

EMPOWERING COMMUNITIES WITH A HERITAGE OPEN ECOSYSTEM



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1. Excellence

1.1 Objectives of the ECHOES project

Europe’s rich cultural diversity is rooted in its unique historic evolution and retraceable in old documents, art, buildings, books, artefacts and audio-visual material. The study of these historic sources has professionalized since the 19th century, leading to a better understanding of the past, but also to specialization and the forming of discipline-based institutions or collections and therefore: fragmentation. In the past decades a lot of time and effort has been invested in the digitization of these discipline-based collections and most of the time the digital copies of the collection pieces can as a result be found *somewhere* on the Internet, often only on the websites of the collection holders themselves. Or they are offered on a (discipline-based) portal with search criteria that are based on the historic discipline they derived from, reserving them for expert eyes and/or traditional ‘heritage consumers’. That is why the aforementioned fragmentation is not solved by making the cultural assets digitally available, it is continued, preventing most users to make full use of the digital assets on the Internet. And it also prevents collection holders from making full use of the knowledge and working power of all the users!

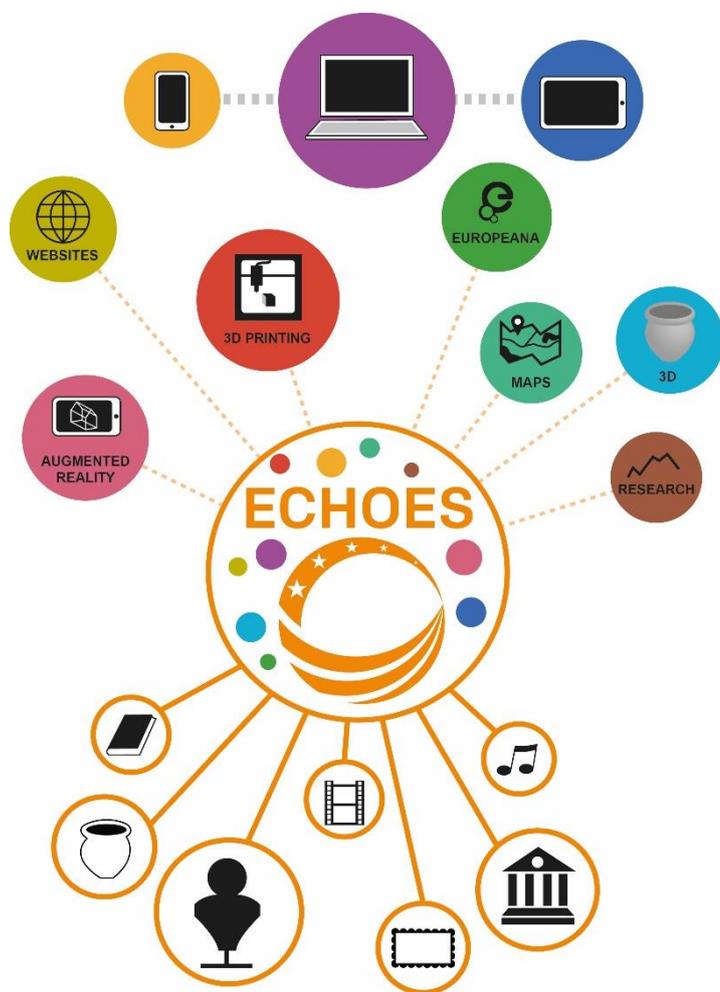


Fig. 1.1 ECHOES will offer integrated access to digital heritage assets around a location or theme and a range of adaptable tools for all sorts of purposes and devices.

The three-year ECHOES project (Empowering Communities with a Heritage Open EcoSystem) is aiming to dissolve the barriers between collections, nations and languages. It will present digital cultural assets in innovative ways, making them available for new and traditional uses by new and traditional (e.g. scientific) audiences alike. These aims not only contribute to solving the European problem of the fragmentation of its history. They are also a response to the needs of the public, that increasingly uses and experiences heritage in innovative ways, disregards the borders between states, and takes no notice of the often somewhat artificial boundaries between historical disciplines and collections. Because they are interested in European history as a *whole*.

The way in which the project is attempting to defragment history, is by providing a universally applicable, modular, Open Source IT architecture for heritage collection holders, that functions as a digital biotope for a broad range of user communities, giving them a role in enriching and interpreting digital collections, and making them available to others. It is the interaction between (parts of) this biotope and the communities that will turn it into a digital ecosystem. An important condition for this ecosystem to thrive is that different types of users will have their own niche environment, based on their needs. After consulting the users the ECHOES project will empower users by providing a personal environment which can be



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adapted to specific needs and which will offer the option to work together or share information in communities. So, in short

the ECHOES project will deliver an ecosystem for a broad range of user communities, giving them integrated access to digital heritage assets from all conceivable collections based on location or theme, means to add to and comment on these collections and innovative visual tools for the interpretation of all these assets, all of which can be adapted to their specific needs.

With the ecosystem organizations that keep digital heritage collections like libraries, museums, archives and planning departments (in their role as guardians of the immobile heritage) will be able to share their assets with the world easily, connect them to each other, and automatically enrich them with geo-locations and information about relationships with other digital cultural assets. By using the Open Source ecosystem all collection holders will be able to use the innovative tools that the ECHOES project will deliver for searching and displaying collections locally and thematically, to provide services (reservations, orders etc.) and to automatically forward their collection data to important portals such as Europeana and Archives Portal Europe, creating more traffic to these portals and to their own collections.

Users will be able to view their heritage in innovative ways, to interact with other users, to form communities of common interest and to enrich data. They will be able to share their own heritage or research results and can use the data supplied by the ecosystem in new and innovative applications for tourism, research (or just plain fun!) without having to interact with the systems of different collection holders.

The ECHOES consortium combines the expertise of leading experts on cultural heritage, digitalization of cultural data, semantic web technologies, augmented reality, 3D reconstruction, online communication and design, and humanities studies. This multi-disciplinary team, consisting of universities, SMEs/entrepreneurs, governmental agencies and collection holders, is fully equipped to successfully execute the project and achieve the ambitious goals. To ensure the sustainability of the ecosystem a dissemination programme that aims to stimulate the use of the ecosystem by collection holders that are not part of the consortium is drawn up, and the establishment of a foundation that manages the ecosystem after the project's closure is planned.

Empowering Communities with a Heritage Open EcoSystem key objectives are summarized as follows:

1. To report on the needs of different groups of real (potential) users and on the technical conditions for the digital ecosystem **[WP1]**.
2. To develop a fully functional Open Source, web based architecture that connects, enriches and publishes digital collections without the need to change collection management systems **[WP2]**.
3. To develop tools to create personal environments for adding to and interacting with heritage data, which can adapt to the specific needs of different user communities or users **[WP3]**.
4. To develop new search criteria and technology to offer personalized results and attract new users **[WP4]**.
5. To develop new, visually attractive tools for the instant presentation of and interaction with digital cultural assets (e.g. maps, infographics, augmented reality, 3D models) without the need for collection holders to prepare these presentations **[WP5]**.
6. To encourage the use and ensure the future of the ecosystem by dissemination and the establishment of a managing foundation **[WP6-7]**.

1.2 Relation to REFLECTIVE-6-2015: Innovation ecosystems of digital cultural assets

The REFLECTIVE-6 work programme challenges the heritage sector to respond to the changes in behaviour and expectations that the digital age evokes. In short the programme asks for proposals that facilitate the access, reuse and exploitation of digital cultural assets, that shed a new light on Europe’s history, use new technology and attract new consumers. The ECHOES project does exactly that. To start with the first, facilitating access: part of the main objective of the project is to provide an integrated access to digital cultural assets from all conceivable heritage collections. The open data warehouse which is part of the ecosystem (Fig. 1.2) will make said assets freely available for scientific analysis and reuse in other applications. And by offering new search criteria (like pattern, theme or color), based on the consultation of new user groups (like designers or game developers), the potential for the reuse and exploitation of heritage collections by non-traditional heritage consumers is increased.

The integrated access to digital cultural assets in heritage collections does not only serve the general public: humanities and social sciences researchers will as a specific group of users be challenged to develop new insights by looking beyond their own field of expertise, leading to richer interpretations of the past. A better insight through innovative forms of presentation is an important part of the requirements of the new ecosystem. To be concrete: the visualization of search results in RDF triple clouds, the use of maps, time lines, diagrams and combinations of these, and interactive forms of data visualization that can be used while consulting collections are examples of this in the project. On top of that all users should be enabled to create infographics themselves by using the visualization of search results. Humanities and social sciences researchers will pre-eminently benefit from these tools, not only because they allow new questions to be asked, but also because the visual character of the tools matches the new ways in which we shape our knowledge and transmit it to future generations. That collections in different places can easily be connected and researched with the same tools within the ecosystem will make a comparative analysis much easier – as the historic GIS showcase in WP3 will show – and so provide the opportunity to enhance the understanding of the European identity in its many forms.

The augmented reality (AR) app which will be built in the project as a showcase, offers new ways to navigate the spatial heritage with wearable devices, linking heritage sites with mobile heritage in the collections of local institutions. It will demonstrate the potential for enrichment by the crowd, offering the user the possibility to – on the spot – link geographical coordinates to any digital cultural asset. The showcase will also prove that the extra functionality that the AR app adds to the ecosystem of the project is an important asset for tourism and city marketing, displaying hidden, lost and related heritage on mobile devices.

As will be clear, the ECHOES project addresses the scope of *REFLECTIVE-6-2015 Innovation ecosystems of digital cultural assets* perfectly. The table below (Table 1) describes in detail what the project will deliver in addressing each of the specific challenges of the REFLECTIVE-6 topic.

Table 1 The way ECHOES addresses the scope of REFLECTIVE-6

SCOPE ACCENTS REFLECTIVE 6	ARE MET BY ECHOES PROJECT BY MEANS OF:
<p><i>Support and promote access to and reuse of digital cultural heritage resources.</i></p>	<p>The project will deliver a <i>fully functional and visually attractive ecosystem</i>, which will among other things:</p> <ul style="list-style-type: none"> • offer heritage collection holders the opportunity to create a single access point to multiple collections [WP2]; • offer users the opportunity to enrich the information related to the digital cultural assets by

- adding their own information, by linking assets or geotagging them [WP3 and WP5];
- automatically enrich collections [WP2];
- make digital cultural assets (without legal restrictions) freely available as open data for reuse in applications of all sorts [WP2];
- become an aggregator for Europeana and the Archives Portal Europe, creating more traffic to these portals and to the collections connected by the ecosystem [WP2];
- be universally applicable and available to all (as the ecosystem is developed as Open Source software).

Enable new models and demonstrations of the analysis, interpretation and understanding of Europe's cultural and intellectual history.

The ecosystem will:

- enable researchers to look beyond the boundaries of their own discipline by connecting collections in two ways [WP2] - by creating a single access point and by linking digital cultural assets together (linked data);
- make digital cultural assets freely available as open data for research [WP2];
- also provide tools for new forms of presentation and interaction with data by using maps, timelines, infographics (data visualization) and 3D models, which will lead to new scientific insights and analyses [WP5].

Capitalise on state of the art technologies (e.g. mobile and wearable devices).

The project will deliver a *ready-to-use augmented reality app* [WP5] that

- will make the digital-cultural-asset-content that is brought together by the ecosystem available on mobile devices;
- and will interact with the user's location.

Bring cultural content to new audiences through the development of new environments, applications, tools and services.

The project has the ambition to bring cultural content to new audiences in three ways:

- by offering new criteria for searching through digital cultural assets, as non-traditional heritage consumers like designers – who want to reuse digital cultural assets as 'raw material' for new designs – search in a non-traditional way [WP4];
- by offering an augmented reality app that can bring content to mobile devices in the spatial environment, increasing the chance of an 'accidental' encounter with heritage, encouraging a further acquaintance [WP5];

- by using the visually attractive tools for the presenting of and interaction with cultural digital assets mentioned above [WP5].

Developed technologies or services should be generated in the context of humanities research perspectives.

The ecosystem will be developed in the context of humanities research perspectives by:

- involving researchers in the user advisory groups in the *Challenge Analysis* work package in the beginning of the project and during the build [WP1];
- the involvement of six universities or university-related institutions within the project;
- creating a personal environment for historic GIS (HGIS) researchers, thus demonstrating the benefits for humanities studies and social sciences [WP3].

And/or facilitate the access, reuse and exploitation of digital cultural resources meeting real user needs.

The ecosystem will meet *real user needs* by:

- involving different user types in the advisory groups in the beginning of the project and during the build [WP1];
- providing them with a personal environment which can be adapted to their specific needs and can be part of one or more communities - offering the option to work together or share information in these communities [WP3];
- offering them personal suggestions on the basis of their own interests [WP4].

The ecosystem will facilitate the *access* to digital cultural resources by:

- offering heritage collection holders the opportunity to create a single access point to multiple collections [WP2];
- offering users the opportunity to enrich the information related to the digital cultural assets by adding their own information, by linking assets or geotagging them [WP3 and WP5];
- automatically enriching collections [WP2];
- becoming an aggregator for Europeana and the Archives Portal Europe, creating more traffic to these portals and to the collections connected by the ecosystem [WP2].

The ecosystem will facilitate the *reuse* of digital cultural resources by:

- making digital cultural assets (without legal restrictions) freely available as open data for reuse in all sorts of applications [WP2];

- offering other criteria for searching through digital cultural assets, as non-traditional heritage consumers like designers – who want to reuse digital cultural assets as ‘raw material’ for new designs – search in a non-traditional way [WP4].

The ecosystem will facilitate the *exploitation* of digital cultural resources by:

- making digital cultural assets (without legal restrictions) freely available as open data for reuse in all sorts of applications [WP2];
- facilitating non-traditional heritage consumers who want to reuse digital cultural assets as ‘raw material’ for new uses [WP4];
- delivering an augmented reality app that can easily be employed within the tourism sector [WP5].

The developed technologies or services should illustrate how they allow new research questions to be formulated on the basis of cross-collaboration.

The project will:

- illustrate how the innovations in the presentation of and interaction with data, caused by data visualization (part of the field of information technology) can help humanities and social sciences researchers develop new research questions and insights [WP5].

And/or stimulate cross-border, cross-lingual, and multi-disciplinary reuse of Europe’s cultural heritage.

The ECHOES consortium already felt the urgency to work cross-border and cross-lingual, as it contains six member states and two bilingual territories: the provinces of Barcelona and Friesland. The ecosystem will stimulate the *cross-border* and *cross-lingual* reuse of Europe’s cultural heritage by:

- employing the mapping tool (see §1.3), used to bring collections together, to bring together digital cultural assets from different states or language regions [WP2];
- employing ‘language technology’ to offer (international) suggestions based on preferences and relationships between digital cultural assets.

The project aims to stimulate *multi-disciplinary* reuse Europe’s cultural heritage by:

- making digital cultural assets (without legal restrictions) freely available as open data for reuse in all sorts of applications [WP2];
- facilitating non-traditional heritage consumers who want to reuse digital cultural assets as ‘raw material’ for new uses [WP4];

- delivering an augmented reality app that can easily be employed within the tourism sector [WP5].

Proposals should demonstrate appropriate methods of re-using and repurposing digital assets, paving the way for wider exploitation of Europe's cultural resources and boosting innovation.

The methods the ECHOES proposal has adopted to make digital cultural assets available for re-use or repurposing are:

- the arrangement of an open data warehouse, containing all digital cultural assets (without legal restrictions), which will be freely available for reuse [WP2];
- facilitating non-traditional heritage consumers who want to reuse digital cultural assets as 'raw material' for new uses [WP4];
- delivering an augmented reality app that can be easily be employed within the tourism sector [WP5].

1.3 Concept and approach

The ECHOES project has adapted a three-layer-model for the new ecosystem, which means there is a functional divide between collection management systems, utilities that pass on data, and applications for presentation and utilization (Fig. 1.2). The government of the Netherlands has, in its national strategy for digital heritage, adopted a similar model for the future¹, which made the project extra interesting for the SME's within the consortium to join, because the experience they acquire will according to expectations generate future business. For collection holders the three-layer-model means they can keep out of a vendor lock-in as they are free to choose different companies for different layers. The fact that the complete ecosystem is developed as Open Source software guarantees even more freedom for collection holders to choose a company for support.

One of the premises of the project is that the ecosystem that the project will deliver, constitutes an integral access to heritage collections and can be connected to all commonly used collection management systems – or any other collection management system that can supply its data as structured XML or at least as a CSV-file. This connection is made by using a mapping tool that maps the data to a universal schema. The design of this schema will focus on the similarities between objects from different heritage collections, for example: all historical objects have in common that *people* were involved in their creation and use in a certain *period* in a certain *location*. The use of the ecosystem should not dictate alterations to the management systems of collection holders, to keep the ecosystem viable and avoid reservations to implement it.

The framework of the ECHOES solution is modular, with modules that should cooperate seamlessly. The basic idea behind this concept is that a modular approach enables collection holders to use those modules that meet their needs. On top of that a modular design makes it easier to adopt a 'best-of-breed' approach,

¹<http://www.rijksoverheid.nl/bestanden/documenten-en-publicaties/publicaties/2015/03/09/nationale-strategie-digitaal-erfgoed/nationale-strategie-digitaal-erfgoed-docx.pdf>

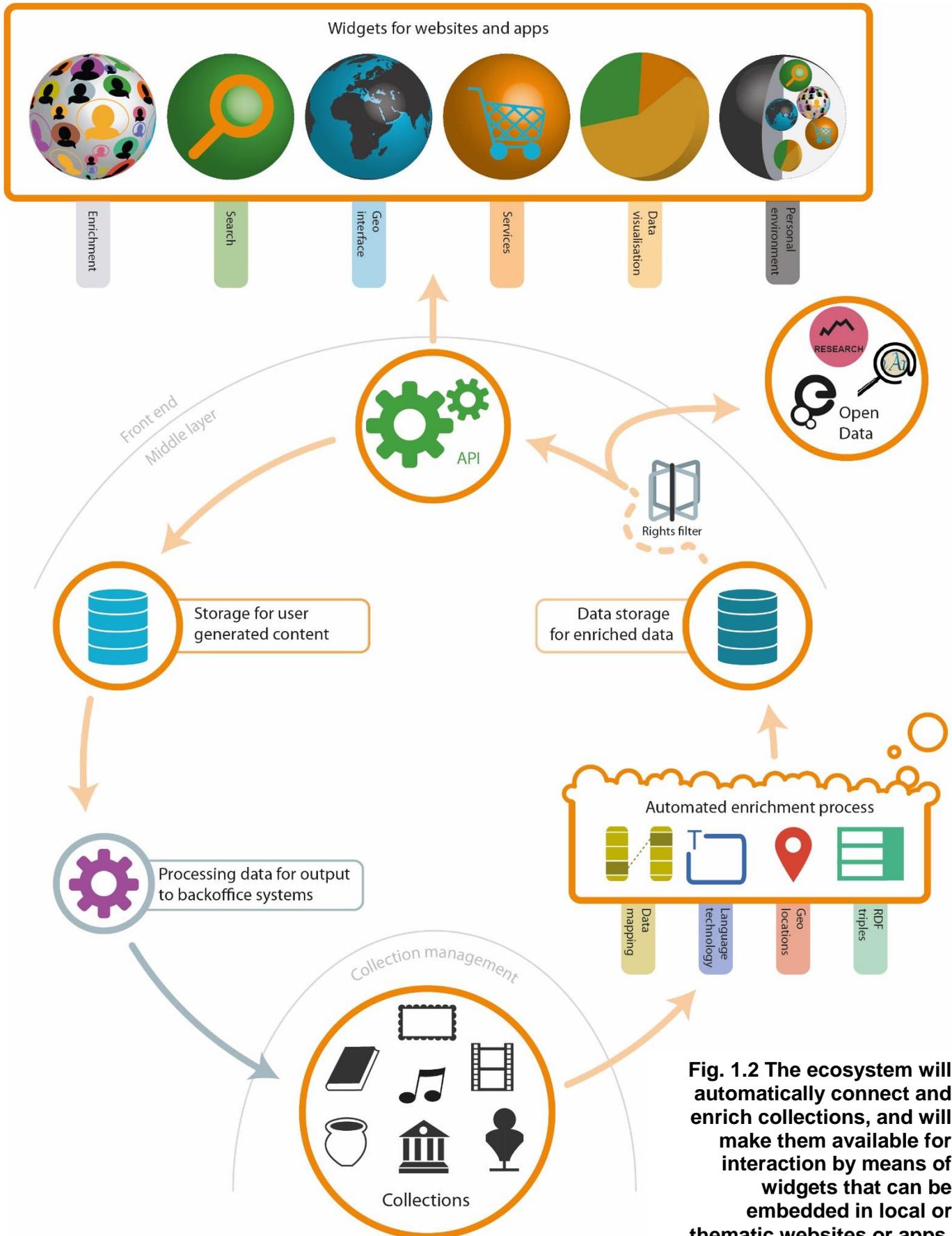


Fig. 1.2 The ecosystem will automatically connect and enrich collections, and will make them available for interaction by means of widgets that can be embedded in local or thematic websites or apps.



