

Milestone Report



# Share 3D

**ACTIVITY 6**

**M11 - BUSINESS PLAN**

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CONNECTING EUROPE FACILITY (CEF) – TELECOMMUNICATIONS SECTOR

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# Introduction

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Sharing new perspectives: your 3D view on Europeana (Share3D) was funded under the European Commission's Connecting Europe Facility Telecommunications Sector (INEA/CEF/ICT) programme with the overall goal of developing tools to provide services for users to publish and re-use 3D and other digital materials available from Europeana and Sketchfab.

During the eighteen month project, Share3D has developed two tools:

- An easy-to-use dashboard solution for capturing and delivering metadata for 3D models hosted on Sketchfab to Europeana
- An easy-to-use storymaker service enabling end users to reuse content from Europeana and Sketchfab to create stories, timelines and interactive resources.

Two main tools are available online to cultural institutions (galleries, museums), researchers, individuals and companies.

The aim of this report is to describe the business case, present a business plan and put in place the resources needed to maintain services for a minimum of 2 years after the end of the Action.

All partners contributed to developing the project business plan.

## 1. SHARE3D TOOLS AND SERVICES

This section provides a brief overview of the Share3D services.

### 2.1 Share3D Dashboard

The Share3D dashboard, developed by ARC, provides institutions and individuals that have uploaded 3D models of cultural heritage on Sketchfab with a service for capturing and providing metadata to Europeana. This is a hosted service that requires no setup on a local machine. Instead it is served over the cloud and anyone can use it through any web browser simply by signing up (following the SaaS model).

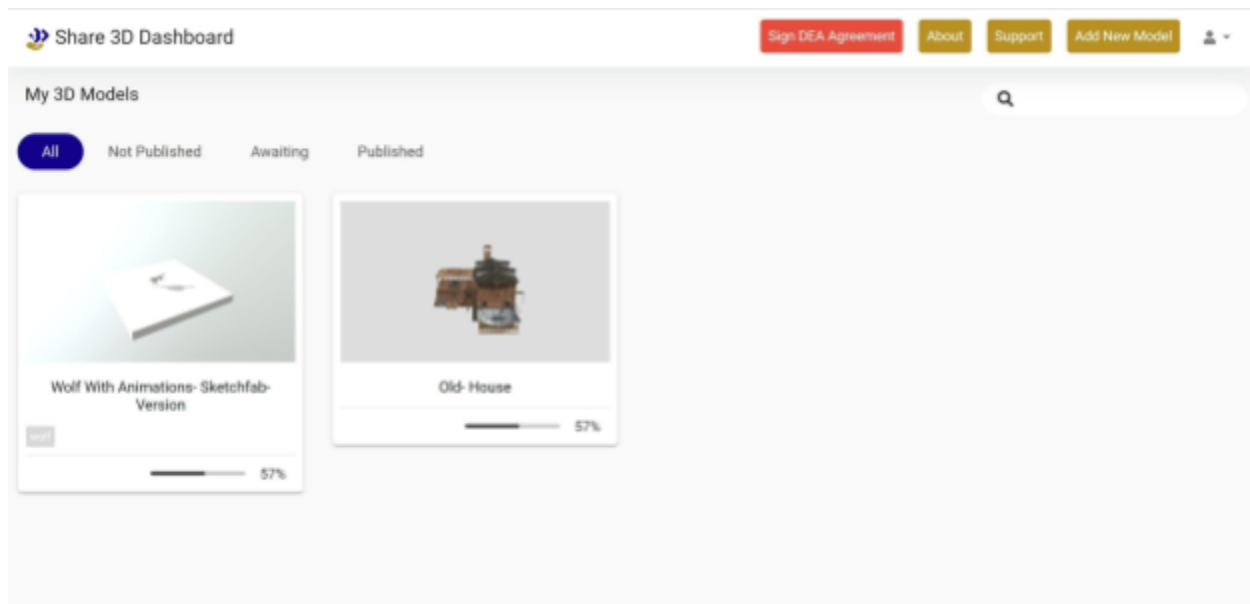
There are two main user groups for the dashboard:

