Anna Kaiser

Interfaces of Protection

Training Collaboration between Cultural Heritage and Emergency Responders

Anna Kaiser

Interfaces of Protection

Training Collaboration between Cultural Heritage and Emergency Responders

© 2025 Anna Kaiser

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International Deed. (https://creativecommons.org/licenses/by-nc-sa/4.0/)

Verlag: University of Krems Press

Druck und Distribution im Auftrag des Verlags:

tredition GmbH, Heinz-Beusen-Stieg 5, 22926 Ahrensburg, Deutschland

ISBN: 978-3-903470-29-3

DOI: https://doi.org/10.48341/4cfp-gh27

Das Werk, einschließlich seiner Teile, ist urheberrechtlich geschützt. Für die Inhalte ist der Verlag verantwortlich. Jede Verwertung ist ohne seine Zustimmung unzulässig. Die Publikation und Verbreitung erfolgen im Auftrag des Verlags, zu erreichen unter: University of Krems Press, Dr.-Karl-Dorrek-Straße 30, 3500 Krems, Austria.

Kontaktadresse nach EU-Produktsicherheitsverordnung: bibliothek@donau-uni.ac.at

University of Krems Press

Per Günther, con sincera gratitudine, per quei preziosi raggi di luce.

Table of Contents

Preface

The present work marks a first conclusion after ten years of research, teaching, and third-mission activities at the Center for Cultural Property Protection of the University for Continuing Education Krems—an institution that I helped to establish and have since developed in its academic and practical direction. At the same time, this volume represents the formal conclusion of the tenure-track process for the Professorship of *Applied Cultural Property Protection*.

Over the past decade, the field of cultural property protection has evolved significantly. It has regained much of the recognition and urgency it deserves, even though the global geopolitical situation continues to demonstrate, day after day, how fragile and endangered cultural heritage remains in crises of every kind. At the Center for Cultural Property Protection, we have sought to contribute to an effective response capacity—by educating and training the interfaces between the cultural heritage community and emergency responders. Bridging this divide has become one of the central academic and pedagogical missions of the Center.

Neither this work nor the international positioning of the Center for Cultural Property Protection would have been possible without my three colleagues—Silvia Hofbauer, Raffaela Woller, BA MA and Mag. Michaela Kukula—who continuously support, think far beyond disciplinary boundaries, act with vision, and never hesitate to tackle new challenges with humour and determination, even when circumstances are demanding. My heartfelt thanks go to all three of you for your professionalism, creativity, and unrelenting spirit.

Equally, I owe deep gratitude to my family and my partner, who have given me the stability and encouragement essential for my academic work, who have believed in me unfailingly, and who have often endured my long absences during intense periods of writing and research. You have always been there, ready to listen, to remind me of perspective, and to draw my attention back to what truly matters in life—among which the protection of cultural heritage indeed holds an important place, though it is not the whole of it.

Finally, this book is dedicated to a great academic mentor and dear friend—Prof. Mag. Dr. phil. Dr. phil. h.c. Günther E. Thüry—whose example is one to strive toward, yet impossible to surpass. His often small but timely beacons of light, including one in Pompeii, so essential to a classical historian, have illuminated more than one dark hour along the way.

Anna Kaiser

Krems an der Donau,
1 November 2025

Introduction

The present study marks the culmination of the author's tenure-track position as Professor of Applied Cultural Property Protection at the University for Continuing Education Krems. It brings together and extends her academic work conducted at the Center for Cultural Property Protection over the past five years, situating these studies within a broader conceptual and methodological framework. Collectively, these works have focused on a central question that runs through all research, teaching, and field activities at the Center: how to design, train, and institutionalise functional interfaces between the cultural heritage community and emergency responders in order to safeguard both movable and immovable cultural assets in times of crisis.

The present study explicitly builds upon the following key publications by the author, all of which address the training and development of such interfaces in different contexts and through diverse methodological approaches:

Bonazza, A., Sardella, A., Kaiser, A., Cacciotti, R., De Nuntiis, P., Hanus, C., Maxwell, I., Drdácký, T. & Drdácký, M. (2021) 'Safeguarding cultural heritage from climate change related hydrometeorological hazards in Central Europe', International Journal of Disaster Risk Reduction, 63, pp. 1–20. DOI: https://doi.org/10.1016/j.ijdrr.2021.102455.

Bonazza, A., Kaiser, A., Sardella, A., Cacciotti, R., De Nuntiis, P., Hanus, C., Drdácký, T., Maxwell, I. and Drdácký, M. (2021) 'Elements for a sustainable management of cultural heritage at risk in a changing environment', *Restauratorenblätter – Papers in Conservation*, 38, pp. 85–97.

Cacciotti, R., Kaiser, A., Sardella, A., De Nuntiis, P., Drdácký, M., Hanus, C. & Bonazza, A. (2021) 'Climate change-induced disasters and cultural heritage: Optimizing management strategies in Central Europe', Climate Risk Management, 32, pp. 1–13. DOI: 10.1016/j.crm.2021.100301.

Kaiser, A. (2022) 'Joint and Combined Exercises in Heritage Protection as a Means to Establish Interfaces in Cooperation with Emergency Responders', *Preservation Education & Research*, 14, pp. 54–71.

Kaiser, A. (2023) 'Training for Cultural Heritage Protection: The STRENCH Summer Schools', in Curulli, I.G., Kaya, D.I. & Khaefi, A. (eds.) *Heritage Education for Climate Action*. London/Hoboken: Routledge, pp. 31–40.

Kaiser, A. (2024) 'Die Bedeutung von Übungen im Risikomanagement für Kulturgüter', in Kührer-Wielach, F. (ed.) *Halbjahresschrift für Geschichte und Zeitgeschehen in Zentral- und Südosteuropa*, 36(1–2). München: Südost-Institut, pp. 24–33.

Kaiser, A. (2025a) 'Exercises as Part of a Holistic Approach to Education and Training in Cultural Property Protection', in Szuniewicz-Stępień, M. (ed.) *Wyzwania dla ochrony dóbr kultury w czasie konfliktu zbrojnego – 70-lecie konwencji haskiej*. Gdynia: Akademia Marynarki Wojennej, pp. 191–207.

Kaiser, A. (2025d) 'Cultural Property Protection Exercises as Interface between Heritage, Military, and Emergency Responders', in Gruber, N. & Puhr, A. (eds.) *Cultural Property Protection in the 21st Century: Meeting Requirements across the Forces. Collected papers from the International Conference in Vienna, November 2024*. Vienna: Federal Ministry of Defence, pp. 89–94.

Beyond this academic foundation, the study also draws upon the author's extensive professional and research experience in the field of cultural property protection. These endeavours combine scholarly inquiry with applied engagement in national and international cultural heritage protection, civil protection, and military contexts. The author's background as a reserve officer of the Austrian Armed Forces—including formal education at the Theresan Military Academy's and at various Austrian Army branch schools—as well as her appointments as Cultural Property Protection Officer and commanding officer, have provided a unique vantage point for examining the operational realities of emergency response. Notably, her service as commanding officer of the Austrian Forces Disaster Relief Unit (AFDRU) and participation in large-scale international certification exercises under the EU Civil Protection Mechanism (EUCPM) have

contributed first-hand insights into how coordination, communication, and shared procedures between civilian and uniformed actors can be effectively trained, tested, and evaluated.

These combined academic and operational experiences form the empirical and conceptual backbone of the present thesis. They underpin its primary objective: to develop an integrative, evidence-based framework for education, training, and institutional cooperation in cultural heritage protection—one that enables sustained collaboration between heritage professionals and emergency responders across disciplinary and administrative boundaries.

Executive Summary

The study investigates how cultural heritage can be effectively protected in times of crisis through the development of structured interfaces between the heritage community and emergency responders. It situates cultural heritage protection within the broader frameworks of disaster risk reduction, civil protection, and humanitarian response, recognising it as a cross-cutting field that demands cooperation across professional and institutional boundaries. The research combines theoretical analysis, pedagogical exploration, and empirical evidence to examine how education, training, and organisational design can foster mutual understanding and operational coordination between sectors.

The analysis begins with a review of the theoretical and institutional foundations of interface-building. Chapter 1 demonstrates that cultural property protection constitutes a classical cross-cutting domain, situated at the intersection of cultural governance, civil protection, and international law. It reveals that the diversity of organisational systems—military, civil, and heritage-related—produces communication barriers, procedural asymmetries, and mutual unfamiliarity. As evidenced in both literature and field experience, these gaps can only be bridged through deliberate interface management supported by systematic training.

Chapter 2 explores the pedagogical foundations of such training. Drawing on Bloom's taxonomy and Kolb's experiential learning theory, it establishes that learning by doing—through exercises, simulations, and

wargames—represents the highest cognitive and behavioural level of professional education. The chapter underscores the particular importance of practical, scenario-based learning in adult education, where experience and reflection reinforce the transformation of knowledge into competence. Exercises therefore function not merely as rehearsals for crisis response but as laboratories for building shared understanding between different organisational cultures.

Chapter 3 traces the translation of these principles into practice through the development of educational programmes and exercises organised by the Center for Cultural Property Protection at the University for Continuing Education Krems. These activities demonstrate that targeted, well-structured exercises foster mutual trust, shared mental models, and procedural literacy between heritage professionals and emergency services. The exercises analysed in this study provide a robust foundation for future development. They confirm that interface competence is both teachable and measurable, provided that it is embedded in realistic, multi-agency contexts.

Chapter 4 presents the empirical results of a survey on risk management for cultural and natural heritage protection, conducted within the EU funded Interreg Central Europe project INACO, capturing perspectives from a broad range of stakeholders in cultural heritage, environmental management, and disaster response across Central Europe. The data reveal that respondents strongly support interdisciplinary cooperation and recognise the need for new professional profiles—particularly the risk manager for cultural (and natural) heritage—to institutionalise coordination between sectors. Respondents also express clear preferences for blended, practice-oriented training designs, while highlighting constraints related to time, cost, and institutional authorisation. Their responses collectively provide an evidence base for developing flexible, yet structured curricula aimed at strengthening both human and organisational interfaces.

The final analytical synthesis in Chapter 5 integrates these insights into a comprehensive model for education, training, and institutionalisation. It identifies training as the primary vector of interface-building, capable of

translating abstract cooperation mandates into tangible professional practices. At the same time, it recognises that training can only achieve sustainable impact if supported by policy frameworks that embed cultural heritage risk management within administrative systems. The proposed tiered training architecture and the call for permanent cultural heritage risk manager positions within local and regional administrations together outline a pragmatic pathway for professionalising the interface between heritage and emergency response.

Key Contributions

This study contributes to research and practice in four principal ways:

1. Conceptual integration: It positions cultural heritage protection as a system of interfaces requiring coordinated governance, rather than as a collection of isolated technical measures.

2. Pedagogical innovation: It links educational theory with operational practice, demonstrating how Bloom's and Kolb's frameworks inform the design of cross-sectoral training for heritage resilience.

3. Empirical grounding: It provides one of the few systematic datasets on stakeholder perceptions of training needs, competencies, and institutional arrangements for cultural (and natural) heritage risk management in Central Europe.

4. Strategic framework: It proposes a scalable model for embedding cultural (and natural) heritage risk management within public administration, aligned with the Sendai Framework for Disaster Risk Reduction and the EU Civil Protection Mechanism.

While the study outlines a coherent architecture for education and institutional integration, it also opens several avenues for further research. Future work should evaluate the long-term behavioural impact of training interventions, explore quantitative metrics for interface competence, and pilot fully fledged wargames as advanced tools for simulating complex coordination under crisis conditions. At the policy level, comparative studies

across European Member States could assess how national frameworks integrate cultural heritage into disaster-risk-reduction strategies and identify best practices for scaling cooperation through EU mechanisms such as the Union Civil Protection Knowledge Network.

Ultimately, this research underscores that cultural heritage protection is not a peripheral concern but a core dimension of societal resilience. By institutionalising cooperation between heritage experts and emergency responders, Europe strengthens its capacity not only to preserve its material and immaterial heritage but also to uphold the cultural continuity that sustains communities through crisis and recovery. The interface between culture and emergency response thus becomes a space of shared responsibility—a bridge between the past and the future, between knowledge and action.

1 – Interfaces in Cultural Heritage Protection

Cultural heritage protection constitutes a quintessential cross-cutting topic. When large-scale, high-intensity events such as earthquakes, floods, extreme precipitation, or armed conflict occur, the safeguarding of heritage objects and sites can no longer be achieved by caretakers and conservators alone.[1] In such emergencies, the scope and kinetic pace of operations require the support of emergency response organisations. These may include civil protection, firefighting units, law enforcement, and—where applicable—the military.[2] Each of these entities operates within highly formalised decision-making and command structures that are rarely, if ever, adjusted in the midst of a crisis. Consequently, civilian heritage experts must possess a sound understanding of these procedural systems in order to integrate their specialist knowledge effectively into the response chain.[3]

The origins of this research reach back almost a decade, to the formative years of the Center for Cultural Property Protection at the University for Continuing Education Krems. When the Center was being established in 2015, the immediate challenge lay in integrating the subject of cultural

[1] For a general overview on so called natural and man-made disasters regarding cultural heritage, see Bonazza et al 2018, listing climate change, air pollution and environmental degradation, flood, landslides, wind, earthquakes, volcanic eruptions, fire and armed conflict. The SiLK – Guidelines for the protection of cultural property (Siegel/Dohrmann, 2024; 2025) deal specifically with security in museums, archives, and libraries and tackle the following hazards: general security management, fire, flood, theft, vandalism, accidents and malfunctions, deterioration and wear and tear, climate, light, pests and mold, pollutants, severe weather, earthquakes and violence. Additional threats are illicit trade of cultural heritage and wanton destruction, for which inter alia: Bevan 2006; Brodie 2008; 2010; Campbell 2013; Brosché et al 2016; Bumgardner 2017; Rosén 2017; Brodie/Yates 2019; Higgins 2019; Kaiser 2021a; Dunkley 2023; Dunkley/Clack 2023; Shultz 2023; Kaiser 2025; forthcoming a; b.

[2] Dependent on national legislations and possibilities, as shown in ProteCHt2save "Report on analysis of existing plans on managing cultural heritage in emergencies", Danube University Krems 2019 and survey preluding the document, conducted by the author.

[3] Kaiser 2023, 7–9 as well as Kaiser 2019a; 2019b; Schramm 2019; Kaiser 2020; Kaiser/Schramm 2020; Kaiser 2022; Kaiser 2021b; De Siervo/Vicario 2023, 46; Domenec de Cellès/Rehberger 2025, 22; Kaiser 2025a.

property protection into the structures of science, research, and teaching within the classical university environment. The university's profile—explicitly devoted to continuing education—has from the outset been grounded in a strong practice orientation, offering specialised postgraduate programmes designed to train and upskill experts in narrowly defined professional fields. From this background emerged a distinct understanding of cultural property protection: At Krems, the concept was not confined to the military or international-law dimensions traditionally associated with the 1954 Hague Convention and its protocols but deliberately expanded to include the civilian and applied components of protecting cultural assets during disasters of both anthropogenic and natural origin. This broader framing recognised that heritage protection is as much an operational challenge in domestic emergency management as it is a matter of international humanitarian law.[4] The author's own professional experience as then Liaison Officer for Military Cultural Property Protection in the Austrian Armed Forces reinforced this dual perspective. It became evident that practical exercises would have to constitute a core element of the curriculum, enabling students to bridge theoretical knowledge with the real-world requirements of cooperation in the field. Almost immediately, the question arose how different organisations—military, civil-protection, emergency services, and cultural institutions—could be trained to work together effectively, given that in everyday circumstances they rarely interact. A decisive milestone in developing and testing these interdisciplinary interfaces was the EU funded Interreg Central Europe project ProteCHt2save, which provided both the framework and resources for designing and conducting the first large-scale exercises in Krems in 2018 devoted exclusively to cultural property protection. These exercises, together with the table-top simulations integrated into the Cultural Property Protection postgraduate curriculum, laid the empirical foundation for subsequent

[4] Throughout this study, the terms *cultural heritage protection* and *cultural property protection* are used synonymously. While cultural heritage protection traditionally denotes the broader and more inclusive approach, encompassing tangible and intangible dimensions as well as environmental and social contexts, cultural property protection tends to be linked to the Hague Convention of 1954 and thus armed conflict and International Humanitarian Law. The consistent interchangeable use of both terms reflects their shared objective: the safeguarding of cultural assets in times of peace and crisis.

research and evaluation. They also formed the basis for a master's thesis, carried out in close collaboration with the author, which analysed the training of interfaces between the cultural and the emergency-response sectors. The professional domains involved in disaster response are marked by complementary, yet seldom overlapping, expertise. Emergency responders are typically unfamiliar with the cultural or material specificities of heritage sites, while curators and conservators often lack operational experience in high-pressure disaster environments.[5] Successful mitigation of damage to heritage assets thus depends upon the deliberate combination of these different knowledge bases. Without a structured interface capable of translating between the two communities, the cultural side's detailed intelligence about collections and structures risks being overlooked or arriving too late for operational decision-making. Moreover, disaster environments are characterised by time pressure, ambiguity, and information overload or substantial gaps in information. Under such circumstances, any absence of clearly defined liaison mechanisms rapidly produces friction: responsibilities become blurred, communication channels collapse, and critical information fails to reach those authorised to act. Research in Central Europe has shown that these coordination problems are often exacerbated by inadequate preparedness planning and weak coherence between management levels. Such deficiencies delay the implementation of protection measures and obscure accountability across stakeholder groups—issues that formal interfaces and trained liaison structures are explicitly designed to mitigate.[6]

The ProteCHt2save project provided comparative evidence that legal frameworks, organisational responsibilities, and the mix of emergency actors available to support cultural heritage differ markedly between Central European countries. To map this diversity, a multi-country survey examined: (1) existing emergency plans across national, regional and local levels, including inspections and training; (2) organisations involved across the disaster cycle and potential "docking points" for cultural-heritage cooperation; (3) national capabilities, regulations and guidance; and (4) experience and case studies since the year 2000. Based on these data, a

[5] Schramm 2019; De Siervo/Vicario 2023, 46; Domenec de Cellès/Rehberger 2025.
[6] Cacciotti et al 2021, 4; Kaiser 2023, 8–9.

SWOT analysis informed a transnational blueprint for preparedness that could be tailored to specific administrative contexts. The blueprint encompassed threat analysis, stakeholder engagement with responders, the communication of tools, and the development, implementation and testing of emergency plans; its methodology deliberately embedded exercise feedback from responders and heritage stakeholders at pilot sites to refine procedures and clarify roles. A central conclusion of this comparative work was not the lack of technical guidance—manuals on material treatment and general emergency planning abound—but the absence of a linking mechanism that enables real cooperation under operational conditions. ProteCHt2save therefore advanced, designed, and tested a Cultural Heritage Rescue Team (CHRT) prototype to institutionalise the interface. CHRTs are conceived as mixed (or interoperable) units that embed heritage expertise within the procedures of emergency response; they can be organised nationally—facilitating standardisation, integration and funding—or transnationally, broadening expert pools while facing language and equipment-standard challenges. In both models, the team requires defined leadership, liaison and logistics functions, and access to specialist profiles (e.g., archaeologists, structural engineers, conservators, data experts). Training must span individual, team, specialist, refresher, leadership and (if applicable) pre-deployment modules, supported by a home-base operations centre for logistics and expert reach-back.[7] The CHRT concept directly addresses gaps repeatedly observed in the regional survey: inadequate risk planning (including missing evacuation and rescue plans for unlisted heritage) and fragmented cooperation across management levels, which delay implementation and obscure responsibilities. In operational terms, CHRTs serve as the trained interface through which heritage knowledge becomes actionable within incident command, while also raising awareness, identifying at-risk assets through field training, and

[7] Danube University Krems 2019 and survey preluding the document, conducted by the author; Bonazza et al 2021, 7; 15–16; Kaiser 2019b; Kaiser/Schramm 2020; Cacciotti et al 2021, 4; 9–11; Kaiser 2025a, 194; 197–199; 203–205. For manuals and guidelines and material conservation and emergency planning inter alia Tandon 2016; UNESCO and Ministerio de Cultura y Patrimonio 2017; Tandon 2018.

facilitating transnational knowledge exchange.[8] Building this interface capability requires exercise-centred training. The author, in her capacity as programme director at the Center for Cultural Property Protection therefore initiated a sequence of table-top and live exercises that brought together heritage professionals with military, civil protection, firefighting and law-enforcement personnel, with a pedagogical focus on familiarising the civilian participants with staff work and decision-making procedures so that they could integrate their expertise at the right time and node in the operational process.[9]

While the structural necessity of interfaces is evident, their effectiveness depends on how well professionals are trained to inhabit them. Experience across multiple EU projects demonstrates that joint exercise formats are indispensable tools for this purpose. Table-top and live exercises allow civilian heritage professionals to familiarise themselves with the staff-work procedures, decision-making logic, and documentation systems characteristic of military and civil-protection and civil-defence organisations. Through such practical immersion, participants learn how to align their expertise with existing operational workflows and thus to contribute meaningful inputs at appropriate stages of an incident. A recurrent insight from post-exercise evaluations is that a shared professional language and a common mental model are prerequisites for effective cooperation. Participants consistently reported that they only recognised the importance of unified terminology and procedural understanding once confronted with the practical challenges of joint exercises. The most successful outcomes were achieved where participants received preparatory instruction in staff-work procedures before the exercise phase, enabling them to integrate more seamlessly into operational routines. Exercises also serve a

[8] Cacciotti et al 2021, 4; 9–11. For lessons learned from the full establishment of similar teams see the German KulturGutRetter project, which developed and operationalised a CHRU – Cultural Heritage Rescue Unit. The CHRU held a national full-scale exercise in 2024 and deployed as a skeleton unit to the EU Civil Protection Mechanism MODEX in Venice late in 2024. Domenec de Cellès/Jakubeit 2023; Papa et al 2025; Domenec de Cellès/Rehberger 2025. See also the Carabinieri Tutela Patrimonio Culturale Blue Helmet for Culture Initiative and their longstanding expertise as interface between heritage community and emergency responders / military. Rush/ Benedettini Millington 2015; Arma dei Carabinieri 2021.

