SafeCult

Co-funded by the Erasmus+ Programme of the European Union

R5/A1 European guidelines for the management of risks and emergencies for written cultural heritage

Co-funded by the Erasmus+ Programme of the European Union

R5/A2. European collaborative cross-border response tools to manage the cultural heritage disaster emergency

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1. Introduction

Preserving the rich tapestry of written cultural heritage is an intricate dance with time, where the past meets the present in the vulnerable pages of manuscripts, books and archival documents. The custodians of these treasures face a dual challenge: protecting them from the ravages of time and safeguarding them from the unpredictable onslaught of disasters.

Time, in its incessant march, alters materials, while unforeseen disasters, whether natural or anthropogenic, represent imminent threats. The delicate nature of manuscripts, the fragility of ancient scrolls, and the ephemeral ink on historical documents require a proactive approach to ensure their preservation for future generations.

Every manuscript, every ancient writing, contributes to the collective narrative of humanity. The loss of these artifacts is not just a material setback; it is a diminishment of our shared history and cultural identity. Therefore, what is at stake in managing the risks associated with written cultural heritage is not only about protecting physical entities but also about safeguarding the essence of human civilization.

As we move into the 21st century, challenges to written cultural heritage have evolved. Climate change introduces new environmental threats, while technological advances bring both opportunities and risks. Global interconnectedness also means that localized disasters can have far-reaching consequences. It is within this dynamic and complex environment that initiatives such as SafeCult gain importance.

Understanding the essence of risk management begins with acknowledging the inherent vulnerabilities of written cultural heritage. In the broader landscape, the concept of risk management extends beyond the physical attributes of cultural artifacts. It encapsulates a nuanced understanding of the socio-cultural importance of written heritage.

The SafeCult project operates within the diverse cultural landscape of Europe, aiming to harmonize various perspectives, challenges, and opportunities for effective risk management of written cultural heritage. Recognizing the cultural wealth and diversity across the European Union, SafeCult emphasizes the importance of understanding distinct historical, linguistic, and artistic heritages. The project fosters multidisciplinary collaboration, bringing together experts in conservation, emergency response, and cultural studies to comprehensively address challenges to written cultural heritage.

Harmonizing diverse perspectives involves cultural sensitivity, respecting and preserving the unique characteristics of each cultural context, including communities and practices associated with written heritage. SafeCult serves as a unifying force, facilitating collaboration, knowledge exchange, and the development of standardized approaches within the European Union. The project emphasizes the

role of knowledge exchange among experts from different cultural backgrounds, enriching the collective understanding of risk scenarios and management strategies.

SafeCult recognizes the dynamic nature of cultural heritage and incorporates adaptability into its risk management framework. This ensures tailored strategies that remain relevant and effective across diverse landscapes. The project invests in capacity building within local communities, empowering individuals and institutions for effective risk management, fostering resilience in various cultural heritages.

Harmonizing diverse perspectives through SafeCult is not just a technical necessity; it is a commitment to preserving the cultural wealth embedded in written heritage. By weaving together diverse perspectives, SafeCult aims to create a resilient fabric that protects cultural heritage from the threats posed by emergencies and disasters. Ultimately, the project seeks to leave a legacy of safeguarded written cultural heritage for the benefit of future generations, acknowledging the nuanced understanding required for effective risk management in the mosaic of European cultural heritage.

A central objective of SafeCult is to establish uniformity in emergency response across the European Union. The guidelines devised by SafeCult aim to create a singular document encapsulating standard procedures for both risk prevention and emergency management. This cohesive approach ensures consistency and facilitates streamlined communication during crisis situations.

2. Written Cultural Heritage and risk management

Risk management is widely recognized as an internationally accepted approach to address and mitigate emerging challenges across various sectors. Originally developed for the business sector, this approach has progressively expanded to diverse contexts, including cultural heritage. Its flexible and adaptable nature makes it a powerful tool for preserving cultural heritage.

Risk management has become an international standard for dealing with uncertainties and threats in multiple contexts. Organizations worldwide, from businesses to public sectors, have embraced this approach to identify, assess, and mitigate risks. Standards such as ISO 31000 provide global guidelines that organizations follow to implement effective risk management practices.

The versatility of risk management allows for its successful application in the context of cultural heritage. Protecting cultural heritage, with its unique characteristics and fragility, requires a tailored approach, and risk management fits this need perfectly. In the field of cultural heritage, the application of the risk management standard translates into a process consisting of 5 phases:
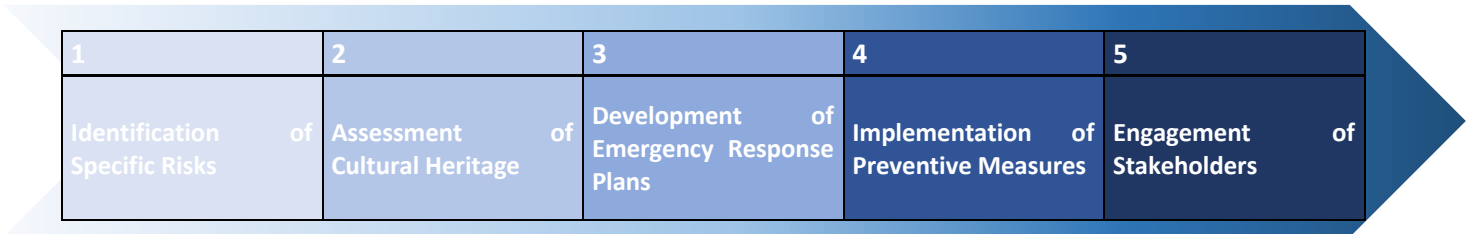
1. **Identification of Specific Risks**: Risk management enables the specific identification of risks to which cultural heritage is exposed. These can include physical threats like fires or floods, as well as more complex risks related to social dynamics or technological changes.

2. **Assessment of Cultural Heritage**: Risk assessment in the context of cultural heritage involves not only financial value but also historical, cultural, and social importance. Risk management can integrate these different aspects into the assessment, ensuring comprehensive protection.

3. **Development of Emergency Response Plans**: A key element of risk management is preparation for emergency situations. This translates to creating specific emergency response plans for cultural heritage, ensuring swift and targeted action in case of incidents.

4. **Implementation of Preventive Measures**: Risk management promotes the implementation of preventive measures. In the context of cultural heritage, this could include the adoption of advanced security systems, environmental protocols for conservation, and preventive actions against anthropogenic threats.

5. **Engagement of Stakeholders**: In managing cultural heritage, involving the community and other stakeholders is crucial. Risk management can facilitate the creation of participatory processes, ensuring that decisions are made considering the perspectives and values of the community.

1	2	3	4	5
Identification of Specific Risks	Assessment of Cultural Heritage	Development of Emergency Response Plans	Implementation of Preventive Measures	Engagement of Stakeholders

It should be remembered that risk management is a "cyclical" process. Its cyclicality is based on the dynamic nature of environments and conditions that can affect cultural heritage and follows the Plan-Do-Check-Act scheme. The risk management process must therefore be repeated cyclically (e.g. annually), and constantly (throughout the life of an organization).

In the following pages all the phases of the process are explained in detail, with the related required actions and outputs.

1	
Identification of Specific Risks	
Main Activity	It is important to consider all the potential threats that could affect the preservation and accessibility of the library heritage. In particular: - **Environmental Risks** - **Technological Risks** - **Infrastructure-related Risks** - **Security Risks** - **Financial Risks** - **Personnel-related Risks** - **Regulatory Risks** - **Health Risks** For the implementing of this fase is used an instrument calle RISK REGISTER. For each risk identified it is necessary to estimate the probability of occurrence and the potential operational impact, this will allow generating a prioritized scale of risks. Each risk must also be associated with an owner (person or organizational function), who will be responsible for monitoring the risk and implementing mitigation actions in the subsequent phases of the process. The risk identification phase ends with the identification of mitigation actions for each risk in the RISK REGISTER.
Outputs	**RISK REGISTER**

2
Assessment of Cultural Heritage

	Main Activity	Cultural heritage assessment is a process that evaluates cultural assets from different points of view: - Economic Evaluation: This type of valuation is often important for insurance, investment or financial transaction purposes. - Financial Sustainability: necessary for the long-term conservation and maintenance of cultural assets. - Historical and Cultural Value: This part of the assessment evaluates the historical and cultural importance of the assets. Consider the rarity, authenticity and historical influence of each object or collection. - Social Relevance: This aspect examines the role of cultural heritage in society. This includes evaluating their impact on cultural identity, public education and social cohesion. The results of the assessment must be related to those of the risk identification in order to estimate their potential economic and social impact.
	Outputs	**CULTURAL HERITAGE ASSESSMENT**
		ESTIMATE OF HAZARDS IMPACT

