Co-funded by the European Union

CHARISMA

Cultural Heritage Academy for Risk Management

PROJECT RESULT N.3

2023

Prototype of Risk Assessment platform

Agreement n° 2021-1-IT01-KA220-VET-000034797

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July 2023

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To access the CHARISMA web app go to

https://www.charisma-academy.eu/app-charisma/

or scan here:

Introduction

This project epitomizes a visionary endeavor: to empower forthcoming generations of Cultural Heritage Risk Managers with avant-garde technology and experiential learning. Through the utilization of state-of-the-art data and technology, we are pioneering the development of a transformative web application that redefines training within the sector.

Our objective is to furnish trainees with an intuitive platform that not only enhances their learning experience but also revolutionizes their approach to cultural heritage risk management. With mere tablets or smartphones, they will be equipped to assess risks, generate comprehensive reports, and make well-informed decisions—all without the reliance on costly equipment.

However, our ambition extends beyond immediate impact. We envisage our platform not only shaping the trajectory of cultural heritage training but also inspiring educational institutions to embrace innovative tools for experiential learning across various disciplines. From cultural heritage to hydrogeological risks and beyond, the potential for transformative impact is boundless.

This project result utilizes cutting-edge data and technology to train future Cultural Heritage Risk Managers who can effectively handle and prevent risks in their roles. This programmatic need emphasizes the importance of hands-on learning experiences for trainees, ensuring they gain firsthand experience and learn through trial and error. The target groups include participating VET providers, trainees, as well as external VET providers and their staff and trainees.

The key innovation lies in the development of a highly innovative web app that fills a gap in the market. While similar digital tools exist for insurance professionals in the cultural heritage sector, none are tailored specifically for training purposes. This web app, coupled with a flexible framework, will enable trainees to gain experience without the need for expensive equipment. They can assess conditions and risks of cultural heritage sites using tablets or smartphones, which are expected to be the primary tools for Cultural Heritage Risk Managers.

This tool will provide trainees with an easy-to-use platform that enhances their learning performance and overall training course impact. Additionally, other VET providers offering similar courses may use the platform as a didactic tool to educate their trainees on risk categorization and evaluation processes.

Once tested and validated, the prototype can be further developed into an advanced professional tool for professionals already working in the field. This transferability extends beyond cultural heritage to other fields where hands-on experience is crucial but difficult to obtain without digital tools, such as hydrogeological risks, construction, and urban planning. Overall, this project result has the potential to significantly impact the training landscape and improve the skill set of future Cultural Heritage Risk Managers.

The CHARISMA web app

Preserving our cultural heritage is not just about conserving artifacts; it's about safeguarding our identity and history for future generations. However, this noble task faces increasing challenges from natural calamities, human activities, and technological advancements. In response, the Charisma web app emerges as a pioneering solution, providing cutting-edge training in risk management for cultural heritage. By leveraging state-of-the-art technology and collaborative efforts, Charisma aims to empower future Risk Managers with the skills and knowledge needed to identify, assess, and mitigate risks to cultural heritage assets.

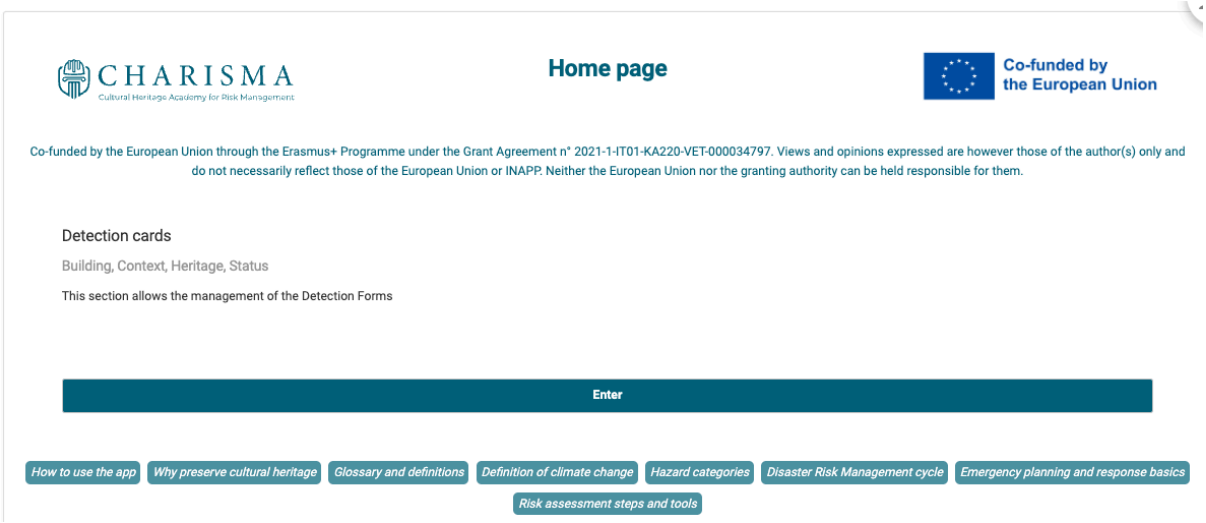


Figure 1 - A screenshot of the dashboard of the CHARISMA web app

Background and Objectives:

The Charisma web app is the result of a collaborative effort led by the RMCH project consortium.

