirements for the different tools involved in the interviews:

o   web-based
o   minimum expense
o   compliance with the privacy and security protocols
o   recording features
o   local storage of recordings
o   automated transcription accuracy
o   ease of editing

Gathering tools

A general scope of the gathering tools is provided, following the content types involved (audio, video, 360º video) to identify the generic software tools and the devices needed to edit and record the content, describing also the most commonly used software for each content type.

Furthermore, some examples are reviewed to exemplify potential usage of immersive, empowering gathering tools in SO-CLOSE and for their representation of the different content types that can potentially be gathered.

Gathering tools reviewed:

•   Collaborative boards
•   3D scanners
•   Roaming 360º digital video and photography
•   Soundscapes

As the co-creation methodologies are defined, they will define the specific co-creation methods and the exact tools to be used.

DCH sharing tools

Overview of wed-based DCH sharing tools. Besides the examination of relevant European projects as separate case studies, a specific analysis was focused in two main specific directions, regarding DCH sharing tool types:

o   Establishment of the desired DCH sharing tools qualities established on the project's requirements, as outlined in the Grant Agreement.

o   Analysis of the DCH sharing tools of European museums and memorials about forced displacement and exile.

The choice of the DCH sharing tool types featured in the list of available solutions was made based on the overall compliance of the qualities and their potential interest for the European museums and memorials.

Sharing tools reviewed:
• Interactive documentary – Webdocs
• Migration Story map
• Virtual Museums & Exhibition platforms
• Migration timeline
• Refugee Blogs
• Social media chatbot
• Serious games
• Interactive visualisations
• Open Repository

7. Interviewing tools

This chapter presents the final selection of interviewing tools and a brief use guide. The aim of the interviewing toolkit is to support the project's professionals to remotely conduct the WP1 interviews. The interviews were initially planned to be conducted in person, though the COVID-19 pandemic emergence and the consequent lockdown measures, forced to modify the interviews protocol and design a completely virtual workflow. Annex I include the detailed workflow description. Overall, not all the interview tasks can be accomplished on one single platform, as none was found on the market gathering all the characteristics required. Instead, several tools must be used, each one responding to a different task.

More specifically, the interview needs are: remote connection, web conference ability and recording, transcription, editing, and translation. It is recommended to incorporate these tasks into the schedule of the programme's regular workflow, as they are inevitably demanding in terms of working hours.

The recommendations have been based on the following criteria: quality accuracy of results, cost-efficiency or free tools, web-based tools, security, use of SO-CLOSE languages, and ease of use.

Moreover, the limitations of the available software have been the decisive factor for the final choice of tools. These limitations are related to the high cost of transcription services, the low quality of some free services, poor security and privacy, or lack of the recording option. The following figure presents the interviewing toolkit and workflow:

Web conferencing

For the interviews organised by the SO-CLOSE programme to be conducted remotely with refugees in the different language programmes, the recommendation is Cisco's

Figure 2. Interviewing tools

Webex videoconference tool. Webex has been selected after researching various tools that offer high-quality, free of charge, secure, and recordable videoconference services.

It is important that the users conducting the interviews familiarise themselves with **Webex**, and schedule early testing of the whole process, to not come up against unexpected issues at the time of the interview, or lose any important material from the recording. The necessary features for the interviews that Webex includes are:

- Free signup
- Option to record the meeting on the interviewer's computer It is possible to record locally in the interviewer computer the video of the meeting
- Option to conduct a videoconference with unlimited time

Webex offers the host the option of automatically transcribing the meetings, though this feature is only available in English and therefore not possible for the rest of the working languages in SO-CLOSE programme. It is also not included in the free version and is not recommended for privacy reasons.

Transcription

UAB Transmedia Catalonia Research Group suggested a captioning tool (Web Captioner; https://webcaptioner.com/) that provides a similar level of accuracy.

Web Captioner (https://webcaptioner.com/) is an online user-friendly service that includes all working languages of SO-CLOSE project. It relies on Google speech-to-text technology for the languages and dialects it supports. This could be an interesting point, given that the interviews to be conducted will include no native English speakers. Web Captioner can be freely used by all project members and provides a performance level comparable to other paid options.

In the applied research conducted, accuracy varies between the different available application models and algorithms, and the error rate also depends on factors such as external noise, sound quality, proximity and volume of voice recorded, as well as pronunciation varieties.

It is nevertheless important to note that an error rate is inevitable on all automated platforms. This is why reviewing and post-editing is necessary, in addition to taking care of the quality and simplicity of the audio.

Post-editing

The automated transcriptions with paying requirements offer integrated post-editing tools. These features are included in the subscriptions but are not available independently.

In the case of Web Captioner, which is a freely offered software, this feature is not included. The software generates text files and Word documents that can be downloaded and opened with Office Microsoft Word (or ".doc" file extension alternative tool).

This means carrying out editing tasks on separate environments available online, such as **oTranscribe**: https://otranscribe.com/

OTranscribe web application is free and includes all SO-CLOSE working languages in its interface. OTranscribe doesn't convert audio to text but is especially designed for editing transcriptions, and aims to facilitate the process. It offers a working platform that integrates an audio player and a text editor.

The audio player can be easily controlled by keyboard shortcuts, to play/pause, rewind, slow down etc. These shortcuts can be easily picked up and help the editor to keep a fast pace and work more efficiently. The final documents can be saved in Plain text format (.txt) or stored directly to Google Drive.

English translation

Concerning automated translations, the most widely used free application that covers all working languages is **Google Translate**. Although not completely accurate, Google Translate uses technologies such as Neural Machine Translation that convert it into a reliable working tool, at least for mass translation needs.

7.1.   Privacy and security issues

As described in the WP7, **SO-CLOSE data procedures are designed following the EU regulations on data protection, GDPR**. Accordingly, manipulation of all personal data generated by the interviews needs to comply with the SO-CLOSE data safety procedures.

More specifically, regarding the tools to be used for the interviews, the WP7 sets the following framework:

All tools planned on this project (WP2 and WP3) and their installation and diffusion (WP4, WP5, and WP6) will follow:

-        applied cryptography, such as encryption;

-        partnership with service providers that focuses on data protection;

-        explicit information for participants about their rights, their shared data, and also easy ways for them to revoke and control their information (virtual or physically shared).

Overall, data privacy and security are considered in the interviewing workflow:

1.   The designed process allows SO-CLOSE members to minimise the exposure of the personal data they are working with, making the interviews anonymous **before proceeding to recordings, transcriptions and consecutive translations.**

2.   The recommended tools count with certified encryption systems that offer a standard data protection level.

3.   Data protection is a priority; hence security measures have been designed and communicated as guidelines and requirements for the use of the tools.

> In detail:

- Organise the interviews considering data minimisation. Only ask for personal data if necessary and before starting the recording. Do not repeat information already collected during the interview, or before.
- Review cautiously the policies of all the platforms used.
- Record the interviews with external recording tools, rather than with the native tool of each platform, to minimise data exposure.
- In case of recording with the native platform, save the recording files locally and not on the cloud.
- Do not transcribe in real time, even if the platform allows you to, use instead the recommended transcription tools.
- Content anonymisation is a requirement for the use of Web Captioner. Before proceeding to an automated transcription with Web Captioner, control the entire audio recording, to make sure that no personal data are recorded.
- You will have to identify and manually SKIP any identification reference, to avoid personal data exposure.
- If it is not possible to guarantee that there are no personal identification data in the audio, then the interview should be manually transcribed.
- Save the produced documents only in local.
- Upload the documentation directly to Nebula secure server.

Eliminate the local files as soon as uploaded in Nebula.

Below, details are provided in relation to cryptography and privacy policy of the recommended tools.

Cryptography

All recommended tools count with cryptography methods to ensure information security. The SSL certificate that the tools dispose of secures data as it is passed from the browser to the website's server, and TLS refers to the cryptographic protocol that encrypts communications and guarantees data integrity and privacy.

Table 1. Cryptography details

	Certificate	Verified by	Details
Webex	Valid SSL Certificate	HydrantID ICA G2	TLS_ESCHE_RSA_WITH_AES_256_GCM_SHA386, 128bits, TLS 1.2
Web Captioner	Valid SSL Certificate	Amazon	TLS_ESCHE_RSA_WITH_AES_128_GCM_SHA256, 128bits, TLS 1.2
oTranscribe	Valid SSL Certificate	Let's Encrypt	TLS_ESCHE_RSA_WITH_AES_128_GCM_SHA256, 128bits, TLS 1.2
Google Translate	Valid SSL Certificate	GTS CA 101	TLS_AES_128_GCM _SHA256, 128bits, TLS 1.3

Privacy policy

All of the recommended interviewing tools inform in their Privacy Policy the terms under which they use the data provided, under the user's consent, specifically about the data management processes; collection, storing, use, and sharing, as required by the GDPR EU regulations.

Overall, we consider that the recommended tools meet the privacy conditions for SO-CLOSE data procedures, as these have been set by the WP7 guidelines.

The recommended platforms comply with important aspects of the GDPR framework, which includes various restrictions and obligations imposed on the companies that deal with EU generated data and applies to any business dealing with them.

OTranscribe states that the company doesn't store copies of the transcripts nor the audios uploaded. The site also states its regular collection of user data[2], called identifiable data, and its internal use to provide the demanded services. Further data sharing with third parties is limited, in the platform's need to provide and enhance the requested services and in cases of court orders and legal processes.

Web Captioner also notifies its collection of data, and the use of cookies and Google Analytics services for the delivery and improvement of its services. Additionally, the

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[2] Personal Identifiable Information' (first name, last name and email address), 'Optional Personally Identifiable Information' (postal address, phone number), and if applied subscription data (username, ID number, hashed password)

platform states that within the European Union, IP-anonymisation is activated and thus the information is treated under the respective Agreement on the European Economic Area.

For Cisco and Google, which answer to Webex and Google Translation's respective policies, both fully comply with the EU regulations for all the services that they provide.

Lastly, to reassure protection and privacy beyond the established standard when managing particularly sensitive data, the interviewer may exclude identifiable parts of the interviews from the transcription and translation processes, consolidating the participant's anonymisation.

Detailed privacy aspects

Detailed information is provided below for each one of the proposed tool's privacy policies to warn and inform future SO-CLOSE users.

Webex being a Cisco's owned software, complies with the company's privacy policy. Cisco's data protection program is applied to the data's whole lifecycle and aims to comply with mandatory privacy laws worldwide and in particular EU's GDPR.

Web Captioner Content anonymisation is a requirement for the use of Web Captioner. The guidelines provided by TEMP (detailed in the previous pages) emphasise the need to guarantee that no personal information is transcribed automatically.

Regarding the session data collected (computer's Internet Protocol-IP address, browser type, browser version, the pages of a site that you visit, the time and date of your visit, the time spent on those pages and other statistics) and the Google Analytics and other cookies the platforms states the following.

"*The information generated by the cookie about your use of the Website will be transmitted to and stored by Google on servers in the United States. In case IP-anonymisation is activated on this Website, your IP address will be truncated within the area of Member States of the European Union or other parties to the Agreement on the European Economic Area. Only in exceptional cases the whole IP address will be first transferred to a Google server in the USA and truncated there*."

These are commonly gathered internet log data being used by Web Captioner to monitor the website, and have no relation with the pre-recorded content. Moreover, the site refers to the possibility of IP anonymisation.

Regarding Google's Speech-to-Text Data logging policy, it states that "Google's Speech-to-Text does not log customer audio data or transcripts". This means that information passes through Google servers, but is not stored. Nevertheless, for extra reassurance purpose, and in case of Google's speech-to-text future privacy policy changes, the given

recommendations state that the content transcribed using Web Captioner should avoid personal data.

Concluding, clear anonymization instructions are given to the interviewers and the transcriptions are not performed live/simultaneously with the interviews, so that the information transcribed will not include personal data of the interviewees. The information kept by Web Captioner only affects the common log data of the website session while the interview content is not stored in Web Captioner nor Google's servers. Users can also opt-out from being tracked by Google Analytics, following the site's guidelines.

oTranscribe is an open-source software built upon open-source components and licensed by MIT. The service is provided by MuchRock Foundation, a non-profit collaborative news site, member of the Global Investigative Journalism Network. Thus, oTranscribe's privacy policy is subject to MuckRock's respective regulation.

As stated, oTranscribe doesn't store copies of the transcripts nor audio/video files uploaded to the platform. However, it does collect 'Personal Identifiable Information' (first name, last name and email address), 'Optional Personally Identifiable Information' (postal address, phone number), and if applied, subscription data (username, ID number, hashed password). The aforementioned data is stored in order to serve communication needs and assistance in the MuckRock's Django app.

Regarding the sharing of third-party data, permission is requested and is only applied for the delivery of the platform's services to users. Additionally, Personal Identifiable information may be disclosed when required by law or "under the good-faith belief that such disclosure is necessary to conform to applicable law".

Google Translate is Google's statistical and neural machine translation and is subject to Google's account and services that comply with GDPR. https://cloud.google.com/security/gdpr/

Regarding the data confidentiality of Translate services, Google states that: "Google does not use any of your content for any purpose except to provide you with the service."

The text uploaded on Google's platform is, as detailed, stored for a short period to perform the requested translation services, and is deleted after 7 – 14 days.

Security and privacy issues have arisen for the Zoom platform, and we reproduce here a series of recommendations that can be applied a priori, to strengthen the software's security and take precautions for any possible interruptions during platform use (Gebhart and Mir, 2020). Specifically:

- Deactivate auto-saving
- Deactivate Attention Tracking
- Set a virtual background for videocalls

- Keep the Meeting ID in private mode
- Activate Meeting password
- Lock screen sharing for participants
- Control participant's entry through waiting rooms
- Lock the meeting when all interested parties have joined

7.2.   Brief guide

STEP 1: <u>Record interviews conducted in Webex</u>

- Record session with an external recorder device, only if not possible record locally on the interviewer's computer.
- Plan to ask for any personal data you need at the beginning of the interview and start recording after the initial minutes presentation.
- Once you already know the surname of the interviewee you don't need to repeat the information during the interview, or if you do, pause the recording.
- Test conference recording before conducting the interview.
- Recording meetings is available from the desktop app, signing up to Webex Free plan. The recordings are only saved locally. https://help.webex.com/
- Take care of properly ending the meeting in order to complete the recording.