3	
Development of Emergency Response Plans	
Main Activity	Plans may include: **Cataloging Cultural Assets**: Creating a comprehensive inventory of cultural heritage resources is essential. **Establishment of Teams**: Forming specialized emergency response teams is vital. These teams typically consist of trained professionals with expertise in conservation, restoration, security, and logistics. **Internal and External Communication Plans**: Developing communication strategies is critical for effective emergency response. **Evacuation Plans**: Protocols for the safe evacuation of personnel and visitors from cultural heritage sites are established. **Salvage Procedures**: Detailed procedures for salvaging and protecting cultural artifacts during and after an emergency are developed. **Regular Training and simulation Programs**: Ongoing training programs are conducted to ensure that emergency response teams are well-prepared and familiar with their roles.
Outputs	**EMERGENCY RESPONSE PLANS**

	4
	Implementation of Preventive Measures
Main Activity	The implementation of preventive measures in the management of cultural heritage is a proactive phase aimed at putting plans into action to protect valuable artifacts and sites. This involves practical steps and strategies to mitigate potential risks and ensure the longevity of cultural treasures. In essence, this phase is about translating plans into tangible actions, fostering a proactive culture that prioritizes the safeguarding of cultural heritage. It's a dynamic and ongoing process, ensuring that institutions are well-prepared to face potential risks and challenges in the ever-evolving landscape of cultural heritage preservation. Regular maintenance and monitoring are integrated into the implementation phase. Routine inspections help identify and address potential issues early on, from structural weaknesses to environmental conditions. Policy development and enforcement, including access restrictions and adherence to security protocols, contribute to a comprehensive approach. The implementation of preventive measures is seamlessly integrated into a broader risk management framework, aligning with emergency response plans and post-emergency recovery procedures.
Outputs	**RISK MITIGATION**

5	
Engagement of Stakeholders	

	Main Activity	This phase consists in: **Community Outreach Programs:** Engaging with local communities increases awareness and fosters a sense of shared responsibility for cultural heritage preservation. Community members may be involved in reporting suspicious activities, participating in evacuation drills, or contributing local knowledge to enhance risk management. **Coordination with Emergency Services:** Establishing partnerships with local emergency services, fire departments, and law enforcement agencies is crucial for a coordinated response. Communication Strategies: **Internal and External Communication Plans:** Developing communication strategies is critical for effective emergency response. This involves establishing internal communication protocols among team members and external communication plans to liaise with emergency services, relevant authorities, and the public.
	Outputs	**EXTERNAL RESOURCES**
		EMERGENCY NETWORK

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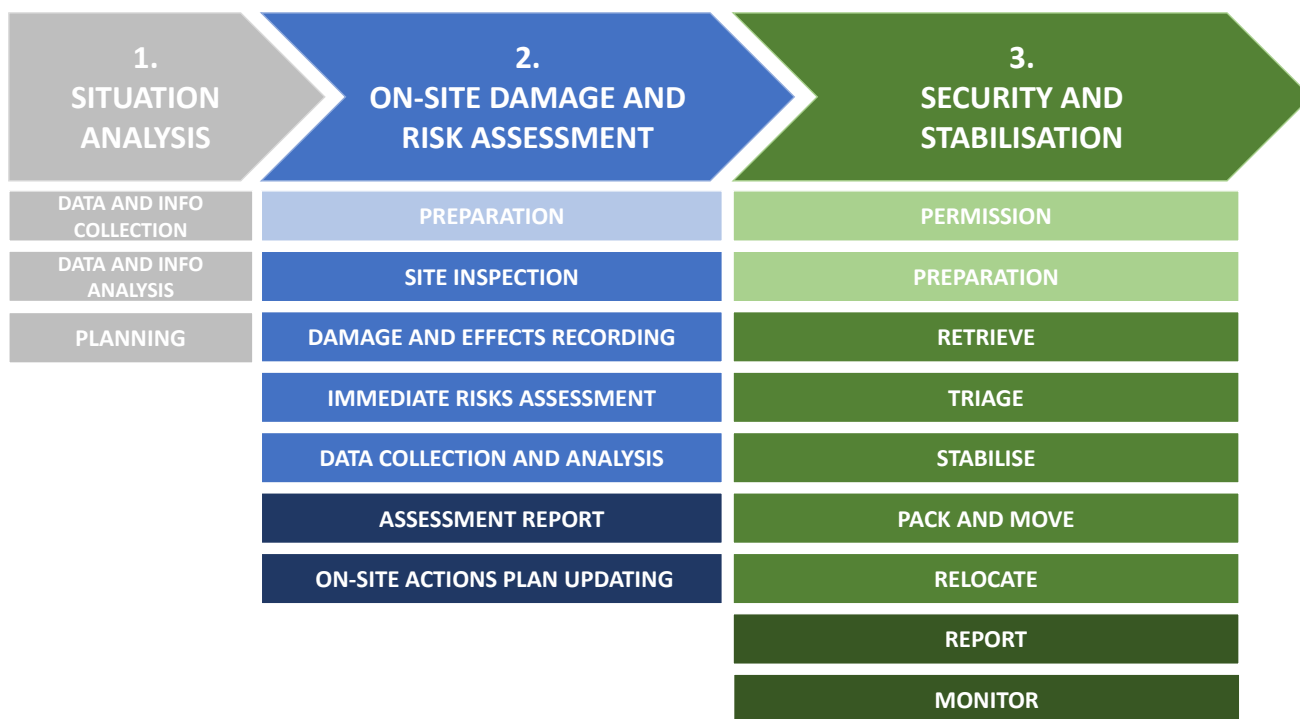# 3. The context of the emergency and the first aid providing process

The combined and interlinked measures undertaken to stabilize and mitigate risks to endangered cultural heritage in the midst of and following an emergency are collectively referred to as cultural heritage first aid. The immediate trigger for such emergencies could stem from natural disasters, human-induced hazards, or a combination of both. First aid encompasses evaluating the emergency scenario and its probable impact on cultural heritage, conducting on-site assessments of damage and risks, as well as implementing security and stabilization measures.

The primary objective of first aid is to support the recovery of affected cultural heritage, subsequently facilitating the recovery of the communities associated with it. Integrated into institutional emergency or crisis response plans, cultural heritage first aid constitutes a crucial component of emergency response procedures. In many instances, particularly in the aftermath of widespread disasters, cultural heritage first aid may be initiated only after the formally declared emergency phase concludes. Nevertheless, advance preparation and coordination remain essential to ensure a prompt and effective cultural heritage first aid response in the event of an emergency.

The main process of management and provision of first aid for cultural heritage, promoted by the major competent international institutions, as for example the ICCROM (International Centre for the Study of the Preservation and Restoration of Cultural Property), is based on a sequence of 3 steps:

1. A first phase of **Situation Analysis**, which typically begins while the critical event is underway or in the period immediately following its occurrence; the main output of this phase is a rough action plan for the first aid intervention.
2. An **On-Site damage and risk assessment** phase following the event, which serves to estimate the actual damage suffered by the cultural heritage and the risks present in the site affected by the event.
3. A final phase of **Security and stabilization**, aimed at recovering and securing the assets affected by the event.

Each of these steps is composed of a series of macro phases, which characterize the implementation sequence. In the figure below it is possible to see the 3-step process in its entirety with the characterization of the macro phases of each step, which will be discussed below of the document.

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1. SITUATION ANALYSIS	2. ON-SITE DAMAGE AND RISK ASSESSMENT	3. SECURITY AND STABILISATION
DATA AND INFO COLLECTION	PREPARATION	PERMISSION
DATA AND INFO ANALYSIS	SITE INSPECTION	PREPARATION
PLANNING	DAMAGE AND EFFECTS RECORDING	RETRIEVE
	IMMEDIATE RISKS ASSESSMENT	TRIAGE
	DATA COLLECTION AND ANALYSIS	STABILISE
	ASSESSMENT REPORT	PACK AND MOVE
	ON-SITE ACTIONS PLAN UPDATING	RELOCATE
		REPORT
		MONITOR

In particular, steps 2 and 3 of the process, in addition to being divided into macro phases, are also characterized by a series of specific actions that make up each individual phase. This gives them the shape of real action frameworks. The following points 5. and 6. of this document are therefore described in detail:

- the **On-Site damage and risk assessment framework**
- the **Security and stabilization framework.**

The correct implementation of the 3 steps Cultural Heritage first aid process is the most effective way towards the early recovery of assets and spaces affected by critical events.

