Propositions and polling from Berlin

This document represents the state of progress towards the ViMM Manifesto, Roadmap and Action Plan, which are the key intellectual outputs of its work, following the joint Consensus-building workshop of all Thematic Areas (TA) held in Berlin on 12 and 13 April, in which about 100 experts in Digital Cultural Heritage participated. As such, it represents the culmination of the stage in the work of ViMM which arises from its 21 Working Groups, divided among 7 Thematic Areas.

The main inputs on the first Day were the fruits of the 9 months operation of the Working Groups up until the end of 2017, represented in *D3.2 Seven TA Working Group Composite Reports* and subsequently transformed by each TA Leader into a set of 'Propositions' for consideration at this event. These drafts were discussed and refined by each TA Group in Berlin and the drafts in this document are the result. Each TA was requested, if possible, to restrict the number of Propositions taken forward to Day 2 to six. Each individual Proposition was subsequently 'pitched' to the plenary audience by and individual member of the group on Day 2 and an advisory 'polling' exercise conducted, the results of which are annexed.

The next immediate stage in the process will be to synthesise the Propositions further. There are inevitably overlaps, duplications and minor conflicts between some Propositions which will now be resolved to produce a coherent whole. Further supporting evidence will be gathered to support Manifesto and Roadmap statements where necessary. The Thematic Area structure (the '7Ds') created by ViMM in order to gather evidence and ideas and to generate expert discussion, will now be transformed into a more holistic approach.

Propositions following Berlin

TA 1 Definitions

1.1 Positioning the 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. Virtual museums, as defined in ViMM, and Digital Cultural Heritage (DCH) in general should be positioned and described to benefit from well-structured investment at the EU, national and regional level. This is critical to the economy and society in a growing context of the next FWP, where open digital platforms and social media play vital roles.

1.2 Conceptualising the VM sector: typologies, schematics & visualisation

The conceptualization of virtual museums, as introduced by ViMM, should be further developed to generate relevant policies, inspire novel implementations and to stimulate the investment of decision-making processes.

1.3 Holistic documentation

Linked (Open) Data performs a critical role in transforming cultural heritage collections. Therefore, quality standards, have to be prioritized in order to achieve an excellent level of integration, enrichment, retrieval and reuse of content. Management of cultural information is challenged by issues such as knowledge representation and information integration from different contexts. There is a need to establish expert-driven holistic and user-oriented documentation of DCH, to be carried out and funded in order to increase the scientific, economic and social potential of advanced services to users**.**

1.4 Digital replicas

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

1.5 Emerging frameworks and standards

Emerging frameworks and standards which support create and share open interoperable Frameworks such as (IIIF) and Copernicus for Cultural Heritage and others, should be promoted and fast- tracked.

1.6 Content and documentation in Europeana

Europeana should extend its audience where possible by increasing the amount and quality of 3D and AR/VR/MR content it provides access to and by promoting and incorporating more holistic documentation driven by user needs.

1.7 Cooperation with international organisations

Synergies between EU policies and strategies for DCH and those of key international organisations and leading players in the CH field should be leveraged for maximum global advantage.

TA 2 Directions

2.1 Policy and society

Why?
Society becomes technology driven: CH organisations should adapt, get involved

Culture is an economical asset (Culture 3.0): Policies must be developed and put into practice in order to gain maximum effect.

Ethics
Governments should monitor the development of the Digital environment. Not by enforcing or blocking information streams (the easy option). DCH information must move top down and bottom up.

DCH should not exclude groups, minorities; besides “high tech” developments “low tech” should be developed and maintained simultaneously.

Anybody involved in CH should reflect on essence and consequences of digitisation and digital virtual reality and its implications for misuse and manipulation for political reasons.

Pragmatic/logistical
Clear and tangible policies for governments and CHI management.

Anybody involved in handling, exploitation, research and valorisation should be aware of the usefulness of VR/MR/AR technology that can support their processes, both internal and external. > Should be part of educational curriculum in CH.

2.2 Organizational change

- Open minded mentality
- Focus on inclusive technologies
- Accessibility, sustainability, interoperability
- Possibly a Department / Committee for this?
- Project-based ‘Organisational Readiness Value’

Institutions are not working in a vacuum but should ensure openness to the outside world. For them to be able to make the most of new technology there needs to be organisational change. It is important for museums to develop a strategy for inclusive technologies and invest the needed resources in hardware and software solutions as well as training and support. Here accessibility, sustainability and interoperability should be prioritised.