STEP 2: <u>After the interview is completed transcribe the audio/video using Web Captioner</u>

- Content anonymisation is a requirement for the use of Web Captioner. Before proceeding to an automated transcription with Web Captioner, control the entire audio recording, to make sure that no personal data are recorded.
- You will have to identify and manually SKIP any identification reference to avoid personal data exposure.

- **If it is not possible to guarantee that there are no personal identification data in the audio, then the interview should be manually transcribed.**Use a multimedia reproducer (VLC media player) in order to reproduce the audio/video file.
- Play the file from any available speakers and situate the speakers right in front of the computer's screen.
    - There's an alternative option to speakers, which involves playing the audio file with an external device and inputting the signal though the computer's minijack entrance.
- Open Web Captioner https://webcaptioner.com/ and set the Spoken Language.
- When the transcription is completed, save the transcription on the local drive as a Text file or as a Word document.

STEP 3: <u>Edit Transcriptions in the interview language using oTranscribe</u>:

- https://otranscribe.com
- Save the working and final file on the local drive.

STEP4: <u>English Translation</u>

- Google Translate (or DeepL for some of the SO-CLOSE languages) can provide a first translation draft for the interview's texts.
- Remember that the text must be anonymised, during the previous steps.

STEP 5: <u>Save results in NEBULA</u>

- Upload all the materials (session recording, edited transcriptions and translations) in the NEBULA UAB-repository.
- Eliminate the produced files (audios, text files, etc.) once you have uploaded them to Nebula.
- Further instructions will be given regarding NEBULA usage.

<u>NOTE</u>: The guide has been elaborated during May-June 2020 to support the operational needs of the project and contains information on commercial products that is probable to change over the time, because of the update of the services, the terms of use or the security and privacy policies.

8. Gathering tools

Cultural heritage is capable of embodying complex narratives that reveal the social, historical, and economical context, and connect generations, intangible cultural elements, geographical areas, aesthetical standards, and social groups. The literature highlights the potential of artefacts to trigger conversation and take on meaning, and

finally contribute to engagement with past and present heritage, and create memorable experiences (Cook and Hill, 2019).

Forced displacements in different historical contexts are treated by museums and memorials all around Europe, whereas in regard to undocumented migration, there's a whole new archaeological field that has been developed. This is an attempt to establish a scientific approximation to the analysis, collection, and documentation of the displacements and their social, economic, political dynamics, of the so-called New Nomadic Age (Hamilakis, 2018). SO-CLOSE can draw methodological guidelines from that field as well as practical direction on cultural and heritage content collection, description, and sharing.

The purpose of this chapter is **to report on the state-of-the-art of the gathering tools. The gathering tools, in the framework of SO-CLOSE, are meant to support co-creation activities and produce the digital assets linked to the content and narratives produced.** All this content will be used to feed the DCH sharing tools to be developed.

The specific work to be carried out in WP2 will determine the co-creation methodologies that will define the final choice of the gathering tools to be used for co-creation and content-gathering.

What we call digital assets are all items (photos, videos, immersive videos, audios, documents, 3D files) that are a digital translation of memories, narratives and heritage artefacts collected with proper methods, recorded with devices, and edited and managed using software.

8.1.   Presentation

There is a growing variety of software and devices for the recording, editing, and management of digital information. This includes commonly used devices, like mobile phones and 360 cameras, specialised media asset managers, and software applications.

The following table presents the basic types of content (documents, images, audio, 360º video…) that will presumably be used in the SO-CLOSE programme. We distinguish between software and devices for each content type, aiming to present an inventory of the necessary equipment for the gathering of digital assets.

When possible, we always opt for Open Access software, to guarantee accessibility and facilitate workshop development. Lastly, computers and smartphones are basic devices that are compatible and necessary for all the mentioned content types for production, processing, and storage.

Table 2. Gathering tools content types

Content type	Software	Devices
Document Letters, administrative docs, notes, general text types	Text processor Messaging applications Scanning software	Scanner
Image Personal photos, selfies, photographic archives	Image editors Free bank image Social media Online archives Scanning software	DSL Camera Mobile camera 360º camera Scanner
Audio Oral testimonies, personal recordings, audio messages, audio cuts	Mobile voice recorder app Free audio bank	Digital voice recorder Personal microphone Headsets
Video Personal recordings, video archives, open-access videos	Video editor Free video bank	Mobile Camera 360º camera
Immersive video	Video editor	360º camera
3D	Display.Land / Meshroom Sketchfab	Mobile phone
Workshop facilitation	Whiteboard Software Storyboard editors Mind mapping software	Mobile phone Computer
Digital media and metadata	Media Asset Manager	Computer

8.2.   Types of gathering tools

The following gathering tools examples have been highlighted because of their alignment with SO-CLOSE approaches and objectives (immersivity, empowerment,

storytelling), and because of the representational potential of the different content types that can be gathered.

8.2.1. Collaborative Whiteboard

Definition: A collaborative whiteboard resembles a physical whiteboard; in practice it is a shared, open-design space, where collaborators can simultaneously edit and share content from their own devices, making it an excellent co-creation tool.

Production & co-creation: A whiteboard can host textual information while it also accepts image formats and URL links. It could be used to invite the workshop's participants to share their stories and embed them with mobile stored photos, even anonymously. A whiteboard can also be used to enhance collaborative storytelling, creating multi-author, collective stories.

Objectives alignment: As a content gathering tool, a whiteboard enhances digital storytelling, where life stories and testimonies can be collected and synthesised by collaborative and co-creation methods.

Integration: The results of the collaborative whiteboard can be easily integrated into almost all the suggested digital tool types.

TOOLS

Miro Whiteboard. https://miro.com/features/

Google Jamboard. https://jamboard.google.com/

Mural. https://www.mural.co/

8.2.2. 3D Scanning

Definition: The process of capturing the three-dimensional shape and appearance of real objects, applying core technology of a wide variety of fields. This is rapidly expanding its applications in the fields of cultural heritage, as it allows for the scanning, documentation, and communication of heritage objects, monuments, and even landscapes.

Production & co-creation: Nowadays advances have made 3D modelling of objects by the general, non-expert public possible, through free online software or mobile applications. The technique used to create a 3D scan of an object using multiple images

is called photogrammetry and it can be used to collaboratively produce models during co-creation workshops.

<u>Objectives alignment</u>: The advanced technologies applied to 3D scanning offer immersive experiences and engagement, and a greater impact on communication and conservation potential.

<u>Integration</u>: 3D models can be integrated into other digital media such as galleries, games, interactive visuals etc.

TOOLS

Mobile phone/camera. The photos can be made by a DSLR camera, or simply using the camera on a mobile phone.

Display.Land Application (iOS and Android) for 3D modelling of inddor/ outdoor elements. Free with subscription. It offers basic editing features. The outcome is an .obj archive that can be uploaded directly to Sketchfab. Link: https://get.display.land/

Meshroom. Online free software for modelling.

Sketchfab. Publishing platform for 3D models.

<u>Example</u>
<u>Sketchfab, *What They Carried*</u>

Figure 3. Sketchfab 3D bag "What they carried"
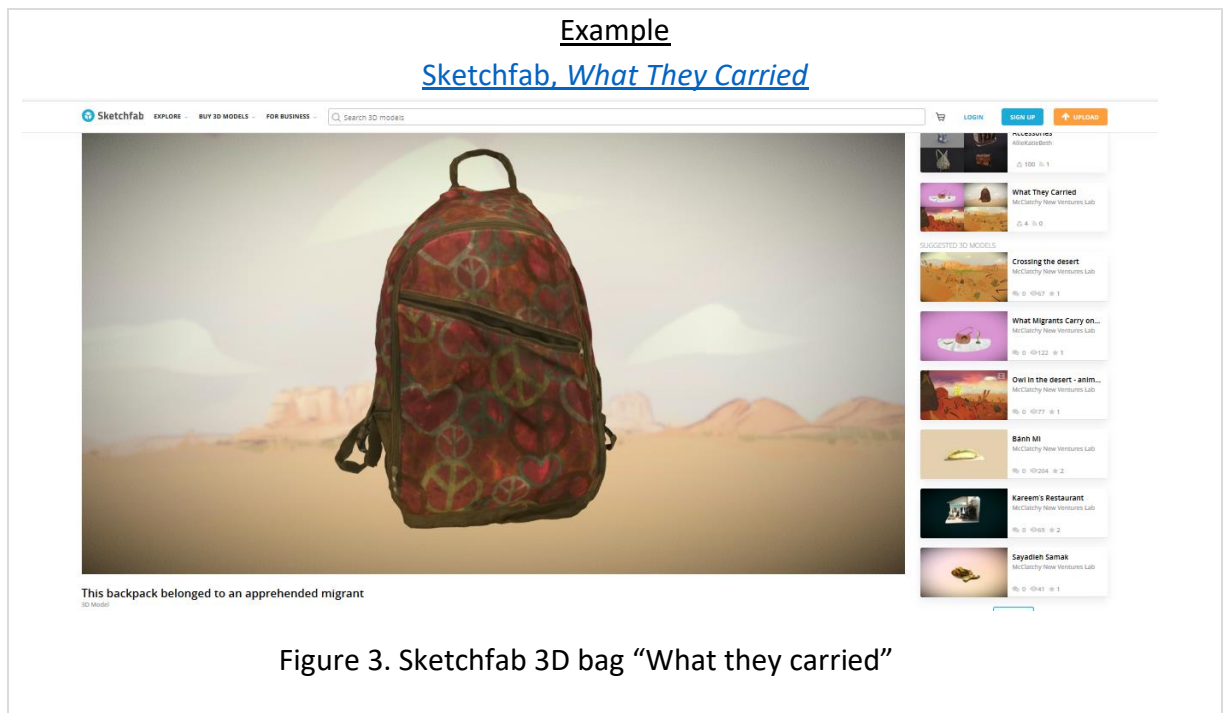
8.2.3. Roaming 360º video

<u>Definition:</u> Roaming digital video cameras with 360º capabilities are loaned to refugee communities, in a chain of trust basis and empowering approach.

<u>Production & co-creation:</u> 360o images and videos can be watched in YouTube and Facebook or even with basic VR headsets. This roaming camera could work as a video making tool to be used by refugees documenting their environment. Recording videos of daily activities and realities could grant agency to content creation. We suggest a first meeting workshop where the participants will be given a masterclass on the technical and narrative use of the tools. Specifically, beginning with issues like using the camera and video editing, and then opening up a discussion about story construction and messages.

<u>Objectives alignment</u>: Exchange; collaborative production, creativity, creation of digital video content; Social cohesion; immersive storytelling.

<u>Integration:</u> Once recorded, immersive videos can easily be embedded in the rest of the tools to enrich the experiential features of the narratives.

TOOLS

Camera 360o Ricoh Theta

Theta+ For 360o image editing

Theta+ video For 360o video editing

<u>Example</u>
[360° Video | Migrant Crisis: The Whole Picture](#)

Figure 4. YouTube 360 video "Migrant Crisis"

8.2.4. Soundscapes

Definition: Soundscapes are audio recordings that document the sonorous landscape. Recording everyday conversations, street noises, and any other sounds of ongoing activity. The central part of the representation is not visual, but acoustic.

Production & co-creation: Mobile phone recording applications are available for free, or integrated as native mobile apps, and can be used by the workshop's participants to document sounds of everyday life in a way that's less intrusive and holistic than video image. As its production does not depend on specialised software, it can be easily produced by any participant, and also easily combined with other content types (for example videos composed of photos and audio recordings).

Objectives alignment: Soundscapes enhance participation and democratisation of media.

Integration: Soundscapes and audio recordings can be easily integrated into different media as maps, timelines, galleries, or video productions.

Example

Refugee Hosts. *Readings and Soundscapes*

Figure 5. Web of Refugee Hosts "Soundscapes"

8.2.1. Video and image

Definition: Regular video and image shooting are both useful means to display and enrich So-CLOSE's narratives.

Production & co-creation: So-CLOSE will provide recording camera's, audio and video devices. The refugee communities will then record and document the narratives dealing with recent memories and experiences.

Objectives alignment: Through agency and co-creation of media content by the communities, image and video will enrich the resulting projects to be created using the sharing tools to be developed.

8.2.2. Other gathering tools

Lastly, we considered it useful to present some project examples that were suggested by UAB task members as cultural methods that could be also be used.

- Versembrant – Rap educational project

Described as a popular itinerant school, Versembrant's objective is to encourage critical thinking among young people though urban art and hip hop. The project consists of workshops focused on art production that evolves through themes such as racism, xenophobia, and gender inequalities. The social component of the project is defined by art practices serving the scope of social transformation. https://www.versembrant.cat

- Claudio Zulian – Video artist

Italian artist based in Barcelona. His work includes multiple artistic practices, video, installations, performances, that mainly focus on social and political issues. He has explored migration issues through different art forms and has also filmed the documentary We were not born to be refugees, about the personal stories of eight refugees living in Barcelona. https://www.claudiozulian.com

- Open Cultural Centre (OCC) – Children's book

OCC is a volunteer's organisation working on the inclusion of refugees and migrants through educational and cultural activities in Spain and Greece. The activities organized by OCC are aimed at promoting intercultural communication and community activities in the camps and in transit zones. In this framework, they published the book, "My friend!", including paintings and stories by refugee children to raise awareness of children's vulnerability and their situation. https://openculturalcenter.org/ca/producte/amic-meu-catalan/

- 5W - #Boza Documentary

Short documentary with testimonies about undocumented migration in Europe. The documentary is based on selfies taken by the central characters to communicate with their families and friends. The selfies, and other mobile pictures and videos, are used as the script for the documentary narrative, while accompanied by the character's testimony. https://www.revista5w.com/where/boza-un-documental-migraciones-forma-selfi

- UAB – Film correspondences

"Correspondencias en cuarentena, 2020": A gallery of short films produced during the quarantine by a group of friends, to keep in contact with each other. Each film (1-5min) represents a card sent from one person to another. This method is especially interesting for SO-CLOSE project, as it creates means of communication between people from different geographical areas and offers a multidimensional perspective that focuses on individual, personal stories. https://vimeo.com/showcase/6977533

8.3. Multimedia Asset Manager

A Multimedia Asset Management tool will be adopted and parametrized to SO-CLSOE workshop and pilot media gathering needs. The MAM will be developed from on an open-source media repository basis (Omeka S), widely used in digital heritage projects.

