

The ViMM Manifesto Draft 2.1

Introduction

This document represents the latest draft of the ViMM Manifesto, distilled mainly from the Synthesis of Propositions which emerged from the Consensus-building workshop held in Berlin on 12 and 13 April 2018, but with a small number of additional ideas added and following further consultation within the ViMM consortium. Once finalised, the draft Manifesto will be circulated for consultation to the ViMM/DCH community. The final version following that will become the Deliverable *ViMM Manifesto* (due in August 2018).

Material from the Synthesis of Propositions which is more suitable for the *Action Plan and Roadmap for VM* (due in October 2018) is, in general, not included in the draft Manifesto but is held back for the first draft Roadmap, which will be made available in June 2018, once additional supporting evidence has been considered and incorporated.

The ViMM Manifesto

We, the ViMM Coordination and Support Action and its community of experts, believe that the following ten areas require attention and action by all interested parties in the near future in order to secure the potential social and economic benefits of Digital Cultural Heritage in the years to come.

1. Positioning the DCH sector

Culture is becoming increasingly a precondition of all kinds of economic value generation, processes driven by two concurrent streams of innovation: digital content production and digital connectivity. It is critical to Europe's economy and society in the context of future funding programmes that virtual museums and Digital Cultural Heritage (DCH) in general, are positioned and described to benefit from well-structured investment at the EU, national, regional and local levels.

Culture - and the heritage which derives from it - is an economic and social asset. The ideas defined for Culture 3.0¹ have identified key links with innovation, welfare, sustainability, social cohesion, new entrepreneurship, soft power, local identity and the knowledge economy. Policies are needed leading to initiatives which gain maximum effect, moving from public patronage to a system-wide competitiveness strategy through strategic investment.

Society becomes increasingly technology driven: cultural heritage organisations must adapt and become engaged with this development. Therefore, clear and tangible policies are needed from governments and managements of cultural heritage institutions. The conceptualisation of virtual museums, as promoted by ViMM (see the footnoted definition²), should be further developed to generate relevant policies, inspire novel implementations and to stimulate investment.

In order to improve cost/impact efficiency and achieve greater sustainability, effective operational and business planning is needed. An important gap can be identified between investments in implementation of digital projects on the one hand and 'backbone' or infrastructural actions, on the other.

Synergies between EU policies, in the light of the Council conclusions³, the Commission proposals for a New European Agenda for Culture⁴, on the one hand, and the strategies for DCH of key international organisations and leading players in the CH field (listed on the ViMM Platform) such as UNESCO's global goals, on the other hand, should be leveraged for maximum advantage.

¹ <https://ec.europa.eu/assets/jrc/events/20131024-cci/20131024-cci-sacco.pdf>

² <https://www.vi-mm.eu/2018/01/10/the-vimm-definition-of-a-virtual-museum/>

³ <http://www.consilium.europa.eu/en/press/press-releases/2017/12/14/european-council-conclusions-external-relations/>

⁴ https://ec.europa.eu/culture/sites/culture/files/commission_communication_-_a_new_european_agenda_for_culture_2018.pdf

In this context, ViMM acknowledges strategic documents such as:

- the ICOM New Strategic Plan 2016 - 2022⁵
- the ICOMOS future strategic plan: The World Heritage List: Filling the gaps - an action plan for the future⁶
- The Action Plan 2015-2017 - Network of European Museum Organisation⁷
- 'A Call to Culture': Europeana 2020 strategic update⁸
- the Strategy for the Reinforcement of UNESCO's Action for the Protection of Culture and the Promotion of Cultural Pluralism in the Event of Armed Conflict⁹

2. Improving audience participation

There is a clear need to identify and classify in more depth the target audiences who can benefit from DCH. A sustainable future for Digital Cultural Heritage will benefit greatly from a wide sense of ownership and involvement by the communities concerned. As DCH initiatives apply global strategies, they should take steps to increase the social and economic benefits for these communities, such as the involvement of schools, inclusion of minorities, increased accessibility and engagement of local enterprises in product promotion and open content.