For organizational change to happen the organisations should ensure that internal communication is taking place as a network/strategy initiative both within their own institution and in cooperation with other national/international institutions.

Openness

- working with 3rd parties
- partnerships, crowdfunding, crowdsourcing (etc.)
- to present yourself to your audiences

- both content and software should be under free licenses (open source) to ensure that other can use it

Openness to the outside world would strengthen the institution's ability to support new technologies and is crucial for the virtual museums to become a reality. The Digital Cultural Heritage field should look to the outside world, with a logic of abundance rather than scarcity.

For virtual museums to work, openness to partnerships needs to be a part of it. Museums should be open-minded and work together and support a variety of production houses, creative businesses, SMEs, etc. for multiple purposes, providing virtual products to promote cultural heritage beyond the limitations of a physical museum. For this both content and software should be under free licenses (open source) to ensure that others can easily (re-)use it. This create potential for commercial derivation.

Working in an open way will ensure better possibilities for fundraising as value is shown. This also increases the possibility to get the general public involved in crowdsourcing which can create new possibilities, increase engagement and create other benefits for the institution.

Thinking long term

- Innovation
- Investments
- Strategies for Digital Development
- Free licenses (open source) will ensure that when a company goes away the content is still accessible and ensure that it is available long term

Cultural heritage organisations should be aware of the usefulness of VR/MR/AR technology that can support their processes, both internal (content and asset management, preservation, restoration) and external (promotion and marketing, access to archives and unexposed artefacts, new experiences of CH, linking up collections for educational, scientific and/or commercial purposes etc.). These represent considerable innovation opportunities, which can be enhanced by placing an emphasis on education and communication.

In terms of investments, there are multiple levels. It is important for museums to provide additional resourcing and staffing across digital, IT, design, and content creation/editing roles.

2.3 (Organisational): Digital transformation

Organisations should have a view towards producing digital experiences as universal as possible. The vision for technology take-up should be mapped to the overall vision and benefits of the museum's mission not to miss out on opportunities. This will help organisations stay innovative, which is a necessity also for fundraising.

Managements should prioritize digital transformation and lead organizational change to cooperate in a shared digitisation process within a common general strategy which tackles interoperability problem and creates "economies of scale". The institutions need to work proactively and prepare material for reuse. It needs to create and uphold plans for workable frameworks for how to work with its material, such as investigating image rights and strengthening the ability of museums to support new technology. Also, 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 (and not lost if a company goes out of business or a format gets dismissed).

2.4 (Technical): Digital Transformation

EU should promote and fund technology that can help create Virtual Cultural Heritage, for instance the process of digitising collections and objects and infrastructural upgrades in and for museums. For achieving sustainability, all digital cultural information should be based on open formats, meeting meta data standards and support long-term availability. Required updates have to be taken in to account and funded. We strongly recommend that museums make their data available by open licence.

2.5 Digital Transformation: content delivery & maintenance

It is common knowledge that technology (hard and software) needs to be updated periodically, which unfortunately not all museums have embraced or even understand. It is also common knowledge that visitors/people own devices.

Museums should make maximum use of the hardware technologies already owned by people.

Adoption

Museum departments should incorporate technology solutions within their day-to-day responsibilities and should commit to regular updates of the content which visitors experience through websites, online collections, education resources and mobile apps

2.6 Virtual values

Act as a framework for virtual/augmented/mixed experience strategies and development, and at the same time 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

TA 3 Documentation

3.1 Technology watch (with use cases and examples)

It is important that cultural heritage institutions are aware of and informed about technologies available to support their documentation requirements. To enable cultural heritage institutions to choose a technology that fits their needs an inventory of innovations accompanied by examples and use cases should be established and maintained. A thorough investigation of the applicability of technologies used in other sectors (e.g. industries or universities) should be conducted and shared, and an on-going process of technology watch initiated. To this end, the technologies should be documented as well as the entities that were created using them (whether they succeeded or failed). To support such a technology, watch a set of metadata and standards for the description of each example or use case should be defined.

This is a meta-topic potentially involving more than documentation only. This could lead in the long term to a permanent service.