Some important features, from an authoring point of view, rely on international standards like Dublin Core and W3C, it is adaptable to personalization, it allows the incorporation of a large number of digital assets, offers interoperability, classification, tagging, geolocalization, and authoring accessibility (Alcaraz Martinez, 2014).

There's also a long list of international applications of Omeka, that have been developed by scholars, museum professionals, librarians and archivists.

Omeka S is an instrumental media asset management tool linked specifically to SO-CLOSE workshops and pilots' media and description collecting needs, and it's not intended to work as a preservation repository. The MCP will act as the preservation repository even after the end of SO-CLOSE program.

A wide spectrum of content types (pictures, documents, videos, 3D objects) and file formats (.obj, .pdf, .ppt, .doc, .xml, .html, .mp3, .mp4, .divx, .gif, .tif, .jpeg …) and metadata description capabilities will be supported by the MAM, responding to SO-CLOSE needs to gather and describe different media content.

Table 3. MAM content types and formats

Content Types	Expected common file formats (supported by the MAM)
Video	.mp4
Audio	.mp3 / .wav
Document	.pdf, .ppt, .docx, .xml, .html

3D	.obj
Image	.gif, .tif, .jpeg

8.4. Rights and consent management

Special mention needs to be made to the foreseen procedures of rights and consent management for the content gathering during the following stages of the project.

The content gathering methods of SO-CLOSE include participatory media co-creation. A series of forms are drafted by the project for the copyright management and the photo, video and sound recording release and consent collection.

The forms are complemented by detailed information sheets for the Pilots and the Toolbox, they will be managed directly by the Cultural Institutions that will translate them, if needed, in local or/and other languages. The institutions will dedicate part of the pilot sessions to inform the participants about the content and the terms of the forms, and to collect the signatures. Only material produced with the informed consent of the participants will be used and published by the project, and the available authorisation documents will be detailed in the metadata of each media. Finally, the original forms and copies will be stored by the project for the necessary period.

Regarding the specific scope of the forms:

AGREEMENT FORM FOR THE PUBLICATION OF PHOTOGRAPH, VIDEO AND SOUND RECORDING – AUTHORSHIP RIGHTS

Agreement between the Consortium and the pilots participants that sets the terms for the publication of the media content created by the participants.

The media will be made publicly accessible under the CC - BY licence, acknowledging the name of the participant as author/creator of the content. Permission is granted to the organizations members of the Consortium to use the material worldwide and for its entire duration.

SO CLOSE PHOTO, VIDEO AND SOUND RECORDING RELEASE AND CONSENT FORM

Consent form for pilots participants and third-parties depicted in the media, for the use and publication of the photographs, videos and sound recordings and their image, likeness, appearance, and/or voice.

Visual data, including immersive content and other participant-generated content, particularly if there are third parties featured, will be managed on the basis of the following protocol:

1. Third parties appearing in videos must sign a consent form authorizing the use of their image even if they are not the "protagonists" of the works.

2. Special care will be taken when dealing with minors and people with functional diversity, when informing them about their rights and the use of their image.

3. The option to withdraw the authorization will be given.

4. The recordings that will be made during the SO-CLOSE public events (content gathering workshops and Open Day events) will not record people who are not directly participating. If deemed necessary (e.g. other people appearing in central part of a photo) the image will be retouched to blur their facial area.

5. For the material collected (crowdsourcing), the person making the contribution must sign the "Terms of the contribution", which includes guaranteeing the consent of third parties that may appear in the image. He / she will also be responsible for requesting that the images are removed from the SO-CLOSE digital platforms in case people appearing in the images express this wish.

Furthermore, the documents inform participants that all the materials will be used in accordance with the SO CLOSE project objectives of preserving and sharing the cultural heritage of forced migrations in Europe. With this aim, the project will elaborate digital tools that will be aggregated by the Memory Centre Platform which will be made publicly available through the internet.

Finally, participants are called to check which of the following terms they content to:

• 	I agree with the audio/video recording and photographic production for research and dissemination purposes.

• 	I agree with the use of literal quotes of my interventions.

• 	I agree with the use of the audio and video recordings for purposes of research dissemination as long as mechanisms to guarantee my privacy and security are adopted.

• 	I agree with the mention of my name when using audio/video recordings.

• 	I agree with the mention of my name when using quotes of my interventions.

## 8.5. 	Results

Content gathering is an essential part of the project's development as it will provide the programme with the necessary material for its future development. The future

definition of the co-creation methods, and the target group's characteristics and needs, will define the content types to be gathered, and thus, the supporting devices and software involved.

Furthermore, concerning the methods and activities that rely on the user's participation, it is important to consider the limitations presented by the inherent inequalities of the context, the resources available, and the technological abilities of the people that will participate.

Mobile phones are considered a central resource for refugees, as they allow them to communicate, get informed and navigate the Web. It is evidenced that phone accessed social media is displacing conventional media platforms for refugees and migrant communities (Gillespie et al., 2016). Generally, mobiles are the principal device used for internet access, messaging, social media use, music listening, etc. (Alcaraz, 2016). For that reason, they can constitute an excellent tool for participatory digital campaigns and crowdsourcing calls.

Regarding the examples analysed, 360º pictures and video content can give SO-CLOSE the immersivity pursued while using a roaming camera is a gathering method that can lead to excellent and empowering results as it gives communities and refugees the agency to record content in a chain of trust approach. In addition, whiteboards can be very helpful for storytelling creation, and can also be used in remote workshops.

Considering the working plan for the following tasks and WPs:

The following WP2 will be crucial for the definition of the content gathering methodologies of the CIs and the selection of the sharing tools. The WP2 tasks include focus groups with the stakeholders (T2.1), the tools co-design workshop (T2.2) and the design validations and specifications (T2.3). During WP3, while the tools development will take place, CI will be able to refine their gathering methodologies and work on the historic material collection and evaluation.

Regarding WP4 and the implementation of the content gathering methods and tools, it is important to highlight two more aspects. First, that these methodologies will be adapted to the curatorial vision and scope of each project. The gathering and the sharing tools need to be considered and selected in accordance with the narrative framework of the projects and considering their story topics and how they can best serve them. Overall, it must always be aligned with the specific project's framework, curatorial and co-creation approach.

Second, the project will have to dedicate a considerable amount of time and resources to carry out these methodologies, as they are processes that require the engagement of the participants, their contribution and the curation of all the materials under the co-defined scope.

The results of the study conducted suggest that:

• Co-creation tools have to guarantee maximum ease of use, accessibility and usability.

• Being central devices for refugees, mobile-driven tools are generally recommended for participatory activities.

• A MAM is essential to easily support workshop and pilot digital asset management needs and to describe all the digital content gathered.

• The gathering of different content types (photos, videos, scanned documents, audios etc.) will benefit the development of enriched DCH sharing tools.

• To determine the methods for each pilot through based on the user's studies that are being implemented.

9. DCH sharing tools analysis

The DCH sharing tools analysis consists of two parts. First, we examine the tools created by relevant European projects. Secondly, we look at the tools that are used by museums

and memorials in Europe treating forced displacements. This analysis provides the basis for the final selection of the DCH sharing tools in SO-CLOSE, presented in Chapter 7.

The examined European projects are reviewed for their relevancy to the SO-CLOSE approach and main themes: migration, forced displacements, co-creation, digital tools, storytelling. The versatility of the projects examined is meant to cover the wide spectrum of the SO-CLOSE proposal.

Regarding European projects, the tools that have been produced or are being developed by these projects will be reviewed under a three-fold perspective:

- Project description: Overview of project's approach to tool development.
- Data and content gathered: The content used as a basis for the tools.
- Tool(s) developed: Description of the resulting tool(s).
- Usage assessment: Evaluation of project tools.

The examination of European museums and memorial focuses on the DCH sharing tools used to disseminate the heritage of forced displacements, forced labour, exile, political persecutions and extermination. This examination is meant to narrow the framework of the DCH sharing tools analysis, focusing on specific reference institutions. The examined memorials and museums cover the references made in the Grant Agreement (p. 37,38), and further enrich them.

As for the methodology of the museums and memorials institution examination, the approach applied provides an analysis of the DCH sharing tool types and their characteristics.

9.1. European projects case studies

CHESS

Project Description: Cultural Heritage Experiences through Socio-Personal Interactions and Storytelling: CHESS is a research prototype system aimed at enriching museum visits through personalised interactive storytelling. This project aspires to replace traditional exhibit-centric descriptions with story-centric cohesive narrations and carefully-designed references to the exhibits. The project focused on the development of the storytelling model and the CHESS authoring tool that enabled cultural experts to create personalised interactive experiences for visitors to cultural sites (Pujol et al., 2012)

Data and content gathered: The content of the CHESS tools was provided by museum professionals at the cultural institutions involved.

Regarding the user's data gathering, for personalisation purposes, different approaches were applied: Organisation of user workshops; implementation of museum curators and groups of visitors in the design methodology; user-group participation in the planning and design of the outset scenarios; modelling of the visitors with the assignment of personas, based on demographical data and the interpretation, through algorithms of the user's interaction with the developed applications, during their testing. A brief visitor questionnaire was also used to gather user information (Pujol, 2012).

Tool(s) developed:

•   CHESS Authoring Tool (CAT) enables the design and development of interactive stories. Adaptive Storytelling Engine (ASTE) combines the user's information with contextual data, to offer a personalised path into the museum. Therefore, as a story authoring tool for visitors, the tool was meant to provide the user-visitor with the technical means to create their own story graph, within an enriched environment.

•   Personalised museum itineraries/guides, based on visitor's profiling and storytelling modelling of the museum's content. The developed applications included augmented reality and 3D digital creations, as well as QR -scanning activities and the possibility of displaying new images, videos etc.

Usage assessment: The project was initially focused on adapting a Diginext's sophisticated tool into a usable tool for heritage professionals to be able to create storytelling experiences. As a leading partner explained in an interview held in the framework of this research, in the end the project was finally focused on the development of a co-design and user-centered methodology, that gave fruit to the sampling project, EMOTIVE.

Another element that was underlined in literature and in the interview, was the fact that the complexity of the initial tool did not facilitate its adoption by the museum professionals (Perry et al., 2017). This is why we recommend paying special attention to the usability of the tools we deploy in the co-creation pilots, as well as the user's perspective.

EMOTIVE

Project Description: Emotive project has been developed within the Horizon framework (2016-2019) with the aim of researching, designing, developing, and evaluating methods and tools to create emotive storytelling narratives. EMOTIVE gives continuity to the CHESS project by using the insights gained on the use of mobile guided technologies in cultural institutions to develop authoring tools intended for cultural professionals. It is also a sibling project of VIMM – Virtual Multimodal Museum (both founded under the same call, H2020-SC6-CULT-COOP-2016).

Focused on cultural sites and heritage narratives, its main aim is to enhance heritage communication through emotional impact, engagement, and drama-based narratives.

Data and content gathered: The heritage content that was included in the developed EMOTIVE experiences was co-designed with the museum experts and provided the relevant information about exhibits and storytelling narratives. VR environments were developed using cutting-edge technology as IBR and Multi-View Stereo algorithms and datasets, and photographs produced by the project's team.

Tool(s) developed: EMOTIVE developed a series of authoring tools as well as a series of heritage experiences:

• **The Storyboard Editor & Visual Scenario Editor**. Interactive Storytelling experiences for mobile devices.

• **An authoring tool for on-site experiences.** Enables cultural professionals to develop stories, from simple text-based presentations to advanced multi-user AR games, and design different storylines. Using visual authoring, it permits users with no programming skills to create story modules.

• **Floor Plan Editor**. Bring your experiences online. Enables heritage professionals to create virtual representations merging 360o photographs and publishing them on a web-based environment.

• **Mixed Reality Plugin for Unity**. Immersive virtual experiences:
An authoring tool for off-site experiences. Image-Based Rendering software that converts 2D photographs into an immersive virtual environment.

• **Tools for artefacts replicas & VR interaction**. Bring objects to life. Cultural heritage managers are provided with tools (Flexible mold shells, FlexMolds) created with 3D printing) to create tangible replicas of artefacts that can be also transferred in the virtual environment through the Object tracking plugin for unity. This tool allows the user to interact with the replica on a virtual level, through a virtual reality headset and a tangible interface.

Experiences:

• **Ebutius Dilemma**. Interactive character-driven exploration of "The Antonine Wall: Rome's Final Frontier" display developed for the Hunterian Museum at the University of Glasgow. It uses mixed reality storytelling onsite and online virtual exhibition with interactive 360o views.

• **Views on Verecunda's Life: "A Digital Window to the Scottish Roman Past"** is a multi-part experience that combines immersive VR and AR features to contextualise the objects on display. Mixed reality digital storytelling onsite and facilitator-led experience.

• **Digital education Kit: Exploring Egalitarianism**. Explores the Stone Age site of Çatalhöyük, Turkey, through 3D printed replicas, virtual tour of 360º view houses, discussion-provoking Chatbot, quiz for personalisation ("your role in society").

Usage assessment: The project's applications and experiences were largely a product of the ongoing research and continuity of the co-designed, user-centered methodology initiated in CHESS. As shown, the detailed study of the users in different cultural venues allowed them to adapt the tools and develop an application that addressed the user's profile.

