



DELIVERABLE

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7.7 Europeana Cloud Final Report

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This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

DECLARATION BY THE PROJECT COORDINATOR

I, as coordinator of the Europeana Cloud project and in line with my obligations as stated in Article II.2 of the Grant Agreement declare that:

- The attached periodic report represents an accurate description of the work carried out in this project for this reporting period;
- The project:
 - has fully achieved its objectives;
 - has achieved most of its objectives with relatively minor deviations;
 - has failed to achieve critical objectives and/or is deviating significantly from the schedule.
- The public Website is up to date;
- To my best knowledge, the information contained in the financial statement(s) submitted as part of this report is in line with the actual work carried out and consistent with the reported resources and if applicable with the certificates on financial statements.

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Date: 26 May 2016.

Signature:



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PUBLISHABLE SUMMARY



Europeana Cloud: Unlocking Europe's Research via the Cloud

As a Best Practice Network, coordinated by the Europeana Foundation, the Europeana Cloud project established a (1) cloud-based system for Europeana and its aggregators and (2) Europeana Research, a new service supporting researchers in the digital humanities. In the three years, between February 2013 and April 2016, the Europeana Cloud project created access to new content and metadata, a new linked storage system and new tools and services for researchers. The project had a vital role in the further development of Europeana's services¹ for both data partners and aggregators in the Europeana network.

Main Objectives

The main objectives of the Europeana Cloud project were:

1. establish a cloud-based system for Europeana and its aggregators, capable of storing both metadata and content, because content providers and aggregators, across the European information landscape, urgently needed a cheaper, more sustainable infrastructure. They need to move to an infrastructure that could deal not just with descriptive metadata but actual digitised content as well.
2. provide a new linked storage system, by creating a cloud-based infrastructure capable of delivering cost-efficient content and metadata storage for stakeholders across Europe.
3. understand and incorporate the legal, strategic and economic issues of a cloud-based system for content for cultural heritage institutions and domain aggregators.
4. achieve a broad consensus among European content aggregators and research networks on the advantages of a cloud based solution.
5. develop a digital service, named Europeana Research,
6. and via this cloud provide new tools and services for researchers to discover and use captivating content, permitting innovative research that exploits digitised content in Europeana, because researchers required a digital space where they could undertake innovative exploration and analysis of Europe's digitised content.
7. provide access at Europeana to 2.4m new metadata and 5m new digital objects with a clear research focus from across European universities, libraries, data centres and publishers to strengthen the benefits of Europeana Research.

¹ See also [this presentation](#) given at the Cloud Final Conference, April 2016.

Project Outcomes

Achieving these objectives, the major outcomes of the project are:

- A storage service for metadata and digital media capable of scaling up to store massive amounts of data and to/from which data can be written and retrieved over an API, including fundamental internal services to operate this storage service, such as authentication, authorisation, identifier generation, data lookup, notifications, and logging. The data from the three partner aggregators in the project, Poznań Supercomputing and Networking Center (PSNC), The European Library (TEL) and Europeana have been added to this cloud storage.
- Data processing services to demonstrate the capability of generic data processing. The IIF Image Sharing Service is the most prominent new service, which transforms image files into JPEG2000 and makes them available over [IIF](#) in 'zoomable' form. Others include the Metadata Transformation, Europeana Data Model (EDM) Search and Image Transformation Service (primarily in support of the IIF Image Service).
- Europeana Research: a new service giving individual researchers and research infrastructures, such as CLARIN and DARIAH, access to cultural heritage material. Tools show the research possibilities of data. The user's requirements for the service arise from extensive empirical examination of research practices in the digital humanities. Europeana Research improved Europeana's position to deliver a service that is truly of use to digital humanities scholars and other researchers interested in cultural heritage data. Europeana Research connects Europeana more closely to DARIAH and CLARIN.
- In addition, the framework conditions for the above services have been designed and documented. They include the legal framework for the [access and reuse of the material](#) (D5.3), the [governance model](#) and legal entity concept (D5.4), the [partner roadmap](#) (D5.5), and a [business model](#) (D5.6) for the further development of Europeana's services. A [handbook](#) (D5.2) is also available for the core users of the infrastructure, explaining the practical use of the features and functionalities of the new cloud-based system through a comprehensive description of both the standard REST-API for developers and the data model. The framework components will allow for continuation and further development of the services, in accordance with changing needs.

Project Impact

The listed outcomes add towards the seven impact areas outlined in the project's Description of Work (DoW), as follows:

1. Create a dynamic, scalable infrastructure that facilitates future innovation and lower costs for the Europeana Network of data partners.
 - Europeana Cloud has created a shared storage service for the cultural heritage sector across Europe, thus facilitating future development. Its innovation lies in both quantitative and qualitative features of the development. The infrastructure is capable of scaling up to store massive and rapidly increasing amounts of cultural heritage data as well as large media files, permitting services such as IIF to facilitate high-quality viewing (zooming) of the stored material.

- The underlying software and source code have been built using open source frameworks.
 - The project disclosed that aggregators consider the costs of storage not a major difficulty.
2. Increase efficiencies for the participating aggregators (TEL, Europeana and PSNC).
 - A shared storage service for metadata and digital media and a generic data processing service have been developed, eliminating the needs for replicating processes with different aggregators in different places.
 - In collaboration with aggregators, [requirements](#) were set to increase efficiency in data processing and metadata modelling (D5.7). An understanding on how to proceed in using new technologies to improve the aggregation of data and make it very easy for cultural heritage institutions to contribute and the commencing of Operation Direct under the Europeana Digital Service Infrastructure DSI-1 project.
 3. Achieve a much closer relationship with the research community in the humanities and social sciences.
 - The project has investigated researchers' [needs and requirements](#) for scholarly use of Europeana content, developed and applied tools as part of Europeana Research (D3.2).
 - A [content strategy](#) for Europeana Research has been delivered (D1.4).
 - The project has set up the [Europeana Research Advisory Board](#), consisting of professors and researchers from renowned universities with interests in the field of digital humanities.
 - Under the Europeana DSI-1 project, a [distribution plan for researchers](#) was created, emphasising the need to produce a service that is of use to the communities and infrastructures it wishes to serve and which does not reinvent their services and work.
 - Partly steered by the Europeana Research Advisory Board, [51 blogs](#) were published that exemplify the use and value of Europeana Research.
 - The project has established the Europeana Research Co-ordinators Group with representatives of eight research infrastructures, including DARIAH, CLARIN and EUDAT. The need for a coordinating group as a separate entity was superseded, when its requirements were integrated in the subsequent Europeana DSI-projects.
 - Europeana Research serves the purpose of creating a community based site where information and material of relevance to digital humanities researchers is packaged and can be easily found.
 4. Add a total 7.4m digital items to Europeana (2.4m additional metadata records and 5m digital objects), with a focus on research content.
 - 2.49m new metadata records were aggregated to TEL, of which 2.1m are available via Europeana.
 - 7.8m media files were added to Europeana, of which 5.6m are full digital objects and 2.3m are thumbnails.
 5. Provide greater exposure of research-focused content from participating cultural heritage institutions via Europeana Research.
 - The distribution of scholarly content increased: Europeana Research has seen nearly 9,000 individual users between June 2015 and May 2016, with about 27 percent returning. Total page views were close to 30,000.

- Europeana Research currently features [181 data sets](#); [12 featured collections](#) with extensive descriptions, and [6 full-text newspaper datasets](#) with .json files of text and metadata.
 - A reliable procedure for adding material (especially research material), as well as a trusted source of content is established within Europeana.
 - A set of eight tools was developed for the use of Europeana content by different groups of researchers.
 - IIF as a service allows for researchers to use the content in a flexible and user-targeted way.
 - The project ingested newspapers contributed by the National Libraries of Belgium (BKR) and Iceland (BOK). The Poznań Supercomputing and Networking Center (PSNC) ingested its 1.8m thumbnails, and the Open University contributed over 6m digital objects from COnnecting REpositories (CORE), in five formats. In addition, 5m images and all the associated metadata of the Europeana Newspapers corpus were exported from the existing servers of The European Library (TEL) to Europeana Cloud. At the time of finalizing this report, uploading the 11m free-text newspaper pages to Europeana Cloud was still ongoing.
6. Present Europeana with enhanced capability for interacting with its partners (specifically aggregators, data partners and researchers).
- The new cloud services allow the project aggregators flexibility to ingest and store objects.
 - The development of IIF as a service addresses a need for aggregators to display images so that they can be used by researchers in many flexible ways.
 - The needs of research users in the academic environment (especially in digital humanities) are met by Europeana, achieved through working with the research infrastructures (DARIAH, EUDAT, CLARIN and others), through the Europeana Research Advisory board.
 - Europeana has engaged in a [strategic dialogue](#) with related stakeholders, which were defined as research infrastructures, data providers, aggregators and project partners (D6.1).
7. Provide a greater understanding by the Europeana Network and within the Europeana platform of the strategic issues in employing a cloud-based infrastructure for cultural heritage.
- With the input of all stakeholders, the project developed frameworks to start operating cloud-based services by an [independent legal entity](#) should partners in the Europeana ecosystem decide to do so (D5.4),
 - including an [access and reuse framework](#) (D5.3)
 - and a [business model](#) that will be applied with the Europeana Foundation, its ecosystem and Network after the end of the project (D5.6). The business model describes the future and sustainability of the project outcomes.

The significant knowledge base developed in the project, regarding the positioning of cloud services in the environment of digital services for cultural heritage, and the impact it had on project trajectories is described in the sections below and was also exemplified in the Cloud Final Conference [Shooting for the Moon?](#) in April 2016.

In a roundtable debate, the Work Package leaders shared their observations and lessons learned in the Europeana Cloud project with a group of experts and stakeholders such as representatives of the European Commission, technology practitioners, commercial vendors and others involved in similar cloud initiatives. The open exchange of views resulted in a set of recommendations with the aim of informing the Commission on a future approach to building cloud infrastructures (for the cultural sector):

- **Education and Communication** - Education of cloud project stakeholders on issues related to privacy and security of data in cloud should be made a priority on the initial stages of a project; these issues should be communicated widely to address concerns early and plan accordingly.
- **Needs and Constraints Analysis** - The way to address concerns related to data privacy and security is a thorough analysis of the needs and constraints of an organisation in the light of various cloud offerings. Making this analysis is a strategic investment of resources every institution should do to stay relevant in the cloud age.
- **Cloud Ownership** - While cloud services hold huge promise for the cultural sector, they still need to be properly understood, planned and managed. Extremes are dangerous: not using cloud means lagging behind; mismanaging it can lead to losing control of data and core organisational processes. Through a mix of activities, including external consultations and devising an exit strategy, project managers and funders should encourage institutions to find the right balance early in a project.
- **Innovation Culture** - Successful adoption of cloud is largely a function of organisational culture. Cloud-friendly culture fosters innovation in small steps through experimentation, taking risks and continuous testing of assumptions. Institutions have an active role in making their culture fit for cloud, even if the project framework is rigid.
- **Flexible Project Management** - Strive towards flexible project frameworks and processes that permit and even encourage experimentation within the project timescale and adaptation to interim findings. Have a plan B for critical project elements, thus allowing some space for failure, but ultimately ensuring a successful outcome.
- **Redefining Success** - Make learning lessons and adapting to change a part of the definition of success. Foster a cultural change to a more scientific approach where projects are allowed to publish their failures to benefit future ones, thereby saving public money in the long term. Develop hybrid funding frameworks which combine short-term experiments with long-term strategy.
- **Develop Structured and Context-Aware Communication** - Communication should be context-specific and avoid abusing the term cloud: communication with broad groups of stakeholders should be focused on value which is created for them rather than how technology works. In the context of technology, communication should rely on accepted standards (such as ISO-17788 and ISO-17789).

Lessons Learned and Outlook

The major outcome of the project is therefore Europeana's changed views on some fundamental aspects of the originally conceived services and its product positioning. These pivots have been described in the [updated business model](#) of the Europeana Shared Services (D5.6). These moderations are made in response to improved business intelligence (primarily improved user/customer and market insight; changes in researcher needs and requirements; as well as changed technology conditions during the project timeframe), and in response to general changes and trends in the cloud services industry.

As mentioned, we learned that the initial project assumption that storage was a major pain point (in terms of money and time spent) for aggregators proved false. We know this from having [interviewed our aggregator partners](#) as well as from observing the general trend of ever reducing storage costs in the commercial market. Therefore, cheap storage can no longer serve as the unique selling point of Europeana Cloud. The focus on storage as the main feature of the services should be decreased.

Secondly, the project assumption that the cost of maintaining aggregation tools and services constitute a major part of aggregators overall budgets has proven to be partly true. From the experience of our aggregation network, the cost of tools and services is circa 20% of the total cost of operations which is not considered onerous and any reduction is likely to be in single figures. Again, Europeana Cloud's outcomes should not be positioned as primarily being cost-savers.

The project disclosed that the process of aggregation is cumbersome, slow, work intensive and opaque and leads to friction and increased costs. Also, most of the aggregators are dependent on one technical provider (National Technical University of Athens NTUA) and the main tool used (MINT) is in the later stages of its product lifecycle with no replacement from NTUA in development. It became clear that the main feature of Europeana Cloud better shifted from storage to specific data processing services, the Metadata Transformation and the IIIF Image Sharing services serving as examples. Post-project Europeana will continue to develop alternative solutions to metadata aggregation tools and services, creating mechanisms that remove layers of processing and make the publishing of cultural heritage data to the web very simple.

On the academic side, the developed service Europeana Research supports digital humanities scholars to find source and make use of cultural heritage data for research purposes. The showcasing of tools and services on Europeana Research for the manipulation of data is useful. Researchers who are not interested in applying digital research methodologies, but are looking for cultural heritage material (from GLAMs) will use Europeana Collections.² We learned, however, that scholars with advanced (coding) skills in applying digital methodologies can and will use the Europeana API and its documentation on Europeana Labs. Therefore, developing researcher specific APIs is not needed, but improvements to the existing content and technologies - i.e. Europeana Collections, Europeana API(s) and Europeana Data - are desirable to make the content more useful to academic scholars. It should also be made easier for researchers to identify relevant content in Europeana, assess whether the quality meets their research requirements and then access/download the data. And mostly Europeana Research

² Europeana's latest research on users of Europeana Collections show that a significant proportion (27%) of respondents identify as researchers or students.

serves the purpose of creating a community based site, where information and material of relevance to digital humanities researchers is packaged and can be easily found.

Finally, during the course of the project the political environment changed. The requirement by the Commission for Digital Service Infrastructures (DSIs) like Europeana to become fully self-sustainable has been moderated. The need to establish parallel activity flows aimed solely at income generation (and possibly detracting from the core Europeana mission) has diminished in favour of developing a model based on shared costs - which can be done through the Europeana Foundation. Creating a separate legal entity with the aim of generating income from the market is not needed currently and may prove superfluous.