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meaning that every module can be created by a party that excels in the design and build of that part of the functionality. The larger number of the modules constitute the middle layer, that not only passes on data, but also enriches and stores it. The front end modules are in fact widgets that can easily be embedded in existing websites or apps. In the future new widgets for purposes that cannot be foreseen now can easily be developed and connected to the ecosystem. The ECHOES project in principle does not deliver websites or apps which often have a brief lifespan, other than those that are necessary to prove the benefits of the ecosystem for different user communities.

One of the cornerstones of the ECHOES project is the Request for Information (RfI) that a partnership consisting of the cities of Bruges, Delft, Ghent and Leiden, and the repository of the history of the province of Friesland called Tresoar used in 2014 to consult the market on the feasibility and price of the proposed ecosystem. At that time a request for European funding was foreseen already. The RfI contained an architecture sketch and an extensive table with requirements. These are used as a starting point and will be checked and perfected during the first stage of the project: the challenge analysis in which user groups like the general public, researchers, professionals, designers and institutions are consulted. Because research has shown that the consummation of types of heritage differs between the sexes², the composition of the user advisory groups involved in the project will be equally balanced between men and women.

To conclude with the positioning of the project on to the spectrum from 'idea' to 'market' as expressed in Technology Readiness Levels, ECHOES will start at TRL 2, technology concept formulated, and finish at level TRL 9, actual system proven in an operational environment.

1.4 Ambition and innovation level of the ECHOES project

To strive for a good solution for the integrated access to all conceivable digital heritage assets can be considered ambitious. This ambition is founded in the relatively uncommon conviction of the ECHOES consortium that the boundaries between historical disciplines and collections are fairly arbitrary and that the fragmented nature of the heritage sector does not correspond with the interests and needs of the public. The ambition of the consortium is that the solution that the ECHOES project will deliver will provide a richer interpretation of the past by (automatically) connecting digital heritage assets, and will meet real user needs, thus ensuring the viability and use of the ecosystem after its completion. That is the reason the project starts with a consultation of user communities and involves them during the build of the ecosystem.

A fair share of the tools that will be created within the project, contain at first sight elements that resemble parts of applications, tools and services that can already be found somewhere in the digital world. Data visualization for example, is already a reasonably common tool to get a grip on large quantities of data in the blink of an eye. But not in the heritage sector. Something similar applies to tools that *are* already available in the heritage sector: if you need one or two you can often find more or less what you need; if you need them all, you're in trouble. The ECHOES consortium wants to provide users and collection holders with a complete set of (sometimes new, sometimes improved) tools that they can use to fill their needs. They can also easily add extra functionality by building another widget on top of the Open Source ecosystem.

² F. Huysmans and J. de Haan, *Het bereik van het verleden, ontwikkelingen in de belangstelling voor cultureel erfgoed*, het culturele draagvlak 7, The Hague, 2007.

Summarized the new ecosystem is innovative and ambitious in:

- 1. its goal: defragmentation by offering integrated access to digital cultural assets from all conceivable heritage collections;*
- 2. its completeness, flexibility and openness;*
- 3. the automatic enrichment of the collections by linking collection data (in different discipline-based collections) and adding geographical coordinates;*
- 4. the (visually attractive) new tools, including technology that is already operational in other sectors than the heritage sector;*
- 5. the adaptability of these tools to serve the need of specific (new) communities of users;*
- 6. the fact that it gives users a definitive role in making digital heritage available, in enriching the information connected to the digital heritage assets and in interpreting the past.*

That the ECHOES solution will among other things offer integrated access to digital heritage assets, might sound a bit like the purpose of the internet portal *Europeana*. But there are important differences. First of all the focus of the ECHOES project is not on creating another portal but rather on creating an ecosystem of interoperable, flexible tools that will enable collection holders to connect collections locally, regionally or internationally, dependent on their needs. This means that the ecosystem can be used for example by one institute which manages its collections in different collection management systems, by a number of institutes within a city who want to present the collections pertaining to the city or by several collection holders in different countries who wish to present (part of) their collections on a themed website for a certain period.

Secondly, the digital heritage assets that can be made available with the ecosystem include mobile heritage (in libraries, museums and archives) and immobile heritage (built heritage and archaeological remains), the latter of which is hardly offered by *Europeana* at the moment. The visually attractive tools needed for searching and presenting particularly these historic buildings and places will surpass the limited possibilities of the traditional text search in most search environments (including *Europeana*) and will also provide extra context to all digital heritage assets, for example with the geographical interface and the data visualization tools.

To be efficient with resources the ECHOES consortium plans to only develop those parts of the ecosystem from scratch that are not available. Open Source software that offers the desired functionality or resembles it, will be inserted and altered, if needed, to meet the requirements for the ecosystem. In the build up to this proposal an inventory of this software has been made, and during the project the Expert Advisory Group in the project will be regularly questioned about the developments in the field and the resulting software. The consortium for example expects to be able to use parts of the Dutch 'Erfgoed & Locatie' project (Heritage & Location) and Open Source solutions provided by *LoCloud*, a project funded by Europe, that enables small and medium-sized institutions to digitize their collections and make them available via *Europeana*. Also, other European programs like CARARE and ATHENA will be closely looked at and taken into consideration.

To conclude the paragraph on ambition and innovation a short mention of the planned AR app cannot be omitted. Although only a showcase and not part of the ecosystem itself, this app will be freely available to all collection holders, local authorities etc. throughout Europe and an absolute highlight. The app will not only be able to offer tours and/or to show the hidden or lost heritage in the spatial environment by displaying 3D reconstructions on mobile devices with a very realistic rendering that is adapted to the time of day, using cloud computing. If available 3D documentations of archaeological digs or of the inside of historic buildings can also be shown to the public, or historical photographs from the collections (and all other content) connected to the ecosystem. By imposing historic images over a live view, users are able to – on the spot – very accurately geo-tag such an image to geographical coordinates.

2. Impact

2.1a Expected impact after ecosystem implementation

In practical terms the ECHOES project will 'only' deliver an ecosystem that gives integrated access to all conceivable digital heritage assets and provides innovative tools for searching, displaying and interpreting that can be adapted to the specific needs of (new and traditional) user communities. The societal impact of such an ecosystem with its corresponding ambitions and goals will however be much bigger. Because the ecosystem in itself mirrors and facilitates a shift in the attitude of the heritage sector, it allows innovation and new business models in and around this sector. On macro level three major changes can be expected:

- **Barriers become increasingly irrelevant.**

The project aims to defragment European history by dissolving the barriers between collections, nations and languages. The ecosystem will show – once operational – that offering one access point to multiple discipline-based heritage collections does indeed a) answer the wishes of the public and b) challenges researchers to look beyond the boundaries of their own discipline. By showing the demand for and the outcomes of integrated access, the ECHOES consortium will lead the way for collection holders that for the moment still hang on to a discipline-based access, even if they in the end will not use the ecosystem itself for integrated access.

And with the multi-lingual mapping tool and interfaces of the ecosystem, it will be easier for collection holders to collaborate with other collection holders in the EU, leading to more international partnerships.

A special mention must be made of the vanishing boundaries between immobile and mobile collections. Current solutions that are meant for integrated access to heritage assets at the moment all seem to focus mainly on collections in libraries, museums and archives. The ecosystem that the ECHOES project will deliver, will be the first that also presents data on historic buildings and places, offering them for once not as part of a planning tool but as a set of digital heritage assets containing information on the past, integrated with other data on heritage on a local level or thematically. The increased awareness of historic values in an area will raise public support for their conservation.

- **Digital heritage assets will sometimes just be digital assets.**

Although already subject to change, the heritage sector is still supply-oriented instead of user-oriented, offering their (digital) collection items because they are deemed important remnants of the past. In this way the historical assets have something sacred (sometimes even untouchable) about them; more or less demanding that every person feels the same and wants to accept this heritage as his or hers. In a multi-cultural Europe, with lots of leisure activities with which the heritage sector has to compete, this is not sustainable.

Luckily, an increasing number of new users is discovering cultural heritage as a source of inspiration, as raw material for new applications and/or as a way to make a living. For these groups, the ECHOES project provides new ways to browse through all connected collections, offering a wealth of material to work with. In this process of re-use the original context of the digital assets is lost – heritage assets will become assets – but a new one is created, ensuring the viability and economic relevance of the collections in the long term and (further) legitimizing their safekeeping. The re-use of digital heritage assets for new purposes – from a simple scan to a full-fledged 3D model of an archaeological find – is only a relatively recent phenomenon, but it is here to stay and has a very large potential value. The new possibilities the ecosystem offers, will contribute greatly to this development.

- **Cultural heritage becomes part of visual culture.**

Most search environments for digital heritage collections at the moment take the shape of a text search box and criteria, displaying the result of the performed search as some kind of list, at best with thumbnails. The outcomes of historical research generally take the shape of a text. The fact that

the heritage sector is still so much focused on text as a vehicle for all sorts of communication, stands in the way of opening up the sector for new audiences and new uses.

In a digital age that relies heavily on visual means, with people reading less, the sector cannot stay behind and has to fully embrace attractive, visual tools for the experience, analysis and transmission of its assets. The ECHOES project will lead the way and is going to provide a comprehensive set of these tools. With these it will be possible to search the collections (for example with the map interface), to display the results of a search in new ways (for example with data visualization), to contribute to new insights, and to create and to share the outcomes of research not by means of a text, but with an image. The app that the project delivers will change the experience of historic buildings and places, rousing interest among users that would otherwise not have come into contact with this heritage. The ECHOES consortium sees the tools (widgets) that will be created 'on top' of the ecosystem as a first generation only. The fact that other widgets or apps can easily be built to work with the ecosystem offers the opportunity to create even better, visually attractive tools.

In more detail, the ECHOES project contributes to all expected impacts as set out in the *REFLECTIVE-6* work programme, as shown in Table 2.1a below and the additional impacts of H2020 (Table 2.1b).

Table 2.1a Contribution to expected impact REFLECTIVE-6

EXPECTED IMPACT REFLECTIVE 6:	CONTRIBUTION ECHOES TO EXPECTED IMPACT:
<p><i>Stimulate new research perspectives for the humanities and social science communities, promote further the use of digital cultural heritage allowing its reinterpretation towards the development of a new shared culture in Europe.</i></p>	<p>The implemented ecosystem stimulates <i>new research perspectives</i> by:</p> <ul style="list-style-type: none"> • offering single access to different discipline-based collections, challenging researchers to look beyond the boundaries of their own discipline; • automatically creating links between digital heritage assets; • offering the opportunity to consult collections in different places, language areas and/or states, making a comparative analysis possible by using the same tools for their consultation; • making digital collections from different disciplines, places, language areas and/or states freely available as linked open data; • offering innovative tools for searching, presenting and analysing digital heritage assets; • offering (a community of) researchers the opportunity to set up an environment that meets their specific needs; • offering researchers the possibility to work together in a community. <p>The implemented ecosystem promotes the <i>use and reinterpretation</i> of digital heritage assets, allowing the <i>development of a new shared culture</i> in Europe by:</p>

- creating a single access point for the consultation of digital collections from different disciplines, places, language areas and/or states, and making a comparative analysis possible by using the same tools for their consultation [as demonstrated in the HGIS showcase in WP3];
- making digital collections from different disciplines, places, language areas and/or states freely available as linked open data;
- automatically forwarding digital heritage assets connected by the ecosystem (including immobile heritage) to important portals like Europeana and Archives Portal Europe;
- allowing researchers from different language areas and/ or member states to work together in a community;
- offering digital heritage assets for re-use by non-traditional heritage consumers like designers or game developers, creating a new context for these assets (WP4).

Provide innovative and creative methods for approaching cultural assets and generate applications and services to access and exploit the rich and diverse European digital cultural heritage in a sustainable way.

The implemented ecosystem provides an *innovative and creative approach* of digital heritage assets by:

- creating one access point for the consultation of digital collections from different disciplines, places, language areas and/or states;
- offering visually attractive tools for searching, presenting and analysing digital heritage assets (maps, infographics);
- offering users and user communities the opportunity to set up an environment that meets their specific needs – this could for example be an educational environment;
- being the basis on top of which even more, new tools (widgets) can easily be built to interact with and display the digital heritage assets connected by the ecosystem;
- offering digital heritage assets for re-use by non-traditional heritage consumers like designers, creating a new context for these assets;
- means of the showcase AR app that can be used everywhere and will offer tours, show 3D models and documentations of lost and hidden heritage in an area, show all other content connected by the ecosystem and make it possible to geo-tag this content using a mobile device;
- empowering users. The European story is not only retraceable in collections that are managed by institutes. A lot of information is in the hands of the public which is often more than willing to

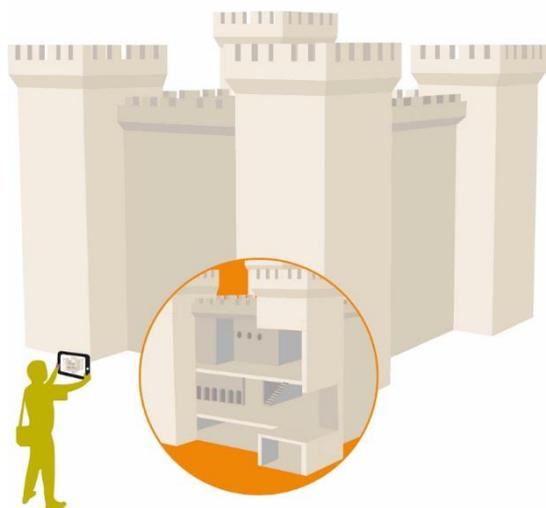


Fig. 2 The AR app will show hidden or lost heritage that would otherwise stay hidden, for example the interior structure of a castle.

share this information - even if this takes some effort. By empowering users the ecosystem will give users a definitive role in making heritage available, enriching the information connected to the collections and add their own information and digital heritage assets.

The implemented ecosystem supports the *access* and *exploitation* of digital heritage assets by:

- creating one access point for the consultation of digital collections from different disciplines, places, language areas and/or states;
- offering visually attractive tools for searching, presenting and analysing digital heritage assets (maps, infographics);
- automatically forwarding digital heritage assets connected by the ecosystem (including immobile heritage) to important portals like Europeana and Archives Portal Europe;
- being the basis on top of which even more, new tools (widgets) can easily be built to interact with and display the digital heritage assets connected by the ecosystem;
- offering digital heritage assets for re-use by non-traditional heritage consumers like designers, creating a new context for these assets;
- means of the showcase AR app that can be used everywhere and will offer tours, show 3D models and documentations of lost and hidden heritage in an area, show all other content connected by the ecosystem and make it possible to geo-tag this content using a mobile device.

The ecosystem is *sustainable*, because:

- it constitutes an answer to the needs of the general public, researchers, designers, professionals of all sorts, educational and heritage institutions and many more;
- is developed as Open Source software with the necessary documentation;
- its modular and three-layer-design ensures flexibility and the possibility to adjust and extend;
- a managing foundation will be established for the ecosystem before the project's closure.

Foster collaboration between those with primary expertise in the interpretation of cultural data and researchers with complementary

The ECHOES project fosters *collaboration* between sectors, particularly those with primary expertise in the interpretation of cultural data and researchers with

expertise in digital and interactive frameworks.

expertise in digital and interactive frameworks, because:

- during the project an international team of highly educated experts on the digitalization of cultural data, semantic web technologies, linked open data, augmented reality, 3D reconstruction, online communication and design, cultural heritage and history will work together, which will lead to new networks and collaborations;
- the Open Data warehouse which is part of the ecosystem will enable humanities researchers to analyse big datasets, often in collaboration with experts on data extraction;
- the process of creating links between digital heritage assets (RDF triples) will continue after the project's closure;
- the ecosystem enables the setup of a personal environment with new or adapted tools (widgets) that meet the need of – for example – researchers on cultural data; both of which can demand the involvement of experts in the digital field.

Projects will strengthen the European capability in creating new forms of digital entertainment and engagement based on cultural heritage and will promote the use of new technologies such as new media and new modalities of access.

The ECHOES project *supports new forms of digital entertainment* based on cultural heritage by:

- making digital heritage assets from different collections in different places, language areas and/or states freely available for re-use in other applications (like apps or serious games) by means of an Open Data Warehouse;
- its showcase app with its innovative technology that will prove an important asset for tourism and will lead the way for other forms of digital (mobile) heritage entertainment.

The ECHOES project *promotes the use of new technologies* by:

- creating one access point for the consultation of digital collections from different disciplines, places, language areas and/or states, offering a wealth of information on European history without having to leave your house;
- offering visually attractive tools for searching, presenting and analysing digital heritage assets (maps, infographics);
- offering users and user communities the opportunity to set up an environment that meets their specific needs;

- means of the showcase AR app that can be used everywhere and will offer tours, show 3D models and documentations of lost and hidden heritage in an area, show all other content connected by the ecosystem and make it possible to geo-tag this content using a mobile device.

In addition these activities will create a viable and sustainable cross-border, cross-lingual and/or cross-sector digital exploitation of European digital cultural heritage assets by putting into place new networks of researchers, scholars, ICT professionals and specialists of digital heritage.

The Open Source ecosystem that the ECHOES project delivers will prove to be *viable* because it is an answer to the needs of the a variety of user communities, has a flexible and open setup and does not dictate alterations to the collection management systems that heritage institutions use. The *sustainability* of the ecosystem is guaranteed by the establishment of a managing foundation and its use, in the first place by the consortium members themselves (for example in the provinces of Friesland and Barcelona to connect digital collections on a provincial level, and in Gent and Leiden to create a single access point to all municipal heritage) and by the collection holders that as a result of the dissemination efforts and results of the project will implement the ecosystem.

The ecosystem will create a *cross-border, cross-lingual and/or cross-sector exploitation* of digital heritage assets because it a) uses a mapping tool and automatic enrichment to dissolve the barriers between collections, nations and languages, b) offers the widgets of the frontend and the management environment of the ecosystem in all languages represented by the consortium and c) uses digital techniques (like data visualization, the AR app, or the Open Data Warehouse) to offer European heritage.

The ecosystem will contribute to the forming of *new networks* with its focus on users and user communities, offering them the opportunity to work together in a digital environment that suits their needs.