Improvements were also made in the authoring tools, in regards to the previous CHESS version. Nevertheless, the renewed version did not reach non-digital experts or culture professionals until it was developed independently from the beginning by the University of Athens research team, outside of the project's framework (Vrettakis et al., 2019).

CROSS-CULTS

Project Description: Cross-cults goal is to spur a change in the way European citizens appraise history, fostering the re-interpretation of what they may have learned in the light of cross-border interconnections among pieces of cultural heritage, other citizens' viewpoints and physical venues. The project aims at enabling a unified, IT-facilitated approach to history.

The programme was held through four principal concepts that resulted in four applications. The main idea was to offer digital resources to visitors at different venues, so that they could explore the venues and learn about the specific context, comparatively. The goal was to interrelate different objects, different historical periods, cities, and museums. One application was especially developed for each of the different scenarios. The apps were developed for mobile use, and although different, the four of them share some common elements, such as digital maps and customisable, interactive features.

Data and content gathered: The methods included content augmentation from crowdsourcing, but the initial corpus of content was defined by experts. The main focus of the project was the creation of an ontological scheme for interconnecting objects, aiming to provide the user with a comparative approximation of heritage resources (Vlachidis et al., 2018).

Tool(s) developed: Several concepts and tools were developed as pilots. The tools developed in the project included cultural heritage items such as museum exhibits, archeological monuments, gallery paintings, etc., that were selected in collaboration with historians, social scientists, and heritage professionals, and extracted from existing collections, repositories and data sets.

App1. Visitor assistance (map) and game, The National Gallery, London: The app included two kinds of functionalities. The first was a digital map with lists of the paintings on display in each room. This feature was enhanced with a profiling system (log-in

information, liked items, declared interests) that was developed to provide personalised recommendations and tour design. The second component of the app is a gallery creation game, where the user is invited to make a selection of artefacts and compose their own gallery.

Tools applied: digital interactive map, user profiling and segmentation, tags for recommendations, interface game simulation. Stories linked to heritage items, connections, quizzes, and queries for user's reflections/evaluation,

App. 2: Storytelling game, Lugo (Spain), Chaves (Portugal), Montegrotto Terme (Italy), Epidaurus (Greece). This second app was meant to interconnect different locations and cultures through shared archeological themes composed in an app game for visitors. Minigames were designed to challenge the players' knowledge concerning different locations, historical periods, and cultures, and to highlight shared themes between European localities.

Tools applied: identification by geolocation, user profiling and segmentation, tags for recommendations, interactive maps, galleries of images, live chat, online group play option, interactive graphs.

App. 3: Museum ecosystem and set of mini-games. Thematic tours, Archeological Museum of Tripolis, Greece.

App. 4: Multiple cities interplay: GPS tracking, customisable interactive map, geo-located historic content for non-linear storytelling, user rating, available on mobile apps and web interface.

Usage assessment: Present use and development of the app: National Gallery London currently offers through the AppStore, **the "National Gallery London HD" app** (€2.29) that includes 1,635 paintings, access to HD versions of the paintings, and the option to save them in the mobile's photo gallery, search engine, bookmarks, slide-show, Facebook posting option, and classification by century, genre, and author.

A comparative assessment of the first pilot app developed in the framework of the Cross-cults project with the actual app version currently available by payment, ultimately reveals that **a simplified version has been adopted and commercialised**. The present app offers a large number of high definition images, available for downloading and classified by different criteria.

ONGEKEND BIJZONDER

Project description: Oral history project promoting diversity in heritage collections and a change in the social perception of refugees in the Netherlands. Inspired by 248 interviews, Ongekend Bijzonder — meaning *Specially Unknown* or *Unknown Special* —

developed more than 30 artistic productions together / in co-creation, with refugee communities, artists, and cultural institutions. It also created a permanent record of the individual refugee's life stories, documenting with these testimonies the communities and refugee lives in the Netherlands, and making them accessible via the City Archives.

Data and content gathered: The content gathering of the project is especially relevant to SO-CLOSE, as it comprises a significant body of testimony-based material on the subject of (former) refugees, living in the Netherlands. In practice, the project accomplished creating a primary source, conducting 248 interviews based on history standards and documented with audio and video by specially trained professionals.

Furthermore, the co-creation approach was enriched by projects driven by artists who accompanied the refugee participants to create and present narratives of their personal stories.

Tool(s) developed: The project used a web-based open-access platform as an archive for the oral testimonies collected in video formats, integrated into various topic categories, and applied through a participatory approach to the collection process by engaging city agents with migrant communities.

Usage assessment: A prototype process of community-based development and a migrant empowerment project that has won the public award for Code Cultural Diversity.

IMARE

Project description: iMARECULTURE uses Advanced VR, immersive serious games and Augmented Reality as tools to raise awareness and access to European underwater cultural heritage. The project focuses on raising European identity awareness through maritime and underwater cultural interaction and exchange in the Mediterranean Sea. Commercial ship routes joining Europe with other cultures are considered vivid examples of cultural interaction, while shipwrecks and submerged sites, unreachable to a wide public, are excellent samples that can benefit from immersive technologies, and augmented and virtual reality.

Data and content gathered: Existing data of archaeological investigation, open data, and academical publications set the basis for the project database.

Tool(s) developed:

- A 3D library of ancient (classical era) ships, created based on scientific publications and 2D drawings.

- A 3D library of Amphorae, including the *Arpenteur ontology Editor*, the *Ontology-based Web tool for extracting 2D/3D data from the stored Xlendi dataset,* and the *Ontology-based Web tool for 3D timeline data from Xlendi timeline dataset*.
- The Image Enhancement Tool, aimed at enhancing the quality of underwater images, implements state-of-the-art algorithms.
- A Navigation Algorithm, called *Seafaring Webservice* offers users a visual experience through the simulation of Kyrenia's ancient maritime paths, based on archaeological evidence.

Usage assessment: It is considered a project of reference for VR and AR tools, serving the cultural heritage study, documentation, and dissemination.

ViMM

Project description: Virtual Multimodal Museums is an EU project and an EMOTIVE sibling that unites international expertise on the field of Virtual Museums (VM), to build a consensual framework on Europe's VM conceptualising (manifesto) and practice (roadmap). ViMM has established its main objective to analyse and promote the role of VM as a strategic resource for Europe's cultural, social, environmental, and economic value. In this framework, the programme has defined state-of-the-art advances in the field and released a series of case studies on applications of digital media into heritage projects.

Data and content gathered: To develop the Action Plan's heritage strategies, ViMM researched state-of-the-art digital applications in European cultural institutions.

Tool(s) developed: ViMM was focused on supporting policy development, decision making, competence building, and the use of technical advances. It did not intend to further develop new digital tools or applications.

Relevant case studies of the state-of-the-art digital heritage applications are available on the project's website (https://www.vi-mm.eu/case-studies/).

La Tempesta (TEMP) has participated on the VIMM project panel of experts.

CULTURE LABS

Project description: Recipes for social innovation. Culture Labs is developed as an **open and evolving ICT-empowered infrastructure comprised of a rich variety of resources including guidelines**, methodologies, digital tools, existing community engagement projects, as well as novel ideas and approaches that can facilitate social innovation in culture.

The project promotes a participatory approach to heritage, focusing on migrant communities, and aims to offer methodological tools and digital infrastructure to be used by stakeholders — museums, civil organizations, policymakers — who want to engage with their local community. Four pilots will be developed and assessed, in four different countries.

Culture Labs investigates and proposes the use of **digital services and tools** for facilitating access to Cultural Heritage through tailor-made original experiences, creative reuse, enrichment and co-creation.

Data and content gathered: The content of CROSS-CULTS is recipe-participatory approaches that are meant to build a methodological framework for participatory practices. The research conducted focused on the following: different stakeholders' needs, challenges, expectations, ICT tools used for social innovation and engagement, and participatory approaches. Desk research and assessments by NGOs and other organisations working with migrants, as well as in-depth interviews and online questionnaires addressed to different groups and sub-groups of migrants were conducted.

Although not yet completed, the project holds significant relevance for SO-CLOSE because it can inform co-creation activities and tools (Giglitto, Ciolfi and Claisse, 2018)

Tool(s) developed: Among the already published *public deliverables* to be considered is the D3.4 *Pool of Ingredients v.1* (GIglitto et al, 2018). The digital tools that this deliverable describes are digital online collection platforms, online exhibitions, and videos for YouTube and Facebook.

Nevertheless, the main part of the programme that was established in WP6, *Social Innovation through culture: recipes and recommendations*, and WP7, *Pilot activities and evaluation*, are not yet implemented and/or published.

Usage assessment: The project being in construction, we will have to wait to evaluate its practical outcomes. Nevertheless, the published material shows that the main focus is the social dynamics generated through heritage mediation, and the digital tools constitute a secondary resource for managing participatory activities (back office).

REBUILD

Project description: ICT-enabled integration and life rebuilding guidance. REBUILD addresses immigrant integration through the provision of a toolbox of ICT-based solutions aimed at facilitating migrants' access to local community services, such as education, residence permits, welfare, accommodation, professional recognition, minors' social services and others.

Data and content gathered: Open databases, state services related information, and user profiling through questionnaires and serious games.

Tool(s) developed: The project's main product will be the design of a digital companion that will act as a communication interface between immigrants and public administration, to supply the migrant's information checked against the various public services available.

In order to develop the *Digital Companion,* set of tools, the projects develop deep learning-based profile analysis, machine learning for needs and skills matching, hybrid chatbot and personalised interaction. These state-of-the-art technologies will be incorporated into the developed *REBUILD open platform*, as an innovative approach to migrant's integrations.

Usage diagnostic/assessment: The project is ongoing and so its practical outcomes cannot yet be evaluated.

COHERE

Project description: Critical Heritages: performing and representing identities in Europe as mentioned in the programme's description, "it seeks to identify, understand and valorise European heritages, engaging with their socio-political and cultural significance and their potential for developing communitarian identities". The key concepts and relative practices focused on by the programme are: identity, representations, and performances of history. The analysis conducted runs through diverse European territories and heritage practices, under the spectrum of an intensifying EU Crisis.

Data and content gathered: The project was focused on the research of heritage practices at institutional, social and personal levels, and reviewing critically heritage key-concepts.

Tool(s) developed: Although a research-centred project, in the framework of one of the *WP5: Technological Tools. Eurocraft: Explore Critical Heritages through Vid-maps (Beta Version),* it developed a serious game to promote communication between young people in Europe using Vid-maps, or multilayer dot maps. The concept and tasks focus on the way people use social media and crowdsourcing platforms to share elements and materials reflecting their identity.

Usage diagnostic/assessment: The platform is still functioning online. The dot-map created contains several heritage symbols of the European territory. While playing the game, we did not find any material shared by the users. As a structure, it encompasses various games, crowdsourcing, and interactive concepts, although it does not support

these features with an attractive, user-friendly and intuitive design and that is considered to have an important impact on its actual use.

Game link: http://patrec.ece.upatras.gr/cohere-game/

Me. La

Project Description: This research programme investigated the impact that current flows and migrations have on museums and heritage practices. It has examined the transformations of museums and the heritage meanings and practices towards the new roles they are acquiring in the changing context of Europe.

Tool(s) developed: No digital tools were developed. The outcome of the project has been the development of a professional's guide for enhancing the role of museums in the "age of migrations".

TRACES

Project description: Transmitting Contentious Cultural Heritages with the Arts: From Intervention to Co-Production. TRACES programme has been investigating the role of contentious heritage in contemporary Europe. It deploys critical analysis and an artistic/ethnographic approach, in order to examine the contentious cultural heritages around Europe and their potential to build social awareness. The project aims to develop participatory public interfaces, in both virtual and physical environments, for the study and transmission of controversial and conflicting heritage issues. One of the products of this programme that is especially relevant for SO-CLOSE is the Contentious Heritage Manual that provides guidelines for heritage practices that include the transmission of contentious pasts.

Tool(s) developed: Fanzines, exhibitions, and videos were produced, but haven't been incorporated in any especially designed tool/platform, apart from the project's webpage.

NADINE

Project description: Big data and artificial intelligence in support of migrant integration.

NADINE programme's objective is to create a platform that uses open data to support migrant integration. The main focus of the project's idea is to promote migrant employment, taking into consideration their individual skills and background as well as host services and labour opportunities.

Data and content gathered: Personal interviews and co-creation seminars will drive toolbox design activities.

Tool(s) developed: The NADINE platform incorporates technologies that allow a wide variety of functions. Serious games — functioning as skills assessment tools — and facility mapping are feeding the two key banks of data: a repository of information about host societies and migrants. Machine learning applications, chatbots, and ICT tools for migrant data collection are developed.

Usage diagnostic/assessment: This is an ongoing project that has developed and applied high-end technology. SO-CLOSE can benefit from CERTH being one of NADINE's technological partners when considering applicable new developments in computer science.

9.2.   European Case studies results

The case studies examination shows evidence of the plethora and diversification of content gathering methodologies and the developed tools.

Intensive research is being conducted in Europe on heritage concepts and practices including migration museums (Me.La), digital heritage applications (EMOTIVE) and authoring tools for storytelling (EMOTIVE & CHESS), heritage preservation and dissemination (iMare), associations of heritage concepts and items (CrossCults), policymaking (ViMM), contentious heritage (Traces) and heritage related identity issues (Cohere).

Two of the studied projects (NADINE and Rebuild) focus on the social integration of refugees through the development of ICT applications that facilitate access to local services and employment.

Some other relevant programmes considered were the Onkgekend Bijzonder (The Netherlands) and Cultural Labs (international Consortium).

- Onkgekend Bijzonder is an example of a primary source creation project with a clear community-based approach, and the primal target to collect the oral testimonies of former refugees living in the Netherlands and offer them as a public heritage resource. Regarding storytelling co-creation, the project promotes refugee empowerment by directly inviting the participants to create their own narratives, accompanied by artists and video professionals. This is an example of a discursive agency, as the stories are directly scripted and produced by the people who lived them.