[9] Kaiser 2022; Kaiser 2023, 6–8; Kaiser 2025a, 194; see also chapter 3 below.

second pedagogical purpose: clarifying roles and responsibilities under stress. In time-critical environments, ambiguity in decision rights or reporting lines can paralyse action. Structured staff processes, once understood, provide the necessary framework within which heritage experts can deliver targeted inputs and ensure that these are operationally actionable.[10] Beyond technical competence, joint training cultivates trust—a non-quantifiable but crucial factor in inter-organisational coordination. Recurrent collaboration fosters personal relationships and mutual confidence, substantially reducing the time required to coordinate decisions during real emergencies. The exercises carried out at the Center for Cultural Property Protection demonstrated that embedding emergency responders directly into the planning and testing of cultural-heritage protection measures generates such trust and accelerates feedback loops between the two professional communities.[11] The institutional embodiment of this approach is once again the Cultural Heritage Rescue Team. CHRTs formalise the collaboration between heritage experts and emergency responders, providing clearly defined leadership, liaison, logistics, and specialist roles. The rationale for establishing and training interfaces is both conceptual and empirical. Interfaces are the mechanisms through which specialised cultural heritage knowledge becomes operationally relevant during emergencies. Exercise-centred training not only imparts procedural literacy but also fosters shared understanding, clarifies authority, builds interpersonal trust, and institutionalises cooperation through structures such as CHRTs. Where such mechanisms are systematically developed, cultural heritage protection advances from improvised collaboration to a predictable, standards-based component of modern disaster-response systems.[12]

[10] Schramm 2019; Proculther Project 2021, 154-157; 168-169; Piacentini/Proietti 2023; Kaiser 2025a, 197; 203–205; Domenec de Cellès/Rehberger 2025; Papa et al 2025. Oral feedback from students in the Cultural Property Protection MSc programme supports this finding. Particularly noteworthy is the statement made by student K.N. in 2019 following the table-top exercise in Module 10. He stated that only with applying what he had learned in theory weeks before did he start to understand what he had learned.

[11] Bonazza et al 2021, 15–16.

[12] Bonazza et al 2021, 6–7; Cacciotti et al 2021, 4; 9–11; 15–16; Kaiser 2023, 6–9; Kaiser 2025a, 198–205.

Beyond the experiences gained from the exercises conducted within different European Union funded projects at the Center for Cultural Property Protection, the literature on emergency exercises and the principal response doctrines converge on the same conclusion: effective disaster operations depend on well-trained interfaces that translate between organisational logics and enable rapid, reliable coordination. National systems typically codify structures, roles and responsibilities for mobilising resources through basic laws, plans and standing arrangements; one principal instrument for testing and improving these arrangements is the full-scale emergency exercise, designed to replicate disaster conditions both physically and psychologically. Such events are defined by time pressure, uncertainty and conflicting information, and by the need for the simultaneous deployment of multiple services—police, fire, medical, local-authority and voluntary sectors. Under these conditions, responders must command a working knowledge of procedures and be able to implement them collectively, not merely within their own institutions.[13] A key issue is its differentiation of exercise fidelity and corresponding learning outcomes. Discussion-based and functional formats develop cognitive and decision-making processes, whereas drills refine physical skills; full-scale exercises combine all dimensions of fidelity and thus expose inter- and intra-agency dependencies and procedural mismatches. Across studies, the most consistent benefit is improved collaboration—responders demonstrate greater role comprehension, trust and ability to integrate plans across agencies—though the term itself is operationalised inconsistently.[14] These findings mirror the project-based evidence presented earlier: interfaces are learned and stress-tested through exercises. Inter-organisational research corroborates these conclusions. Recurring barriers in emergency cooperation are unclear structures, divergent role logics, competition, stereotyping and deficient communication interfaces. Effective joint action requires shared mental models, explicit responsibility rules and trust. Under stress and time pressure, explicit coordination among command leads becomes vital for converting fragmented information into collective

[13] Waring et al 2024.
[14] Waring et al 2024.

action, yet also more difficult to sustain.[15] Exercises that explicitly confront these frictions therefore provide the strongest learning gains. This logic is codified in major operational doctrines. NATO AJP-3.19 defines cooperation, coordination, consultation and de-confliction as distinct but complementary interaction modes and insists that mutual respect, clarity of roles, trust and transparency are essential; it explicitly cites cultural-property protection as an example of civil-military coordination requiring contextual sensitivity.[16] Likewise, the National Incident Management System (NIMS) in the United States mandates a common, interoperable vocabulary and shared command structures across all sectors to achieve unified incident management.[17] The National Response Framework Training Guide operationalises this through mandatory inter-agency training, while ISO 22320 extends the same principle globally, prescribing process and structure for cross-border incident management and emphasising cultural sensitivity and community participation.

The safeguarding of cultural heritage during crises epitomises the necessity of multi-agency coordination. No single actor—whether police, fire, military, humanitarian agencies or cultural institutions—can independently provide adequate protection in complex emergencies. The UN Civil–Military Coordination (UN-CMCoord) Handbook stresses that coherence, mutual understanding and respect for mandates are indispensable to effective joint action, particularly where civilian, humanitarian and military actors operate side by side in sensitive environments.[18] Cultural-property protection adds further complexity: heritage experts bring irreplaceable knowledge of significance and vulnerability but lack operational capacity to secure sites; conversely, military and emergency responders have the command structures and logistics but little familiarity with heritage protocols. Bridging this divide requires that responders attain shared situational awareness and harmonised decision-making across organisational boundaries—precisely the objectives of contemporary interoperability frameworks such as the JESIP model in the United Kingdom, which

[15] Mähler 2016 13; 18; 20; 102–111.
[16] NATO 2018 §§ 1.15–1.16, 2.5, 2.9–2.10.
[17] FEMA 2017.
[18] UN OCHA 2018, 3–5.

defines the five core principles of joint working: *co-location, communication, coordination, joint understanding of risk,* and *shared situational awareness*.[19] Training is pivotal to achieving such interoperability. Joint exercises must expose participants to each other's procedures and communication cultures. Adapting both the UN and JESIP guidelines to cultural heritage interfaces, we can highlight several priorities:[20]

- Common language and procedures. Cultural heritage experts must learn to use plain, shared terminology and structured reporting models such as M/ETHANE, together with decision-support tools like the Joint Decision Model, to ensure clarity under pressure.[21]

- Understanding of mandates and constraints. Cultural specialists must appreciate the legal frameworks governing emergency and military operations, while emergency responders must recognise the irreplaceable value and handling protocols of cultural assets.

- Co-location and coordination. Exercises should simulate co-located command environments where joint risk assessments and shared situational awareness can be achieved in real time.

- Respect for humanitarian and cultural principles. Training must reinforce that military and security assets play a supporting role in cultural heritage protection, and that cultural and humanitarian imperatives guide prioritisation. But on the other hand, and at least equally important, is the understanding that saving human lives is the priority of emergency services and thus cultural heritage cannot take centre stage immediately during or in response to a calamitous event.

[19] JESIP 2021.

[20] UN OCHA 2018; JESIP 2021.

[21] M/ETHANE is a standardised format in which to report major incidents, supporting reporting procedures during high kinetic and stressful events. The letters stand for: M – major incident (yes or no), E – exact location, T – type of incident, H – hazards, A – access, N – number of casualties, E – emergency services.

- Psychological and behavioural preparedness. Responders need resilience, adaptive communication skills and trust-building capacities to cooperate effectively under stress.

Embedding these components in curricula ensures that cultural property protection is mainstreamed within integrated emergency-management systems rather than treated as an isolated specialty. Multi-agency collaboration is thus not optional but foundational: it allows diverse expertise to complement one another, advancing the twin goals of safeguarding people and preserving the cultural fabric that sustains communities.

Taken together, the exercise evidence, inter-organisational research, and operational doctrines articulate a coherent design logic for cultural heritage protection:[22] (1) Codify how actors will cooperate—structures, roles, liaison mechanisms, and information exchange. (2) Staff and equip interfaces that translate between institutional systems and cultures. (3) Exercise those interfaces with sufficient fidelity to build shared mental models, trust and role clarity. In the context of cultural property protection, where specialised knowledge must be operationalised within rigid incident-management architectures, this triad is indispensable and links into the higher levels of Bloom's taxonomy of education objectives, as outlined in the following chapter. It transforms cultural heritage safeguarding from ad-hoc cooperation into an integrated component of multi-agency emergency response.

[22] Mähler 2016; FEMA 2017; ISO 22320:2018; NATO 2018; UN OCHA 2018; FEMA 2019; JESIP 2021; Waring et al. 2024.

2 – Teaching and Learning through Exercises

Within the classic hierarchy of learning objectives, exercise-based learning targets the upper tiers—analysis, evaluation, and creation—rather than the basic recall and comprehension that occupy the lower levels. Bloom's *Taxonomy of Educational Objectives* remains the foundational point of reference for the cognitive domain, while acknowledging the parallel affective and psychomotor domains as important but (at the time) underdeveloped areas of inquiry.[23] Positioning exercises at the top of the taxonomy reflects their capacity to demand transfer, judgement, and synthesis under constraints—precisely the forms of performance that cultural heritage professionals must display during emergencies. Contemporary research explains why exercises are especially effective for mid- and late-career professionals. Adults retain substantial cognitive capacity; what changes are the conditions for effective learning (time, setting, autonomy, intrinsic motivation, and authentic application). Motivation increases when learners can shape the activity, bring professional experience to bear, and directly engage with lifelike problems. Simulations—table-top or live—give each participant a unique, situationally grounded experience and then consolidate learning in structured debriefings that bring individual perspectives into a shared understanding; fidelity to reality is crucial.[24] Kolb's experiential learning theory provides the canonical process model behind these effects: learning is a holistic, integrative transformation of experience driven by the dialectics of action/reflection and experience/abstraction. Immediate and personal experience provides the vitality and contextual depth that transform abstract concepts into meaningful understanding, while simultaneously offering a shared basis for evaluating and refining ideas. Because feedback underwrites goal-directed action and evaluation of consequences, exercises that couple action with rigorous feedback loops (briefings, hot-wash-ups, after-action reviews) are especially potent. Kolb is explicit that experiential learning does not replace behavioural or cognitive theories; it integrates them into a broader view of

[23] Bloom 1956/1971, 7.
[24] Jarvis 2010, 164-166; Kaiser 2025a, 196.

human adaptation that spans classrooms, workplaces, and civic life across all life stages. The learning cycle is best understood as a spiral—iterative passes of experiencing, reflecting, thinking, and acting—so repeated exercising deepens competence over time.[25] This aligns with management-education evidence: simulations and exercises create common experiences that anchor reflection and transfer to practice; formats range from role-plays and case discussions to field-based activities and service learning. Educators rotate among roles—facilitator, expert, evaluator, coach—to sustain autonomy while maintaining rigour.[26] In cultural heritage protection, simulations are the traditional training environment of emergency responders and not so much of the heritage community. Nevertheless, exercises dedicated to cultural heritage protection have shown to engage participants cognitively and emotionally in a manner that closely replicates real-life experience, thereby stimulating the higher levels of Bloom's hierarchy.[27]

A basic distinction is made between discussion-based (table-top) and operation-based formats (functional, drills, full-scale). Table-tops efficiently build familiarity with plans, roles, and responsibilities and are especially suited to practising cognitive processes—sense-making, coordination, decision-making—within limited time and with limited resource. Drills refine technical skills by repetition; functional and full-scale exercises add psychological, physical, and environmental fidelity, making interdependencies and procedural mismatches visible but raising cost and complexity.[28] Reviews consistently report improvements in collaboration, knowledge of plans, and identification of gaps requiring reinforcement, while cautioning that collaboration is often inconsistently defined and should be operationalised clearly in evaluation designs.[29] Inter-organisational research clarifies why these formats matter for adults who bring strong professional identities to joint tasks. Recurrent problems include unclear structures, misaligned processes, divergent role logics,

[25] Kolb 2015, 31-32; 37; 43-44; 50–51; 61; 186.
[26] Kayes/Kayes 2021.
[27] Kaiser 2025a, 196–197.
[28] Waring et al 2024; Wallace et al 2025, 2–3.
[29] Waring et al 2024.

competition, stereotyping, and unclear communication interfaces—all of which degrade joint performance under time pressure. Effective cooperation presupposes a shared frame of reference and shared mental models (terminology, situation interpretation, explicit responsibility rules) and is enabled by trust; explicit coordination and communication between agencies converts fragmentary information into coordinated action, albeit under stress.[30] These are precisely the conditions under which adult learners benefit from authentic tasks, safe-to-fail exploration, and structured feedback—the pillars of experiential learning.[31] Design guidance converges on a handful of success factors. Mixed civilian–military studies emphasise four clusters—goals, set-up, scenario, participants—with explicit, non-conflicting objectives and timely feedback on consequences.[32] Experts recommend: (1) clear objectives and comprehensive debriefings (≥ 30–45 min); (2) psychological safety to legitimise uncertainty and error; (3) balanced realism aligned to learning goals; (4) deliberate uncertainty to train adaptation; and (5) active participation with role clarity and inclusive input.[33] These map directly to Kolb's spiral—action with feedback, reflection with abstraction, and renewed experimentation.[34]

Within the family of simulations, wargames are decision-centric methods in which human players make consequential choices within a modelled conflict or crisis under rules, scenarios, and adjudication that generate dynamic outcomes. Because the term is used inconsistently—from unstructured discussions to large-scale, force-on-force exercises—a pragmatic approach identifies core characteristics: adversarial interaction, structured procedures, dynamic adjudication, and cost-efficiency relative to real operations. Clarity of aim before design is essential—analytical discovery, education/training, or entertainment—together with iterative playtesting, attention to practicalities, and adequate analysis effort.[35] Off-the-shelf commercial wargames can be adapted for planning drills or

[30] Mähler 2016, 13; 18; 20; 102–111.
[31] Kolb 2015, 31–33; 50–51; Nolda 2015, 81-85; Kayes/Kayes 2021.
[32] Grunnan/Fridheim 2017; Wallace et al 2024, 10–11.
[33] Wallace et al 2024, 10–11.
[34] Kolb 2015, 33; 44; 61; 186.
[35] Fridheim 2022, 223–231.

curricular use, providing greater depth than reading alone.[36] Doctrinal sources converge on the pedagogical value of wargaming for adults. The UK Wargaming Handbook frames wargames as safe and vicarious experiences that confront players with continuous, often unexpected decisions in complex contexts—especially useful for exploring wicked problems—while stressing limitations: non-reproducibility, qualitative (not predictive) outputs, and dependence on participant quality.[37] NATO's Wargaming Handbook likewise positions wargaming within analytical campaigns and educational sequences—not as a standalone validation tool but as a generator of insights to be integrated with experiments, simulations, and exercises. Benefits include cost-effective practice of staff procedures, exposure to friction and uncertainty against adaptive human opponents or stakeholders, discovery of unknowns, and consensus-building; design should protect psychological safety so that players can take risks without fear of sanction.[38] The mechanism by which wargames imprint learning is increasingly well described. High-engagement games combine a presented narrative (the designed scenario) with a constructed narrative (the story players create through their choices). Because players must act rather than merely observe, wargames become "story-living experiences," with effects that are retained more vividly and contribute more profoundly to behavioural and cognitive transformation than those achieved through passive instruction; they are most powerful when integrated with analysis, exercises, history, and practice.[39] In higher education, they constitute advanced active learning, compelling learners to grapple with genuine strategic and tactical dilemmas—provided that educational objectives are explicit ex ante.[40] This synthesis dovetails with Bloom and Kolb. Wargames and decision-focused exercises push learners into the evaluate/create strata by requiring judgement and innovation under uncertainty, while embodying Kolb's spiral through iterative cycles of action, feedback, reflection, and renewed experimentation.[41] In adult

[36] CALL 2019, 19.
[37] Ministry of Defence 2017, §§ 1.13–1.20; 11–13; § 2.1–2.2; 19.
[38] NATO n.d., §§ 1.2–1.4; 1.8; 2.3; 5–11.
[39] Perla/McGrady 2011, 7; 15.
[40] Sabin 2014, 36–37.
[41] Bloom 1956/1971, 7; Kolb 2015, 33; 44; 61; 186.

professional settings, this is the signature strength of wargaming: it harnesses accumulated experience while challenging assumptions, thereby accelerating adaptive expertise.

Bloom level	Learning performance	Typical teaching methods	Exercises / wargames
1. Remember	Recall facts and terminology	Lecture, handbook, e-learning, reading	— (indirectly reinforced through repetition within scenarios)[42]
2. Understand	Explain contents and describe interrelationships	Seminar, discussion, instructional video	Table-top preparation (briefings)[43]
3. Apply	Apply acquired knowledge in familiar situations	Object-based training, skill drills (e.g., packing, inventorying)	Simple scenarios in table-top exercises[44]
4. Analyse	Decompose structures and relationships; weigh decision options	Case studies, group work	Table-top exercises with decision points and adversarial elements ("mini-wargames")[45]
5. Evaluate	Compare and assess options; set priorities	Peer review, planning games, critical discussion	Wargaming & complex live exercises: participants must evaluate consequences and select courses of action[46]

[42] Bloom 1956/1971; Anderson/Krathwohl 2001.
[43] Biggs 1996; Kolb 2015.
[44] Tandon 2016; 2018; FEMA HSEEP 2020.
[45] Perla/McGrady 2011; Appleget et al 2020.
[46] Ministry of Defence 2017; WHO 2017; Mahdi et al 2023.

6. Create	Design innovations; demonstrate strategic thinking	Project work, strategy development	Full-scale wargames / capstone exercises → teams design new procedures, improvise solutions, develop SOPs[47]

Table 1: Bloom's Taxonomy and didactic methods (with reference to exercises and wargaming)

In summary, the progression of learning methods mapped to Bloom's taxonomy demonstrates a clear correspondence between learning depth and exercise complexity. Lectures, manuals, and other transmissive forms of instruction address primarily the lower cognitive levels—remembering and understanding—by transmitting foundational knowledge and conceptual frameworks. Practical skill trainings occupy the intermediate level (applying), translating theoretical knowledge into operational competence through repetition and supervised practice. Table-top exercises and mini-wargames extend learning to the analytical tier, where participants must dissect complex scenarios, identify decision points, and explore alternative courses of action under realistic constraints. At the uppermost levels, large-scale simulation exercises and comprehensive wargames enable learners to evaluate competing options, synthesise information from multiple disciplines, and ultimately create new strategies, procedures, or standard operating protocols.[48] Only through exercise-based and wargame-centred learning can participants achieve the full cognitive engagement required at the top of Bloom's hierarchy—developing the evaluative judgement, creativity, and strategic thinking that transform knowledge into adaptive capability.

For cultural-heritage protection, the fit between method and learning goal is decisive. Table-tops efficiently align terminology, roles, and plans across the cultural and emergency domains; drills refine specific technical

[47] NATO n.d.; Sabin 2014; Bundeswehr 2024.

[48] On VR injects and VR exercises as the next step in disaster preparedness training see Alshowair et al 2024.

procedures (e.g., documentation, handling, packing); functional/full-scale exercises expose interdependencies under realistic constraints; and wargames pressure-test decision-making, reveal tacit assumptions, and build shared mental models under adversarial or uncertain conditions.[49] Across formats, adult-learning design should ensure explicit objectives, authentic scenarios, active participation, psychological safety, and rigorous debriefings with accountability for implementing lessons.[50] When these conditions hold, exercises and wargames jointly address the upper tiers of Bloom's taxonomy while operationalising Kolb's experiential spiral, thus cultivating evaluative judgement and creative problem-solving in mixed teams of heritage specialists and emergency responders.[51]

Although several of the full-scale exercises conducted for interface training between the heritage community and emergency responders at the Center for Cultural Property Protection already exhibit certain characteristics of fully fledged wargames, they nevertheless remain situated on the intermediate levels of Bloom's taxonomy. As the following chapter will demonstrate, these exercises primarily serve to consolidate applied competence, analytical reasoning, and evaluative decision-making within structured operational frameworks. The development of comprehensive wargames thus represents the next evolutionary step in cultural-heritage protection training at the Center for Cultural Property Protection—one that presupposes well-established interfaces and a solid foundational understanding of inter-agency cooperation.

[49] Ministry of Defence 2017, § 3.4; 39–40; Wallace et al 2025, 2–4.
[50] Kolb 2015, 31–33; 50–51; Kayes/Kayes 2021; Wallace et al 2025, 10–11.
[51] Bloom 1956/1971, 7; Kolb 2015, 44; 61, 186; Kaiser 2025a, 196–197.

3 – Case Studies for Educational Practice and Applied Exercises

This chapter provides an overview of the teaching formats and exercises that the author has organised at the Center for Cultural Property Protection—and, on one occasion, for the Austrian Armed Forces—since 2016. These activities are presented together with the corresponding research projects and academic programmes to which they belong. The objective is to outline the empirical and educational basis of this study and to contextualise the author's related scientific publications within a coherent framework. Two of the large-scale exercises, as well as the table-top exercises developed within the MSc Cultural Property Protection programme, have already been examined in detail in a master's thesis, while segments of the international summer schools have likewise been analysed extensively in previous studies.[52] For better orientation, the exercises discussed in this chapter are positioned within the schematic framework introduced in Chapter 2, linking their structure and learning objectives to the cognitive levels of Bloom's taxonomy. The overarching goal of all exercises conducted at the Center has been to train and visualise the interfaces between the cultural heritage community and emergency responders—to operationalise cooperation through practice. The exercise organised by the author for the Austrian Armed Forces, which included a dedicated cultural property protection component, can be classified as closest to a wargame in its design. Nevertheless, its final emphasis lay primarily on the assessment of existing capabilities and skills, as well as on raising awareness among participating organisations for the requirements and potential of cultural property protection within joint operations.

3.1 – Study Programmes at the Center for Cultural Property Protection

Since its foundation, the Center for Cultural Property Protection at the University for Continuing Education Krems has been committed to the

[52] Schramm 2019; Kaiser 2023.

university's triad of research, teaching, and third mission. All programmes are designed as postgraduate and part-time continuing education, addressing professionals who seek to expand or specialise their expertise in applied fields of cultural heritage protection. The first cohort of the Master of Science (MSc) in Cultural Property Protection commenced in 2016 and was taught in German; a second intake followed in 2017, also in German. Subsequently, the programme was converted to English, and beginning in 2023, it was restructured into modular components that can be flexibly combined into the full 120 ECTS MSc degree. Throughout all phases of development, the guiding principle has remained unchanged: a strong orientation toward practical application and intersectoral cooperation.

The curriculum has consistently covered the core domains of cultural property protection, encompassing both theoretical and operational dimensions:[53]

- Foundations of cultural property protection – conceptual definitions, historical and geographical evolution, international comparison, and legal frameworks;
- International Humanitarian Law – sources of law, areas of application, enforcement mechanisms, and international agreements on the protection of cultural property;
- Psychological and anthropological aspects – the cultural and emotional significance of heritage, and the psychological effects of its loss or destruction;
- Architectural and art history – materials and building typologies, stylistic analysis, and the assessment of architectural value;
- Collections and inventories – emergency documentation, conservation concepts, and physical security planning for heritage sites;
- Hazard and risk scenarios – identification of threats and corresponding mitigation strategies;

[53] Center for Cultural Property Protection 2025; Danube University Krems 2025.