Table 2.1b Contribution to additional impacts H2020

ADDITIONAL EXPECTED IMPACT H2020 WIDE	CONTRIBUTION ECHOES TO EXPECTED IMPACT:
<p><i>The project will contribute to:</i></p> <p><i>improving innovation capacity and the integration of new knowledge;</i></p>	<ul style="list-style-type: none"> • The integration of knowledge from all types of heritage collections and the way the ECHOES ecosystem makes this knowledge easily available to researchers by using new digital technologies inevitably leads to the integration of new

knowledge and methods in the traditional historical disciplines. The ecosystem will greatly improve the innovation capacity of the fairly traditional heritage sector.

strengthening the competitiveness and growth of companies by developing innovations meeting the needs of European and global markets; and, where relevant, by delivering such innovations to the markets.

- An increasing number of new users is discovering cultural heritage as a source of inspiration, as raw material for new applications and/or as a way to make a living. For these groups, the ECHOES project makes it possible to (re)use a wealth of material that would otherwise not easily be available for (re)use. Sectors expected to profit especially from this are tourism, design and the game industry. In this way the ECHOES project strengthens the competitiveness of companies in three growth sectors in the European economy.
- The SMEs involved in project ECHOES operate nationally, internationally or even globally (e.g. Picturae digitizes heritage for the Smithsonian Institution). Being part of ECHOES means they can stay frontrunners in the sector and use their new experience to expand their activities into other countries in Europe and beyond. That all SMEs believe in the potentially groundbreaking nature of the ecosystem, is proven by the fact that they are willing to invest quite a considerable amount of their own budgetary means to supplement the partial reimbursement from the EU for commercial parties for their efforts.
- The flexibility and openness of the new ecosystem gives companies now not involved in the project the chance to enhance the ecosystem even further by developing additional widgets and apps that make use of the unique possibilities of ECHOES.

2.1b Obstacles and conditions

In a sector where institutes that keep heritage collections often use closed source software of one and the same IT company for their collection management and presentation, utilization and services on the web, the three-layer, flexible, Open Source approach of the ecosystem can be considered innovative. The ecosystem is sure to have its impact on the sector and the way in which institutions choose to shape their IT, with more custom solutions and freedom to choose *the* company that excels in a certain task. An important condition for the use of the ecosystem is that the collection management systems are able to communicate and can deliver their information as structured XML or – at worst – as a CSV-file. However common for most regularly used collection management systems, this is not yet applicable to all. The ECHOES consortium believes that the three-layer model is the future and that it will encourage IT companies to open up their collection management systems. An extra incentive to do so will be the fact that the circular motion shown in fig. 1.2 is partly optional (leading user generated data after a check back



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to the collection management systems is not a standard feature) and is also dependent upon the ability of the management systems to communicate.

The quality of the data in the collection management systems is an important factor for benefitting fully from the ecosystem. This quality differs from place to place, but improving it is not part of the ECHOES project. Firstly, because the quality of the data is the responsibility of individual collection holders and secondly all resources had to be allocated to the already quite ambitious goal of creating an ecosystem that gives integrated access to all conceivable digital heritage assets and provides innovative and adaptable tools for searching, displaying and interpreting heritage. For IPR and other legal rights it is necessary that legal restrictions on showing assets are registered in the collection management systems. If these are not registered, the rights management filter of the ecosystem cannot do its job and showing the digital heritage assets might be (legally) impossible. The innovative and ambitious automatic enrichment uses semantic web technology and mapping data to geo-locations. The result of this enrichment greatly depends on the availability of online sources, like vocabularies/thesauri and geographic information, for example in national registries of geo-data. To summarize, the user experience of the ecosystem also depends on the quality of data that is not part of the project. To make sure the ecosystem will work everywhere in a *technical sense*, every showcase or technical pilot will be executed in two locations in different countries.

The connection between the digital heritage assets from different collections is made by the ecosystem by mapping the data to an ECHOES metadata model that will be selected or, if needed, specially designed in the project, making use of the knowledge and standards of organizations like ICA, ICOM and IFLA and tools already developed in programs like CARARE, LoCloud, ATHENA, APEx and Europeana insight. Due to this mapping, differences in terminology (including those caused by multilingualism) don't stand in the way of integrated access. If one universal ECHOES metadata model will prove to be sufficient or feasible is still unsure, as an innovative all-embracing solution for making all mobile *and immobile* heritage available – like the ECHOES ecosystem – has never been built. It is also not completely certain whether *all* digital assets being made available by the ecosystem can be passed on to portals like Europeana and the Archives Portal Europe. Of course the last one is a discipline-based portal, taking only archival material, but during the project clear arrangements must be made with both portals, using the Expert Advisory Group for advice and as an intermediary. For now the statement that all content in the ecosystem will be mapped to the Europeana Data Model (EDM) suffices.

2.2 Measures to maximise impact

The dissemination of the ecosystem is essential to the success of project ECHOES. The consortium will raise awareness for and ensure visibility of the project to the identified stakeholders to ensure widespread dissemination of its results. In addition, dissemination makes transfer of knowledge and expertise between consortium partners and other stakeholders possible. This will strengthen the collaboration between the partners, their networks and the wider European heritage community.

This section describes the plan for dissemination and exploitation of the results obtained in the ECHOES project. The objective is to maximise the impact of the project by inspiring, involving and informing stakeholders about the progress of the project, obtained results and their potential implications. Stakeholders in this case can be divided into two groups: collection holders and all sorts of user groups imaginable. This section specifically focuses on the designed measures directed at identified target groups and how these contribute to increase the impact of the project.

2.2a Dissemination and exploitation of results

To maximize the impact and use of the ECHOES ecosystem a set of dissemination activities will be carried out, both during and after the project. Dissemination activities both during and after the project will be targeted at two groups: collection holders and all sorts of user groups imaginable. The identification of existing and new user groups is part of Work Package 1. In the table (2.2 Stakeholder analysis) a few of the non-traditional groups are mentioned as an example.

One of the final activities of the project phase will be the setting up of a foundation for ‘ownership’ and dissemination of the ecosystem. Ownership in this case does not mean exploitation, but rather further implementation. The ecosystem will be developed as an Open Source solution which will be well documented. Interested parties will be able to use the ecosystem or parts thereof (modules) free of charge. In this way the ECHOES ecosystem will be sustainable after the project itself has finished.

Table 2.2 Stakeholder analysis (starting point for analysis in work package 1)

STAKEHOLDER	WHY WE WANT TO REACH THE STAKEHOLDER
<p><i>Collection holders</i></p>	<ul style="list-style-type: none"> • We aim to dissolve the barriers between collection types and between individual collections. • We aim to dissolve the barriers between nations and languages. • We want to make it easy to connect collections via a single access point based on holding institute, location or theme. • ECHOES enables collection holders to enrich collections by giving users the opportunity to enrich the information related to the digital cultural assets by adding their own information, by linking assets or geotagging them, without great cost to the collection holder. • Via ECHOES, collection holders can make their assets available to Europeana and the Archives Portal Europe, creating more traffic to these portals and to the collections connected by the ecosystem. <p><u>And most importantly:</u></p> <ul style="list-style-type: none"> • ECHOES helps collections holders make their collections more relevant, by making them available to new user groups like designers or tourists and by giving existing users more information based on existing collections.
<p><i>Traditional users of digital heritage collections</i></p>	<p>Traditional users of cultural heritage assets can have a much better experience using digital heritage assets:</p> <ul style="list-style-type: none"> • ECHOES can supply a single point of access for several similar collections; • ECHOES links different types of collections, thus enriching the results of a search; • ECHOES can be used to make digital cultural assets (without legal restrictions) freely available as open data for reuse; • users can enrich data and form communities through the ECHOES ecosystem.

Humanities and social sciences researchers

- The ecosystem enables researchers to look beyond the boundaries of their own discipline by connecting collections in two ways [WP2] - by creating a single access point and by linking digital cultural assets together (linked data).
- ECHOES provides tools for new forms of presentation and interaction with data by using maps, timelines, infographics (data visualization) and 3D models, which will lead to new scientific insights and analyses;
- ECHOES can be used to make digital cultural assets (without legal restrictions) freely available as open data for reuse by scientists, among others;
- ECHOES provides the opportunity to disseminate research results to the general public by enriching data held by collection holders.

Non-traditional users of digital heritage collections

The whole point of ECHOES is to make digital cultural assets more widely available and to prepare them for different non-traditional use(r)s:

- ECHOES offers new criteria (like pattern or color) for searching through digital cultural assets, tailor made for non-traditional heritage consumers like designers – who want to reuse digital cultural assets as ‘raw material’ for new designs;
- by offering an augmented reality app that can bring content to mobile devices in the spatial environment, ECHOES increases the chance of an ‘accidental’ encounter with heritage, encouraging a further acquaintance;
- by using the visually attractive tools for the presentation of and interaction with cultural digital assets.

General public

The general public, defined here as a non-defined user group, can be reached more easily by using ECHOES functionality:

- by offering an augmented reality app that can bring content to mobile devices in the spatial environment, ECHOES increases the chance of an ‘accidental’ encounter with heritage, encouraging a further acquaintance;
- by using the visually attractive tools for the presentation of and interaction with cultural digital assets;
- by making use of cultural heritage assets in non-traditional environments like city websites, school sites, themed sites, etc., using the widgets provided by ECHOES.

Tourism industry

City/regional/national marketing

ECHOES can offer easy access to cultural heritage for the tourism industry:

- by offering an augmented reality app that can bring content to mobile devices in the spatial environment;
- by making use of cultural heritage assets in non-traditional environments like city websites, school sites, themed sites, etc., using the widgets provided by ECHOES.



*Software developers,
builders of websites
and apps*

ECHOES provides an Open Source ecosystem that can be used, maintained, extended and built upon by software developers and builders of websites and apps.

2.2b Communication activities

During the project dissemination will consist of the following activities:

Dissemination is essential to ensure maximum impact and sustainability for the ECHOES project. The different possibilities of dissemination activities will be identified to raise awareness and ensure visibility of the project, with special attention paid to the stakeholders identified above: collection holders and all sorts of user communities. A widespread dissemination of the results will facilitate the implementation and stimulate the use of the ecosystem and make the transfer of knowledge and expertise between consortium partners and other stakeholders possible. This will strengthen the collaboration between the partners, their networks and the wider European heritage community.

The fact that the whole ECHOES ecosystem will be developed as an Open Source solution, using generally accepted standards, will make the implementation by (parts of) the ecosystem by users outside the original consortium feasible. Several IT companies, with a good geographical spread over Europe, are involved in the development of the ECHOES ecosystem. They will have a vested interest in promoting its further use and in building new applications for different user groups using ECHOES as a base. This too will ensure further implementation both during the project and after the project is finished.

Because dissemination is such an important part of the success of the ECHOES ecosystem it is the subject of a separate work package, WP7. The first task of this WP is to write a dissemination plan to ensure that the project continues to achieve its full potential impact on target groups. In the plan the communication strategy will be discussed, and topics will include among other things:

- the communication strategy with regards to different stakeholders, with special attention paid to establishing close relationships with new/potential user communities;
- the utilization of different channels for the dissemination (the Internet, the website of ECHOES and of partners, international and national press: newspapers, radio and TV);
- a strategy for tracking events, publications etc. that are relevant to the project;
- a strategy for the organization of events;
- a strategy for the creation of a learning environment.

Based on the dissemination plan, a communication calendar will set out all the communication and dissemination actions over a time span of a little over three years, listing the key moments in the process of the project and linking them to actual communication activities undertaken by the consortium. A visual identity for the whole project will be designed, taking into account the different target groups and the different sorts of material that will be produced for those target groups. The visual identity should work in all mediums.

The project website will be the face of the ECHOES project on the Internet. Here all reports, information and project material can be uploaded. The website will have to serve different types of user groups of the ecosystem (institutions like collection holders, end-users like researchers, designers, tourism industry, traditional users of heritage). A good design appealing to different groups will be important as will be offering easy navigation to information relevant to each group. The website shall also serve as a private platform to share information among consortium members and to communicate about a robust and coherent implementation plan.



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Various marketing materials will be prepared for different end-users, explaining opportunities, benefits and advantages of project ECHOES solutions. Specific templates for partners' use will be developed and multimedia dissemination material, project leaflets, press releases, folders, posters, brochures, digital PR materials (newsletters, thumbnails, banners, internet ads, etc.) will be produced. These materials will be available on the site. All partners will use these materials to target different groups.

In accordance with the dissemination plan for the project, ECHOES presence on the mainstream social networks will be ensured in order to raise awareness of the public and interested parties about the project progression, possibilities and outcomes by creating active and engaging official project profiles. And the project will be promoted in articles and information material that is published in journals, newsletters, web portals, presented in city council meetings, etc.

During the project two conferences will be organized to disseminate specific parts of the project. Also, all partners will contribute to the dissemination of the project and its results by attending international conferences related to the subject and giving presentations on ECHOES. Open calls will be organized during the project and coordinated by certain partners in order to explore, gain new insights, add new functionalities and present the possibilities introduced by project ECHOES tools for analysis and display of cultural collections in general. Partners will present the results of the studies taken from open calls and present examples of successful implementation of ECHOES solutions.

The first conference will be held concurrent with the release of the concept strategy for user participation. The second conference will be held at the end of the project to present the complete ecosystem. The conferences will present the ECHOES solution to different user groups, from scientists and collection holders to traditional users of digital heritage. They will reflect on the problems, advantages and disadvantages related to the themes of open data, copyrights, technical issues, possibilities for use of the ecosystem, user communities and funding of digitizing, etc., all in order to exchange experiences and good practices.

The results of Work Package 5, the development of new, visually attractive tools for the instant presentation of and interaction with digital cultural assets and the augmented reality (AR) ECHOES showcase app, will be reported on in Open Access scientific journals.

To ensure further dissemination, even after the end of the project, an online learning environment will be created. It will provide guides, tutorials, a short course and videos aimed at potential users. It will be designed to promote the use of the ECHOES tools and will be made available on the website. The evaluation of the dissemination during the project will be the input for the organization of the dissemination after the project is finished. The results of the dissemination evaluation will be handed to the foundation that will manage ECHOES after the project.

After the project dissemination will consist of the following activities:

The ECHOES ecosystem will be built Open Source. This means there is no Intellectual Property Right on the ecosystem itself. The heritage data connected to the system by partners can be subject to IPR. Therefore they will only be shown as Open Data if they are marked as such in the middle layer of the ecosystem. This will make the implementation by (parts of) the ecosystem by users outside the original consortium feasible.

To ensure ownership of the results of the project after the build, a foundation will be set up to continue dissemination and to provide information to interested parties. The results of the project, including software and user guides, will be archived in the online repository of the Consorci de Serveis Univeritaris de Catalunya (CSUC) and will remain available for at least five years after the project is finished. There will be no embargo period for use of either software or documentation. The use of the ECHOES solution will



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be demonstrated in an online learning environment. Both this environment and the documentation will be available on the foundation's website, that will also stay online for at least five years after the project has finished.

Several IT companies, with a good geographical spread over Europe, are involved in the development of the ECHOES ecosystem. They will have a vested interest in promoting its further use and in building new applications for different user groups using ECHOES as a base. This too will ensure further implementation both during the project and after the project is finished.

3. Implementation

3.1 Work packages, correlation and planning

3.1.1 Work packages, content and correlation

The work in the project is divided into 7 work packages which will be coordinated by a yet to be established ECHOES office at the headquarters of Erfgoed Leiden and Omstreken in the Netherlands. A list of the work packages and a detailed description of the WPs with their tasks, deliverables and milestones can be found in the tables 3.1b, 3.1a, 3.1c and 3.2a respectively. Below a brief overview is given of the WPs, their content and correlation (also shown in Fig. 3.1 Relationships between work packages).

WP1 – Challenge analysis

This WP constitutes the foundation of the ECHOES project as it reports on the needs of different groups of real (potential) users and on the technical conditions for the digital ecosystem. The findings of WP1 will be used as a starting point in the WPs 2, 3, 4 and 5. A regular feedback on the ecosystem during the build is part of this WP, as is a user evaluation of the ecosystem as a whole at the end of the project.

WP2 – Connecting collections

WP2 is the biggest in terms of the use of resources allocated (about 30%), and probably in terms of the challenge that is taken up. It will develop the heart of the ecosystem: the 'middle layer' that collects, connects, enriches and passes on data to an Open Data warehouse and a couple of portals, and – by means of APIs – to the visually attractive, adaptable tools for the instant presentation of and interaction with the digital cultural assets. Because of the potentially groundbreaking nature of this middle layer, the SME PIC that takes the lead in this package has been found willing to invest a considerable amount of their own budgetary means to supplement the partial reimbursement from the EU for commercial parties for this quite substantial effort. The WPs 3, 4 and 5 are involved in the development of these APIs, to make sure the tools developed in these WPs are served properly.

WP 3 – Empowering communities

WP3's objectives are twofold. In the first place community tools will be developed for the enrichment of digital collections by the crowd, for making use of the services and for enabling users to create their own environments. Users can in this personal environment (slightly) alter the tools developed in WPs 3, 4 and 5 to meet their needs.

Secondly, WP3 will show the societal relevance of the ecosystem as a whole, both from the point of view of education and research as well as for the general public. This means that the tools developed in the WPs 2, 3, 4 and 5 will together be deployed as one ecosystem, connecting different collections and heritage resources in two different territories. The result of this will be the subject matter of the final user evaluation in WP1.

WP4 – New perspectives

New search criteria and technology to attract new user communities and improve the users' experience when searching digital heritage assets are the main objectives of this WP. With innovative technology (e.g. language technology, image recognition, geolocation technology, filter technology and ranking technology) data will be transformed into information. This WP will not deliver finished interfaces, but search technology that will be embedded in the interfaces/tools of the WPs 3 and 5. The WP leaders of 3 and 5 are therefore involved in the development.

WP5 – Presentation and analysis

WP5 is *the* work package that will make all the innovative, clever things done with the heritage data visible to the world. This work package will develop new, visually attractive tools (like data visualization) for the instant presentation of and interaction with digital cultural assets. To make sure the tools will be adaptable in the personal environments, the WP3 leader is involved in the development. A second key result of this WP will be an augmented reality (AR) ECHOES app with a wide range of uses. It offers new ways to navigate the spatial heritage with wearable devices, linking heritage sites with mobile heritage in the collections of local institutions and with 3D reconstructions or 3D images of lost or hidden heritage. It will demonstrate the potential for enrichment by the crowd, offering the user the possibility to link geographical coordinates to any digital cultural asset.