Its primary objective is to equip future Risk Managers with practical skills and knowledge essential for effective risk management in cultural heritage preservation. By offering hands-on experience and trial-and-error learning opportunities, Charisma aims to create a dynamic and interactive training environment. Furthermore, the platform seeks to enhance understanding and proficiency in cultural heritage risk management, ensuring that trainees are well-prepared to tackle real-world challenges in the field.

The development of the Charisma web app stems from a crucial need in the cultural heritage sector: the demand for innovative training tools to prepare future Risk Managers. Traditional methods often fall short in providing practical experience and real-world scenarios, essential for effective learning. Thus, Charisma fills this gap by offering a dynamic platform that ensures hands-on experience and trial-and-error learning, aligning with the evolving needs of the industry.

This project result caters to a diverse range of stakeholders in the cultural heritage sector. Primary target groups include participating organizations (VET Providers) and participants (VET Trainees). Additionally, VET Providers outside the partnership, along with their staff and trainees, can benefit from the platform's resources and training materials. By targeting a broad audience, Charisma aims to democratize access to high-quality training in cultural heritage risk management.

At the core of this project result lies its innovative framework, designed to revolutionize risk management training in cultural heritage.

Unlike existing tools primarily tailored for professionals in the insurance sector, Charisma offers a unique training platform specifically aimed at preparing future Risk Managers. Its flexible and adaptable framework enables compatibility with tablets and smartphones, making it accessible to a wider audience. By eliminating the need for expensive equipment, it breaks down barriers to entry and ensures that practical experience is within reach for all aspiring Risk Managers.

This project result anticipates a significant impact on trainees' learning performance and the overall effectiveness of the Training Course. By providing a user-friendly platform for learning risk assessment techniques, it aims to enhance trainees' understanding and proficiency in cultural heritage risk management. Through hands-on experience and real-world scenarios, it equips trainees with the practical skills needed to address and mitigate risks effectively, thus contributing to the preservation of cultural heritage assets.

Its innovative approach holds significant potential for transferability to other training fields where hands-on experience and trial-and-error learning are essential. Once tested and validated, the platform could serve as a model for developing advanced training tools in various domains, including hydrogeological risks, construction, and urban planning. By sharing its framework and methodology, it seeks to inspire innovation and drive positive change beyond the realm of cultural heritage preservation.

Methodology

The development of this project result relies on a robust methodology, encompassing a responsive web application generation framework from an external IT company that was selected through a call for tenders.

This framework supports detailed access control, database administration, form and report generation, domain authentication, and authorization levels.

The design and development process involves close collaboration with project partners and stakeholders. Through alpha and beta testing with trainees and trainers, this web app ensures usability and effectiveness, incorporating feedback to refine the platform before its official launch.

The project result's implementation methodology has involved a comprehensive testing phase, including alpha and beta testing with trainees and trainers.

Feedback from stakeholders has been carefully evaluated and incorporated into the final version of the platform, ensuring that it meets the needs and expectations of its users. By prioritizing usability and effectiveness, it aims to deliver a high-quality training experience that prepares future Risk Managers for the challenges ahead.