It is important that citizens are not restricted to being just consumers of DCH, but that they should be enabled to participate actively and empowered to take ownership of their cultural assets.

In line with the Culture 3.0 concept and in order to better serve its audiences and to maximise efficiency of economic and social efforts, the DCH community needs to shift towards participatory design strategies and to move from technology-oriented to user-oriented perspectives. This involves mapping social needs and goals and considering innovation not only as the creation of new technology but also as the novel use of existing technology.

By focusing on interaction and conceptual design, virtual multimodal museums will be able to offer diversified, collaborative, and tailored experiences that adapt to the different needs of audiences and stakeholders, including the public, curators and museum decision makers, technical specialists, partner organisations and other industries.

3. Harnessing technologies

The harnessing of additional technologies will have increasing relevance for museums and cultural heritage institutions, including: artificial intelligence; computer vision; deep learning / machine learning; and adaptive cognitive methods. It is important that cultural heritage

⁵ <http://icom.museum/the-vision/strategic-plan/>

⁶ <https://www.icomos.org/en/newsletters-archives/116-english-categories/resources/publications/258-monumentsasites-xii>

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<https://www.google.com.cy/search?q=future+action+plan+nemo&oq=future+action+plan+nemo&aqs=chrome..69i57.6382j0j4&sourceid=chrome&ie=UTF-8>

⁸ <http://strategy2020.europeana.eu/update/>

⁹ https://en.unesco.org/system/files/private_documents/strategy_comprehensive_en_0.pdf

institutions are aware of and informed about technologies available to support their requirements. To this end, the use of technologies should be documented as well as the extent of their success or failure.

Cultural heritage organisations and everyone involved in handling, exploitation, research and valorisation of DCH should be aware of the usefulness of XR (Extended Reality)¹⁰ technology that can support their internal and external processes, not only by extending existing formats but also by exploring new ways of presenting cultural content. This should not compete with but extend institutional capabilities, beyond the limitations of material reality, as they relate to exhibits, infrastructure and users.

Cultural heritage institutions often deal with a very large number of three dimensional objects, e.g. archaeological museums with millions of pieces, making it impossible to document each single fragment manually. Automated information extraction on a large scale is needed, underpinned by comparative analysis of different technologies as a prelude to further development. Artificial intelligence might be an enabling technology for this, especially as more data becomes available.

Human-machine collaboration will enhance our understanding and enjoyment of cultural heritage, for example by interlinking metadata/data across domains and capturing knowledge directly from the human brain and body activity. New immersive environments are required that enhance interaction between human and machine activity, together with efficient interfaces for semantic tagging by humans

All this entails the full engagement of the cultural heritage sector in a process of Digital Transformation in which museum departments should incorporate technology solutions within their day-to-day responsibilities.

4. Incentivising funding

While there is evidence of a solid demand for virtual multimodal museums and DCH in general, there is a lack of resources and also great imbalances between institutions in relation to their scale, legal statutes, location, and content. In order to address these imbalances, policies for the incentivisation of funding from both public and private sources need to be developed including a mixture of direct public subsidies, tax incentives for private funding, sponsor visibility, crowdfunding and other fundraising initiatives.

The EU and international heritage organizations can play a key role in co-ordinating and promoting the means of funding for DCH – as well as funding key initiatives directly - as a vital ingredient in Europe’s economic prosperity and social cohesion, not least through its museums and cultural heritage institutions. Collective investments on an EU-wide scale are likely to be needed in new technologies, since few if any individual institution could make them on their own.

¹⁰ XR is used by ViMM as a current way to express all real-and-virtual combined environments and human-machine interactions generated by computer technology and wearables i.e. the ‘reality continuum’ encompassed by virtual reality (VR), augmented reality (AR) and mixed reality (MR).

5. Opening up

Museums should be open-minded, working together with a variety of creative producers, to provide virtual products that promote cultural heritage beyond the limitations of a physical museum. Openness to partnerships is an important pre-requisite.