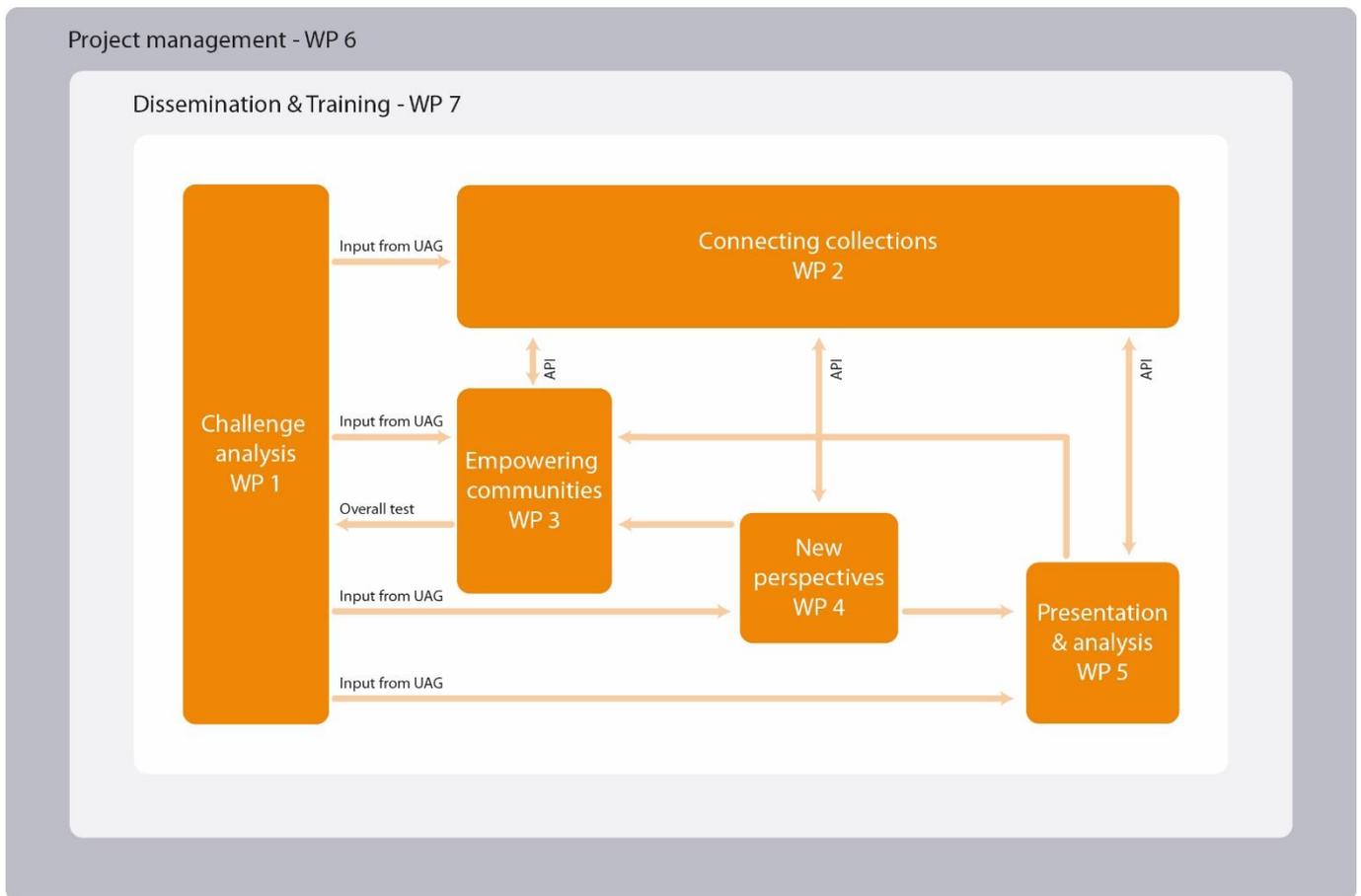


Fig. 3.1 Relationships between the work packages

WP6 – Project management

The purpose of the project management WP is the smooth execution of the project in order to ensure cohesion and compliance with the proposal. This WP covers the overall project management: planning, quality control, administration & financial management and reporting on the project. A concise, professional management structure will be implemented to ensure that all aspects of the EC requirements for communication and reporting are met and the overall legal, contractual, financial and administrative management of the project is coordinated.

WP7 – Dissemination

The main objective of WP7 is to carry out a set of dissemination activities essential to ensure maximum impact and sustainability for the ECHOES project. The different possibilities of dissemination activities will be identified to raise awareness and ensure visibility of the project. During the project there will be a close collaboration between WP7 and the other WPs, thus making sure that results of the WPs are made known to the world.

Table 3.1a: Work package descriptions

WORK PACKAGE TITLE	CHALLENGE ANALYSIS
WORK PACKAGE NUMBER	1
WP LEADER	LDB

START MONTH	END MONTH
1	38

PARTICIPANT NO.	2	1	4	5	6	7	11	12
SHORT NAME	LDB	ELO	DIBA	TRES	I3A	RIJ	AYZ	SG
PERSON MONTHS	12	6	3	3	1	2,5	0,5	2,5

OBJECTIVES
<p>This WP constitutes the foundation of the ECHOES project as it reports on the needs of different groups of real (potential) users and on the technical conditions for the digital ecosystem. In this package the methodology for the consultation of users is designed, and the consultations are carried out. Special attention is given to new audiences, like education and the tourist and creative industries. Naturally traditional user communities and collection holders are also consulted, to ensure a broad acceptance and use of the ecosystem, decreasing the risk of an unsuccessful solution or failure.</p> <p>For the consultation User Advisory Groups (UAGs) will be formed, made up of different types of user communities (e.g. general public, researchers, professionals, designers and institutions) from various European countries and equally balanced between men and women. These UAGs will be involved iteratively throughout the project, providing the project with a thorough understanding of the potential user groups' needs at the start, improving the ecosystem by testing acceptance and giving feedback during development, and giving the ECHOES foundation and others in the digital heritage field valuable information by evaluating the final solution.</p>

The objectives of this WP are:

- to design a methodology for the consultation of user communities;
- to set up User Advisory Groups;
- to carry out user consultations at the start, during the development and at the end of the project (i.e. user consultation iteration 1,2 and 3);
- to analyse the way in which the heritage data is structured now in the collection management systems of the heritage institutions in the consortium and/or related heritage institutions;
- to report on the first user consultation and the data analysis and draw up functional requirements for the WPs 2-5;
- to report on the feedback gathered during the development (in collaboration with WP3-5);
- to report on the data gathered during the user evaluation at the end of the project.

The User Consultation Methodology Plan (D1.1), Functional Requirements Specification (D1.2) and User Evaluation (D1.3) will be made available on the ECHOES website in cooperation with WP7.

DESCRIPTION OF WORK

T1.1 Design of the user consultation methodology (M1-M2)

by: LDB, DIBA, TRES, I3A, RIJ, SG

This task aims at establishing a detailed methodology plan for the ECHOES project, concerning the involvement of user communities and collection holders (as potential users and content suppliers to the ecosystem). Included in this task is the definition of which communities of traditional heritage consumers and potential new users we want to reach and a decision on how we want to involve them throughout the project. Also part of this task is the formation of the User Advisory Groups (UAGs), made up of different user communities from various European countries and equally balanced between men and women.

This task will be documented in D1.1, User Consultation Methodology Plan, which will be made available via the ECHOES website after M9 (launch website).

LDB will lead this task, identify Swedish candidates for the UAGs, and function as lead editor of the User Consultation Methodology Plan. The others involved will identify candidates for the UAGs in Croatia, Spain, the Netherlands and Belgium, and the leaders of other WPs in this task will help design the methodology.

T1.2 First user consultation (M2-M4)

by: ELO, LDB, DIBA, TRES, RIJ, SG

This task involves a thorough analysis of the Request for Information (RfI) that a partnership consisting of the cities of Bruges, Delft, Ghent and Leiden, and the Frisian historic repository Tresoar used in 2014 to consult the market on the feasibility and price of the proposed ecosystem. The result of this analysis will be a draft set of requirements for the ecosystem, that will be used to consult the UAGs for the first time, which is also part of the task.

This task will be documented in D1.2, Functional Requirements Specification, which will be made available via the ECHOES website after M9 (launch website).

ELO will lead this task, consult the Dutch users, and function as lead editor of the Functional Requirements Specification. The others involved will support the consultation in Sweden, Croatia, Spain and Belgium.



T1.3 Analysis actual data structures (M3-M4)

by: ELO, DIBA, TRES, RIJ, AyZ, SG

This task focuses on the analysis of data structures used to manage digital heritage assets by the consortium partners and/or related heritage institutions. These institutes together represent the vast majority of the collection holders in Europe, considering the geographical spread within the consortium, the variety in collection types and the various stages of digitization. The analysis will among other things include a survey of the metadata models and collection management systems being used and a brief examination of the quality of the data and its potential for automatic enrichment.

This task will be documented in D1.2, Functional Requirements Specification, which will be made available via the ECHOES website after M9 (launch website).

ELO will lead this task and function as lead editor of the Functional Requirements Specification. All involved will deliver information on their data management or on that of related institutions in their local environment to the task leader. The Expert Advisory Group and national aggregators in the Netherlands will also be asked for support with counsel.

T1.4 Periodic feedback on first release modules ECHOES (M11-M24)

by: LDB, DIBA, TRES, RIJ, SG

The aim of this task is to consult the UAGs when a module, widget or any other part of the ecosystem is deemed fit for a first release, to analyse the user responses and report on it. The analysed result will be communicated to all ECHOES WPs, in order to secure that the findings from this second iteration of consultations are addressed and implemented in the continued development of the ECHOES solution.

This task will result in D1.3, Periodical UAG Feedback Reports to all WP leaders.

LDB will lead this task and function as lead editor of the Periodical UAG Feedback Reports. The others involved will support the second iteration of consultations in Croatia, Spain, the Netherlands and Belgium.

T1.5 User evaluation of the final ECHOES solution (M37-38)

by: LDB, ELO, DIBA, TRES, RIJ, SG

The third iteration of the UAGs consultations constitutes the final user evaluation of the finished ecosystem, using the showcase websites created by WP3, and checking among other things user acceptance, interest, and ease of use of the ecosystem. The final activity will be to gather, analyse and document the final user evaluation. Lessons learned will be shared for the further development of the ECHOES ecosystem managed by the ECHOES foundation.

This task will be reported in D1.4, User Evaluation, which will be made available via the ECHOES website.

LDB will lead this task and function as lead editor of the User Evaluation. The others involved will support the third iteration of consultations in Croatia, Spain, the Netherlands and Belgium.

DELIVERABLES	DELIVERY MONTH
D1.1: User Consultation Methodology Plan	M2
D1.2: Functional Requirements Specification	M4
D1.3: Periodic UAG Feedback Reports	M11-24
D1.4: User Evaluation	M38

WORK PACKAGE TITLE	CONNECTING COLLECTIONS		
WORK PACKAGE NUMBER			2
WP LEADER			PIC

START MONTH	END MONTH
6	30

PARTICIPANT NO.	3	1	4	5	6	7	8	9	10	11	12	14
SHORT NAME	PIC	ELO	DIBA	TRES	I3A	RIJ	RIX	GRID	IMI	AYZ	SG	CSUC
PERSON MONTHS	142	12	1.5	1	4	2	4	10.5	17	2	5	3

OBJECTIVES

WP2 will develop the heart of the ecosystem: the ‘middle layer’ that collects, connects, enriches and passes on data to the visually attractive, adaptable tools for the instant presentation of and interaction with the digital cultural assets. The middle layer will map different types of heritage collections to a universal schema and semi-automatically enrich the data with (other) Linked Open Data and coordinates. If desired by the collection holder, the content generated by users can be led back to the collection management systems. The middle layer does not require alterations to the collection management systems, unless a collection holder would like to include user generated content (UGC) in his collection management systems. This might require changes.

The result of WP2 will be an Open Source architecture – made available on the Github software repository under a non-restrictive Open Source Licence (e.g. GPLv3) and at least 5 years on the online repository of CSUC – that provides WP3, 4 and 5 with documented APIs (Application Programming Interfaces) that can also be used by 3rd party developers or researchers. By using the APIs all can make maximum use of the enriched (open!) data and will have a very powerful tool to make visualisations of the data. All data the middle layer will be stored in a suitable format in a reliable and sustainable repository.

The objectives of this WP are to:

- select, adapt or design (a) metadata model(s) for ECHOES;
- build a mapping tool;
- build tools to semi-automatically enrich the data;
- provide APIs to deliver the content to the front end tools;
- map the content to Europeana and Archives Portal Europe data models;
- test and improve the middle layer (in collaboration with WP3,4,5);
- document the completed middle layer and make it available.

The completed middle layer and the documentation will be made available at least 5 years on the online repository of CSUC which can be found via the ECHOES website (in collaboration with WP7) and on Github.

DESCRIPTION OF WORK

All tasks will be performed in close cooperation with the IT coordinator (ITC) of WP6, since the ITC is responsible for the monitoring and validating of the project's technical work, quality control and cross-coordination of technical solutions between the different WPs, ensuring technical consistency and achievement of technical objectives.

T2.1 Requirement analysis and decision on metadata model (M6-M9)

by: PIC, ELO, DIBA, AyZ, SG, iMI, Rij

An analysis of D1.2, Functional Requirements Specification will lead to a good overview of the data structures used by collection holders. To achieve the overall goal of creating integrated access to digital cultural assets from all conceivable heritage collections a universal ECHOES metadata model will be selected, or, if needed, specially designed.

The metadata model will be documented in D2.1, ECHOES Metadata Model.

PIC will lead this task, assisted by the ITC. The others involved will contribute as collection holders, ensuring compatibility with the way their digital heritage assets are kept, or because of their expertise on the semantic web, ensuring the compatibility with Linked Data.

T2.2 Inventory of Open Source technology and decision on technology stack (M6-M9)

by: PIC, ELO, GRID, iMI, SG

Decide on coding language, framework, triple store etc.

PIC will lead this task, assisted by the ITC. With the combined input from the technology companies, the research institute involved and ICT specialists from collection institutes, decisions will be made with regard to the technologies that will be best suited to meet the goals of the project, with a clear focus on the efficient use of resources (use what is available) open standards and sustainability.

T2.3 Determine sources for auto-enrichment (M8-M11)

by: PIC, ELO, DIBA, TRES, RIJ, GRID, iMI, AyZ, SG

The semi-automatic enrichment uses semantic web technology and mapping data to geo-locations. This enrichment uses online sources, like vocabularies/thesauri, Linked Open Data resources and geographic information, for example in national registries of geo-data. This task will identify those sources.

This task will be documented in D2.2, List of Enrichment Sources.

PIC will lead this task, assisted by the ITC. The others involved will identify (inter)national sources already in use within the heritage sector, and other datasets that can be used with the new techniques that will be developed.

T2.4 Functional requirements API (M10-M14)

by: PIC, ELO, I3A, RIX, GRID, CSUC

This task will decide the functional requirements for the APIs that can be used by the tools developed in WP3, 4 and 5 and other future front end applications.

This task will be documented in D2.3, API Functional Requirements.

PIC will lead this task, assisted by the ITC. The other WP leaders involved and the IT developers that are charged with the development of the tools in the frontend will make known what they need the APIs to do, based on the outcomes of the first user consultations.

T2.5 Build mapping tool (M9-M17)

by: PIC, ELO

The mapping tool will take input in the form of XML, CSV or OAI-PMH. Collection holders will be able to map their metadata to the metadata model of ECHOES designed in T2.1. Testing is part of this task.

This task will deliver D2.4, Mapping Tool.

PIC will perform this task, which will be monitored by the ITC.

T2.6 Build enrichment tools (M18-20)

by: PIC, ELO, GRID, iMI

These tools will enrich the mapped data with information found in the sources for auto-enrichment identified in T2.3. Testing is part of this task.

This task will deliver D2.5, Enrichment Tools.

PIC will lead this task, assisted by GRID and iMI. The build will be monitored by the ITC.

T2.7 Build first release API (M21-M22)

by: PIC, ELO, I3A, RIX, GRID

The first release of the API or APIs is based on the functional requirements drawn up in T2.4.

This task will deliver D2.6, First Release API.

PIC will lead this task, assisted by I3A, RIX and GRID. The build will be monitored by the ITC.

T2.8 Test and feedback on first release API (M23-M23)

by: GRID, I3A, RIX, CSUC

The first release of the API or APIs will be tested by the technical parties involved in WP3, 4 and 5 and feedback will be given to PIC.

This task will deliver D2.7, First Release API Feedback Report.

GRID will lead this task and act as lead editor, assisted by I3A and GRID.

T2.9 Final release API (M24-M24)

by: PIC

The API or APIs will be perfected using the feedback of T2.8.

This task will deliver D2.8, Final Release API.

PIC will perform this task.

T2.10 Build output mapping tool (M25-M26)

by: PIC, ELO

The mapping tool will convert the data stored in the ECHOES metadata model to the Europeana Data Model (EDM) and Archives Portal Europe Data Model (APE EAD). Testing the mapping tool is part of this task.

This task will deliver D2.9, Output Mapping Tool.

PIC will perform this task, which will be monitored by the ITC.

T2.11 Share ECHOES' middle layer (M6-M30)

by: PIC, ELO, iMI

The Open Source architecture created by WP2 will be made available on the Github software repository under a non-restrictive Open Source Licence (e.g. GPLv3) and at least 5 years on the online repository of CSUC which can be found via the ECHOES website (in collaboration with WP7). This task will deliver D2.10, Technical Manual on ECHOES' Middle Layer Components. PIC will lead this task and act as lead editor, assisted by ELO and iMI.

DELIVERABLES	DELIVERY MONTH
D2.1: ECHOES Metadata Model	M9
D2.2: List of Enrichment Sources	M11
D2.3: API Functional Requirements	M14
D2.4: Mapping Tool	M17
D2.5: Enrichment Tools	M20
D2.6: First Release API	M22
D2.7: First Release API Feedback Report	M23
D2.8: Final Release API	M24
D2.9: Output Mapping Tool	M26
D2.10: Technical Manual on ECHOES' Middle Layer Components	M30

WORK PACKAGE TITLE	EMPOWERING COMMUNITIES		
WORK PACKAGE NUMBER	3		
WP LEADER	DIBA		
			

START MONTH	END MONTH
13	35

PARTICIPANT NO.	4	1	3	5	12	13	14	15	16
SHORT NAME	DIBA	ELO	PIC	TRES	SG	IUR	CSUC	UVA	UL
PERSON MONTHS	27	6	0.5	3	5	21	29	2	2

OBJECTIVES
<p>WP3's objectives are twofold:</p> <ul style="list-style-type: none"> To develop community tools that will enable users to create their own environment with a design that is attuned to their needs and/or to the needs of the community of users with a shared interested they are part of. With the tools in this environment users will at least be able to build a community, to add their own information to the digital collections in various ways and to make use of services provided by the collection holder.

- To show the societal relevance of the ecosystem, both from the point of view of education and research as well as for the general public. This means that the tools developed in the WPs 2, 3, 4 and 5 will together be deployed as one ecosystem, connecting different collections and heritage resources in two different territories. Also, a HGIS environment for historians will be set up.

DESCRIPTION OF WORK

All building tasks will be performed in close cooperation with the IT coordinator (ITC) of WP6, since the ITC is responsible for the monitoring and validating of the project's technical work, quality control and cross-coordination of technical solutions between the different WPs, ensuring technical consistency and achievement of technical objectives.

T3.1 Requirement analysis and collecting best practices (M13-M15)

by: DIBA, ELO, TRES, IUR

This task will combine the analysis of the Functional Requirements Specification document (D1.2) to extract the needs of (new) user communities with the production of an inventory of best practices. This activity aims to identify the best (preferably Open Source) examples of community tools or existing nowadays. Especially tools and strategies to personalize the digital environment and to let the crowd enrich heritage collections are of interest, since the enrichment of collections seems the most complex challenge in this WP, which has the ambition to reach high levels of citizen participation in adding information to the collections. Successful concepts need to be copied or used as an inspiration; mistakes need to be avoided. To identify best practices the huge expertise and network of the ECHOES partners will be utilized.

The result of this task will be documented in D3.1, Functional Requirements for Community Tools. DIBA will lead this task and function as lead editor, assisted by the ITC, TRES and IUR.

T3.2 Designing a strategy for user participation (M16-M17)

by: IUR, DIBA

This task will translate the outcomes of T3.1 into a strategy to successfully employ the users/the general public to enrich heritage collections and make sure the personal environments will be used. The result will be D3.2a, Concept Strategy for User Participation.

This document will be debated during the first ECHOES conference (T7.6). The new insights and comments collected at that conference will contribute to definitive guidelines for citizen enrichment of digital heritage collections.

The result will be D3.2b, Guidelines for Citizen Enrichment of Digital Heritage Collections. IUR will lead this task and function as lead editor of both documents, assisted by DIBA.