- Cultural Labs, although not yet completed (the finish year is 2021), has already produced a methodological framework for co-creation approaches in culture and heritage, including the ICT tools involved. What is most relevant for SO-CLOSE are the guidelines provided for adjusting the tools to meet respective users' and stakeholders' needs and expectations.

Gathering tools serve the methodological co-creation approach to local communities and refugee narratives and memories. Devices, software, and the rest of the digital tools serve as a means to digitise, edit, manage, document, recombine, disseminate, and preserve content.

The distinctive feature of SO-CLOSE greatly relies on assigning the participating communities the critical agency of creating the cultural content and heritage narratives. What stands out in this sense is that experts are accompanying the communities in content creation, but don't have the principal authoring agency.

9.3. Museums and memorials tools analysis

According to the project's agreement, tools developed by SO-CLOSE should be replicable in different places such as Museums or Memorials. European territories and populations during the 20th century suffered wars, persecutions, and forced labour on such a scale that nowadays, monuments and memorials are scattered all around Europe, representing the heritage of past forced displacements, preserving and socialising traumatic European memories of historical conflicts.

In order to conduct a comparative analysis of the digital sharing strategies and tool types that are being used by reference European institutions, we considered several sites representing the distinct historical contexts that are treated in the Agreement: the Second World War, the Holocaust, the extermination of Slavs and Roma communities by the Third Reich; European countries dealing with their colonial past; civil wars, dictatorships and political persecutions; the partisan struggle; and the communist past of the eastern European countries. Having examined the communication strategies of several reference memorials and museums separately, we will present here a synthetical analysis of the findings and the respective recommendations.

As argued, memorial initiatives over Europe are very diverse and this is reflected in their digital applications. Large and outstanding institutions that have an established digital presence are launching into new forms/types (360º environments, video productions…), while those that are smaller and more local tend to diversify their tools or concentrate on the development of specific projects/tools.

We can also make a distinction between projects that have been originally conceived as digital resources, like the *Virtual Shtetl* — the portal of the Museum of the History of

Polish Jews in Warsaw whose goal is aligned with the museum's mission[3] — and resources that digitally complement the museum's and memorial's physical activity.

The starting point for all the examined digital tools has been the special historical content that each institution hosts. Ranging from extensive documental archives to heritage objects, photographic material, museum collections and monuments, the common scope of the institutions is threefold; to preserve, communicate and engage with heritage.

A key tendency detected is that digital archives, a prevalent type of digital preservation tool, are being enriched with interactive features and curated sections that also promote engagement with heritage content.

The *Arolsen archives*[4] is an international centre for the study of Nazi persecution, which was launched in 2019, with support from Yad Vashem —The World Holocaust Remembrance Centre in Israel — and gives access to more than 13 million documents online, with indexed name lists. Its state-of-the-art qualities[5] rely not only on the advanced data management technologies applied, but also the enhanced features of the archive.

These features are the interactive portal on Nazi forced labour and migration[6] **which embeds maps and graphical multimedia stories, online interactive exhibitions, and the crowdsourcing campaign** "Every Name Counts*" that calls for citizen's participation, e-guides and educational materials to understand documents and research. These digital tools allow the citizens to engage with heritage, and access and process the information enclosed in the archive.

Another distinctive initiative of digital documentation is the Documentation and Cultural Centre of German Sinti and Roma, *RomArchive*[7]. **Depending on the Central Council of German Sinti and Roma, it is meant to strengthen the cultural and political position of the minority through the digitisation of artistic and cultural elements of Sinti and Roma communities. The item contents of the archive are structured into sections, including past and present aspects of the community. The curated sections and the historical context articles are serving similar functions to the interactive features and the educational material of the Arolsen archive, to synthesise the information and communicate in an engaging way.**

Digital archive platforms are also incorporated in many institution's websites, as the *Museu do Aljube, Resistência e Liberdade* (Lisbon)[8], the *Lund University digital collection*

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[3] https://sztetl.org.pl/en/
[4] www.arolsen-archives.org
[5] Europa Nostra heritage Award winning 2020, Education training and Awareness Raising, Germany.
[6] https://arolsen-archives.org/en/learn-participate/interactive-archive/transnational-remembrance/
[7] https://www.romarchive.eu/en/
[8] https://www.museudoaljube.pt/centro-de-documentacao/arquivo/

(Lund)[9], the *Valence, Centre for the Armenian Heritage* (Paris)[10] and *EUROM -The European Observatory on Memories* (Catalunya)[11] offering online access to the content they host. These repositories tend to adopt a catalogue form with less interactive features, presenting photographs, documents, objects or testimonies in relatively static digital environments.

Another tool for engaging with heritage is online exhibitions. There are many different ways of creating digital exhibitions, and a key finding of the study has been the fact that heritage institutions are now launching into this field in very diverse ways. This diversification of tool types evidences the fact that is a novel way of engaging with collections and the public and institutions are embracing it enthusiastically.

We see that prevalent archival institutions emphasise offering a historical approach to their particular periods and topics. Textual resources are very important to address the needs of contextualisation and analysis of the phaenomena presented. Photographic material is used as a primary source that enriches the texts. As examples we can mention, *ASKI* has created a digital museum dedicated to the Makronissos exile island, and the political percussions of the anti-communist Greek state from 1947- 1960[12] , and the *Nazi Forced Labor Documentation Center in Berlin-Schöneweide*[13] that offers an online version of the exhibitions on forced labour during National Socialism that are structured in topics and distributed over different pages of the website.

Google Arts and Culture is also used as a resource for creating and publishing online exhibitions by several institutions. Interactive elements are integrated to different degrees. As examples of such exhibitions we can mention, the *Auschwitz – Birkenau* memorial and museum, "Camp letters of Tadeusz Korczowski"[14], the *Anne Frank's house* stories[15] and the *Contemporary History and Civic Academy Foundation Sighet Memorial* in Romania, "Memory as a form of justice"[16].

We would highlight the strong communicative power of the Arolsen archives exhibition, "#StolenMemory"[17] and the RomArchive's, exhibition-tour, "Places and forms of genocide Letters by Roma"[18].

The state-of the art tool that is being used, taking the online exhibitions one step forward, is web documentaries. Interactivity is a central feature of the tool as well as

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[9] https://www.ub.lu.se/witnessing-genocide

[10] https://www.le-cpa.com/en/ressources/collections

[11] http://memoria.gencat.cat/ca/que-fem/banc-memoria-democratica/

[12] https://www.makronissos.org/en/

[13] https://www.ns-zwangsarbeit.de/en/italian-military-internees/topics/germany-and-italy-as-allies-1936-1943/

[14] https://artsandculture.google.com/exhibit/BAISKLlkMEw2Lg?hl=en

[15] https://artsandculture.google.com/partner/anne-frank-house

[16] https://artsandculture.google.com/exhibit/memory-as-a-form-of-justice/wR5Qnm4U?hl=en

[17] https://arolsen-archives.org/en/living-history/stolenmemory-auschwitz/

[18] https://www.romarchive.eu/en/voices-of-the-victims/tour-voices-victims/#start

hybridity, as it permits the combination of different media types; videos, photographic material, moving images, audio testimonies, documents, and text. The *Museum of Resistance and Deportation de Isère* in Grenoble, has produced two web documentaries, "Absences" and "Un Camp pour les Tsiganes: SALIERS 1942-1944"[19].

We also noted that web documentaries are used to treat migration, social, historical and artistic topics, which is linked to the SO-CLOSE approach. As examples we can mention the following webdocs: "La Crise Migratoire et nous"[20] (Institut Francais), "Les voyageurs"[21] (Médecins du monde, Liberation.fr & TV5monde.org), "A la recherche des enfants du Havre"[22], "Âmes sauvages. Le symbolisme dans les pays baltes"[23] (Institut Francais, Lituanie); all of these have been developed on a similar basis to the aforementioned museum's web documentaries.

Furthermore, interactive web maps are very usually employed to visualise geographical expansion and multiplication of phenomena such as concentration and forced labour camps. Berlin and the surrounding interactive map of Dokumentationszentrum NS-Zwangsarbeit[24], Vienna's forced labour camps map with integrated timeline[25] and Frankfurt 1933 -1945 topographies[26] are some of the initiatives that map the geographies of the war period camps.

Two mapping projects that stand out are the "Jewish places", developed by a group of institutions including the Berlin's Jewish Museum, and the Arolsen's "Transnational Rememberance".

Jewish Places[27] is an interactive map with detailed information on places of Jewish life in Germany, of the past as well as present day. Community spaces, synagogues, cemeteries, and cafeterias of Jewish towns are presented while it is possible to follow the traces of historical personalities and trace the places around which their biographies revolved. At the same time, Jewish Places networks numerous web resources on Jewish regional history, thus helping these web projects to achieve greater visibility.

Arolsen's project, "Transnational Remembrance of Nazi Forced Labor and Migration"[28], maps trajectories and places of WWII Displaced People, following the paths of more than 1700 liberated East and West European labourers. Story Maps is an additional

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[19] https://musees.isere.fr/page/musee-de-la-resistance-et-de-la-deportation-de-lisere-expositions-virtuelles?musee=15
[20] http://www.institutfrancais-lituanie.info/migration/#Sommaire_FR
[21] http://www.tv5monde.com/mdm/mdm.html#Introduction
[22] http://alarecherchedesenfantsduhavre.fr/#titre
[23] http://www.institutfrancais-lituanie.info/Amessauvages/#1
[24] https://www.ns-zwangsarbeit.de/italienische-militaerinternierte/recherche/arbeitskommandos/
[25] https://www.geschichtewiki.wien.gv.at/Zwangsarbeiterlager
[26] https://www.frankfurt1933-1945.de/nc/topografie/aktueller-plan/show/4/thema/wirtschaft-und-arbeit/
[27] https://www.jewish-places.de/
[28] https://transrem.arolsen-archives.org/maps/

resource aimed at examining groups of Displaced People, as stateless Jewish ex-german citizens or people that resettled in Argentina.

Regarding 360º **views, these are offered by some of the institutions examined**, such as Anne Frank's house, the Auswith – Birkenau museum memorial, the Arolsen archives, and the Polin Museum of the History of Polish Jews virtual tour of the core exhibition[29]. The Riga Guetto also offers a Google Street View virtual tour, accompanied by survivor's testimonies, in a project called "Walk Among Memories"[30].

Lastly, mobile apps are the least contested resource: The only mobile app that we were able to identify thgough web, was the one of the Terror Háza Múzeum in Budapest[31].

9.4. Museums and memorials tools analysis results

Museums and memorials are focused on developing digital spaces and applications that allow them to bring digital expression to their content and enhance user's engagement with their heritage objects.

To achieve this, according to the analysis conducted, there are two key elements in the designing of the tools:

i)   The content is the central element of the tools, with tool types and the architecture of information being developed accordingly.

ii)   The mediation between digital content and users is achieved with hybrid interactive and multimedia features that allow the user to choose their own learning path, and with curated sections that use storytelling techniques to synthetically present specific topics: articles, archive sections, educational materials, story maps etc.

We can state that the different combinations give birth to very diverse and hybrid tool types. However, some common patterns have been observed regarding the visualisation of information and storytelling techniques that can be also applied to SO-CLOSE tools.

- Movement and displacements are represented with maps, timelines, and sketched as lines.
- Colours are used to distinguish different chronological events, individuals or groups.
- Geographical dispersion of phenomena and/or structures such as camps are represented with dot-like symbols over the maps.

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[29] https://virtualtour.polin.pl/
[30] http://www.rgm.lv/in-their-shoes/?lang=en
[31] https://www.terrorhaza.hu/en

- Objects, documents, and photographs are the visual protagonists of storytelling compositions, while textual resources are used in a complementary way.
- The user is given the option of choosing their own learning path, by following or passing by the different story paths offered.
- Special resources are usually developed to guide and promote the use of the tools for educational purposes (e-guides, curated blog entries, special topics entries…).

10. DCH Sharing tools in SO-CLOSE

DCH sharing tools will be developed with a storytelling and public dissemination purpose for the SO-CLOSE project. These tools will host the curated content of the programme, exhibiting digital narratives of past and present forced displacements of European territories.

The state-of-

the-art available tools list includes a short description, the examination of the alignment of the tool with the objectives of SO-CLOSE, and the assessment of the co-creation potential of the tools. The examples displayed for each tool type are indicative, to illustrate the different types and showcase application of the tool's usage.

10.1. Compliance criteria

Based on the project description, we have defined the fundamental criteria for the sharing tool types assessment as following:

Storytelling and immersive digital narratives

Diverse digital resources provided by innovative technologies, and their field applications, create new ways of representation and establishing meaning. Typically, digital storytelling media can offer alternative non-linear narration practices that allow for multiple interpretations and the involvement of the user in the information flow, as well as inclusion of a great variety of media.

Digital storytelling media is also considered to carry democratisation potential, as it opens up the possibility of expressing and disseminating personal and collective narratives to a wide non-expert public (Hartley & McWilliam, 2008)

The SO-CLOSE project needs to make use of the expressive capabilities of digital media to be able to reflect and express the multi-layered narratives that they are encompassing. Different locations, historical moments, personas, and resources can be combined through digital storytelling means, serving the programme's central aim: to bring different life stories closer. Namely, digital means that which can be combined such as text, still imagery, audio-visuals, hypertext connections, interactive features, enhancing the user's experience, and the story's impact (Ioannidis et al., 2013).

Engagement and empowerment for social transformation

Another highly valued quality for the tools to be selected is their capacity to engage final users and empower refugees. Engagement is achieved when the tool can maintain the interest and attention of the user, through attractive and intuitive design, and relevant content. DCH sharing tools also empower refugees and communities by representing their interests in a responsible and self-determined way.

Hybridisation

The hybridisation of forms refers to the capacity of creating tools that combine different content types and also different tools, enhancing their spectrum and their performed functions.

In the SO-CLOSE case, a hybridised basis is recommended to enrich and reflect all the different included experiences, as well as the diversity of the content types that the programme will have to deal with.