- Crisis management – presentation and communication techniques, crisis and media communication, and structured scenario training;
- Preparation of baseline material for cultural property protection, including templates, risk registers, and field documentation tools;
- Command procedures and staff work – decision-making under crisis conditions, establishment and operation of command posts, emergency planning, and cooperation with emergency services;
- Evacuation and emergency planning – practical development, implementation, and testing of plans in collaboration with local first responders.

Integral to the programme are both stand-alone cultural property protection exercises and integrated table-top exercises designed to familiarise students with the fundamentals of command processes and staff procedures in crisis management. The course culminates in a functionable live exercise, in which students implement and test an emergency plan they have developed for a selected cultural heritage institution, working directly with local emergency services.

Since 2022, the University for Continuing Education Krems has been a member of the European Security and Defence College (ESDC). The Center for Cultural Property Protection piloted the Cultural Property Protection Course, a one-week programme aimed at participants from EU institutions, Member States, EU candidate countries, and partner organisations. A limited number of places are reserved for representatives from UN and OSCE structures as well as from specialised training institutions. The course targets professionals engaged in conflict prevention, crisis management, and post-conflict recovery, particularly those working operationally in the protection of cultural heritage or have to act as liaison and interface. In keeping with the integrated and holistic approach of cultural property protection, the course is open to civilian, military, and police personnel alike.[54] A central component of the ESDC Cultural Property Protection

[54] European Security and Defence College 2023.

Course in Krems is a 1.5-day table-top exercise, which applies the course contents to simulated scenarios. Its explicit aim is to translate theoretical learning into practical collaboration, focusing on interfaces between cultural heritage specialists and emergency responders—the same operational nexus that underpins the training philosophy of the Center as a whole.

3.2 – Research Projects on Cultural Heritage Protection

The **ProteCHt2save** project, funded by the EU Interreg Central Europe programme and coordinated by the Institute of Atmospheric Sciences and Climate at the National Research Council of Italy (CNR-ISAC), ran from July 2017 to June 2020 with participation from ten organizations across seven Central European countries. Its overarching mission was to enhance the resilience of cultural heritage to climate-related extreme events—such as heavy rainfall, floods, droughts, and fires—through integrated risk assessment, decision-support tools, and emergency preparedness exercises involving both heritage custodians and emergency services.[55] Central to ProteCHt2save was the creation of an innovative Web GIS Risk Mapping Tool designed to support regional and local authorities in identifying heritage sites under threat and developing tailored mitigation and evacuation strategies. This online platform visualizes high-resolution risk maps for a variety of climate hazard indices—including extreme precipitation, flooding, drought, and heat extremes—based on historical data (1951–1980; 1987–2016) as well as future climate scenarios (2021–2050; 2071–2100). The tool's interface incorporates Copernicus satellite data, ERA5 and ERA Land reanalyses, and regional climate models, enabling dynamic hazard mapping and vulnerability ranking of cultural assets at local-to-regional scales. ProteCHt2save also produced three major thematic reports: (1) a survey of existing risk evaluation tools and GIS platforms suitable for cultural heritage protection; (2) methodologies for assessing the climate change impacts on heritage; and (3) case-based risk assessments for historic structures in Central Europe. In pilot locations these assessments revealed increasing vulnerability to heavy rainfall indices and highlighted critical

[55] Interreg Central Europe 2007-2013a; ProteCht2save 2020-2022.

conservation and maintenance gaps. Beyond digital mapping, ProteCHt2save emphasized practical preparedness — implementing cultural heritage protection exercises and evacuation drills in collaboration with local cultural institutions, municipal authorities, and emergency services, as highlighted briefly below. A decision-support handbook and best-practice manual were developed to guide transnational rescue protocols in emergency scenarios. This ensured that civil protection teams and heritage practitioners could work together seamlessly, using shared data, simulation-driven planning, and coordinated response strategies.[56]

The **STRENCH** project (STRENgthening resilience of Cultural Heritage at risk in a changing environment through proactive transnational cooperation) was an Interreg Central Europe initiative coordinated by the Institute of Atmospheric Sciences and Climate of the Italian National Research Council (CNR-ISAC), running from March 2020 to February 2022 as a follow-up and capitalisation project for inter alia ProteCHt2save. It brought together nine partners from seven Central European countries to address the growing threats from natural, anthropogenic, and especially climate-induced extreme events on Europe's natural and cultural heritage.[57] At its core, STRENCH sought to pioneer ready-to-use solutions for assessing and mitigating climate-related risks to cultural assets—ranging from historic buildings and ruins to archaeological sites, cultural landscapes, parks, and heritage villages. Building on prior European projects (including ProteCHt2save, HICAPS, and Climate for Culture), STRENCH developed a full suite of instruments: WebGIS tool for multi-hazard assessment (initially developed in ProteCHt2save and taken to a next level), hazard maps covering threats like flash floods, storms, landslides, heavy rainfall, river flooding, and drought-induced fires, along with a robust vulnerability assessment methodology and disaster risk reduction strategies. The project's online platform integrated satellite (Copernicus) data, climate models, and vulnerability indices into an interactive interface, enabling local and regional stakeholders to visualize hazard scenarios and prioritize interventions using dynamic risk maps. Complementing the digital tools, download-ready hazard and vulnerability maps were implemented at seven

[56] Kaiser 2025c.
[57] Interreg Central Europe 2007-2013b.

pilot locations across partner countries, and two summer schools provided hands-on training in the use of the WebGIS system, multi-risk analysis, and preventive heritage protection strategies. A defining feature of STRENCH was its emphasis on stakeholder engagement and cross-sector cooperation. The project forged close collaboration between heritage professionals (archaeologists, conservators, curators), local authorities, research institutions, and emergency responders. Guidance materials produced within STRENCH included policy briefs to integrate cultural heritage protection into disaster risk management plans, manuals for sustainable risk management strategies, and frameworks for embedding digital risk tools into planning and conservation routines. The project firmly aligned with the Sendai Framework and the European Agenda for Culture, promoting participatory decision-making and citizen involvement in safeguarding heritage.[58]

The **INACO** project ("INnovative strategies for the Adoption of risk management plans to enhance the resilience of sensitive Cultural and Natural Heritage (CNH) Objectives in river basin districts") is funded by the EU Interreg Central Europe Programme and implemented between June 2024 and November 2026. With a consortium of eleven partners from eight countries the project aims to strengthen the resilience of cultural and natural heritage assets located in river basin districts across Central Europe. INACO addresses the growing exposure of these assets to climate-driven hazards such as floods, droughts, wildfires, and extreme precipitation, emphasizing the integration of heritage protection within wider frameworks of environmental and water-resource management. Building upon previous initiatives such as ProteCHt2save and STRENCH, INACO extends the focus from hazard assessment toward the institutionalization of risk management capacities and the operational adoption of resilience strategies by public administrations. Its methodology combines scientific analysis, digital innovation, and stakeholder participation. Central components include the further development of Web-GIS-based tools and self-assessment instruments for hazard mapping and vulnerability ranking, and the elaboration of risk management plans tailored to representative pilot

[58] Kaiser 2025c.

sites. These pilots, distributed across Central Europe, encompass three major typologies: fluvial and coastal transition zones (e.g. the Po Delta in Italy and the Dubrovnik area in Croatia), lakeside heritage contexts (e.g. Lake Neusiedl in Austria and Fonyód in Hungary), and inland river-basin environments (such as the Rednitz and Wiesent valleys in Germany, the Jelenia Góra basin in Poland, the Košice region in Slovakia, and the Vltava valley in the Czech Republic). A distinctive feature of INACO lies in its emphasis on capacity building within administrative bodies, aiming to up-skill and re-skill professionals to act as risk managers for cultural and natural heritage. Through a combination of online modules, workshops, and field exercises, the project promotes a shared professional language between heritage experts, environmental authorities, and emergency services. By integrating transnational cooperation, digital tools, and participatory governance, INACO contributes to the establishment of a comprehensive and transferable framework for multi-sectoral resilience building, ensuring that cultural and natural heritage protection becomes a structural component of sustainable river-basin management in Central Europe.[59]

The **CHePiCC online** project (*Cultural Heritage Protection in Climate Change*) was an Erasmus+ strategic partnership coordinated by the Center for Cultural Property Protection at Danube University Krems, together with partner institutions in Norway, Spain, Italy, the Czech Republic, and Austria. Its objective was to integrate research on climate change and its impacts on cultural heritage into higher education through the development of innovative online and blended-learning formats. The project raised awareness of cultural heritage as a valuable and vulnerable resource, while equipping future generations with the knowledge and tools to safeguard identity and heritage under changing climatic conditions. Key outcomes included a freely accessible online course on the risks of climate change for movable, immovable, and intangible heritage as well as for cultural landscapes, combined with strategies for their sustainable protection. In addition, the project developed and tested a transdisciplinary summer university model focusing on cultural landscapes in the context of climate change.[60]

[59] Interreg Central Europe n.d.
[60] Kaiser 2025c; Danube University Krems n.d.

The **CHARISMA – Risk Management for Cultural Heritage** project (2022–2024), co-funded by the Erasmus+ programme was carried out with partners in Germany, Austria, Italy, and the Czech Republic. The project developed basics for a risk manager figure for cultural heritage, responding to the urgent need for systematic protection of historic buildings, museum collections, archaeological sites, and other tangible heritage assets facing growing climate- and hazard-related threats. CHARISMA produced key outputs to support this role: a Europe-wide study mapping current practices and skill gaps; a detailed competence profile aligned with the European Qualifications Framework (EQF); and a digital platform enabling guided risk assessments and management plans. The project also piloted a vocational training programme combining online modules with a hands-on training week in Dornbirn, Austria (2023) and Milan, Italy (2024) where participants gained practical experience in risk analysis, planning, and emergency simulation.[61]

In sum, the study programmes and projects conducted at the Center for Cultural Property Protection establish the academic and methodological foundation for all subsequent training and research activities described in this chapter. The following section therefore turns to the exercises themselves—their design, implementation, and analytical integration into both the MSc curriculum and international research projects.

3.3 – Exercises in Cultural Heritage Protection

Table-Top Exercise Neunkirchen

Within the framework of the postgraduate programme in Cultural Property Protection, theoretical instruction is systematically combined with practical exercises designed to simulate real-world decision-making, inter-agency coordination, and the protection of cultural heritage under emergency conditions. These exercises form an integral part of the curriculum and provide a structured environment in which participants can apply and test the knowledge acquired throughout the course. A major milestone within the programme is Module 10, which focuses on command procedures and decision-making in crisis situations, the structure and

[61] Kaiser 2025c; CHARISMA n.d.

operation of incident command systems, and the development of emergency plans. The pedagogical aim of this module is to enable participants to understand and practise staff work and leadership functions within an operational command setting. The core of this module is the large-scale table-top exercise Neunkirchen, developed specifically for this course by the author in cooperation with one of her students. The exercise follows the Austrian command and control system used by the Austrian Armed Forces, which—aside from minor modifications—corresponds to the civilian disaster management structure defined by the Federal Ministry of the Interior.[62] This design ensures the compatibility of heritage-related decision-making with the procedures used by both civil protection and military actors during real emergencies. The focus on the Austrian system derives from the fact that the exercises are supported through various cooperation agreements with Austrian emergency and response organisations. The Neunkirchen scenario represents one of three benchmark exercises later analysed in comparative perspective—alongside Tritolia18 and Kolomani18—in a master's thesis by Hannes Schramm.[63] Participant feedback from the second cohort of the postgraduate programme provides a crucial pedagogical insight: while theoretical instruction was regarded as essential, the full comprehension of command structures and staff functions only emerged through active participation in the exercise under guided supervision. As one student noted, the theory was necessary and well presented, but it only truly made sense once applied during the simulation.[64] This reflects the programme's underlying didactic principle that the cognitive understanding of coordination mechanisms must be reinforced through experiential learning.

- **Primary objective:** Familiarisation with staff procedures and the decision-making process.
- **Participant profile:** Participants had recently learned the fundamentals of staff work and decision-making; first practical application under instructor guidance.
- **Bloom level:** 4 – Analyse.

[62] BMI 2007.
[63] Schramm 2019.
[64] See note 10 above.

- **Exercise type:** Table-top exercise with decision points.
- **Pedagogical focus:** Introduction to structured decision-making and operational communication within a simulated command environment.

Live Exercise Module 11

A practical cultural property protection exercise forms the core of Module 11, which builds directly on the leadership training of Module 10. Its thematic focus is emergency and evacuation planning, covering both the conceptual foundations and the implementation of operational procedures. In 2019, the second cohort conducted Module 11 in Schruns, Montafon (Tyrol, Austria), working in close cooperation with the Montafon Local History Museum. Beginning on 6 May 2019, the students developed a comprehensive emergency plan for the museum under the supervision of the museum director and his staff. The plan was subsequently tested in a full-scale live exercise conducted on Thursday evening of the same week, in collaboration with the local fire brigades. Prior to the simulation, the students briefed the firefighters on the emergency plan and object priorities. The exercise scenario assumed a fire outbreak within the museum; the response was commanded by the local fire service incident leader. Working in cooperation with museum personnel, students applied the priority list for cultural objects, coordinating their evacuation to a nearby church that served as a temporary collection and triage site. There, participants from the cultural property protection side performed documentation and inventory procedures to ensure accountability and traceability of the evacuated items. In addition to producing a complete and functional emergency plan—which was reviewed and finalized after the exercise—the interdisciplinary cooperation between students and first responders represented the key learning outcome of Module 11. Building upon the theoretical and procedural foundations of Module 10, participants were now required to apply command and coordination principles in a operational context. The exercise thus served as a formative bridge between classroom-based knowledge and practical application, demonstrating that effective cultural property protection depends on the integration of heritage expertise into existing emergency command structures through structured, practice-oriented training.

- **Primary objective:** Training of interfaces and cooperation with emergency responders.
- **Participant profile:** Participants with prior knowledge of staff procedures and decision-making from previous module (TTX Neunkirchen).
- **Bloom level:** 4–5 – Analyse / Evaluate.
- **Exercise type:** Live functional exercise (not full-scale).
- **Pedagogical focus:** Coordination and evaluation of inter-agency collaboration under operational conditions.

The Ancient Temple

In 2022 and 2024, the Center for Cultural Property Protection conducted further advanced training courses that continued and expanded the experiential learning approach established in the postgraduate programme within the European Security and Defence College (ESDC) framework. A central element of these Cultural Property Protection Courses was a one-and-a-half-day exercise on inter-agency cooperation in cultural property protection, forming the core of an intensive one-week curriculum. Cultural property protection was deliberately presented as a cross-cutting topic, examined from multiple perspectives—ranging from the identification and mitigation of threats and risks to the coordination of emergency response and recovery. This integrated format was designed to reflect the multidimensional nature of heritage protection in crises and to foster mutual understanding among different professional communities. The exercise, titled “The Ancient Temple”, employed a table-top exercise format to reproduce the complexity of real crisis environments and to explore the operational interfaces between institutional actors. Participants were divided into four groups representing the main pillars of cultural property protection during emergencies: civil administration, civil protection authorities, law enforcement, and the military. Each of these sectors was assigned specific roles, mandates, and decision-making responsibilities, requiring them to coordinate and communicate effectively in order to achieve coherent outcomes. The scenario itself depicted a human-induced disaster in a major urban environment that, while primarily a humanitarian and security crisis, also affected cultural heritage sites and

collections. The metaphor of the "ancient temple"—from which the exercise takes its name—served as both a conceptual and pedagogical framework: the four institutional pillars must cooperate to uphold the "roof" of the cultural property protection system. If too many pillars fail or act in isolation, the structure as a whole collapses. Participants were therefore confronted with the challenge of balancing sectoral mandates and priorities while maintaining the overarching objective of safeguarding cultural heritage amid broader disaster response operations. Through this exercise, participants experienced first-hand the necessity of coordination, information sharing, and mutual support among the different actors involved in crisis management. The "Ancient Temple" format thus reinforced one of the key findings of the broader research underlying this study: effective cultural property protection can only be achieved through systemic cooperation across administrative, protective, enforcement, and defence sectors, all of which must operate under unified situational awareness even when cultural heritage is not the primary concern in a large-scale disaster.

- **Primary objective:** Strengthening inter-agency cooperation.
- **Participant profile:** Predominantly professionals from security, heritage, and international-mission contexts; basic familiarity with emergency frameworks.
- **Bloom level:** 2–3 – Understand / Apply.
- **Exercise type:** Table-top exercise (preparations and scenario briefings).
- **Pedagogical focus:** Integration of diverse institutional perspectives and refinement of common situational awareness.

Traismauer 2016

The Traismauer 2016 exercise was a practical training event organized by the Centre for Cultural Property Protection in Traismauer, Austria. It simulated a fire emergency threatening cultural heritage sites in the area. The exercise aimed to strengthen cooperation between cultural heritage experts and emergency services by jointly conducting risk assessments, developing evacuation plans, and practicing the protection and recovery of vulnerable cultural assets. Participants engaged in coordinated actions

to ensure safe handling and documentation of artefacts under emergency conditions.[65] Without prior staff training for the participants, the exercise was designed primarily to demonstrate how the fire service operates and to familiarise participants with its command and decision-making procedures.

- **Primary objective:** Observation of emergency-services operational procedures.
- **Participant profile:** No prior training required; introductory participants.
- **Bloom level:** 1 – Remember.
- **Exercise type:** Observation-based orientation activity.
- **Pedagogical focus:** Initial familiarisation with emergency-response structures and terminology.

Göttweig 2017

In 2017, the author, then serving as a reserve officer and Cultural Property Protection Officer within the Military Command of Lower Austria, was invited by the local fire brigade responsible for Göttweig Abbey to integrate cultural property protection into a large-scale emergency exercise. The fire service aimed to address this topic for the first time in such an operation and to identify interfaces with other response agencies, while the military cultural property protection unit sought to test interoperability under realistic conditions. The exercise, conducted in November 2017, involved fifteen fire brigades, the Red Cross, police, the Christophorus 2 emergency helicopter team, and personnel from the Austrian Armed Forces—in total around 200 participants. Set within the extensive monastic complex of Göttweig Abbey, the scenario simulated a partial building collapse and fire during renovation works, resulting in multiple injured and missing persons as well as smoke propagation through the ventilation system. After the successful completion of search and rescue operations, the focus shifted to protecting the monastery's cultural assets, including paintings, manuscripts, and liturgical objects. Cultural property protection personnel of the Armed Forces were actively integrated into the exercise, coordinating with the fire service to secure and evacuate valuable heritage

[65] Kaiser 2025c; University for Continuing Education Krems 2025c.

items. The event demonstrated the feasibility and necessity of structured cooperation between emergency services and the military, which in this case took the place of the interface between heritage side and emergency response side, in safeguarding cultural heritage under disaster conditions and provided a practical case study for the development of cross-sectoral procedures in cultural property protection.[66]

- **Primary objective:** Evaluation of inter-agency cooperation in complex scenarios.
- **Participant profile:** Experienced military cultural property protection personnel.
- **Bloom level:** 5 – Evaluate.
- **Exercise type:** Complex full-scale live exercise.
- **Pedagogical focus:** Assessment of coordination, communication flow, and joint decision-making among multiple agencies.

TRITOLIA18

Exercise TRITOLIA18 (Scenario Palace Gardens) was a large-scale cultural heritage protection exercise conducted in May 2018 by the Centre for Cultural Property Protection in collaboration with the Austrian Armed Forces and within the framework of ProteCHt2save.[67] Designed as a realistic disaster scenario simulating an earthquake impact on a major heritage site, the exercise brought together cultural heritage professionals, military units, and international experts to train in joint emergency response for movable and immovable cultural property. The primary focus of TRITOLIA18 was to strengthen cooperation between cultural institutions and emergency services. Through interdisciplinary teamwork, the exercise enabled participants to jointly develop and implement evacuation strategies, conduct on-site risk assessments, and carry out rescue operations for vulnerable artefacts. Special emphasis was placed on aligning military emergency protocols with the specific requirements of cultural heritage conservation, including the safe handling, documentation, and stabilization of objects.[68] In the first phase, the participants worked as part of a military

[66] Brandt 2017; NÖN 2017; Kaiser 2018.
[67] University for Continuing Education Krems 2025d.
[68] Kaiser 2025c.

staff structure—without any prior preparatory course—and were instructed on the fly, that is, directly during their work, by trainers and subject-matter experts. This was made possible by the fact that most participants already had prior (military) training in staff work and decision-making procedures. The second phase constituted the practical exercise component, in which the participants, acting as cultural property protection specialists, were required either to carry out the salvage of cultural assets themselves or to direct the Austrian Armed Forces personnel assisting in the operation.[69]

- **Primary objective:** Application of staff-work principles from a cultural property protection perspective.
- **Participant profile:** Learning on the fly under trainer and peer guidance; divided into mixed working groups.
- **Bloom level:** 4–5 – Analyse / Evaluate.
- **Exercise type:** Live exercise, CPP functional (not full-scale).
- **Pedagogical focus:** Integration of cultural property protection expertise into structured decision-making and staff processes.

Kolomani18

Exercise Kolomani18 was a comprehensive cultural heritage protection exercise conducted in July 2018, organized by the Centre for Cultural Property Protection in cooperation with local emergency agencies within the framework of ProteCHt2save.[70] The exercise simulated a major flood event impacting heritage sites in Melk, Austria. The main objective was to enhance coordination and communication between cultural heritage professionals and emergency responders through joint training and practical scenario-based drills. Participants worked together to assess risks, develop evacuation and protection plans for cultural assets, and practice the safe removal and temporary safeguarding of vulnerable artefacts during flooding.[71] The exercise formed part of a summer school. The programme of this one-week event included lectures on crisis staff work procedures, the decision-making process, and an introduction to local and national

[69] See Schramm 2019.
[70] University for Continuing Education Krems 2025e.
[71] Kaiser 2025c.

emergency response services. The exercise served as the final component of the summer school, allowing participants to apply and operationalise what they had learned in a realistic training scenario.

- **Primary objective:** Familiarisation with staff procedures and decision-making processes.
- **Participant profile:** Participants newly introduced to staff work; first application simultaneously across multiple groups.
- **Bloom level:** 4 – Analyse.
- **Exercise type:** Table-top exercise with decision points and mini live component.
- **Pedagogical focus:** Collaborative analysis and synchronised execution of staff procedures under guidance.