T3.3 Design community tools for enrichment and services (M18-M19)

by: IUR, ELO, DIBA, TRES, CSUC

The requirements, strategy and guidelines in the document D3.1, D3.2a and D3.2b will be translated to technical specifications and a design of the look-and-feel of the community tools for enrichment and services.

IUR will lead this task, assisted by ELO, DIBA and CSUC.



T3.4 Build community tools for enrichment and services (M20-M22)

by: CSUC, ELO, DIBA

The first release of the community tools for enrichment and services is based on the design drawn up in T3.3.

This task will deliver D3.3, First Release Community Tools for Enrichment and Services.

The build will be executed by task leader CSUC, supervised by DIBA and the ITC.

T3.5 Test first release community tools for enrichment and services (M23-M23)

by: DIBA, ELO

The first release of the community tools for enrichment and services will be tested by the UAGs set up by WP1, and by ELO and DIBA. Feedback will be given to CSUC.

This task will deliver D3.4, First Release Community Tools for Enrichment and Services Feedback Report.

DIBA will lead this task and act as lead editor, assisted by ELO. A separate feedback report based on the UAGs findings will be delivered by WP1 (T1.4).

T3.6 Final release community tools for enrichment and services (M24-M24)

by: CSUC, ELO, DIBA

The community tools for enrichment and services will be perfected using the feedback of T3.5. The final release of the tools will be documented and made available on the Github software repository under a non-restrictive Open Source Licence (e.g. GPLv3) and at least 5 years on the online repository of CSUC which can be found via the ECHOES website (in collaboration with WP7).

This task will deliver D3.5, Final Release Community Tools for Enrichment and Services.

Perfecting the module will be executed by task leader CSUC, which will be monitored by DIBA and the ITC.

T3.7 Design community tools to personalize environments (M23-M25)

by: IUR, ELO, DIBA, TRES, CSUC

The requirements, strategy and guidelines in the document D3.1 and D3.2a will be translated to technical specifications and a design of the look-and-feel of the community tools to personalize environments.

IUR will lead this task, assisted by ELO, DIBA and CSUC.

T3.8 Build community tools to personalize environments (M26-M30)

by: CSUC, ELO, DIBA

The first release of the community tools to personalize environments is based on the design drawn up in T3.7.

This task will deliver D3.6, First Release Community Tools to Personalize Environments.

The build will be executed by task leader CSUC, supervised by DIBA and the ITC.

T3.9 Test first release community tools to personalize environments (M31-M31)

by: DIBA, ELO

The first release of the community tools to personalize environments will be tested by the UAGs set up by WP1, and by ELO and DIBA. Feedback will be given to CSUC.

This task will deliver D3.7, First Release Community Tools to Personalize Environments Feedback Report.

DIBA will lead this task and act as lead editor, assisted by ELO. A separate feedback report based on the UAGs findings will be delivered by WP1 (T1.4).

T3.10 Final release community tools to personalize environments (M32-M32)

by: CSUC, ELO, DIBA

The community tools to personalize environments will be perfected using the feedback of T3.9. The final release of the tools will be documented and made available on the Github software repository under a non-restrictive Open Source Licence (e.g. GPLv3) and at least 5 years on the online repository of CSUC which can be found via the ECHOES website (in collaboration with WP7).

This task will deliver D3.8, Final Release Community Tools to Personalize Environments.

Perfecting the module will be executed by task leader CSUC, which will be monitored by DIBA and the ITC.

T3.11 Showcase HGIS community (M33-35)

by: ELO, DIBA, UVA, UL

A growing group of scholars working in the humanities, archaeology and geography study the spatial and societal developments in a territory, beginning with the smallest unit: the parcels of land and their owners. This Historic GIS (HGIS) community is in need of a standardized parcel-based HGIS with research tools for universities, archives and heritage management institutions that can be used everywhere. With this, they will be able to compare different cities and regions in Europe, which is now hampered by the fact that if HGIS are even available, they are developed individually and use different methods. This standard HGIS should use cadastral maps from the first half of the nineteenth century (widely available after the Napoleonic era) as a starting point, as they offer a good starting point for regressive and progressive analysis, because the parcels still reflect the situation of the Old Regime, while they also form the basis for the modern cadastre.

The ecosystem can provide such a HGIS, but a personal HGIS environment has to be created, to interact with and add to the data that is already available in the ecosystem in a way that is attuned to HGIS communities' needs. A small comparative study will be undertaken in Leiden and Barcelona, demonstrating the opportunities for intra-European research.

This task will deliver D3.9, HGIS Environment; demonstrating that environments can indeed be personalized, and the ecosystem can indeed satisfy the needs of humanities and social sciences researchers.

ELO will lead this task, assisted by DIBA, UVA and UL.

T3.12 Mapping content to ECHOES metadata model (M28-M31)

by: DIBA, ELO, SG

To enable the showing of all digital heritage assets made available by the ecosystem on the showcases websites, the available heritage collections will have to mapped to the ECHOES metadata model.

DIBA will coordinate this task, and DIBA and SG will both map the digital heritage assets in their territories (kept in collection management systems that can communicate) to the ECHOES metadata model, assisted by ELO.



EMPOWERING COMMUNITIES WITH A HERITAGE OPEN ECOSYSTEM

T3.13 Upload content to ECHOES (M32-M32)

by: PIC

Using the mapping made in T3.12 digital heritage assets are uploaded into the ecosystem. PIC will complete this task.

T3.14 Design showcase websites (M33-M34)

by: IUR, DIBA, SG, CSUC

The functionality and advantages of the complete ecosystem will be demonstrated by building two websites that will offer integrated access to all digital heritage assets in the two territories. By creating two websites the ECHOES consortium will prove that the ecosystem can function everywhere. The two sites will have the same technical specifications but the design of the look-and-feel will be adapted to the local situation.

IUR will lead this task, assisted by CSUC. They will receive input from DIBA and SG.

T3.15 Build showcase websites (M35-M36)

by: CSUC, DIBA, SG

The websites will be built, based on the design drawn up in T3.14.

This task will deliver D3.10, Showcase Websites.

The build will be executed by task leader CSUC, supervised by DIBA and SG.

DELIVERABLES	DELIVERY MONTH
D3.1: Functional Requirements for Community Tools	M15
D3.2a: Concept Strategy for User Participation	M16
D3.2b: Guidelines for Citizen Enrichment of Digital Heritage Collections	M17
D3.3: First Release Community Tools for Enrichment and Services	M22
D3.4: First Release Community Tools for Enrichment and Services Feedback Report	M23
D3.5: Final Release Community Tools for Enrichment and Services	M24
D3.6: First Release Community Tools to Personalize Environments	M30
D3.7: First Release Community Tools to Personalize Environments Feedback Report	M31
D3.8: Final Release Community Tools to Personalize Environments	M32
D3.9: HGIS Environment	M35
D3.10: Showcase Websites	M36

WORK PACKAGE TITLE	NEW PERSPECTIVES		
WORK PACKAGE NUMBER			4
WP LEADER			TRES

START MONTH	END MONTH
11	36

PARTICIPANT NO.	5	1	4	6	7	8	9	10
SHORT NAME	TRES	ELO	DIBA	I3A	RIJ	RIX	GRID	IMI
PERSON MONTHS	23	6	2	2	1	21	24	6

OBJECTIVES

WP4 will provide new search criteria and technology to attract new user communities and improve the users' experience when searching digital heritage assets. With innovative technology (e.g. language technology, image recognition, geolocation technology, filter technology and ranking technology) data will be transformed into information. This will lead to better search results with additional suggestions, based on the user's preferences, his online social network and related collection items.

The potential for reaching new audiences is demonstrated by challenging the creative sector to re-use heritage in new design, after finding the digital heritage assets with the new search technology, thus also encouraging other designers to discover heritage collections as a source of inspiration.

The objectives of this WP are:

- to build a *new perspectives* module for the ecosystem, also incorporating the best ideas brought forward in a hackathon;
- to showcase the new possibilities for new user communities by challenging the creative sector to re-use the digital heritage assets made available by the ecosystem.

The results of the hackathon and the showcase will be made available on the ECHOES website in collaboration with WP7.

DESCRIPTION OF WORK

All tasks will be performed in close cooperation with the IT coordinator (ITC) of WP6, since the ITC is responsible for the monitoring and validating of the project's technical work, quality control and cross-coordination of technical solutions between the different WPs, ensuring technical consistency and achievement of technical objectives.

T4.1 Requirement analysis and inventory of new technology (M11-M13)

by: TRES, ELO, DIBA, I3A, iMI

This task will combine the analysis of the Functional Requirements Specification document (D1.2) to extract information on the needs of (new) user communities with the production of an inventory of

new technology expected in the next three years, to make sure the new search technology developed by this WP will a) match the developments in the field, and b) not yet be superseded by better technology on completion.

The result of this task will be documented in D4.1, Functional Requirements for New Perspectives module.

TRES will lead this task and function as lead editor, assisted by the ITC and the research institute. The WP leaders involved are going to use the new perspectives technology in the tools they will develop in their WP and will help formulate the requirements.

T4.2 Design new perspectives module (M13-M15)

by: GRID, ELO, TRES, RIX, iMI

The requirements in document D4.1, Functional requirements for New Perspectives will be translated in new search-, filter- and ranking-technologies based on the technical capabilities of the ecosystem, the architecture of which is drawn up in WP2. With the aid of technology designed in WP4 collection data will be analysed, processed and enriched. Algorithms are designed to prepare the enriched data/information for further processing, for features like retrieving and ranking information, suggesting relevant filters and presenting information and insights.

GRID will lead this task, assisted by TRES, RIX, iMI and the ITC.

T4.3 Hackathon (M15-M17)

by: TRES, RIJ

In cooperation with the dissemination WP7 a hackathon will be organized to challenge and engage the European hacker communities and education (graduate schools and universities) to develop technology for new ways of searching for new user communities. The central question of the hackathon will be: which new ways of searching can be created to facilitate use and re-use of digital heritage assets?

The results of the hackathon will not be an end-product for users, but technology or ideas which will be incorporated during the build of the first release new perspectives module (T4.4). The hacker or student group with the best idea will be offered a place in the development of this technology so the new idea will be a part of an actual working ecosystem. With the hackathon the ECHOES project is empowering communities by letting them take part in the development of the ecosystem itself!

This task will be led by TRES, assisted by RIJ for the communication and reporting on the hackathon on the ECHOES website (WP7).

T4.4 Build new perspectives module (M16-M22)

by: GRID, ELO, TRES, RIX

The first release of the new perspectives module is based on the design drawn up in T4.2.

This task will deliver D4.2, First Release New Perspectives Module.

The build will be executed by task leader GRID, RIX and the hackathon winners supervised by GRID. The ITC and TRES will monitor this task.

T4.5 Test first release new perspectives module (M23-M23)

by: I3A, ELO, DIBA, TRES

The first release of the new perspectives module will be tested by the UAGs set up by WP1, and by the WP3 and 5 leaders. Feedback will be given to TRES.

This task will deliver D4.3, First Release New Perspectives Module Feedback Report.

I3A will lead this task and act as lead editor, assisted by DIBA and the ITC. A separate feedback report based on the UAGs findings will be delivered by WP1 (T1.4).

T4.6 Final release new perspectives module (M24-M24)

by: GRID, ELO, TRES, RIX

The new perspectives module will be perfected using the feedback of T4.5. The final release of the tools will be documented and made available on the Github software repository under a non-restrictive Open Source Licence (e.g. GPLv3) and at least 5 years on the online repository of CSUC which can be found via the ECHOES website (in collaboration with WP7).

This task will deliver D4.4, Final Release New Perspectives Module.

Perfecting the module will be executed by task leader GRID and RIX, assisted by TRES. The ITC will monitor this task.

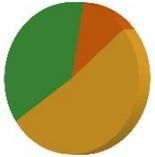
T4.7 Recycling heritage, design showcase (M30-M36)

by: TRES, RIJ

In cooperation with the dissemination WP7 a competition will be organized to challenge designer communities and design academies to re-use heritage in new design, after first finding the digital heritage assets with the new search technology provided by the ecosystem. The winner will be supported in bringing the idea to the market.

This task will be led by TRES, assisted by RIJ for the communication and reporting on the competition on the ECHOES website (WP7).

DELIVERABLES	DELIVERY MONTH
D4.1: Functional Requirements for New Perspectives Module	M13
D4.2: First Release New Perspectives Module	M22
D4.3: First Release New Perspectives Module Feedback Report	M23
D4.4: Final Release New Perspectives Module	M24

WORK PACKAGE TITLE	PRESENTATION AND ANALYSIS	
WORK PACKAGE NUMBER	5	 
WP LEADER	I3A	

START MONTH	END MONTH
6	30

PARTICIPANT NO.	6	1	3	4	5	7	8	11
SHORT NAME	I3A	ELO	PIC	DIBA	TRES	RIJ	RIX	AYZ
PERSON MONTHS	60	10	0.5	2.5	2.5	12	44	12

OBJECTIVES

WP5 is *the* work package that will make all the innovative, clever things done with the heritage data visible to the world. This work package will develop new, visually attractive tools for the instant presentation of and interaction with digital cultural assets – for example the visualization of search results in RDF triple clouds, the use of maps, time lines, diagrams and combinations of these, and interactive forms of data visualization that can be used while consulting collections – which will lead to a better insight in our history without the need for collection holders to prepare all these presentations.

The augmented reality (AR) ECHOES app built in this WP as a showcase has a wide range of uses. It offers new ways to navigate the spatial heritage with wearable devices, linking heritage sites with mobile heritage in the collections of local institutions. It will demonstrate the potential for enrichment by the crowd, offering the user the possibility to – on the spot – link geographical coordinates to any digital cultural asset. Exceptionally spectacular will be the displaying of 3D reconstructions or 3D images of lost or hidden heritage on mobile devices. The app will be freely available and will be built completely as Open Source, with one small exception: the software used to realistically render the 3D reconstructions is proprietary but can be used freely on the ECHOES platform.

Summarized the objectives of this WP are to:

- create tools for data visualization;
- create a geographical interface;
- create an app for augmented reality and deploy it in a two cities.

DESCRIPTION OF WORK

T5.1 Requirement analysis for presentation and analysis tools (M6-M8)

by: I3A, ELO, DIBA, TRES

An analysis of the Functional Requirements Specification document (D1.2) to extract information on the needs of user communities regarding forms of presentation and interaction will result in functional requirements for the presentation and analysis tools.

The result of this task will be documented in D5.1, Functional Requirements for Presentation and Analysis Tools.

ELO will lead this task, assisted by I3A, DIBA and TRES: the WP leaders that all build front end tools that should work together.

T5.2 Design tools for presentation and analysis (M9-M10)

by: I3A, ELO, DIBA, TRES, RIX

The requirements in document D5.1, Functional requirements for Presentation and Analysis Tools will be translated to technical specifications and a design of the look-and-feel of the new tools. An inventory of available Open Source software that can be (re-)used is part of this task.

RIX will lead this task, assisted by ELO, DIBA and TRES for the look-and-feel. I3A will guard the interoperability with the ECHOES app.

T5.3 Build tools for presentation and analysis (M11-M22)

by: I3A, RIX

The first release of the presentation and analysis tools is based on the design drawn up in T5.2.

This task will deliver D5.2, First Release Presentation and Analysis Tools.

The build will be executed by task leader RIX, supervised by I3A.

T5.4 Test first release presentation and analysis tools (M23-M23)

by: I3A, ELO, DIBA, TRES

The first release of the presentation and analysis tools will be tested by the UAGs set up by WP1, and by ELO and the WP3, 4, and 5 leaders. Feedback will be given to RIX.

This task will deliver D5.3, First Release Presentation and Analysis Tools Feedback Report.

ELO will lead this task and act as lead editor, assisted by I3A, DIBA and TRES. A separate feedback report based on the UAGs findings will be delivered by WP1 (T1.4).

T5.5 Final release tools for presentation and analysis tools (M24-M25)

by: I3A, ELO, RIX

The presentation and analysis tools will be perfected using the feedback of T5.4. The final release of the tools will be documented and be made available on the Github software repository under a non-restrictive Open Source Licence (e.g. GPLv3) and at least 5 years on the online repository of CSUC which can be found via the ECHOES website (in collaboration with WP7).

This task will deliver D5.4, Final Release Presentation and Analysis Tools.

Perfecting the module will be executed by task leader RIX, assisted by ELO, TRES and I3A.

T5.6 Requirement analysis for ECHOES app (M6-M8)

by: I3A, ELO, RIJ, AyZ

An analysis of the Functional Requirements Specification document (D1.2) to extract information on the needs of user communities will result in functional requirements for the ECHOES app.

The result of this task will be documented in D5.5, Functional Requirements for ECHOES App.

I3A will lead this task, assisted by RIJ and AyZ, representing the cities where the app will be implemented as a showcase. The ITC will monitor interoperability with the ecosystem and make sure that the app can be deployed anywhere.

T5.7 Design ECHOES app (M9-M12)

by: I3A, ELO, RIJ, AyZ

The requirements in document D5.5, Functional Requirements for ECHOES App will be translated to technical specifications and a design of the look-and-feel of the app.

I3A will lead this task, assisted by RIJ and AyZ, representing the cities where the app will be implemented as a showcase. The ITC will monitor interoperability with the ecosystem and make sure that the app can be deployed anywhere.

T5.8 Providing content for ECHOES app (M9-M14)

by: I3A, RIJ, AyZ

Apart from showing all digital heritage assets made available by the ecosystem, the app will be able to show 3D reconstructions of lost cultural heritage using augmented reality techniques and offer historic walks. In this task it will be decided what historic stories and locations are the most interesting to share with the general public in the two cities where the app will be implemented as a showcase.



AyZ will coordinate this task, and RIJ and AyZ will both gather the content for their city. I3A will prepare 'scenarios' to make sure the app can show 3D reconstructions, 3D documentations and historic images imposed over a live view.

T5.9 Mapping content to ECHOES metadata model (M15-M15)

by: RIJ, AyZ

To enable the showing of all digital heritage assets made available by the ecosystem by the app, the available heritage collections will have to be mapped to the ECHOES metadata model.

RIJ will coordinate this task, and RIJ and AyZ will both map the digital heritage assets in their cities (kept in collection management systems that can communicate) to the ECHOES metadata model.

T5.10 Upload content to ECHOES (M16-M16)

by: PIC

Using the mapping made in T5.9 digital heritage assets are uploaded into the ecosystem. PIC will complete this task.

T5.11 Build ECHOES app (M13-M26)

by: I3A, ELO

The first release of the ECHOES app is based on the design drawn up in T5.7.

This task will deliver D5.6, First Release ECHOES App.

The build will be executed by task leader I3A. The ITC will monitor interoperability with the ecosystem and make sure that the app can be deployed anywhere.

T5.12 Test first release ECHOES app (M27-M28)

by: I3A, ELO, RIJ, AyZ

The first release of the new perspectives module will be tested by the UAGs set up by WP1, and by RIJ and AyZ representing the cities where the app will be implemented as a showcase.

This task will deliver D5.7, First Release ECHOES App Feedback Report.

I3A will lead this task, act as lead editor of the feedback report and coordinate the tests in Rijeka and Zaragoza by RIJ and AyZ. The ITC will monitor interoperability with the ecosystem and make sure that the app can be deployed anywhere.

T5.13 Final release ECHOES app (M29-M30)

by: I3A, ELO, RIJ, AyZ

The ECHOES app will be perfected using the feedback of T5.12. The final release of the app will be documented and be made available on the Github software repository under a non-restrictive Open Source Licence (e.g. GPLv3) and at least 5 years on the online repository of CSUC which can be found via the ECHOES website (in collaboration with WP7). There is one small exception: the software used to realistically render the 3D reconstructions is proprietary but can be used freely on the ECHOES platform.

This task will deliver D5.8, Final Release ECHOES App.