In any case, it is essential to remember that this process becomes part of a context of crisis and often of great suffering for the populations affected by the events, for this reason its implementation requires the utmost professionalism and preparation of those who govern it. In particular, in scenarios of natural disasters, it is necessary that the first aid intervention for cultural heritage is carried out not only by coordinating the personnel and resources available, but also in harmony with all relief interventions for the population. Finally, it bears repeating that in times of emergency, the primary focus is on preserving lives and ensuring security. Once these critical operations have been successfully carried out, cultural heritage first aid measures can be put into action. However, effective

on-the-ground coordination with diverse emergency and humanitarian entities must be established before an emergency occurs. This coordination should be an integral part of the emergency preparedness plans devised by local governments and cultural heritage institutions.

In practical terms, the optimal timing for initiating first aid measures varies and is contingent upon the following factors: Type of emergency, Access to affected areas, Scale of damage to cultural heritage, Local capacity and preparedness.

3.1.   Type of emergency events and damage

The classification of emergency events used in this document was carried out by dividing them according to an origin criterion. The 3 categories identified are:

- events caused by **nature**

- events caused by **man**

- events caused by **bad or unsuitable conservation conditions**

NATURAL EVENTS	MAN-CAUSED EVENTS	BAD OR UNSUITABLE CONSERVATION CONDITIONS
floods-tsunami	warfare	humidity
fire	terrorism	mold
earthquake	nuclear accident	insects
tornado-storm	vandalism	
volcano		
landslides		

The protection of cultural heritage is a task that requires careful planning to prevent damage caused by a wide range of disasters, and **it is essential to consider adverse events as complex systems capable of generating connections between the various risks**. Any type of event, such as floods and fires, in addition to causing direct damage to cultural heritage, can in fact trigger potential secondary events that increase the damaging impact on cultural heritage.

For example, during a tornado, in addition to the direct damage caused by the wind and the physical force of the event itself, secondary events such as fires and floods can occur. The powerful wind can

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knock down power lines, causing fires that can further damage cultural assets. Similarly, the formation of a tornado can lead to heavy rain and flooding, putting works of art and historical monuments at risk.

Understanding these interconnections is critical for disaster preparedness and response. When developing a contingency plan for the protection of cultural property, it is essential to consider not only the type of primary event but also the possible secondary consequences. This approach will allow for the implementation of targeted preventive measures and the development of more effective intervention strategies, thus helping to preserve cultural heritage for future generations.

In the following table you can see an example of how natural disasters are often interconnected in terms of primary and secondary risks and damages.

PRIMARY HAZARD	PRIMARY DAMAGE	SECONDARY HAZARD	SECONDARY DAMAGE
EARTHQUAKE	*mechanical damage*	**fire, landslides, tsunami**	*heat damage, mechanical damage, water damage*
FLOODS	*water damage*	**landslides, mould/mildew**	*mechanical damage, corrosion, efflorescence*
TSUNAMI	*water damage*	**fire, floods**	*heat damage, water damage*
TORNADO-STORM	*mechanical damage*	**fire, floods**	*heat damage, water damage*
FIRE	*heat damage*	**water damage, mould/mildew**	*water damage, corrosion, efflorescence*
VOLCANO	*pollutants damage*	**fire, landslides, earthquake**	heat damage, mechanical damage, water damage

Below are described some of the main disaster scenarios that most recur in written cultural heritage.

- **Action of water and adverse weather conditions**
  The entry of water into repositories, particularly for archives, is a recurring risk that is not exclusively related to adverse weather conditions. Although phenomena such as flooding due to heavy rains, gigantic waves caused by hurricanes, typhoons and cyclones are significant factors, often the problem is rooted in structural defects and lack of maintenance in water supply and discharge pipes in buildings, as well as in the lack of care of the structures that house the goods.

Flooding of watercourses or reservoirs, such as rivers, streams, lakes and reservoirs, is closely linked to the planning of the surrounding land. Some areas, historically more exposed to such disasters, see floods cause serious and recurring damage to people and property. In addition, floods can lead to landslides and landslides, causing considerable damage, especially in highly urbanized areas. In the international archival community, there is a widespread opinion that, due to ongoing climate change, natural disasters that threaten archives will become more and more frequent. This requires an urgent reflection on the need to implement preventive measures and contingency plans to protect documentary heritage from unpredictable catastrophic events. Collaboration between archival institutions, government institutions and experts in the field is crucial to develop effective risk mitigation strategies and safeguard the precious historical evidence preserved in the archives.

It is recommended that Operational Bodies and Owners be reminded that:

- Simple compliance with current legislation will not sufficiently protect buildings.
- More can be achieved in a pre-planned risk analysis and preventative approach to ameliorate the consequences of a flood or landslide incident from occurring, by involving the production of:
  - o A Maintenance Handbook.
  - o A Risk Management Plan.
  - o Appropriate Insurance coverage.
  - o Staff and occupancy training.
  - o Additional achievable practical measures.

- **Fire**

regardless of their origin, fire is the most precarious event for archives and libraries due to the nature of the materials stored, even though it is rare, thanks to preventive measures mandated by law. Fires can result in the destruction of archival and bibliographic materials, with limited possibilities for recovery. There are ongoing debates regarding the choice of extinguishing substances to combat these fires, as some substances may cause more significant damage than the fire itself. Accidental causes, such as short circuits from faulty electrical equipment or systems, overloads, and unprotected elements, contribute significantly to fire incidents. Additionally, negligence can also play a role in fire occurrences. In addressing these risks, it becomes crucial to not only focus on fire prevention but also on the development of efficient fire suppression strategies that minimize damage while avoiding the introduction of harmful agents during firefighting efforts. Recognizing the potential catastrophic consequences of a fire in archives and libraries, there is an increasing emphasis on comprehensive risk assessment, the installation of advanced fire detection and suppression systems, and the establishment of emergency response plans. Collaborative efforts between archival professionals, fire safety experts, and policymakers are essential to ensure the preservation of invaluable cultural heritage stored in these institutions.

It is recommended that Operational Bodies and Owners be reminded that:

- Simple compliance with current legislation will not sufficiently protect their buildings.
- More can be achieved in a pre-planned risk analysis and preventative approach to ameliorate the consequences of a fire incident from occurring, involving the production of:
    - o A Fire Safety Handbook incorporating a Fire Safety Log.
    - o A Damage Limitation Plan.
    - o Appropriate Insurance coverage.
    - o Staff and occupancy training.
    - o Additional achievable practical measures.

- **Earthquake**

The final act in the lengthy process of accumulating deformation of the Earth's outermost rocks is driven by the considerable dynamic processes occurring within our planet. Earthquakes, although not directly measurable in the strict sense, result from this accumulated energy. Nevertheless, correlations allow us to quantify the "magnitude" of seismic events from two perspectives: one related to the released energy, known as magnitude, and the other based on observed effects on structures and the environment, termed intensity. Surface ground shaking during earthquakes can induce various building movements, including horizontal and vertical motions. These movements, when compounded, result in deformations, torsions, dislocations, and collapses to varying degrees.During and after earthquakes, building collapses and falling structures can be compounded by secondary hazards such as fires and water penetration. These additional challenges make emergency interventions exceedingly complex and difficult. The aftermath of earthquakes demands a comprehensive and coordinated response that addresses not only immediate structural safety concerns but also the potential secondary effects that can exacerbate the overall impact. The seismic resilience of buildings and infrastructure, along with preparedness measures, becomes paramount in mitigating the destructive consequences of these natural events.

It is recommended that Operational Bodies and Owners be reminded that:
- The installation of a network of accelerometers at specific points on major cultural assets is an important way of recording seismic action and in helping to determine a relevant response to an event.
- Seismic isolation might be proposed as a solution where reinforcement is impossible to comply with present-day building codes.
- A funded pre-event detailed digital/photographic survey record of cultural assets would allow for a greater degree of reconstruction after an earthquake.
- Additional funding will be required to ensure a sufficient number of skilled employees are available to create and complete digital database material.
- Earthquake resistance evaluation of cultural assets where a high number of occupants can exist and be at risk (e.g. churches, museums) should be systematic, mandatory and a prerequisite for approval in their operation.

- In such circumstances detailed layout information should be posted clearly indicating escape exits, the location of water flow valves and, electric power switches, ventilation, air conditioning etc.
- With due regard to security requirements, record sheets for earthquake damaged cultural assets and collections should be prepared indicating the location of the most important and valuable items.

- **Tsunami**

A marine phenomenon, tsunamis are characterized by waves spanning tens or hundreds of kilometers, with a period ranging from 5 to 60 minutes. These waves are generated impulsively by the abrupt displacement of a mass of water. Typically, tsunamis result from the sudden upward or downward movement of the seafloor, often triggered by a powerful earthquake with a relatively shallow hypocenter. These seismic events commonly occur in the open sea or even on land, in close proximity to the coast. In addition to seismic activity, tsunamis can also be generated by other events such as submarine or aerial landslides, volcanic eruptions, and, more rarely, the impact of meteorites in the water. The destructive potential of tsunamis lies in their ability to propagate across vast oceanic expanses, reaching coastlines with devastating force. Due to their unpredictable and far-reaching nature, early warning systems and effective monitoring are essential for coastal regions prone to tsunamis. Timely dissemination of information allows for the implementation of evacuation procedures and other protective measures, significantly reducing the risk to human life and property.