Summer School 2019

The Summer School 2019 "Climate Change and Cultural Landscapes – Preventive Conservation of Natural and Cultural Resources along the River Danube" was the second event of its kind within the Interreg Central Europe project ProteCHt2save. It combined theoretical input on climate change impacts and preventive heritage protection with field-based learning. Expert lectures introduced current approaches to risk assessment and preparedness, followed by excursions through the UNESCO World Heritage site Wachau Valley between Krems and Melk, including a visit to Melk Abbey. The practical focus lay on emergency preparedness for cultural heritage in the flood-prone town of Stein (Krems). Together with the Krems Fire Brigade and staff of the Lower Austrian State Gallery, participants developed and tested procedures for the evacuation of artworks in a flood scenario, including object prioritization and a route-card system.[72] The exercise demonstrated how interdisciplinary cooperation between cultural institutions and first responders can effectively translate preventive conservation principles into operational practice.[73]

- **Primary objective:** Introduction to emergency-service procedures and coordination mechanisms.

[72] For the route-card system in cultural heritage protection see Münchner Fachgruppe Präventive Konservierung 2017, 14-19; Amt für Kultur Fürstentum Liechtenstein 2023.
[73] University for Continuing Education Krems 2025f.

- **Participant profile:** No prior experience required; summer school participants from varied backgrounds.
- **Bloom level:** 2 – Understand.
- **Exercise type:** Table-top briefings with mini live component.
- **Pedagogical focus:** Observation and reflection on emergency-response processes and basic inter-agency interaction.

Lindau 2023

The Lindau 2023 exercise, held during the Summer School 2023 as part of the Risk Management for Cultural Heritage – CHARISMA project, focused on the emergency evacuation and protection of archival materials following a simulated fire at the Lindau City Archive, Germany. The archive houses valuable documents ranging from medieval manuscripts to current local newspapers. Following the successful extinguishing of the fire and the evacuation of personnel by the Lindau Volunteer Fire Department, participants of the summer school, who acted as cultural heritage protection experts, were tasked with the careful removal, inventory, and safe relocation of archival items. After an initial briefing, roles and responsibilities were assigned based on the diverse expertise of the participants, who collaboratively devised an optimal evacuation strategy. The exercise included the physically challenging transport of artefacts down multiple flights of stairs, followed by the establishment of a secure temporary depot on site. There, recovered items were assessed, sorted, labelled, and stored with care.[74]

- **Primary objective:** Introduction to operational practices of emergency responders.
- **Participant profile:** No prior training; mixed disciplinary audience.
- **Bloom level:** 2 – Understand.
- **Exercise type:** Table-top briefings with mini live segment.
- **Pedagogical focus:** Exposure to emergency-management structures and terminology; awareness raising.

[74] Kaiser 2025c; University for Continuing Education Krems 2025g.

STRENCH Online Summer Schools (2020–2021)

Within the framework of the Interreg Central Europe project STRENCH two international online summer schools were conducted in 2020 and 2021. They represented key elements of the project's capacity-building strategy, aiming to increase the knowledge of local stakeholders in cultural heritage protection and to test the tools and methodologies developed within STRENCH together with their intended end users. The transition to a fully digital format—necessitated by the COVID-19 pandemic—posed the challenge of maintaining the project's characteristic hands-on and interactive approach, a hallmark of the earlier Cultural Property Protection Summer School and ENVIMAT Summer School, both of which had relied on a balanced combination of lectures, workshops, and live exercises. For this reason, the two STRENCH summer schools form a separate chapter of the cultural heritage protection events and exercises conducted at the Center for Cultural Property Protection in Krems. To meet this fully online challenge, the STRENCH consortium deliberately adapted its teaching methodology. The traditional mixture of theoretical lectures and group work on case studies or table-top exercises was transferred into an online environment through the use of pre-recorded inputs, live lectures, and collaborative breakout sessions. This hybridized digital design ensured that participants remained actively engaged rather than passive recipients of information. The online format also provided an unexpected advantage: it broadened participation beyond Europe, attracting heritage professionals, researchers, and public administrators from more than thirty countries.[75]

The first STRENCH Summer School (2020) on Tools and Strategies for Strengthening Resilience of Cultural Heritage in Climate Change marked the project's initial effort to translate its transnational objectives into a structured online training programme. Organized by the Centre for Cultural Property Protection in cooperation with the Institute of Atmospheric Sciences and Climate (CNR-ISAC, Italy), the two-week programme was designed to gradually introduce participants to the multifaceted field of cultural heritage protection under climate change conditions. The first week served as a pre-learning phase, featuring four video lectures that

[75] Kaiser 2023, 3-5.

introduced cultural heritage protection from different perspectives—ranging from environmental threats and climate impacts to institutional frameworks and community engagement.[76] This asynchronous component allowed participants to familiarize themselves with core concepts at their own pace. The second week shifted to a live, interactive format with one or two lectures per afternoon to avoid online fatigue. These sessions delved deeper into heritage risk management and climate adaptation, addressing topics such as vulnerability assessment, preventive conservation, and the use of geospatial and satellite-based tools. The culmination of the programme was a practical exercise online, during which participants directly tested one of the newly developed STRENCH tools—most notably the WebGIS hazard and vulnerability mapping platform—and provided user feedback on its functionality and usability across their respective regional contexts.[77] This first online summer school successfully recreated the interactive spirit of prior in-person events. Participants collaborated in virtual working groups, discussing how the presented methodologies could be adapted to their own institutional realities. The combination of guided lectures, applied exercises, and peer exchange facilitated a learning environment that blended conceptual understanding with practical application.

- **Primary objective:** Testing and validation of analytical tools and methodologies for risk assessment.
- **Participant profile:** No specific prerequisites; multidisciplinary research participants.
- **Bloom level:** 4 – Analyse.
- **Exercise type:** Functional simulation / online case studies.
- **Pedagogical focus:** Analytical evaluation of digital tools and interoperability across heritage and risk-management disciplines.

The second STRENCH Summer School on Risk Management and Protection Strategies for Cultural Landscapes in Climate Change was held in 2021 and further refined the online format into a compact, one-week programme focusing on risk management and protection strategies for

[76] Kaiser 2023, 4.
[77] Kaiser 2023, 4; University for Continuing Education 2025a.

cultural landscapes. Each day was structured around a specific thematic focus—Monday addressed climate change challenges, Tuesday vulnerability and preventive protection, Wednesday risk assessment and management, Thursday featured the international STRENCH conference, and Friday concluded with group presentations of the case-study results.[78] In preparation for this summer school, participants were asked to select and prepare their own case studies following the STRENCH pilot-site criteria. These case studies ranged from cultural landscapes and historic parks to archaeological sites and small historic settlements in both inland and coastal regions. During the week, each morning began with theoretical input from project partners on the tools and methods under development, while the afternoons were dedicated to applying these tools directly to the selected case studies. Participants assessed site-specific vulnerabilities, developed mitigation and adaptation measures, and tested the functionalities of the STRENCH WebGIS and related decision-support instruments. To promote active exchange and peer learning, participants with similar site typologies were grouped into syndicate working teams, collaborating in Zoom breakout rooms.[79] This setup encouraged comparative discussion of methodological approaches and facilitated the development of context-sensitive strategies. The interactive character of the programme mirrored real-world interdisciplinary cooperation, as participants represented diverse professional backgrounds, including heritage conservation, urban planning, environmental management, and civil protection.

- **Primary objective:** Testing and refinement of tools for risk assessment and reduction.
- **Participant profile:** No specific prerequisites; multidisciplinary research participants.
- **Bloom level:** 4 – Analyse.
- **Exercise type:** Functional simulation / online case studies.
- **Pedagogical focus:** Comparative analysis of prototype tools and cross-case validation of resilience methodologies.

[78] University for Continuing Education Krems 2025b.
[79] Kaiser 2023, 4-5.

Across both editions, the STRENCH summer schools attracted over one hundred participants from all continents, demonstrating the potential of online education to extend international outreach far beyond the project's initial European focus, as shown in figure 1 below.[80]

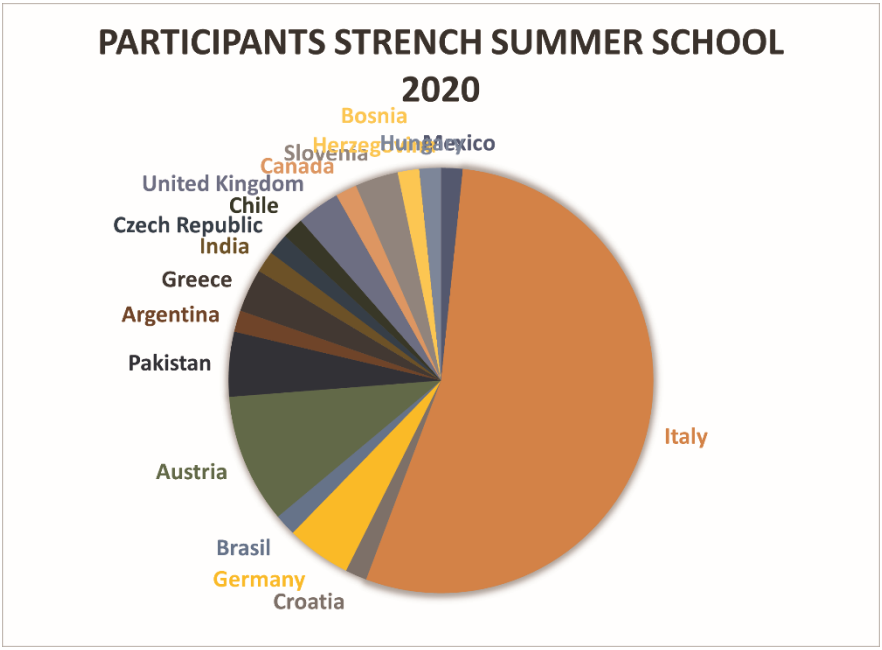

Figure 1: Participants of the STRENCH 1 summer school by country.

The integration of asynchronous learning, live expert sessions, and applied group work successfully preserved the practice-oriented and collaborative ethos of prior in-person programmes. The experience gained from organizing these digital summer schools produced several key insights: first, that interactive, problem-based learning can be effectively realized online if supported by structured group work and tool testing; second, that

[80] Kaiser 2023, 5.

the online format enhances accessibility for geographically dispersed stakeholders; and third, that virtual environments can serve as efficient platforms for co-development between researchers and practitioners. Consequently, the STRENCH summer schools not only fulfilled their pedagogical purpose but also functioned as testing grounds for the project's digital tools and methodologies, directly influencing their refinement before final implementation. They thus stand as exemplary models for digital capacity building in cultural heritage risk management—demonstrating how experiential learning and stakeholder engagement can persist, and even thrive, under the constraints of remote collaboration.[81]

In addition to the in-extenso discussion of the two STRENCH summer schools, three exercises war analysed in a master's thesis at the University for Continuing Education Krems.[82] The table-top Neunkirchen from the MSc programme in Cultural Property Protection and the two exercises conducted within ProteCHtsave, Tritolia18 and Kolomani18.

> *Questionnaires were sent to participants in the three exercises to assess how the training events – with their different set-ups – contributed to civilian heritage professionals' understanding of how emergency responders work under time pressure and how best to contribute their expertise, taking into account the highly structured systems and procedures required by the first responder side of cultural heritage protection. It was important to assess the responses given based on each participant's expertise in crisis response and emergency management or staff work. Any information gained by comparing the responses of participants who had participated in more than one of the exercises was also valuable. Thirty-six participants were sent questionnaires, of which 69% responded. Six of these had participated in more than one exercise, and of these four indicated that they had previous knowledge or experience of staff work and emergency response, while two had no such experience. The expertise of the participants in TRITOLIA was evenly divided between those with previous knowledge and experience and those with no previous knowledge. Finally, only 20% of*

[81] University for Continuing Education Krems 2025a; 2025b.
[82] Schramm 2019.

participants in KOLOMANI had no previous knowledge or experience of staff work and emergency response. Analysis of the responses and experiences of the heritage professionals involved in the exercises was very much in line with the post-exercise evaluations and conclusions of the organisers and military trainers, namely that the best collaborative outcomes were achieved in the NEUNKIRCHEN exercise. This exercise allowed for more extensive pre-learning of staff work and decision-making procedures. During the training, the cultural heritage participants were able to contribute their expertise and provide relevant products one step behind the trainers who simulated the briefings as full battalion staff – thus providing the cultural heritage participants with a clear model to follow and emulate. The KOLOMANI exercise provided a parallel approach where heritage participants worked alongside military personnel and this organisation worked almost as well. It should be noted, however, that 80% of the cultural heritage participants in the KOLOMANI exercise had some previous knowledge or experience of staff work or emergency response. The NEUNKIRCHEN approach was therefore more successful overall. … the organisers' hypothesis in setting up the KOLOMANI exercise was that it would lead to a more creative approach to providing the required cultural heritage inputs, as there was no immediate product to copy during the exercise, but the evaluation supports a different outcome. All participants in the three exercises identified three main takeaways:

1. *Speaking the same language is of paramount importance. Participants emphasised that they only realised this during the exercise phase, as they did not understand the need and the implications in the lectures before participating in the exercises themselves.*
2. *Coordination between the heritage side and the emergency response side is essential. Having worked together before, i.e. during training exercises, is of immense help in ensuring successful coordination. The civil heritage practitioners stated that, given the highly structured staff work and procedures that are well established in emergency response organisations, it is the civil heritage practitioners who need to learn*

how best to cooperate and communicate with emergency responders.

3. *When working under time constraints and in emotionally stressful situations (which cannot be fully simulated), it was crucial to have clearly defined responsibilities and to work to a fixed scheme. In this case, the decision-making process and the associated procedures relied on military personnel who enabled the development of effective courses of action.*[83]

3.4 – Overview of Exercises Conducted

Table 2 provides an overview of the exercises organised by the Center for Cultural Property Protection between 2016 and 2023 (in the case of Göttweig 2017 organised for the cultural property protection component within a larger exercise). The table aligns each activity with its primary objectives, the participants' level of prior training, its cognitive level according to Bloom's taxonomy, and the respective exercise typology. The classification illustrates the pedagogical progression from introductory observation and familiarisation formats to complex, inter-agency live exercises and functional simulations designed to test decision-making, coordination, and the effectiveness of trained interfaces. From the perspective of cultural property protection and the participating cultural property protection specialists, the exercises differ significantly in terms of operational context. In Göttweig 2017 and Tritolia 2018, cultural property protection formed an integral component of the overall exercise, with participants actively embedded in the command structure and operational decision-making processes. In all other exercises, by contrast, the emergency services primarily served as supporting entities for cultural property protection activities and did not have autonomous tasking or mission objectives of their own.

[83] Kaiser 2025a, 203-205, based on Schramm 2019, 36-49; 52-53.

Exercise	Primary objective	Participant profile (prior training)	Bloom level	Type of exercise	Pedagogical focus
Neunkirchen	Familiarisation with staff procedures and the decision-making process	Participants had recently learned the basics of staff work and decision-making; applied for the first time under guidance	4 – *Analyse*	Table-top exercise with decision points	Application of staff procedures; situational analysis
Module 11	Training of interfaces and cooperation with emergency responders	Participants had basic knowledge of staff work and decision-making from previous module (TTX Neunkirchen)	4–5 – *Analyse / Evaluate*	Live, functional exercise (not full-scale)	Coordination under operational conditions
ESDC Ancient Temple	Inter-agency cooperation	Participants mainly from professional fields with relevant background	2–3 – *Understand / Apply*	Table-top exercise (briefings and scenario preparation)	Integrating diverse institutional perspectives
Göttweig 2017	Inter-agency cooperation	Military cultural property protection personnel	5 – *Evaluate*	Complex full-scale live exercise	Evaluation of multi-agency procedures and communication

Traismauer 2016	Observation of emergency services' operational procedures	No prior training required	1 – *Remember*	Observation-based orientation activity	Introductory familiarisation with emergency responder operations
Tritolia 2018 (Palace Gardens)	Application of staff procedures from cultural property protection perspective	Learning on the fly under trainer and peer guidance (most of the participants with relevant background or have successfully passed the Neunkirchen and Module 11 scenarios)	4–5 – *Analyse / Evaluate*	Live, functional exercise (not full-scale)	Integration of cultural property protection expertise into staff operations; guiding emergency responders supporting the recovery of heritage assets
Kolomani 2018	Learning staff work and decision-making process	Recently introduced to staff procedures; first application with simultaneous execution by multiple groups under trainer guidance	4 – *Analyse*	Table-top with decision points and mini live segment	Collaborative decision-making under supervision

Summer School 2019	Introduction to emergency-service procedures	No prior experience required	2 – *Understand*	Table-top briefings and mini live segment	Observation and applied reflection
Lindau 2023	Introduction to emergency-service procedures	No prior experience required	2 – *Understand*	Table-top briefings and mini live segment	Exposure to real emergency responder structures and routines
STRENCH 1	Testing of tools and methodologies	No specific prerequisites	4 – *Analyse*	Functional simulation / case studies	Analytical tool validation
STRENCH 2	Testing of tools and methodologies	No specific prerequisites	4 – *Analyse*	Functional simulation / case studies	Evaluation of prototype decision-support tools

Table 2: Overview of cultural property protection exercises by objectives, training level, cognitive level, and typology.

The comparative overview demonstrates a deliberate pedagogical progression within the training activities carried out at the Center for Cultural Property Protection. Early exercises (e.g., Traismauer 2016, Neunkirchen) focused on introductory and analytical learning, enabling participants to familiarise themselves with emergency-response structures and to apply staff procedures under supervision. Subsequent formats such as Module

11, Göttweig 2017, and Tritolia 2018 target higher cognitive levels of Bloom's taxonomy, requiring analytical reasoning, evaluative decision-making, and the coordination of interdisciplinary teams under operational pressure. Simulations implemented online within international projects such as STRENCH 1 and 2 concentrated on the testing and analytical validation of tools and interoperability frameworks, thus integrating technological and procedural innovation into educational design.

In recent years, fully fledged wargames have increasingly been implemented at national level within Europe, reflecting a growing recognition of their pedagogical and operational value. Italy, Switzerland, and Liechtenstein for example have conducted comprehensive national exercises simulating complex emergency scenarios involving cultural heritage assets. Since 2024, Germany has joined this development through the Kulturgutretter project, which integrates cultural heritage protection into full-scale emergency management exercises. At the European level, the topic has also entered the ModEx (Modular Exercise) framework of the EU Civil Protection Mechanism—most notably with the first inclusion of a cultural heritage protection in Venice in 2024. All of these exercises have reaffirmed the critical importance of interfaces—both between the cultural heritage community and emergency responders and among the various emergency and "blue-light" organisations that do not routinely cooperate in daily operations. The recurring lesson across national and transnational contexts is clear: successful safeguarding of cultural heritage during crises depends on the establishment of robust, trained, and institutionalised cross-sectoral communication and coordination mechanisms.[84]

3.5 – Conclusion

The exercises conducted over the past years have clearly demonstrated that establishing a shared frame of reference and shared mental models—including common terminology, consistent situation interpretation, and explicit rules of responsibility—creates the foundation for trust, which is

[84] See inter alia De Siervo/Vicario 2023; Piacentini/Vicario 2023; Domenec de Cellès/Jakubeit 2023; Piacentini/Proietti 2023; Calabrò et al 2024; Cauliez et al 2024; Government of Liechtenstein 2024; Papa et al 2025; Domenec de Cellès/Rehberger 2025.

indispensable for the effective management of cultural property protection.[85] Such trust must be built among diverse actors who, under normal circumstances, operate in professional domains that rarely intersect. All exercises were therefore designed to familiarise the cultural heritage community with decision making processes and operational frameworks of emergency responders, doing so with minimal time investment and in a manner that encouraged intuitive, low-threshold engagement. Emergency services operate according to established command systems that have proven effective over centuries and are unlikely to be adapted for the cultural sector. Consequently, the training approach must focus on enabling cultural heritage actors to integrate themselves effectively into these existing systems and to cooperate successfully within them. This objective was pursued at different levels and degrees of complexity across the exercises outlined above, consistently yielding positive results. While participating emergency responders also benefited by expanding their own understanding of cultural property protection, they were not the primary target group of these trainings. Building on this foundation, the subsequent INACO project undertook an extensive survey among stakeholders from administrative and political bodies at local, regional, and national levels across Central European countries. The aim was to refine training and education pathways and to advance toward the definition of a professional figure of a risk manager—a specialist capable of acting as an interface not only between emergency responders and cultural heritage institutions, but also among different sectors of civil protection or civil defence. This role is envisaged as a crucial and permanent interface within everyday practice, ensuring that the principles and mechanisms of cultural property protection become an integral part of the broader system of civil emergency management.

[85] Mähler 2016 20; 102-111; see also chapter 2.

4 – INACO Survey on Interfaces and Training

The INACO online survey was developed to gather insights from a wide spectrum of stakeholders involved in cultural and natural heritage protection and disaster risk management. Its overarching aim was to support the development of a new professional profile—that of a risk manager for cultural and natural heritage assets, embedded within public administration.[86] In this context, the survey sought to identify the competences, training needs, and institutional frameworks required to establish such a role on a sustainable and interdisciplinary basis. Part of the project is the development of an online training course for the named risk managers. Accordingly, the survey included several questions related to training design and educational methods, extending from digital formats to live exercises and follow-up opportunities. In doing so, it established a conceptual and methodological link to the training formats and exercises discussed in Chapter 3, thereby completing the circle between practice-based learning and empirical assessment of training needs. The online survey targeted both direct project participants in the INACO project and a broader network of institutional actors engaged in cultural heritage governance, including representatives from administrative bodies, emergency services, research institutions, and professional associations. The responses collected provide an empirical foundation for analysing the current state of intersectoral cooperation and for refining training pathways that address the practical realities of risk management in cultural and natural heritage protection.

4.1 – Survey Participants

A total of fifty-nine participants completed the questionnaire, representing a demographically broad but overall experienced respondent group. The age distribution shows a clear concentration in the middle and upper professional age ranges. The largest proportion of respondents—around one-third—belonged to the 45–54 age group, followed by those

[86] For more details about the parts of the questionnaire dedicated to the professional risk manager figure see Kaiser 2025c.

aged 55–64, who together with the previous category account for nearly half of all participants. The next largest group comprised respondents aged 35–44, representing approximately one-fifth of the total sample. Younger professionals between 25 and 34 years formed a much smaller segment, indicating limited representation of early-career participants in the survey. At the upper end of the scale, a notable number of respondents were aged 65–74, and one participant identified as older than the listed options, illustrating continued professional engagement of senior experts even beyond typical retirement age.

Among the fifty-nine participants in the INACO questionnaire, the gender distribution reveals a moderate predominance of male respondents. The data indicate that thirty-three participants identified as male, 24 as female, and two selected "prefer not to say." One response recorded both "female, male"—interpreted as representing joint participation or a mixed institutional entry—was included qualitatively but not counted as a separate demographic category. Overall, approximately 56 percent of respondents were male and 41 percent female, with the remaining 3 percent declining to specify. This distribution broadly mirrors the gender balance typically observed in fields such as civil protection, technical administration, and heritage management, where male representation remains somewhat higher, particularly at senior administrative and operational levels. Taken together with the age distribution, these demographic findings confirm that the questionnaire successfully reached a diverse but experienced stakeholder group, representing multiple generations and both genders, thereby providing a balanced empirical basis for the subsequent thematic analysis.