Interoperability

Interoperability refers to the interconnection of systems that are capable of exchanging data and feeding each other mutually. Although a technical term, when we refer to software interoperability we refer to the need that different SO-CLOSE platforms communicate with the respective repositories, establishing interaction paths. Technically, the optimal way to accomplish and guarantee interoperability between tool types in SO-CLOSE **is to develop web-based tools**.

Adaptability

In the project's framework, adaptability means to be able to adapt the tools to different cultural contexts, besides the scope of the SO-CLOSE project. As described, although the content of each shared experience is local, the tools generated will have to be replicable and scalable to different needs and heritage related practices.

Sustainability of the tools

The sustainability of the tools to be generated is one of the greatest challenges that the programme has to face, to guarantee further usage of the tools by potential future users. This is why it is important to keep a balance between state-of-the-art technologies, costs, and functionality when considering sustainability objectives. **Sustainability also requires selecting and developing the tools that respond directly to the project's aims without overwhelming them, keeping in mind unattended usage.**

Foster co-creation

The SO-CLOSE tools must not only enable the sharing of cultural heritage but also foster the co-creation methodologies to create new cultural and documentation materials. The co-creation methodologies that will be designed and applied will feed the selected

sharing tools. Local communities and migrant populations have to be given the possibility to participate, generating content that will communicate their interrelated stories, in the innovative participatory heritage practices envisioned by SO-CLOSE.

Accessibility

Web Accessibility is defined by the World Wide Web Consortium (W3C). To develop the DCH Sharing Tools interfaces we will follow EN301549 recommendations, with the following guidelines as a reference:

- Web Content Accessibility Guidelines (WCAG). Refers to any part of a website, including text, images, forms, and multimedia, as well as any markup code, scripts, applications, and such. (https://www.w3.org/WAI/standards-guidelines/wcag/)
- Authoring Tool Accessibility Guidelines (ATAG). Refers to the software or services that people use to produce web content, including code editors, document conversion tools, content management systems, blogs, database scripts, and other tools. (https://www.w3.org/WAI/standards-guidelines/atag/)

 "Web accessibility means that people with disabilities can perceive, understand, navigate, and interact with the Web, and that they can contribute to the Web. Web accessibility also benefits others, including older people with changing abilities due to aging." (WAI 2005)

Web accessibility criteria are assessed by the Web Content Accessibility Guideline (WCAG) requirements and techniques, an international reference tool that sets the standard criteria for web accessibility and provides techniques and strategies for its accomplishment. [32]

Overall, accessibility is an especially complex issue because of the great variety of functional diversities and because it depends on different components such as:

- Content: textual and graphic information, coding and document structure
- User's agents (navigators, reproduction media etc.)
- Assistance technologies (screen readers, keyboard etc.)
- User's abilities, knowledge and access strategy
- Developers
- Authoring tools
- Evaluation tools

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[32] https://www.w3.org/WAI/WCAG21/quickref/?versions=2.0

10.2. Sharing Tool types

10.2.1. Interactive documentary: webdocs

Definition: A web documentary, interactive documentary, or webdoc is a documentary production that differs from the more traditional forms—video, audio, photographic—by applying a full complement of multimedia tools. The interactive multimedia capability of the Internet provides documentarians with a unique medium to create non-linear productions that combine photography, text, audio, video, animation, and infographics. The webdoc adopts the expression that best matches the content to be displayed, creating surprising and visually compelling results.

Objectives alignment: Dealing with complex digital narratives & storytelling; Multimedia (audio & video) approach; Innovative interfaces; Interactivity; Historical context and contemporaneity.

Potential use for SO-CLOSE: A web documentary can be used as a social tool that brings the exiled legacy back, integrating both past and present realities and link this reality to local communities.

Methodological notes & co-creation: The different co-created contents (conversations, songs, oral witnesses) can be combined into an enriched webdoc.

Example
[De Infancia en peligro a infancia peligrosa](#)

Figure 6. SOS Racisme webdoc "De infancia en peligro a infancia peligrosa"

10.2.2. Migration story map

Definition: A Story Map aims to tell remarkable stories with custom maps that inform and inspire. A story can affect change, influence opinion, and create awareness—and maps are an integral part of storytelling. You can, therefore, give your narrative a stronger sense of place, illustrate spatial relationships, and add visual appeal and credibility to your ideas.

Objectives alignment: To enhance digital storytelling with geographical information, add text, photos, and videos to explain a journey using an interactive narrative that is easy to publish and share.

Potential use for SO-CLOSE: We envisage this tool as an opportunity to be combined with other tools such as blogs, or the roaming 360º camera videos. It is a really good resource to be used with images and collage pictures. Since the maps need to be very visual and schematic, this tool may help to tell the stories while the interactive map reinforces the narrative, such as showing the main landmarks or spots on the map and combining them with images or videos.

Methodological notes & co-creation: Refugees could explain their stories through maps: Where they come from and where they are willing to live, the migratory movements they've made during their lives, etc. The main goal would be to gather enough information to create an itinerary. We would propose printing maps so the refugees can draw their movements, writing down their own stories combined with the place in which these stories have taken place.

Example
[Surviving Cancer as a Refugee](#)

Figure 7. Story map 1 "Surviving cancer"
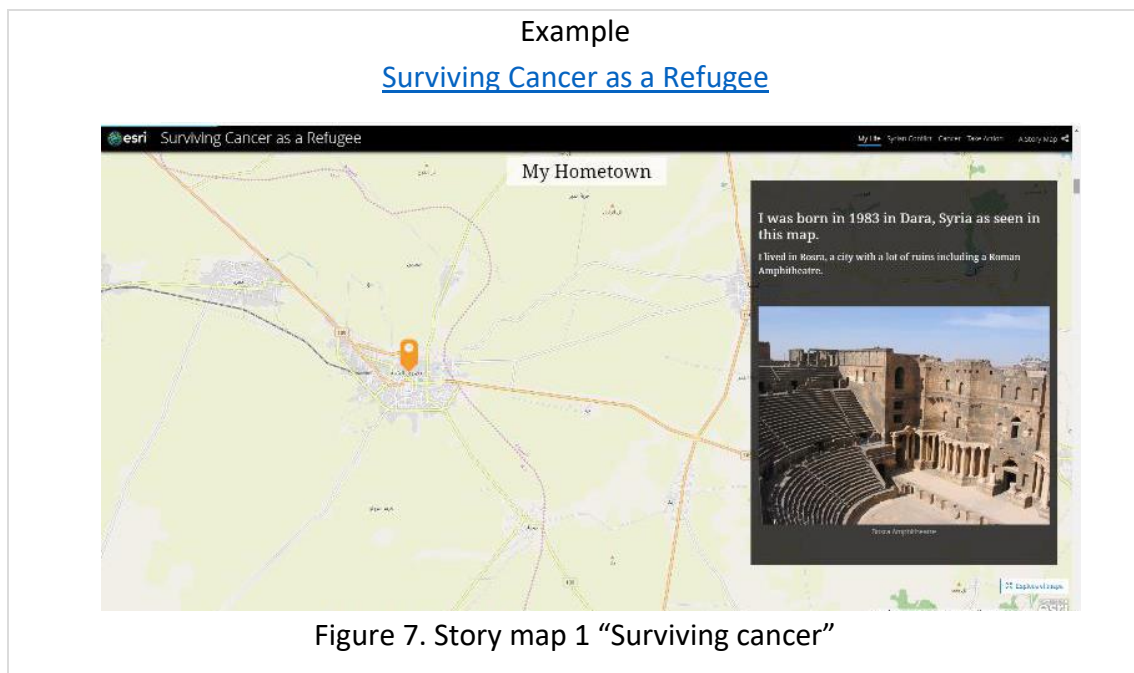
10.2.3. Virtual museums & exhibitions platform

Definition: Virtual museums and exhibition platforms are being used both for collection and exhibition purposes. The curatorial narratives are adapted into a digital context, normally based on photographic material.

Objectives alignment: Empowering communities, creativity, social cohesion, empowering communities; reinforce and allow the memory of local communities to become visible.

Potential use for SO-CLOSE: Compilation of pictures, scanned documents, or other objects used as a testimony for their stories and gathered under the outline of an online exhibition, to use the platform as a nonphysical tool to be able to share the story of migration through years, including current stories. We would also suggest creating a physical exhibition as a way of celebrating the work done.

Methodological notes & co-creation: Virtual exhibitions could be curated by the communities themselves. We will try to create a dialogue with refugee and local communities' experiences where they will decide which information (documents, images, scanned objects) of the refugee experience will be collected and exhibited.

Example
[Makronissos Digital Museum](#)

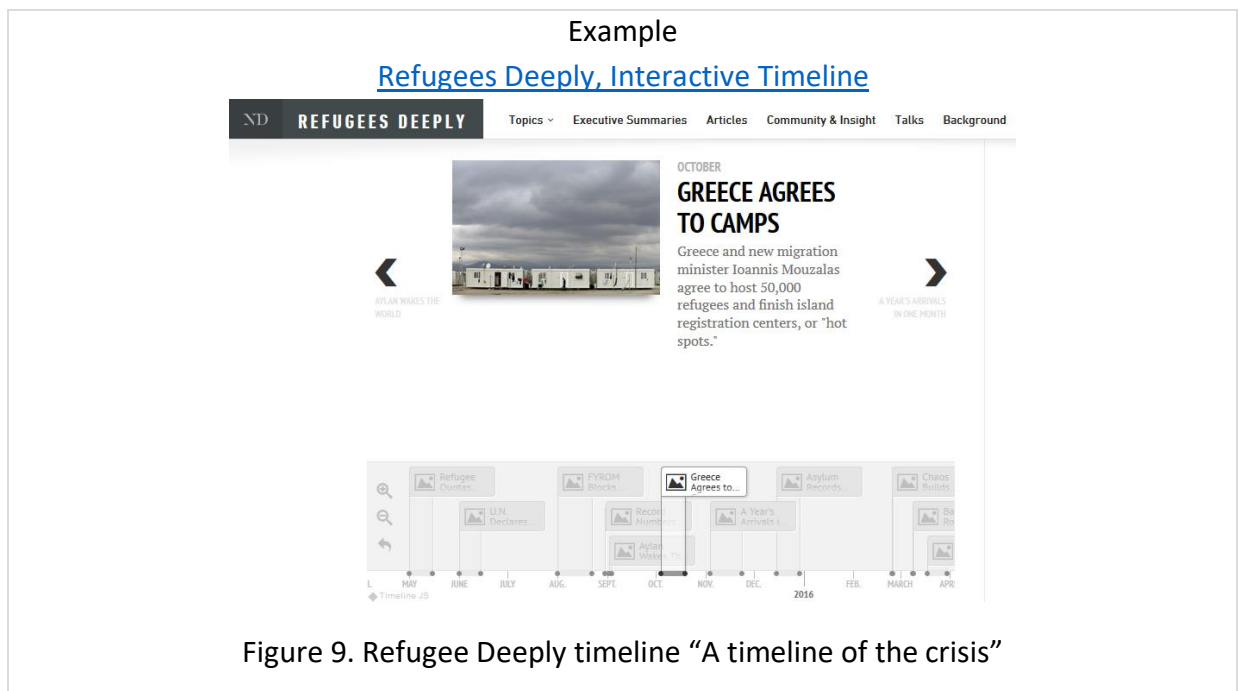Figure 8. ASKI virtual museum "Makronissos"
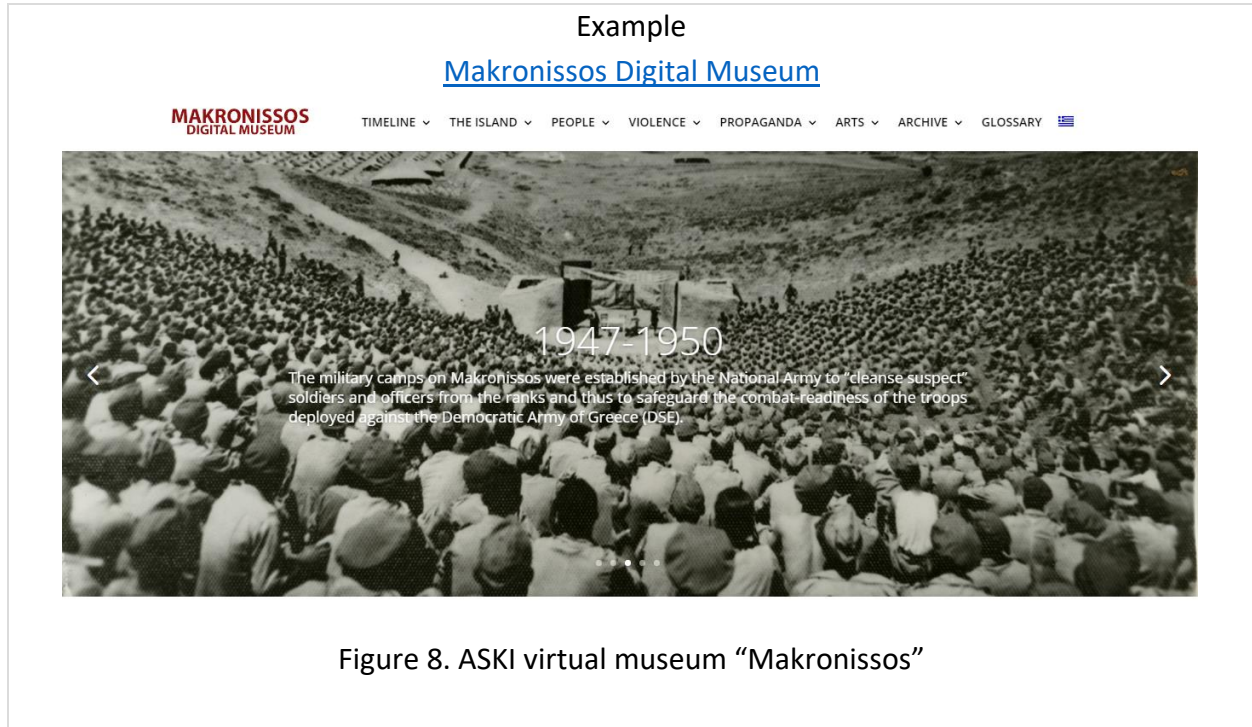
10.2.4. Migration timeline

Definition: A timeline provides information about the major moments in history in order to tell the story of communities in an interactive and visual journey.

