CRAEFT

care, judgment, dexterity

Risk Assessment

Project Acronym	Craeft
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http://www.craeft.eu/

Executive summary

This final risk assessment provides a retrospective evaluation of Craeft following its successful completion at Month 36 (M36). While previous reports focused on project execution, this deliverable marks the transition from implementation-focused management to safeguarding the long-term exploitation and preservation of project outcomes.

Project Status at M36. The majority of risks related to technical development, data collection, and stakeholder coordination have been effectively mitigated and are now considered closed. The project's successful completion reflects strong resilience and the full achievement of its scientific and technological objectives.

Residual and Post-Project Risks. The focus has shifted to five primary areas that influence the sustainability and lasting impact of Craeft:

- Digital Asset Sustainability. Ensuring the continued availability and interoperability of platforms, datasets, and digital re-enactments.
- Long-term Stakeholder Engagement. Maintaining active participation from craft communities, educators, and institutional partners.
- Uptake and Reuse. Promoting the continued use of project methodologies and educational resources by external users.
- Technological Obsolescence. Addressing the need for periodic updates to maintain the relevance of VR/AR and haptic tools.
- Intellectual Property Management. Safeguarding digital content through secure licensing and governance frameworks.

Mitigation and Governance. To safeguard these outcomes, the consortium has implemented strategies based on modular system design, clear licensing, and robust documentation. Long-term impact is further supported by transitioning responsibility to partner institutions for hosting and community-driven maintenance.

Key Lessons Learned. The project's risk management history highlights several vital practices for future initiatives:

- Sustained Collaboration. Early and continuous engagement with stakeholders ensures community ownership and tool adoption.
- Adaptive Mitigation. Flexible, data-driven strategies allowed the team to respond effectively to evolving technical challenges.
- Standardisation. Rigorous data protocols and multidisciplinary expertise provided a stable foundation for the project's legacy.

Overall, the Craeft results are robust, reusable, and well-positioned to deliver lasting cultural, educational, and societal impact.

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Abbreviations

AI	Artificial Intelligence
AR	Augmented Reality
CAP	Craeft Authoring Platform
CIDOC-CRM	CIDOC-Conceptual Reference Model
DMP	Data Management Plan
EDM	European Data Model
FAQ	Frequently Asked Question
GDPR	General Data Protection Regulation
HTTPS	Hypertext Transfer Protocol Secure
IPR	Intellectual Property Rights
M36	Month 36
MoCap	Motion Capture
UCD	User-Centred Design
VR	Virtual Reality
WP	Work Package

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1 Introduction

1.1 Background Information on Craeft

Craeft (Craft Understanding, Education, Training, and Preservation for Posterity and Prosperity) has explored traditional crafting activities as complex, knowledge-rich practices encompassing care, judgment, dexterity, and cultural meaning. Drawing on an interdisciplinary approach that integrates Anthropology, Knowledge Representation, Cognitive Science, Art History, Advanced Digitisation, Audiovisual and Haptic Immersion, and Computational Intelligence, the project has developed digital methodologies and tools for understanding, preserving, teaching, and valorising craft practices.

Throughout its lifecycle, Craeft has treated crafts as living and evolving forms of cultural heritage, while also recognising their potential as sustainable economic activities and vehicles for knowledge transmission. By combining advanced digital technologies with close collaboration with craft practitioners, educators, and cultural stakeholders, the project has delivered a comprehensive set of results spanning documentation, digital re-enactment, education, training, preservation, and product valorisation.

At M36, the project has successfully concluded all planned activities and delivered its scientific, technological, and societal objectives.

1.2 Purpose and Scope of the Risk Assessment

This deliverable constitutes the final risk assessment of Craeft, prepared at the conclusion of the project (M36). Unlike earlier versions of this deliverable, which focused on identifying and mitigating risks related to project implementation and execution, this final version adopts a post-project perspective.

The purpose of the final risk assessment is to:

- Provide a retrospective overview of how previously identified risks were addressed and resolved during the project lifecycle.
- Identify and assess residual risks that remain relevant after the project's completion.
- Identify post-project risks associated with sustainability, long-term use, exploitation, and impact of the project's results.
- Document lessons learned and mitigation approaches that support the long-term robustness of the project outcomes.

Accordingly, risks related to development delays, technical integration during implementation, data collection, and internal project coordination are considered closed and are not reassessed in terms of likelihood or impact. The scope of this deliverable is deliberately focused on risks that may impact the project's legacy beyond the funded period.