It is recommended that Operational Bodies and Owners be reminded that:
- Simple compliance with current legislation will not sufficiently protect buildings.
- More can be achieved in a pre-planned risk analysis and preventative approach to ameliorate the consequences of a flood or landslide incident from occurring, by involving the production of:
  - A Maintenance Handbook.
  - A Risk Management Plan.
  - Appropriate Insurance coverage.
  - Staff and occupancy training.
  - Additional achievable practical measures.

- **Landslides**

Landslides represent a visible manifestation of the ongoing evolution of the landscape—a continuous process that can be subtle with imperceptible soil erosion or, at times, dramatically impactful, especially when significant volumes are involved, affecting both people and built structures. Throughout history, humans have engaged with landslides in an ongoing challenge to adapt to the natural environment while simultaneously safeguarding against its potential hazards, particularly in mountainous regions and areas prone to disintegration. The primary driving force behind landslides is rainfall, with seismic events playing a lesser but still significant role. Human activities and territorial policies have

substantially contributed to this phenomenon. On one hand, these policies have led to the occurrence of landslides in areas where they were previously uncommon, and on the other, they have exacerbated the impact on the socio-economic fabric. The delicate balance between human development and the natural environment requires careful consideration to minimize the occurrence and mitigate the consequences of landslides. Strategies for sustainable land use, effective hazard assessment, and the implementation of protective measures are crucial elements in achieving a harmonious coexistence with the evolving terrain.

It is recommended that Operational Bodies and Owners be reminded that:

- Simple compliance with current legislation will not sufficiently protect buildings.
- More can be achieved in a pre-planned risk analysis and preventative approach to ameliorate the consequences of a flood or landslide incident from occurring, by involving the production of:
  - o A Maintenance Handbook.
  - o A Risk Management Plan.
  - o Appropriate Insurance coverage.
  - o Staff and occupancy training.
  - o Additional achievable practical measures.

- ## Tornado- Storm

The destructive impact of wind is now recognized as a significant threat and risk, resulting in the potential loss of life, property, and infrastructure due to partial structural damage, collapse, or flying debris. While the risk of damage to historic buildings from wind and driven rain is well-documented in Europe and worldwide, a comprehensive assessment and analysis of the full scale of consequences are still lacking. Addressing this issue requires the coordination of various communities to serve as inter-agency coordinators. These coordinators should establish links with non-governmental organizations (NGOs) and international organizations, including UN agencies, empowering them to act as bridges between policy makers and those responsible for implementing risk reduction activities at the local community level. Furthermore, there is an opportunity to showcase developed wind engineering technologies in the disaster risk reduction marketplace. This connection could facilitate the promotion of specialized, practical equipment to potential users and partners, which could be adapted to meet the specific needs of different regions by incorporating local building and land-use practices. This collaborative approach not only enhances disaster preparedness but also fosters innovation and adaptation in addressing the unique challenges posed by wind-related risks in various geographical contexts.

It is recommended that Operational Bodies and Owners should be reminded that:

- More can be achieved in a pre-planned risk analysis and preventative approach to ameliorate the consequences of wind damage through the formation of a Damage Limitation Plan.

- The Appropriate Insurance coverage is required to assist in the preservation of the cultural value of historic buildings.

- Armed conflict and attack

In times of war, armed conflict, terrorism, and street demonstrations, archives face significant risks of destruction, sabotage, theft, and vandalism. Certain institutions may become deliberate targets with the intent to obliterate information. Digital archives, in particular, are highly vulnerable to individuals skilled in breaching security systems, infiltrating information systems, and causing harm by damaging, altering, or stealing data. The threats to archives during these tumultuous times highlight the importance of robust security measures, both physical and digital, to safeguard valuable historical records and information. Institutions housing archives must implement comprehensive risk management strategies, contingency plans, and security protocols to mitigate the potential impact of intentional attacks or collateral damage. For digital archives, cybersecurity becomes a paramount concern, necessitating advanced protective measures against unauthorized access and malicious activities. Regular backups, encryption, and strict access controls are crucial components of a resilient defense against digital threats. In such challenging circumstances, the preservation of archival materials requires not only protective measures but also collaborative efforts between institutions, government authorities, and security agencies to ensure the resilience and integrity of these vital repositories of historical information.

It is recommended that Owners be reminded that:
- They should report irregularities concerning possible terrorism-activities to the relevant authorities.
- They should contribute to the efforts of the civil and military forces by providing much needed local information and knowledge.
- They should ensure adequate records of their ownership and of their assets preferably certified and digitalised.

- Nuclear accident

A nuclear or radiological accident is an occurrence involving the release of radioactive material or a level of radioactivity with the potential to impact public health. These incidents can occur in nuclear power plants, military or civilian nuclear facilities, and establishments engaged in activities related to the handling of radioactive elements—such as nuclear fuel production plants, radioactive waste manipulation facilities, research laboratories, and radiological departments in hospitals. In the aftermath of a nuclear accident, not only can archives within the affected plant or facility be contaminated by radioactive dust, but archives located in the broader surrounding area may also be at risk. The dispersion of radioactive particles in the air and their potential to settle on surfaces pose a significant threat to archival materials. The contamination of archives in the vicinity of such incidents necessitates careful assessment, monitoring, and, if required, remediation measures to ensure the safety of archival collections and the individuals who may come into contact with them. The preservation of records in

areas prone to nuclear activities underscores the importance of disaster preparedness, emergency response plans, and collaboration between archival institutions and relevant authorities to safeguard both the historical documents and the well-being of the public.

It is recommended that Owners be reminded that:

- Simple compliance with current legislation will not sufficiently protect buildings.
- More can be achieved in a pre-planned risk analysis and preventative approach to ameliorate the consequences of a flood or landslide incident from occurring, by involving the production of:
    - o A Maintenance Handbook.
    - o A Risk Management Plan.
    - o Appropriate Insurance coverage.
    - o Staff and occupancy training.
    - o Additional achievable practical measures.

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4. Step one - The Situation Analysis

The first step of the process is the Situation Analysis. It involves analyzing the situation to gain a comprehensive understanding of the broader context of the emergency. This analysis is crucial for first aiders to develop a plan tailored to the specific circumstances on-site. A thorough situation analysis is conducted towards the conclusion of the emergency phase to identify mid- to long-term requirements for the cultural heritage recovery process. In the midst of a rapidly unfolding crisis, conducting a situation analysis proves invaluable in mitigating risks and restraining or preventing damage to cultural heritage. When initiated at the outset of a field operation dedicated to safeguarding cultural heritage, a situation analysis becomes instrumental in determining the operation's location(s), timing, scale, and scope. By relying on pre-event information regarding the type(s) and significance of the cultural heritage at stake, a situation analysis plays a pivotal role in addressing crucial questions, such as what aspects to prioritize and how to intervene effectively. Simultaneously, it aids in identifying the key actors and stakeholders who can contribute to the implementation of first aid measures.

A situation analysis for cultural heritage first aid encompasses various elements, including but not limited to:

- The teams or institutions responsible for executing first aid measures.
- The owners or institutions overseeing the affected cultural heritage.
- Representatives from emergency management institutions controlling access to the affected area and determining response priorities.
- Representatives from local communities.
- Involvement of volunteers and local non-governmental organizations (NGOs).

The correct implementation procedure of the Situation Analysis involves the **collection** and subsequent **analysis** of information of a different nature regarding the emergency, these 2 steps are essential and preparatory to **planning** the on-side intervention.

➢ As regards the **collection phase**, this essentially aims to find the maximum amount of useful information regarding the context of the emergency, the cultural heritage affected, and the actors involved in the emergency, using the question scheme shown in the following table:

COLLECT INFORMATION

CONTEXT OF THE EMERGENCY	CULTURAL HERITAGE AFFECTED	MAIN STAKEHOLDERS AND ACTORS
Which province, region, or country is involved?	How many, and what type of cultural heritage assets are likely to be affected?	Who are the owners (institutions/individuals/social groups) of the cultural heritage assets in the affected area?
What is the primary hazard?	What is the significance of the affected cultural heritage in the area, and for whom? Is it a listed heritage asset of national or regional importance?	Who are the people or communities dependent on the cultural heritage assets for their livelihood?
Which secondary hazards could cause more damage?	What are the local beliefs or attitudes that might affect cultural heritage first aid?	Who is in charge of coordinating the emergency response and who controls access to the affected area(s)?
Are you in a Pre, During or Post emergency stage?	What was the condition of the affected cultural heritage before the event?	Which local communities, volunteer groups or on-site staff can assist in assessing damage and risks, and in implementing security and stabilisation measures?
	Do functional emergency management plans for the affected cultural heritage exist?	Which emergency responders, for example firefighters military or civil defence personnel, are able to assist in implementing first aid for the affected heritage?
	What type of damage has been caused to cultural heritage assets in the area?	What type of resources can the stakeholders of the affected heritage provide?
		What is the level of cooperation between the key emergency actors and stakeholders?