- Regular users
- Administrators

## Regular users

Share3D Dashboard users are considered to be quite advanced Internet users, as they belong to a specialized audience that is creating digital representations of 3D models of cultural buildings, items, artistic work and uploading these on Sketchfab. They are advanced because they know about 3D digitized models and they know about metadata usually in the cultural heritage domain. Usually, regular users do not have expertise specialized on Europeana specific requirements such as EDM (the Europeana data model) and the publishing requirements on both (meta-)data quality. Currently there are a few hundred Sketchfab users in the Cultural heritage category, so we anticipate there will be a moderate number of Dashboard users. Users login to the Dashboard by email and link to their Sketchfab accounts to capture details of these and then use the Dashboard to add metadata for Europeana.

The next image depicts the “My Models” page in the Dashboard of users.



The Share3D dashboard’s infrastructure requirements were designed to the minimum needed to maximize sustainability. More specifically, a single server is required that can support up to 100 users simultaneously. A backup system prevents any disasters. In terms of DevOps (system maintenance) less than 1FTE is required (see section 3.4 below).

There are no quotas for users, there is no rule limiting how many metadata records an individual user can work on within the Share3D Dashboard and/or submit to Europeana<sup>1</sup>. This is achieved because the 3D content itself is stored within Sketchfab’s repository and only the

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<sup>1</sup> The only requirement is that users must sign a Data Exchange Agreement in line with Europeana policy before their metadata records may be submitted.

descriptive metadata is worked on in the Dashboard. The load on the infrastructure - hardware equipment and software services - is relatively light.

### **Administrators**

Administrators of the Dashboard can view all the 3D models that have been imported by all users and have full access to all users and to their metadata records of 3D models in the database. When a user 'publishes' a metadata record for a 3D model the record is submitted to the administrator for review. Administrators can view the metadata for individual 3D models and can contact the user by email (to request edits or suggest improvements to the record) and/or make direct edits to the metadata if appropriate. Once the metadata is validated it is submitted to Europeana by the Administrator via CARARE's<sup>2</sup> aggregation service.

Administrators are responsible for giving individual users permission to submit their records to Europeana (once the user has signed the Data Exchange Agreement). Administrators can block individual users from submitting to Europeana (for example, test users). Therefore, the administrators assure that the quality of the 3D models metadata are according to Share3D and Europeana guidelines.

The permissions and rights of the administrators allow the:

- quality assurance of metadata for 3D models published on Sketchfab submitted to Europeana in line with Europeana's metadata quality standard, minimizing the risk of rejection from Europeana due to non compatibility
- control of compatibility between Share3D and Europeana; Sketchfab specific metadata is mapped and EDM specific metadata is added so that it can be re-used within the Europeana context.
- time efficient submission of metadata for 3D models to Europeana

The next image depicts the dashboard view page of administrators.

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<sup>2</sup> [www.carare.eu](http://www.carare.eu)

Share 3D Dashboard

About Support Add New Model Admin Page

Admin Dashboard

All Not Published **Awaiting** Published

Q Download Archive

Model Name	Category	Progress
New Qlone	glassworks (buildings) crystal (lead glass)	79%
48-forklift	vehicle components	79%
The Swann Inn of Ename in 1665		71%
Christmas 1914 tin	containers (receptacles) tribute gifts	93%
White Coat of Arms	carvings (visual works) stone-working sculpture (visual works) architectural elements	86%
Ename abbey guest quarters and carillon tower		71%
Medieval ferry boat		71%
Rural bakery - 17th century		71%

At the time of the project completion, there are three administrators registered on Share3D dashboard:

- Dimitris Gavrilis & Vangelis Nomikos (ARC)
- Kate Fernie (CARARE)

## 2.2 Share3D Storymaker

The storymaker tool is designed for end users who include cultural institutions, teachers, students, people from the creative or tourism industries, and individuals. The tools enable users to reuse content from both Sketchfab and Europeana to create stories, timelines, guides and other resources. The tool has a special focus on enabling 3D content to be included into interactive resources allowing for the addition of hotspots and textual annotations on top of the model. The tool is simple and easy to use, users can begin to create it in just 4 steps. The system takes all the technical workload off users, letting them focus on the conceptual part of the process of creating a story.