1.3 Importance of Craeft

Post-project risk assessment is particularly important for an initiative such as Craeft, whose outcomes extend beyond the duration of the funded project and are intended to support long-term cultural, educational, and economic impact.

Key areas where post-project risk assessment is essential include:

- **Sustainability of digital assets**, platforms, and datasets developed during the project;
- **Long-term engagement** of craft communities, educators, and institutions;
- **Uptake and reuse** of methodologies, tools, and educational materials by external users;
- **Preservation and governance** of digital representations of craft knowledge;
- **Adaptability** of project results to evolving technological and societal contexts.

By addressing these aspects, the final risk assessment assures that Craeft's results are not only complete but also resilient and capable of generating impact beyond the project's lifetime. It also demonstrates that risk management has been an integral and continuous process throughout the project, culminating in a structured and realistic assessment of post-project challenges and mitigation measures.

2 Final Risk Identification at M36

Risk identification is a critical component in evaluating the outcomes and sustainability of Craeft. At M36, the project has successfully concluded, and the majority of execution-related risks have been addressed. This chapter presents a post-project risk assessment, highlighting residual and post-project risks that may affect the long-term sustainability, adoption, and impact of project results.

By focusing on these remaining risks, the project team can guide future exploitation, preservation, and community engagement, ensuring that Craeft's outcomes remain robust and impactful beyond the funded period.

2.1 Residual and Post-Project Risk Landscape

During the project, initial risks were identified across technical, operational, and user engagement dimensions. Following successful mitigation efforts, these risks are now largely closed. The table below summarises the types of post-project risks that remain relevant.

O1. Understanding Crafting Actions and Processes

- **Residual Technical Complexity:** While development challenges have been overcome, ongoing refinement and platform integration may require minor updates to maintain usability and interoperability.
- **Data Interoperability:** Continued attention is needed to ensure long-term compatibility and accessibility across platforms and tools.

O2. Digital Re-enactment of Craft Actions and Processes

- **Technological Integration:** Advanced technologies such as motion capture and haptic systems are implemented, but future updates may occasionally present compatibility considerations.
- **User Feedback Incorporation:** Maintaining mechanisms for ongoing improvement based on stakeholder feedback supports the accuracy and relevance of digital re-enactments.

O3. Education

- **Adoption of Educational Tools:** Educational materials must be maintained and updated to reflect evolving technologies and pedagogical standards.
- **Long-term Engagement:** Sustaining interest and participation from learners and educators is essential for continued impact.

O4. Training

- **Immersive Training Usability:** VR and AR solutions require maintenance to ensure ease of use for future trainees.

- **Pedagogical Effectiveness:** Training exercises should be periodically reviewed and refined to ensure skill transferability.

O5. Design

- **Tool Integration:** Design software and hardware systems may evolve, requiring future updates to maintain compatibility.
- **User Learning Curve:** Ongoing documentation and support are necessary to facilitate the adoption of digital design tools.

O6. Preservation & Revival

- **Certification Processes:** The establishment of standardised craft certification frameworks requires continued refinement and promotion.
- **Sustainability Practices:** Maintaining environmentally and socially sustainable practices in craft preservation remains an ongoing consideration.

O7. Product Valorisation

- **Market Dynamics:** Long-term market acceptance of craft products depends on adapting to evolving customer preferences while preserving authenticity.
- **Digital Content Security:** Continued protection of intellectual property and data integrity is required for sustainable valorisation.

2.2 Positive Risk Factors and Opportunities

The project's successful execution has also produced **positive risk factors**, enhancing the likelihood of long-term impact:

- **Technological Advancements:** Robust simulation, data processing, and immersive tools create opportunities for future expansion.
- **Increased Stakeholder Engagement:** Strong partnerships ensure continued knowledge sharing, collaboration, and community ownership.
- **Scalability Opportunities:** Methods and tools developed during Craeft can be extended to additional crafts, educational contexts, and cultural institutions.
- **Knowledge Dissemination:** Documented best practices and case studies provide transferable insights for other projects and initiatives.
- **Enhanced User Adoption:** Positive feedback from stakeholders supports long-term acceptance and reuse of digital tools and methodologies.