Further support should be given to the universalisation of Open Access policies for digital data (e.g. Creative Commons), Open Source infrastructure for digital content management and Open frameworks for object visualization/ dissemination.

For achieving sustainability, digital cultural information should be based on open formats and metadata standards, such as the ones provided by the Europeana Service, supporting long-term availability. It is strongly recommended that museums make their data available by open licence, taking into account all the relative EU directives (such as PSI, orphan works, copyrights, etc.).

It is important to consider the use of open source software tools and formats as a first priority in order to ensure long-term usability of the material created, promoting public availability of open source authoring tools for Cultural Heritage assets. Such an approach will enhance the benefits to creative industries and strengthen developments such as Citizen Science, Crowdsourcing and Open Science.

For this, both content and software should be under free licenses (open source) to ensure that others can easily (re-)use it, thus creating potential for both commercial and non-commercial derivation. Working in an open way will ensure better possibilities for fundraising since value is transparent. It will also increase the opportunity to increase public engagement, crowdsourcing and create other benefits for institutions.

6. Giving the whole picture: data, documentation and semantics

Increased awareness and acceptance of the “Digital Turn” and the primary importance of data, especially structured and harmonised data, is central to the future of DCH, a sector where the data, contents and formats are heterogeneous (3D/2D, textual, audio, video, multilingual). Therefore, quality standards need to be prioritized in order to achieve an excellent level of integration, enrichment, retrieval and reuse of content.

Linked (Open) Data (LOD) performs a critical role in transforming cultural heritage collections. LOD requires controlled vocabularies/authority files and its impact is improved by contextualization of the material.

Management of cultural information is challenged by issues such as knowledge representation and information integration from different contexts. There is a need to support and establish expert-driven holistic and user-oriented documentation of DCH in order to increase the scientific, economic and social potential of advanced services to users. Cultural heritage data can be an important and revealing source for big data analytics.

Europeana should extend its role as the central platform for digital cultural heritage incrementally increasing the amount and quality of 3D and XR content.

Many, especially older, cultural heritage objects are only partially preserved. The missing parts are then reconstructed while building 3D-objects. For scientific purposes each reconstructed part needs to be not only identifiable, but also documented as to how the reconstruction was conducted and why the part has the actual dimensions, actual colour etc. This holds true especially when elements of intangible heritage are incorporated into virtual reconstructions. There is a need to distinguish the ‘fictional’ and the scientific in virtual models.

7. Powering contextualisation

Further momentum is needed to ensure that everyone involved in creating virtual objects provides information to support contextualisation to accompany their products. Standards and methods should be followed if available and other cases addressed to provide sufficient metadata for different contextualisation scenarios.

Many 3D models created in the past have limited applicability due to a lack of associated metadata. This can make it difficult to present cultural heritage objects in the context necessary to understand their meaning and relevance or to draw scientific conclusions from them. DCH projects should emphasise the historical and cultural background of what they are presenting.

Storytelling is an important example of contextualisation. New technologies e.g. 3D and XR offer opportunities to engage, to teach, to involve and are supportive elements for CH storytelling. They will be an important part of digital/virtual exhibitions which transmit both tangible and intangible cultural heritage.

Methods of visualisation based on new technologies need to be exploited. Easy-to-use instruments should be developed to support the integration of new technologies in digital exhibitions and other storytelling applications.

Immersive storytelling through XR playful learning (learning through story, play and interaction) in cultural heritage experiences is an important objective. New areas of creating and representing meaning, in order to provide for personalised experience should be explored along with increased interaction. Presence can be defined as a psychological perception of being Immersed in the XR environment and is essential for engagement and cognitive connection to the content. This involves content which is relevant and coherent in terms of social and cultural factors, including aspects such as cultural values, recognition and significance, representation of emotional intelligence, semantic time, space, provenance and uncertainty and emotion-based user interfaces.