## 2. CONTEXT FOR SHARE3D SERVICES

### 3.1 Consortium

The project consortium comprises the following partners.

#### **Athena-Research and Innovation Centre in Information, Communication and Knowledge Technologies (Athena RC)**

(ARC) is a scientific research and technological organisation, functioning under the auspices of the General Secretariat for Research and Technology (Ministry of Education). The Digital Curation Unit (which forms part of ARC's Institute for the Management of Information Systems) was responsible for management of the project and development of the Dashboard and Storymaker services.

#### **Connecting Archaeology and Architecture in Europe (CARARE)**

CARARE is a non-profit association that aims to advance professional practice and foster appreciation of the digital archaeological and architectural heritage, and which is an accredited Europeana aggregator. CARARE was responsible for developing guidelines and informed the requirements for the Dashboard and Storymaker.

#### **NoHo Limited (NoHo)**

NoHo are specialist producers of captivating digital experiences for museum, corporate, and broadcast clients. From evocative audio to rich, interactive video, web and 3D, our content informs, educates and inspires audiences, young and old alike. NoHo was responsible for informing the design of the Storymaker, developing use cases and capturing user requirements.

#### **Vilnius Universitetas (VUFK)**

Vilnius University comprises 14 faculties, 3 institutes and 3 interfaculty research centres of study and research and is among 1,5 percent top universities in the world. The Faculty of Communication of Vilnius University (VUFK) was responsible for developing use cases and capturing user requirements for the project.

#### **Visual Dimension bvba (VisDim)**

VisDim is a Belgian company specialised in 3D digital heritage, with 20 years of experience in international projects. The company focuses on scientifically correct virtual reconstruction of historical sites and landscapes and digital restoration of museum objects. The 3D digital assets are combined with storytelling and used in innovative applications such as educational 3D



games, museum and site kiosks and online 3D resources. VisDim was responsible for project communications, for developing use cases and capturing user requirements for the project.

### 3.2 Intellectual property and licences for Share3d tools

Athena Research Centre, NoHo Ltd, CARARE and Visual Dimension bvba contributed to the design and development of the Share3D dashboard and storymaker and own any Intellectual property rights. The code for tools themselves has been made freely available under the MIT license, one of the less restrictive and more clear open source licenses:

Service	Licence	Availability	Link
Dashboard	MIT License	Freely available. Full source code available under the MIT License	<a href="https://github.com/athenarc/share3d-dashboard-api">https://github.com/athenarc/share3d-dashboard-api</a> <a href="https://github.com/athenarc/share3d-dashboard">https://github.com/athenarc/share3d-dashboard</a>
Storymaker	MIT License	Freely available. Full source code available under the MIT License	<a href="https://github.com/athenarc/storytelling-tool">https://github.com/athenarc/storytelling-tool</a> <a href="https://github.com/athenarc/share3d-storytelling-api">https://github.com/athenarc/share3d-storytelling-api</a>

### 3.3 Funding

Share3D’s project funding under the European Commission’s Connecting Europe Facility Telecommunications Sector was for eighteen months. The costs relevant for sustainability of the services include:

- Salaries and overheads
- Maintenance costs relating to storage and services
- Costs relating to the development of services
- Costs relating to the management and support of users
- Communication costs

### 3.4 Costs

Maintenance of the Share3D services can be distinguished into technical, operational and dissemination costs.