2.3 Summary

At M36, Craeft has successfully mitigated execution-related risks, and the remaining risks are primarily post-project in nature. These residual risks focus on sustainability, maintenance, uptake, and the continued relevance of project results. By acknowledging and addressing these risks, the project ensures

that its outcomes remain resilient, reusable, and impactful beyond the duration of the funding period. Positive risk factors further reinforce the project's potential for long-term success and adoption.

3 Risk Analysis and monitoring at M36

At M36, Craeft has successfully concluded all planned activities and achieved its objectives. The majority of risks related to project execution have been mitigated and are now considered closed.

This chapter presents a final risk analysis, highlighting residual and post-project risks, their status, and key lessons learned that support the sustainability, adoption, and long-term impact of Craeft's results.

3.1 Post-Project Risk Assessment

The post-project risk assessment focuses on risks that remain relevant after the project's completion. These primarily concern the sustainability of digital assets, long-term stakeholder engagement, uptake and reuse of tools and educational materials, technological evolution, and intellectual property protection.

The table below summarises the residual and post-project risks:

Risk Area	Description	Likelihood	Impact	Status	Notes
O1: Technical Complexity	Minor updates may be required to maintain platform interoperability.	Low	Medium	Residual	Platforms and simulations are operational but require periodic maintenance.
O1: Data Availability & Quality	Ensuring ongoing access and usability of datasets.	Low	High	Residual	Data are robust and validated, but long-term hosting and curation are needed.
O2: Technological Integration	Future updates of motion capture or haptic systems may pose challenges.	Medium	Medium	Residual	Core systems are stable; modular design mitigates major issues.
O3: Adoption of Educational Tools	Educational materials may need updates for evolving technologies.	Medium	High	Post-Project	Mechanisms for revision and distribution ensure ongoing relevance.
O4: Training Usability & Pedagogy	Maintaining the effectiveness of immersive training solutions.	Medium	Medium	Post-Project	Training content requires periodic review for skill transferability.

O6: Certification & Skill Recognition	Continued development and promotion of certification frameworks.	Low	High	Residual	Engagement with institutions and craft communities supports adoption.
O7: Digital Content Security	Long-term protection of intellectual property and digital assets.	Low	High	Residual	Security measures are in place; licenses and documentation ensure proper use.

The majority of residual risks are characterised by a **Low Likelihood** due to the robust technical and data foundations established during the project lifecycle. However, the **Impact** remains **High** for areas such as data availability and certification, as these are critical to Craeft's long-term legacy and societal contribution.

By maintaining the **modular design** of the platform and ensuring **institutional hosting**, the consortium effectively lowers the severity of potential technological obsolescence.

3.2 Lessons Learned and Implications for Post-Project Risk Management

The risk mitigation strategies applied throughout Craeft provide valuable lessons for managing residual and post-project risks:

- **Technical Expertise:** Early investment in multidisciplinary teams and continuous technical refinement ensured seamless integration and platform stability, providing a strong foundation for post-project sustainability.
- **Data Collection and Validation:** Standardised protocols and collaboration with craft communities ensured high-quality datasets. Continued curation and hosting mechanisms are recommended for long-term access.
- **Stakeholder Engagement:** Frequent co-design sessions and feedback loops built trust and community ownership. Sustaining engagement post-project is critical to maintain the adoption of tools and frameworks.
- **Resource Management:** Strategic allocation of resources and funding diversification minimised operational risks, enabling robust project delivery and a secure basis for post-project exploitation.
- **Continuous Monitoring:** Bi-monthly reviews and real-time dashboards allowed timely mitigation during the project. Similar monitoring and governance structures are advised for maintaining residual and post-project risks.

The final risk analysis demonstrates that Craeft's execution-related risks have been effectively closed. The remaining risks are manageable and primarily concern the long-term sustainability, adoption, and preservation of project outcomes.

By integrating lessons learned, robust documentation, modular technological design, stakeholder engagement, and open dissemination practices, Craeft is well-positioned to maximise its post-project impact and ensure the continued relevance and use of its results.

4 Risk Mitigation Strategies

At M36, Craeft has completed all planned activities. The majority of execution-related risks have been addressed and are now considered closed.

This chapter focuses on mitigation strategies for residual and post-project risks, ensuring the sustainability, adoption, and long-term impact of project results. It also reflects on lessons learned from earlier mitigation efforts, which guide maintaining Craeft outcomes beyond the funded period.