Work Packages

WP1 - Assessing Researchers' Needs in the Cloud and Ensuring Community Engagement
Agiatis Benardou (Digital Curation Unit / Athena RC, Athens)

WP2 - Developing the Infrastructure for Europeana Cloud
Pavel Kats (Europeana Foundation, The Hague)

WP3 - Exploiting Europeana Cloud with Services and Tools for Researchers
Erik Duval / Joris Klerkx and Sven Charleer (University of Leuven, Belgium)

WP4 - Ingestion of Content and Metadata Development
Marian Lefferts (Consortium for European Research Libraries CERL, The Hague)

WP5 - Sustaining the Europeana Cloud: Legal, Strategic and Economic Issues
Julia Fallon / Victor-Jan Vos (Europeana Foundation, The Hague)

WP6 - Dissemination and Networking
Martin Moyle (University College London)

WP7 - Project Management
MDR Partners Consulting (United Kingdom) / Els Jacobs (Els Jacobs Advies & Onderzoek EJA, Netherlands)

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[end of publishable summary]

PROJECT OUTCOMES

Work Package 1 - Assessing Researchers' Needs and Ensuring Community Engagement

Agiatis Benardou, Digital Curation Unit / Athena RC

As foreseen in the Description of Work (DoW), WP1 identified and defined the humanities and social sciences research communities to be supported via the Europeana Cloud, while developing an effective research content strategy for Europeana and improving the understanding of digital tools, research processes and content used in these communities. At the same time, WP1 engaged the humanities and social sciences research communities in the use of Europeana as a valuable resource for digital humanities research through dialogue established both at the level of communities of practice as well as at the level of major European Research Infrastructures.

As researchers require a digital space where they can undertake innovative exploration and analysis of Europe's digitised content, WP1 provided the insights and requirements for the development of new tools and services supporting this innovative endeavours. Moreover, WP1 used a series of dissemination events and channels to achieve as broad a consensus among European and research networks on the advantages of a cloud based solution. Most importantly, WP1 was key to the design and management of the digital service of Europeana Research.

WP1's outputs inspire the further development of Europeana Research, which aims at opening up cultural heritage content for use in research, by fostering collaborations between Europeana and the cultural heritage and research sector. A start has been made with the set up the [Europeana Research Advisory Board](#), consisting of professors and researchers from renowned universities with interests in the field of digital humanities. Under Europeana DSI-1 a business plan has been written for Europeana Research, emphasising the need to produce a service that is of use to the communities it wishes to serve and which does not reinvent their services and work.

Task 1.1 - Humanities and Social Sciences Research Communities Advisory Board

The Research Communities Advisory Board (RCAB) was established at the beginning of the project and was actively involved in reading and commenting on all deliverables. Their reviews provided targeted recommendations on all WP1 outcomes and facilitated the continuing development of Europeana Research towards the end of the project. While the RCAB did not hold regularly scheduled meetings, they were present in some of the expert fora and evaluation workshops held throughout the course of the Europeana Cloud project.

[D1.1 Research Communities Identification and Definition Report](#), produced in the first six months of the project, provided the foundation for all reports that followed, as it determined the humanities and social sciences research communities more likely to engage with Europeana as a resource.

Task 1.2 - Content Strategy for Europeana Research

The work in this task focussed on matching Europeana content to the research communities and accumulated in [D1.4 Content Priorities for Humanities and Social Sciences Research Communities](#), submitted in January 2015. The document included the outcomes of the D1.1

Research Communities Identification and Definition Report and desk research into the [D1.2 State of the Art on Digital Research Practices, Tools and Scholarly Content Use](#). The report demonstrates that the target audience for Europeana Research is fluid with ever-changing research questions being asked by interdisciplinary groups of scholars in an ever-changing mix of academic disciplines (historians and economists, or art historians and scientists, or social sciences and sociology students, etc.), and with an ever-evolving set of skills, including those related to data mining.

This report identified many of the weaknesses and strengths of the current Europeana offering, and requirements of the research community in terms of re-use of content. It presents recommendations for the content strategy and development of Europeana Research in terms of target audience, content strategy, content and tools.

Given that Europeana datasets has multiple ingested collections that provide usefulness for humanities research, especially when openly licensed, more should be made of these collections. Collections of metadata should be highlighted on Europeana Research. They should be made available via the portal, but also via the API, so that digital humanities scholars can access the underlying metadata in bulk (export metadata ranks highly in the user requirements). It would also be useful if tools could be developed to create collections of content (held at the source cultural heritage institution) based on metadata records assembled by a user. Moreover, collections should be as meaningful as possible for researchers. In presenting collections on Europeana Research, each set of items should form a coherent whole.

Europeana Research requires focused accumulation of content to create in depth corpora for researchers to reuse. Europeana as a whole needs to develop more coherent collections of metadata and related content to provide focus, especially for channels, but also to give collection strength within the Europeana Collections (the new version of the portal) and Europeana Labs. Therefore, future aggregation work for Content Strategy as a whole should be closely aligned with Europeana Research. However, these should not overlap - researchers require much more focused collections than the broader channels.

Task 1.3 - Research User Requirements for Europeana

In November 2015, the work in this task resulted in an extensive [D1.3 D1.6 User Requirements Analysis and Case Studies Report / Content Strategy Report](#) consisting of three main components; (a) user requirements, (b) a series of case studies, and (c) a content strategy based on the given requirements. The document built on the results from D1.2 State of the Art on Digital Research Practices, Tools and Scholarly Content Use. An analysing web survey provided evidence-based data on the potential use of content from Europeana for research purposes (MS03).

The report presents a long list of non-prioritized user requirements as well as a set of flexible content recommendations for the further development of Europeana Research as part of the next round of Europeana funding. The conclusions arise from extensive empirical research (case studies, web survey, interviews, focus groups) complemented by thorough desk research (literature review, study of particular thematic areas), and build on work previously conducted in the context of other digital humanities research infrastructures (DARIAH, EHRI, ARIADNE, NeDiMAH).

Identified user requirements refer to searching and discovering relevant research material, organising unpublished materials, annotating scholarly information, improving the metadata descriptions as well as the cooperation and collaboration within the platform. Content recommendations include collection-level descriptions of particular datasets, suggestions pertaining to metadata (such as prioritization of more specific fields), as well as a lengthy list of functionalities (import/export, annotation tools, enriched full-text and others).

Task 1.4 - Research Community Engagement

WP1 organized four expert forums to engage researchers. The first three forums focused on content and tools and the requirements within the research communities, while the last one explored API use among the humanities and social science communities. In October 2015, the outcomes of all four forums were published in one document [D1.5 Reports on All 4 Europeana Cloud Expert Fora](#).

Researchers recommend the development of a new functionality for adding annotations, comments, and user-enhanced metadata to records; a robust, user-friendly functionality for export to non-proprietary, ubiquitous, and/or third-party software; a refined search functionality and additional filters; an approach to additional content that focuses on quality in few areas/subjects/topics rather than quantity in many; improved metadata quality; and clear, easy-to-find information on Europeana, its providers, collection strategies, and inclusion (and exclusion) criteria.

Task 1.5 - Research Community User Evaluation

In the course of the project, WP1 ran three evaluation workshops linked to the WP3 iterative development cycle. The workshops provided feedback regarding the usefulness, as against usability, of tools and service prototypes within Europeana Cloud. Also, they discussed the fitness-for-purpose of the tools and services with regard to the requirements analysis and user-centred design of Europeana Research. The [D1.7 Research Community Evaluation Report](#), submitted in January 2016, presents the outcomes of the workshops.

The first evaluation workshop (2013) focused on reviewing the tools and services developed from WP3 so far by members of WP1 as representatives of the targeted research community. The set of digital tools explored at that point were based upon a variety of underlying construction technologies while the major issues brought up concerned the scalability and application with Europeana content and metadata. The importance of good and enriched metadata, raised in Europeana Cloud expert forums as well, was defined as the measure by which we would gauge success within the iterative development process.

In July 2015, archaeologists and scholars working on the Antiquity, together with developers, discussed and evaluated available tools and content in the area while assessing relevant Europeana content. Moreover, they provided insights to user requirements with particular emphasis on digital humanities methodologies, advised on feasibility of Europeana working in that area and indicated further content to be potentially aggregated by Europeana in that area. According to the experts, it was suggested that Europeana encourages access to the kind of content that has more demand, focuses on connecting, or contextualising, existing data from across Europe, provides motivation for sharing metadata, and focuses on user feedback on metadata and on different user groups and matches them with particular sets of services.

In October 2015, key stakeholders (researchers, e-content experts and digital humanists), brainstormed on how the new platform of Europeana Research should be structured to best serve the needs of the community. The discussion oriented towards cross-project collaboration as a beneficial way forward for all Europeana-related projects. Europeana Research could be seen as a tool, facilitating access to content but also ensuring channelling of its content through other sources.

Work Package 2 - Developing the Infrastructure for Europeana Cloud

Pavel Kats, Europeana Foundation

Achieving the Description of Work requirements, the main outcome of WP2 is the new cloud based system for Europeana and its aggregators, to store record metadata and digital content. The storage service is capable of scaling up to store massive amounts of data, which can be retrieved over an API. WP2 has developed the fundamental internal services to operate the storage service: authentication, authorisation, identifier generation, data lookup, notifications and logging. The data from all three aggregators, PSNC, TEL and Europeana have been added to this cloud storage. WP2 developed services to demonstrate the capability of generic data processing, the most prominent being the IIIF Images Sharing Service.

Task 2.1 - Requirements Gathering and Evaluation of Technologies

The system is cloud-based in the sense of using software technologies, designed for scale. These technologies provide out-of-the-box horizontal scaling, and a mechanism for turnkey expansion of the system to accommodate increase in load. The build-for-scale approach is implemented in all the software layers: content (object) storage, metadata database, frontend services and interservice communication. The way we structured the requirement-gathering process and executed it as well as the architecture of the distributed system are detailed in [D2.2 Europeana Cloud Architectural Design](#).

Tasks 2.2 + 2.3 Prototype Development for Metadata and Content Cloud

The production environment of Europeana Cloud is operated by the commercial-grade data center operated at PSNC. The environment is robust and is currently scaled for today's level of resource consumption by the project partners. Through extensive stress testing we made sure it is future-proof for our needs. The current installation is capable of storing up to 50 TB of digital content, which is more than sufficient for our needs during the foreseeable future. (For reference, the largest consumer of digital content today is the Europeana Newspapers project, which requires approximately 10 TB of storage). The deployment topology of the production environment and the technical specification of individual software components and layers are detailed in [D2.4 D2.5 Prototype of Metadata and Content Cloud](#).

The system we developed is capable of handling both metadata and content thanks to its flexible aggregation-centric data model, distributed storage of metadata and digital content, and a distributed data processing framework for cultural heritage data.

Task 2.4 - Bidirectional Metadata and Content Access API

The general mechanism for upload and access of cultural heritage data is accessible through the standard REST-API interface for developers. Both the data model and the API are thoroughly described in the [Tutorial for Developers](#), which was also submitted in [D5.2 Updated Practical User Guide](#) (Handbook for Europeana Cloud Participants) in April 2016.

Task 2.5 - Service Platform and Execution API

A central component of the new infrastructure is its Data Processing Service (DPS), a distributed framework for executing large-scale processing tasks on cultural data. The framework is based on the open-source [Apache Storm](#) software. By now we have implemented several processing flows used by the partners: metadata mapping, metadata enrichment, metadata indexing, metadata similarity assessment, and image conversion. The flows are implemented using ‘plugin’ architecture and the system is ready for integrating new processing plugins, some of which are already in active development by Europeana. To encourage developers to work on new processing plugins and contribute to the vision of Europeana Shared Services as a future marketplace for services, we have prepared [DPS Plugin Development Tutorial](#). Our overall approach towards designing flexible micro-services for the cultural sector and the way Europeana Cloud technology supports it are presented in [D2.6 Metadata and Content Cloud](#).

The first commercial-grade service of Europeana Cloud is its IIIF Image Delivery service. The Image Delivery service allows data owners to publish their high-resolution images using IIIF, the increasingly popular interoperability standard for images. The service exploits the DPS image conversion service to store images in the JP2000 format, required by IIIF. It is used in production to display digitised newspapers content in high-resolution.

Access to the system is screened by the authentication and authorisation service, a standard implementation of HTTP Authentication. We have built into the system the ability to control access to various levels of the data hierarchy: from datasets to individual files, thus allowing for fine-grained authorisation tailored to the specific requirements of a future customer.

Task 2.6 - Evaluation and Migration to Cloud

Towards the end of the project we evaluated the performance of the new system and performed migration of existing metadata and content to the new system. This process allowed us to validate the data model, fix issues and improve the performance of the production environment, and better plan for fully-fledged future integration of the new data infrastructure with the software stack of Europeana and its aggregators. The migration process is described in [D2.7 Migration and Upload of Metadata and Content](#).

The lessons that we learned in WP2 reinforce recommendations voiced by external experts at the Europeana Cloud Final Conference in April 2016: WP2 would have benefitted from a requirement gathering process involving also potential users outside the work package, similarly to the broad investigation of researchers’ needs under WP1.

This would have allowed us to challenge project’s assumptions earlier and change course where needed. Following this requirement gathering process it would have been good to use the same group of users to validate the ongoing outcomes. It would have improved the agility of our design and development process.

Work Package 3 - Exploiting Europeana Cloud with Services and Tools for Researchers

Joris Klerkx and Sven Charleer, University of Leuven

Researchers require a digital space where they can undertake innovative exploration and analysis of Europe's digitised content. Achieving the objectives listed in the Description of Work, WP3 developed the digital service, named Europeana Research, supporting researchers to discover and make use of Europeana content in their work. WP3 developed advanced services and tools for researchers in digital humanities, permitting innovative research that exploits digitised content in Europeana.

Following an iterative design process and incorporating WP1 outcomes, WP3 identified typical personas and scenarios of thematic use of content, that the Europeana Cloud tools and services, and Europeana Research would be expected to support. Based on the personas and scenarios, we developed services and tools that leverage Europeana content for use by researchers. We reported on the success, potential, and challenges related to the integration of new research-oriented services and tools with the Europeana Cloud infrastructure. The evaluations have been exploratory in nature, focusing on understanding how researchers work, what their main problems and challenges are and how an advanced research platform could help to address these issues. More specifically, we focused on:

1. *perceived usability*: how well do the researchers think that the prototype can be used?
2. *perceived usefulness*: how much value do the researchers believe they can derive from the use of such prototype?
3. *potential for further development*: what kind of additional tools and services would researchers want to have available?

In the Europeana Cloud project the user-centered development process worked as intended. The final set of tools was positively evaluated by the intended users. On the other side, it has shown us that generalizing this toolset towards other types of researchers is not as trivial as one would hope as each type of digital humanities researcher has a unique workflow and requirements.

In an iterative process, the initial and evolved development of the Europeana Research service was based upon these insights and the improved understanding of digital tools, research processes and content used in the digital humanities research communities generated in WP1.

Task 3.1 - Personas, Scenarios and Use Cases

The personas, scenarios and use cases to help understand and analyse user needs are presented in [D3.1 Personas, Scenarios and Use Cases](#), describing in detail the kind of tools a researcher would typically apply and how the use would fit in his typical workflow. The target audience consisted of researchers in digital humanities, musicology, philosophy, agriculture. The document lists a set of core problems and classes of tools and services that can solve these problems for our target communities of researchers who work with Europeana content.