3.2 Supporting contextualisation of virtual objects

Everyone involved in creating virtual objects should ensure that information to support contextualisation (e.g. temporal or spatial coverage, uses of the analogue original) always accompany their products. Standards and methods (e.g. linked data) should be followed if available and other cases for providing sufficient metadata to support different contextualisation scenarios (e.g. static environment, augmented reality) should be addressed.

Many 3D models created in the past (e.g. available at sketchfab and other channels) have limited applicability due to a lack of associated metadata. In particular, 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. Universities and schools conducting technical education should teach the relevance of cultural background information for the understanding of cultural heritage objects. Projects digitizing cultural heritage should emphasize the historical and cultural background of what they are presenting. (Example provided in 3.3).

(Might be harmonized with 1.3 “Holistic documentation” and 6.4 “Tangible heritage into digital context: integrated view”).

3.3 Story-telling as an example of contextualization

New technologies e.g. 3-D. VR, AR, MR offer new opportunities to engage, to teach, to involve and will be an important part of digital/virtual exhibitions to transmit both tangible and intangible cultural heritage. Methods of visualization based on new technologies need to be exploited. Scenarios, test cases and easy-to-use instruments need to be developed to support the integration of new technologies in digital exhibitions and other story-telling applications. The documentation requirements to support this kind of contextualisation, and in particular the needs of documenting intangible heritage, need to be understood and made available as best practices (See 3.2).

3.4 Faithful representations

Often 3D-objects presume to present and replace a cultural heritage object. Many, especially older, cultural heritage objects are only partially preserved. The missing parts are then reconstructed while building 3D-objects, whether by “physical parts”, colouring or the extent of some pieces etc. Every 3D-object that contains such “reconstructed” parts should identify these parts. 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, the actual colour etc. This holds true especially when elements of intangible heritage are incorporated into virtual reconstructions. Projects, programs and university curricula should reflect such distinctions. Research is needed on how to present the fiction/science distinction in virtual models.

3.5 (Mass-) Automated Information Extraction

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. More investigation and practical development of technologies for 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.

3.6 Participatory approaches in virtual museums

A thorough investigation of possible ways of involving citizens in documenting digital cultural heritage is needed. It is important that citizens are not restricted to being just consumers of digital cultural heritage, but that they should be enabled to participate actively and empowered to take ownership of their cultural assets. Through citizens' involvement they can contribute knowledge which is very relevant for scholarly investigation of the respective objects, while strengthening their cultural identity. The involvement of citizens will also enable them to understand the distinction between fictional, entertainment-driven and science-based applications of 3D-digitization. Basic training and rules of thumbs should be produced to support collaboration between institutions and citizens following best practice.

TA 4 Dimensions

4.1 Immersive storytelling

MR/VR/AR edutainment (learning through story, play and interaction) in cultural heritage storytelling experiences is a key objective. However, as the rules and structures of traditional storytelling (literature, cinema, etc.) do not translate to AR/VR/MR storytelling, there is an urgent need to promote experimentation, research and interdisciplinary collaborations to create these structures for immersive and compelling stories.

4.2 Gamification

Gamification is a feedback loop that incentivizes the user to progress in the experience or learning process. To sharpen the good and efficient use of gamification elements, further research efforts to map which gamification techniques achieve which emotional result should be encouraged. Care should be taken to use gamification elements judiciously so as not to overpower the story or learning objective.

4.3 Presence

Presence can be defined as a psychological perception of being Immersed in the VR/AR/MR environment. Presence is essential for engagement and cognitive connection to the content. Presence can be enhanced if the content is relevant and coherent in terms of social and cultural factors. There should be cross-disciplinary synergies about presence-related methodologies that were not developed for, but which can be integrated, in a virtual museum of the future.

4.4 Accessibility

EU should promote public availability of authoring tools and Cultural Heritage assets and best practices to facilitate content creation (open-source). A central infrastructure should be created for re-usable 3D European digital-born assets and also setting common cross-border standards for their IP protection. EU should define a central copyright rules – framework and authenticity stamp for Cultural Heritage assets and its metadata.

Authoring tools: Software tools that helps assemble and orchestrate content elements to design a good experience (3D modeling tools, animation tools, storytelling, multimedia editing, game engines, storyboarding, data acquisition).