The geographical coverage of responses reflects a transnational engagement with the topic. Contributions were received from eleven countries, namely Australia, Austria, Croatia, the Czech Republic, Germany, Hungary, Italy, Poland, Romania, Slovakia, and Slovenia.

In terms of institutional affiliation, 27% of respondents represented INACO project partners, while a further 5% were associated strategic partners (ASPs). Administrative bodies at various levels accounted for the largest share of respondents (42%), complemented by 27% of participants

from other institutions, such as cultural organizations, research bodies, and independent agencies.[87]

4.2 – Affiliation with Emergency Services

Two related questions assessed the respondents' current and past affiliations with emergency or civil protection services. The responses provide insight into the operational backgrounds present within the sample. A clear majority of participants reported no current membership in emergency or disaster management organisations. Out of the fifty-nine total respondents, 47 individuals (approximately 80%) stated that they are not presently affiliated with any such service. A small number provided neutral or blank responses (e.g., "–" or "we don't"), which can be interpreted as negative in this context. Conversely, twelve respondents (around 20%) confirmed active involvement in an emergency service. Their affiliations reveal substantial institutional diversity, including:

- Civil protection and civil defence units, such as municipal civil protection groups or regional civil defence organisations.
- Firefighting services and disaster management departments, often integrated within broader risk-management frameworks.
- Specialised technical services, including torrent and avalanche control, mountain rescue, and water management within civil protection structures.
- Professional crisis management entities, such as urban or regional crisis management centres (e.g., the Crisis Management Center of the City of Kraków).
- Technical and scientific support organisations, for instance the Croatian Centre for Earthquake Engineering, as well as ad hoc consulting roles on specific emergency-related issues.

[87] For these and the following percentages: The survey allowed multiple answers to individual questions. In this case, a project partner institution of INACO is an administrative body, which lead to two answers for this question.

When asked about previous membership, the share of affirmative responses increased notably. Twenty-two participants (approximately 37%) indicated that they had formerly served in an emergency or civil protection organisation, while 37 respondents (about 63%) stated that they had not. The overlap between these and current memberships suggests that some respondents maintain long-standing engagement with crisis management, either continuously or through different institutional affiliations over time.

Taken together, these findings show that although direct operational membership is limited, a substantial proportion of respondents possess prior hands-on experience in emergency or disaster management. This background constitutes a valuable resource for interface-building between the heritage and response communities, reinforcing the premise that effective protection of cultural and natural heritage requires both strategic knowledge and practical insight into emergency response mechanisms.

4.3 – Current Function and Job Description

The responses to the question about current function and job description reveal a highly heterogeneous sample in terms of professional affiliation, position, and disciplinary background. This diversity confirms that the survey successfully reached stakeholders across the full spectrum of cultural heritage protection, environmental management, and disaster response. At the academic and research level, several respondents identified themselves as researchers, senior researchers, lecturers, or scientific staff within universities and specialised institutes. This group demonstrates the active engagement of the scientific community in heritage protection and climate adaptation, contributing theoretical, methodological, and empirical expertise to the field. A substantial proportion of responses originated from administrative and governmental institutions, spanning local administrations, regional offices, and national ministries. The functions represented include senior positions such as directors, deputy directors, heads of departments, and unit leaders in domains such as water management, territorial planning, environmental protection, and civil protection. The group also encompasses civil servants with technical or planning responsibilities, including settlement development officers, regional project

managers, and inspectors. The survey also engaged specialised practitioners in disaster management and emergency response. Respondents included officers for disaster management, branch managers within firefighting services, civil protection directors, and technical officers in environmental and water management. A smaller but notable share of respondents were project managers and coordinators involved in international, regional, or EU-funded frameworks. Their portfolios cover climate protection, risk management, and heritage resilience, positioning them as crucial intermediaries between policy development, research, and operational implementation. They frequently operate at the interface between scientific knowledge and administrative decision-making, thereby linking conceptual innovation with institutional practice. In addition, the dataset includes sectoral specialists whose expertise lies outside heritage protection in the narrow sense but who contribute significantly to resilience building. This category comprises veterinarians, agronomists, architects, geographers, environmental directors, and technical instructors. Finally, a small number of participants identified as independent experts or retired professionals.

4.4 – Link to Cultural (and Natural) Heritage

When asked about existing professional links to cultural and natural heritage the survey confirms that a substantial majority of participants maintain either a direct or indirect professional connection to the protection, management, or study of cultural and natural heritage. The breadth of replies reflects not only disciplinary diversity but also the multiple ways in which cultural and natural heritage concerns are integrated into professional practice across sectors ranging from conservation and environmental protection to infrastructure development and regional governance.

A considerable number of respondents reported that their core professional duties are explicitly related to the protection, conservation, or management of cultural heritage. This group includes restoration and conservation experts, such as monument adaptation specialists, museum conservators, and conservation engineers. Several participants also indicated that heritage protection has become part of their responsibilities, particularly through risk assessments, inter-ministerial cooperation projects, and

emergency exercises addressing heritage assets. In addition, local and municipal officials highlighted their involvement in the management of protected cultural sites, UNESCO World Heritage properties, and architectural heritage at the city or regional level.

A significant proportion of respondents described their connection to cultural or natural heritage in relation to landscape management and natural heritage preservation, where cultural and ecological values are closely intertwined. Examples include projects such as the Wässerwiesen Project, which safeguards traditional irrigation systems and their associated ecosystem services.[88] Other respondents referred to regional initiatives promoting resilient water management in the Seewinkel and Lake Neusiedl area (a UNESCO site), as well as programmes aimed at conserving biodiversity in aquatic and forest ecosystems. Activities within forestry, fisheries, agronomy, and environmental protection were frequently cited as contributing simultaneously to the preservation of cultural landscapes and the stability of natural systems.

A further segment of the sample linked their professional engagement through research and higher education. These respondents work in architecture, conservation, and environmental sciences, conducting studies and projects related to climate change and risk mitigation. Examples include doctoral research on the role of cultural heritage in regional development, university courses addressing the intersection of culture and environment, and research projects analysing hazards and climate-change impacts on heritage assets. Several participants emphasised their use of satellite remote sensing and geospatial data for natural hazard characterisation and climate-related risk assessment, illustrating the scientific depth and technological integration of current cultural and natural heritage research.

Some respondents described their link to cultural and natural heritage as indirect, emerging primarily from their institutional mandates rather than from heritage-specific responsibilities. For example, water management authorities incorporate heritage considerations when developing flood-protection measures, landscape planning frameworks, or climate

[88] Landratsamt Forchheim 2025.

adaptation strategies. Likewise, infrastructure development agencies are obliged to integrate heritage concerns during planning and implementation phases, ensuring compliance with environmental and cultural regulations. Agencies responsible for extreme weather and natural hazards, such as flood or heavy rainfall management, also recognised cultural and natural heritage as vulnerable assets within their broader field of responsibility.

Several respondents approached cultural and natural heritage from the perspective of governance and spatial planning, highlighting its inclusion as a cross-cutting policy concern. Their reported duties include evaluating projects with regard to their impact on cultural landscapes, preserving landscape attributes for future generations, and supervising legally protected sites and areas. Others referred to capacity-building and governance initiatives for climate adaptation that explicitly integrate cultural and natural heritage dimensions into strategic frameworks.

Taken together, the responses demonstrate that the protection of cultural and natural heritage extends far beyond narrowly defined conservation roles. Instead, cultural and natural heritage is interwoven into a wide spectrum of professional activities, ranging from hands-on restoration and emergency response to research, planning, and policy development. Traditional practices, such as historical irrigation systems, exemplify the inherent interdependence of cultural and natural dimensions within heritage protection.

This distribution points to two key take-aways:

1. Embeddedness of cultural and natural heritage across sectors – Cultural and natural heritage protection is frequently a secondary yet indispensable component of broader domains such as water management, disaster risk reduction, or urban planning.

2. Potential for interdisciplinary cooperation – The overlapping mandates and professional intersections identified highlight the need for structured interfaces linking heritage specialists, environmental managers, and emergency responders, transforming incidental collaboration into systematic cooperation.

4.5 – Administrative Level for the Role of Heritage Risk Manager

When asked at which administrative level a risk manager for cultural (and natural) heritage should be situated, respondents provided a diverse set of answers, reflecting different interpretations of how responsibilities for heritage protection and risk management should be distributed across governance tiers. The responses nonetheless reveal clear tendencies toward a multi-level and integrated approach, with strong emphasis on local and regional implementation capacity.

The majority of participants—around two-thirds (approximately 65%)—identified the local and regional levels as the most appropriate administrative settings for the cultural and natural heritage risk manager. Many respondents explicitly selected both levels simultaneously, suggesting that effective protection requires close coordination between municipal operational actors and regional planning or administrative structures. This view highlights the need for risk managers to combine site-level awareness with the ability to integrate heritage concerns into broader regional risk and spatial planning frameworks.

A smaller but notable group—about 15% of respondents—extended this multi-level concept to include the national level, advocating for a three-tiered model that links local implementation with regional coordination and national strategic oversight. According to this view, the national level should provide policy coherence, standardisation, and access to funding mechanisms, while day-to-day coordination and response capacities remain decentralised.

Around 10% of responses indicated a preference for a regional-only placement, viewing it as the most efficient administrative tier for integrating cultural and natural heritage protection into civil protection systems and for supporting smaller municipalities. Conversely, approximately 8–10% argued for a strictly local-level role, emphasising the importance of proximity to heritage assets, community engagement, and the operational realities of emergency response. Only a few isolated answers (around 3%) proposed a solely national assignment, suggesting that risk managers at this level should focus on overarching governance, capacity-building, and inter-agency coordination rather than direct intervention.

Taken together, these results demonstrate a clear preference for decentralised structures coupled with vertical coordination across administrative levels. Respondents conceive the cultural and natural heritage risk manager as a bridging and interface function, operating primarily at the local and regional levels, but connected to national frameworks that provide guidance and resources. This distribution reflects the broader consensus throughout the survey that effective cultural and natural heritage protection depends on proximity, inter-institutional linkage, and coherence across governance scales, ensuring that technical expertise, operational capacity, and policy authority are mutually reinforcing.

4.6 – Coordination Skills Required for Risk Managers

When asked about the competencies required of risk managers responsible for coordinating multi-actor processes in the protection of cultural and natural heritage, respondents with experience in emergency services, crisis management, and heritage administration identified a broad and interrelated set of skills necessary for effective coordination in complex, multi-stakeholder environments. The responses converge around five overarching categories: communication and interpersonal competencies, leadership and coordination skills, analytical and strategic thinking, professional and technical expertise, and personal attributes related to adaptability and resilience.

Communication and interpersonal competencies: Across all responses, communication skills were repeatedly emphasised as the most critical asset of a risk manager. Respondents described effective risk managers as "excellent communicators" capable of transmitting information clearly, mediating between divergent perspectives, and bridging professional and institutional cultures. Essential sub-skills include social competence, empathy, and cultural awareness when working with heterogeneous stakeholder groups. Negotiation and consensus-building abilities were also frequently mentioned, alongside advocacy and motivational capacities that enable risk managers to secure cooperation under pressure and maintain engagement during extended or stressful situations.

Leadership and coordination skills: Respondents—many of whom drew on direct experience from flood response or disaster management contexts—underlined the importance of leadership as a core quality. Effective risk managers must possess the ability to coordinate multiple agencies simultaneously, including technical services, civil protection units, and administrative bodies. They must demonstrate supervisory competence, ensure clear role definition and task allocation, and inspire confidence and reliability within their teams. Several respondents emphasised the capacity to act decisively under stress as essential for maintaining operational cohesion and continuity in emergencies affecting heritage assets.

Analytical and strategic thinking: Many responses highlighted the need for analytical thinking and systems-level awareness. Risk managers are expected to anticipate threats through structured risk assessment, scenario planning, and early warning processes. The ability to identify problems rapidly, propose effective solutions, and balance competing priorities was seen as indispensable. Respondents referred to the necessity of adopting a "broad overview" when evaluating risks, resources, and interdependencies. Such strategic foresight and systemic understanding were viewed as central to long-term resilience-building in heritage protection.

Professional and technical expertise: Technical competence was regarded as a precondition for credibility and effectiveness. Respondents stressed that risk managers must combine professional experience in fields such as risk management, emergency services, or conservation with an understanding of administrative and regulatory frameworks. This dual knowledge allows them to bridge the gap between policy and practice, translating legislative requirements and strategic plans into actionable procedures. Familiarity with institutional structures, legal mandates, and operational standards was cited as essential for navigating complex bureaucratic and technical environments.

Personal attributes and adaptive capacities: Finally, respondents placed significant emphasis on personal qualities that distinguish effective risk managers in high-pressure situations. These include problem-solving ability, situational awareness, and adaptability in rapidly evolving circumstances. Creativity, resilience, and a strong orientation toward results and

accountability were likewise identified as key attributes. Emotional stability, confidence, and reliability were viewed as critical for maintaining team morale and ensuring sustained performance during crises.

Taken together, the responses portray the risk manager as a hybrid professional figure—simultaneously a communicator, strategist, technical expert, and leader. The role requires not only domain-specific expertise but also a high degree of interdisciplinarity, flexibility, and cultural sensitivity, ensuring that the protection of cultural and natural heritage remains visible within broader emergency and resilience frameworks. Risk managers for cultural and natural heritage are seen at the interface of all agencies and communities engaged in and necessary for the protection of cultural and natural heritage. Importantly, respondents highlighted that empathy, authority, and systems-level understanding must coexist within this role. The combination of these qualities enables risk managers to build trust among stakeholders, facilitate coherent multi-agency cooperation, and ensure that both the human and cultural dimensions of heritage protection are addressed during crises.

4.7 – Training Approaches for Developing Interface Competence

Respondents were asked how the training of future risk managers for cultural and natural heritage should address the challenge of bridging the knowledge gap between heritage professionals and emergency service organisations. As multiple predefined responses were possible, the data reveal both the frequency of preferred options and the tendency of participants to favour combined or complementary approaches.

The results show a clear preference for practice-oriented and cooperative learning formats, with three dominant categories emerging from the responses:

1. Joint exercises with tailored scenarios were selected by the majority of respondents—approximately 40% of all choices recorded. These answers emphasised the importance of applying theoretical knowledge in realistic, context-specific simulations that replicate emergencies affecting cultural or natural heritage assets. Participants underlined that such exercises allow both sides to gain

insight into each other's procedures, to test communication under time pressure, and to foster trust between disciplines.

2. Joint workshops bringing both sides together to share challenges and perspectives were almost equally frequent, accounting for roughly one-third of all selections. Respondents viewed workshops as essential spaces for mutual learning, dialogue, and conceptual alignment, providing a preparatory stage for later exercises. They allow heritage professionals to articulate conservation priorities and constraints, while emergency responders explain operational requirements and command structures.

3. Introductory modules on organisational structures, standard operating procedures, and the significance of cultural and natural heritage represented around one-quarter of all responses. These selections highlight the continued need for foundational knowledge transfer, ensuring that each professional community understands the basic principles and institutional logic of the other. Such introductions were seen as particularly important for participants without prior exposure to the counterpart's work environment.

A small number of respondents provided additional input to the topic, adding integrated or sequential formats that combine the three approaches. Their comments included formulations such as *"all of the above," "workshop including an exercise,"* or *"introduction, workshop, and exercises for different situations."* These statements reinforce the perception that no single method suffices on its own, and that effective interface training must blend conceptual instruction, dialogue-based learning, and experiential simulation.

Taken together, the results indicate a strong consensus in favour of participatory, experience-based training. Respondents clearly associate successful competence development with joint, scenario-driven exercises and structured exchange between disciplines, rather than with purely theoretical instruction. The proposed formats correspond closely with adult-learning principles and Bloom's higher cognitive domains, where

understanding, application, and analysis are achieved through active engagement.[89]

4.8 – Recommended Duration of Training

The responses to the question addressing the recommended duration of training for risk managers in cultural and natural heritage revealed a wide spectrum of opinions. The variation reflects differing perceptions of the role's complexity, the baseline qualifications of prospective trainees, and the expected depth of professional preparation. The responses can be categorised into four main duration ranges, supplemented by a set of conditional remarks.

Short-duration training (≤ 20 hours)

Several respondents proposed compact introductory programmes ranging from two to twenty hours. Such formats are typically conceived as awareness-raising or sensitisation courses, suitable for professionals who already possess relevant expertise in administration, heritage management, or emergency response. They are often described as modular or distributed sessions—for example, four hours per week or several short blocks—designed to introduce the basic principles of cultural and natural heritage risk management without requiring substantial time investment.

Moderate-duration training (24–60 hours)

The majority of responses converged around a moderate training range of 24 to 60 hours, roughly equivalent to one to two working weeks. Commonly cited figures included 40 hours and 60 hours, frequently equated with the structure of a one-week intensive course. This duration is

[89] See also Chapter 2. The outcomes correlate with surveys undertaken by the author during the re-organization of the study programmes of the Center for Cultural Property Protection in 2024, which were conducted among all students and participants of short and long-term cultural property protection programmes since 2016. 60% considered the collaboration between the heritage and emergency response sector 'very important', while 40% deemed it as 'important'. 80% rated practical exercises as 'very important' and 20% as 'important'. Regarding training settings, 80% stressed the importance of a mixture of theoretical and practical lessons, whereas 20% would opt for live exercises only, with no theory and only practical sessions. (Kaiser 2025d, 92-93).

sufficient to cover theoretical foundations, coordination and communication skills, and applied case studies, while remaining manageable for professionals within administrative institutions. This mid-range duration thus represents a practical compromise between depth of content and feasibility for working practitioners.

Extended training (80–160 hours)

A smaller but notable group recommended extended training programmes between 80 and 160 hours, allowing for more substantial practice-oriented modules. These suggestions reflect the need for experiential learning components, such as live exercises, table-top simulations, and interdisciplinary cooperation scenarios. Examples included formats such as "eight hours per week over six weeks" (48 hours) or "ten sessions of eight hours each" (80 hours). Respondents advocating this range viewed structured, medium-term capacity-building as essential to ensuring operational competence in complex cultural and natural heritage risk contexts.

Comprehensive programmes (200–1000 hours)

At the upper end of the spectrum, a minority of respondents proposed comprehensive programmes lasting between 200 and 1000 hours. Individual suggestions of 720 hours and 1000 hours indicate an ambition to develop full professional requalification frameworks, comparable to university-level or postgraduate certification programmes. These responses reflect the view that cultural and natural heritage risk managers should possess deep multidisciplinary expertise, encompassing technical, legal, and cultural knowledge, which can only be acquired through long-term and immersive education.

Conditional responses

Several participants qualified their recommendations by noting that the appropriate duration depends on a range of contextual factors, including:

- The baseline preparedness and prior professional experience of the participants;
- The scope and depth of the curriculum;

- Whether the programme is designed as a standalone qualification or as an introductory module to be complemented by practical, on-the-job training.

These conditional responses underline the importance of aligning training duration with both entry-level competences and institutional needs, avoiding a one-size-fits-all approach.

Overall, the distribution of responses suggests that, despite some outliers, the central tendency lies in the range of 40 to 60 hours. This duration corresponds to a one-week intensive course, or a modular training programme extended over several weeks. Stakeholders therefore regard cultural and natural heritage risk management as requiring substantive but targeted training—more comprehensive than a brief awareness session yet more focused than a full professional requalification.

Two main implications emerge from the data:

1. Tiered training formats may be most effective, combining a core 40–60-hour module with optional advanced units (up to 120–160 hours) for specialists seeking deeper expertise.

2. Flexibility and modularity are essential. Given the diversity of professional backgrounds among potential participants, adaptable course structures that accommodate varying entry levels can ensure both accessibility and comprehensiveness in the training of future cultural and natural heritage risk managers.

4.9 – Online Training

When asked what they would prefer, the majority of the respondents (approximately 80%) opted for blended learning formats with parts of the training online and parts on-site in presence, as opposed to online or in-presence training only. Following up questions targeted online training specifically, with asking about the best and worst associations to come to mind. Aspects of online training display a broad spectrum of associations in the answers given by the respondents, encompassing both positive and negative perceptions. The diversity of terms reflects the dual nature of online learning as both an enabling and a potentially limiting format.

With regard to positive aspects, the collected keywords can be grouped into four overarching thematic categories, corresponding to the major patterns of perception observed across the dataset.

Efficiency and convenience: A substantial number of respondents associated online training with efficiency, practicality, and convenience. Frequently mentioned words included timesaving, cost-effective, comfortable, efficient, quick, and accessible. These responses highlight the perceived logistical advantages of digital learning, such as reduced travel time, lower organisational costs, and ease of participation across distances. The emphasis on scalability and flexibility of scheduling suggests that many participants view online formats as a pragmatic solution, particularly for professionals balancing full-time employment with further training obligations.

Accessibility and flexibility: Closely related to the previous category, a second cluster of responses underscored the accessibility and flexibility of online training. Keywords such as accessibility, flexibility, decentralisation, available anytime, transferable, and scalable point to the format's ability to reach geographically dispersed or institutionally diverse audiences. These responses indicate that participants appreciate online delivery as a means of democratising participation, enabling inclusion of actors who might otherwise be excluded due to logistical, financial, or organisational constraints.

Engagement and pedagogical quality: Several respondents associated online training with qualities linked to effective learning design and participant engagement. Terms such as interactive, involving, visually attractive, clarity, good speakers, practical examples, teamwork, discussion, and feedback possibilities were cited as characteristics of well-structured online courses. These associations highlight that pedagogical quality—rather than the digital format itself—is decisive for the success of online learning. Interactivity, collaboration, and visual engagement emerged as essential factors in sustaining motivation and ensuring that learning outcomes are achieved.

Broader qualities and values: Finally, several respondents framed online training in relation to broader values and institutional goals. Terms

such as sustainable, environmentally conscious, inclusive, network, best practices, and interdisciplinarity suggest that online formats are seen as more than mere substitutes for in-person teaching. Instead, they are valued as platforms for international and cross-sectoral collaboration, fostering exchange and community-building across disciplinary and geographic boundaries.

With regard to negative aspects, the identified drawbacks can be grouped into five overarching thematic categories, corresponding to the major patterns of perception observed across the dataset.