Task 3.2 - Iterative Design, Development and Evaluation of Tools

The tools and services for researchers developed in Europeana Cloud are described in [D3.2 Tools and Services](#), including references to the locations at which the software can be accessed. The tools and services result from a combination of adapting existing tools and developing new ones, tailored to the personas, scenarios and use cases identified in D3.1.

By developing eight prototypes, we illustrated how Europeana content can be put in use. Applying the User Centered Design (UCD) approach, through face to face sessions with actual target audience groups (experts), we deployed the tools and services in realistic testbeds to evaluate and validate their usefulness. This resulted in a final toolset for each audience that was positively evaluated.

Listed in chronological order the developed prototypes are:

1. **ARIADNE Finder** for basic search and retrieval of Europeana content. (<http://ariadne.cs.kuleuven.be/finder/ariadne/>)
2. **TimeMapper** for geo-visualization and timeline visualization of Europeana content. (<http://timemapper.okfnlabs.org/>)
3. **ActivityStreams** for collective awareness of research activities using Europeana (eg researcher 'A' searched the Cloud on terms 'X' and 'Y', after which she downloaded object 'Z'). <http://atinyarm.appspot.com/>
4. **Music21** for helping scholars and other active listeners answer questions about music quickly and simply (<http://web.mit.edu/music21/>).
5. **Aruspix** is a software application for the optical recognition, the superimposition and the collation of early music prints (<http://www.aruspix.net/>), automatically converting music prints into the MEI standard supported by researchers that work with Music21.
6. The **Newspaper Exploration Environment** is an interactive data visualisation tool to facilitate exploration of digitised newspapers through faceted search across coordinated multiple views and recommendations, creating an environment that supports both serendipitous discovery and targeted search. (<http://daddi.cs.kuleuven.be/ecloud/login>)
7. The **eCloudDM tool** is a data mining tool for the Europeana Newspaper Archive. It includes at the time of writing two libraries for named entity recognition and topic tagging. While this is already helpful to annotate and search newspaper articles from the Europeana Newspaper Archive, it can easily be used for any texts from Europeana.
8. The **AGRERI Discovery Microsite** is a personalised microsite that can be used by researchers in the field of agricultural economics to search and discover relevant resources. The microsite searches predefined collections of datasets based on user input and presents the results in a uniform way. (http://www.agreri.gr/external_library/browse)

The final set of tools was positively evaluated by the intended users as explained in [D3.3 Evaluation Report](#) on integration of tools with Europeana. An important issue for the last YR3 cycle was to connect the frontend tools for researchers with the backend infrastructure of Europeana Cloud, so that we could work with more comprehensive content collections. Interactive visual data exploration can benefit digital humanities researchers, but large interactive surfaces are not always available. Our research has shown that with the ubiquity of tablets, a setup of multiple tablet devices can provide a good substitute for devices such as interactive tabletops.

Task 3.3 - Europeana Research

Europeana Research was launched in early 2015 as the means for Europeana to connect its cultural heritage dataset with its use in scholarship, particularly in the digital humanities. In accordance with Europeana overarching strategy, Europeana Research was configured as a site for exposing data collections. So rather than a place for searching and browsing for individual items, Europeana Research allows access to open data (via either the API or via data

dumps) for reuse in research projects. The data is collected and described in a manner that provides extra value for researchers, with information about source, rights, type, language and potential subject areas, as well as insights to its potential usefulness.

Drawing on the ongoing work of WP1 and WP3 (and also funding from Europeana's infrastructural funding DSI-1), Europeana Research created the following:

- A digital service for delivering data for reuse in the digital humanities
- By April 2016, more than 180 tailored collection descriptions highlighting Europeana collections specially suited for research, with appropriate links to the Europeana API and portal- <http://research.europeana.eu/data>
- In depth articles highlighting some of the most valuable collections ingested during the Europeana Cloud project- <http://research.europeana.eu/collections>
- A series of blog posts related to different aspects of the digital humanities and its interaction with the cultural sector <http://research.europeana.eu/blogposts>
- Information on how to connect to Europeana's API via the Europeana Labs service <http://research.europeana.eu/page/apis>

User research on researcher needs showed that technically-skilled researchers use Labs and the Europeana APIs in the same way regular developers do. As they are not full-time developers the API-documentation could be made more researcher friendly though. One reason the API documentation was not continually updated and improved was the user-unfriendliness of the then Labs CMS. Obviously, there was nothing to gain by duplicating the API-documentation from Europeana Labs on the Europeana Research website. Therefore Semantika improved the documentation of the Europeana API on Labs and made it more searchable for the benefit of researchers and other re-users and migrated the site from its then CMS to its current CMS, Bolt.cm. This is the same CMS that powers Europeana Professional (and later Research) and has a much more editor-friendly workflow. This has enabled more editors to contribute to the site.

Work Package 4 - Ingestion of Content and Metadata Development

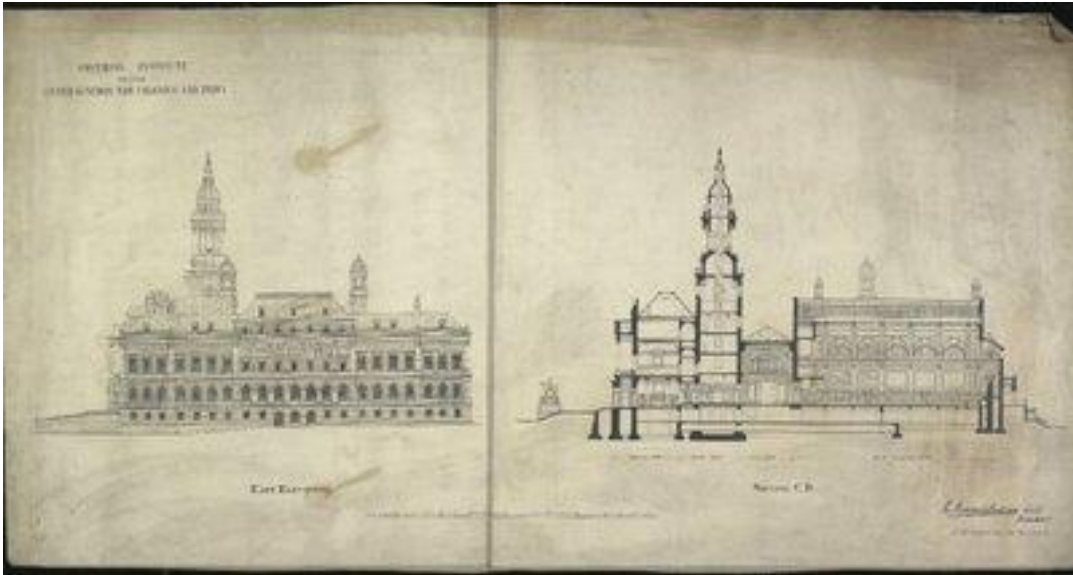
Marian Lefferts, Consortium of European Research Libraries (CERL)

As per the Description of Work, WP4 revolved around monitoring and refining the ingestion workflows and processing of data sets in the Europeana Cloud infrastructure, exploring how to improve both the discoverability and the contextualisation of this data and enhancing the Europeana Data Model (EDM). The key outcome of WP4 is the access to 2.49m new metadata and 7.8m new content items with a clear research focus, and sourced from across European universities, libraries, data centres and publishers.

The Europeana Cloud project partners, and specifically the partners in WP4, were amongst the first test users of the Europeana Cloud storage service, even while it was being developed and constructed. In such an environment 'in motion' plans, processes and recommendations were under constant review, the subject of close communication with WP2, and amended as necessary.

Tasks 4.1 and 4.2 - Ingestion of Metadata and Digital Content for Research

The KPI for metadata ingestion was set at 2.4m items and this target was met, as outlined in [D4.5 Research Metadata and Content available in Europeana](#).³ The ingestion process was executed by The European Library (TEL), working with each of the project partners to ingest their metadata, convert their native metadata format to the Europeana Data Model (EDM),⁴ check the presence of licensing statements in accordance with the Europeana Licensing Framework and then forward for its publication on the Europeana portal (and the TEL portal as well).



[Imperial Institute of the United Kingdom, the Colonies and India](#)
(by Rowland Anderson) Source: University of Edinburgh. CC-BY

Valuable scholarly metadata was sourced from institutions as diverse as the Croatian Academy of Arts and Sciences, the Hungarian University of Debrecen, and the Bavarian Library Consortium. Languages featured include Czech, Dutch, German, English, French, Italian, Latin, Russian, Greek and Hungarian. The datasets cover a great variety of materials, including digitised maps, manuscripts, incunabula, archival materials, pamphlets, playbills, dissertations and journals, as well as visual materials such as portraits, architectural drawings, photographs, images of plaster casts, films and video. Topics covered include (in no particular order) political studies, economics, law, philology, linguistics, psychology, education, history, Judaic studies, philosophy, religion, theatre studies, history of fencing, folklore, architecture, geography, literature, Egyptology, medieval history, etc. The new content, with solid contributions from Belgium, Croatia, Finland and Romania filled some of the geographical lacunae in the existing dataset, while adding audio and video files from the middle of the 20th century helped to address the 20th-century black hole in Europeana.⁵

A various number of data processed by The European Library was not ingested into the Europeana dataset, either because of (a) a lack of full and consistent rights labelling, or (b) a lack of direct links to digital contents. For example, the majority of the metadata that project

³ Debrecen datasets were augmented after the publication of the report. This is the updated URL for all datasets ingested in Europeana: <http://tinyurl.com/hgqqg6o>.

⁴ <http://pro.europeana.eu/edm-documentation>

⁵ <http://pro.europeana.eu/blogpost/the-missing-decades-the-20th-century-black-hole-in-europeana>

partner BASE (the domain aggregator Bielefeld Academic Search Engine) contributed consisted of metadata that they themselves had aggregated, and which referred to open access articles lodged in university repositories around the world. The majority of these articles have been deposited without any clear rights statement - this means the data does not pass Europeana's policy that all data must be accompanied by a rights statement. Attempts were made by WP4 and BASE to contact the rights holders but the enormity of the task was beyond the capability and scope of the Europeana Cloud project. In the case of the data provided by University College London and the National Library of Scotland, the rights issues are quite complex, and conversations with data partners, legal experts and other national and international authorities could not be resolved within the timeframe of the project. However, all the data contributed by the project partners is stored in Europeana Cloud and also available to end-users via The European Library.



[Antifonarium \(winterdeel\) voor de orde van de Wilhelmiëten |](#)

Faber de Walincourt, Walter (illustrator). Source: VU University Amsterdam Library. CC0

Perhaps more importantly for Europeana's long-term ambitions, WP4 succeeded in ingesting digital objects into Europeana and began to find ways to utilise that content for different purposes. This is a significant shift in Europeana's direction, as previously it had only been able to deal with metadata. The KPI for content ingestion of 5m objects was met.

The project ingested newspapers contributed by the National Libraries of Belgium (BKR) and Iceland (BOK). The Poznań Supercomputing and Networking Centre (PSNC) ingested its 1.8m thumbnails, and the Open University contributed 6m digital objects from COncnecting REpositories (CORE), in five formats.⁶ In addition, 5m images and all the associated metadata of the Europeana Newspapers corpus was exported from the existing servers of The European

⁶ All of those contain a xml representation (oai_dc format),
 625,371 contain a pdf representation (full text of the metadata record) (10.2% of total),
 6.063,639 contain a json representation (99.6% of total),
 620,054 contain an extracted (raw) text representation (10.1% of total) and
 546,854 contain a thumbnail representation (09.0% of total)

Library (TEL) to Europeana Cloud. At the time of finalizing this report, uploading the 11m free-text newspaper to Europeana Cloud was still ongoing.

In the course of the project it became clear that the current process of aggregation, which is very labour intensive for both Europeana and for aggregators, must be streamlined and that the Europeana Cloud could be harnessed to host services, shared tools and workflows that will make it easier for aggregators and individual GLAMs to publicise and share data via Europeana Cloud.

Task 4.3 - Exploring Shared Metadata Enrichment

[D4.3 A Report and Plan on Future Directions for Improving Metadata in the Europeana Cloud](#)

presents the outcomes of the exploratory work on data enrichment and making connections between research materials in the Cloud more explicit, with the aim to improve both the discoverability of the content and the contextualisation of the objects.

ISTI-CNR proposed a course of action complementary to the extensive work on semantic enrichment that already takes place in Europeana, by exploring image comparison between WikiArt and Europeana. This method aims to provide context for the art content Europeana has aggregated. Not only does the method relate Europeana records to WikiArt records, it also clusters related Europeana records, thus improving navigation through the Europeana dataset. In addition, the metadata recorded in the WikiArt records can be used to enrich Europeana metadata.

The Open University developed a REST API for the discovery of textually similar items, in order to be able to present the user with (near-)duplicates or a list of objects with similar full text. This improves the discoverability of same or related content. Varying the settings in the similarity tool (from 'the same' to decreasing levels of similarity) gives end-users control of the precision or fuzziness of the results set with which they wish to work.

Both VU Amsterdam and CERL worked with the Cloud API, employing it for real, well-defined use cases. In the context of Task 4.4 described below, the VU Amsterdam used the Cloud API to upload content of two collections to the Cloud infrastructure, aiming to create a fully automated process which could automatically upload (part of) a collection in CONTENTdm to the Europeana Cloud. CERL explored the API as an alternative to its current aggregation workflow, and the Cloud infrastructure as a potential host for its Heritage of the Printed Book database. Both activities resulted in appropriate testing of the API and the Cloud infrastructure and valuable recommendations for refining the Cloud API and its supporting documentation.

Task 4.4 - Evolving the Europeana Data Model for Research Content

When the Europeana Cloud project was conceived in 2011-2012, it was thought that we would need to enhance the Europeana Data Model (EDM) to best serve research content. We found that the metadata aggregation triggered no new requirements in terms of data modelling. Aggregating content in the Europeana Cloud, however, did bring to light new requirements, particularly in the areas of representing digital objects (such as images) and full text. For Europeana to deliver better quality services (both for aggregators and for end-users), it needs to address how it can harvest and represent content from cultural heritage organisations on a sustainable level, as well as maintaining data interoperability.

[D4.4 Recommendations for Enhancing EDM to Represent Digital Content](#) addresses this challenge, showing how full-text, images, and multimedia can be represented using the Europeana Data Model (EDM) to be stored in and retrieved from services like the Europeana Cloud. The deliverable features three use case studies with the following objectives:

- To define different use cases for linking metadata and content: from the simple case of adding one link to the content in the metadata to more complex cases.
- To extract requirements and propose solutions using EDM.
- To propose ways to interact with two solutions to handle content: the Europeana Cloud storage service and the International Image Interoperability Framework (IIIF) protocol.⁷



National Library of Technology, Prague

http://www.europeana.eu/portal/record/9200370/BibliographicResource_3000095828078.html

The EDM modelling proposals detailed in the deliverable have been aligned to the solutions defined by the IIIF Community (a rapidly growing number of cultural heritage institutions and open source software companies and projects committed to sharing and displaying image resources across repositories and the web) and the W3C Web Annotation group in order to maximise interoperability with ongoing efforts of those two communities. These initial recommendations will have to be updated in the future as the IIIF and Web Annotations Communities⁸ are still refining their specifications.