Perfecting the module will be executed by task leader I3A, in close collaboration with AyZ, RIJ and the ITC.



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DELIVERABLES	DELIVERY MONTH
D5.1: Functional Requirements for Presentation and Analysis Tools.	M8
D5.2: First Release Presentation and Analysis Tools	M22
D5.3: First Release Presentation and Analysis Tools Feedback Report	M23
D5.4: Final Release Presentation and Analysis Tools	M25
D5.5: Functional Requirements for ECHOES App	M8
D5.6: First Release ECHOES App	M26
D5.7: First Release ECHOES App Feedback Report	M28
D5.8: Final Release ECHOES App	M30

PROJECT MANAGEMENT	
WORK PACKAGE TITLE	PROJECT MANAGEMENT
WORK PACKAGE NUMBER	6
WP LEADER	ELO

START MONTH	END MONTH
1	38

PARTICIPANT NO.	1
SHORT NAME	ELO
PERSON MONTHS	38

OBJECTIVES
<p>The main purpose of this WP is the smooth execution of the project in order to ensure cohesion and compliance with the proposal. This WP covers the overall project management: planning, quality control, administration & financial management and reporting on the project. A concise, professional management structure will be implemented to ensure that all aspects of the EC requirements for communication and reporting are met and the overall legal, contractual, financial and administrative management of the project is coordinated.</p> <p>WP6 will work together with WP1 - WP7 in order to:</p> <ul style="list-style-type: none"> • ensure overall management of the project in liaison with the Executive Steering Committee to support and enable the participants to achieve the objectives, deliver milestones and complete deliverables; • ensure that the consortium adheres to contractual duties; • administer and distribute EC funds in a timely fashion, record financial allocations and produce financial reports, and liaise with the Project Office in Brussels; • ensure the full compliance of ECHOES with all relevant legal issues related to the project activities according to national and international legislation; • establish an effective project communication infrastructure.

DESCRIPTION OF WORK

This WP is responsible for the implementation and the overall management of the project and will ensure an optimal progress towards the planned objectives.

ELO will be the lead partner in this WP, but all other partners will be involved in organisational structures as indicated (see §3.2).

T6.1 Implementing the management structures (M1-M2)

by: ELO

A project management framework will be set up by the Project Coordinator (PC), consisting of:

- 1) an ECHOES office (EO) (day-to-day operations)
 - administrative support for the Project Board, Executing Steering Committee and Expert Advisory Group and managed by the PC. The EO also consists of an IT Coordinator (ITC) and an administrative assistant regarding all project-related administrative and operational tasks. The office will be supported by financial legal advisors of the Servicepunt 71 (SP71), a regional cooperation for public administration, and the Hezelburcht agency for support concerning European procedures.

- 2) a Project Board (PB) (overall coordination of and reporting on the project – quarterly face to face meetings + ad-hoc meetings if necessary)
 - monitoring the planning and quality of the project and guarding the coherence of the progress in the work packages. Reports to the Executive Steering Committee (ESC) every 6 months. The PB consists of the PC (chair), the ITC who will act as deputy chair in case of absence of the PC, and all WP leaders.

- 3) the Executive Steering Committee (ESC) (strategic orientation /major changes – in principle twice a year: one face to face meeting, one teleconference)
 - monitoring the parameters of the project and highest decision-making body. Consisting of the Director of ELO (chair) and executive delegates from all the beneficiaries. Beneficiaries that also lead a WP are to delegate a different person to the ESC other than the WP leader. Meetings are always attended by the PC who is not an ESC member, but will act as a substitute chair in case of absence the Director of ELO.

- 4) An Expert Advisory Group (EAG) (independent experts that advise the PB on request – a teleconference every 6 months on average, face to face meeting during the Europeana Annual General Meeting)
 - giving expert (technical) advice on request on digital heritage aspects, external developments relevant to the project, maximising the project benefits and the dissemination of the project beyond the consortium. The EAG will be composed of reputable international experts in digital cultural heritage.

The members of the EO, PB, ESC and EAG have already been identified (see §3.2). These bodies will be formally established during the kick-off meeting. The operation of these bodies will be monitored by the PC during the overall project in order to verify whether managerial processes need further optimization. The overall goal of these bodies is to ensure smooth execution of the project, but also mutual exchange and fruitfulness of collaboration among the partners. To this purpose, besides personal acquaintance and socialization during meetings (the most important vehicle for



efficient collaboration), all telecommunication technologies will be used (tele-video-conferencing, e-mail, telephone, etc.), including the implementation of a SharePoint collaboration platform.

The User Advisory Groups (UAGs) mentioned in §3.2 will be set up by the WP1 leader.

T6.2 Project governance (M1-M38)

by: ELO

The PB with assistance of the EO will be responsible for the overall project management and the scientific progress and quality of the project. The ECHOES Office will function as a helpdesk for all participants and assist with administrative duties. Major decisions will be taken by the ESC. The PB will be the contact point for the ESC, the EAG (for the activities of these bodies, see Section 3.2).

Data Management is an important aspect during the project and the consortium will use a Data Management Plan (M6).

Conflicts among participants in any given activity will be solved at WP level by the WP leader; if unresolved the issue will be scaled up to the PB, or even the ESC in case the PB cannot reach a unanimous decision or the issue needs extra (higher level) discussion and/or political support. Voting rules will apply as stipulated in the Consortium Agreement in the ESC.

To ensure the sustainability of the ecosystem after the project has finished a managing ECHOES foundation will be established before the project's closure (M30).

T6.3 Legal, administrative and financial management and reporting (M1-M38)

by: ELO

The legal, administrative and financial management will cover:

- 1) day-to-day administrative and organizational issues (including meeting organization of the PB, ESC and EAG, and follow-up);
- 2) monitoring of the project costs in order to predict, oversee and control the overall costs incurred and the EC contribution requested;
- 3) follow-up of EC payments;
- 4) maintenance of the Consortium Agreement;
- 5) assistance to individual project partners on specific administrative issues;
- 6) periodic and consolidated annual financial reports (as specified in the Grant Agreement);
- 7) required certificates on financial statements.

Close contact will be kept with the responsible officers of the EC in order to ensure that all activities carried out and their related costs are compliant with the Horizon2020 regulations. Any amendments will be dealt with quickly in collaboration with the EC.

T6.4 Quality control and progress reports (M1- M38)

by: ELO

The coordinator will monitor the progress and quality of the project via half-yearly progress reports that will be prepared by the WP Leaders. These reports will also form the basis for the reports for the EC. Where necessary, adaptations to the project plan will be made with the aim to ensure the timely delivery of the project results as agreed upon with the EC. Major adaptations will be approved by the ESC before being submitted to the EU for approval.

DELIVERABLES	DELIVERY MONTH
D6.1 Report on the establishment of the EO, PB, ESC, EAG	M3
D6.2 Report on the establishment of the Consortium Agreement	M5
D6.3 Data Management Plan	M6
D6.4 ECHOES Managing Foundation	M30
D6.5 Periodic and final progress reports, for the EC	M18,38
D6.6 Financial reports for the EC	M18,38

WORK PACKAGE TITLE	DISSEMINATION AND TRAINING
WORK PACKAGE NUMBER	7
WP LEADER	RIJ

START MONTH	END MONTH
1	38

PARTICIPANT NO.	7	1	2	3	4	6	8	9	13	14
SHORT NAME	RIJ	ELO	LDB	PIC	DIBA	I3A	RIX	GRID	IUR	CSUC
PERSON MONTHS	27	4	4	1	2	1	1	1	4	5

OBJECTIVES
<p>The main objective of WP7 is to carry out a set of dissemination activities essential to ensure maximum impact and sustainability for the ECHOES project. The different possibilities of dissemination activities will be identified to raise awareness and ensure visibility of the project, with special attention paid to the stakeholders identified in §2.2: collection holders and all sorts of user communities. A widespread dissemination of the results will facilitate the implementation and stimulate the use of the ecosystem and make the transfer of knowledge and expertise between consortium partners and other stakeholders possible. This will strengthen the collaboration between the partners, their networks and the wider European heritage community.</p> <p>The activities that will be carried out within WP7 are the:</p> <ul style="list-style-type: none"> • opening up of channels for dissemination and the exchange of technical information and results; • starting up of communication activities and the creation of communication channels with different stakeholders (e.g. general public, researchers, professionals, designers and institutions); • promotion of the use of tools, technologies and applications resulting from the project; • creation of publicity materials; • active participation in, and/or organization of events (conferences, hackathons etc.) in order to disseminate and promote the use of project results and to create an active community; • active promotion of the results of the project to the European commission and foster relationships with other framework projects; • creation of a learning environment to ensure the use of the project results and to create an active community.

Summarized the objective of this WP is to maximise the impact of the project by inspiring, involving and informing stakeholders about the progress of the project, obtained results and their potential implications. WP leader RIJ will coordinate all of the dissemination actions carried out during the project, and also contribute to them.

DESCRIPTION OF WORK

T7.1 Dissemination plan and communication calendar (M1-M3)

by: RIJ, ELO

A dissemination plan will be written to ensure that the project continues to achieve full potential impact on target groups. In the plan the communication strategy will be discussed, and topics will include among other things:

- the communication strategy with regards to different stakeholders, with special attention for establishing close relationships with new/potential user communities;
- the utilization of different channels for the dissemination (the Internet, the website of ECHOES and of partners, international and national press: newspapers, radio and TV);
- a strategy for tracking events, publications etc. that are relevant to the project;
- a strategy for the organization of events;
- a strategy for the creation of a learning environment.

Based on the dissemination plan, a communication calendar will set out all the communication and dissemination actions over a time span of a little over three years, listing the key moments in the process of the project and linking them to actual communication activities undertaken by the consortium.

This task will deliver D7.1, Dissemination Plan and Communication Calendar.

RIJ will lead this task and act as lead editor, assisted by ELO, which as project coordinator has a good overview of the project and will especially contribute to the calendar.

T7.2 Design visual identity (M4-M5)

by: RIJ, ELO, IUR

A visual identity for the whole project will be designed, taking into account the different target groups and the different sorts of material that will be produced for those target groups. The visual identity should work in all mediums, like websites, Facebook, printed material, etc. and will be used for all expressions of the project (website, promotional materials, etc.). The visual identity will be placed at the disposal of ECHOES partners.

In the visual identity manual a set of guidelines/ basic principles for web interfaces is also included. These can be used for the look and feel of the tools developed in WP3 and 5. The look and feel of these tools can be altered by users, but the standard look and feel should be that of ECHOES.

This task will deliver D7.2, Visual Identity Manual.

RIJ will lead this task with assistance of ELO, and they will discuss the visual identity with IUR, who will design the visual identity and act as lead editor of the manual.

T7.3 Design ECHOES website (M6-M7)

by: RIJ, ELO, IUR

The project website is the face of the ECHOES project on the Internet. Here all reports, information and project material can be uploaded. The website will have to serve different types of user groups of the ecosystem (institutions like collection holders, end-users like researchers, designers, tourism



industry, traditional users of heritage). A good design appealing to different groups is important as is offering easy navigation to information relevant to each group.

RIJ will lead this task with assistance of ELO, and they will discuss the website design with IUR, who will do the actual design of the website.

T7.4 Build ECHOES website (M8-M9)

by: CSUC, RIJ, ELO

The website will be built to serve different uses. The project website will serve as a first set of publicity materials and will be used throughout the project to guarantee proper dissemination of project results to the public. Content will be added as the project develops. The website shall also serve as a private platform to share information among consortium members and to communicate about a robust and coherent implementation plan.

This task will deliver D7.3, ECHOES website.

CSUC will lead this task as builder of the website. The build will be monitored by RIJ and ELO.

T7.5 Design and produce publicity material (M6-M37)

by: RIJ

Various marketing materials will be prepared for different end-users, explaining opportunities, benefits and advantages of project ECHOES solutions. Specific templates for partners' use will be developed and multimedia dissemination material, project leaflets, press releases, folders, posters, brochures, digital PR materials (newsletters, thumbnails, banners, internet ads, etc.) will be produced. These materials will be available on the site. All partners will use these materials to target different groups.

In accordance with the dissemination plan for the project, ECHOES presence on the mainstream social networks will be ensured in order to raise awareness of the public and interested parties about the project progression, possibilities and outcomes by creating active and engaging official project profiles. And the project will be promoted in articles and information material that is published in journals, newsletters, web portals, presented in city council meetings, etc.

As coordinator of the dissemination RIJ will lead this task, and carry out most of these activities.

T7.6 Conferences and Open Calls (M10-M38)

by: RIJ, ELO, LDB, DIBA

During the project two conferences will be organized to disseminate specific parts of the project. Also, all partners will contribute to the dissemination of the project and its results by attending international conferences related to the subject and giving presentations on ECHOES. Open calls will be organized during the project and coordinated by certain partners in order to explore, gain new insights, add new functionalities and present the possibilities introduced by project ECHOES tools for analysis and display of cultural collections in general. Partners will present the results of the studies taken from open calls and present examples of successful implementation of ECHOES solutions.

Task leader RIJ will introduce the framework in order to establish guidelines for organization and implementation of the ECHOES conferences and the dissemination by partners at other conferences. RIJ will also act as coordinator and organizer of the conferences, the other ECHOES partners will deliver the content. These other partners specifically are LDB and DIBA, because they are the work package leaders for the user consultation (WP1, LDB) and the community tools and showcases (WP3, DIBA). Their work will be input for the first conference.

The first conference will be held concurrent with the release of the concept strategy for user participation. The second conference will be held at the end of the project to present the complete ecosystem. The conferences will present the ECHOES solution to different user groups, from



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scientists and collection holders to traditional users of digital heritage. They will reflect on the problems, advantages and disadvantages related to the themes of open data, copyrights, technical issues, possibilities for use of the ecosystem, user communities and funding of digitizing, etc., all in order to exchange experiences and good practices.

T7.7 Create learning environment (M22-M33)

by: RIJ, ELO, PIC, I3A, RIX, GRID, CSUC

An online learning environment will be created. It will provide guides, tutorials, a short course and videos aimed at potential users. It will be designed to promote the use of the ECHOES tools and will be made available on the website. Comments from users of this online learning environment will be fed back to the consortium, so they can be used in perfecting the ECHOES ecosystem.

This task will deliver D7.5: Digital learning environment.

WP7 leader RIJ will coordinate this task assisted by ELO for the project overview. The content will be provided by partners. For the learning environment the IT developers will deliver information and educational tools for those parts of the ecosystem they have developed. The learning environment will be built by CSUC as part of the website.

T7.8 Evaluation dissemination (M38-38)

by: RIJ, ELO, LDB

The evaluation of the dissemination during the project will be the input for the organization of the dissemination after the project is finished. The results of the dissemination evaluation will be handed to the foundation that will manage ECHOES after the project.

This task will deliver D7.4, Dissemination Evaluation Report.

As coordinator of the dissemination RIJ will lead this task and act as lead editor. RIJ will be assisted by ELO, and by WP1 leader LDB because of the relationship with T1.5.

DELIVERABLES	DELIVERY MONTH
D7.1: Dissemination Plan and Communication Calendar	M3
D7.2: Visual Identity Manual	M5
D7.3: ECHOES Website	M9
D7.4: Conference	M17
D7.5: Digital learning environment	M33
D7.6: End Conference	M37
D7.7: Dissemination Evaluation Report	M38

A brief overview of the work packages, their lead participants, person months invested, start and end date can be found in table 3.1b below and an overview of the deliverables with the dissemination level and delivery month is presented in table 3.1c.

Table 3.1b List of work packages

WORK PACKAGE	TITLE	LEAD PARTICIPANT NO	SHORT NAME	PERSON MONTHS	START	END
WP 1	CHALLENGE ANALYSIS	2	LDB	30.5	M1	M37
WP 2	CONNECTING COLLECTIONS	3	PIC	204	M6	M30
WP 3	EMPOWERING COMMUNITIES	4	DIBA	93.5	M13	M35
WP 4	NEW PERSPECTIVES	5	TRES	85	M11	M36
WP 5	PRESENTATION AND ANALYSIS	6	I3A	143.5	M6	M30
WP 6	PROJECT MANAGEMENT	1	ELO	38	M1	M38
WP 7	DISSEMINATION AND TRAINING	7	RIJ	50	M1	M38
				644.5		

Table 3.1c List of deliverables

NO	DELIVERABLE NAME	WP NO	SHORT NAME OF LEAD PARTICIPANT	TYPE	DISSEMINATION LEVEL	DELIVERY MONTH
1.1	User Consultation Methodology Plan	1	LDB	R	PU	2
1.2	Functional Requirements Specification	1	ELO	R	PU	4
1.3	Periodic UAG Feedback Reports	1	LDB	R	CO	11-24
1.4	User Evaluation	1	LDB	R	PU	38
2.1	ECHOES metadata Model	2	PIC	DEM	PU	9
2.2	List of Enrichment Sources	2	PIC	R	PU	11
2.3	API Functional Requirements	2	PIC	DEM	PU	14



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2.4	Mapping Tool	2	PIC	OTHER	PU	17
2.5	Enrichment Tools	2	PIC	OTHER	PU	20
2.6	First Release API	2	PIC	OTHER	CO	22
2.7	First Release API Feedback Report	2	GRID	R	CO	23
2.8	Final Release API	2	PIC	OTHER	PU	24
2.9	Output Mapping Tool	2	PIC	OTHER	PU	26
2.10	Technical Manual on ECHOES' Middle Layer Components	2	PIC	R	PU	30
3.1	Functional Requirements for Community Tools	3	DIBA	R	PU	15
3.2a	Concept Strategy for User Participation	3	IUR	R	PU	16
3.2b	Guidelines for Citizen Enrichment of Digital Heritage Collections	3	IUR	R	PU	17
3.3	First Release Community Tools for Enrichment and Services	3	CSUC	OTHER	CO	22
3.4	First Release Community Tools for Enrichment and Services Feedback Report	3	DIBA	R	CO	23
3.5	Final Release Community Tools for Enrichment and Services	3	CSUC	OTHER	PU	24
3.6	First Release Community Tools to Personalize Environments	3	CSUC	OTHER	CO	30
3.7	First Release Community Tools to Personalize	3	DIBA	R	CO	31



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	Environments Feedback Report					
3.8	Final Release Community Tools to Personalize Environments	3	CSUC	OTHER	PU	32
3.9	HGIS Environment	3	ELO	DEM	PU	35
3.10	Showcase Websites	3	CSUC	DEC	PU	36
4.1	Functional Requirements for New Perspectives Module	4	TRES	R	PU	13
4.2	First Release New Perspectives Module	4	GRID	OTHER	CO	22
4.3	First Release New Perspectives Module Feedback Report	4	I3A	R	CO	23
4.4	Final Release New Perspectives Module	4	GRID	OTHER	PU	24
5.1	Functional Requirements for Presentation and Analysis Tools	5	ELO	R	PU	8
5.2	First Release Presentation and Analysis Tools	5	RIX	OTHER	CO	22
5.3	First Release Presentation and Analysis Tools Feedback Report	5	ELO	R	CO	23
5.4	Final Release Presentation and Analysis Tools	5	RIX	OTHER	PU	25
5.5	Functional Requirements for ECHOES App	5	I3A	R	PU	8
5.6	First Release ECHOES App	5	I3A	OTHER	CO	26