➢ The **analysis phase** of the gathered information aims to:

- pinpoint cultural heritage assets that:
  o Hold the utmost significance.
  o Have sustained severe damage.
  o Exhibit some damage and are susceptible to secondary hazards, posing a risk of further harm if not addressed.

- Identify cultural heritage assets that necessitate on-site damage and risk assessment. Prioritize assets that are partially or heavily damaged and face the potential for further losses. Additionally, consider on-site assessment for assets of high significance that are at risk.

- Evaluate the required expertise for on-site damage and risk assessment. This assessment, beyond reviewing damage and risks, may also demand an overarching evaluation of site safety and, if applicable, the safety of its structures. For instance, a post-flood on-site assessment for a historic building and collection might require input from a structural engineer familiar with water-damaged heritage structures and a collections manager proficient in assessing damage, decomposition risks, and mold. Similarly, a post-war assessment of comparable cultural assets may initially necessitate a safety check for explosive devices.

- Based on available information, assess the immediate security measures needed at each site (such as whether the site requires covering or assigning a guard for protection). In the context of intangible heritage, consider the relief-support required by the practicing community to recover from the emergency.

- Identify the necessary supplies and equipment for conducting on-site damage and risk assessments. Utilize the stakeholder and actor map to determine which stakeholders and actors can grant permission for on-site work, facilitate access, provide resources, coordinate logistics, and offer expertise for:

    o On-site damage and risk assessments.
    o Security and stabilization operations at each site.
    o Evaluation and monitoring of work conducted at each site.

- Consider the information available about the preferred local language(s) or communication forms in the affected area. Identify communication strategies for effectively engaging with emergency actors, stakeholders, affected communities, and media groups.

➢ The **Planning Phase,** as in a traditional project management approach, uses the analysis outcomes to develop a strategic plan for implementing cultural heritage first aid, outlining the following:

- **On-Site Operations Overview:** Predicted time frame, scale, costs, and objectives.
- **Roles and Responsibilities:** Define roles for institutions, emergency actors, cultural first aiders, and volunteer groups.
- **Permissions and Consultations:** Outline formal permissions and community consultations required for on-site assessments and security measures.

- **Communication Plan:** Specify communication methods and designate responsibilities.
- **Preparation and Resources:** Detail necessary resources and preparations, including pre-event documentation, emergency supplies, and equipment.
- **Training and Orientation:** Define on-site training and orientation requirements for volunteers and emergency responders.
- **Safety and Quality Control:** Establish criteria for safety and quality control in implementing first aid.
- **Evaluation Criteria and Modes:** Clarify who will conduct evaluations and the methodology employed.
- **Monitoring Regime:** Specify the responsible party and the timeframe for the monitoring regime.

5. Step two - On site damage risk assessment

The On-Site damage and Risk assessment is conducted to identify and document the damage incurred and the risks posed to cultural heritage in the aftermath of a disaster. The outcomes of this assessment play a vital role in establishing priorities for on-site actions. So, after the Situation Analysis, conducting integrated post-event damage and risk assessments for all cultural heritage types—movable, immovable, and intangible—is imperative. Neglecting this process may result in an inefficient allocation of time and resources and inaccurate estimations of recovery needs. This comprehensive approach is essential as it informs the strategic plan for implementing on-site actions outlined during the initial situation analysis. The on-site assessment offers the opportunity to:

• Assess the physical nature of the affected asset in its environment and identify actions necessary for safety and stabilization.

• Observe how the disaster has affected the wider group of stakeholders, for example by talking to the community, local leaders, souvenir sellers on or near the site, or operators of surrounding guesthouses.

• Identify immediate risks and related mitigation measures.

• Estimate site-specific costs for safety and stabilization actions and for full recovery.

As introduced in the previous point 3. The context of the emergency and the first aid providing process, this step of the process is characterized as a real operational framework. It is possible in fact to imagine on site damage and risk management as a path made up of 7 sequential macro phases, each of which is made up of a series of specific actions. The entire framework is thus composed of a total of 29 specific actions which, implemented in sequence, allow the assessment of the damage and risks present on the site where the event occurred to be carried out in an effective and complete manner. In the following pages the framework has been destructured in order to provide a more detailed description of each macro phase and its specific actions.

ON-SITE DAMAGE AND RISK ASSESSMENT FRAMEWORK

PREPARATION	SITE INSPECTION	DAMAGE AND EFFECTS RECORDING (Objects and collections)	IMMEDIATE RISKS ASSESSMENT	DATA COLLECTION AND ANALYSIS	ASSESSMENT REPORT	ON-SITE ACTIONS PLAN UPDATING
Obtain permission and contacts	Site Accessibility Survey	Mapping Damaged Heritage Objects	Hazard Identification and Assessment	Digital Preservation of Heritage Assessments	Production of the assessment report	Uploading of the On-Site action plan
Prepare team	Site Access and Safety Planning	Comprehensive Material Analysis	Comprehensive Heritage Vulnerability Assessment	Stakeholder Interview Documentation		
Gather pre-event data	Structural Assessment and Internal Access Planning	Detailed Damage Assessment	Immediate Risk Assessment	Photograph Management and Integration		
Tools and equipment	Detailed Building Damage Assessment	Environmental Exposure Documentation	Risk Level Identification	Data Integration		
Logistics and means of communication	Collaborative Safety Planning	Visual Documentation of Damage		Standardized Database Management		
Coordinate your plan	Assessing Infrastructure Damage					
	Debris and Hazardous Materials Management					

1 PREPARATION	
Obtain permission and contacts	Obtain permission from the custodians where applicable, and the emergency response coordinator, or the incident commander, to enter the affected site(s). Obtain the contact information of the staff members or caretakers who have indepth knowledge of the affected heritage and its condition before the event.
Prepare team	Assemble a team for on-site damage and risk assessment based on the nature and scale of the hazard event and the type of cultural heritage involved. Depending on the emergency's size, volunteers and professionals from diverse fields like architecture, engineering, museum studies, object conservation, and anthropology can conduct assessments at multiple sites. Military personnel and emergency responders may participate based on the nature of the emergency, providing logistics support when needed. It's crucial that assessment teams are trained for consistent documentation, using uniform assessment forms, floor/sketch plans, and predetermined photo shots. They should accurately apply damage degrees (major, moderate, minor) and use agreed-upon formats for compiling data. Safety procedures and an understanding of the local cultural context are essential components of on-site assessment team orientation
Gather pre-event data	Gather the following pre-event documentation: a. A map which indicates the geo-coordinates of the affected cultural heritage. b. Site map, or latest satellite image, if available. c. Where applicable, collect floor plans, otherwise prepare a sketch plan. d. Site-based inventories, describing the type, number, and location of buildings, objects and intangible elements. e. Pre-disaster photos (primarily long or wide shots) of the affected sites, buildings, objects and intangible heritage
Tools and equipment	Gather tools for recording damage and risks, including a camera with extra batteries and a user-friendly, context-specific integrated damage and risk assessment form. Assemble personal safety equipment tailored to the hazard event's nature; for instance, in a flooded area, acquire waterproof footwear and protective facemasks with microfilters to prevent infections.
Logistics and means of communication	Prepare a budget estimate for the on-site assessment, considering costs related to: Transportation, Accommodation, Food and drinking water, Safety and security, Means of communication, Equipment for recording data during the assessment, Supplies for initial securing of the site, Personnel. Once the estimate is ready, secure the necessary funds and make arrangements to put all of the logistics in place.
Coordinate your plan	Align your plan with other emergency actors and agencies functioning in the area. This coordination is crucial, as structural safety and usability assessments for public buildings, including museums, libraries, archives, and heritage structures, may occur concurrently. Additionally, emergency management agencies might establish temporary shelters in open spaces within heritage sites, overlapping with on-site assessments and cultural heritage security and stabilization actions.