The collaboration with IIIF resulted in the publication of a specific EDM-IIIF profile enabling Europeana data providers using IIIF to submit their IIIF media resources to Europeana. Additionally the development of a IIIF server by WP2 as part of the Europeana Cloud storage service allows Europeana to consume richer media files. The first instance has been tested using the Europeana Newspapers corpus.

In the course of the project the Europeana database was enhanced considerably with metadata and content specifically aimed at researchers in the humanities and social sciences. With the development of the Cloud API, Europeana has made a start with developing more modern and easy to use services and tools for publishing data from cultural heritage institutions to the web

⁷ <http://iiif.io/>

⁸ <https://www.w3.org/annotation/>

and into Europeana. The API for discovering textually similar items and the application of image comparison techniques are an aid to making the Europeana content more useful to these researchers, and, finally, the IIF Service allows end-users to navigate more easily through the dataset and to make the most of the content aggregated in Europeana.

Work Package 5 - Sustaining the Europeana Cloud

Victor-Jan Vos, Europeana Foundation

WP5 dealt with the investigation of stakeholder needs and requirements for the Europeana Cloud, currently named Europeana Shared Services (the proposed brand name for the infrastructural services that Europeana Cloud has developed). Understanding and incorporating the legal, strategic and economic issues of a cloud-based system for content for cultural heritage institutions, we achieved broad consensus among European data partners and research networks on the advantages of the Shared Services.

More precisely according to the Description of Work, WP5 created the strategic and practical requirements for the Shared Services, interviewed prospective partners (mainly domain and thematic aggregators) to understand how and why they would use the services and investigated possible governance structures and a business model for the services, and explored licensing issues in shared services by setting up an access and reuse framework that allows partners to have full control on who does what with their stored objects.

For WP5, the main lessons learned are that the initial premise of the project (to decrease costs of storages) has proved false with new technology and the rapid development in cloud technologies. We learned this from interviews with our prospective partners and analyses of sustainability models and governance. The services developed in the project reflect this change, not focusing on shared storage but on data processing and distinct tasks (such as image transformation).

Tasks 5.1 and 5.2 - Requirements for the Europeana Cloud

We devised strategic and practical requirements with input of all project partners through several workshops (September and October 2013), using an iterative process. Major recommendations from these workshops were to work together on a coherent business model, which became an additional deliverable. To develop a viable business model for the Europeana Shared Services, we used the lean start up methodology – continuously testing, refining and building a Minimum Viable Product (MVP). This resulted in the Europeana Shared Services being better tied to partners' requirements.

During the requirements analyses with prospective users of the services, we devised requirements to create access to data storage for download and upload of metadata and content (via a REST API), user authentication to allow access and reuse, support of the data processing needs, and the need for development of user-friendly tools for access to the storage of metadata and content. To align the work between WPs, this was a collaborative effort between WP2 and WP5. Apart from these functional requirements, we understood the need for the set-up of a policy based framework to enable continuity of existing standards for sharing data.

The requirements are further described and analysed in [D5.7 Product and Services Requirements for Implementing Europeana Cloud Services](#). They are made operational for users in [D5.2 Updated Practical User Guide](#) (Handbook for the Europeana Cloud Participants), which includes a tutorial how to use the services. The requirement analysis has been communicated (iteratively) to WP2 for its implementation and development.

Task 5.3 - Exploring Licensing Issues

Under this task, Kennisland and Europeana Foundation held workshops (March 2014) to investigate licensing issues and to explore the legal requirements of project partners when storing and sharing their data in through the Europeana Cloud infrastructure. This resulted in [D5.3 Europeana Cloud Access and Reuse Framework](#) containing principles that govern access to the stored objects and metadata (read, write, delete permission), granting permission to others, persistency of the data, as well as the use of rights statements and access to the technical metadata. The framework has guided WP2 how to implement access and reuse abilities for the Shared Services.

Task 5.4 - Sustainability, Governance and the Business Model

To guarantee the sustainability of the services, the project set up a task force to investigate possible options for a governance model, resulting in [D5.4 Governance Structure for Europeana Cloud](#). The Cloud Consortium Governance Task Force recommended creating an independent legal entity to manage the future Europeana Cloud services. This new business organisation should have a cooperative legal structure and governance model, since the analysis showed that the cooperative model would best match the agreed design principles. Also, the cooperative model corresponds to the values of the Cultural Commons which were consolidated under the Europeana v3.0 project. Commons principles like trust, mutuality and engagement guide Europeana as a movement, association and network.

However, during the course of the project, splitting off of a separate entity with the aim of generating income from the market became an unlikely option, due to changes in the political environment. Much more viable from an economic impact perspective is the development of shared services under the Europeana Foundation. Yet, the recommendations for the governance model will be further elaborated and validated, should partners in the Europeana ecosystem decide to set up an independent entity.

With the end of the Europeana Cloud project and until a final governance model is selected, the Poznań Supercomputing and Networking Center (PSNC) and Europeana Foundation (EF) will manage the Europeana Cloud services based upon a mutual contractual agreement.

In addition, the project developed a business model outlining the vision for the future development of Europeana services for both data partners and aggregators after the end of the Europeana Cloud project. The final [D5.6 Updated Europeana Cloud Business Model](#) is the outcome of two iterations, in March 2015 and April 2016. The document presents the minimal viable product and its propositions for the Europeana Shared Services, provisionally assessing the annual costs.

Task 5.5 - Planning for Aggregators to Become Part of Europeana Cloud

The aggregator partners, Poznań Supercomputing and Networking Center (PSNC) and Europeana Foundation (EF), including The European Library (TEL), will be the first users of the outcomes of the Europeana Cloud project. Other Europeana related aggregator partners were

interviewed, following a standardised format, to examine their needs and to investigate whether and how they would be using the Europeana Shared Services. The partners indicated several items for improvement, all related to data processing and management.

The initial project assumption that storage was a major pain point (in terms of money and time spent) for aggregators proved false. Therefore, cheap storage could no longer serve as the unique selling point of Europeana Cloud and the focus on storage as the main feature of the service(s) should be decreased. The assumption that the cost of maintaining aggregation tools and services constitute a major part of aggregators overall budgets proved to be partly true. From the experience of the aggregation network, the cost of tools and services is circa 20% of the total cost of operations which is not considered onerous and any reduction is likely to be in single figures. Again, Europeana Cloud's outcomes should not be positioned as primarily being cost-savers.

Partners indicated that the process of aggregation is cumbersome, slow, work intensive and opaque and leads to friction and increased costs. The investment of work effort and total turnaround time from when a GLAM has decided to publish their data on Europeana to when it is published, is counted in months, when it should be counted in days or even hours. Equally aggregators and providers have to repeat similar processes to publish to other distributors of their data, such as Wikipedia or into education systems etc.

Also, most of the aggregators are dependent on one technical provider (National Technical University of Athens NTUA) and the main tool used (MINT) is in the later stages of its product lifecycle with no replacement from NTUA in development. It became clear that the main feature of Europeana Cloud better shifted from storage to specific data processing services, the Metadata Transformation and the IIIF Image Sharing services serving as examples. Post-project Europeana will continue to develop alternative solutions to metadata aggregation tools and services, creating mechanisms that remove layers of processing and make the publishing of cultural heritage data to the web very simple.

The full outcomes of the interviews are presented in [D5.5 Europeana Cloud Road Map](#).

Work Package 6 - Dissemination and Networking

Martin Moyle, University College London (UCL)

According the Description of Work, WP6 was to communicate the concept of Europeana Cloud, as a project to help the cultural heritage sector across Europe, aggregators and individual institutions, to store, manage and share their data using Cloud technologies. Guided by the [D6.1 Stakeholder Engagement Plan](#), WP6 set out to raise awareness of Europeana Cloud among potential future adopters (networks, users, data providers, tools and services developers), and to share the outputs of project with the partners and other interested parties. The newly created Europeana Research Co-ordinators Group (ERCG) served during the project as the communications forum for strategic partnerships between European Research Infrastructures.

The WP6 team was effective in raising awareness of the project and its objectives in year one. At that point, slippage in the major project deliverables meant that most of the day-to-day project

communication, until the launch of Europeana Research in April 2015, lacked clear direction. Forward planning was challenging, and the team was unable to execute the agreed Communication Plan. The most successful piece of communication in this period was a highly effective animated introduction to the Europeana Cloud, produced by Europeana in October 2014. The eventual launch of Europeana Research offered a welcome opportunity to promote a tangible product and to develop a model of successful communication that might in future be applied to the Europeana Cloud. An updated [presentation](#) was produced by Europeana during the project extension period and given at the Europeana Cloud Final Conference in April 2016.

Task 6.1 - Stakeholder Engagement

The D6.1 stakeholder analysis, delivered in July 2013, identified the project stakeholders and the potential of each stakeholder group to contribute to the realisation of the project's objectives, from the highest priority stakeholders (at that time characterised as research infrastructures, data providers, aggregators and project partners) to the lowest (such as publishers). The difficulty of prescribing communication very precisely in the early days of such a complex project was recognised, but nonetheless the most important over-arching messages were identified: that Europeana Cloud stood for a transformative new infrastructure, new tools and services over high quality content, and sustainability. Communication would be achieved through a mixture of general project dissemination, firm plans targeting particular communities, and alliances with other key projects, infrastructures and services.

Task 6.2 - Communications Infrastructure between European Research Networks

The Europeana Research Co-ordinators Group (ERCG) was established in February 2013 as a forum for strategic partnership between European research infrastructures. The Group brought together representatives of eight organisations, namely CENDARI, CLARIN, ERIC, DARIAH, DASISH, EUDAT, LIBER's Scientific Information Infrastructures Working Group, OpenAIRE, in addition to Europeana and The European Library.

The [D6.2 ERCG Plan](#) defined the purpose of the Group as a venue for strategic alignment between the participants and a forum through which research infrastructures and their communities could be engaged with the Europeana Cloud project, tools and services. The ERCG would devise a long-term framework for ongoing, post-project strategic relationships between ERCG members and the Europeana Foundation.

In practical terms, the chosen approach for ERCG operations was to hold themed meetings, linked to Europeana Cloud deliverables. Thus one meeting was held to discuss and provide feedback on the [D2.2 Europeana Cloud Architectural Design](#); another to explore the use of APIs within research infrastructures. In both cases, findings were shared with the relevant WP Leaders. In this way, the ERCG provided useful formative input during the developmental stages of the project, fulfilling that aspect of its mission. However, following the award of DSI funding to Europeana, and the repositioning of Europeana Foundation's strategic communication that followed, the requirement for the ERCG as a stand-alone grouping was superseded. Consequently, the ERCG was disestablished in October 2014.

Task 6.3 - Researcher Communication Plan

The [D6.3 Researcher Communication Plan](#) was founded in requirements work conducted by WP1 and focussed on direct communication with researchers, to promote Europeana Research. The Plan transcends disciplinary differences by characterising researchers in terms of their

appetite for technological engagement, describing a spectrum from ‘resistant traditionalists’ to ‘experts’. WP1 held a series of expert fora, introducing the work of the project to the scholarly community and embedding it within the research infrastructures. Promotion of the service was led by a series of Featured Collections, highlighted on the Europeana Research website and showcasing corpora from Croatian musicology archives to early Austrian landscapes. Separately, a blog captured issues of current interest to researchers, featuring guest postings on topics such as crowdsourcing and text mining, and an active Twitter account was maintained.

Task 6.4 - Promoting the Europeana Cloud

The communication plan [D6.4 Promoting the Europeana Cloud](#) delivered the strategy for the final year of the project, designed both to communicate the services to be offered by Europeana Cloud and to inform their development. Building on the emerging business model for the Europeana Cloud services, the priority audiences were identified: aggregators and other potential partners; the EC and member states; data providers; and developers. The Plan was designed to ensure that Europeana Cloud services and their benefits were understood and valued by these stakeholders. A dissemination timeline was constructed around the anticipated pattern of key deliverables from WP2 and WP5.

The full implementation of the Communication Plan for Europeana Cloud was not carried out during the lifetime of the project. This reflected the extent to which the originally expected pattern of deliverables changed, as the project was redefined and reshaped during its final year, for instance to prioritise data processing services over storage. This recalibration of strategy necessitated profound changes to the outputs of the project, particularly across WP2 and WP5, and it was neither possible nor desirable to attempt systematic and lucid communication of Europeana Cloud’s business proposal, tools and services during this period of reinvention, in the closing twelve months of the project. The Communication Plan that was delivered will serve as a template for large-scale and purposeful communication of the repositioned Europeana Cloud, when the Europeana Foundation is ready to promote the service to new adopters.

Task 6.5 - Project Results Dissemination

Under this task, core communication continued. This included maintenance of the website, blog and Twitter account. A Newsletter, compiling previously published blog posts, ran to two editions; this approach had worked in older projects, but take-up was low compared to the number of visits directly to the blog, and the ‘subscription’ model was felt to be a barrier. The compilation approach was therefore dropped in favour of promotion of the original postings. All WPs contributed to the blog, which provided a steady stream of information about Europeana Cloud and a taster for its deliverables throughout the lifetime of the project.

The Europeana Cloud website achieved an average of 1,012 page views/month (including views of blog posts, with the caveat that, because of mid-project technology migration, some blog views cannot be counted). The bounce rate of 56% was slightly better than that for Europeana as a whole. In total, 39 blog postings were made in the course of the project, an average of 1 per month. The most-viewed blog post was a call for partners made by WP3 (Wanted: Historic Newspaper Researchers, March 2015), which was seen 977 times. The project Twitter feed published 210 tweets and accrued 890 followers.

Analytics for the Europeana Research Portal are available from mid-June 2015. Between then and end of project, the Featured Collections were viewed 2,414 times; the Newspaper collections were accessed 2,214 times; and there were 4,017 downloads of other data via the Portal. At the time of finalising this report, use of the Europeana Research API cannot be measured independently of the Europeana Labs API.

In terms of dissemination activity specific to Europeana Research, after the launch of the service in April 2015, 51 posts were made to the Europeana Research blog, at an average of 4 per month. The @EurResearch twitter account gathered 904 followers and had published 544 tweets at the time of writing. The impact of the Europeana Research campaign, with a defined audience and a clear focal point for communication, shows the potential for future communication of the Europeana Shared Services that are currently being developed on the foundations of the Europeana Cloud project.

A complete log of dissemination activities is presented in the Appendix.

PROJECT MANAGEMENT

= *Work Package 7: Els Jacobs, Els Jacobs Advies & Onderzoek (EJA)*

Coordinating the Europeana Cloud project was a challenge. Adhering to the truly innovative nature of the work, partners debated the focus of Europeana Cloud commonly and intensely, resulting in shifts of strategy and priorities over the course of the project. Managing Europeana Cloud meant accommodating a significant turnover of key personnel (WP leaders; scientific coordinator, qualified technical staff). After one year, project coordinator MDR left the Consortium. In 2015, The European Library (TEL), one of the three aggregating partners in the project, disappeared effectively as a proposed independent entity, eventually merging with the Europeana Foundation.