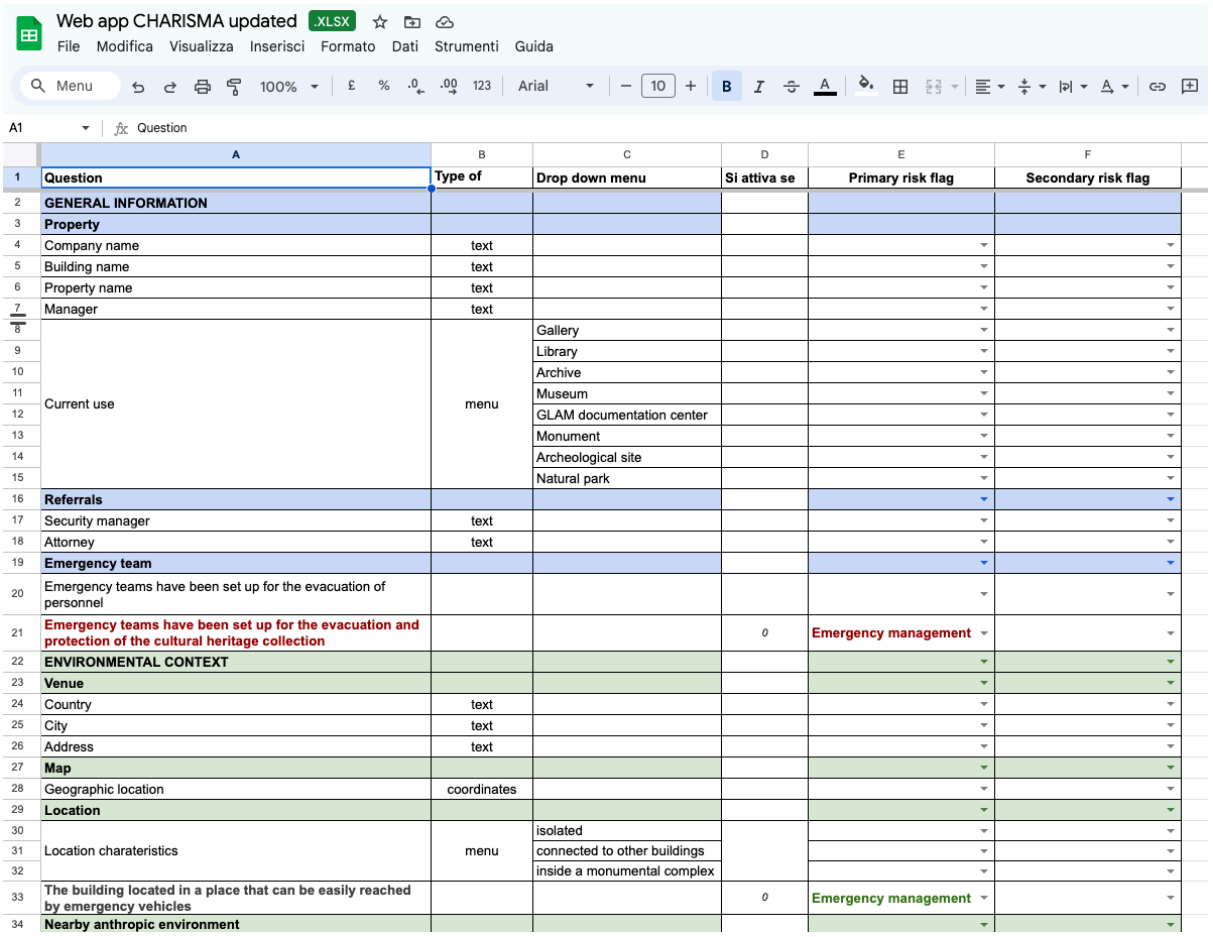
Design and development of the basic structure

The development of the CHARISMA web app reflects an academic endeavor characterized by extensive research and scholarly inquiry undertaken by the project consortium. Delving into the complexities of risk factors affecting cultural heritage, the consortium engaged in a thorough examination of various dimensions that could potentially impact heritage sites.

Through a rigorous exploration of environmental, geographical, structural, and historical variables, the consortium systematically identified and analyzed key elements contributing to the vulnerability of cultural heritage. This investigative process yielded invaluable insights into the multifaceted nature of risks inherent in heritage preservation.

Central to the consortium's research efforts was the formulation of a comprehensive questionnaire, meticulously designed to capture the nuances of risk assessment within the cultural heritage domain. The questionnaire served as a foundational instrument for the subsequent development of the CHARISMA web app.

The consortium endeavored to create a sophisticated yet accessible tool for risk assessment and mitigation in cultural heritage management. In essence, the CHARISMA web app stands as a scholarly contribution to the field, informed by a deep understanding of the complexities inherent in safeguarding our shared cultural heritage.



Web app CHARISMA updated .XLSX

File Modifica Visualizza Inserisci Formato Dati Strumenti Guida

A1 | Question

	A	B	C	D	E	F
1	**Question**	**Type of**	**Drop down menu**	**Si attiva se**	**Primary risk flag**	**Secondary risk flag**
2	**GENERAL INFORMATION**					
3	**Property**					
4	Company name	text				
5	Building name	text				
6	Property name	text				
7	Manager	text				
8	Current use	menu	Gallery			
9			Library			
10			Archive			
11			Museum			
12			GLAM documentation center			
13			Monument			
14			Archeological site			
15			Natural park			
16	**Referrals**					
17	Security manager	text				
18	Attorney	text				
19	**Emergency team**					
20	Emergency teams have been set up for the evacuation of personnel					
21	**Emergency teams have been set up for the evacuation and protection of the cultural heritage collection**			0	Emergency management	
22	**ENVIRONMENTAL CONTEXT**					
23	**Venue**					
24	Country	text				
25	City	text				
26	Address	text				
27	**Map**					
28	Geographic location	coordinates				
29	**Location**					
30	Location charateristics	menu	isolated			
31			connected to other buildings			
32			inside a monumental complex			
33	**The building located in a place that can be easily reached by emergency vehicles**			0	Emergency management	
34	**Nearby anthropic environment**					

Figure 2 - A glimpse of the research sheet for the development of PR3

The sections of the web app

The CHARISMA web app questionnaire is divided into several sections.