4.1 Retrospective on Mitigation Strategies

Throughout the project, risk mitigation strategies were implemented to address:

- Technical complexities through multidisciplinary expertise and iterative development.
- Data availability and quality via standardised collection protocols and collaboration with craft communities.
- Stakeholder engagement through co-design workshops, tailored communication, and feedback loops.
- Resource management via prioritisation of high-impact activities and diversification of funding.

These measures proved effective in mitigating execution-related risks and establishing a strong foundation for long-term sustainability.

4.2 Post-Project Mitigation Strategies

The following strategies focus on **residual and post-project risks**, addressing the long-term preservation, adoption, and reuse of Craeft results.

4.2.1 Sustainability of Digital Assets

- **Platform Maintenance:** Ensure continued availability and accessibility of digital tools, datasets, and re-enactments.
- **Modular Design:** Maintain system flexibility to accommodate future technological updates.
- **Documentation and Hosting:** Provide comprehensive technical and user documentation, and secure institutional hosting for long-term access.

4.2.2 Data Management and Quality

- **Long-Term Curation:** Establish protocols for ongoing validation and archiving of datasets.
- **Community Collaboration:** Maintain partnerships with craft communities to update, enhance, and diversify datasets over time.

4.2.3 Stakeholder Engagement and Adoption

- **Ongoing Outreach:** Sustain engagement with craft practitioners, educators, and institutions to promote uptake of project tools and materials.
- **Training and Dissemination:** Provide continued access to training programs, educational resources, and best practice guidelines.
- **Feedback Loops:** Encourage community-driven improvement and adaptation of tools and content.

4.2.4 Intellectual Property and Content Security

To mitigate residual risks related to digital content security and the protection of intellectual property (IP), the project has established a robust governance framework. This ensures that project outcomes remain protected while facilitating legitimate reuse and adoption by the craft community.

Licensing and Governance

- **Clear Licensing Agreements:** All digital content, including datasets and training materials, is governed by clear licensing agreements to ensure proper use post-completion.
- **Standardised Permissions:** The use of standardised licensing (such as Creative Commons for educational materials) facilitates the legal "uptake and reuse" of project methodologies.
- **Institutional Ownership:** Long-term governance is secured through institutional ownership, where partner institutions assume responsibility for oversight and access control.

Data Protection and Integrity

- **GDPR Compliance:** Continued adherence to the General Data Protection Regulation (GDPR) ensures the privacy of practitioners and stakeholders involved in data collection.
- **Secure Digital Assets:** Security measures are integrated into the project's platforms to safeguard against unauthorised access or technological obsolescence.
- **Documentation as Security:** Comprehensive technical records and user documentation serve as a safeguard, ensuring that the IP remains interpretable and usable even as software environments evolve.

4.2.5 Educational and Training Material Sustainability

- **Adaptive Learning Resources:** Periodically review and update educational materials to remain aligned with evolving technological and pedagogical standards.
- **Inclusive Programs:** Maintain accessibility of training resources for diverse audiences and skill levels.

4.3 Lessons Learned

5.4. Lessons Learned

The post-project perspective at M36 highlights several critical insights derived from the project's execution. These lessons provide a blueprint for managing residual risks and ensuring the long-term cultural and societal impact of Craeft outcomes.

- **Stakeholder Collaboration is the Key to Adoption:** Early and sustained engagement with craft practitioners, educators, and institutions fostered a sense of ownership. This collaboration ensures that project results remain relevant and usable beyond the funded period.
- **Flexible Mitigation Facilitates Resilience:** Adopting adaptive mitigation strategies during the project lifecycle allowed the consortium to respond effectively to technical complexities. These flexible approaches now serve as a framework for post-project risk management.
- **Data-Driven Decision Making Strengthens Outcomes:** Utilising evidence-based strategies throughout the project reinforced risk mitigation and informed technical updates. This practice ensures that future updates to tools and datasets remain grounded in validated findings.
- **Robust Documentation and Governance Safeguard the Legacy:** Comprehensive records, clear licensing, and institutional ownership are essential for protecting project outcomes. These elements provide the necessary structure for long-term preservation and secure reuse.
- **Modular Design Future-Proofs Technology:** The decision to use modular and adaptable designs for platforms and tools supports future technological updates. This foresight mitigates the risk of technological obsolescence and ensures long-term usability.

By institutionalising these lessons, Craeft has transitioned from a set of implementation tasks into a sustainable ecosystem for digital craft preservation.