Despite these challenges, the project remained on track delivering Europeana Research and cloud based services for storage and data processing as significant and sustainable outcomes. The European Commission contributed to accomplishing the planned results by approving a three-month extension of the project. In the course of work, no significant incidents occurred, demonstrating the collaborative spirit of the Consortium and the long standing competency of the partners running innovative Europe-wide projects.

Task 7.1 - Day to Day Management

As project coordinator during YR1, MDR put in place information and communication mechanisms to support the effective operation of the Best Practice Network. After MDR's departure, a project team of three took over the day to day management, coordinating and monitoring Europeana Cloud solidly, thus ensuring efficient financial management, effective operation, and the delivery of results on time, to budget and at excellent quality levels. The Europeana Foundation performed the duties of scientific coordinator and project coordinator. Els Jacobs Consultancy (EJA) acted as the project manager.

The Executive Board met monthly (mostly virtual via Skype). All papers, agendas and minutes were made available to all Consortium partners on Basecamp.

The Europeana Cloud Consortium partners convened four Plenary Meetings as scheduled. The first meeting coincided with the Europeana Cloud kick-off in The Hague (March 2013). Two informative and constructive annual Plenary Meetings were held in Athens (March 2014) and Edinburgh (June 2015) respectively. Typically, each Work Package ran their own break out groups along with general presentations on the progress of the project, with particular attention paid to current topics like the access and reuse framework for Europeana Cloud or the governance model. Documents and presentations were made available on Basecamp for the project.

The last Plenary Meeting coincided with the Europeana Cloud Final Conference in The Hague (April 2016). The Executive Board decided on a special format to contribute most constructively to completing the Europeana Cloud project and reinforcing the outcomes. In a roundtable debate on [Cloud Infrastructures for the Cultural Sector: Shooting for the Moon?](#), the Work Package leaders shared their observations and lessons learned in the Europeana Cloud Project with a group of experts and stakeholders such as representatives of the European Commission, technology practitioners, commercial vendors and others involved in similar cloud initiatives. The open exchange of views resulted in a set of recommendations with the aim of informing the Commission on a future approach to building cloud infrastructures (for the cultural sector).

Task 7.2 - Management of Commission Requirements

Periodic management and progress reports have been submitted in compliance with the European Commission's requirements. Drafting the Final Report demanded an extra effort of all WP leaders due to the scientific coordinator, the Europeana Cloud mastermind, leaving Europeana a few months before the end of the project.

For a number of reasons, YR1 and YR2 payments of expenses to partners were delayed. Collecting solid cost claims proved a time-consuming task due to the large number of project partners. When project coordinator MDR left the Consortium on short notice in April 2014, the Europeana Foundation took over the financial management of the project. However, a few months passed until all relevant information was transferred. The withdrawal of MDR required an intricate amendment of the Grant Agreement which impeded financial reporting. In addition, the Europeana Cloud financial reports were subject to an exceptionally detailed audit, further extending the disbursement of project funds. The full overview on the use of resources included in this Final Report is the result of dedicated efforts of both Consortium partners and Europeana staff. As such it proves the efficiency of the financial management during the later stages of the project, addressing the recommendations by the reviewers at the Technical Review in early March 2015.

Task 7.3 - Quality Assurance of Deliverables

The Executive Board employed effectively the arrangements (set up in March 2013) for the review of all project deliverables involving partners and where appropriate external experts. Milestones were completed and deliverables submitted in time and to the appropriate quality level.

In consultation with the European Commission, some new deliverables were added (notably [D5.6 Business Model](#); and [D5.7 Product Requirements](#)), others changed in scope (notably [D4.4 Recommendations for Enhancing EDM to Represent Digital Content](#); and [D5.3 Europeana Cloud Access and Reuse Framework](#)) or were delayed (notably the interdependent documents [D1.4 Content Priorities for Humanities and Social Sciences Research Communities](#); [D2.4](#)

[Prototype of Content Cloud](#); [D5.2 Handbook for the Europeana Cloud Participants](#); and [D6.4 Promoting Europeana Cloud](#)). The modifications were the consequence of the changing view on some fundamental aspects of the outcomes (services) and their product positioning, which occurred in the course of the project. The adjustments were made in response to improved business intelligence as well as developments and trends in the cloud services industry.

Task 7.4 - Monitoring, Evaluation and Risk Management

The Executive Board reviewed progress against the Description of Work (tasks, deliverables, milestones, risks) monthly. The scientific coordinator and the WP leaders paid special attention to areas of collaboration between different Work Packages. In close collaboration with the WP leaders, the project coordinating team assessed and updated the Key Performance Indicators (KPIs) and Risk Register periodically. They kept a keen eye on the Europeana Cloud activities and outcomes observing EU copyright and IPR requirements as well as the emerging Europeana agreements.

When staff and organisational changes slowed down the process of technical development, the Coordinator requested and the Commission approved a three-month no-cost extension for the Europeana Cloud project from February to April 2016. The merger of The European Library into Europeana had ended in the loss of two of key technical staff within the project. Equally, the third aggregator in the project, the Poznań Supercomputing and Networking Centre (PSNC), lost two members of its development team who were developing Europeana Cloud.

Task 7.5 - Sustainability of the Project

In a series of (virtual) meetings during the final year of the project, the WP leaders and the Europeana Foundation examined how to safeguard best the sustainability of the Europeana Cloud outcomes. In Europeana's overall strategy, the Europeana Cloud project supports the work to improve the services for the data partners, making it easier to store, manage and share their data, using cloud technologies. Also, the Cloud project improved Europeana's position to deliver a service, Europeana Research, that is truly of use to digital humanities scholars and other researchers interested in cultural heritage data.

After the end of Europeana Cloud in April 2016, the Europeana Foundation and the Poznań Supercomputing and Networking Centre (PSNC) will continue to operate the project outcomes under the EU funded projects Europeana DSI-1 and DSI-2 until at least September 2017. The Europeana Digital Service Infrastructure (DSI) belongs, via the Europeana Foundation, to all the cultural heritage organisations contributing to its data and its development.

In the timeframe of Europeana DSI-2, Europeana will research the possibility for direct data delivery with GLAMs, while collaborating with domain aggregators to develop their positions as expert hubs in the Europeana ecosystem. In addition, the services for ingestion (Metis) and display of cultural heritage material (IIIF and IxIF) will be standardised in cooperation with the IIIF-consortium.

Key Performance Indicators (KPIs)

Indicator No.	Relating to which project objective / expected result?	Indicator	Method of measurement	Expected Progress		
				Year 1	Year 2	Year 3
1.1	Increase knowledge of Europeana amongst researchers	Greater knowledge of Europeana amongst sample of researchers	User survey [M12,36]	<i>Target:</i> 20% of users surveyed have knowledge of Europeana <i>Actual:</i> 47%	n/a	<i>Target:</i> 90% <i>Actual:</i> 85%
1.2	Increase use of Europeana amongst researchers	Greater satisfaction of use Europeana amongst sample of researchers	User survey [M12,36]	<i>Target:</i> 10% of those who have Europeana use it. <i>Actual:</i> 59%	n/a	<i>Target:</i> 50% <i>Actual:</i> 50%
2.1	Cloud-based infrastructure for Europeana data created	Development of Europeana Cloud infrastructure	Measured against D2.2 (Technical Architecture of Europeana Cloud)	<i>Target:</i> First prototype available and tested by 3 aggregators <i>Actual:</i> Used	<i>Target:</i> Developed service meet specifications in D2.2 / Full capacity prototype in place <i>Actual:</i> in place	<i>Target:</i> Final service functioning and used by 3 aggregators <i>Actual:</i> The service functioning and used by 3 aggregators in several use cases
2.2	Aggregation of existing Europeana datastore into Europeana Cloud	Number of records in Europeana	via eCloud API	-	<i>Target:</i> 10m records <i>Actual:</i> tbc by 6 March 2015	<i>Target:</i> 30m records <i>Actual:</i> 30m (and counting)
3.1	Successful interaction between 3rd party tools and Europeana content	Acceptance by WP3 partners	Evaluation by WP3 partners [M12,24,36]	<i>Target:</i> First evaluation of tools <i>Actual:</i> Passed	<i>Target:</i> Second evaluation of tools <i>Actual:</i> Passed	<i>Target:</i> Third evaluation of tools <i>Actual:</i> Passed

Indicator No.	Relating to which project objective / expected result?	Indicator	Method of measurement	Expected Progress		
				Year 1	Year 2	Year 3
3.2	Personas and scenarios for the Europeana Cloud tools and services	Acceptance of deliverable [M12,24,36]	Deliverable	<i>Target:</i> 8 <i>Actual:</i> 8	not used in Year 2	not used in Year 3
3.2	Number of connections between external tools and services and Europeana cloud services	Acceptance of deliverable [M12,24,36]	Deliverable	n/a	n/a	<i>Target:</i> 5 <i>Actual:</i> 5
3.3	Completion of European Research	Acceptance of deliverable (D3.4) by M36	Successful evaluation via RCAB of Europeana Research	n/a	<i>Target:</i> Prototype in place <i>Actual:</i> in place	<i>Target:</i> Final service in place <i>Actual:</i> in place
4.1	Increase the extent and range of overall metadata aggregated to TEL	Number of metadata records pertaining to items	Each metadata record in TEL portal is counted	<i>Target:</i> 0.5m <i>Actual:</i> 0.8m	<i>Target:</i> 2.0m <i>Actual:</i> 2.23m	<i>Target:</i> 2.4m <i>Actual:</i> 2.49m
4.2	Increase the extent and range of overall metadata available via Europeana	Number of metadata records pertaining to items	Each metadata record in Europeana portal is counted	<i>Target:</i> 0.2m <i>Actual:</i> 0.8m	<i>Target:</i> 1.0m <i>Actual:</i> 1.4m	<i>Target:</i> 2.4m <i>Actual:</i> 2.1m
4.3	Increase in research-focused content in Europeana	Number of individual digitised objects ingested into Europeana Cloud	Each individual digital object in Europeana Cloud will be recorded	n/a	n/a	5m <i>Actual:</i> 7.8m

Indicator No.	Relating to which project objective / expected result?	Indicator	Method of measurement	Expected Progress		
				Year 1	Year 2	Year 3
5.1	Successful Business Plan for Europeana Cloud	Validation of documents relating to Business Plan	Internal and external review	High Level Principles validated by current and future eCloud members <i>Actual: Met</i>	Cost Model and Operating Handbook validated by current and future eCloud members <i>Actual: Delayed⁹</i>	Overall Business Plan validated by current and future eCloud members <i>Actual: Business Model outlining vision for future development after end of Europeana Cloud project</i>
5.2	Clear alignment of business requirements with strategic and technical outputs	Approval of product requirements by external reviewers	Deliverable	n/a	Delivered and reviewed by external reviewers <i>Actual: Met</i>	Evaluated and revised by external reviewers <i>Actual: Evaluation and future direction in D5.6 Updated Business Model</i>
5.3	Project partners engaged with the strategic development of the Cloud Services	Consultation on development of key deliverables: governance, legal and strategic deliverables	Number of workshops held with project partners to explore strategic issues	<i>Target:</i> 3 <i>Actual:</i> 3 workshops held	<i>Target:</i> 6 <i>Actual:</i> 8 workshops held	<i>Target:</i> 8 <i>Actual:</i> 8 workshops held

⁹ Cost Model and D5.2 (Europeana Cloud Handbook) were delayed to Month 28 of the project. Two new deliverables D5.6 (Europeana Cloud Business Model) and D5.7 (Product and Service Requirements) were put in their place and have been delivered.

Indicator No.	Relating to which project objective / expected result?	Indicator	Method of measurement	Expected Progress		
				Year 1	Year 2	Year 3
5.4	Increase in awareness of Business plan by Aggregators	Developing relationships between Cloud Services and Aggregators (outside project partners)	Number of meetings held each year to discuss individual aggregator plans to join Cloud	n/a	<i>Target:</i> 5 <i>Actual:</i> 5 Aggregators	<i>Target:</i> 10 <i>Actual:</i> 8 Aggregators
6.1	Dissemination: website	Average number of page views per month	Google analytics	<i>Target:</i> 1,000 <i>Actual:</i> 1,193	<i>Target:</i> 1,500 <i>Actual:</i> 1,182	<i>Target:</i> 2,000 <i>Actual:</i> 2,072 (including Europeana Research) website)
6.2	Dissemination: Twitter @europeana_cloud	Number of followers	Twitter	<i>Target:</i> 300 <i>Actual:</i> 349	<i>Target:</i> 500 <i>Actual:</i> 606	<i>Target:</i> 700 <i>Actual:</i> 890
6.3	Dissemination: Twitter @europeana_cloud	Number of tweets made (cumulative)	Twitter	<i>Target:</i> 100 <i>Actual:</i> 113	<i>Target:</i> 200 <i>Actual:</i> 156	<i>Target:</i> 300 <i>Actual:</i> 210
6.4	Dissemination: Blog	Number of posts made (cumulative)	Project website	<i>Target:</i> 12 <i>Actual:</i> 12	<i>Target:</i> 24 <i>Actual:</i> 27	<i>Target:</i> 36 <i>Actual:</i> 39

Deliverables Table

No.	WP	Title	Partner	Delivery Month	Delivery Date	Nature	Level	Comments
D2.1	WP2	Create Development Environment	EF	3	Apr 2013	O	PP	
D4.1	WP4	Initial Metadata Ingestion Plan	EF	4	May 2013	R	PU	
D1.1	WP1	Research communities identification and definition report	KNAW	6	Jul 2013	R	PU	
D2.2	WP2	Initial Version of Architectural Design Document	PSNC	6	Jul 2013	R	PP	
D6.1	WP6	Stakeholder Engagement & Infrastructure Plan	UCL	6	Jul 2013	R	PU	
D7.1	WP7	Consortium Agreement	EJA	6	Jul 2013	R	PP	delayed to M26 – Mar 2015
D7.2	WP7	Periodic progress report	MDR	6	Jul 2013	R	PU	
D6.2	WP6	European Research Coordinators Group Plan	KNAW	7	Aug 2013	R	PU	
D1.2	WP1	State of the art report on digital research practices, tools and scholarly content use	CERL	9	Oct 2013	R	PU	
D5.1	WP5	Minimum requirements for the cloud	EF	10	Nov 2013	R	PU	
D2.3	WP2	Prototype of Metadata Cloud	EF	12	Jan 2014	P	PU	
D7.3	WP7	Annual report	MDR	12	Jan 2014	R	PU	
D2.4	WP2	Prototype of Content Cloud	EF	18	Jul 2014	P	PU	delayed to M24 – Jan 2015; D2.4 + D2.5 merged
D7.4	WP7	Periodic progress report	EF	18	Jul 2014	R	PU	
D5.7	WP5	Product Specifications	EF	23	Dec 2014	R	PU	additional deliverable; delayed to M24 - Jan 2015
D1.4	WP1	Content priorities for Humanities and Social Sciences research communities	CERL	24	Jan 2015	R	PU	delayed from M18
D2.5	WP2	Prototype of Metadata Cloud and Core Services	EF	24	Jan 2015	P	PU	D2.4 + D2.5 merged
D4.2	WP4	Content Ingestion Plan	EF	24	Jan 2015	R	PU	
D6.4	WP6	Stakeholder Engagement & Infrastructure Plan	EF	24	Jan 2015	R	PU	delayed from M18
D7.5	WP7	Annual Report	EJA	25	Feb 2015	R	PU	