Authenticity stamp: Authorized and legitimate digital reproduction and use of DCH assets.

4.5 Digital Privacy

Any data acquired on users during the VR/AR/MR experience must be securely processed and anonymized since now cameras, motion sensors and controllers in such applications may invade privacy. Within multiuser environments safety guidelines should be implemented to protect individual users.

4.6 Support innovation

The EU and other international heritage organizations should co-ordinate, fund and promote both incremental as well as innovative AR/VR/MR techniques for museums and cultural heritage institutions. These techniques should not only extend existing formats, (eg. augmented audio-guides and automated educational programs) but also explore new ways of presenting cultural content. They should not compete with but extend institutional capabilities, beyond the limitations of material reality, as they relate to exhibits, infrastructure and users.

TA 5 Demand

5.1 Audience-oriented strategies

In order to better serve our audiences and to maximize efficiency of economic and social efforts, we need to: 1) map social needs and goals; 2) shift towards participatory design strategies; 3) move from technology-oriented to user-oriented perspective; 4) consider innovation also as the novel use of existing technology and not only the creation of new technology.

By focusing in interaction and conceptual design, virtual multimodal museums will be able to offer diversified, collaborative, and tailored experiences that adapt to the different needs of both audiences and stakeholders.

5.2 Education and training policies for CH professionals.

A major challenge is education and training for CH professionals. In this case, policies should address: 1) active, systematic involvement and training of teachers, curators, administration and governance staff; 2) development of new and existing methodologies to promote understanding of different media paradigms; 3) ensure continuous training through DUI (Doing, using and interacting) and DWO (Doing with others) methodologies.

By doing all this we will enhance awareness of and openness to digital initiatives, as well as promote innovation in Education.

5.3 Governance and decision-making

An important gap can be identified between investments in implementation of digital projects and 'backbone' actions. In order to improve cost/impact efficiency and achieve greater sustainability effective operational and business planning is needed. Requirements include a well-structured decision-making process, measurement and evaluation processes, and resources allocation for studies. Key actions are:

Establishment of standardized processes for the four stages of any digital heritage project: conception, design/planning, implementation, and operation.

Organization of the administration and governance structures, by developing extensive support schemes for an effective decision-making process, both internal (digital project owners and promoters) and external (policy makers, administration, communities).

Development of new channels to present/propose projects in CH institutions, which will lead to new governance structures.

5.4 Incentivising funding

While there is a solid demand for virtual multimodal museums, there are lacks of resources and also great imbalances between institutions due to, amongst others, the scale, legal statutes, location, and content type. In order to address these imbalances, policies for the incentivization of funding from both public and private sources need to be developed: direct public subsidies, tax incentives for private funding, sponsor visibility, fundraising initiatives, crowdfunding.

It is important that:

Funding be not technology-driven but rather project-driven.

Resources are allocated to the first two stages of the four-stage decision-making process (concept and design/planning).

5.5 Community ownership

A sustainable future for Digital Cultural Heritage will benefit greatly from a wide sense of ownership by and involvement of the communities concerned, such as neighbours, local communities, physical visitors, and virtual visitors. As DCH initiatives apply global strategies, they should take steps to increase the social and economic benefits for these communities, such as schools involvement, minorities inclusion, accessibility, local enterprises and product promotion, open content**.**

5.6 Assessment and impact

In order to improve efficiency and effectiveness of the use of resources, assessment and impact studies, as well as standardized processes, should be included as a fundamental commitment of CH institutions and as part of all projects funded and/or carried out by public and private institutions. The available methods and tools to address these needs are not sufficiently mature and developed neither for project assessment nor for impact evaluation. Correspondingly, funding should be allocated specifically for research and development of toolkits, case studies, and general frameworks.

Important aspects are:

Process development for qualitative and quantitative measurements of the impact of digital culture on specific economic and societal issues, as well as economic return on investment to cultural organizations.

Assessment of the project against its own original objectives, such as usability studies, operation, user analytics, etc.

TA 6 Discovery

6.1 Multimodal worlds (digitization)

Manifesto: Create interdisciplinary consortiums:

Interaction should be the key rule to better understand the real objects, their evolution vs. time, and ensure their long-term conservation;

Needs clearly defined and adapted to the users (either public or professionals).