5 Risk Monitoring and Review – Final M36

Effective risk monitoring and review are essential not only during project execution but also for ensuring the sustainability, adoption, and long-term impact of project results. At M36, Craeft has concluded its activities, and the majority of execution-related risks are considered closed.

This chapter presents the post-project monitoring framework, focusing on residual and post-project risks and providing guidance for ongoing governance and maintenance of Craeft outcomes.

5.1 Post-Project Risk Monitoring

Although the project has ended, certain risks remain relevant for **long-term sustainability**. Post-project risk monitoring should focus on:

- **Sustainability of Digital Assets:** Ensuring that tools, datasets, and digital re-enactments remain accessible, usable, and updated over time.
- **Stakeholder Engagement:** Tracking continued participation and adoption by craft communities, educators, and institutions.
- **Educational and Training Resources:** Monitoring the uptake and relevance of learning materials and training programs.
- **Intellectual Property and Data Protection:** Ensuring proper licensing, data security, and content reuse according to agreed governance structures.

Mechanisms for post-project monitoring may include:

- **Institutional Oversight:** Assigning responsibility to partner institutions or community stakeholders for the maintenance and review of digital tools and datasets.
- **Periodic Review:** Scheduled assessments of resource usage, platform accessibility, and educational material relevance (e.g., annually or biannually).
- **Community Feedback:** Engaging users and stakeholders to identify emerging needs, usability issues, or opportunities for adaptation.

5.2 Review Mechanisms for Residual Risks

To maintain the long-term relevance and impact of Craeft results, the following review mechanisms are recommended:

- **Effectiveness Assessment:** Periodically evaluate whether mitigation measures for residual and post-project risks are still sufficient.
- **Continuous Improvement:** Use lessons learned during the project to refine governance, technical maintenance, and stakeholder engagement strategies.
- **Scenario Analysis:** Anticipate potential changes in technology, market conditions, or educational requirements, and plan contingency measures to maintain sustainability.

5.3 Key Lessons and Findings

The post-project review confirms several insights from the project lifecycle that support ongoing risk management:

- **Mitigation Successes:** Execution-related risks were effectively addressed, providing a stable foundation for long-term adoption.
- **Residual Risks:** Post-project risks remain in areas such as platform sustainability, ongoing community engagement, and content governance.
- **Stakeholder Contributions:** Active engagement of craft communities, educators, and institutional partners is critical for monitoring and maintaining project results.
- **Governance and Documentation:** Clear responsibilities, licensing, and documentation are essential to ensure that outcomes remain usable and impactful beyond the funded period.

Craeft has successfully transitioned from execution-focused risk management to a framework for post-project monitoring and governance. By institutionalising oversight, maintaining stakeholder engagement, and applying lessons learned from project execution, Craeft's results are positioned for long-term sustainability, adoption, and impact.

6 Conclusion

Craeft successfully concluded at M36, having met its core objectives of understanding, documenting, preserving, and valorising traditional crafts through innovative digital technologies. Throughout the project's lifecycle, a structured and adaptive risk management strategy ensured that execution-related challenges were effectively mitigated.

6.1 Transition to Sustainability

With the implementation phase complete, the focus of risk management has shifted from active execution to long-term sustainability and impact. Ensuring the project's legacy now depends on managing residual risks related to digital asset accessibility, the continued adoption of training materials, and the ongoing maintenance of technological tools. By proactively addressing these post-project factors, Craeft ensures its outcomes remain robust and relevant beyond the funded period.

6.2 Core Pillars of Long-Term Success

The project's enduring impact is built upon four critical foundations:

- **Stakeholder Collaboration:** Continuous engagement with practitioners and institutions has fostered a sense of ownership, which is essential for the long-term adoption of project results.
- **Technological Flexibility:** The modular design of the project's platforms allows for future updates, ensuring the tools remain usable as technology evolves.
- **Data Integrity and Governance:** Standardised collection and validation protocols, combined with clear licensing and institutional hosting, provide a secure foundation for the preservation of craft knowledge.
- **Adaptive Resilience:** Evidence-based decision-making and cross-disciplinary collaboration have established a blueprint for best practices in digital heritage governance.
- Final Outlook

Craeft demonstrates that proactive risk management and interdisciplinary innovation can deliver sustainable outcomes at the intersection of technology and cultural heritage. The results are now well-positioned to provide lasting educational and societal value, offering a proven model for future initiatives in digital craft preservation.