No.	WP	Title	Partner	Delivery Month	Delivery Date	Nature	Level	Comments
D5.3	WP5	Europeana Cloud Legal Framework	KL	29	June 2015	R	PU	renamed "Europeana Cloud Access and Reuse Framework" No update required per Apr 2016.
D7.6	WP7	Periodic progress report	EJA	30	Jul 2015	R	PU	
D1.5	WP1	Expert Forums with Reports	TCD	33	Oct 2016	R	PU	
D1.3	WP1	User requirements analysis and case studies report	Athena RC	34	Nov 2015	R	PU	D1.3 + D1.6 merged
D1.6	WP1	Content Strategy Report	CERL	34	Nov 2015	R	PU	
D5.4	WP5	Model and Governance Structure for Europeana Cloud	EF	35	Dec 2015	R	PU	
D2.6	WP2	Metadata and Content Cloud Delivered	EF	36	Jan 2016	P	PU	
D3.4	WP3	Europeana Research Portal	EF	36	Jan 2016	D	PU	
D3.1	WP3	Document on personas, scenarios and use cases	KU LEUVEN	37	Feb 2016	R	PU	also versions in M6-M18
D3.2	WP3	Tools and services	KU LEUVEN	37	Feb 2016	P	PU	Also versions in M12-M24
D3.3	WP3	Evaluation report	EF	37	Feb 2016	R	PU	Also versions in M12-M24
D4.4	WP4	Recommendation for enhancing EDM to support research-orientated content	CERL	37	Feb 2016	R	PU	renamed "Recommendation for enhancing EDM to represent digital content"
D4.5	WP4	Research metadata and content available in the Europeana Cloud	EF	37	Feb 2016	O	PU	
D1.7	WP1	Research Community Evaluation Report	Athena RC	37	Feb 2016	R	PU	
D4.3	WP4	A report and a plan on future directions for improving metadata in the Europeana Cloud	CERL	37	Feb 2016	R	PU	
D2.7	WP2	Migration/Upload of metadata and content analyzed	EF	39	Apr 2016	P	PU	
D5.2	WP5	Handbook for the Europeana Cloud participants	EF	39	Apr 2016	R	PU	Draft M24 - Jan 2015; v2 M28 - May 2015; Final version Renamed "Practical User Guide" M39 - Apr 2016
D5.5	WP5	Europeana Cloud Partner Roadmap	EF	39	Apr 2016	R	PU	

No.	WP	Title	Partner	Delivery Month	Delivery Date	Nature	Level	Comments
D5.6	WP5	Updated Europeana Cloud Business Model	EF	39	Apr 2016	R	PU	additional deliverable in M23 – Dec 2014; Updated version M39 – Apr 2016
D6.3	WP6	Updated Researcher Communication Plan	Athena RC	39	Apr 2016	R	PU	Delivered in M18 – Jul 2014; Updated version M39 – Apr 2016
D7.7	WP7	Final Report	EJA	40	May 2016	R	PU	

Milestones Table

No.	WP	Title	Partner	Due Month	Due Date	Comments
MS1	WP1	Research Communities Advisory Board established	KNAW	1	Feb 2013	
MS30	WP6	Creation of Europeana Research Coordinators Group	KNAW	2	Mar 2013	
MS31	WP6	Project website, blog constructed	EF	2	Mar 2013	
MS26	WP5	High Level Strategic Requirements	EF	3	Apr 2013	
MS28	WP5	Europeana Cloud Strategic Organisation workplan	EF	4	May 2013	
MS2	WP1	Desk research on Scholarly Content use complete	CERL	6	Jul 2013	included in D1.2
MS7	WP2	Decision on the use of underlying cloud storage system	OU	6	Jul 2013	included in D2.2
MS27	WP5	Strategic Requirements Check	EF	6	Jul 2013	M6-M12-M18-M30
MS3	WP1	Web survey complete	Athena RC	7	Aug 2013	included in D1.3
MS8	WP2	First Prototype made available to other WPs - implementation with multiple nodes, sites and more tha	EF	8	Sep 2013	included in D2.4 and D2.5
MS4	WP1	Desk research on Digital Research Practices complete	NLW	9	Oct 2013	included in D1.2
MS9	WP2	Content and metadata loaded and accessible through test API from prototype.	EF	9	Oct 2013	included in D2.4, D2.5 and D2.7
MS6	WP1	Evaluation workshops and write-ups complete	Athena RC	10	Nov 2013	also M21-M30/ Included in D1.7
MS5	WP1	Research Communities Advisory Board meetings complete	TCD	12	Jan 2014	also M24-M36
MS14	WP3	First version of tools and documentation	KU LEUVEN	12	Jan 2014	included in D3.2

No.	WP	Title	Partner	Due Month	Due Date	Comments
MS32	WP7	Successful project review at end YR 1	EF	12	Jan 2014	
MS10	WP2	Second Prototype made available to other WPs – improvements on stability and performance	EF	18	Jul 2014	included in D2.3 and 2.7
MS11	WP2	Content and metadata loaded and accessible through Beta API from prototype	EF	18	Jul 2014	included in D2.7
MS12	WP2	Performance evaluation on improvements and limitations.	EF	18	Jul 2014	included in D3.2
MS23	WP4	Sample Content ingested into Cloud	EF	18	Jul 2014	included in YR2 report
MS21	WP4	Report with recommendations for enhancing EDM – first draft	CERL	22	Nov 2014	
MS15	WP3	Second version of tools and documentation	KU LEUVEN	24	Jan 2015	included in D3.2
MS22	WP4	Metadata and content ingestion clinics	CERL	24	Jan 2015	included in YR1 and YR2 reports
MS33	WP7	Successful project review at end YR 2	EF	24	Jan 2015	
MS24	WP4	Additional enrichment plugins to enrich Cloud data as part of the content ingestion workflow	CNR	36	Jan 2016	included in D4.3
MS25	WP4	Additional plugins to enrich Cloud metadata as part of the content ingestion workflow are ava	EF	36	Jan 2016	included in D4.3
MS16	WP3	Third version of tools and documentation	KU LEUVEN	36	Jan 2016	included in D3.2
MS17	WP3	Europeana research Portal	EF	39	Apr 2016	
MS18	WP4	Periodic reports on meta data ingestion	EF	39	Apr 2016	
MS19	WP4	2.4 million metadata records from project partners available in Europeana	EF	39	Apr 2016	
MS20	WP4	Update reports on content ingestion	EF	39	Apr 2016	due on regular basis / included in D4.5
MS34	WP7	Successful review at end of project	EF	39	Apr 2016	
MS13	WP2	25% of available metadata available in cloud	EF	39	Apr 2016	included in D2.7
MS29	WP5	Cost Model	EF	39	Apr 2016	delayed from M18 / included in D5.6

USE OF RESOURCES

The cumulative budget overview of all 35 Europeana Cloud partners for the full project period of 39 months from February 2013 until April 2016 (as presented in table 1) reveals an overall underspend of 10.1%, equivalent to € 478,126. The further analysis of the project partners' financial reports and including the Europeana Foundation's audit costs should not result in significant modifications of these figures.

Table 1: Europeana Cloud - Cumulative Budget Overview

Costs category	Budget project	Costs projects	Spent in %	Under-spend in %
Personnel costs	4,250,795	3,919,959	92.2%	7.8%
Subcontracting	69,240	50,311	72.7%	27.3%
Other Direct costs	429,548	301,187	70.1%	29.9%
	4,749,583	4,271,457	89.9%	10.1%

Total underspend	478,126
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In financial terms, the underspend is due to lower personnel costs for an amount of € 330,836, resulting from partners reporting lower personal rates than initially estimated (see table 2 below). According to the Description of Work (DoW), the overall monthly rate is € 6,005, based on a budget of € 4,250,795 and 707.88 person months. Partners reported a monthly rate of only € 5,102, which is based on the total costs of € 3,919,959 corresponding to 768.35 person months. At the start of the project, partners found it difficult to assess precisely the level of expertise required to perform the assigned tasks. In some EU Member States labour rates were lowered substantially as a consequence of the worldwide economic crisis. Also, as a result of its withdrawal, project partner MDR left roughly € 150,000 unspent. This project money had to be considered a loss as a consequence of MDR's bankruptcy.

Relating the other direct costs, an amount of € 128,361 was left unspent due to partners reporting lower travel costs and to a double reservation in the DoW, which remained unnoticed until very recently. Work related to creating a number of case studies and white papers was calculated twice, in both person months and other direct costs. The underspend of the subcontracting costs (presented in table 3 below) is due to unfortunate timing. Since the cloud infrastructure and API were ready for use later than planned, the consultant Data Conversion Group (hired by CERL) could not mobilize extra staff to fully execute the assigned tasks related to the D4.3 Report on Future Directions for Improving Metadata in the Europeana Cloud during the limited six weeks' time available before the submission deadline. Audit costs are still to be added to the subcontracting costs of the Europeana Foundation.

Table 2: Europeana Cloud - Overview Monthly Rates per Partner

Part. No.	Partner	Rate in DOW	Rate as Reported	In %
1	Europeana Foundation	6,210	6,044	-2.7%
2	Ariadne Foundation	6,000	3,881	-35.3%
3	Athena Research and Innovation (Digital Curation Unit-DCU)	4,500	4,178	-7.2%
4	Bayerische Staatsbibliothek / Bavarian Library Consortium	6,300	5,528	-12.2%
5	Questa.Soft Central and Eastern European Online Library	5,000	4,182	-16.4%
6	CERL	6,500	4,181	-35.7%
7	Onsiglio Nazionale delle Ricerche (ISTI- CNR)	6,000	5,666	-5.6%
8	Debrecen Egyetem	2,000	1,974	-1.3%
9	Fundación DIALNET	4,200	4,349	3.6%
10	Hrvatska Akademija Znanosti i Umjetnosti /Academy of Sciences & Arts	3,572	3,134	-12.2%
11	National & Copenhagen University Library	7,000	6,754	-3.5%
12	Stichting Nederland Kennisland	7,100	4,632	-34.8%
13	Koninklijke Nederlandse Akademie van Wetenschappen - (DANS & NIOD)	6,000	7,587	26.4%
14	KU - Leuven	6,250	5,482	-12.3%
15	LIBER	6,000	6,138	2.3%
16	Istituto Luce-Cinecitta SRL	5,000	5,154	3.1%
17	MDR Partners	5,233	5,231	0.0%
18	Kansallisarkisto / National Archives of Finland	5,100	4,265	-16.4%
19	National Library of Wales	7,399	6,410	-13.4%
20	Narodni Technicka Knihovna / National Technical Library	1,876	1,717	-8.5%
21	Stichting OAPEN / Open Access Publishing In European Networks	6,772	6,156	-9.1%
22	Open Knowledge Foundation Deutschland	6,800	5,790	-14.9%
23	The Open University	5,533	4,641	-16.1%
24	Instytut Chemii Bioorganicznej Pan / Poznan Super Computing	4,700	3,633	-22.7%
25	Trinity College Dublin	7,836	4,314	-44.9%
26	Stichting Katholieke Universiteit Brabant Universiteit Van Tilburg	7,500	7,525	0.3%
27	University College London	9,621	7,749	-19.5%
28	The University of Edinburgh	6,937	5,198	-25.1%
29	Goeteborgs Universitet / University of Gothenburg	7,424	5,300	-28.6%
30	Universite Libre De Bruxelles / Free University of Brussels	10,255	10,751	4.8%
31	Universitaet Bielefeld (BASE)	5,000	5,098	2.0%
32	University of Patras	2,000	1,926	-3.7%
33	Stichting VU-VUMC Amsterdam	5,588	5,587	0.0%
34	Els Jacobs Advies	9,520	9,565	0.5%
35	Semantika	3,700	3,165	-14.5%
		6,005	5,102	

Table 3: Europeana Cloud - Overview of Subcontracting Costs

Participant No.	Partner	Short Name	Country	Total Project Budget	Total Costs in Project	Under / Over Budget in project	Under / Over Budget in %
1	Europeana Foundation	EF	NL	53,000	46,028	-€ 6,972	-13.15%
6	CERL	CERL	UK	16,240	4,283	-€ 11,957	-73.63%
				69,240	50,311	-€ 18,929	-27.34%

The underspend is moderated by the 9% overspend in person months (as presented in table 4 below), underpinning the analysis of the lower monthly rates as the main cause of the underspending. Also, to reduce the underspend an amount of roughly € 190,000 was reallocated between partners. The funds were employed to strengthen key outcomes of the project, following the strategic recommendations by the reviewers at the Technical Review in early March 2015. Funds were applied to reinforce tasks supporting the sustainability of Europeana Research and improving the tools related to the Europeana Cloud service, thus enhancing its value. Furthermore, late 2014 two new partners, Semantika and Els Jacobs Advies (EJA), joined the Consortium.

The main partners receiving extra budget were (1) Europeana Foundation, (7) ISTI-CNR, (23) Open University, (24) PSNC and new partner (35) Semantika for development work, resulting in a substantial overspend in person months in WP2. They did not manage, however, to spend the reallocated budget in full due to a significant turnover of qualified technical staff, which was the main argument for requesting a three-month extension of the project. The (2) Ariadne Foundation spent extra time on drafting an additional case study on Europeana as a Resource for Social Scientists in Agriculture and Food, creating an overspend in person months in WP3. Starting in October 2014, new partner (34) Els Jacobs Advies (EJA) replaced MDR as the project manager. In the final months EJA took over the role of the scientific coordinator as well. The overspend in person months in WP1 was due to extra efforts, by CERL and Trinity College Dublin (TCD) in particular, investigating content priorities for humanities and social sciences research communities (as reported in D1.4) and populating the Europeana Research website with additional collection descriptions.

The financial figures per partner are presented in table 5 below, comparing their overall spent budget to the figures listed in the latest version of the DoW.