Lack of personal interaction and networking: The most frequently cited concern was the absence of direct personal contact. Respondents repeatedly noted that online formats often lead to impersonal experiences, social isolation, and a reduction in opportunities for networking and informal exchange. Words such as impersonal, isolated, one-sided, and less personal appeared frequently in the dataset. These comments underscore the importance of relationship-building, peer learning, and informal knowledge transfer, which participants perceive as essential elements missing from online environments.

Low engagement and monotony: Many participants associated online training with low engagement and repetitive delivery. Sessions were described as boring, monotonous, long, uninspired, and overly theoretical. Respondents criticised the lack of interactivity, uninspired presentation styles, and poor visual materials, often citing frontal lectures and unengaging slides as examples. These conditions were said to cause rapid decline in motivation, passive participation, and difficulty maintaining attention throughout the training.

Limited practical and experiential learning: A recurring critique concerned the absence of practical components and field-based experiences. Participants stressed that online training provides few opportunities for hands-on learning and that theoretical input cannot easily be translated into practice. The impossibility of conducting real-world exercises or simulations was seen as particularly problematic in disciplines such as risk management and heritage protection, which rely heavily on experiential learning and applied competence development.

Structural and pedagogical weaknesses: Several respondents drew attention to organisational and instructional shortcomings. Reported issues included poorly structured sessions, weak time management, and excessive theoretical content. Some described courses as too long, bureaucratic, or overly formalistic, lacking interaction and motivational balance. Such characteristics were perceived to result in limited learning outcomes and a sense that online training was conducted merely to fulfil formal requirements rather than to foster genuine knowledge transfer.

Technical and accessibility issues: Finally, respondents frequently mentioned technical barriers as sources of frustration. These included unstable internet connections, poor sound or video quality, platform malfunctions, and compatibility issues. In addition, external distractions in the workplace and the need for high self-discipline were cited as further obstacles to effective participation. Such factors contribute to a general perception that the online environment, while convenient, is vulnerable to disruption and variable in quality.

Taken together, the results indicate a dual perception of online training among respondents. On one hand, digital formats are valued for their practical efficiency, accessibility, and inclusiveness. On the other, participants identified risks of monotony, impersonality, and limited engagement, suggesting that the success of online education depends heavily on didactic quality and interactivity.

The three most frequently recurring conceptual clusters were:

1. Efficiency and convenience – time-saving, cost-effective, accessible.
2. Flexibility and inclusion – flexible, scalable, enabling broad participation.
3. Engagement versus monotony – interactive and interesting when well designed, but boring and impersonal when poorly implemented.

These findings underscore that while online training is widely accepted as a practical and inclusive mode of delivery, its effectiveness is contingent

upon pedagogical design and learner engagement. Without careful structuring and interactive elements, the efficiency gains of digital learning risk being offset by reduced attention and participation.

4.10 – Perceived Outcomes and Added Value of Live Exercises

Respondents were asked which outcomes they considered most important for a live exercise—beyond the benefits of practical tool testing and network building. Participants could select multiple options from four predefined categories: (1) testing of protocols and procedures; (2) development of strategies and plans; (3) working under pressure; (4) getting to know the way of work and approach of colleagues or the respective other side (cultural or natural heritage and emergency response).

The distribution of responses shows a clear preference for experiential and interface-oriented outcomes, reflecting the practical expectations associated with live exercises in cultural and natural heritage protection. The most frequently selected option was (1) testing of protocols and procedures, chosen by a large majority of participants. Respondents recognised live exercises as essential opportunities to verify existing plans, assess coordination mechanisms, and identify procedural weaknesses. This choice underscores the perception of exercises as testing grounds for operational readiness rather than symbolic or purely educational events. Nearly as many respondents selected (4) getting to know the way of work and approach of colleagues or the respective other side, highlighting that mutual understanding between cultural heritage professionals and emergency responders is viewed as an equally valuable outcome. Live exercises are thus seen as platforms for building trust, shared terminology, and an appreciation of differing institutional logics—a prerequisite for effective cooperation in real emergencies. (2) Development of strategies and plans ranked third but still appeared in a substantial portion of responses. This reflects the strategic function of exercises as spaces not only for validation but also for joint planning and procedural innovation, where new frameworks and preparedness measures can be elaborated collaboratively. Finally, (3) working under pressure was somewhat less frequently selected but remained a significant element across responses. Participants acknowledged the importance of simulating decision-making under time constraints,

uncertainty, and stress, to prepare for the cognitive and emotional challenges of actual crisis environments. A small number of respondents took the possibility to expand or comment on the listed categories. Their qualitative remarks included, for instance, the importance of testing the practical feasibility of measures, stimulating creativity ("unleash the imagination"), and combining all listed objectives in a single, integrated exercise format. These comments reinforce the interpretation that respondents regard live exercises as multidimensional learning environments where operational testing, interpersonal exchange, and strategic reflection complement one another.

In summary, the pattern of responses demonstrates a strong consensus:

1. Testing of protocols and procedures is perceived as the core outcome of live exercises.
2. Mutual understanding and collaboration across professional cultures is seen as equally essential for success.
3. Strategic development and psychological resilience under pressure are valued as secondary but reinforcing dimensions.

4.11 – Structure of an Ideal Live Exercise

Respondents were asked to indicate what format they considered most suitable for an ideal live exercise in the field of cultural and natural heritage protection. Multiple predefined options were provided, combining different durations and learning phases. The overall distribution of answers shows a clear preference for blended and sequential learning formats, combining preparatory instruction with an intensive on-site component. The most frequently selected configuration—chosen by approximately two-thirds of respondents (around 65%)—was "two to three days of theoretical input on site followed by one day of challenging practical exercise." This option reflects a strong consensus that participants require sufficient conceptual and procedural preparation before being confronted with a realistic simulation. Respondents implicitly emphasised the value of a progressive learning trajectory, moving from structured classroom-based input to applied field experience within the same event. A second,

also widely supported format (around 46% of respondents) was “online pre-learning”, often selected in combination with the previous option. This highlights the perceived usefulness of digital preparatory modules to familiarise participants with core terminology, background knowledge, and institutional frameworks prior to the live event. Such preparatory work allows more time during the on-site phase for scenario-based teamwork and decision-making. About one-quarter to one-third of respondents favoured an “intensive exercise phase on site” (32%) or “two to three densely packed days of exercise” (24%). These selections underline the importance of immersion and realism, suggesting that participants value opportunities to test procedures and collaboration under time pressure. For many, such condensed, high-intensity simulations were seen as the most effective way to reproduce the operational environment of real crises. Finally, roughly one-quarter selected “only practical exercise phase on site” (17%) or “theoretical information on site” (19%) as stand-alone options, though these were often combined with other answers. This smaller subset indicates some variation in expectations—ranging from those who prefer exclusively hands-on training to those who consider theoretical grounding sufficient within the exercise context itself.

Taken together, the distribution demonstrates a clear preference for a mixed-mode design, in which participants engage in online pre-learning, proceed to structured on-site instruction, and culminate in a challenging, realistic exercise scenario. Respondents thus favour progressive, blended, and experiential learning architectures over purely theoretical or stand-alone practical formats. This finding aligns closely with broader trends in adult education and experiential learning theory: successful exercises should combine cognitive preparation, collaborative problem-solving, and embodied experience to ensure both conceptual understanding and operational competence.[90] In effect, respondents envision the ideal live exercise as a four-phase learning continuum—pre-learning, theoretical foundation, interactive immersion, and reflective consolidation—integrating the strengths of classroom, digital, and field-based pedagogy.

[90] See chapter 2.

4.12 – Importance of Exercise Location

Respondents were asked to evaluate how important the destination or location of a live exercise is to them. Four predefined response options were provided: (1) *the location does not matter to me at all*; (2) *it needs to be easily reached with public transport*; (3) *costs are a topic – the exercise should not be set in an area which is too expensive (i.e., accommodation, travel)*; (4) *it is important to have the exercise in a touristically important area, so I can spend time visiting before or after the exercise*.

The results show a strongly pragmatic orientation among respondents. Convenience, accessibility, and affordability clearly outweigh personal or touristic considerations. Approximately 24% of all participants selected (1) *the location does not matter to me at all*. This group appears primarily motivated by professional interest rather than destination appeal. Their responses suggest that content, organisation, and learning outcomes are valued far more highly than geographical setting. A slightly larger share—around 50%—chose (2) *it needs to be easily reached with public transport*. Accessibility was thus identified as the single most important logistical factor, reflecting the preference for destinations that minimise travel time and complexity, particularly for participants travelling across Central Europe. (3) c*ost considerations* also featured prominently, appearing in approximately 46% of responses, often in combination with accessibility. Many respondents emphasised that affordability of accommodation and travel is a decisive precondition for participation. This mirrors broader findings from earlier questions, where institutional support and funding availability were cited as key enablers of training attendance. By contrast, only about 15% of respondents considered it important that the exercise be located in a touristically attractive area, enabling them to combine professional participation with leisure activities. This indicates that while a minority appreciates the opportunity for cultural or personal enrichment, most participants approach live exercises as professional and purpose-driven events, not as occasions for recreation. Taken together, these findings suggest that ease of access and cost-efficiency are decisive factors for maximising participation in live exercises. Organisers should therefore prioritise centrally located, well-connected, and affordable sites, ensuring inclusivity and broad representation across stakeholder groups, while

recognising that destination prestige is of marginal importance to most participants.

4.13 – Accepted Travel Time and Distance

When asked whether they would be willing to travel within Central Europe to participate in a two- to three-day live exercise, the majority of respondents expressed a positive attitude, though many added conditional remarks regarding time, distance, or destination. Approximately 58% stated a clear *"yes,"* while a further 44% responded *"depends on the travel time and distance"* or *"depends on the destination."* Only about 15% indicated that they would not be willing to travel for such an event. These results confirm a broad willingness to participate in transnational exercises, provided that logistical feasibility and travel costs remain reasonable. They also underscore that willingness is not unconditional: for most participants, accessibility and time efficiency are decisive factors influencing participation. This finding introduces the more detailed analysis in the following section on acceptable travel time and distance. While participants widely acknowledged the added value of in-person engagement, their readiness to travel was clearly conditioned by practical considerations such as time, cost, accessibility, and institutional approval. The answers on acceptable travel time and distance can be grouped into five main categories, representing distinct patterns of travel tolerance and motivational factors.

No limitation / high willingness to travel: Several respondents expressed unrestricted willingness to travel for relevant training opportunities. Statements such as *"all times, all distances," "no limits,"* and *"if costs are covered, I will go anywhere in Central Europe"* illustrate a high level of intrinsic motivation among some participants. This group is characterised by the belief that training quality and relevance outweigh logistical challenges, provided that financial and institutional support—especially reimbursement of travel expenses—is ensured.

Conditional willingness based on costs and accessibility: A large proportion of respondents described their willingness to travel as conditional, depending primarily on cost-efficiency and accessibility. Their readiness to

participate was linked to the availability of funding to cover travel and accommodation expenses, the ease of access via airports or railway networks, and the quality and thematic relevance of the training programme, particularly regarding coordination between cultural heritage and crisis management. These responses highlight the importance of contextual feasibility—participants are more inclined to attend live exercises when the logistical and financial burdens are proportionate to the perceived professional benefit.

Moderate travel tolerance (same-day or short journeys): Many respondents indicated a moderate level of travel tolerance, typically defining acceptable limits as four to six hours of travel time or approximately 200 to 400 kilometres. Typical comments such as *"four hours travel time by train"* or *"five hours public transport"* reflect pragmatic considerations, balancing professional duties and travel commitments. This category represents the modal preference among respondents, defining the effective catchment area for regional training events.

Extended travel tolerance (multi-day commitment): A smaller number of participants reported a higher tolerance for longer journeys and multi-day absences, indicating willingness to travel for up to eight hours or to commit to three to five days away from their workplace. One respondent cited *"maximum one week – five workdays"* as an acceptable threshold, suggesting that longer, immersive courses are feasible when appropriately structured and justified. For these respondents, content quality, networking potential, and experiential depth appear to outweigh logistical challenges.

Organizational and institutional constraints: Several responses emphasised that the decisive factor is not personal willingness but institutional authorization. For participants within governmental or emergency structures, attendance often requires the approval of supervisors or departmental leadership (e.g., within civil protection directorates). This underscores that organizational policy, staff release, and budgetary approval can determine actual participation more strongly than individual motivation.

Overall, the data reveal three key trends: (1) High intrinsic motivation. A subset of participants expressed full willingness to travel anywhere

within Central Europe, provided that funding and relevance are ensured. (2) Modal preference for moderate distances. The majority of respondents indicated an acceptable range of 4–6 hours or 200–400 km, balancing accessibility with professional obligations. (3) Institutional dependency. Participation often depends less on personal inclination than on institutional support, including cost coverage and official permission.

From a training design perspective, these findings imply several practical considerations: (1) Regional training hubs across Central Europe could maximise participation by minimising travel barriers and time commitments. (2) Funding mechanisms for travel and accommodation constitute a critical enabling factor. (3) For longer or more intensive exercises, securing formal institutional buy-in and clear justification for staff release are essential to ensure sustainable participation.

4.14 – Necessary Participants for a Successful Exercise

When asked who needs to be present at an exercise to make it a success and worthwhile for the participants, respondents converge on a clear insight: the success and impact of live exercises depend fundamentally on who participates. Respondents consistently emphasised that the composition of the participant group determines both the credibility and the operational relevance of an exercise. Four principal categories of actors were identified as indispensable for ensuring meaningful outcomes and sustainable learning effects.

Subject-matter experts and experienced practitioners: The most frequently cited prerequisite for effective exercises was the presence of experts combining theoretical and practical knowledge. Respondents highlighted the need to involve (1) experienced professionals in risk management and disaster response; (2) specialists from cultural and natural heritage management, including site managers, conservators, architects, and environmental managers; (3) practitioners with direct experience of past disasters affecting heritage sites; and (4) recognised international experts from organisations such as Blue Shield, ICCROM, and UNESCO. These participants are viewed as crucial for bridging theory and practice, contextualising technical content, and providing guidance rooted in real-world

experience. Their presence enhances the knowledge transfer within exercises and lends authority to the training setting.

Stakeholders with decision-making authority: Many responses underscored the importance of involving actors with managerial or political responsibilities. This includes individuals with strategic or administrative mandates within municipalities, regional and national administrations, as well as political representatives and high-ranking officials capable of authorising or implementing policy changes. Their engagement ensures that exercises are not only educational in nature but also institutionally anchored, allowing outcomes to influence governance frameworks and policy development.

Emergency and civil protection services: Another consistently highlighted group comprised representatives of the emergency response sector—including civil protection officers, firefighters, first responders, and military personnel or other emergency services involved in crisis management. Their participation was described as indispensable for several reasons: it enables the simulation of realistic operational environments, strengthens cross-sectoral interfaces, and helps heritage professionals understand how emergency command structures function in practice. The inclusion of emergency actors ensures that exercises move beyond theoretical modelling to reflect the procedural realities of crisis operations.

Local and site-specific stakeholders: Respondents also attached high importance to the participation of local actors directly responsible for, or affected by, heritage assets. This group includes municipal officials, site managers, owners of cultural or natural heritage properties, and representatives of pilot sites or regional institutions. Their involvement brings contextual and place-based knowledge into the exercise, ensuring that scenarios are grounded in realistic risk environments and that results can be translated into site-level preparedness.

Taken together, the responses indicate that participants perceive live exercises as worthwhile when they bring together a comprehensive, multi-actor constellation. The following four dimensions are regarded as essential: (1) Expertise – representation of both heritage specialists and risk-management professionals. (2) Authority – inclusion of decision-makers

with policy or resource-allocation powers. (3) Operational capacity – engagement of civil protection and emergency responders. (4) Local knowledge – integration of site managers, owners, and local officials.

4.15 – Conclusion

The evaluation of the INACO survey provides a detailed empirical picture of the professional landscape, training expectations, and practical considerations relevant to the emerging role of risk managers in cultural and natural heritage protection. The responses reveal a broad and diverse stakeholder environment encompassing academic researchers, public administrators, emergency services, and heritage professionals—reflecting the inherently interdisciplinary character of the field. Across all sections of the survey, respondents demonstrated a high level of intrinsic motivation and an evident awareness of the need for structured training and cooperation mechanisms at the interface between cultural heritage and emergency management. The findings underline that cultural and natural heritage protection is not an isolated domain but one embedded in wider systems of governance, environmental management, and civil protection. In terms of capacity-building, the responses identified a core skill set for risk managers that combines communication, leadership, analytical reasoning, and technical competence with personal adaptability and cultural sensitivity. Regarding training design, there was broad consensus around modular programmes of moderate duration (40–60 hours), complemented by opportunities for extended, practice-oriented learning. Respondents acknowledged the efficiency and accessibility of online training while simultaneously emphasising its pedagogical limitations—particularly the lack of personal interaction and experiential components. The survey further confirmed the continued relevance of live exercises as essential learning environments. Willingness to participate is generally high but strongly influenced by logistical feasibility, institutional support, and cost coverage. Respondents also highlighted that the composition of participant groups decisively shapes the effectiveness of exercises: only when experts, decision-makers, emergency responders, and local stakeholders are jointly involved do exercises achieve credibility, operational value, and sustainable impact. The findings of the survey establish a comprehensive empirical

foundation for understanding current needs, perceptions, and constraints in training and cooperation for cultural and natural heritage protection. Together with the previous chapters they provide the necessary basis for the analytical reflections in Chapter 5, where these results will be interpreted in light of the conceptual frameworks outlined earlier—particularly the importance of building interfaces between cultural heritage practitioners and emergency responders.

5 – Synthesis and Conclusions

Building upon the empirical findings presented in the previous chapter, this final chapter provides an analytical interpretation of the INACO survey results within the broader conceptual frameworks of interface-building, experiential learning, and professional capacity development in cultural (and natural) heritage protection.[91] Whereas Chapter 4 summarised the data descriptively, the present chapter seeks to contextualise and explain the observed patterns, linking them to the theoretical and practical discussions developed throughout this publication—most notably the operational and communicative interfaces between the heritage community and emergency responders. The synthesis proceeds from the central premise that effective cultural heritage protection under conditions of crisis depends on functional interfaces—institutional, procedural, and human—between heritage professionals, emergency services, and administrative authorities. These interfaces enable the translation of conservation priorities into emergency operations and, conversely, the integration of operational realities into heritage management. The development and maintenance of such interfaces require not only structural coordination but also shared understanding, mutual trust, and compatible modes of decision-making.

Accordingly, this chapter examines the results of the INACO survey through three interpretive lenses:

[91] This synthesis should be read in light of certain methodological and empirical limitations. First, the INACO survey represents a moderate sample size with a predominantly Central European focus, which limits the generalisability of findings to other regional or institutional contexts. The representation of emergency services within the sample, though valuable, was partial; additional perspectives from first responders and operational command structures would further refine the analysis of interface dynamics. Second, the study draws on qualitative evaluations of training and exercises but lacks longitudinal data to measure the persistence of learning outcomes and behavioural change over time. Future research should therefore pursue comparative analyses across European Member States, systematically assess the effectiveness of training architectures proposed here, and explore the potential of digital simulation and wargaming tools for scalable, evidence-based training in cultural and natural heritage protection.

1. Institutional and professional dimensions – analysing how mandates, hierarchies, and stakeholder constellations shape collaboration between cultural heritage actors and emergency organisations;

2. Pedagogical and methodological aspects of training – evaluating how different learning formats (from theoretical instruction to experiential exercises) contribute to the cultivation of interface competence;

3. Strategic integration and professionalisation – considering how education and institutional frameworks can be aligned to consolidate these interfaces in practice.

By linking the empirical evidence with conceptual frameworks such as Bloom's taxonomy of learning objectives, Kolb's experiential learning theory, and multi-agency coordination models (including JESIP and UN-CMCoord), this synthesis aims to identify the systemic strengths, recurrent challenges, and developmental trajectories of interface-building in cultural and natural heritage protection. The ultimate objective is to derive analytical conclusions on how the interfaces between heritage professionals and emergency responders can be strengthened through education, training, and institutional design, ensuring that cooperation in crisis becomes both effective and sustainable.

5.1 – Analytical Integration of Findings

The role of interfaces: Across all analytical layers of this study one consistent conclusion emerges. Effective cultural (and natural) heritage protection in emergencies depends on institutionalised interfaces between the heritage community and the emergency response system. These interfaces function as translation mechanisms, aligning the differing organisational logics, priorities, and terminologies of two professional cultures that seldom interact under normal circumstances. The theoretical frameworks discussed in Chapters 1 and 2 already emphasised that heritage protection represents a cross-cutting field, located at the intersection of culture, security, and risk governance. In practice, however, this intersection often

remains fragmented. The survey and training evidence confirm that collaboration typically relies on personal initiative rather than institutional structures, leaving cooperation highly contingent and inconsistent. Respondents across disciplines highlighted recurring barriers: incompatible terminology, divergent chains of command, and lack of shared procedural knowledge. Emergency services operate within rigid hierarchies and predefined command structures, while cultural institutions function within consultative, expert-driven frameworks. In the absence of common reference points, valuable time and information are frequently lost during crises. Findings from the practical exercises conducted at the Center for Cultural Property Protection reinforce this conclusion. Where prior contact and structured coordination existed—such as in ProteCHt2save or later exercises under the STRENCH project—cooperation proved markedly more effective. Conversely, first-time interactions between heritage professionals and responders were characterised by uncertainty, role ambiguity, and hesitation to act. The results of the INACO survey echo this pattern: most respondents regard interface competence as a trainable skill, not an innate ability, and stress that cooperation must be practised and institutionalised rather than expected to arise spontaneously. Thus, the analysis confirms that the success of cultural (and natural) heritage protection under crisis conditions hinges on the presence of well-trained and operationally integrated interfaces. These interfaces serve as both structural nodes—institutionally embedded points of contact—and human competencies, embodied in professionals who understand and can navigate both cultural and operational environments.

Training as the primary vector of interface-building: Training emerges as the principal vehicle for developing and sustaining functional interfaces between heritage experts and emergency responders. Both the empirical data and the literature affirm that interface competence must be acquired experientially—through collaboration, simulation, and reflection—rather than by theoretical instruction alone. Respondents to the INACO survey consistently prioritised joint exercises, workshops, and scenario-based learning as the most effective tools for building cross-sectoral understanding. This preference corresponds closely with Bloom's upper cognitive domains, where learning outcomes such as analysis, evaluation, and creation

are achieved through active engagement and decision-making. Similarly, Kolb's experiential learning theory provides a conceptual rationale: sustainable learning occurs when individuals cycle between experience, reflection, conceptualisation, and application. Live exercises and table-top simulations embody precisely this process, enabling participants to translate conceptual knowledge into coordinated action. The evidence from previous exercises (Chapter 3) further demonstrates that joint training environments are the most efficient spaces for aligning procedures and expectations across sectors. Participants repeatedly highlighted the moment when theoretical instruction transformed into shared experience as the point where understanding between "the two sides" was actually achieved. This is consistent with international best practice models such as JESIP and UN Civil–Military Coordination (UN-CMCoord), both of which identify joint training as the cornerstone of interoperability. Pedagogically, this evidence points to a progressive training trajectory. Learning begins with theoretical modules—often delivered online or through blended formats—to establish a common conceptual foundation. This stage is followed by interactive workshops, where dialogue and mutual problem-solving generate understanding of each other's systems and constraints. The process culminates in live exercises, where knowledge is tested under stress and uncertainty. At the apex of this progression lies the potential future introduction of fully fledged wargames—complex, dynamic simulations designed to train decision-making under realistic conditions and to integrate multiple actors simultaneously.