Roadmap: Cultural heritage needs defined by heritage professionals:

Main focus of any new proposal;

Balanced consortium with technology experts and users, sharing all the same interest.

Manifesto: Simulation of 3D worlds should include:

Interaction with people (multilingual, including ancient languages) and other actors (such as animals);

Integration of sensory aspects such as touch, smell and sound;

Immersion will play a key role

Roadmap:

Need to define libraries of Virtual Human, gestures, emotions, 3D animals, etc.

Need to emphasize vision-based technology (real time), speech synthesis/recognition (algorithms) and immersion for the interaction.

6.2 Semantics & new Forms of Knowledge

Manifesto

New areas of creating and representing meaning in order to provide for personalised experience should be explored

Roadmap

- Proposed areas for analysis, modelling, representation and increased interaction are:
- Cultural values, recognition and significance
- Representation of Emotional intelligence
- Time/space/provenance/ uncertainty aspects in semantics
- Emotion-based user interfaces

Manifesto

Human-machine collaboration will enhance our understanding, enjoyment and performance

Roadmap

- Broadening up by interlinking metadata/data across domains (i.e. curated/scientific data, automatically extracted/sensor data, crowdsourced data, etc.)
- Capturing knowledge directly from the human brain and body activity

- New immersive environments that enhance interaction between human and machine activity
- Efficient interfaces for semantic tagging by humans

6.3 Cooperation/Standardization

Manifesto

- We need to preserve the current standards and thus sustain backward-compatibility
- We need to create more powerful and intelligent standards that can be used across domains

Roadmap

- Continuity and sustainability via interconnections between standards
- To create an open format that is interoperable in different systems and disciplines, based on ontologies

TA 7 Decisions

7.1 Efficient workflows for Virtual Museums

Workflow efficiency from the point of view of documentation and preservation/curation of the collection:

1. Awareness of the "Digital Turn" (it's all about data, in particular the structured and harmonized data

2. Awareness of heterogonous data, contents and formats (3D/2D, textual, audio, video)

3. Data preparation/curation (data modelling), semantic enrichment, development of the application ontology (CIDOC CRM referenced)

4. Linked Data requirements (Linked Open Data), controlled vocabularies/authority files, contextualization of the collection (i.e. re-using geographical data/historical maps, re-using other Linked Data Resources, EUROPEANA)

5. Open Access Policies according the digital data (e.g. Creative Commons)

Infrastructure needed:

Open Source CMS (beyond solutions like "MuseumPLUS") as platform for indexing and publication (e.g. http://wiss-ki.eu/ or https://omeka.org/),

Open source frame work for object visualization/dissemination (WebGL for 3D and IIIF for 2D)

Workflow efficiency rom the point of view of ***target-oriented dissemination of the collection.***

1. Content exploitation and information visualization (communication of huge amount of digital artefacts).

2. Definition of target groups (end consumer) and proper development of narratives and storytelling for the exhibition arising awareness of the CH, in particular the DCH

3. Enhancing the benefits of the Creative Industry and 'nerds' (Hackathons towards Virtual Museumthons), implementing Citizens Science and Crowdsourcing, strengthen the idea of Open Science.

4. Ensuring the usage of various applications and technologies for dissemination, e.g. VR, AR, and MR applications, Interactive/immersive applications, Imaged based (linear) storytelling (film animation)

Introduction of additional relevant technologies

- artificial intelligence
- computer vision
- deep learning / machine learning
- adaptive cognitive methods

7.2 Effective communication

Effective communication will be accomplished by creating a VR and DCH network of experts, companies and organisations, enabling them to find and interlink with one another through specialised social media. Initially, the data will be collected through the ViMM website and will later

be integrated into an existing sustainable platform (e.g. LinkedIn). These profiles will include categories of skills and expertise to help users to filter and find potential partners or clients.

7.3 Understanding target audiences

There is a need for a clear classification of target audiences, who benefit from the ViMM project.

The major target audiences are:

- Technical specialists (including those of private companies) – to interconnect;
- Curators & decision makers within museum management – to know where to go to and why it is helpful;
- Partner organizations – not to duplicate the work but to share;
- Industries which use the same methods and techniques – to connect with the CH world.

The ViMM Platform will promote targeting these audiences by different means, among which publishing best practice examples and having Capacity Building days.