Table 4: Europeana Cloud – Cumulative Overview of Person Months per Partner per Work Package

Consortium		WP1		WP2		WP3		WP4		WP5		WP6		WP7		TOTAL		
Nr	short name	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual	Planned	in %
1	EF	4.57	5.00	58.90	64.00	9.12	13.00	33.97	17.00	31.97	42.30	12.91	8.00	15.24	13.00	166.68	162.30	103%
2	Ariadne	1.04	-	-	-	19.66	12.00	-	-	1.01	1.00	2.89	1.00	0.57	1.00	25.18	15.00	168%
3	Athena RC	34.54	33.00	-	-	-	-	-	-	1.04	1.00	1.00	1.00	3.17	3.00	39.74	38.00	105%
4	BSB	-	-	-	-	-	-	2.23	3.00	0.86	1.00	0.28	1.00	1.18	1.00	4.55	6.00	76%
5	CEEOL	-	-	-	-	-	-	3.50	3.00	1.34	1.00	1.01	1.00	0.30	1.00	6.15	6.00	103%
6	CERL	23.83	6.00	-	-	-	-	4.78	12.00	0.23	1.00	1.43	3.00	1.86	3.00	32.14	25.00	129%
7	CNR	-	-	37.51	24.00	-	-	-	6.00	1.03	1.00	1.03	1.00	1.04	1.00	40.61	33.00	123%
8	DE	-	-	-	-	-	-	2.68	3.00	1.32	1.00	1.00	1.00	1.00	1.00	6.01	6.00	100%
9	DIALNET	-	-	-	-	-	-	3.07	3.00	1.01	1.00	3.00	3.00	1.01	1.00	8.09	8.00	101%
10	HAZU	-	-	-	-	-	-	9.00	9.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00	12.00	100%
11	KB DK	-	-	-	-	-	-	3.21	3.00	0.33	1.00	0.82	1.00	0.98	1.00	5.34	6.00	89%
12	KL	-	-	-	-	-	-	-	-	28.26	24.00	1.73	1.00	0.14	1.00	30.13	26.00	116%
13	KNAWS	7.00	12.00	-	-	-	-	-	-	0.06	1.00	4.40	6.00	0.43	1.00	11.88	20.00	59%
14	KU Leuven	-	-	-	-	21.61	24.00	9.40	3.00	-	1.00	-	1.00	-	3.00	31.00	32.00	97%
15	LIBER	2.31	6.00	-	-	-	-	-	-	1.15	1.00	7.57	5.00	1.60	1.00	12.63	13.00	97%
16	LUCE	-	-	-	-	-	-	2.97	3.00	0.97	1.00	0.69	1.00	0.74	1.00	5.38	6.00	90%
17	MDR	-	-	-	-	-	-	-	-	0.33	0.33	-	-	8.26	8.25	8.58	8.58	100%
18	NAF	-	-	-	-	-	-	-	-	0.97	1.00	0.40	1.00	0.70	1.00	2.07	3.00	69%
19	NLW	13.44	14.00	-	-	-	-	3.20	3.00	0.75	1.00	0.73	1.00	0.90	1.00	19.02	20.00	95%
20	NTK	-	-	-	-	-	-	0.98	3.00	0.50	1.00	0.35	1.00	0.93	1.00	2.76	6.00	46%
21	OAPEN	-	-	-	-	-	-	0.99	3.00	0.35	1.00	0.09	1.00	0.64	1.00	2.06	6.00	34%
22	OKF DE	-	-	-	-	19.20	16.00	-	-	1.00	1.00	6.00	5.00	1.20	1.00	27.40	23.00	119%
23	OU	-	-	46.71	35.00	-	-	11.00	12.00	1.00	1.00	1.00	1.00	1.00	1.00	60.71	50.00	121%
24	PSNC	-	-	92.51	58.00	-	-	-	-	1.00	1.00	1.01	1.00	1.00	1.00	95.51	61.00	157%
25	TCD	20.51	12.00	-	-	-	-	-	-	0.36	1.00	0.79	1.00	2.50	1.00	24.17	15.00	161%
26	TILBURA	-	-	-	-	-	-	0.77	3.00	0.02	1.00	0.08	1.00	0.55	1.00	1.41	6.00	24%
27	UCL	-	-	-	-	-	-	2.66	3.00	0.77	1.00	8.49	10.00	2.56	3.00	14.48	17.00	85%
28	UEDIN	0.65	2.00	-	-	0.05	-	2.55	3.00	0.29	1.00	0.02	1.00	3.16	1.00	6.71	8.00	84%
29	UGOT	18.82	15.00	-	-	-	-	0.18	1.00	0.18	1.00	0.19	3.00	0.83	1.00	20.20	21.00	96%
30	ULB	-	-	-	-	-	-	1.53	2.00	-	1.00	-	1.00	0.35	1.00	1.88	5.00	38%
31	UNIBI	-	-	-	-	-	-	6.39	3.00	-	1.00	-	3.00	-	1.00	6.39	8.00	80%
32	UPAT	-	-	-	-	-	-	3.13	3.00	0.99	1.00	1.00	1.00	1.09	1.00	6.21	6.00	104%
33	VUA	-	-	-	-	5.00	5.00	3.33	3.00	0.47	1.00	0.06	1.00	0.99	1.00	9.84	11.00	89%
34	EJA	-	-	-	-	-	-	-	-	2.90	2.00	-	-	8.17	8.00	11.07	10.00	111%
35	SEM	-	-	-	-	10.40	9.00	-	-	-	-	-	-	-	-	10.40	9.00	116%
TOTAL		126.69	105.00	235.62	181.00	85.03	79.00	111.51	107.00	83.45	98.63	60.97	69.00	65.08	68.25	768.35	707.88	109%
		121%		130%		108%		104%		85%		88%		95%		109%		

Table 5: Europeana Cloud – Cumulative Financial Overview per Partner

Participant No.	Partner	Country	Total Project Budget	Reported YR3 to April 2016	Total Costs in Project	Under / Over Budget in Project	Under / Over Budget in %
1	Europeana Foundation	NL	1,086,886	482,249	1,165,159	€ 78,273	7.2%
2	Ariadne Foundation	BE	93,000	43,189	99,293	€ 6,293	6.8%
3	Athena Research and Innovation (Digital Curation Unit-DCU)	GR	190,500	85,957	192,054	€ 1,554	0.8%
4	Bayerische Staatsbibliothek / Bavarian Library Consortium	DE	42,300	3,832	29,174	-€ 13,126	-31.0%
5	Questa.Soft Central and Eastern European Online Library	DE	34,500	-	26,101	-€ 8,399	-24.3%
6	CERL	UK	190,740	47,683	141,120	-€ 49,620	-26.0%
7	Onsiglio Nazionale delle Ricerche (ISTI- CNR)	IT	203,250	141,835	235,401	€ 32,151	15.8%
8	Debrecen Egyetem	HU	16,500	2,229	15,570	-€ 930	-5.6%
9	Fundación DIALNET	ES	39,600	7,879	38,388	-€ 1,212	-3.1%
10	Hrvatska Akademija Znanosti i Umjetnosti /Academy of Sciences & Arts	HRV	47,358	6,602	42,759	-€ 4,599	-9.7%
11	National & Copenhagen University Library	DK	46,500	20,144	38,469	-€ 8,031	-17.3%
12	Stichting Nederland Kennisland	NL	195,850	61,540	146,218	-€ 49,632	-25.3%
13	Koninklijke Nederlandse Akademie van Wetenschappen - (DANS & NIOD)	NL	146,500	25,359	99,661	-€ 46,839	-32.0%
14	KU - Leuven	BE	209,000	30,106	179,327	-€ 29,673	-14.2%
15	LIBER	NL	84,000	24,408	83,390	-€ 610	-0.7%
16	Istituto Luce-Cinecitta SRL	IT	33,000	18,827	29,517	-€ 3,483	-10.6%
17	MDR Partners	UK	199,175	-	48,582	-€ 150,593	-75.6%
18	Kansallisarkisto / National Archives of Finland	FIN	18,300	3,655	12,737	-€ 5,563	-30.4%
19	National Library of Wales	UK	152,487	4,987	128,311	-€ 24,176	-15.9%
20	Narodni Technicka Knihovna / National Technical Library	CZ	15,756	2,099	8,430	-€ 7,326	-46.5%
21	Stichting OAPEN / Open Access Publishing In European Networks	NL	45,132	5,655	13,958	-€ 31,174	-69.1%
22	Open Knowledge Foundation Deutschland	DE	160,900	53,950	161,201	€ 301	0.2%
23	The Open University	UK	283,400	190,558	287,949	€ 4,549	1.6%
24	Instytut Chemii Bioorganicznej Pan / Poznan Super Computing	PL	311,950	241,999	379,471	€ 67,521	21.6%
25	Trinity College Dublin	IRL	129,544	42,637	115,369	-€ 14,175	-10.9%
26	Stichting Katholieke Universiteit Brabant Universiteit Van Tilburg	NL	49,500	2,126	10,687	-€ 38,813	-78.4%
27	University College London	UK	175,557	33,242	116,010	-€ 59,547	-33.9%
28	The University of Edinburgh	UK	59,999	8,819	43,840	-€ 16,159	-26.9%
29	Goeteborgs Universitet / University of Gothenburg	SE	170,154	37,309	115,160	-€ 54,994	-32.3%
30	Universite Libre De Bruxelles / Free University of Brussels	BE	55,777	3,119	21,950	-€ 33,827	-60.6%
31	Universitaet Bielefeld (BASE)	DE	46,000	29,210	33,343	-€ 12,657	-27.5%
32	University of Patras	GR	16,500	6,139	15,792	-€ 708	-4.3%
33	Stichting VU-VUMC Amsterdam	NL	65,968	19,149	56,746	-€ 9,222	-14.0%
34	Els Jacobs Advies	NL	99,200	88,212	106,368	€ 7,168	7.2%
35	Semantika	SI	34,800	33,952	33,952	-€ 848	-2.4%
Total			4,749,583	1,808,655	4,271,457	-478,126	-10.1%

APPENDIX - Dissemination Activities Log

Event and Description	Location	Number of Participants	Month	Part-ner
8th International Digital Curation Conference, Presentation by Freire Nuno, Charles Valentine & Isaac Antoine, Europeana / The European Library - "Europeana and Research: Enabling the Use of Cultural Heritage Objects for Digital Humanities"	Amsterdam	25	1	1
Presentation involving Europeana Cloud	London, UK	160	1	1
Websites	http://www.techlib.cz/cs/2459-europeana-cloud/	55 000	1	20
Info about project to Czech library community using digital library system Kramerius	Czech Republic	50	1	20
Promoting the project through notifications placed on the university / library website	www.ulbsibiu.ro , bcu.ulbsibiu.ro		1	35
Spotlight on Europeana's biggest content provider	http://pro.europeana.eu/blog	5	1	1
Europeana Creative kick-off, 1 slide in Presentation at Europeana Creative kick-off, by Breandan Knowlton	Vienna	The Pro blog receives an average of 3500 page views per month	1	1
CERL Executive	Padua	50-75	2	6
Twitter @dialnet: some tweets about Europeana Cloud	@dialnet	15	2	9
Dialnet alerts		400,000 registered users; 60 partners	2	9
Summary on project website	http://www.dans.knaw.nl/en/content/categorieen/projecten/europeana-cloud-ecloud		2	13
Introductory blog post	http://niodbibliotheek.blogspot.ie/2013/03/europeana-cloud-europeana-voor.html		2	13
Tweets (WP1 participant)	@PetraLinks	450 followers	2	13
Blog post	http://pro.europeana.eu/web/europeana-cloud/blog/-/blogs/debut-presentation-for-europeana-research-coordinators-group		2	13, 15
Presentation at Digital History Course	Amsterdam	15	2	13
Introduction to eCloud	Centre for Advanced Welsh and Celtic Studies, Aberystwyth	30	2	19
Europeana Cloud kick-off meeting, Presentations at the Europeana Cloud kick-off meeting by Alastair Dunning, Chiara Latronico, & Jill Cousins	The Hague	75	2	1
Future Everything, Mention of Europeana Research in presentation by Jill Cousins at FutureEverything conference	Manchester		2	1
Goportis, 'Europeana: Creating a digital resource for researchers' by Jill Cousins.	Hanover		2	1
Introduction to eCloud	Rome	150	2	7

Event and Description	Location	Number of Participants	Month	Part-ner
The work of Europeana Cloud was covered in a presentation to Norwegian Research Libraries	Trondheim	20	2	15
CERL Directors	Vatican	15	3	6
Info about project to GreyNet and INIST (Open Grey database)		2	3	20
Emailing potential participants to invite to the eCloud Expert Forum #1: Case Studies	Online	38 invitations sent to non-eCloud members to participate	3	23
Organizing the 4th International Conference on Information Science and Information Literacy, Sibiu, Romania April 17-19, 2013	bcu.ulbsibiu.ro/conference	200	3	35
Paper "The Library of the Lucian Blaga University of Sibiu and the Europeana Libraries: a good end & a promising beginning", Dr. R. Volovici, I.Visa, E. Marginean, C. Volosciuc,	bcu.ulbsibiu.ro/conference	200	3	35
Publication of two news on dialnet website	http://dialnet.unirioja.es/	20.8 million visits/year to site	3,5	9
Promoting the e-Cloud project at all the events organized and supported by the City of Sibiu in 2013 under the name "Sibiu – Smart". The "Lucian Blaga" University from Sibiu is participating with 6 projects, the Library with the project: "the Digital Library of ULBS - Sibiu Smart"	bcu.ulbsibiu.ro/smart	5	3-12	35
Presentation involving Europeana Cloud	Zagreb, Croatia	75	4	1
Presentation at SEEDI (South-Eastern European Digitisation Initiative) Conference (V. Juričić: "Europeana Cloud And Hazu")	Zagreb, National and University Library	50	4	10
Presentation at the Conference 13. dani specijalnih i visokoškolskih knjižnica (13th Days of special and faculty libraries) V. Juričić: Knjižnica HAZU u EU projektu Europeana Cloud	Opatija	80	4	10
Presentation "Mapping the History of Logic". GlaMMaP Kickoff meeting.	VU University Amsterdam.	30	4	33
Presentation with proceedings publication	Paris	150	4	14
Blog: Europeana Cloud: Establishing the High Level Principles Blog by Maarten Zeinstra and Julia Fallon, published on the Europeana Cloud blog, which is aggregated into Europeana Professional blog	Pro.europeana.eu/blog	Pro Blog has 3,500 page views per month	5	1
eCloud mentioned in Blog: Extending the Europeana Licensing Framework by Paul Keller from Kennisland published on the Europeana Professional blog	Pro.europeana.eu/blog	Pro Blog has 3,500 page views per month	5	1
'Web as Literature event', 2 slides on eCloud in presentation by Antoine Isaac, Europeana, http://www.slideshare.net/antoineisaac/europeana-vision-web-as-literature-2013	British Library, London	100	5	1
Information about Europeana Cloud and Questa.Soft (C.E.E.O.L.)'s participation in the project	Email	300	5	5
Website: eCloud principles	http://www.kennisland.nl/filt	300 visits/day	5	12