	Dashboard	Storymaker
Technical costs	<p>The Share3D dashboard was designed with minimum technical maintenance costs in mind. The service includes a backend database for the metadata records but does not include any complex repositories that require storage, maintenance etc. The service is designed to link to Sketchfab (where the 3D models are hosted) and make use of Sketchfab’s internal repository through its respective APIs to access data (links to the models, previews, core model information).</p> <p>Users can sign up and use the service with minimal intervention (approval is required when signing up).</p> <p>In terms of skill set, the following are skills are required:</p> <ul style="list-style-type: none"> <li>● frontend development (jquery / bootstrap)</li> <li>● systems administrator</li> <li>● backend development (java)</li> <li>● aggregation manager (Domain specific knowledge including EDM)</li> </ul> <p>Furthermore the technical costs include the use of 1 server, a backup system and the hosting environment (server room, power and internet connection).</p>	<p>The Storymaker tool was designed with a minimum technical maintenance cost in mind. The design integrates searches on Sketchfab and Europeana via their APIs to enable users to select content for inclusion in their stories. As the Sketchfab and Europeana content is hosted externally the initial design did not include an internal repository. A repository was added in response to user/business requirements (see section below) to enable users to upload their own content.</p> <p>Users can sign up and use the service with minimal intervention (approval is required when signing up).</p> <p>In terms of skill set, the following are skills are required:</p> <ul style="list-style-type: none"> <li>● frontend development (React)</li> <li>● systems administrator</li> <li>● backend development (Java)</li> </ul> <p>Furthermore the technical costs include the use of 1 server, a backup system and the hosting environment (server room, power and internet connection).</p>
Operational costs	Operational costs of mid/senior personnel to assure that the Share3D Dashboard service. Ideally, that person	Operational costs of mid/senior personnel to assure that the Storymaker service.

	<p>should also be aware of the Europeana processes, standards and guidelines.</p> <p>The operational costs include a support role for a person with expert knowledge of the tools and all the internal processes.</p>	<p>The operational costs include a support role for a person with expert knowledge of the tools and all the internal processes.</p>
<p>Dissemination</p>	<p>Maintaining and developing the service also involves communicating the Share3D dashboard to Cultural Heritage institutions, Europeana data partners, Sketchfab’s cultural heritage users and the broader Europeana Tech community. This activity needs support and dedication from current consortium partners in the long-term. This is not included in the cost estimation of this project for the next 2 years as all partners are expected to use their own existing communication channels to keep the project alive.</p> <p>The Dashboard has a dedicated web site (dashboard.share3d.eu), is described on the <a href="https://share3d.eu/dashboard/">https://share3d.eu/dashboard/</a> website and the Twitter account of the project (@Share3D_eu). Therefore, the main dissemination cost of the Dashboard includes the domain name registration, web hosting and maintenance of the websites.</p>	<p>The Storymaker has a dedicated web site (storymaker.share3d.eu), is described on the <a href="https://share3d.eu/dashboard/">https://share3d.eu/dashboard/</a> website and disseminated via the Twitter account of the project (@Share3D_eu). The <b>main dissemination costs for the storymaker include</b> domain name registration, web hosting and maintenance of the websites.</p> <p>In addition, developing the service also involves communicating the storymaker to Cultural Heritage institutions, Educators, Cultural heritage users and others. All partners are expected to use their own existing communication channels to disseminate over the next two years. The additional costs of presenting the Storymaker at events and conferences is something to be discussed among the partners.</p>

**Personnel costs**

We estimate that maintaining the tools requires:

- dashboard - approximately 0.4 FTE  
This is split in half on a BE and a FE engineer and involves bug fixes, updates that arise due to metadata schema changes, incompatibilities due to technology updates.
- storymaker - approximately 0.4 FTE,  
This is split in half on a BE and a FE engineer and involves bug fixes, updates that arise due to metadata schema changes, incompatibilities due to technology updates.
- Technical operations - approximately 0.2 FTE  
This involves security updates at the system and database level, taking backups and doing regular system and database maintenance.
- Operational - approximately 0.2 FTE  
This involves oversight of the systems and support.

No additional equipment costs have been identified for the next 2 years i.e. hard drives, ram, cloud storage.

### 3. BUSINESS PLANNING

Share3D's partners considered the future of the tools as part of the business planning exercise carried out in early 2020. Maintenance and development of the services were considered (see sections 2 and 3 above), user groups and sustainability were explored. The code for the services has been deposited under the MIT licence (see section 3.2 above) to enable the partners not just to continue using the tools as is, but also improve/extend them.

#### 4.1 User groups

From a business standpoint, the Share3D tools target:

##### **Creators of 3D cultural heritage content**

- There is demand from cultural institutions and individuals who are creating 3D cultural heritage content for a metadata capture tool that is designed to facilitate the provision of metadata to Europeana, and which conforms to metadata quality specifications.
- The Share3D dashboard was reported as being easy to use and of benefit to institutions and individuals who are uploading 3D content to Sketchfab and wish to share this content with Europeana.