2	
SITE INSPECTION	
Site Accessibility Survey: Mapping Clear and Blocked Areas for Informed Planning	Conduct a thorough walk around the site to assess the accessibility of all areas, noting any clear or blocked access points. Indicate these access points on the site plan.
Site Access and Safety Planning: Establishing Safe Routes, Entrances, and Evacuation Paths	Identify, mark, and if necessary, prepare safe access routes to the site. Pay special attention to the entrance, ensuring that it extends to the point where vehicles can approach and be parked. Additionally, identify safe exits and evacuation routes from the site to designated safe zones for quick retreat, if needed.
Structural Assessment and Internal Access Planning: Safeguarding Buildings with Expert Consultation	In the event of visible damage to a building, seek consultation with a structural engineer. If it is deemed safe to enter, mark a secure internal access route on the floor plan. If a floor plan is unavailable, create a sketch plan to illustrate the safe internal access route.
Detailed Building Damage Assessment: Mapping and Documenting Structural and Non-Structural Issues	Identify the main structural elements: is it a framed or unframed (load-bearing) structure? What type of roof does it have? This will help to identify the most vulnerable areas of the building and those that cultural first aiders and volunteers need to be aware of.
Collaborative Safety Planning: Establishing Secure Work and Storage Spaces with Local Emergency Managers for Volunteer and First Aider Activities	With the help of local emergency managers, identify safe work and storage spaces in and around the site that volunteers and first aiders can use to undertake security and stabilisation actions
Assessing Infrastructure Damage: Documenting and Mitigating Impact on Basic Services for Efficient Stabilization Actions	Identify and record damage to basic services and infrastructure, e.g. electricity and water supply, etc. If it has not yet been done, switch off water, electricity and gas supplies. Keep in mind that you may need a supply of fresh water and electricity to stabilise objects on-site later.
Debris and Hazardous Materials Management: Identifying, Mapping, and Coordinating Professional Disposal for Post-Disaster Cleanup	Find out if the site has external or unwanted debris, or hazardous waste or chemicals that require disposal. If so, mark its location on the site map. In such cases, specialised professionals trained to manage post-disaster debris and waste disposal must be called in. At the same time, check if the site has broken building parts or fragments of decorative elements, which should be salvaged. Mark their location on the site map

3	
DAMAGE AND EFFECTS RECORDING (Immovable heritage)	
Mapping Damaged Heritage Objects: Locating and Marking Affected Areas on Floor Plans or Sketch Plans	Identify and mark the location of the room/area containing damaged cultural heritage objects on a floor plan, if available; otherwise use a sketch plan.
Comprehensive Material Analysis: Utilizing Pre-Event Inventory and Visual Inspection to Quantify and Document Damaged Cultural Objects	Use the pre-event inventory and your own visual inspection to determine the number of objects damaged, and the materials that they are made from, such as stone, wood, paper or metal. This information should be recorded on your damage and risk assessment form.
Detailed Damage Assessment: Identifying Types and Extent of Cultural Object Damage Through Observation and Documentation	Try to identify the type and extent of damage. For example, record whether the objects are broken and/or deformed. Examine whether the objects are wet, dry, soiled or burnt. Record your observations on the assessment form.
Environmental Exposure Documentation: Recording Cultural Object Conditions in Relation to External Elements and Hazardous Materials	Record whether the objects are exposed to the environment or hazardous materials, such as chemicals or human waste.
Visual Documentation of Damage: Capturing Comprehensive Views of Damaged Objects through Photography with Reference Numbers for Assessment and Mapping	Take photographs of the damaged objects. If you find them together in one or multiple piles, take one wide shot of each pile. Record the reference numbers of the photographs taken on the assessment form and on the floor plan.

4	
IMMEDIATE RISKS ASSESSMENT	
Hazard Identification and Assessment: Recognizing Potential Threats to Lives and Heritage Assets, Including Primary and Secondary Hazards	Recognize potential threats, whether arising from natural occurrences or human activities, that could present an immediate risk to human lives and/or result in harm to both physical and cultural heritage. Take into account both primary and secondary hazards in this assessment. For instance, a primary hazard like an earthquake could lead to secondary hazards such as tsunamis, flooding, arson, or vandalism. If these sources of hazards are confined to specific areas, pinpoint their locations in and around the site, building, or community
Comprehensive Heritage Vulnerability Assessment: Understanding the Multifaceted Risks through Situation Analysis and Stakeholder Engagement	Identify vulnerabilities across physical, social, economic, political, and attitudinal dimensions that expose heritage to potential hazards. This involves: - Analyzing situation results to understand the reasons behind heritage damage and its ongoing susceptibility to secondary threats. For example, a poorly-maintained heritage structure damaged in a hurricane may face additional risks like fire and rain damage. The lack of maintenance may be linked to social or economic factors, such as limited resources or ownership by a minority community. - While recording damage, take note of how the inherent characteristics of the heritage increase its vulnerability to secondary hazards. For instance, organic materials that are wet and soiled are more susceptible to mold and pest infestations. - During on-site assessments, document activities around the site or community that may heighten vulnerabilities, such as sheltering people in an open area near the heritage site, exposing it to the risk of looting or vandalism. Interviews with stakeholders, including site managers and neighbors, can provide insights into their perceptions of threats and needs. - For intangible heritage, consider the social processes affecting the transmission, accessibility, or practice of intangible heritage. For example, although knowledge may remain intact, large-scale displacement or a loss of access to markets could diminish interest among younger generations. This may lead to an inability to learn or sustain specific traditions in the community over the medium to long term.
Immediate Risk Assessment: Crafting Statements on the Interplay of Hazards, Vulnerabilities, and Exposure Levels	Create concise risk statements to assess immediate risks by detailing how primary and secondary hazards, vulnerabilities, and exposure levels interact, impacting cultural heritage and safety. For instance, ceiling cracks may cause leaks in heavy rainfall, harming historic interiors, while the absence of security measures may expose a monastery to looting. Thoroughly examine potential connections between vulnerabilities, hazards, and exposure levels to understand the disaster's negative effects.
Risk Level Identification: Assessing the Magnitude of Risk for Each Statement Based on Hazard Nature, Likelihood, and Potential Impact on Safety and Heritage Values	Determine the risk level (low, medium, or high) for each risk statement by assessing the nature and likelihood of primary and secondary hazards, considering their potential impact on people's safety and heritage values. For instance, after an earthquake, the risk of building collapse during aftershocks, prompted by structural cracks, is categorized as high. Conversely, the risk of collapse in the event of localized flooding, resulting from heavy rains and water seepage through a minor crack in the ceiling of the same building, is relatively low

5	
DATA COLLECTION AND ANALYSIS	
Digital Preservation of Heritage Assessments: Implementing Systematic Digitization to Prevent Data Loss and Facilitate Information Sharing	Efficiently digitize assessment forms and sketches for each heritage type immediately post on-site evaluations. This prevents data loss and facilitates sharing in a readily usable format. Establish a digitization method and workflow before starting fieldwork, planning for daily digitization to ensure timely processing. Assign a unique identification number to each heritage component or asset for easy identification during the digitization process.
Stakeholder Interview Documentation: Recording Notes or Transcripts, Including Source Information for Comprehensive Data Storage	For stakeholder interviews, collect and store notes or transcripts along with other data. Include the source's name, interview date and location, and if available, contact information for the interviewee. This ensures comprehensive documentation and easy reference to the source material.
Photograph Management and Integration: Linking Images to Digital Floor Plans with Descriptive File Naming for Comprehensive and Consistent Data Organization	Download photos from your camera and associate them with the digital copies of floor plans using their reference numbers. Alternatively, replace the machine-generated file name or number of the downloaded picture file with a filename reflecting the place, date, and type of damage using short codes. This practice is crucial for assessments spanning multiple locations or conducted in different stages. Maintain consistency in file names and codes to ensure clarity and understanding among all involved in the assessment and data compilation process.
Data Integration: Consolidating Assessment Form, Site Map, Floor Plans, and Photographs into a Unified File for Comprehensive Documentation	Integrate the data from the assessment form with the site map, floor plans, and damage photographs by consolidating them into a single, unified file. This approach ensures comprehensive documentation and easy access to all relevant information in a cohesive manner.
Standardized Database Management: Organizing and Storing Site Data for Seamless Access and Analysis	Collect, categorise and store all of the data collected from the site in a standardised database to ensure easy access and analysis.

6	
ASSESSMENT REPORT	
Production of the assessment report	Produce a Report containing the following details: - Importance of the impacted heritage assets (heritage site/collection/tradition). - Nature of the disaster or conflict, providing information on what transpired, when it occurred, and how it affected cultural heritage. - Comprehensive account of the damage to both built and movable heritage, as well as the repercussions of the disaster on intangible heritage. This entails a concise depiction of the damage or effect type, location (referencing base map, site map, and floor or sketch plan where applicable), and potential causes. Each item of damage is illustrated with a corresponding photograph. For intangible cultural heritage, the description may encompass details on the affected aspects, including tangible elements, people, and/or knowledge/tradition. - Enumerating any losses incurred, with specific references to individuals, income, and/or infrastructure, elucidating the enduring adverse impacts on the cultural heritage in question.