Simulation of 3D worlds should include multilingual interaction with people (including ancient languages) and other actors such as animals, together with integration of sensory aspects such as touch, smell and sound.

Gamification is a feedback loop that incentivises the user to progress in the experience or learning process. Care should be taken to use gamification elements judiciously so as not to overpower the story or learning objective. To sharpen their successful use, gamification techniques should be mapped to the emotional results achieved.

8. Frameworks and standards: a navigable map

More powerful, intelligent and interconnected standards are required that can be used across domains, creating open formats, based on ontologies, that are interoperable in different systems and disciplines.

Emerging open interoperable frameworks and standards which support, create and share DCH such as the International Image Interoperability Framework (IIIF), Copernicus for Cultural Heritage and others, should be promoted and fast-tracked. However, current standards should be preserved and continuity through backward-compatibility thus sustained.

Standards need to be agreed so that digitised content (tangible and intangible) and the related metadata becomes seamlessly accessible in the long term to all. Metadata may include access to complementary material such as images, books, descriptions and drawings, illustrating the cultural and historic significance of the sites or artefacts.

A framework of 'virtual values' is needed to underpin DCH strategies and development, and to provide museum-staff with a comprehensible direction for the museum's approach to virtual and augmented content. The Virtual Values identified by ViMM include: "Virtual for all" Rule; Layered Content; Accessibility, Sustainability, Complementarity and Digital Privacy

9. Driving organisational change

Managements of Cultural Heritage institutions should prioritise digital transformation and lead organisational change, cooperating in a shared digitisation process within a common general strategy which tackles interoperability problems, creates "economies of scale", workable frameworks for rights and strengthens the ability of museums to support new technology.

The vision for technology take-up should be mapped to the museum's mission so as not to miss out on opportunities, entailing a regular assessment of organisational 'readiness' for DCH.

In order to improve efficiency and effectiveness of the use of resources, impact assessment studies, based on mature and standardised processes and tools¹¹, are needed as a fundamental commitment of CH institutions and as part of projects funded and/or carried out by public and private institutions.

Cultural Heritage institutions are not working in a vacuum and should ensure openness to the outside world. For them to be able to make the most of new technology there needs to be

¹¹ Such as the Europeana Impact Assessment Playbook <https://pro.europeana.eu/post/europeana-impact-assessment-playbook>

organisational change. It is important for museums to develop participatory technology strategies and to invest the needed resources in hardware and software solutions as well as training and support. Accessibility, sustainability and interoperability should be prioritised.

10. The Human Resources

Innovation in education and training for DCH will enhance awareness of and openness to digital initiatives. Policies should address systematic involvement and training of teachers, curators, administration and governance staff, using methodologies that promote understanding of different media paradigms.

To assure the skills and capacities of the next generation of (digital) curators and (virtual) museologists, the question ‘who needs to be trained, for what purpose and at what level’ should be directly addressed from a lifelong learning perspective, taking into account secondary, undergraduate, postgraduate, professional and vocational training as well as the engagement of volunteers and the public community in general. Remote and e-learning can play an important role.

Training offers, accompanied by meaningful certification, should be stimulated. These should be addressed to the different target groups involved in Cultural Heritage and their position in the ‘digital workflow’, broken down into different steps or stages and distinguished between technology skills, curatorial issues and decision or policy making needs. Interdisciplinary approaches are necessary to address all the needs and skills required for DCH.

Anyone involved in handling, exploitation, research and valorisation should be aware of the usefulness of XR technology to support their processes, both internal and external. This should form part of educational curricula in Cultural Heritage. Universities and schools conducting technical education should teach the relevance of cultural background information for the understanding of XR-representations of cultural heritage objects.

ViMM supports the recent recommendations of the Council of Europe Strategy 21¹² in the areas of Knowledge and Education for Cultural Heritage and proposes that the DCH sector recognises and develops them.

¹² <https://www.coe.int/en/web/culture-and-heritage/strategy-21-k>