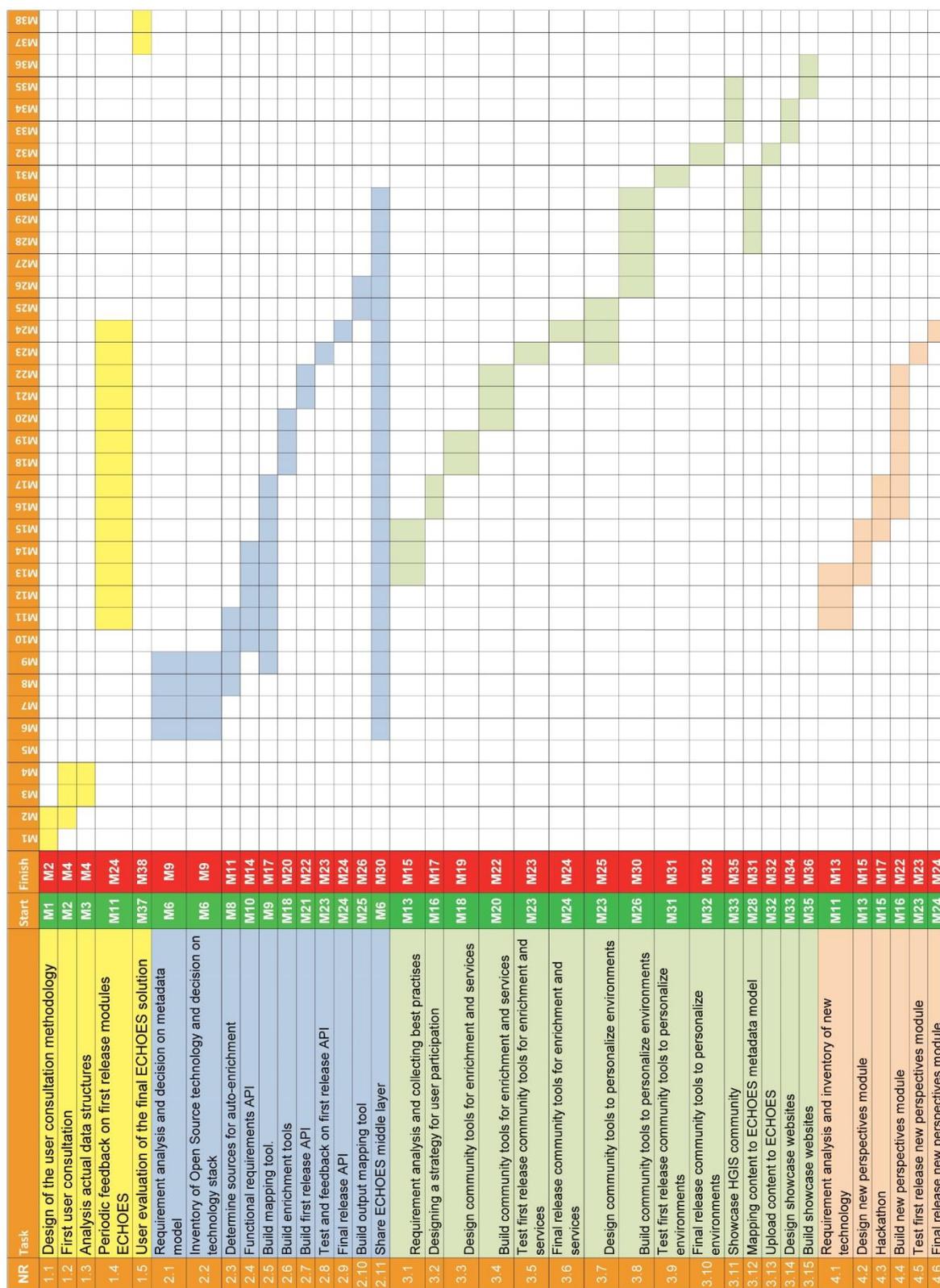
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5.7	First Release ECHOES App Feedback Report	5	I3A	R	CO	28
5.8	Final Release ECHOES App	5	I3A	OTHER	PU	30
6.1	Report on the establishment of the EO, PB, ESC, EAG	6	ELO	R	PU	3
6.2	Report on the establishment of the Consortium Agreement	6	ELO	R	PU	5
6.3	Data Management Plan	6	ELO	R	PU	6
6.4	ECHOES Managing Foundation	6	ELO	OTHER	PU	30
6.5	Periodic and Final Progress Reports	6	ELO	R	PU	18,38
6.6	Financial Reports for the EC	6	ELO	R	PU	18,38
7.1	Dissemination Plan and Communication Calender	7	RIJ	R	PU	3
7.2	Visual Identity Manual	7	RIJ	R	PU	5
7.3	ECHOES website	7	CSUC	DEC	PU	9
7.4	Conference	7	RIJ	DEC	PU	17
7.5	Digital learning environment	7	RIJ	DEC	PU	33
7.6	End Conference	7	RIJ	DEC	PU	37
7.7	Dissemination Evaluation Report	7	RIJ	R	PU	38

3.1.2 Planning

The planning of the ECHOES project is shown in the Gantt chart on page 55-56, displaying interrelations in terms of project planning and timing.

Table 3.1d Gantt chart





EMPOWERING COMMUNITIES WITH A HERITAGE OPEN ECOSYSTEM

NR	Task	Start	Finish
4.7	Recycling heritage, design showcase	M30	M36
5.1	Requirement analysis for presentation and analysis tools	M6	M8
5.2	Design tools for presentation and analysis	M9	M10
5.3	Build tools for presentation and analysis	M11	M22
5.4	Test first release presentation and analysis tools	M23	M23
5.5	Final release tools for presentation and analysis	M24	M25
5.6	Requirement analysis for ECHOES app	M6	M8
5.7	Design ECHOES app	M9	M12
5.8	Providing content for ECHOES app	M9	M14
5.9	Mapping content to ECHOES metadata model	M15	M15
5.10	Upload content to ECHOES	M16	M16
5.11	Build ECHOES app	M13	M26
5.12	Test first release ECHOES app	M27	M28
5.13	Final release ECHOES app	M29	M30
6.1	Implementing the management structures	M1	M2
6.2	Project governance	M1	M38
6.3	Legal, administrative and financial management & reporting	M1	M38
6.4	Quality control and progress reports	M1	M38
7.1	Dissemination plan & communication calendar	M1	M3
7.2	Design visual identity	M4	M5
7.3	Design ECHOES website	M6	M7
7.4	Build ECHOES website	M8	M9
7.5	Design and produce publicity material	M6	M37
7.6	Conferences and Open Calls	M10	M38
7.7	Create learning environment	M22	M33
7.8	Evaluation dissemination	M38	M38

3.2 Management structure and procedures

3.2.1 Project Management

The ECHOES consortium consists of 16 partners from 6 EU countries – to be precise 6 universities or university-related institutions, 4 SMEs and 6 governmental bodies representing heritage collections of all sorts – the majority already having experience with working in European funded projects. Several partners have already worked together in the past or are currently collaborating, which is a considerable advantage when embarking together on a project of this nature. The consortium will be formalized by the setting-up and signing of a Consortium Agreement between all project partners. This agreement will cover all aspects of the governance of the project including rights and responsibilities, financial and intellectual property aspects of the consortium.

To manage the work being done in the consortium, ensuring the optimal execution of project tasks and achieving all the required milestones (table 3.2a), the ECHOES project structure will combine individual roles for coordinating and overall project management with governing bodies for organising the day-to-day work in the work packages, for reporting and decision making (Fig 3.2). The roles and responsibilities of these are described in the paragraphs 3.2.2-3.2.6. The project will be coordinated by Erfgoed Leiden en Omstreken (ELO), its representative being Deputy Director Martijn Andela. The highest hierarchical body in the project, the Executive Steering Committee (ESC), will be chaired by ELO Director Ms. Ariela Netiv. ELO will have full responsibility for fulfilling the obligations as described in the EC Grant Agreement, including the overall and financial management of the project.

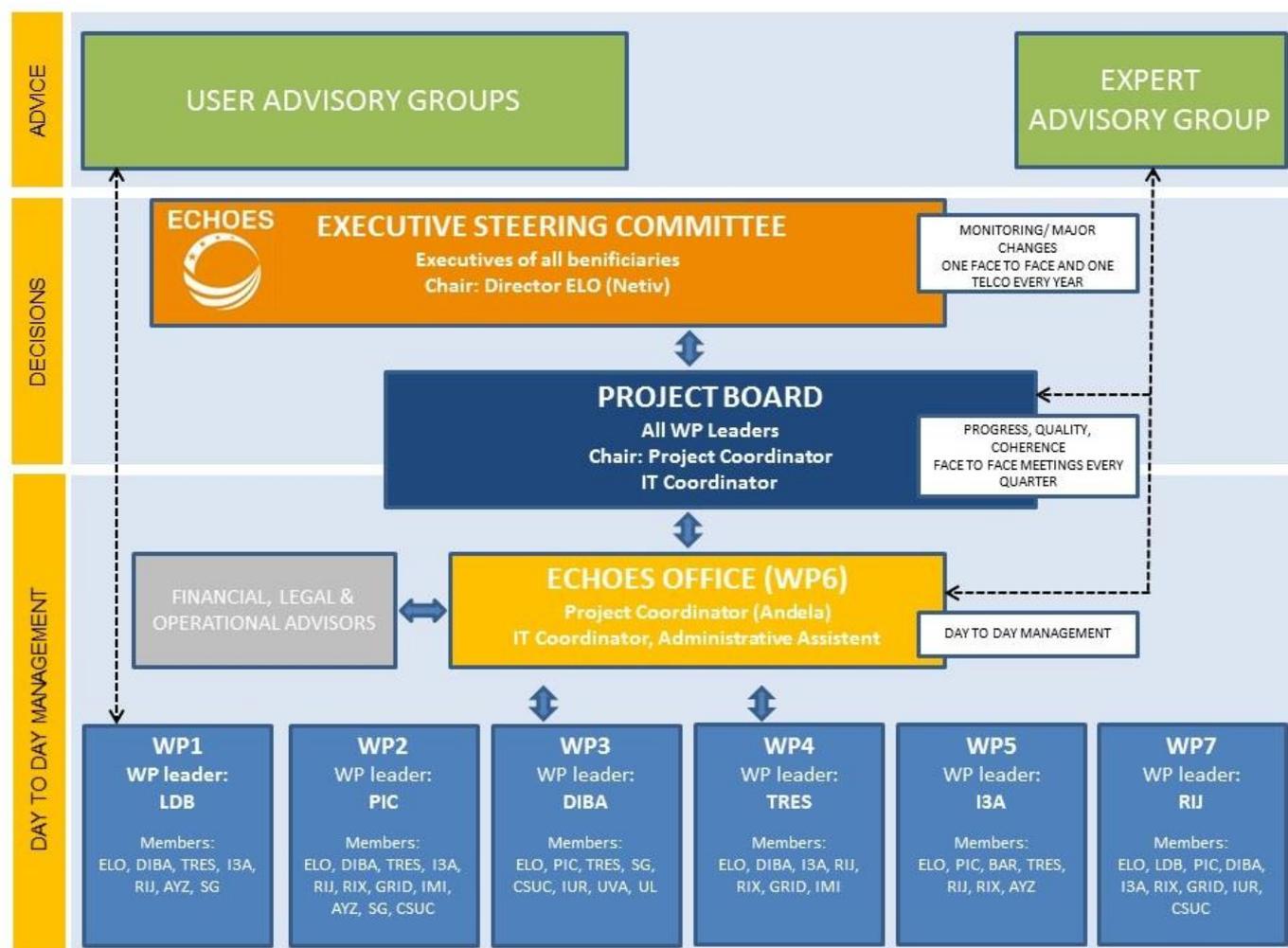


Fig. 3.2 Management structure of the ECHOES project

3.2.2 Executive Steering Committee (ESC)

The ESC is the highest decision-making body in the project and by default consists of one representative of each of the 16 beneficiaries that have acceded to the ECHOES EC Grant Agreement, usually the director of the institution involved or the head of a department with a mandate for decisions. Beneficiaries that also lead a work package are to delegate a different person to the ESC than their WP leader. As mentioned the committee is chaired by ELO Director Netiv and Project Coordinator Andela (PC) will be her substitute in case of absence. The ESC will oversee the project's progress and provide a forum for discussions on the strategic orientation and decision making. It has sole authority to decide on issues that necessitate changes in the EC Grant Agreement (in consultation with the EC) and/or the ECHOES Consortium Agreement.

The following matters need approval of the ESC.

Changes in the consortium

- The entry or withdrawal of a partner and approval of the settlement on the conditions for entry or withdrawal.
- A declaration that a partner is a defaulting party and the demand for remedies to be performed by the defaulting party.
- The termination of the participation of a defaulting party in the consortium and measures relating thereto.
- A proposal to the EC for changing the coordinating institute (ELO).
- A proposal to the EC for suspension of all, or part(s) of the project.
- A proposal to the EC for termination of the Project and the Consortium Agreement.

Content, finance

- Proposals for budgetary changes to Annex I of the EC-Grant Agreement, to be agreed by the EC.
- Major changes to the Consortium Agreement (including the Budget).

Content, scientific and quality control

- Major changes in the direction of the project; these will be communicated with the EC project officer.
- All changes in the EC Grant Agreement and Consortium Agreement.
- Reporting on progress, management and finances to the EC.
- The dissemination plan.
- Measures in the framework of controls/ audit procedures.

Each project partner will appoint one representative. Any member of the ESC can submit a written proposal on one of the subjects listed above. After a proposal has been submitted to the chair, voting on this proposal has to take place within one month or within two months if a meeting of the full ESC is imminent. WP leaders have two votes, the other members have one vote in the ESC. Two thirds of the project partners attending an ESC meeting will constitute a quorum. Simple majority of the attendants will be sufficient for decision adoption, except in those cases when a unanimous decision is required by the EC procedures. In the event of a tied vote, the chair will have an additional vote. ESC meetings will be held twice a year; one face-to-face meeting and one teleconference. The PC will always attend, but will not have a vote, unless he also acts as substitute chair. During the meetings the progress of the ECHOES project, financial issues and problems encountered will be discussed and major decisions will be taken, as described above.



3.2.3 Project Board (PB) and ECHOES Office (EO)

The Project Board is the main governing body of ECHOES and is responsible for the coordination of and reporting on the project. It monitors the planning and quality of the project and guards the coherence of the progress in the work packages. The PB consists of all WP leaders, will be chaired by the PC and in case of absence by the IT Coordinator (ITC - Walther Hasselo), who is also a member. The PB will discuss the progress and current state of the project every quarter in face to face meetings. Ad hoc meetings, phone or video conferences can be organised by the PC if necessary.

The PB will be supported by the ECHOES Office, that operates under the responsibility of the PB and handles day-to-day operations. The EO consists of the PC, the ITC, and administrative assistant supporting the PC. The PC is the executive officer of the project and the contact person for the European Commission. He is responsible for the overall coordination and coherence of the project and for legal aspects. He also takes care of the project planning and monitoring, progress reports, milestone reports, cost statements, audit certificates, budgetary overviews and reviews of the organisation. The ITC is responsible for the monitoring and validating of the project's technical work, quality control and providing assistance and cross-coordination for the WP leaders. Additional key tasks for the ITC are data protection and to ensure the technical consistency and achievement of technical objectives and technical progress reports and proposals to the PB.

The PB responsibilities/tasks comprise all managerial and administrative support functions including the:

- maintaining of project procedures and the coordination of the work of the executive bodies;
- coordination of the integration of the WPs;
- monitoring of the planning and progress using tasks, deliverables and milestones (using tables 3.1a, 3.1c and 3.2a) and – if needed – the taking of corrective measures on basis of the quarterly progress reports prepared by the WP Leaders;
- tracking of financial spending, establish spending profiles and budget projections, and preparing budget reallocations;
- ensuring that partners are aware of, and follow EC regulations for financial expenditure;
- quality control on and ensuring prompt delivery of all data (e.g. deliverables, data requested by the EC, financial audit reports) for reviews and audits;
- proper management of risks (identification, assessment of threats and opportunities, mitigation and contingency plans, as outlined in table 3.2b)
- reporting to, and preparing decisions for the ESC, including (but not limited to):
 - o changes in the consortium;
 - o budget re-arrangements;
 - o the reporting on progress, management and finances to the EC;
- approval on the project's communication plan;
- deciding on project website contents (managed by WP7).

The tasks of the EO comprise of:

- organising the project start-up activities;
- preparing a communication plan for the project (not including dissemination beyond the consortium);
- daily communications;
- the preparation of progress and quality reports by
 - o assembling 6-monthly internal reports for monitoring progress by the ESC;
 - o progress reports for the EC (at 18 and 38 months);
- handling all payments made by the EC and the allocations to the project partners;
- arranging all meetings, including teleconferences;
- providing minutes to all partners (of ESC, PB and EAG);

- being the contact point to the Expert Advisory Group.

3.2.4 Work Package Leaders

Each work package is the responsibility of one participant, who will act as WP leader. The 7 WP leaders of ECHOES are: Mari Runardotter (LDB, WP1), Robert Tiessen (PIC, WP2), Santiago Sarraute Sainz (DIBA, WP3), Olav Kwakman (TRES, WP4), Carlos Orrite (I3A, WP5), Martijn Andela (ELO, WP6), Jadran Mandekić (RIJ, WP7). The WP leaders will have responsibility for the day-to-day management and coordination of the activities in their work package.

In the day-to-day management the WP leaders are expected to:

- assure the quality of the work within the respective WP.
- manage and achieve the deliverables and milestones (using tables 3.1c and 3.2a) of the respective WP;
- solve problems;
- manage the time schedule and available budget of the WP;
- discuss approach and methodologies with the WP members and ensure the flow of communication both inside and outside their respective WPs;
- communicate with the PB (e.g. report quarterly to the PB on the planning and progress);
- organise meetings with WP members when needed and appropriate;
- offer the results generated in their WP for dissemination (WP 6&7 excluded).

For practical and financial reasons, most WP meetings will be held via tele- or videoconference, and are organized by the WP leaders at least every quarter. The WP members will meet face-to-face at least once per year; this could coincide with another (for example PB-) meeting. Additional ad-hoc (bilateral/trilateral) informal meetings and teleconferences to discuss operational affairs are not included in the depiction of the formal progress monitoring and reporting cycle. The WP progress reports are summarized by the PB and reported into a standardised progress report for the EC. The list of milestones below (table 3.2a) will be an important tool to monitor progress.

Table 3.2a List of milestones

NO	MILESTONE NAME	RELATED WPs	ESTIMATED MONTH	MEANS OF VERIFICATION
MS1	User Advisory Groups installed	1	2	Ready for consultation
MS2	Establish ECHOES office	6	2	All vacancies filled
MS3	ECHOES website	7	9	Up and running
MS4	ECHOES metadata model	2	9	Unanimous decision on model
MS5	Final release API	2	24	Up and running

MS6	ECHOES foundation	6	30	Charter drawn up, board filled
MS7	Final release ECHOES app	5	30	Up and running
MS8	Ecosystem complete; final release	2-5	32	middle layer and all widgets up and running
MS9	ECHOES learning environment	7	33	Up and running

3.2.5 Expert Advisory Group (EAG)

The ECHOES consortium will install an independent Expert Advisory Group, composed of reputable international experts in digital heritage, to ensure the project is well connected to other developments in this field. The EAG will not have decision authority in the project, but will on request provide the PB with expert advice and feedback on the activities and results of the project, from its respective background, interests and expertise.

The EAG will advise the PB on the following issues:

- digital heritage aspects;
- external developments relevant to the project;
- maximising the project benefits;
- the dissemination of the project results beyond the consortium.

The EAG may also act as a liaison to other EU funded projects relevant to the project, in order to create synergy, stay efficient and maximise results. The EAG will discuss the project in teleconferences, on average every six months, and will meet face-to-face during the Europeana Annual General Meeting.