7 ON-SITE ACTIONS PLAN UPDATING	
Uploading of the On-Site action plan	A unified report on damage and risk assessment serves as a basis for formulating the strategy to execute on-site security and stabilization measures outlined in the situation analysis. This report proves especially beneficial in prioritizing actions specific to each site, such as the provision of temporary cover for exposed and damaged structural elements. Moreover, it aids in identifying the necessary resources and expertise essential for stabilizing each impacted cultural heritage asset. The process involves recording the damage and the consequences of the disaster, assessing and documenting immediate risks, compiling and analyzing collected data, and subsequently updating the plan for implementation.

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6. Step Three - Security and stabilisation

Measures aimed at stabilizing the state of impacted heritage and averting additional damage and loss through risk reduction are commonly referred to as security and stabilisation actions. These actions are temporary and serve the purpose of offering essential support to damaged heritage during emergencies until complete conservation treatments can be implemented. The execution of security and stabilisation actions varies based on the context and may not consistently adhere to a specific sequence. Nevertheless, meticulous documentation of the heritage asset and the undertaken stabilisation and security measures is essential for the success of any intervention.
Fundamental security and stabilisation actions comprise:

- Installing a protective fence around the impacted site or collection.
- Offering temporary cover, for exposed built elements, fragments, and objects.
- Post-event evacuation of cultural heritage objects to a safer, temporary location.
- Salvaging damaged cultural heritage collections, building fragments, and decorations. This involves sorting, stabilizing through surface cleaning, and/or drying objects.
- Offering safe and secure temporary storage for evacuated and salvaged cultural heritage materials.

As introduced in the previous "point 3. The context of the emergency and the first aid providing process", this step of the process is characterized as a real operational framework. It is possible in fact to imagine on site damage and risk management as a path made up of 9 sequential macro phases, each of which is made up of a series of specific actions. The entire framework is thus composed of a total of 21 specific actions which, implemented in sequence, allow to secure and stabilize the assets affected by the event, and to prepare the ground for the recovery and restoration actions of the same ones. In the following pages the framework has been destructured in order to provide a more detailed description of each macro phase and its specific actions.

SECURITY AND STABILISATION FRAMEWORK

1	2	3	4	5	6	7	8	9
PERMISSION	PREPARATION	RETRIEVE	TRIAGE	STABILISE	PACK AND MOVE	RELOCATE	REPORT	MONITOR
Obtain permission and contacts	Inform the team	Emergency Procedures for Retrieving	Separate damaged and undamaged objects	Surface cleanin	Wrap	Efficient Object Relocation and Temporary Storage Setup	Preparation of a report	Establishing a Routine
	Gather supplies		Group objects	Documentation	Label and complete the salvage record form			
	Prepare the space		Assign a unique identification number	Immediate Risk Assessment	Object Placement Tracking and Documentation Protocol for Effective Storage Management			
	Documentation tracking		Document protocol	Risk Level Identification	Optimal Packing Strategy for Storage Boxes: Ensuring Safety and Efficiency			
	Collaborative Safety Planning							
	Assessing Infrastructure Damage							
	Debris and Hazardous Materials Management							

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1	
PERMISSION	
Obtain permission and contacts	Consult the relevant stakeholders and secure **permission** (preferably in written form) for the salvage operation and relocation of the salvaged objects to a safer temporary location, on-site or off-site.

2	
PREPARATION	
Inform the team	Assemble the team participating in the salvage operation and: - Ensure that all team members comprehend which areas of the site are restricted; - Clarify the workflow of the salvage operation; - Appoint a group leader responsible for overseeing the entire salvage operation. Organize individuals into sub-teams and assign roles based on expertise and interest in the task. Responsibilities encompass documentation, object recovery, triage, stabilization, packing, transportation, logistics, and communication. If there is a shortage of trained personnel for the operation, invest time in training volunteers to assist with tasks that do not demand specialized knowledge.
Gather supplies	Select the appropriate supplies for the salvage operation based on the type of objects, the incurred damage, and the nature of the hazard event. For instance, if the affected objects are made of organic materials and are wet and soiled, materials like polyester mesh will be necessary for handling and drying. Utilize the results of the on-site damage and risk assessment to determine the required supplies.
Prepare the space	Establish a designated area for conducting stabilization treatments and ensure that each workstation has adequate space to address the number of affected objects. Each workstation should be dedicated to a specific type of treatment. For example, avoid conducting wet-cleaning and dry-cleaning treatments on the same workstation to prevent the risk of contaminating wet objects with additional dirt or accidentally getting dry objects wet, which could cause further damage.
Document Tracking	Prepare a comprehensive system for documenting and tracking the objects slated for recovery. The documentation system should encompass three key elements: a. Establish a method for recording the specific location from which the objects are to be recovered. Utilize the floor plan if available, using its numbering system to identify spaces. If the plan's numbering system is unclear or inconsistent, generate new location codes. b. In cases where the building or structure has partially or completely collapsed, and objects are beneath debris, implement a grid system to map object locations. c. A system for numbering the objects that have been recovered d. A salvage record form. This form is used to record the number of objects recovered and tracks their movement throughout the salvage operation. It also provides supporting information,

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3	
RETRIEVE	
Emergency Procedures for Retrieving	In the event of a structural collapse, where historical building fragments and objects are buried beneath substantial debris, seek guidance from the emergency response coordinator or incident commander for advice on removal. This may necessitate the use of heavy machinery, such as an excavator. Ensure the involvement of the machine operator and a structural engineer to guarantee the safety of such removal actions. To recover objects from a specific section of a building or grid: - Begin with small, dry, and undamaged objects. - Have rigid supports (like heavy cardboard or wooden flat boards) ready for retrieving and transporting fragile and damaged objects. - Ensure there are always at least two people to salvage oversized or heavy objects, ensuring proper support. - If an object is broken, gather all broken parts and keep them together. For easy handling, place the object and its broken parts into one container or clear plastic bag. - Preserve the housings (frames, boxes, and mounts) of individual objects with their corresponding items. - In alignment with your chosen documentation method, document the original location number of the object, assign an object number, and record the quantity of retrieved objects.

4	

TRIAGE	
Separate damaged and undamaged objects	Sort objects by distinguishing between damaged and undamaged items. Additionally, categorize them based on their dry or wet condition. Remove objects affected by mold, seal them in plastic bags or containers, and store them separately from other items. Throughout the sorting process, ensure that the original location code of each object is consistently maintained.
Group objects	Organize objects based on their physical condition, material type, and the specific treatment they need. For instance, group together items made from paper or textiles that are dry but require surface cleaning. Similarly, group undamaged fragile ceramics and glass together
Assign a unique identification number	After completing the sorting process, assign a distinct identification number to each object. Attach a label displaying the unique identification number and location code to the secondary support used for handling and moving the object.
Document protocol	Fill in the sections of the **salvage record form** that are related to identification, original location, dimension, and condition of the object.

*In large-scale salvage operations, where the retrieval and categorization of thousands of objects must occur within a short timeframe, effective prioritization is crucial. A triage system proves most efficient for this purpose.

Cultural heritage material triage involves sorting and prioritizing stabilization actions on recovered objects, guided by three criteria:

The extent of damage to the cultural heritage.
The risk of additional damage if left untreated.
The significance or value of the object or structure.
Assessing the value of an object is intricate. In emergency situations, it is recommended to conduct a value assessment during the **situation analysis** and **on-site damage and risk assessment** phases. This assessment should rely on pre-existing institutional records, such as an inventory or accession register.

5

STABILISE	
Surface cleanin	A hazard event may leave behind dust, soot, dirt and contaminants, which, if left on the surface of objects could cause further damage and deterioration. If an object is wet, and has contaminants on it, it may need to be washed in clean water to remove the contaminants. The type of surface cleaning required depends on the nature of the hazard, extent of damage, and the material(s) that the cultural heritage is made from. Try to understand the material make-up of the object, and how a stabilisation treatment may affect its structural integrity. Think critically and select the most appropriate treatment pathway available for stabilisation
Documentation	Retain the location code and the unique identification number assigned to the object throughout the stabilisation treatment. Fill in the relevant fields of the **salvage record form** once the stabilisation treatment is complete.

*After triage, damaged objects need to be stabilised, which may be done on- or off-site, in a clean and prepared area. Stabilisation treatments help to prevent further damage and deterioration to retrieved cultural heritage materials.

6

PACK AND MOVE	
Wrap	Dry objects should be covered with a protective layer, such as foam or a cotton sheet, prior to storage, to protect the object from further damage and secure the object during transit.
Label and complete the salvage record form	- Label the packed objects with the unique identification numbers assigned to the objects during the previous stage. Make sure that every label is clearly visible and securely attached. Boxes containing more than one object should indicate the number of objects inside, and display a list of the unique identification numbers of each object contained within. - Complete the **salvage record form,** prepare and compile a **movement tracking form**
Object Placement Tracking and Documentation Protocol for Effective Storage Management	At least one member of the documentation team should track the placement of objects as they are placed into the boxes. At least one copy of each form must accompany the objects to their storage location.
Optimal Packing Strategy for Storage Boxes: Ensuring Safety and Efficiency	When placing objects into storage boxes, place heavy items at the bottom, and lighter, or more fragile objects at the top. Do not overpack the box. Once all objects have been packed, they can be transported to the new temporary storage facility.