## **Europeana**

- The quality of the metadata provided by the Share3D tool to Europeana was reported as a benefit.
- The 3D content in Europeana task force reported on the growing use of Sketchfab by cultural institutions as a platform for publishing 3D media. Relatively little of this content has yet been shared with Europeana. Lack of metadata and metadata aggregation channels is one of several reasons for this barrier. The Share3D dashboard provides an easy-to-use tool that facilitates aggregation of this content.

## **Cultural institutions who wish to create stories incorporating digital media**

- There is a demand from GLAM institutions (galleries, libraries, archives and museums) for tools that enable the re-use of openly licenced digital cultural media (3D, 2D images, text documents, etc) to create resources such as gallery interactives, guides and stories.
- The Share3D storymaker focuses the process on design (planning the story board, writing text and choosing digital resources) rather than on the technical aspects (writing HTML, embedding media etc).

## **Enterprises who wish to create interactive resources incorporating digital media**

- Enterprises who are working with cultural institutions or the tourism sector benefit from tools that enable the discovery of openly licenced digital cultural media (3D, 2D images, text documents, etc) to create resources ranging from digital signage to gallery interactives and educational materials.

## **Students and individuals wishing to create stories incorporating digital media**

- There is a demand from students, researchers and individuals for attractive and easy-to-use tools which allow the re-use of openly licenced digital cultural media to create and share interactive resources.

## **4.2 Planning for each service**

Currently the Share3D tools have been developed with funding from the European Commission (INEA). Share3D is not a legal person which means that maintenance and development of the tools depends on the activities of the project partners. Community versions of the code for the

tools has been made available for distribution without cost. All of the partners are committed to continue disseminating about the services in the coming years.

The following section summarises the planning for each service:

#### 4.2.1 Dashboard

The Share3D dashboard is currently being used by a number of projects in addition to Share3D including the Europeana Archaeology generic services project and the CARARE domain aggregator. It is under evaluation by the Common Culture generic services project. It has a growing number of registered users. The dashboard is currently linked to 3D content published on Sketchfab. The metadata capture tool has potential to be adapted for use with 3D content published on other platforms.

**Athena RC** plans to continue to support system operations, hardware, software updates and maintenance for the next two years.

**CARARE** plans to continue to support ingest from the Share3D dashboard and publication to Europeana in its aggregation service for the next two years.

Share3D service	Maintenance	Further development.	Business model	Support
Dashboard	Yes	Potential, support for other 3D media. Seek project funding for further development.	Free usage for members of the CARARE association who pay an annual subscription.	Yes

#### 4.2.2 Storymaker

The Share3D storymaker has a growing number of individual users. In addition to the Share3D project it is being evaluated for use by the Common Culture and Europeana Archaeology projects as a complement to existing communications tools available on Europeana. The storymaker allows users to select content that has been uploaded and licenced for re-use on Europeana and Sketchfab. A development to the original service enables end-users to upload their own digital media for inclusion in stories.

**Athena RC** plans to continue to support system operations, hardware, software updates and maintenance for the next two years.

Share3D service	Maintenance	Further development.	Business model	Support
Storymaker	Yes	There is potential for further development of the story templates, and of the export functionality to support new use cases - for example for digital signage, video exports.	<p><b>Free usage</b> - users would have access to the basic functionality but would not be able to upload content or export stories to PDF</p> <p><b>Professional usage</b> - in addition to the basic functionality, users would be able to upload content and export stories to PDF for a fee.</p> <p><b>Enterprise</b> - provision of a standalone service for a fee.</p>	Yes

The project consortium has identified 3 potential subscription models for users of the Storymaker:

- Pay-per-use - charging per published story (micro-payments),
- An annual subscription for end-users,
- Partnership models - subscription services operated in partnership with others, for example with related Europeana membership associations. Under this model the membership fee would include an amount for use of the Share3D storymaker.

#### 4.2.2 Guidelines

The Share3D guidelines provide both guidance on how to use the tools and also guidance on the process of creating 3D content. The guides are published under an open licence and are freely available for end users.