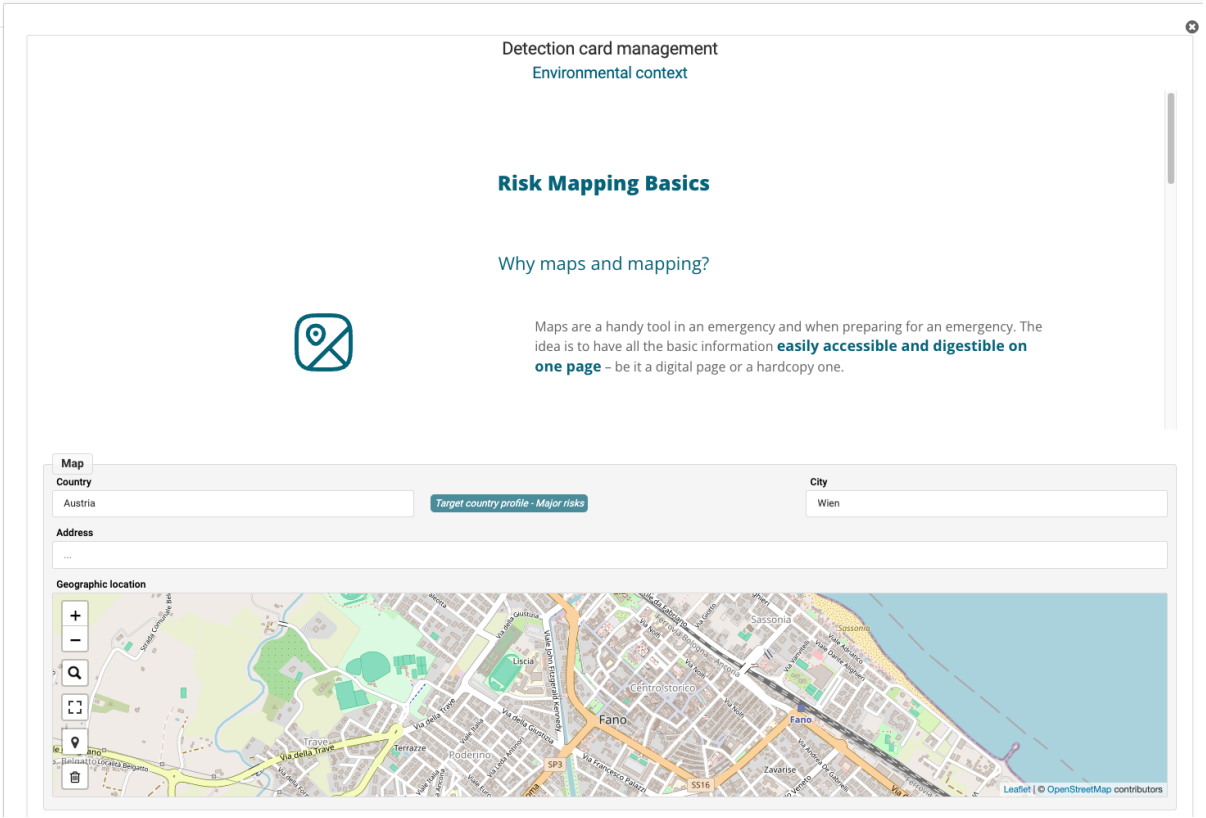


Figure 3 - A snap of the Environmental context section

1. **Environmental context:** In the Environmental Context section of the web app, users encounter inquiries tailored to assess the surroundings of the building housing the collection. These queries aim to pinpoint potential threats stemming from the environment, such as geographical location, nearby urban and natural elements, known area risks, recent disastrous events, and accessibility of roads leading to the building—a crucial factor for emergency response. Of particular significance within this section are risks arising from climate change, including seismic activity, extreme weather events like hailstorms and cyclones, climate-induced risks such as forest fires and droughts, and hydrogeological risks influenced by environmental transformations. Users utilize maps and data from local research agencies to analyze these variables effectively.