The INACO data also contribute to a more precise definition of the competence profile required for these interface professionals. Respondents identified the following skills as particularly critical: (a) communication and empathy, enabling effective liaison across disciplinary and hierarchical boundaries; (b) leadership and coordination, ensuring coherence in multi-agency environments; (c) analytical reasoning and systems thinking, to anticipate interdependencies and assess risks; (d) procedural knowledge, encompassing both heritage management and emergency command structures; and (e) resilience and adaptability, supporting performance under time pressure and ambiguity. These findings converge with those derived from the analysis of exercises and literature, confirming that risk manager

for cultural heritage as interfaces must embody a hybrid professional identity. This role represents a permanent administrative interface, embedded within governance structures and responsible for ongoing coordination, planning, and preparedness. It differs fundamentally from the Cultural Heritage Rescue Team (CHRT) model, which constitutes a situational and operational interface, activated only in emergencies. The two models are complementary: while the CHRT bridges cultural and operational domains during crisis response, the cultural heritage risk manager ensures that collaboration is institutionally anchored, continuously maintained, and strategically guided.

5.2 – Strategic Implications for Education and Training

The empirical and analytical findings presented across the previous chapters converge on a single, overarching insight: education and training represent the decisive instruments for strengthening interfaces between the cultural heritage community and emergency responders. While institutional frameworks establish the formal architecture of cooperation, it is through structured and experiential learning processes that operational interoperability and mutual understanding are effectively achieved. The data reveal that training formats perceived as most valuable are those that progress from conceptual instruction to collaborative engagement and finally to applied practice, allowing participants to move through successive cognitive and experiential stages. Two central implications emerge from the survey data regarding training duration and structure. First, tiered and modular formats are widely seen as most effective. Respondents consistently suggested a core module of approximately 40–60 hours, complemented by optional advanced components extending up to 120–160 hours. This structure balances the need for accessibility with the opportunity for deeper specialisation, enabling participants to progress from introductory awareness to applied competence. Second, flexibility and modularity are essential to accommodate the heterogeneity of participants. Professionals from heritage conservation, civil protection, administration, and environmental management enter training with distinct baseline qualifications and learning needs. Modular systems allow for differentiated entry points, enabling both generalists and specialists to acquire the

competencies necessary for interface work. Taken together, the distribution of responses demonstrates a clear preference for mixed-mode training architectures. Participants favour programmes that begin with online pre-learning, continue with structured on-site instruction, and culminate in challenging, scenario-based live exercises. Such progressive and blended formats align with broader trends in adult education and professional training, where learning effectiveness depends on the combination of cognitive preparation, collaborative problem-solving, and embodied experience. In this model, the training process unfolds as a four-phase continuum: (1) Pre-learning (digital foundation): online modules convey key terminology, legal frameworks, and the basic logic of both heritage management and emergency response systems. (2) Theoretical consolidation: classroom-based sessions explore institutional roles, planning procedures, and coordination mechanisms, allowing participants to contextualise their expertise. (3) Interactive immersion: workshops and joint simulations bring together heritage professionals and responders to address realistic scenarios, translating conceptual understanding into cooperative practice. (4) Reflective consolidation: post-exercise evaluation and debriefing sessions support critical reflection, ensuring that lessons learned are internalised and transferable. This continuum mirrors the pedagogical logic of interface competence development, where learning is not confined to knowledge acquisition but extends to mutual recognition, shared decision-making, and the cultivation of trust. Joint exercises—whether table-top or live—represent the apex of this learning process, as they reproduce the high-pressure, multi-actor environments in which effective cooperation must ultimately take place. At the systemic level, these findings imply that training must become both standardised and institutionalised. Integration of cultural heritage modules into existing civil-protection curricula, and conversely, the inclusion of emergency management components in heritage education, would ensure sustained cross-sectoral exposure. Regional or EU-level training hubs, ideally linked to established entities could provide the necessary frameworks for harmonisation and recognition of qualifications.[92] Finally, the establishment of evaluation and feedback loops is essential to measure learning outcomes, capture best practices, and

[92] Gullotta et al 2021.

sustain professional networks. Post-course and post-exercise reviews should feed into iterative course design, ensuring continuous improvement and knowledge retention. Maintaining alumni networks and practitioner communities of practice can transform one-off training events into durable ecosystems of expertise and collaboration—precisely the kind of ongoing, trust-based interaction upon which effective interfaces ultimately depend.

5.2.1 – Educating Future Interfaces

Regarding training and training formats, we pivot back to the INACO survey in Chapter 4, consolidating responses and extracting explanatory patterns relevant for curriculum and exercise design—particularly regarding how professionals envision the education of future interfaces between cultural heritage specialists and emergency responders. The analysis yielded five cross-cutting themes, each carrying implications for how training should be conceived, structured, and delivered.

(1) Professional Embeddedness of Cultural and Natural Heritage

The dataset confirms that cultural and natural heritage protection is inherently transdisciplinary. Respondents come from academia and research, local to national administration, emergency and civil-protection services, and practical domains such as conservation, urban planning, and water or environmental management. Their professional links to cultural and natural heritage range from direct (site stewardship, restoration, risk and conservation planning) to indirect (infrastructure design, hazard modelling, climate adaptation). This breadth demonstrates that cultural and natural heritage risk management relies on functional interfaces among heritage experts, environmental managers, and responders.

Implication: Training content and casework must be intelligible across epistemic communities. Exercises should explicitly connect heritage outcomes to environmental and emergency-management operations—for example, how water governance decisions affect heritage assets during floods or how responders integrate site-specific data into command procedures.

(2) Competency Profile of the cultural and natural heritage Risk Managers

Respondents consistently described a hybrid professional figure combining interpersonal, strategic, and technical capacities: (a) communication and mediation—negotiation, empathy, consensus-building, and rapid information exchange; (b) leadership and coordination under pressure—supervision, decisiveness, and reliability in multi-agency environments; (c) analytical and strategic capacity—risk assessment, scenario planning, systems thinking; and (d) domain expertise and institutional literacy—credibility in heritage and disaster-risk-reduction (DRR) fields, coupled with fluency in procedures and regulatory frameworks.

Implication: Re- and up-skilling programmes must integrate all four strands instead of privileging technical or legal aspects alone. Interface competence is achieved only when social intelligence, procedural fluency, and operational awareness are cultivated together.

(3) Training Architecture and Delivery Preferences

Responses on duration and modality reveal both diversity and convergence. While suggestions ranged from a few hours to several hundred, the modal preference clusters around 40–60 hours, roughly equivalent to an intensive one-week or modular programme. Participants also articulated a clear pedagogical hierarchy with perceived advantages and drawbacks. Advantages include: (a) efficiency and convenience: time and cost savings, flexibility, and scalability; (b) accessibility and inclusion: broad institutional and geographic reach; and (c) potential for engagement: when designed interactively with clear visuals, case studies, and feedback loops. Whereas drawbacks include: (a) impersonality and isolation: diminished networking and informal knowledge exchange; (b) low engagement and monotony: passive listening, long theoretical sessions, limited interactivity; and (c) deficit of practice and technical friction: insufficient hands-on components, connectivity issues, and distractions. In sum, online environments (if set up and conducted favourably) are effective for what they do best—conceptual alignment, shared situational pictures, preparatory coordination, and distributed reflection—but they cannot replace the embodied, trust-building experiences of in the field cooperation. Consequently,

digital components should be short, highly interactive, and output-oriented, each tied to a concrete deliverable used during the live phase (e.g., hazard map, stakeholder matrix, or communication protocol).

Implication: A blended learning model is optimal. Short, interactive online pre-learning establishes a shared conceptual baseline, while field-based or table-top/live exercises build tacit coordination skills and interpersonal trust. Online phases should be used for pre-coordination, shared situational awareness, and reflective assessment, not as substitutes for experiential learning.

(4) Participation Constraints and Enablers for Live Exercises

The survey demonstrates high intrinsic motivation to participate in live training, tempered by pragmatic constraints. Most respondents consider 4–6 hours or roughly 200–400 km of travel acceptable for same-day reachability; a smaller group accepts multi-day commitments if the content of the training is compelling. Participation depends strongly on cost coverage, accessibility by train or air, and institutional authorisation.

Implication: Future exercises should use regional training hubs within Central Europe, located in well-connected areas, with secured funding and official endorsements. Clear communication of objectives—especially the value of cross-sectoral coordination—can strengthen managerial support and participant commitment.

(5) Success Conditions for Exercises

Respondents agreed that exercises achieve value only when they assemble the full spectrum of actors involved in cultural and natural heritage protection: (1) subject-matter experts with practical disaster experience in cultural heritage and its protection; (2) decision-makers able to allocate resources and authority; (3) operational services—civil protection, fire, police, or military; and (4) local stakeholders—owners, site managers, and municipal representatives.

Implication: Exercises should be designed as multi-actor rehearsals of real interfaces, rather than single-discipline drills. Only by mirroring the real diversity of crisis situations can training cultivate transferable interface skills.

5.2.2 – Progressive Training Schedule

Drawing upon the thematic synthesis and comparative findings presented above, the following section proposes a structured, progressive training schedule for the development of interface competence in cultural heritage protection. The model combines the pedagogical requirements derived from Bloom's taxonomy and Kolb's experiential learning theory with the practical preferences and constraints articulated by survey respondents. Its overarching objective is to create a coherent learning continuum that progressively transforms disciplinary specialists into collaborative, interface-oriented professionals. The training architecture rests on four sequential and complementary phases, integrating digital, classroom-based, and experiential components. Each phase corresponds to specific cognitive and procedural goals, gradually advancing from conceptual understanding to applied collaboration and reflective evaluation.

Phase 1 — Online Pre-Learning: Conceptual and Terminological Alignment

Duration: 10–15 hours (self-paced online modules)

Objective: Establish a common conceptual foundation and shared vocabulary across disciplines.

This phase provides the necessary cognitive scaffolding for all participants—heritage experts, emergency responders, and administrators alike. Content includes: (a) overview of international and national frameworks for cultural heritage protection (UNESCO 1954 Hague Convention, Sendai Framework, EU Civil Protection Mechanism); (b) fundamentals of risk management and disaster response terminology; (c) roles, mandates, and operating procedures of emergency services versus cultural heritage institutions; and (d) interactive glossaries, short scenario videos, and self-assessment quizzes to ensure terminological coherence.

Purpose for interface-building: This stage ensures that participants enter the next phases with a shared operational language, reducing one of the key barriers repeatedly identified in exercises and survey responses. It also lowers entry thresholds for participants from different professional backgrounds, supporting inclusivity without diluting standards.

Phase 2 — Joint Workshop: Understanding Systems and Roles

Duration: 16–20 hours (2–3 days in-person)

Objective: Facilitate direct dialogue and experiential understanding between the "two sides"—heritage professionals and emergency responders.

Workshops are structured around mutual system familiarisation and small-group problem-solving tasks. Key elements include: (a) mapping of institutional roles, workflows, and decision-making hierarchies; (b) case studies of past emergencies involving cultural heritage (floods, fires, earthquakes); (c) round-table discussions where each community presents its operational challenges and expectations; and (d) facilitated negotiation exercises that require participants to reconcile priorities (e.g., human safety vs. artefact rescue).

Purpose for interface-building: Through structured dialogue, participants develop empathy and procedural literacy—understanding not only their own mandate but also that of their counterparts. This phase directly addresses the recurrent challenge of procedural asymmetry and prepares learners for more complex coordination during simulations.

Phase 3 — Scenario-Based Live Exercise: Applied Interface Training

Duration: 24–30 hours (2–3 intensive days on site)

Objective: Test and consolidate collaborative skills in realistic, time-pressured conditions.

Exercises are designed as multi-actor, multi-level simulations, reflecting the operational complexity of real crises. Possible formats include: (a) table-top exercises with decision points and injects simulating changing risk conditions; (b) functional live exercises, where heritage and emergency teams jointly assess a site, prioritise assets, and execute a simulated evacuation or damage mitigation plan; and (c) embedded observer–controller roles and structured debriefings to capture behavioural and communication patterns.

Purpose for interface-building: Live exercises cultivate the embodied, tacit knowledge essential for interoperability—coordination under

pressure, shared situational awareness, and trust. These are the competencies that cannot be virtualised and therefore form the apex of the training process.

Phase 4 — Reflective Consolidation and Evaluation

Duration: 8–10 hours (post-exercise online debrief and assessment)

Objective: Transform experience into transferable knowledge and reinforce professional networks.

This concluding phase includes: (a) a structured after-action review to identify lessons learned; (b) online discussion boards for cross-group reflection and best-practice exchange; (c) feedback surveys to inform curriculum revision; and (d) certification and invitation to join a regional alumni network of cultural heritage risk management and protection professionals.

Purpose for interface-building: Reflection converts experience into collective institutional memory. Sustained online engagement ensures that the interfaces established during training evolve into long-term professional communities of practice—supporting continuous learning, collaboration, and peer exchange across institutions and borders.

5.3 – Policy and Organisational Implications

The pedagogical architecture outlined above demonstrates that education and training are not merely technical instruments but strategic enablers of institutional cooperation. Yet, training alone cannot sustain the interfaces it seeks to create. For the competencies, trust, and shared procedures cultivated through exercises to translate into durable practice, they must be anchored within organisational mandates, administrative structures, and policy frameworks. The following section therefore shifts focus from individual and educational capacity-building to the institutional and governance dimensions of interface management—examining how cultural heritage protection can be structurally integrated into civil-protection and disaster-risk-reduction systems at local, national, and European levels.

(1) Embedding cultural (and natural) risk management in local and regional administration: Survey data and practice-based experience both indicate that the most effective level for sustained interface management lies within local and regional administrations, where direct contact between heritage custodians and emergency responders occurs. Embedding cultural heritage risk-management roles within municipal or regional structures would ensure that preparedness and response planning are informed by local knowledge of assets, infrastructures, and vulnerabilities. At this level, a risk manager for cultural (and natural) heritage could serve as the institutional hinge between heritage offices, environmental authorities, and civil-protection units—translating national policy into actionable local plans, facilitating inter-agency exercises, and maintaining an up-to-date inventory of cultural assets within risk-prone zones. National frameworks, in turn, are needed to provide standardised mandates, qualification criteria, and funding mechanisms for these positions. Without such top-down support, local initiatives remain vulnerable to personnel changes and budgetary fluctuations.

(2) Cross-ministerial coordination and shared responsibility: The complex nature of cultural heritage protection necessitates systematic cross-ministerial coordination. The relevant competencies typically span at least three ministerial portfolios: (a) Culture, responsible for the preservation and management of heritage assets; (b) Interior or Defence, overseeing civil protection, crisis management, and emergency response; and (c) Environment or Climate, addressing hazards, adaptation, and sustainability. At present, these domains often operate in isolation, linked only through temporary project partnerships or crisis-specific cooperation. Institutionalising cultural heritage risk management requires the establishment of formal liaison mechanisms, such as inter-ministerial working groups or national steering committees, with clear mandates for joint planning, data sharing, and training coordination. Such structures would ensure that heritage protection is not an afterthought in disaster response but an integrated consideration throughout the disaster risk reduction cycle—from risk assessment and mitigation to preparedness, response, and recovery.

(3) From project prototypes to institutionalised cooperation: European cooperation projects have played a pivotal role in demonstrating the

feasibility of joint heritage–responder exercises and the development of shared methodologies. These initiatives have created prototypes of effective interfaces, testing cooperation models and producing valuable training materials and tools. However, their impact has often remained confined to project lifecycles, lacking mechanisms for long-term institutionalisation once funding ends. To overcome this limitation, project outcomes should be anchored within enduring institutional frameworks, for example through national training curricula, memoranda of understanding between ministries, or permanent inclusion in civil-protection academies. The European Commission's Union Civil Protection Knowledge Network is best suited to serve as a repository and dissemination platform for these outputs, ensuring that lessons learned are integrated into future policy cycles rather than lost in project archives.[93]

(4) Alignment with International and European Frameworks: The integration of cultural heritage protection into disaster risk reduction strategies and emergency management is not only a pragmatic necessity but also a normative obligation. The Sendai Framework for Disaster Risk Reduction (2015–2030) explicitly recognises cultural heritage as a key dimension of community resilience, calling for the protection of cultural assets and identity as part of national and local disaster risk reduction strategies. Similarly, the EU Civil Protection Mechanism and its associated legislation mandate the inclusion of cultural heritage in risk assessments and encourage Member States to share expertise and resources for the safeguarding of heritage in emergencies. Institutionalising cultural heritage risk management therefore contributes directly to the fulfilment of both international and European commitments. It strengthens coherence between heritage governance and civil protection, advancing the broader EU objective of a "resilient Union" that integrates social, cultural, and environmental dimensions of security.

[93] De Siervo/Vicario 2023; Piacentini/Vicario 2023; Papa et al 2025.

5.4 – Concluding Reflections

The aim of this study was to demonstrate that the protection of cultural heritage in crises ultimately depends on the strength of its interfaces—the human, procedural, and institutional linkages that connect the heritage community with emergency responders. Training has emerged as the most effective instrument to build these interfaces: it enables shared understanding, common language, and mutual trust, translating abstract policy frameworks into operational collaboration. Exercises, when designed progressively from theoretical preparation to live simulation, cultivate precisely those competences—communication, coordination, and decision-making under pressure—that are essential for real-world response. At the same time, sustainable interface capacity cannot rely on individual commitment or isolated training events alone. It requires institutionalisation within public administration, supported by coherent policies, cross-ministerial coordination, and stable governance frameworks at national and European levels. Cultural heritage risk managers as possible interfaces exemplify this synthesis—combining technical expertise, administrative literacy, and interpersonal leadership in a role permanently embedded within civil-protection systems or administrative bodies. Taken together, the findings confirm that education, training, and institutional design must converge to transform fragmented responsibilities into an integrated system of shared competence. By embedding cultural heritage protection into disaster-risk-reduction strategies and aligning it with the Sendai Framework and the EU Civil Protection Mechanism, Europe can move toward a durable culture of prevention, preparedness, and cooperation. The interfaces cultivated through learning thus become not only operational necessities but expressions of a broader societal commitment: to safeguard both lives and the cultural foundations that sustain them.

6 – Outlook

The challenges confronting cultural and natural heritage in the twenty-first century—climate change, natural disasters, technological hazards, and conflict—demand a new paradigm of protection that transcends disciplinary, institutional, and national boundaries. This study has demonstrated that interface-building between the heritage community and emergency responders is not merely an operational necessity but a strategic investment in societal resilience. The knowledge, skills, and trust cultivated through training and institutional cooperation form the human infrastructure upon which sustainable heritage protection depends.

Looking forward, the development of a European framework for heritage risk management represents both a logical continuation and an urgent priority. Initiatives such as the EU Civil Protection Mechanism, the Union Civil Protection Knowledge Network, and UNESCO's capacity-building programmes provide fertile ground for anchoring the competencies and professional roles proposed in this study. Regional training hubs, shared exercise repositories, and cross-border certification systems could further harmonise standards while preserving local specificity.

Technological advances—particularly in remote sensing, digital documentation, and virtual simulation—will expand the potential of training and preparedness. Digital twins of heritage sites, immersive wargames, and AI-supported scenario modelling can complement traditional field exercises, providing safe, repeatable environments for interagency learning. Yet, as this study has consistently underscored, technology can only enhance—not replace—the human interface: the capacity to communicate, coordinate, and decide together under uncertainty.

Ultimately, the resilience of cultural and natural heritage reflects the resilience of the societies that protect it. By institutionalising collaboration between cultural, environmental, and emergency sectors, Europe can advance from project-based cooperation to a culture of integrated preparedness—a culture that values knowledge as much as action, memory as much as innovation. In this vision, safeguarding heritage becomes more than a technical function: it becomes a collective act of stewardship,

ensuring that the physical and symbolic foundations of European identity endure even in the face of profound change.

References

Alshowair, A., Bal, J., AlSuwailem, F., Mostafa, A. & Abdel-Azeem, A. (2024) 'Use of virtual reality exercises in disaster preparedness training: A scoping review', *SAGE Open Medicine*, 12, pp. 1–11. DOI: 10.1177/20503121241241936.

Amt für Kultur Fürstentum Liechtenstein (2023) *Teil 3: Notfallplanung und Notfallstruktur für Kulturgüter im Fürstentum Liechtenstein. Leitfaden zur Erstellung von Notfallplänen und Einsatzstrukturen für den Kulturgüterschutz*. Vaduz: Amt für Kultur Fürstentum Liechtenstein.

Anderson, L.W. & Krathwohl, D.R. (2001) *A Taxonomy for Learning, Teaching, and Assessing*. New York: Longman.

Appleget, J., Burks, R. & Cameron, F. (2020) *The Craft of Wargaming*. Annapolis: US Naval Institute Press.

Arma dei Carabinieri (2021) *Task Force Caschi Blu della Cultura*. Available at: https://www.carabinieri.it/chi-siamo/oggi/organizzazione/mobile-e-speciale/comando-carabinieri-per-la-tutela-del-patrimonio-culturale/task-force-caschi-blu-della-cultura (Accessed 28 August 2024).

Bevan, R. (2006) *The Destruction of Memory: Architecture at War*. London: Reaktion Books.

Biggs, J. (1996) 'Enhancing teaching through constructive alignment', *Higher Education*, 32(3).

Bloom, B.S. et al. (1956/1971) *Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook 1: Cognitive Domain*. 16th print. New York: David McKay Company.

BMI (ed.) (2007) *Staatliches Krisen- und Katastrophenschutzmanagement (SKKM)*. Vienna: Bundesministerium für Inneres.

Bonazza, A., Ingval, M., Drdácký, M., Vintzileou, E. & Hanus, C. (2018) *Safeguarding Cultural Heritage from Natural and Man-Made Disasters: A Comparative Analysis of Risk Management in the EU*. Luxembourg: Publications Office of the European Union.