Objectives alignment: Empowering communities to share their stories related to forced migration history. Recreating sequences of facts. Setting a historical framework and a narration guideline.

Potential use for SO-CLOSE: Interactive presentation of what migration means for our past, present and future society, how communities have been developing a multicultural social model and how this multicultural impact has struggled and survived many changes in history.

Methodological notes & co-creation: Timelines can function as navigation maps in environments that include stories that have taken place in different places, to promote a better understanding of the historical context, as well as the connections between migration flows in the common European context. The communities can create the timelines themselves, enriching them with media and other relative data.

Example
Refugees Deeply, Interactive Timeline

Figure 9. Refugee Deeply timeline "A timeline of the crisis"

10.2.5. Refugee blogs

Definition: Blogs are a type of webpage, characterised by periodical publications, user-author interaction and informal personal tone. They can be a great means for empowering communities to open up the day-to-day life of refugees ("The Refugee Diaries"), assigning them content and agency.

Objectives alignment: Empower communities, boost creativity; social cohesion, reinforce direct agency, curation control and digital literacy.

Potential use for SO-CLOSE: Blogs reflect the diversity of opinions and experiences and can be integrated into cultural institutions as digital curated communities linking the institutions with current issues.

Methodological notes & co-creation: Curation and maintenance of a blog can function as a co-creation tool, providing refugee communities with a means of having a presence in the web community, to share personal experiences and to create a public open network.
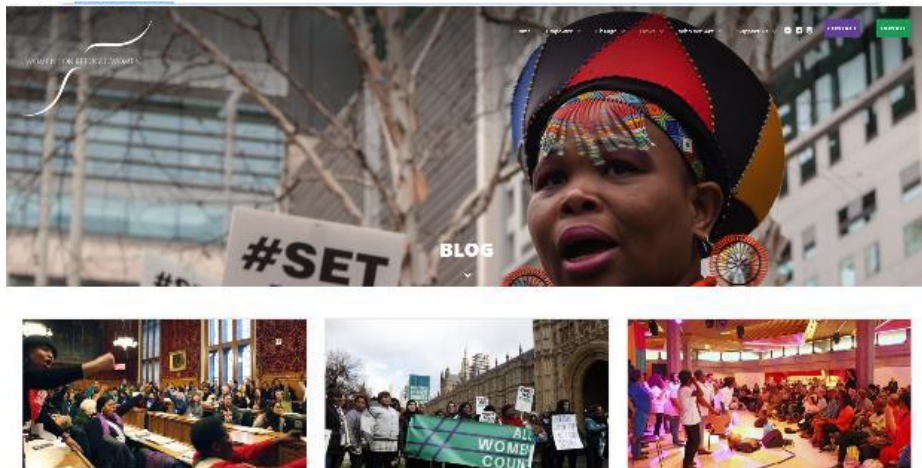
Example

Refugee Women Blog

Figure 10. Refugee Women Blog

10.2.6. Social media chatbot

Definition: A chatbot is a digital agent that carries out actions related to interaction, and can interact with users. Also, it has been thought to provide people with information on the history of migration in a personalised chat conversation, in addition to practical information on migrants' support, migratory movements, history, etc.

Objectives alignment: First-person dialogue; storytelling; social media, interaction, personalisation of information.

Potential use for SO-CLOSE: Regarding heritage and historical aspects, it would be interesting to be able to interact with different people telling their own stories and experiences, thereby offering the users the opportunity to hear similar stories told by different people, as well as the same person telling different stories about what they have experienced.

Other applications in the cultural field, like the Çatalhöyük 'Bot of Conviction', have also demonstrated the possibility of using a chatbot to trigger conversations that provoke emotional engagement and critical thinking, and challenging established conceptions (Roussou, 2019).

Methodological notes & co-creation: Migrant communities can have direct agency on the bot's interaction functionality and the content of the responses.
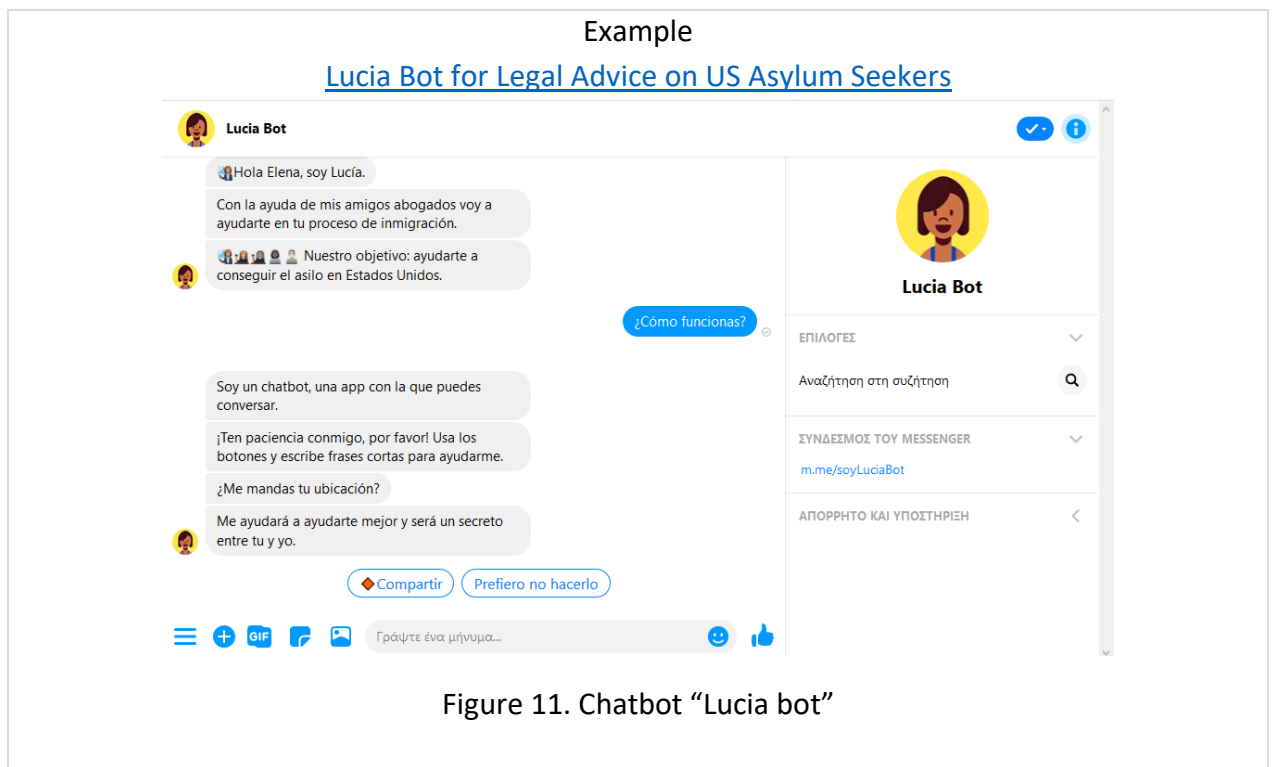

Example
Lucia Bot for Legal Advice on US Asylum Seekers

Figure 11. Chatbot "Lucia bot"

10.2.7.   Serious games

Definition: This term is applied to storytelling games outside of the entertainment industry, and is closely related to the gamification concept, which refers to the game-like design of tools outside of the game industry. Nevertheless, state-of-the-art serious game technology is identical to entertainment games technology, which has great potential and a spectrum of applications. (Ashley & Liarokapis, 2009), for example for non-linear narratives and user engagement. There is a great variety of task typologies that fit with the educational scopes of Cultural Heritage, stimulating different cognitive aspects (Belloti, Berta, De Gloria, D'Ursi, Fiora et al., 2012).

Objectives alignment: Communication, visual expression of information, engagement, personal experience, empathy, identification, emotional impact, interactivity.

Potential use for SO-CLOSE: Attributing game characteristics to educational applications and projects to promote engagement with the user while creating the conditions for interactivity and immersion. Also, serious games are a powerful tool to achieve an emotional impact, as the user is asked to temporarily make decisions as if they were living in another context and in different conditions.

Methodological notes & co-creation: Migrant communities can work on establishing the game's principles and paths, having direct control of the user's later experience and perception. It can be a great means to communicate situations and processes that can only be understood from the migrant's and refugee's perspective.
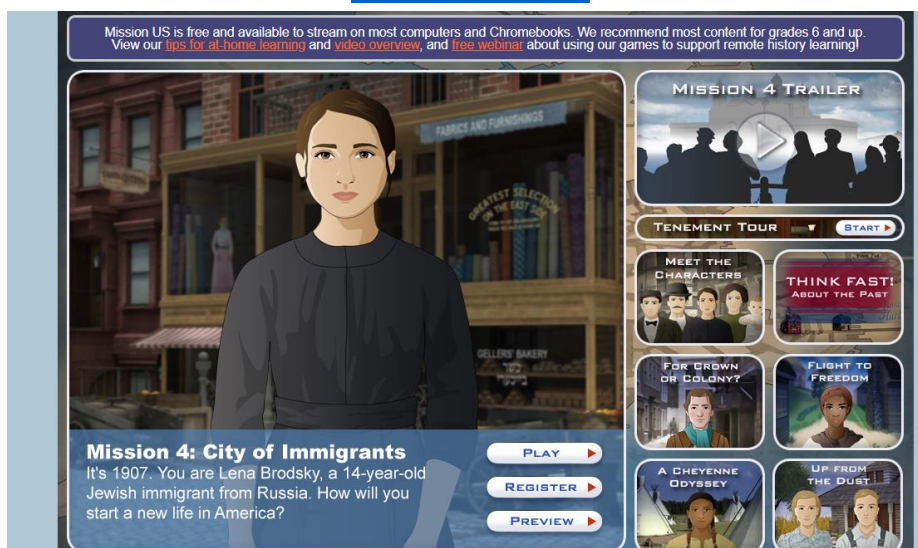
Example
City of immigrants

Figure 12. Serious game mission US "City of Migrants"

10.2.8.   Interactive data visualisations

Definition: The term refers to the graphical representation of information which includes user interaction controls and sequences. It allows a visual overview of a series of data exploring their connections, patterns, and trends. Charts, histograms, bars, networks, word clouds, and timelines are all data visualisation graphs that can be combined into enriched forms. Interactive functions allow the user to explore the data, selecting between the distinct data pathways.

Objectives alignment: There are specialised tools for the visual expression of information that encompass exploration and interaction features, allowing the user to choose the learning path that best suits him/her, and also projects connections and comparison.

Potential use for SO-CLOSE: Given the need for the project to establish semantic connections between life stories and historical events, interactive data visualisations can be used as a tool to discover the network of connections and the relationships between the past and the present, and the geographical areas of the study.

Methodological notes & co-creation: Though the ontological framework would have to be based on a global conceptual construction that would define the basic axis of the project, the connection networks could be the result of co-creation interactive dynamics with the migrant population, defining the spotted commonalities and differences.
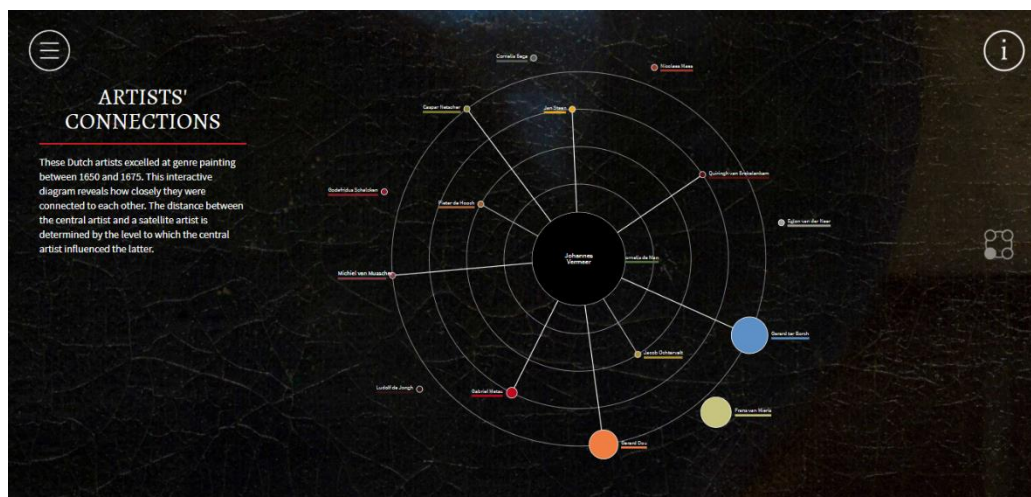
Example
Connecting Vermeer

Figure 13. Interactive visuals "Connecting Vermeer"

10.2.9. Open repositories

Definition: Free access repositories that contain digitalised entries of cultural and historical contents using galleries, virtual exhibitions, and blogs. These also rely on crowdsourcing material for the enrichment of the collections stored and exhibited online.

Objectives alignment: The repositories can incorporate migration testimonies in the cultural heritage map of Europe and offer Open Access the documentation material as an active education and act as a dissemination tool for the communication of past and present migration stories (Harris, 2019).

Potential use for SO-CLOSE: MCP's aim as a migration specialised repository is consistent with the open repository philosophy, gathering evidence of undocumented migration, such as objects left behind the migration roots and borders, objects, and rituals of everyday life as well as personal testimonies.

Methodological notes & co-creation: A repository offers a lot of possibilities for content co-creation, as it can be entirely built upon crowdsourcing material. It would also be interesting to examine the possibility of defining the ontological categories and classifications of storytelling material with the migrant and refugee communities, and to assign agency over the narrative's structure.