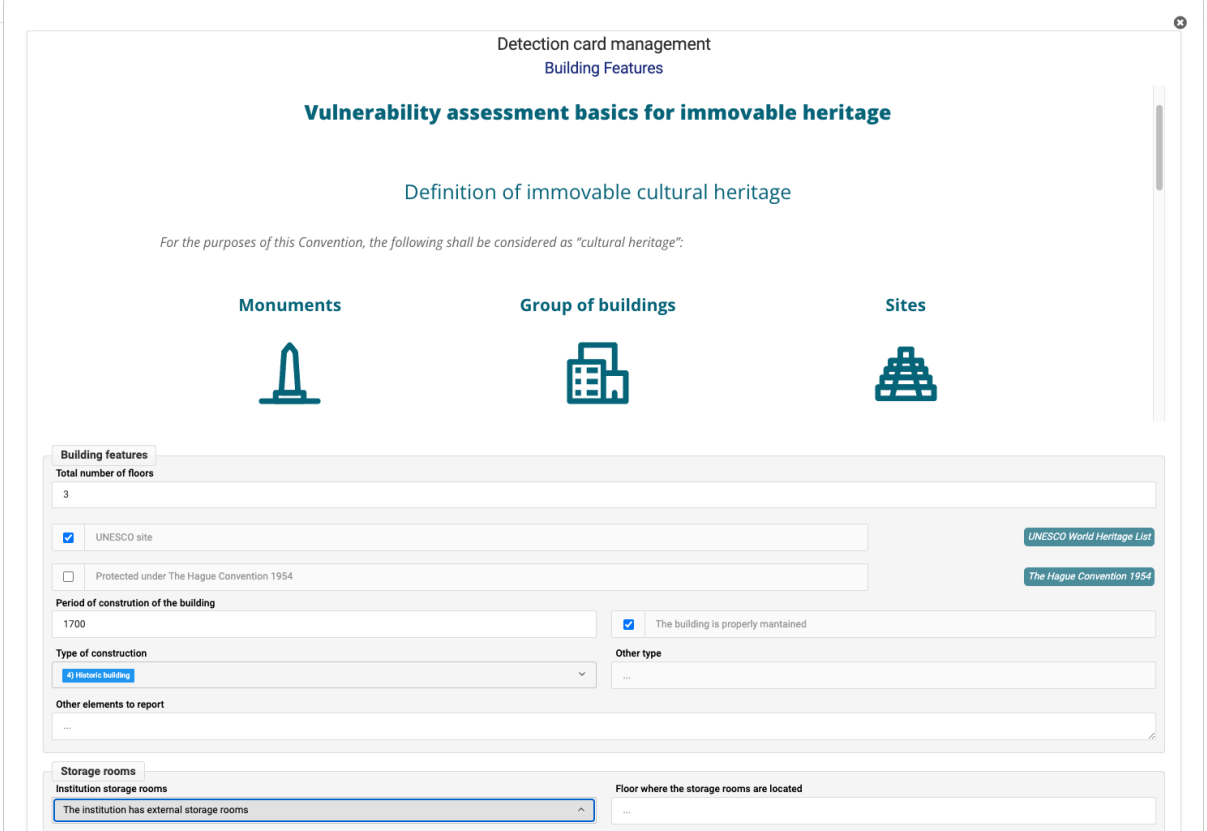


Figure 4 - A snap of the Building features section

2. **Building features:** The Building Features section is crafted to identify all elements and characteristics of the building that could impact collection risk levels. Factors such as construction materials, internal structures, and safety systems significantly influence the collection's vulnerability. It's imperative for cultural sector professionals to identify these elements within their workplace. Key aspects investigated include building constraints, construction type, energy efficiency, storage room descriptions, and risks like fire, anthropic factors, microclimatic variations, and biological threats. Additionally, the existence of a heritage insurance policy and adequacy of emergency exits are examined.

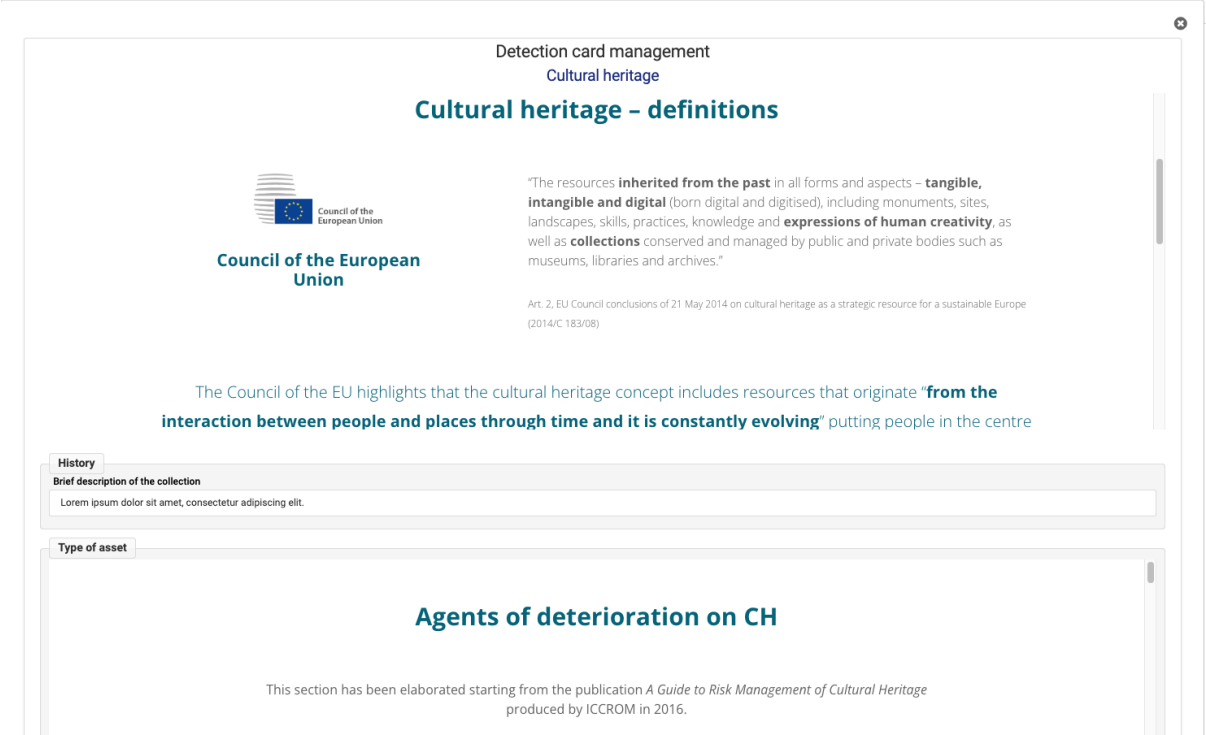


Figure 5 - A snap of the Cultural Heritage section

3. **Cultural Heritage:** Dedicated to the collection, this section aims to obtain an overview of the collection type and conservation methods. While not cataloging the entire collection, the app identifies major vulnerabilities starting from the materials composing the artworks. Users identify the collection's historical period, followed by detailing the museum typology of assets (architectural, archival, etc.) and predominant materials. This provides a snapshot of vulnerabilities across the artworks. Other elements probed include the presence of a catalog, listed heritage, conservation support types, priority lists for saving the collection, availability of safe deposits, and digital catalog presence.