**CARARE** is committed to maintaining and developing the guidelines.

### 4.3 Planning by each partner

#### **Athena-Research and Innovation Centre in Information, Communication and Knowledge Technologies (Athena RC)**

ARC plans to continue support the tools by keeping the servers running, maintaining the servers and database and doing all bug fixes that are required to run the tools in their current state and with the features that they currently support (provided that APIs that are currently offered by Sketchfab and Europeana do not change). In the event of significant changes (e.g. to the APIs) ARC would need to seek funding for the development.

#### **Connecting Archaeology and Architecture in Europe (CARARE)**

CARARE plans to continue to support ingest from the Share3D dashboard and publication to Europeana in its aggregation service. It is committed to communicating about both the Dashboard and the Storymaker to the Europeana network and wider community. In addition, CARARE is committed to maintaining and developing the Share3D guidelines.

#### **NoHo Limited (NoHo)**

Noho is committed to support the Share3D's dissemination activities by communicating the project's tools to its culture/heritage audiences and creative industry network. This will be done via Noho's newsletter and social media, as well as networking at events. Noho will also contribute to the Share3D own activity on Twitter by regularly tweeting and retweeting relevant content in order to keep the account active after the end of the project. Noho will continue to use both tools in its own capacity: the Dashboard for adding metadata to its own 3D models that are suitable for sharing with Europeana, and the Storymaker for creating interesting stories.

#### **Vilnius Universitetas (VUFK)**

VUFK is committed to putting in place the resources needed to maintain Share3D's dissemination activities and to communicate the Dashboard and Storymaker to its networks for the next two years.

#### **Visual Dimension bvba (VisDim)**

VisDim is committed to putting in place the resources needed to maintain Share3D's dissemination activities and to communicate the Dashboard and Storymaker to its networks for the next two years, through its publications and social media, as well as networking at events. VisDim will continue to use the Dashboard for adding metadata to its own 3D models (which are published on Sketchfab) for sharing with Europeana, and the Storymaker to communicate the storytelling, that is associated with these 3D resources. These stories also highlight the links



between the online cultural heritage resources that were used to make the virtual reconstructions and the resulting 3D resources, so that the general public but also cultural heritage institutions are aware about the quality and embedded content of these 3D virtual reconstructions and digital restorations. In other words, further promotion and use of the SHARE3D tools can help effectively to promote the 3D work of creative industry organisations working in the cultural heritage sector and evidence the quality of this work. In addition, by storing and documenting this 3D work and its metadata through Sketchfab en Europeana, this virtual reconstruction research is preserved and disseminated for the cultural heritage community and the general public. This is a very important selling point and communication channel for Visual Dimension, which are now supported through SHARE3D by appropriate 3D online tools.

## 4. CONCLUSION

This section summarises the high-level strategy by which the partners will help to secure the sustainability of Share3D's results.

The Share3D project has developed two main services

- The Dashboard - a service for capturing metadata for models published on Sketchfab and sharing this metadata with Europeana
- The Storymaker - a service for re-using digital content published on Europeana and Sketchfab to create stories

These services reflect the two main usage scenarios:

- 3D content cataloguing and sharing of metadata via in the Europeana Aggregation workflow (Share3D Dashboard)
- Creative re-use of content (Share3D Storymaker)

The potential beneficiaries of Share 3D's services include:

- Cultural institutions (both as creators of 3D digital cultural heritage content and as re-users of digital content in stories)
- Europeana
- Enterprises (tourism, creative industry organisations working with the GLAM sector and education)
- Educational institutions (students, researchers, educators)

## *Milestone 11*

Assessment undertaken as part of the sustainability and business planning process for Share3D services has identified various potential modes of exploitation including licencing (the software) for developers, free community solutions, subscription services, fee-based premium solutions and seeking project funding for further development.

The Share3D tools have been made available under Open licences and the code made available to the developer community. This approach gives potential for sustaining the project's results and enabling the development of new products and services by project partners and others. Share3D is not a legal entity that may be used for exploitation of the services developed in the project. The partners have committed to supporting the tools and each partner is committed to communicating the tools to the wider community in line with the project communication plan.