The Expert Advisory Group consists of:

1. **Gerrit de Bruin**, who worked for over thirty years in the field of Conservation and restoration at The National Archives of the Netherlands in The Hague. He worked: as a restorer, head of restoration, as a policy maker for the Central Board of State Archives Services, head of archive conservation and head of the International Conservation Centre (ICC). He is experienced in making and teaching training programs in conservation and workshops on the UPAA method. He was member of the project Towards an New Age of Partnership (TANAP). He participates in the EU projects SurveNIR, Paper treat, MIP, COST D42, InkCor, and the MATRA project. He participated in the Collection Demography project of the UCL in London. He was member of the Research group of the Dutch Metamorfoze project. At the moment he is member of the Board of the Blue Shield Committee of the Netherlands. His present position is Project Coordinator of the EU funded project Archives Portal Europe Network of excellence (APEX).
2. **Rolf Källman**, who is Head of Department at The National Archives of Sweden, responsible for the Swedish national coordination of digitisation, digital preservation and digital access to cultural heritage. Rolf has for more than 30 years worked with cultural heritage and heritage information in local, regional and national museums, and authorities. For the last 15 years, he has in various positions been engaged in the work with accessible and usable digital heritage information. Rolf is representing Sweden in the Member States' Expert Group on Digitisation and Digital Preservation and the Open Method of Coordination (OMC) Working Group on "Promoting access to culture via digital means: policies and

strategies for audience development". Rolf is also a member of the EU-project RICHES Advisory Board.

3. **Marco de Niet**, who is the director of the DEN foundation. He is actively involved in both national and international networks that focus on innovation with cultural heritage assets, including the Europeana Network. He is advisor to the policy officers of the Dutch Ministry of Culture that are responsible for the digital heritage strategies on the national level. Before DEN he worked at the National Library of the Netherlands, as head of Innovative Projects and Digital Preservation.
4. **Rony Vissers**, who is director of PACKED vzw, the Brussels based centre of expertise in digital heritage, since the beginning of 2008. The organisation is supported by the Flemish Ministry of Culture and plays a central part in Flanders in centring the development of knowledge, experience and expertise regarding digitisation and digital archiving, and in spreading the acquired knowledge, experience and expertise. PACKED vzw is amongst others responsible for the online platforms CEST – Cultural Heritage Standards Toolbox (www.projectcest.be), TRACKS - Toolbox and Guidelines for the Preservation of Archives and Collections in the Arts (www.projecttracks.be) and SCART – a website on audio-visual heritage (www.scart.be). Since 2013 PACKED vzw is heavily involved in the start-up of VIAA – Flemish Institute for Archiving. Since many years PACKED vzw is also involved as partner, work package leader or coordinator in European projects like ATHENA, Linked Heritage, Digitising Contemporary Art, ATHENAPlus, Europeana Space and PREFORMA. Before becoming director of PACKED vzw Rony Vissers mainly worked in the arts fields, amongst others as collection manager at Argos – Centre for Arts and Media and as curator of the film and concert programmes at the arts centre STUC. He is also producer of the video dial H-I-S-T-O-R-Y (Johan Grimonprez, 1997) and co-creator of the interactive multi-media installation Mondophrentic™ (in collaboration with the artists Herman Asselberghs and Els Opsomer, 2000). Rony Vissers holds a master degree in Communication Science (Catholic University of Leuven), a master degree in Library and Information Science (University of Antwerp) and a master degree in Library and Documentation Science (University of Antwerp).
5. **Victor-Jan Vos**, who works as Head of Programmes, Policy & Research at Europeana. Vos studied Media Studies in Amsterdam, and is now facilitating, coaching and managing the team responsible for Project Coordination, R&D, IPR and Knowledge Management, as well as creating proposals under European funding frameworks to run projects that push the boundaries on multilingualism, interoperability, re-use of digital objects and access to cultural heritage across borders.

3.2.6 User Advisory Groups (UAG)

The ECHOES consortium will install User Advisory Groups to make sure the project meets real user needs. A large part of the WP1, Challenge Analysis, is aimed at involving these different types of users iteratively throughout the project (see table 3.1a, WP1, T1.1).

3.2.7 General Project and Risk Management on WP level

WP leaders will be required to submit a formal prospective risk analysis in the first six months of the project with updates every 6 months to identify risks as early as possible, follow them up and report to the PB the risk mitigation achieved against that planned. The WP leader is also responsible for conflict resolution within his WP. WP leaders will be able to raise proposals to the EC regarding effort and budget redistribution, and re-assignment of roles and responsibilities, within their respective WPs via the ESC. The WP leaders report to the PB and provide input for the reports of the PB to the ESC and EC. The WP

leaders will have quarterly face-to-face meetings in the PB to discuss the progress of the WPs and the relation between WPs.

3.2.8 Internal project communication

The members are aware of the fact that, due to their differences in background, a strong focus on communication is required. Therefore, special attention will be paid to fostering connections between the members. A SharePoint based project collaboration platform will be used to share 'closed access' information (e.g. paper drafts), which will be username and password restricted to the consortium members and the advisory groups. This area will include e.g. administrative EU documents, documentation on program progress, meeting agendas and minutes, calendar functions, methods portal, data exchange and web conferencing facilitation. The ECHOES project website (WP7) will be crucial for the dissemination of the project. To ensure transparency this website will be open to all.

The following meetings are foreseen (see also Table 3.2c):

- Three consortium meetings will be held during the project period: one kick-off, one intermediate meeting and one final meeting/event. These meetings will focus on the content and progress of the project, as well as on the financial and administrative aspects. The ESC and PB members will participate in these meetings.
- The EO will discuss the progress and current state of the WPs at least every 4 weeks in a teleconference meeting with the respective WP leader. The PB will discuss progress and current state of the project every 3 months face-to-face.
- The members of the ESC will meet twice a year; one face-to-face meeting combined with the consortium meetings if possible and one teleconference.
- On average the Expert Advisory Board will have a teleconference meeting every six months and a face-to-face meeting during to the Europeana Annual General Meeting.
- Additional meetings or telephone conferences will be organised when appropriate.

3.2.9 Conflict Resolution

Regarding conflict resolution, the project organization is set up to support a bottom-up approach. Conflicts amongst participants in any given activity will be solved at WP level with the help of the respective WP leader; if unresolved or in case of a conflict of interest, the issue will be raised up to the level of the PB, who will use mediation and their expert and referent powers to objectively solve the issue. If still unresolved, the issue will in turn be referred to the ESC, where the voting mechanisms apply. These procedures will be formally agreed upon in the Consortium Agreement. In cases in which legal action is needed, the PC will seek to obtain the required authorization from the consortium and act accordingly in agreement with the legal documents regulating the development of the project.

3.2.10 EC Reporting and procedures

The ECHOES consortium will install a formal annual internal and external progress monitoring and reporting cycle. This cycle will repeat throughout the duration of the project. The Consortium Agreement will include detailed rules and procedures on these meetings and reporting cycles (e.g. notifications of meetings, agenda setting, formal distribution of minutes, voting procedures, proxies and locations). The management structure will implement a periodic meeting and reporting cycle that aims at:

- generating and distributing adequate management information on the progress, quality and planning of the work in the project and on the budget utilisation at partner level;
- ensuring timely completion of the financial and periodic progress reports to the EC according to the contract conditions in the Grant Agreement;
- ensuring adequate management of knowledge and timely dissemination of the results generated in ECHOES.

The table below shows the meeting and reporting schedule.

Table 3.2c Meetings and reports

MANAGEMENT BODY	MEETING FREQUENCY AND METHOD	PROGRESS REPORT	REPORTS TO
ESC	Two times a year; one teleconference and one face-to-face meeting if possible in conjunction with the consortium meetings.	Periodic financial and scientific reports as detailed in the EC grant agreement.	EC
PB	Every 3 months face-to-face.	Biannual report on status of activities, deliverables and milestones per WP.	ESC
EAG	On average a teleconference meeting every six months and a face-to-face meeting during the Europeana Annual General Meeting.	Written advice.	PB

3.2.11 Effective Innovation Management

Newly acquired knowledge will continuously be evaluated for protection, dissemination and exploitation of intellectual property rights by the ESC. Partners will follow the fundamental IPR rules defined in the H2020 Grant Agreement and the Consortium Agreement. The CA will specify in detail the rules and obligations regarding existing know-how and know-how developed during the project, including the obligation for all software development to be Open Source.

3.2.12 Critical risks for implementation

The risks identified in table 3.2b below will be mitigated by means of the measures on the right. During the project this table will be kept up to date. Every new risk identified will be added and measures will be thought up.

Table 3.2b Risks and Measures

DESCRIPTION OF RISK	WP	PROPOSED RISK-MITIGATION MEASURES
Work package leaders or members leaving the project	1-7	Ask all participants to inform the PC as soon as possible if someone is leaving the project; ask the leaving participant to write a work handover for replacement; urge ESC members to assign a new project participant as soon as possible and create a basis welcome / information pack for new participants.
Loss/ prolonged absence of Project Coordinator.	6	Hand over responsibility to ESC chair. If possible, ask the PC to write a work handover for replacement.
Prolonged absence of Project Coordinator	6	Include an article in the Consortium Agreement that expected costs for replacement of the PC (e.g. prolonged absence due to sickness) would be borne by the beneficiaries to ensure sufficient funds in the EU budget.
Delay in the development of parts of the ECHOES solution, which can among other things result in the delay of other parts or in missing the tool that was to be presented at a conference.	1-7	An easily accessible SharePoint environment where consortium members can find all time schedules, deadlines. Ask all participant to give an early warning when delays are expected.
Dependencies on the consortium, which can result in the lack of needed materials or information.	1-7	Frequent and clear communication among the consortium members. A timely warning that one member needs something from the other. A timely warning that something that is needed can't be provided (in time).
Requirements for building (parts) of the ecosystem are not sufficient.	1-5	Organize a teleconference about the requirements. Summarize during the conversation to make sure everything is understood.
New audiences defined by WP1 can have different expectations than we assume.	1	Attend consultations. Ask for regular feedback.
The middle layer built by WP2 is not delivered in time.	3-5	Services and data can be simulated by a stub.
Lack of realism of the virtual element	5	Use of high quality gaming environment library resources.

Delay in production of website	7	Start with a simple website
Delay in organization of conferences	7	Latch on to other conferences, attend other WP leaders at relevant conferences.
Dissemination does not reach all groups necessary	1-7	Revision of dissemination plan

3.3 Consortium as a whole

The ECHOES project will deliver an ecosystem for a broad range of user communities, providing them with the means for integrated access to digital cultural assets from all conceivable heritage collections, means to add to and comment on these collections, and innovative visual tools for the interpretation of all these assets, all of which can be adapted to their specific needs. The challenge posed by creating the ECHOES ecosystem is a major one. Not only do we propose to combine access to every imaginable type of heritage collection, owned by every imaginable type of institute, but we also propose to involve very diverse groups of users, from genealogists to tourists and from scientists in the humanities to (games) designers. The consortium needs to be very diverse to ensure that the whole scope of the challenge can be met, which is to say an ecosystem that delivers:

1. defragmentation by offering integrated access to digital cultural assets from all conceivable heritage collections;
2. completeness, flexibility and openness;
3. automatic enrichment of the collections by linking collection data (in different discipline-based collections) and adding geographical coordinates;
4. (visually attractive) new tools, including technology that is already operational in other sectors to the heritage sector;
5. adaptability of these tools to serve the need of specific (new) communities of users;
6. a definitive role for users in making digital heritage available, in enriching the information connected to the digital heritage assets and in interpreting the past.

The consortium consists of collection holders (*Erfgoed Leiden en Omstreken* or *ELO*, *Tresoar*, the cities of *Ghent* and *Zaragoza*), provinces and cities with ambitions for attracting tourism and new businesses (the provinces of *Barcelona* and *Friesland* – the latter represented by its repository *Tresoar* – and the cities of *Zaragoza*, *Ghent*, *Rijeka* and *Leiden*), researchers in IT from *Linked Open Data* to *Augmented Reality* and social impact (the *Flemish digital research centre iMinds*, the *I3A research institute of the University of Zaragoza*, *CSUC*, the *Consorci de Serveis Univeritaris de Catalunya*, and the *Centre for Long Term Digital Preservation of Luleå University of Technology*), researchers in the humanities (*Leiden University* and the *University of Amsterdam*) and companies that specialize in digital heritage, metadata, crowdsourcing, open standards, searching, language technology, design and online communication (*Picturae*, *Gridline*, *RIX Technologies* and *IURIS*). The diversity of these partners ensures that the goals of the ecosystem will be reached in full.

To start with, we need a good overview of the wishes of traditional and new users of heritage and of what might entice collection holders to use the ecosystem to fulfil these wishes. Luleå’s Centre for Long Term Digital Preservation has experience in researching the social, societal and organizational effects of IT and will take the lead in the consultation of (potential) users and periodical User Advisory Groups feedback reports. The first consultation will lead to a Functional Requirements Specification which will form the foundation of the whole ecosystem.

The completeness of the system will be ensured by the different types of collection holders who hold anything from archives and archaeological fragments to audio-visual material, research on historic buildings and museum collections. Flexibility of the ecosystem will be mandatory because of the diversity of participants. The smallest museum in the province of Barcelona should be able to use the system as easily as the larger institutes like Tresoar and those in Ghent. Openness is a major goal and the fact that the whole ecosystem shall be built as Open Source software is testament to that. Most partners have experience in working with Open Data in one way or another. The automatic enrichment of data in different ways is a specialization of companies in the consortium like Picturae, Gridline and RIX Technologies.



Fig. 3.3 The ECHOES consortium

The provision of visually attractive new tools has two sides to it. On the demand side the group of partners with Luleå's Centre for Long Term Digital Preservation in the lead will deliver periodic User Advisory Groups feedback reports. Scientists from the University of Amsterdam and Leiden University will test some of these tools in a case study. On the supply side the consortium is well endowed with researchers, companies and (local) government departments that can deliver these tools. Amongst them are the I3A research institute, the province of Barcelona, the city of Rijeka, the city of Ghent, Rix, CSUC and IURIS. Coming up with new and creative ways of building or adapting tools to the needs of specific (new) communities of users is part of the modus operandi of almost all partners in the consortium. Barcelona uses crowd sourcing as an innovative strategy for engaging and diversifying European audiences, strengthening the social function of the theatre in contemporary times in *Playing identities, Performing*

Heritage. Rijeka took part in TECH -TOUR Technology and Tourism: Augmented Reality for the promotion of the Roman and Byzantine Itineraries. The University of Zaragoza has ample experience in 3D rendering to make all sorts of exciting new tools for tourism possible.

Finally, the ecosystem will give a definitive role for users in making digital heritage available, in enriching the information connected to the digital heritage assets and in interpreting the past. This turns Europe's heritage into not just a consumer product, an enjoyable view or a marker of identity, but into the true property and work of Europe's citizens. Again, there is a large number of partners with experience in giving users their new role. Picturae, Tresoar and ELO work with many others to enable specific groups of users to enrich data on the Vele Handen (many hands..) platform. ELO offers working space on its website for local history buffs researching plaques and house name stones in the area. Ghent uses Smart-IP (CIP-ICT-PSP), smart engagement techniques and emerging technology to co-produce smart services that increase social cohesion. IURIS manages the positioning and creation of user communities related to heritage, heritage open to the participation of the general public, as co-generators of knowledge.

As seen from this short overview, the consortium covers all bases when the expertise needed for project ECHOES is considered. Specific expertise (§4.1) and the division of labour (§3.1) are described elsewhere. Those paragraphs should suffice to convince the reader of the complementary nature of the expertise the partners bring to the project. This complementary nature is no coincidence. Most partners were asked to participate based on the specific expertise they could bring to the table. ELO, Tresoar and Ghent are left from the group which had the original idea for the ecosystem in 2014. The other partners joined the project because they were interested in the idea and could bring additional expertise that was lacking in the original group. The consortium now covers a broad spectrum from collection holders to end users (researchers). There are companies who will build the backbone of the ecosystem and companies and researchers who will show that attractive tools and apps can be added to the basic system.

To ensure that the ECHOES ecosystem will be compliant with European standards and infrastructure like Europeana and LoCloud an Expert Advisory Group has been set up. This EAG also helps the consortium be aware of new developments in digital heritage in Europe. The Expert Advisory Group consists of Rolf Källmann (*Digisam, national coordination of digitization, digital preservation and digital access to cultural heritage in Sweden*), Marco de Niet (*director, Digitaal Erfgoed Nederland*), Rony Vissers (*director of Packed, expertise centre for digital heritage in Flanders*), Gerrit de Bruin (*project coordinator APEx*) and Victor-Jan Vos (*head of programmes, policy and research at Europeana*).



Fig. 3.4 The Expert Advisory Group

Most partners have worked with one or more partners in the project before, as the overview in paragraph 4.1 shows. A sensible division of labour, a so-called best of breed (everybody does what he is best qualified to do), a digital working environment, frequent face to face meetings, providing space for informal discussions, and a simple management structure should ensure that this further cooperation leads to further success.

The involvement of two places that want to be European Capital of Culture (Leeuwarden, the city where Tresoar is situated, and Rijeka) should indicate the potential of the ecosystem for reaching new audiences.

The participation of no less than four companies from three countries (Picturae, Gridline, RIX Technologies and IURIS) and three universities or university-related research institutes involved in digital business development (Zaragoza I3A, CUSC and iMinds) is testament to the view of business on the sustainability of the ECHOES solution after the project is finished. The involvement of the companies especially, who do not get all their costs covered and who cannot exploit the ecosystem in the usual way because it is developed as Open Source software, points to their conviction that a sustainable business model can be developed in various ways for users of the new ecosystem.

The ecosystem itself will be managed by a not-for-profit foundation and made available, with documentation, through a website. ELO guarantees the operation of this site for five years after closure of the project. The Consorci de Serveis Univeritaris de Catalunya (CSUC) guarantees that the results of the project, including software and user guides, will be archived in their online repository and will also remain available for at least five years after the project is finished.

3.4 Resources to be committed

Table 3.4a: Summary of staff effort

	WP1	WP2	WP3	WP4	WP5	WP6	WP7	Total Person/ Months per Participant
1. ELO	6	12	6	6	10	38	4	82
2. LDB	12	0	0	0	0	0	4	16
3. PIC	0	142	0.5	0	0.5	0	1	144
4. DIBA	3	1.5	27	2	2.5	0	2	38
5. TRES	3	1	3	23	2.5	0	0	32.5
6. I3A	1	4	0	2	60	0	1	68
7. RIJ	2.5	2	0	1	12	0	27	44.5
8. RIX	0	4	0	21	44	0	1	70
9. GRID	0	10.5	0	24	0	0	1	35.5
10. IMI	0	17	0	6	0	0	0	23
11. AYZ	0.5	2	0	0	12	0	0	14.5
12. SG	2.5	5	5	0	0	0	0	12.5

13. IUR	0	0	21	0	0	0	4	25
14. CSUC	0	3	27	0	0	0	5	35
15. UVA	0	0	2	0	0	0	0	2
16. UL	0	0	2	0	0	0	0	2
	30.5	204	93.5	85	143.5	38	50	644.5

Table 3.4b: 'Other direct cost' items (travel, equipment, other goods and services etc.)

5. TRES	Cost (€)	Justification
Travel	10,800*	Standard for a WP leader
Equipment		
Other goods and services	33,000	Budget is needed for a hackathon(€ 6,400) and building the showcase for new user communities in the creative sector (€ 26,400)
Total	33,800	

7. RIJ	Cost (€)	Justification
Travel	10,800*	Standard for a WP leader
Equipment		
Other goods and services	36,000	2 conferences and material for promotional purposes
Total	46,800	

11. AYZ	Cost (€)	Justification
Travel	2,800*	Standard for a WP member
Equipment	4,320	Computers
Other goods and services	16,000	Creation of 3D models
Total	23,120	

*) The ECHOES consortium budgets for € 400 per person, per meeting abroad.