Figure 6 - A snap of the Alerts section

4. **Alerts:** Upon completion of the assessment, users receive a summary graph categorizing their vulnerabilities. Categories include Emergency Management, Environmental Conditions, Anthropogenic Factors, Fire Risks, and Hydrogeological Risks. These help raise awareness of the institution's preparedness and vulnerability across various risk categories.

Assistance and guidance to the developer company

A significant aspect of the design and development process of the CHARISMA web app involved a collaborative partnership with the selected company, chosen through a tender process. This collaboration was instrumental in refining each section of the app to enhance its effectiveness.

Through close evaluation and analysis, the consortium provided detailed directives to the development company, ensuring that every aspect of the app was

scrutinized and optimized for maximum efficacy. Each tab and feature underwent careful examination, with specific guidance provided to streamline functionality and improve user experience.

This collaborative effort resulted in a tailored approach to app development, with a focus on aligning design elements with the project's objectives and user requirements. By leveraging the expertise of the development company and incorporating precise directives from the consortium, the CHARISMA web app was refined to meet the highest standards of functionality and usability.

Production of Training materials

In enhancing the training aspect of the web app, the project consortium developed comprehensive training materials designed to provide users with a thorough understanding of its functionalities and underlying rationale. These materials serve as educational resources, guiding users through each section of the app and elucidating the significance of analyzing specific elements in assessing risks to cultural heritage.

The training materials were meticulously crafted to offer insights into the critical importance of scrutinizing various factors when evaluating risks impacting cultural heritage. Through detailed explanations and illustrative examples, users gain a deeper appreciation for the significance of each analytical component within the app.

By incorporating these training materials into the app's framework, the consortium aimed to empower users with the knowledge and expertise needed to utilize the platform effectively. This approach ensures that users not only navigate the app with confidence but also comprehend the broader context and implications of their risk assessment endeavors in cultural heritage preservation.

The training materials provide important information pills that enable the user to proceed correctly in filling out the app and provide a basic explanation of some issues that the user may not be aware of.

Below is an overview of the Training Materials that can be found on the web app.

Training material on General Information on the first screen to access the app:

- How to use the app
- Why preserve cultural heritage?
- Glossary and definitions
- Definition of climate change
- Hazard categories
- Disaster risk management cycle
- Emergency planning and response basics
- Risk assessment steps and tools

Training material about the Emergency Team, presents in the same Initial section:

- Why is it important to define emergency management teams?
- Emergency teams for the evacuation of personnel
- Emergency teams for the evacuation and protection of the cultural heritage collection

The following training material can be found in the Environmental Context section:

- Risk mapping basics
- Target country profile - Major risks
- Is the building located in a place easily accessible to emergency vehicles?
- Key anthropic hazard
- Main environmental characteristics and natural hazards
- Internlinkages between cultural heritage and climate change

The following training material can be found in the Building section:

- Vulnerability assessment basics fot immovable heritage

- UNESCO World Heritage List
- 1954 The Hague Convention
- Fire risk management
- Anthropogenic risk management
- Microclimate risk management
- Lighting Risk Management
- Biological Risk Management
- Cultural heritage insurance basics

The following training material can be found in the Cultural Heritage section:

- Concept of (tangible) heritage (simplified): participatory concept from the Faro Convention, Council of Europe and EU references
- Agents of deterioration
- Why is important to have an up to date catalogue?
- Why is it important to anchor shelves to the wall?
- Why is it important to lift items from the ground?
- Priority lists: how to do them
- Why is it important to define priority lists
- Storage rooms

The following training material can be found in the Risk Chart section:

- Risk treatment basics

Feedback gathering

The web app underwent rigorous testing by participating students and stakeholders. These students not only explored the app's functionalities but also deployed it within cultural heritage institutions to gauge its practical utility.

Moreover, stakeholders and individuals from the project partner network were invited to engage with the app, providing invaluable feedback. This feedback was meticulously analyzed and incorporated into iterative app refinements, ensuring its optimization for real-world application.

By leveraging direct engagement from students and stakeholders alike, the testing phase not only validated the app's efficacy but also facilitated a comprehensive understanding of its potential within cultural heritage conservation settings. This collaborative approach, characterized by continuous feedback and refinement, culminated in the development of a robust and user-centric web app tailored to the specific needs of cultural heritage institutions.

The feedback questionnaire

Listed below are the questions comprising the feedback questionnaire distributed to the testers.

User interface

1. How would you rate the web app user interface?
2. How would you evaluate the aesthetics and visual identity of the web app?
3. How would you rate the ease of orientation within the tabs of the app?
4. If you deem it necessary, leave a suggestion here on how we can improve the user interface:

Structure and flow of use

1. How would you evaluate the overall structure of the app?
2. Do you think the usage flow is fit for purpose?
3. Do you find that the questions are posed in a simple and understandable way?
4. How would you rate the content of the Training Materials?