The general public is not a direct target group of ViMM, but rather of the resulting museums. ViMM will provide some tools to help those virtual multimodal museums understand and analyse their target audiences.

7.4 External communication policies

For virtual multimodal museums to be developed and sustained in the long-term, effective policies and means of cross-disciplinary communication are required. Using as wide range of communication channels as possible, including mass/social media and public events, a good understanding of the educational role and socio-economic impact of such museums should be fostered, in order to attract funding and encourage their creation, support and wide use. Virtual multimodal museums should set their own objectives, methods, requirements, resources and assess risks in order to achieve an effective communication strategy.

7.5 Human Resource Development and training

- Offer of training (digital workflow) adjusted to the target group involved in the CH sector
- Offering of the workflow in a breakdown format (several steps/stairs to achieve the “VIMM-certificate” (still to be done).
- Distinguish between high technological skill and decision and policy making process.
- Popularization of the workflow via VIMM platform and prepared updated Webinars (according to the innovative remote teaching methods)
- Setting up a network between the multiple working groups (digital (art-)history, virtual archaeologist, etc.)
- Ensuring the next generation of digital curators and virtual museologists by recruitment of tutors and trainees from relevant universities/institutions (e.g. digital art history master’s degree studies, University Erlangen-Nurnberg, etc.)

7.6 Training in DCH

Who needs to be trained, for what purpose and at what level?

- Secondary education
- Undergraduate
- Postgraduate

- Professional/vocational
- In work (curators, IT specialists ….)
- Volunteers/community

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

Council of Europe Strategy 21

Annex - Results of the polling exercise in Berlin

Each participant, in responding to the question, was allowed to select a maximum of ten propositions. The % figures represent the proportion of the expert audience which voted for each proposition among their ten. The first table presents the results in order of Thematic Area, the second in order of % votes received. The total number of voters was 94.

Which are the ten most important propositions for the future of Digital Cultural Heritage in Europe?	
1.1 Positioning the sector	**55%**
1.2 Conceptualising the VM sector; Typologies, Schematics & Visualisation	**17%**
1.3 Holistic documentation	**26%**
1.4 Digital replicas	**12%**
1.5 Emerging frameworks and standards	**15%**
1.6 Content and documentation in Europeana	**12%**
1.7 Cooperation with international organisations	**20%**
2.1 Policy and society	**24%**
2.2 Organisational change	**23%**
2.3 Digital transformation (Organisational)	**11%**
2.4 Digital Transformation (Technical)	**16%**
2.5 Digital Transformation (Technical level)	**11%**
2.6 Virtual values	**18%**
3.1 Technology watch (with use cases and examples)	**28%**
3.2 Supporting contextualisation of virtual objects	**37%**
3.3 Story-telling as an example of contextualisation	**40%**
3.4 Faithful representations	**27%**
3.5 (Mass-) Automated information extraction	**24%**
3.6 Participatory approaches in virtual museums	**29%**
4.1 Immersive storytelling	**37%**
4.2 Gamification	**20%**
4.3 Presence	**19%**
4.4 Accessibility	**21%**
4.5 Digital Privacy	**17%**
4.6 Support innovation	**26%**
5.1 Audience-oriented strategies	**32%**
5.2 Education and training policies for CH professionals	**43%**
5.3 Governance and decision-making	**27%**
5.4 Incentivising funding	**20%**
5.5 Community ownership	**21%**
5.6 Assessment and impact	**24%**
6.1 Multimodal worlds (digitization)	**21%**
6.2 Semantics & new forms of knowledge	**38%**
6.3 Cooperation/Standardisation	**26%**
7.1 Efficient workflows for Virtual Museums	**15%**
7.2 Effective communication	**7%**
7.3 Understanding target audiences	**12%**
7.4 External communication policies	**0%**
7.5 Human resource development and training	**26%**
7.6 Training in DCH	**36%**

Sorted by %

Which are the ten most important propositions for the future of Digital Cultural Heritage in Europe?	
1.1 Positioning the sector	55%
5.2 Education and training policies for CH professionals	43%
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1.6 Content and documentation in Europeana	12%
7.3 Understanding target audiences	12%
2.3 Digital transformation (Organisational)	11%
2.5 Digital Transformation (Technical level)	11%
7.2 Effective communication	7%
7.4 External communication policies	0%