7

RELOCATE	
Efficient Object Relocation and Temporary Storage Setup	this step involves moving the objects to a safer, temporary location on- or off-site. While part of the team is involved in salvaging objects, others can assist in setting up the temporary storage space. The storage space must be cleaned and sanitised before objects are brought into the space. Once all of the objects have been moved to the new storage space, enter the relocation codes of the objects into the salvage record form.

8	
REPORT	
Preparation of a salvage report	The salvage report should encompass the following components: - A concise summary of the operation. - Photographs documenting key workflow steps. - Details about the type of stabilization treatments administered and materials utilized. - An updated salvage record form (refer to page 92). - A breakdown of the costs incurred. - Identified needs for recovery. - Contact information for the team involved in the operation. - Name, signature, and contact information of the team leader of the operation.

9	
MONITOR	
Establishing a Routine	Set up a schedule for the periodic checking and cleaning of the storage space, in consultation with the custodians.

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7. Operational instructions to deal with specific emergency situations

Water Damage - what to do

1.   Visual Assessment at Incident Site:

Objective: Conduct a thorough visual assessment to understand the extent of water damage.
Steps:
- Document visible damage through photographs to record the condition of materials and surroundings.
- Identify the water source and potential contaminants, understanding the origin of the water.
- Examine structural integrity for signs of damage or compromised safety.
- Evaluate moisture levels using appropriate meters to assess saturation in materials.
- Prioritize actions by determining which items need immediate attention and which can be addressed later.

2.   Documentation at Incident Site:

Objective: Ensure comprehensive documentation for assessment, insurance claims, and restoration processes.
Steps:
- Capture images of affected areas, materials, and items before, during, and after mitigation efforts.
- Create a detailed list of damaged items, including descriptions and values.
- Record moisture levels using appropriate meters and monitor drying progress.
- Develop site layouts or diagrams to identify affected zones, marking water sources, affected materials, and safety hazards.

3.   Prioritizing Salvage Order for Water-Damaged Objects:

Objective: Prioritize salvage efforts based on the importance and condition of items.
Criteria:
- Start with high-value and rare items, such as manuscripts, artwork, or unique collections.
- Prioritize items with cultural significance, family heirlooms, historical artifacts, and archives.
- Consider the condition and vulnerability of objects, addressing fragile items requiring immediate attention.
- Begin with smaller, more manageable items, gradually moving to larger and heavier objects.
- Prioritize salvage from accessible and safe areas, planning for harder-to-reach or hazardous locations later.

4.   Precautions Before Rescue Operation:

Objectives: Ensure safety and effective response during water emergencies.
Precautions:
- Raise the alarm immediately and identify the origin of the problem.
- Evacuate the public and non-essential personnel from the affected area.
- Notify the emergency response team and coordinate operations.
- Secure affected material to prevent further damage.

- Enter the area only after authorization, wearing appropriate protective gear such as gloves and masks in the presence of molds.

5. Choice and Sequence of Treatments After a Water Emergency:

Objective: Determine the most suitable treatment for salvaged materials.
Methods:

- Freezing: Followed by sublimation drying, preferred for large amounts or completely wet material.
- Drying: Occurs through evaporation, suitable for limited quantities of slightly wet or partially wet material.
- Air Drying: Commonly used for not very wet books and documents, requiring ample personnel and space.

6. Involvement of Restoration Professionals

- Contact professionals who specialize in the restoration of water-damaged materials

Fire Damage – what to do

1. **Emergency Response Activation:**
   - Immediately activate emergency response protocols to ensure the safety of individuals and prevent the spread of fire.
   - Contact emergency services and provide detailed information about the situation.

2. **Assessment of Structural Integrity:**
   - Assess the structural integrity of the library building to determine if it is safe for entry.
   - Prioritize the safety of response teams and ensure they have the necessary protective gear.

3. **Fire Suppression Measures:**
   - Engage fire suppression systems if available and safe to do so.
   - Use appropriate firefighting equipment, such as fire extinguishers, to combat small fires and prevent them from spreading.

4. **Isolation of Affected Areas:**
   - Isolate the affected areas to contain the fire and limit potential water damage from firefighting efforts.
   - Close doors and windows to prevent the spread of smoke and soot.

5. **Protection of Undamaged Items:**
   - Cover undamaged or minimally damaged items with plastic sheeting or other protective materials to prevent secondary damage from smoke and debris.

6. **Removal of Items at Risk:**
   - Prioritize the removal of items most at risk of damage, considering their value and vulnerability.
   - Use caution when handling items to avoid additional harm.

7. **Assessment of Fire and Water Damage:**
   - Conduct a thorough assessment of the extent of fire and water damage to collections.
   - Document the condition of each item for insurance claims and future restoration efforts.

8. **Engage Restoration Professionals:**
   - Contact restoration and conservation professionals experienced in fire-damaged materials.
   - Follow their guidance on salvage and stabilization measures for the affected items.

9. **Temporary Storage Solutions:**
   - Arrange for temporary storage with controlled environmental conditions for salvaged items.
   - Implement secure packing and storage practices to prevent further damage during transportation.

10. **Communication and Community Outreach:**
    - Communicate with the local community about the situation and seek assistance or expertise if needed.

- Establish partnerships with relevant organizations for additional support and resources.

Mechanical Damage – what to do

1. **Immediate Assessment**:
   - Conduct a rapid visual assessment of the library space to identify visible damage, focusing on shelving units, display cases, and storage areas.
   - Prioritize areas with potential hazards, such as unstable structures or fallen debris, ensuring the safety of response teams.

2. **Stabilization of Shelves and Cases:**
   - Secure unstable shelving units and display cases to prevent further shifting or collapse.
   - Use temporary bracing materials, such as straps or blocks, to stabilize objects at risk of falling.

3. **Protection from Secondary Hazards:**
   - Address immediate threats posed by water penetration, fire, or other secondary hazards.
   - Cover exposed items with plastic sheeting or other waterproof materials to prevent water damage.

4. **Item-by-Item Assessment:**
   - Inspect individual items for visible damage, prioritizing those that are most vulnerable or valuable.
   - Carefully document the condition of each item for future restoration or conservation efforts.

5. **Safe Removal of Items:**
   - Safely remove undamaged or minimally damaged items to a secure location within the library or an external facility.
   - Exercise caution to avoid additional stress on items during the removal process.

6. **Communication and Documentation:**
   - Establish clear communication channels among response teams to coordinate efforts effectively.
   - Document all actions taken, including photographs and detailed notes, to aid in the recovery and restoration process.

7. **Engage Conservation Experts:**
   - Contact conservation professionals as soon as possible to assess the extent of damage and provide guidance on immediate stabilization measures.
   - Follow recommended protocols for handling and transporting damaged items to minimize further harm.

8. **Temporary Storage Solutions:**
   - If necessary, arrange for temporary storage solutions with controlled environmental conditions to prevent further deterioration.
   - Implement secure packing and storage practices to minimize the risk of additional mechanical damage.

9. **Community Engagement:**
   - Keep the local community informed about the status of recovery efforts and seek assistance or expertise if needed.
   - Establish partnerships with relevant organizations and institutions for additional support and resources.

Transportation, Packaging, and Treatment Options

1.   **Transportation and Packaging of Materials:**

Objective: Ensure safe and organized transport of water-damaged materials.
Guidelines:
- Maintain the order of volumes as arranged on shelves during transportation.
- Handle wet or burnt materials with care, replacing disintegrated protective boxes.
- Fill boxes three-quarters full with wet material, carrying small amounts at a time.
- Avoid stacking books too high to prevent instability during manual transport.
- Utilize a "human chain" for transport in the absence of trolleys, avoiding lifts or hoists during emergencies.

2.   **Cleaning of Material Before Transport:**

Objective: Address contamination and prepare materials for transportation.
Steps:
- Wash off mud and superficial dirt from flooded books and documents if time allows.
- Set up a source of clean running water for washing, using a vacuum cleaner for dry mold.
- Focus on quickly removing material exposed to further hazards or circumstances that could increase mold growth.

3.   **Packaging Guidelines for Various Materials:**

Books:
- Avoid opening wet books or removing wet jackets.
- Wash stained books quickly before freezing, avoiding open books or those with water-soluble media.
- Package in boxes with silicone paper, arranging them carefully.

Coated Papers:
- Keep coated papers wet and pack them in boxes lined with plastic bags.

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