Bonazza, A., Sardella, A., Kaiser, A., Cacciotti, R., De Nuntiis, P., Hanus, C., Maxwell, I., Drdácký, T. & Drdácký, M. (2021) 'Safeguarding cultural heritage from climate change related hydrometeorological hazards in Central Europe', International Journal of Disaster Risk Reduction, 63, pp. 1–20. DOI: https://doi.org/10.1016/j.ijdrr.2021.102455

Bonazza, A., Kaiser, A., Sardella, A., Cacciotti, R., De Nuntiis, P., Hanus, C., Drdácký, T., Maxwell, I. and Drdácký, M. (2021) 'Elements for a sustainable management of cultural heritage at risk in a changing environment', *Restauratorenblätter – Papers in Conservation*, 38, pp. 85–97.

Brandt, C. (2017) *65 Menschen gerettet: Großübung fordert 200 Einsatzkräfte auf Stift Göttweig*. Available at: https://www.tips.at/nachrichten/furth-bei-goettweig/blaulicht/409971-65-menschen-gerettet-grossuebung-fordert-200-einsatzkraefte-auf-stift-goettweig (Accessed 31 October 2025).

Brodie, N. (2008) 'The Market Background to the April 2003 Plunder of the Iraq National Museum', in Stone, P.G. & Farchakh Bajjaly, J. (eds.) *The Destruction of Cultural Heritage in Iraq*. Woodbridge: Boydell Press, pp. 41–54.

Brodie, N. (2010) 'Archaeological Looting and Economic Justice', in Messenger, P. & Smith, G. (eds.) *Cultural Heritage Management, Policies and Issues in Global Perspective*. Gainesville: University Press of Florida, pp. 261–277.

Brodie, N. & Yates, D. (2019) *Illicit Trade in Cultural Goods in Europe*. Luxembourg: Publications Office of the European Union.

Brosché, J., Legnér, M., Kreutz, J. & Ijla, A. (2016) 'Heritage under Attack: Motives for Targeting Cultural Property during Armed Conflict', *International Journal of Heritage Studies*. DOI: 10.1080/13527258.2016.1261918.

Bumgardner, S.L. (ed.) (2017) *Cultural Property Protection: NATO and Other Perspectives*, *NATO Legal Gazette*, 38.

Bundeswehr (2024) *Wargaming Handbook*. Berlin: Bundeswehr.

Cacciotti, R., Kaiser, A., Sardella, A., De Nuntiis, P., Drdácký, M., Hanus, C. & Bonazza, A. (2021) 'Climate change-induced disasters and cultural heritage: Optimizing management strategies in Central Europe', Climate Risk Management, 32, pp. 1–13. DOI: 10.1016/j.crm.2021.100301.

Calabrò, G., Gonzales, E., Martini, C., Mercuri, C., Papa, S., Piacentini, V. & Renzulli, S. (2024) 'Cultural heritage sector planning in the Campi Flegrei area on bradyseismic and volcanic risk: the National Civil Protection Exercise "EXE Campi Flegrei 2024"', *Proculther-Net 2 Project Technical Bulletin*, Issue 4, December 2024, pp. 29–35.

CALL Center for Army Lessons Learned (ed.) (n.d.) *How to Master Wargaming: Commander and Staff Guide to Improving Course of Action Analysis*.

Campbell, P. (2013) 'The Illicit Antiquities Trade as a Transnational Criminal Network: Characterizing and Anticipating Trafficking of Cultural Heritage', *International Journal of Cultural Property*, 20(2). DOI: 10.1017/S0940739113000015.

Cauliez, N., Frisa, Y. & Miguez, J. (2024) 'The intersectoral strategy for the protection of cultural property in Switzerland: an overview of the "Leonardo" exercise in the City of Geneva', *Proculther-Net 2 Project Technical Bulletin*, Issue 4, December 2024, pp. 36–43.

Center for Cultural Property Protection (ed.) (2025) *Extraordinary Learning*. Available at: www.donau-uni.ac.at/cpp-study (Accessed 27 February 2025).

CHARISMA (n.d) *Cultural Heritage Academy for Risk Management*. Available at: https://www.charisma-academy.eu/ (Accessed 31 October 2025).

Danube University Krems (2019) *Report on Analysis of Existing Plans on Managing Cultural Heritage in Emergencies*. Deliverable D.T3.1.1. Available at: https://programme2014-20.interreg-central.eu/Content.Node/D.T3.1.1-Report-on-analysis-of-existing-plans-on-managing-cu.pdf (Accessed: 31 October 2025).

Danube University Krems (2025) *Center for Cultural Property Protection – Study Programs*. Available at: https://www.donau-uni.ac.at/en/university/faculties/education-arts-architecture/departments/arts-cultural-studies/centers/center-for-cultural-property-protection/study-programs.html (Accessed: 8 October 2025).

Danube University Krems (n.d.) *CHEPiCC – Cultural Heritage Protection in Climate Change (Online)*. Available at: https://www.donau-uni.ac.at/en/university/faculties/education-arts-architecture/departments/arts-cultural-studies/centers/center-for-cultural-property-protection/research/chepicc-online.html (Accessed: 16 September 2025).

De Siervo, G. & Vicario, T. (2023) 'Including cultural heritage protection among the immediate needs in case of emergency: the role of the Union Civil Protection Mechanism', *Proculther-Net Project Technical Bulletin*, Issue 1, March 2023, pp. 46–50.

Domenec de Cellès, C. & Jakubeit, N. (2023) 'KulturGutRetter (KGR): technical characteristics of a cultural heritage response unit', *Proculther-Net Project Technical Bulletin*, Issue 1, March 2023, pp. 58–64.

Domenec de Cellès, C. & Rehberger, A. (2025) 'Establishing operational readiness in a cross-sectoral team', *Proculther-Net 2 Project Technical Bulletin*, Issue 5, July 2025, pp. 21–33.

Dunkley, M. (2023) 'Culture, Conflict and Armed Non-State Actors: Cultural Heritage Protection in a Changing Operating Environment', *Journal of Cultural Heritage Management and Sustainable Development*, 13. DOI: 10.1108/JCHMSD-08-2020-0122.

Dunkley, M. & Clack, T. (2023) 'The Russian Weaponisation of Cultural Heritage', in Clack, T. & Dunkley, M. (eds.) *Cultural Heritage in Modern Conflict: Past, Propaganda, Parade*. London/New York: Routledge, pp. 117-141.

European Security and Defence College (2023) *Course Curriculum 68 – Cultural Property Protection Course*. Available at: https://esdc.europa.eu/enlistapi/2023-003%20Course%20Curriculum%2068%20Cultural%20Property%20Protection%20Course.pdf (Accessed: 8 October 2025).

FEMA (ed.) (2017) *National Incident Management System*. 3rd edn. October 2017.

FEMA (ed.) (2019) *National Response Framework Training Guide*. July 2019.

FEMA (2020) *Homeland Security Exercise and Evaluation Program (HSEEP)*.

Fridheim, H. (2022) 'Wargaming Dos and Don'ts – Eight Lessons for Planning and Conducting Wargames', *Scandinavian Journal of Military Studies*, 5(1), 221–232. DOI: 10.31374/sjms.127.

Gullotta, A., Guerisoli, G. & Borgese, E. (2021) *Training Requirement Analysis "Cultural Heritage Protection" – Final Report, March 2021: European External Action Service Working Paper on Training Requirements Analysis for Cultural Heritage Protection*. Brussels: European External Action Service.

Government of Liechtenstein (2024) *Feuerwehr Balzers und der Kulturgüterschutz üben in der Kapelle Mariahilf*. Available at: https://www.llv.li/de/medienmitteilungen/feuerwehr-balzers-und-der-kulturgueterschutz-ueben-in-der-kapelle-mariahilf (Accessed 31 October 2025).

Grunnan, T. & Fridheim, H. (2017) 'Planning and Conducting Crisis Management Exercises for Decision-Making: The Do's and Don'ts', *EURO Journal on Decision Processes*, 5(1–4), 79–95. DOI: 10.1007/s40070-017-0065-0.

Higgins, V. (2019) 'Plunder and Looting: Some Historical Reminders', in Chappell, D. & Hufnagel, S. (eds.) *The Palgrave Handbook of Art Crimes*. London: Palgrave Macmillan.

Interreg Central Europe (2007-2013a) *ProteCHt2save – Risk Assessment and Sustainable Protection of Cultural Heritage in Changing Environments*. Available at: https://programme2014-20.interreg-central.eu/Content.Node/ProteCHt2save.html (Accessed: 12 August 2025).

Interreg Central Europe (2007-2013b) *STRENCH – Strengthening Resilience of Cultural Heritage at Risk in a Changing Environment through Proactive Transnational Cooperation*. Available at: https://programme2014-20.interreg-central.eu/Content.Node/STRENCH.html (Accessed 12 August 2025).

Interreg Central Europe (n.d.) *INACO – Innovative Strategies for the Adoption of Risk Management Plans to Enhance the Resilience of Cultural and Natural Heritage in River Basin Districts*. Available at: https://www.interreg-central.eu/projects/inaco/

ISO (2018) *Security and Resilience – Emergency Management – Guidelines for Incident Management (ISO 22320:2018)*. Geneva: International Organization for Standardization.

Jarvis, P. (2010) *Adult Education and Lifelong Learning: Theory and Practice*. 4th edn. Oxon: Routledge.

JESIP (ed.) (2021) *Joint Doctrine: The Interoperability Framework*, 3rd edn. October 2021.

Kaiser, A. (2018) 'Kulturgüterschutz im Rahmen der Großübung Göttweig 2017', *Denkmalpflege in Niederösterreich*, 59, pp. 40–42.

Kaiser, A. (2019a) 'Vorsorgen durch Üben. Ein praktischer Zugang zum Schutz von kulturellem Erbe', in Rohrbach, W. (ed.) *Versicherungsgeschichte Österreichs*, Bd. XIV–XV. Beograd/Wien.

Kaiser, A. (2019b) *Guidelines for Cultural Heritage Rescue Team (CHRT)*. Available at: https://www.interreg-central.eu/Content.Node/D.T3.2.1-Guidelines-for-Cultural-Heritage-Rescue-Team.pdf (Accessed 7 October 2023).

Kaiser, A. (2020) 'Das Potenzial zivil-militärischer Zusammenarbeit im Kulturgüterschutz am Beispiel der Verbindungsoffiziere des Österreichischen Bundesheeres', in Dohrmann, A., Siegel, A. & Schöne, K. (eds.) *kultur!gut!schützen!*. Halle/Saale: Mitteldeutscher Verlag, pp. 33–38.

Kaiser, A. (2021a) 'Militärischer Kulturgüterschutz im 21. Jahrhundert', in Langbrandtner, H.-W., Heyer, E.R. & de Peyronnet-Dryden, F. (eds.) *Kulturgutschutz in Europa und im Rheinland. Franziskus Graf Wolff Metternich und der Kunstschutz im Zweiten Weltkrieg*. Wien/Köln/Weimar: Böhlau, pp. 477–494.

Kaiser, A. (2021b) 'Zivil-militärische Zusammenarbeit für erfolgreichen Kulturgüterschutz', in Langbrandtner, H.-W., Heyer, E.R. & de Peyronnet-Dryden, F. (eds.) *Kulturgutschutz in Europa und im Rheinland*. Wien/Köln/Weimar: Böhlau, pp. 503–507.

Kaiser, A. (2022) 'Joint and Combined Exercises in Heritage Protection as a Means to Establish Interfaces in Cooperation with Emergency Responders', *Preservation Education & Research*, 14, pp. 54–71.

Kaiser, A. (2023) 'Training for Cultural Heritage Protection: The STRENCH Summer Schools', in Curulli, I.G., Kaya, D.I. & Khaefi, A. (eds.) *Heritage Education for Climate Action*. London/Hoboken: Routledge, pp. 31–40.

Kaiser, A. (2024) 'Die Bedeutung von Übungen im Risikomanagement für Kulturgüter', in Kührer-Wielach, F. (ed.) *Halbjahresschrift für Geschichte und Zeitgeschehen in Zentral- und Südosteuropa*, 36(1–2). München: Südost-Institut, pp. 24–33.

Kaiser, A. (2025a) 'Exercises as Part of a Holistic Approach to Education and Training in Cultural Property Protection', in Szuniewicz-Stępień, M. (ed.) *Wyzwania dla ochrony dóbr kultury w czasie konfliktu zbrojnego – 70-lecie konwencji haskiej*. Gdynia: Akademia Marynarki Wojennej, pp. 191–207.

Kaiser, A. (2025b) 'Kulturgüterschutz im 21. Jahrhundert. Die militärische Perspektive', *Zeitschrift für Öffentliches Recht (ZÖR)*, 80, pp. 151–167. DOI: 10.33196/zoer202501015101.

Kaiser, A. (2025c) *Design of the Risk Manager Figure for Cultural and Natural Heritage Protection in Central Europe River Basin Districts*. INACO Deliverable D.3.1.1.

Kaiser, A. (2025d) 'Cultural Property Protection Exercises as Interface between Heritage, Military, and Emergency Responders', in Gruber, N. & Puhr, A. (eds.) *Cultural Property Protection in the 21st Century: Meeting Requirements across the Forces. Collected papers from the International Conference in Vienna, November 2024*. Vienna: Federal Ministry of Defence, pp. 89–94.

Kaiser, A. (forthcoming a) 'Zerstörung von Kulturgut – Kollateralschaden oder Mittel der ethnischen Säuberung?', in Wolf, C. (ed.) *Quo vadis Ukraine – geopolitische Zeitenwende in Europe? Armis et Litteris Schriftenreihe der Theresianischen Militärakademie.* (in print).

Kaiser, A. (forthcoming b) 'Kulturgüterschutz im Donauraum – Erhalt und Schutz der römischen Hinterlassenschaften am Donaulimes', *Römisches Österreich* (in print).

Kaiser, A. & Schramm, H. (2020) 'The Concept of Cultural Heritage Rescue Teams and its Potential for the Military', in Ebner, G., Höfler, G. & Lechner, J. (eds.) *Protection of Cultural Heritage in Peace Operations*. Vienna: Blue Helmet Forum Austria, pp. 113–130.

Kayes, D.C. & Kayes, A. (2021) 'Experiential Learning and Education in Management', *Business and Management*. DOI: 10.1093/acrefore/9780190224851.013.294.

Kolb, D.A. (2015) *Experiential Learning: Experience as the Source of Learning and Development*, 2nd edn. New Jersey: Pearson Education, Inc.

Landratsamt Forchheim (2025) *Das Projekt „Wässerwiesen Franken"*. Available at: https://www.waesserwiesen-franken.de/de/das-projekt/index.php (Accessed 31 October 2025).

Mahdi, S.S. et al. (2023) 'Systematic Review on the Current State of Disaster Preparation Simulation Exercises (SimEx)', *BMC Emergency Medicine*, 23(1), 52. DOI: 10.1186/s12873-023-00824-8.

Mähler, M. (2016) *Gemeinsam im Einsatz: Interorganisationale Zusammenarbeit von Polizei und Feuerwehr*. PhD thesis, Friedrich-Schiller-Universität Jena.

Ministry of Defence, Development, Concepts and Doctrine Centre (ed.) (2017) *Wargaming Handbook*. Shrivenham: UK MoD.

Münchner Fachgruppe Präventive Konservierung (ed.) (2017) *Umgang mit Kunst und Kulturgut im Notfall*. Munich: Münchner Fachgruppe Präventive Konservierung.

NATO (2018) *Allied Joint Doctrine for Civil-Military Cooperation (AJP-3.19)*, Edition A, Version 1. Brussels: NATO Standardization Office.

NATO (n.d.) *NATO Wargaming Handbook*. Brussels: NATO Standardization Office.

NÖN (2017) *Spektakuläre Feuerwehr-Übung im Stift Göttweig*. Available at: https://www.noen.at/krems/besondere-herausforderung-spektakulaere-feuerwehr-uebung-im-stift-goettweig-stift-goettweig-feuerwehruebung-68068572 (Accessed 31 October 2025).

Nolda, S. (2015) *Einführung in die Theorie der Erwachsenenbildung*. Darmstadt: Wissenschaftliche Buchgesellschaft (WBG).

Papa, S., Francaviglia, N. & Vicario, T. (2025) 'Cultural Heritage activities at EU MODEX Venice 2024', *Proculther-Net 2 Project Technical Bulletin*, Issue 5, July 2025, pp. 10–20.

Perla, P.P. & McGrady, E.D. (2011) 'Why Wargaming Works', *Naval War College Review*, 64(3). Available at: https://digital-commons.usnwc.edu/nwc-review/vol64/iss3/8 (Accessed 31 October 2025).

Piacentini, V. & Vicario, T. (2023) 'Towards the development of European capacities for the protection of cultural heritage at risk: the "Key Elements of a European Methodology to Address the Protection of Cultural Heritage during Emergencies"', *Proculther-Net Project Technical Bulletin*, Issue 1, March 2023, pp. 51–57.

Piacentini, V. & Proietti, G. (2023) 'Training and exercise: an effective approach to build cultural heritage protection capacity', *Proculther-Net Project Technical Bulletin*, Issue 2, June 2023, pp. 15–23.

Proculther Project (2021) *Key Elements of a European Methodology to Address the Protection of Cultural Heritage During Emergencies*. Città di Castello (PG), Italy: LuoghInteriori.

ProteCHt2save (2020-2022) *ProteCHt2save WebGIS Tool for Hazard Mapping*. Available at: https://www.protecht2save-wgt.eu/ (Accessed 12 August 2025).

Rosén, F. (2017) *NATO and Cultural Property: Embracing New Challenges in the Era of Identity Wars*. NATO Science for Peace and Security Project Report.

Rush, L. & Benedettini Millington, L. (2015) *The Carabinieri Command for the Protection of Cultural Property: Saving the World's Heritage*. Woodbridge: Boydell Press.

Sabin, P. (2014) *Simulating War: Studying Conflict through Simulation Games*. London: Bloomsbury.

Schramm, H. (2019) *Integration von zivilen Akteuren des Kulturgüterschutzes in einen Einsatzstab*. MSc thesis, University for Continuing Education Krems.

Shultz, D. (2023) *Who Controls the Past Controls the Future: How Russia Uses History for Cognitive Warfare*. NATO Defense College Outlook No. 04, December 2023.

Siegel, A., Dohrmann, A. (2024) 'SiLK – Guidelines for the Protection of Cultural Property', *Proculther-Net Project Technical Bulletin*, Issue 3, July 2024, pp. 10–17.

Siegel, A., Dohrmann, A. (2025) *SiLK – Guidelines for the Protection of Cultural Property*. Available at: https://silk-project.de/ (Accessed 31 October 2025).

Tandon, A. (ed.) (2016) *Endangered Heritage: Emergency Evacuation of Heritage Collections*. Paris/Rome: UNESCO and ICCROM.

Tandon, A. (ed.) (2018) *First Aid to Cultural Heritage in Times of Crisis*, Vols. I–II. Rome/Amsterdam: ICCROM and Prince Claus Fund.

UN OCHA (ed.) (2018) *UN-CMCoord Field Handbook*, Version 2.0. Geneva: United Nations Office for the Coordination of Humanitarian Affairs.

UNESCO & Ministerio de Cultura y Patrimonio (eds.) (2017) *Manual for Contingency Procedures in Historical Archives in the Event of Natural Disaster*. Paris/Quito: UNESCO and Ministerio de Cultura y Patrimonio del Ecuador.

University for Continuing Education Krems (2025a) *Summer School 2020 – Tools and Strategies for Strengthening Resilience of Cultural Heritage in Climate Change*. Available at: https://www.donau-uni.ac.at/de/universitaet/fakultaeten/bildung-kunst-architektur/departments/kunst-kulturwissenschaften/zentren/zentrum-fuer-kulturgueterschutz/lehre/summer-schools.html#ss20 (Accessed 8 October 2025).

University for Continuing Education Krems (2025b) *Summer School 2021 – Risk Management and Protection Strategies for Cultural Landscapes in Climate Change*. Available at: https://www.donau-uni.ac.at/de/universitaet/fakultaeten/bildung-kunst-architektur/departments/kunst-kulturwissenschaften/zentren/zentrum-fuer-kulturgueterschutz/lehre/summer-schools.html#ss21 (Accessed 8 October 2025).

University for Continuing Education Krems (2025c) *Cultural Property Protection Exercise "Traismauer 2016"*. Available at: https://www.donau-uni.ac.at/en/university/faculties/education-arts-architecture/departments/arts-cultural-studies/centers/center-for-cultural-property-protection/study-programs/cpp-exercises.html#traismauer16 (Accessed: 12 August 2025).

University for Continuing Education Krems (2025d) *Cultural Property Protection Exercise "Tritolia 2018"*. Available at: https://www.donau-uni.ac.at/en/university/faculties/education-arts-architecture/departments/arts-cultural-studies/centers/center-for-cultural-property-protection/study-programs/cpp-exercises.html#tritolia18 (Accessed: 12 August 2025).

University for Continuing Education Krems (2025e) *Cultural Property Protection Exercise "Kolomani 2018"*. Available at: https://www.donau-uni.ac.at/en/university/faculties/education-arts-architecture/departments/arts-cultural-studies/centers/center-for-cultural-property-protection/study-programs/cpp-exercises.html#kolomani18 (Accessed: 12 August 2025).

University for Continuing Education Krems (2025f) *Summer School 2019 – Climate Change and Cultural Landscapes: Preventive Conservation of Natural and Cultural Resources along the River Danube*. Available at: https://www.donau-uni.ac.at/de/universitaet/fakultaeten/bildung-kunst-architektur/departments/kunst-kulturwissenschaften/zentren/zentrum-fuer-kulturgueterschutz/lehre/summer-schools.html#ss19 (Accessed: 8 October 2025).

University for Continuing Education Krems (2025g) *Cultural Property Protection Exercise "Lindau 2023"*. Available at: https://www.donau-uni.ac.at/en/university/faculties/education-arts-architecture/departments/arts-cultural-studies/centers/center-for-cultural-property-protection/study-programs/cpp-exercises.html#lindau23 (Accessed: 12 August 2025).

UK Resilience Academy (ed.) (2024) *Exercising Best Practice Guidance*, Version 1. September 2024.

Wallace, K. et al. (2025) 'Expert-Derived Recommendations for Designing and Facilitating Tabletop Crisis Exercises: A Delphi Study', *Safety Science*, 189, 106898. DOI: 10.1016/j.ssci.2025.106898.

Waring, S., Moisi, I., Barrett, C. & Gordts, S. (2024) 'Identifying What Components of Full-Scale Emergency Exercises Improve Disaster Response Learning: A Rapid Evidence Assessment', *International Journal of Disaster Risk Reduction*, 104, 104390. DOI: 10.1016/j.ijdrr.2024.104390.

WHO (2017) *Simulation Exercise Manual*. Geneva: World Health Organization.