Example
Europeana Migration Cultural Heritage

Figure 14. Open repository "Europeana"

10.3. Sharing tools selection methodology

The different typologies of state-of-the-art tools examined in the report are the potential sharing tools to be developed by the project during WP3. The final selection and design of the tools will follow the participatory methodology of the project and will be based on the expected inputs tasks and reports of the WPs 1 and 2.

First, the user requirements will be collected from the project's interaction with the end-users, the interviews and the Focus groups with refugees, asylum seekers, vulnerable migrants and the rest of stakeholders. The interviews and the D1.1 Interview report are expected to provide valuable insights about the user groups and their needs in terms of DCH service provision. It will also provide an overview of the type of narratives that are expressed on a personal level, or in other words, the present day forced migration stories and realities.

Then, Focus Groups will address the collective level and treatment of the narratives; how to perform the past and present matching, which are the communication and transformation needs and which can be the role of digital tools. D2.1 User requirements and Needs and Gaps analysis is expected to provide requirements in these directions.

A series of directions are also already defined by the DoA, such as the replicability, the interoperability, the immersive components and the accessibility features. Although more technical, they also need to be evaluated together with the rest of the user requirements.

The available tools assessment will be performed by the technological partner, in accordance with the set of collected requirements. An analysis requirements list will be elaborated in first place, bringing together the abovementioned reports contributions. Then, the assessment will be focused on the potential of each tool to comply with each one of the enlisted user needs, taking into consideration the present deliverable's considerations and findings. The analysis of previous experiences and tools application in the cultural heritage and the migration areas, presented here, will also serve as a guide for the assessment. The three tools with the highest score will be the selected as main formats of the three SO-CLOSE sharing tools to be developed. As foreseen in the DoA, the solution co-design phase will take place during T2.2, bringing together all the project's partners and the data of the previously implemented user-centred tasks. The tools design will be then submitted to a sample of end-users for a final validation and to gather input for enrichment. The selection and design specifications will be reported in detail in the next technical deliverable, D2.2 Tools Design and Specifications.

The tools selection and design will thus be the result of all the WP1 and WP2 analysis and participatory design.

10.4.   Digital sharing tools conclusions

Heritage and social fields are rapidly launching into digital media technologies, experimenting with new possibilities of content creation, exhibition and dissemination. There's a great variety of media formats and digital tools applicable in culture/heritage that can be potentially developed in the SO-CLOSE programme. Digital tool types present an inherent complexity in the classification and management of taxonomies that derives from the fact that the boundaries between the various digital formats and expressions are vague, and characterised by overlaps and continuous hybridity (Salaverría, 2017).

As evidenced in the analysed examples, the application of the sharing tools can also leverage new methods to gather content.

Personalisation, hybridisation of tool types, and developing under web-based technologies are also key findings evidenced from the case studies and guidelines for SO-CLOSE.

Among limitations that should be considered are the accessibility issues related to immersive technologies that require specially developed tools and technologies. SO-CLOSE can benefit from the expertise of UAB's implication in the ImAc, Immersive Accessibility Project, that has been focused on making the 360-experience accessible for people with sight and/or hearing loss.

Furthermore, academic literature recommendations regarding the optimal solutions for the strategic digital development of heritage applications and visualisations point out four major variables; the available resources and know-how, the specific objectives served, and the heritage themes considered (Foni, Papagiannakis and Magnenat-Thalmann, 2010).

11. Conclusions

The analysis and the insights gained in WP1-D1.3 will hopefully be used as a background for SO-CLOSE programme development.

The first review was concerned with the need to clearly define the tool's categories. The tools categorisation hence was focused on providing SO-CLOSE with a reference framework that responds to the actual generic use of the term 'tools' and its widespread use in the programme.

The main aspect of this categorisation has been the distinction between (1) interviewing tools, (2) content gathering tools and methods (3) Digital Sharing tools, and (4) MCP aggregation services, as reflected in figure 4.
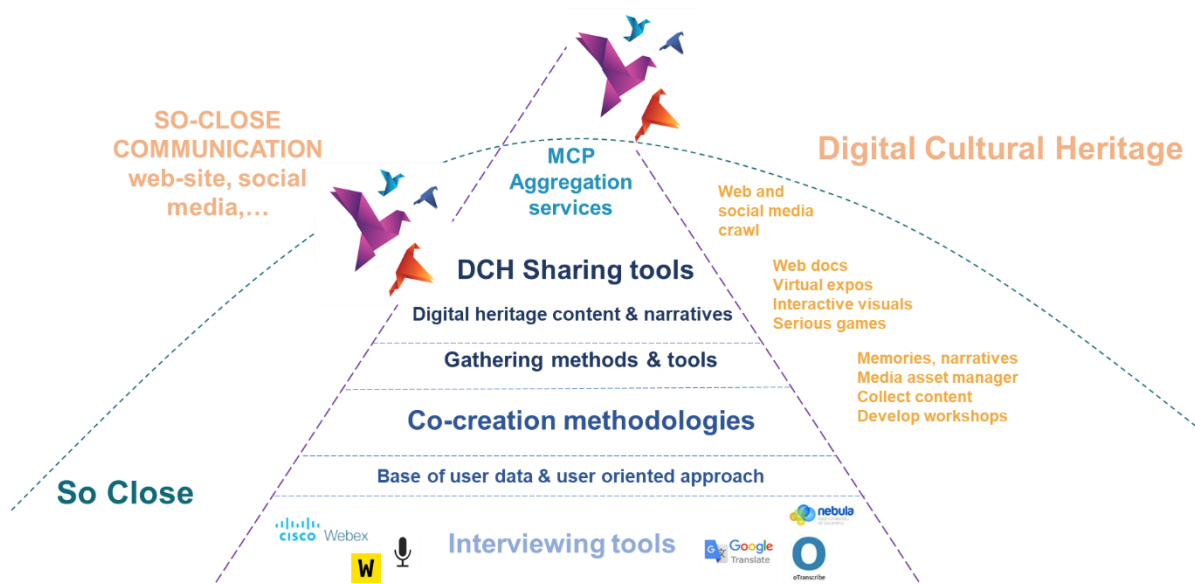

Figure 15. SO-CLOSE tool categories pyramid.

Although each tool category has been treated separately, the general conclusions drawn from the study are the following:

I)   There is a plethora of different digital tools, software, and devices that have to be implemented in SO-CLOSE to accomplish the programme's objectives. Tool types selection (and their specific qualities and inherent strengths) is then paramount to serve the project's needs and objectives.

II) Defining sound co-creation methodologies is central to SO-CLOSE's objectives. Gathering tools are meant to support these methodologies in the creation of digitised cultural content.

III) Being central devices for refugees, mobile-driven gathering tools are generally recommended for participatory activities.

IV)	A Media Asset Manager is essential to easily support the media management needs of the workshops and pilots, and to describe all the digital content gathered.

V)	The creation and gathering of different content types (photos, videos, scanned documents, audios etc.) will benefit the development of enriched narratives and lead to better DCH sharing tools.

VI)	Defining co-creation methods while having final sharing tool types in mind can lead to a better project alignment. Thus, knowing which are the most plausible choices in sharing tools can help define precise gathering methods that serve the best content possible.

VII)	The effectiveness of the gathering and sharing tools depends on the capacity of co-creating curated media content. Hence, content gathering methodologies are expected to establish collaborative practices and engage participants into the narrative and conceptual elaboration of the projects. The sharing tools to be selected must be aligned with the curatorial and narrative approaches that the reports will evidence. Both co-creation and curation processes are time consuming and need to be developed throughout several months.

VIII)	The final gathering and sharing tools selection will take place in the following stages of the project as the result of the participatory tasks and methodologies of WP1 and WP2. Ongoing interviews and the foreseen focus groups reports are expected to evidence insights about the end-users needs regarding the past and present matching and the digital storytelling expectations.

IX)	In the specific fields of cultural heritage and social integration, we evidenced the increasing use of VR applications, serious games, and chatbots by projects promoted by the EU and also international institutions. That said, we suggest focusing on alternative sharing tool types (like webdocs, story-maps or timelines) that are being used in memory and cultural institutions, and can also benefit SO-CLOSE programme's specific objectives.

X)	Open Access and interoperability technical paradigms are narrowly linked to web-based tools and technologies, not conditioned by technical or installation requirements, and easier to design as a sustainable tool.

XI)	A source of innovation will come from the hybridisation, not only of content types, but also of different tool types in SO-CLOSE's sharing tools being finally

developed, to display complex narratives and to respond to the specific needs of the program.

XII) The compliance criteria identified for the sharing tools include:
- o Be replicable by other local institutions and centres
- o Be physically and intellectually accessible to the community.
- o Facilitate storytelling and immersive digital narratives
- o Promote engagement and empowerment for social transformation
- o Hybridisation of different contents and tool types in SO-CLOSE sharing tools.
- o Be interoperable by focusing on web-based technologies.
- o Be able to adapt the tools to different cultural contexts, and develop sustainable tools.
- o Foster the co-creation of the content by participants and local communities

XIII) A key tendency detected is that digital archives, a prevalent type of digital preservation tool, are being enriched with interactive features and curated sections, to promote engagement with the heritage content.

XIV) The Consortium know-how and the resources available are decisive factors. To overcome limitations, the tools to be developed must be aligned with the partner's expertise and incorporate previous experiences and research conducted in specific fields by the participating centres.

Further research development will follow in WP2 D2.2: Tool design & specifications that will include the detail of the technical and functional requirements of the selected tools.

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13. ANNEX I. Recommended workflow and practice guidelines detail for interviewing tools

i)   STEP 1: Record interviews conducted in Webex

Record the audio / video meeting **with an external recorder device**, only if not possible record locally on the interviewer's computer: https://help.webex.com/en-us/jfgavq/Record-a-Cisco-Webex-Meeting-on-Your-Computer

How- to:

- Obligatory to sign up for Webex free plan
- Download the webex desktop app
- Before using the Webex software for web conferencing, it is important to **have it tested with a third party in order to be able to further help the interviewee if needed, as well as guarantee the recording.**
- **Run a test from beginning (connection) to end (listening to the recorded file).**
    - When using equipment or locations that are not regularly used, test your meeting connections in advance.
- When possible, establish online video conferencing connections several minutes before the meeting start time.
- Make use of the maximum audio quality using any available microphone, even the ones incorporated in basic headphones.
- Minimize external noise.
- Speak as clearly as possible.
- Remember to only ask necessary personal data at the beginning of the session, and not to record this part.
- **Important**: **End the meeting properly** in order to process and correctly save the recorded video.
- **Be careful: If you start a meeting by phone, you can't record it.**
  "Recording on your computer is currently only available from the desktop app. If you start a meeting from a device using the web app, such as a Chromebook, you can't record it."

Note! Webex generates mp4 video files. In order to **convert mp4 to an mp3 audio file**, you can use VLC Media Player:

- Media > Convert/Save > Add… > Choose file > Convert/Save, **Audio – MP3** > name and assign mp3 extension.
- After having successfully created the audio file, delete the video

ii)   STEP 2: Transcribe interview using Web Captioner (https://webcaptioner.com/)

After the interview is completed the interviewer transcribes the recorded audio in the Web Captioner application.

Content anonymisation is a requirement for the use of Web Captioner. Before proceeding to an automated transcription with Web Captioner, control the entire audio recording, to make sure that no no personal data are recorded. You will have to identify and manually SKIP any identification reference, to avoid personal data exposure.

If it is not possible to guarantee that there are no personal identification data in the audio, then the interview should be manually transcribed.

- **In order to reproduce the audio file, you will need a multimedia reproducer** (such as VLC media player).

How-to

- Open Web Captioner and first set the Spoken Language as needed, through the settings options:
  Settings (icon on the bottom) > Language > Spoken Language
- Also set 1 second as the time limit for changing line (can be used to partially identify different speakers)
  Setting > General > After 1 second of no audio while captioning Add I line break

- **Play the audio files from any available speakers and situate the speakers right in front of the computer's screen**, in order to guarantee high reproduction volume.
  - There's an alternative option to speakers, which is to play the audio file with an external device and input the signal though the computer's minijack entrance.
- Slow down the playing speed if possible, to facilitate the captions.
- When the transcription is completed, or the part of it that you are working with, **extract and save the file as a Word document**.
- In case the downloaded doc. file asks you for preferable text encoding when trying to open it, choose the Unicode (UTF-8) option.
- Using Web Captioner live during the conference session may lead to potential distraction from the main goal (conduct and record the web conference), and is not recommended for privacy issues (the interviewer must have full control of the data uploaded to transcription platforms).

iii)   STEP3: Transcription editing in oTranscribe (https://otranscribe.com/)

To edit and correct misinterpretations in the automated transcription, we recommend using oTranscribe platform that allows post-editing of the document while

reproducing the audio recording. This way the interviewer can manage both audio and text documents at the same time and on only one platform.

How-to

- Set the working language.
- Upload audio and text files to the platform (text can be directly copy-pasted).
- **Conduct layered editing**, starting from the general aspects of the document, separating speakers and adding punctuation, before proceeding to phrases and vocabulary correction, and finally grammar correction.
- Always save the working file on your local drive, as the programme doesn't store the documents and recommends **regular exports**. There is no option for saving directly to Word, so you should follow one of the following options:
  o Export as a plain text (.txt) and copy-paste the text to a Word file.
  o Export to Google Drive docs, download, open, and save files in Word.

iv)   STEP4: English Translation

- Either Google Translation (or DeepL for some of the SO-CLOSE languages) can provide a first translation draft of the interview texts, before making the material selection that will be refined.
- Remember that the text must be anonymised, in the previous steps, avoid exposing identification data on the translation platforms.
- Copy-paste translation in **Word document**.

Overall, these tasks need to be incorporated in the time schedule of the programme's regular workflow, as they are inevitably demanding in terms of working hours.

v)   STEP 5: Save results in NEBULA

- A copy of all the materials (session recording, edited transcriptions, and translations) should be kept in the NEBULA UAB-repository.
- Eliminate the produced files (audios, text files, etc.) once you have uploaded them to Nebula.
- Further instructions will be given regarding NEBULA usage.