Comments and suggestions

1. If you deem it necessary, please leave a suggestion on how we could improve the user interface:
2. If you deem it necessary, please leave a suggestion on how we could improve the visual identity:
3. If you deem it necessary, please leave a suggestion on how we could improve the app structure:
4. If you deem it necessary, please leave a suggestion on how we could improve the question form:

5. If you deem it necessary, please leave a suggestion on how we could improve the content of the Training Materials
6. If you deem it necessary, please leave a suggestion on how we could improve the overall usage flow:

The results

The feedback questionnaire aimed to gather insights on various aspects of the CHARISMA web app, including user interface, app structure, and training materials. Testers provided qualitative assessments of the user interface, ranging from "ok" to "excellent," with some praising its clarity and ease of use. Suggestions for improvement included refining the detection card page for better clarity and simplifying content navigation.

Regarding the app's overall structure and flow, testers generally found it satisfactory to excellent, indicating a positive perception of its organization and usability. However, some expressed a desire for a more detailed app structure to enhance user experience.

Feedback on question clarity was overwhelmingly positive, with testers finding the questions clear and understandable. Similarly, the content of the training materials received positive evaluations, with testers appreciating their quality and relevance.

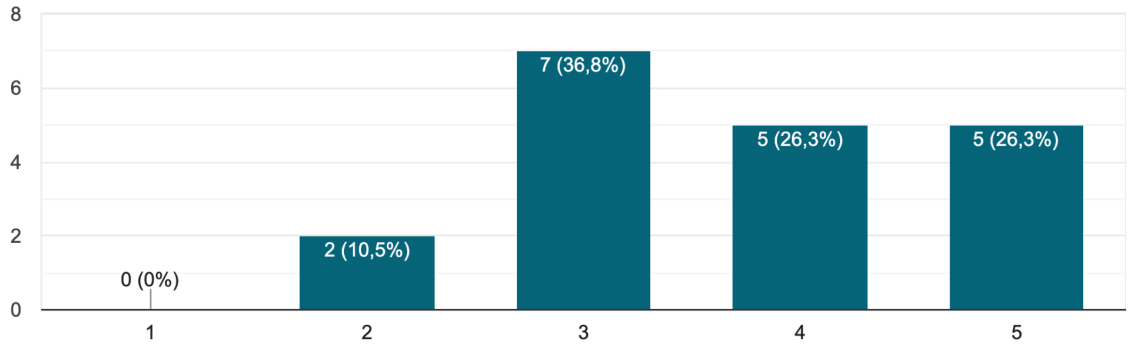
In terms of suggestions for improvement, testers provided valuable insights for enhancing the user interface, such as implementing a dark mode option and improving customization options. Additionally, suggestions were made to specify certain details in the question form, reflecting a desire for more tailored and relevant questions.

Overall, the feedback highlighted areas of strength in the CHARISMA web app, such as question clarity and training materials quality, while also providing valuable suggestions for further improvement to enhance user experience and functionality.

Below are some charts with the collected feedbacks.

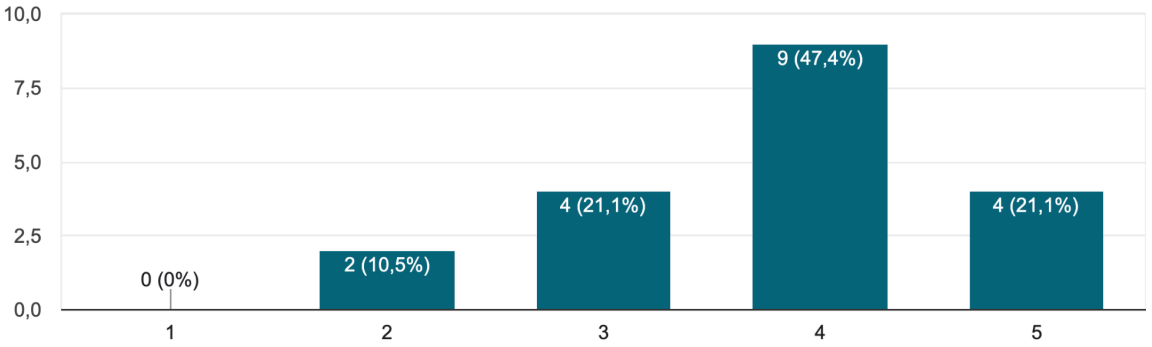
How would you rate the web app user interface?

19 risposte



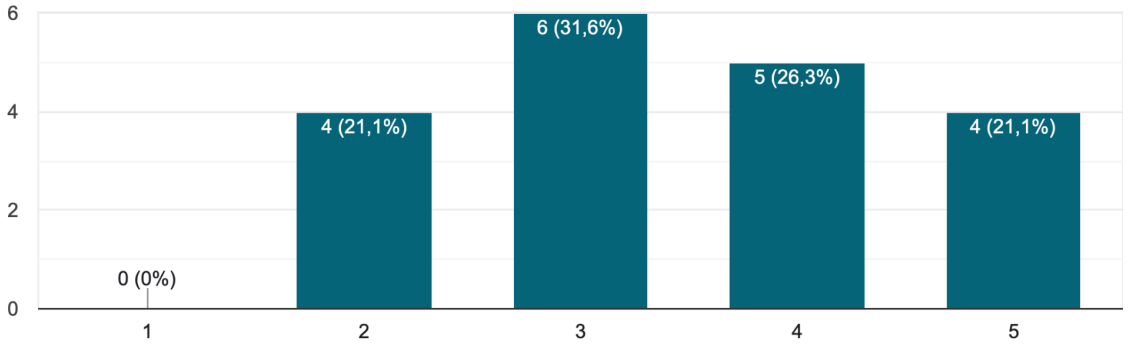
How would you evaluate the aesthetics and visual identity of the web app?

19 risposte



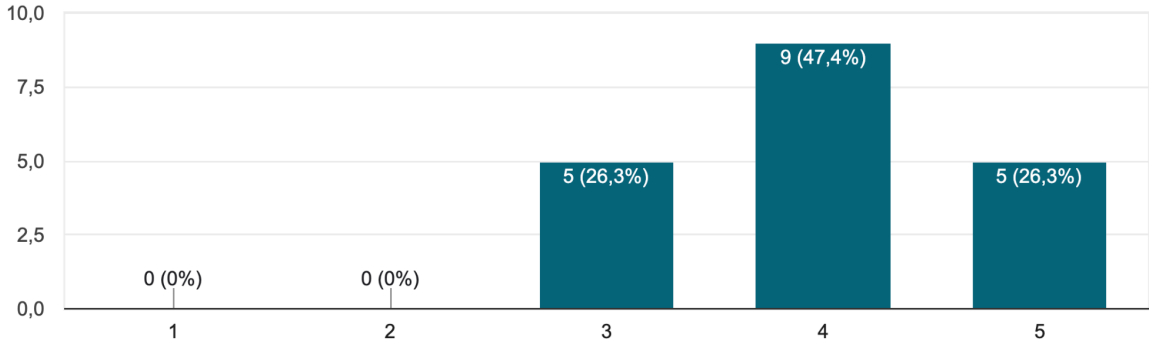
How would you rate the ease of orientation within the tabs of the app?

19 risposte



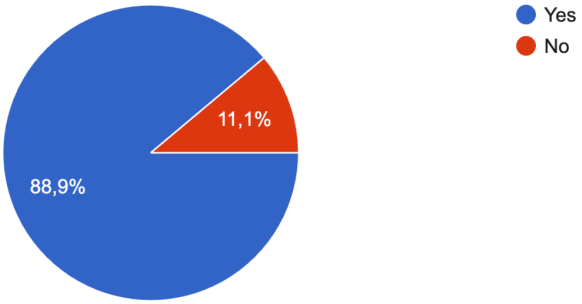
How would you evaluate the overall structure of the app?

19 risposte



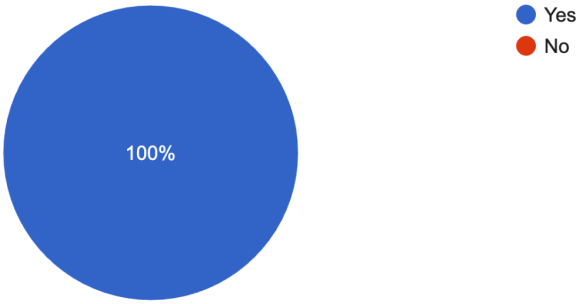
Do you think the usage flow is fit for purpose?

18 risposte



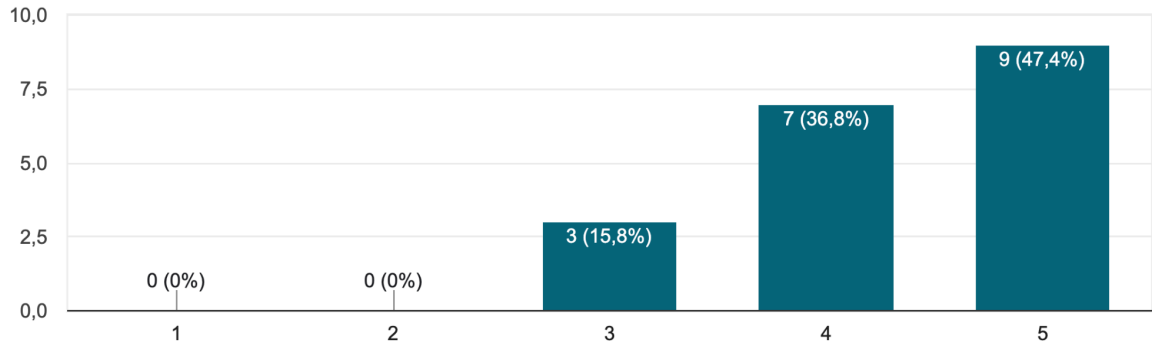
Do you find that the questions are posed in a simple and understandable way?

19 risposte



How would you rate the content of the Training Materials?

19 risposte



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