Event and Description	Location	Number of Participants	Month	Part-ner
	er/events/europeana-cloud-principles-workshop-series			
Website: Europeana licensing framework	http://www.kennisland.nl/filter/projecten/europeana-licensing-framework	300 visits/day	5	12
Website: eCloud principles, series 2	http://www.kennisland.nl/filter/events/europeana-cloud-principles-workshop-series-2	300 visits/day	5	12
Presentation with proceedings publication	Paris	150	4	14
Blog: Establishing high-level principles	http://pro.europeana.eu/web/europeana-cloud/blog/-/blogs/1808803/maximized?p_p_auth=nRKZIP82		5	12
Blog: licensing framework	http://pro.europeana.eu/web/guest/pro-blog/-/blogs/1800365/maximized?p_p_auth=PTpXEn1E		5	12
Mentioned in presentation at OA monograph conference	London	290	5	21
eCloud Expert Forum 1: Case Studies	Dublin, Ireland	15 Expert participants (13 non-eCloud, 2 eCloud), 9 eCloud partners	5	23
Presentation on conference MUSEUM@DIGIT titled "The Possible Future of Europeana: The Cloud Solutions"	Budapest, Hungarian National Museum,	150	5	24
Participation in panel 'Research and digital heritage: what should the EU do?' at Cultural Heritage Creative Tools And Archives workshop	Copenhagen	40	5	13, 3
Europeana Cloud: Establishing the High Level Principles	http://pro.europeana.eu/web/europeana-cloud/blog	440 views / month	5	1
Extending the Europeana Licensing Framework	http://pro.europeana.eu/blog	The Pro blog receives an average of 3500 page views per month	5	1
Europeana Cloud Factsheet	pro.europeana.eu/web/europeana-cloud/communication-tools	Pro has around 14,000 visits per month	5	1
eCloud and WP3 introduction	London	30	5	14
WP3 introduction	Leuven	40	5	14
Invitations to Expert Forum (T1.4.3) – as we invited researchers, we also included information about eCloud.		25	5-8	29
Blog: Debut Presentation for Europeana Research Coordinators Group by Friedel Grant, published on the Europeana Cloud blog, which is aggregated into Europeana Professional blog	Pro.europeana.eu/blog	Pro Blog has 3,500 page views per month	6	13, 15
Formation of a joint eCloud-agINFRA ARIADNE Small Interest Group (SIG) on "Personas and scenarios of digital content for research"	http://wiki.ariadne-eu.org/index.php/Personas_and_scenarios_of_digital_content_for_research	20	6	2

Event and Description	Location	Number of Participants	Month	Part-ner
CERL Newsletter June 2013	http://www.cerl.org/publications/newsletter	600	6	6
meeting within Debrecen Univesity Library to inform other people about the project;	Debreceni Egyetem, Library	20	6	8
Ljetopis HAZU (HAZU annals), p.596-597, 2013	http://dizbi.hazu.hr/?vdoc=4618&page=0	300 printed copies plus online	6	10
Announcement on the Library Website	knjiznica.hazu.hr		6	10
Oxford University Digital Humanities Summer School, Presentation and informal discussions	Oxford	70	6	19
Presentation	BBC Cymru, Cardiff	100	6	19
Blog Article on eCloud Expert Forum	http://dh.tcd.ie/dh/?p=359	Approx 25 views per day	6	23
(Organizing) meeting with Axiom philosophy group, VU students and members of TU Eindhoven	VU University Amsterdam	10	6	33
Europe's Libraries Come Together This September	http://pro.europeana.eu/blog	The Pro blog receives an average of 3500 page views per month	6	1
JCDL 2013, Keynote presentation: 'Why Europeana' by Jill Cousins	Indianapolis		6	1
Presentation on conference MUSEUM@DIGIT titled "The Possible Future of Europeana: The Cloud Solutions"	Budapest, Hungarian National Museum,	150	6	24
Talk on Europeana Cloud at DARIAH-DE Expertworkshop on Interoperable Annotations for the Arts and Humanities	Berlin	30	6	22
WP3 introduction	Amsterdam	20	6	14
Website post, Swedish National Data Service	http://snd.gu.se/sv/projekt/internationella-projekt		7	29
Web: Europeana Cloud - Shared Infrastructure for European Cultural Content	http://www.techlib.cz/cs/2459-europeana-cloud/		8	20
Press release issued regarding Discover Research Dublin, in which details were given about exhibition from Sarah Kenderdine, which draws on Europeana and eCloud data	Ireland (National coverage)	Distributed to websites and newspapers around Ireland	8	23
Article in Irish Times (National newspaper) regarding Discover Research Dublin, and Sarah Kenderdine's eCloud exhibition	Ireland (National coverage)	Between 250,000 and 300,000 people	8	23
RTE 6News broadcast regarding Discover Research Dublin, which featured footage of Sarah Kenderdine's eCloud exhibition.	Ireland	Between 250,000 and 300,000 people	8	23
TCD Hosted Discover Research Dublin (EU Researchers Night), in which Prof. Sarah Kenderdine showcased her work which draws directly from Europeana	Dublin, Ireland	1200 (approx)	8	23
Europeana Cloud - Shared Infrastructure for European Cultural Content	http://pro.europeana.eu/web/europeana-cloud/blog	440 views / month	8	1
Workshop series on the principles of Europeana Cloud	http://pro.europeana.eu/web/europeana-cloud/blog	440 views / month	8	1
"Researchers' Night" – an annual event to disseminate the research and other activities of the university	Debreceni Egyetem, Library	41	8	8
Workshop Social Principles of Cloud	Amsterdam	22	8	12

Event and Description	Location	Number of Participants	Month	Part-ner
Conference Presentation (Keynote): GMW013.de Conference	Frankfurt	200	8	19
Conference presentation: International Conference on Theory and Practice of Digital Libraries (TPDL) 2013	Malta	40	8	19
Talk on Europeana Cloud at WikiSym + OpenSym 2013	Hong Kong	98	8	22
Presentation with proceedings publication	Graz	100	8	14
WP3 introduction	Leuven	40	8	14
Determining the Social Principles of Europeana Cloud	http://pro.europeana.eu/web/europeana-cloud/blog	440 views / month	9	1
Hearing what project coordinators have to say	http://pro.europeana.eu/blog	The Pro blog receives an average of 3500 page views per month	9	1
Discussion of Europeana Research in 'Europeana - Impact & Ecosystem' by Jill Cousins	Leuven		9	1
Internet Librarian Conference, Presentation on Europeana Cloud at Internet Librarian Conference 2013	London	75	9	1
Presentation of Europeana Cloud in the working group "Kulturelles Erbe"	Berlin, Germany	35	9	22
Workshop Economic Principles of Cloud	Edinburgh	25	9	12
Workshop Legal Principles of Cloud	Edinburgh	25	9	12
Blog post, WP5 workshops	http://libraryblogs.is.ed.ac.uk/blog/2013/10/16/1127/		9	28
Web: Determining the Social Principles of Europeana Cloud	http://www.techlib.cz/cs/2459-europeana-cloud/		9	20
Tweet made via @DHTCD following WP5 Workshop in Edinburgh "Using illustrations to visualise discussions - very helpful tool @ #Europeana's #eCloud project workshop in Edinburgh http://tinyurl.com/mwmmrwtw "	@DHTCD	350 followers	9	23
The work of Europeana Cloud was covered in a presentation to FREDOC	Aussois, France	20	9	15
Web: Legal and economic requirements for Europeana Cloud	http://www.techlib.cz/cs/2459-europeana-cloud/		10	20
Discussion meeting with JISC (UK) in context of Shared Repository Services	London	10	10	23
Tweet made during Expert Forum #2 in Amsterdam using hashtags #Europeana #europeana_cloud #Allezculture (also #Amsterdam and #NIOD)	@DHTCD	350 followers	10	23
Blog article on the "Europeana Treasure Hunt" on Europeana website	Online	17 pageviews	10	23
Advocacy for eCloud to Tilburg School of Humanities				
Conference presentation "Computer Tools for the History of Philosophy". Idealism, Realism, Empiricism. Philosophical debates around 1800. Utrecht University, Utrecht, November 29-30, 2013 (with A. Betti and P. van Wierst).	Utrecht University	20	10	33
Debating legal and economic requirements for Europeana Cloud	http://pro.europeana.eu/web/europeana-cloud/blog	440 views / month	10	1

Event and Description	Location	Number of Participants	Month	Part-ner
What will Europeana aggregation look like in 2020?	http://pro.europeana.eu/blog	The Pro blog receives an average of 3500 page views per month	10	1
Europeana and Researchers		20	10	1
LoCloud Plenary , Introduction to eCloud	London	50	10	1
Europeana Cloud newsletter 1	Mailing list	42	10	15
Conference Keynote: Netherlands eHumanities Symposium	Amsterdam	60	10	19
Conference presentation: DARIAH France Conference	France	100	10	19
WP3 progress	Athens	40	10	14
Presentation about the eCloud project on conference "Academic Library: Infrastructure - University - Environment".	Gliwice, Poland, University of Technology	100	10	24
The work of Europeana Cloud was covered in a presentation at the International Research Libraries Conference	Mexico City	30	10	15
Exhibition on eCloud at the Academy Library	Zagreb, HAZU	685	10-12	10
Local cultural heritage in the cloud;	http://pro.europeana.eu/blog	The Pro blog receives an average of 3500 page views per month	11	1
Europeana Network AGM, Presentations at Europeana Network AGM by Alastair Dunning	Rotterdam	150	11	1
Tweet from @DHTCD account to promote Web Survey "Have you heard of Europeana?"	@DHTCD	350 followers	11	23
Conference presentation "Creating a Digital History of Ideas". DHLU Symposium 2013: Reading Historical Sources in the Digital Age, University of Luxembourg, Luxembourg, December 5-6, 2013. (With A. Betti)	University of Luxembourg	50	11	33
Register now for Europeana Cloud Plenary	http://pro.europeana.eu/web/europeana-cloud/blog	440 views / month	12	1
Europeana Cloud newsletter 2	Mailing list	42	12	1
Blog entry on expert forum	http://pro.europeana.eu/web/europeana-cloud/blog/-/blogs/researchers-tell-us-how-to-turn-europeana-into-research-tool	473 views on day 1	12	13
Scientific paper "GlamMap: visualizing library metadata" (with A. Betti, D. Gerrits, B. Speckmann). Paper accepted for VALA2014, 3-6 Februari 2014, published in conference proceedings.			12	33
Blog post on D3.1	http://pro.europeana.eu/pro-blog/-/blogs/2073916	440 views / month	12	22
Tweets - numerous tweets promoting all of the blogs mentioned above, plus key Cloud-related news, e.g. https://twitter.com/Europeanaeu/status/353074388058374144	@Europeanaeu	Over 11,000 followers	Y1	1
Tweets from Europeana Cloud account for all the above	@europeana_cloud	335 followers	Y1	1
Tweets from Europeana main account for all	@europeanaeu	14,000 followers	Y1	1

Event and Description	Location	Number of Participants	Month	Part-ner
of the above, and retweets of Europeana Cloud tweets				
Presentation	Trier, Germany	50	13	19
Project presentations at internal meetings	Gothenburg, Sweden	30	13+16	29
Monday Meetings in the Academy Library	Zagreb, Croatia	70	13+14+16+18	10
Europeana Cloud Plenary	Athens, Greece		14	12
Participation in the European Data Forum 2014 exhibition, presentation of the eCloud in the exhibition through the Agro-Know booth	Athens, Greece	620	14	2
CERL Meeting of the Coordinating Committee	Edinburgh, Scotland	20	14	6
Text in Ljetopis HAZU (HAZU annals) 2014 published in print (March 2014) 593-94		300	14	10
Europeana Cloud Plenary	Athens, Greece	60	14	32
Report from Europeana Cloud Plenary meeting	Available in NTK digital repository http://repozitar.techlib.cz/re-cord/732/files/idr-732_1.pdf	59 500		20
European Data Forum 2014 / http://2014.data-forum.eu	Athens, Greece	620	14	22
Preparation of paper for DL2014 conference	London, United Kingdom		14	24
Paper presentation at the CAA-GR 2014 Conference (in Greek)	Crete, Greece	100	14	3
Emails to cultural heritage projects requesting information on API use	Online	3	14+15+16	25
The Fifth International Conference in Romania on "Information Science and Information Literacy" - Sibiu - April 2014	bcu.ulbsibiu.ro/conference	200	15	
CERL meeting of the Directors	Paris, France	15	15	6
Presentation about the project main aims and progress made so far at Networkshop 2014 (Pécs, Hungary) / http://nws.niif.hu/ncd2014/	University of Pécs, Hungary	200	15	8
Presentation at the 4th Festival of Croatian Digitization Projects, Europeana Day conference (V. Juričić: "HAZU and eCloud)	Zagreb, Croatia	100	15	10
Presentation	St. Andrews, Scotland	100	15	19
Presentation	Wales, United Kingdom	100	15	19
Emails to Cultural Heritage Institutions requesting information in the context of the API Usage Task	Online	4	15	25
Coding Da Vinci 2014 / http://codingdavinci.de	Berlin, Germany	200	15+18	22
Participation in the ARIADNE foundation General Assembly, presentation of the eCloud project and the related work activities	Athens, Greece	10	16	2
Participation in the EdReNe 11th Conference	Athens, Greece	24	16	2
Communication in Second Dialnet plenary meeting	Logroño. University of La Rioja, Spain		16	9
Presentation at Nedimah workshop http://www.nedimah.eu/call-for-papers/downstream-digital-humanities-digital-methods-and-scholarly-communications-ecosystem	Zadar, Croatia	15	16	15
Presentation	Wales, United Kingdom	100	16	19
Discussion with Head Office of Bavarian Library Network	München, Germany	3	17	4

Event and Description	Location	Number of Participants	Month	Part-ner
Participation in the LIBER conference of heads of European libraries in Riga	Riga, Latvia	25	17	5
Article in 027.7	Mention of the Europeana Cloud project http://www.0277.ch		17	6
Promotion of e-cloud at LERU seminar on open scholarship on June 6: http://www.ehumanities.nl/susan-reilly-royal-dutch-library-kb-liber/	Brussels, Belgium	100	17	15
Presentation of the project objectives	Rome, Italy	40	17	16
Presentation	Cologne, Germany	40	17	19
Attendance at a conference with informal discussions about eCloud	Helsinki, Finland	300	17	23
Preparation of paper for INFOBAZY 2014 conference (to be presented in September 2014)	Gdańsk, Poland.		17	24
Presentation to inform an expert group of information architects and IT specialists about the main objectives of the eCloud project and to compare the eCloud research-infrastructure (RI) with the EUDAT RI on a number of characteristics.	Utrecht, Netherlands	12	17	26
BODDy 2014 / http://berlin.opendataday.de/	Berlin, Germany	100	17	22
Website - migration the content to new version of NTK webpages	http://www.techlib.cz/cs/2983-europeana-cloud	55 000		20
Website- Europeana Cloud Business Model Workshop	http://www.techlib.cz/cs/2983-europeana-cloud	55 000		20
Promotion at Reshaping the Research Library Workshop & LIBER Annual Conference	Riga, Latvia	70.450	17+18	15
Emails to researchers inviting participation in Skype interviews in context of API Usage Task	Online	19	17+18	25
Skype interviews with researchers, curators at CHIs, developers and 'data evangelists' in context of API task, during which outline of Europeana Cloud / Research was given	Skype calls	9	17+18	25
Athena Research And Innovation Centre - presentation of work within WP1 in a poster at DH2014	Lausanne, Switzerland		18	3
CERL Newsletter	Online	600	18	6
Europeana Cloud – 3 Strategic Workshops	The Hague, Netherlands	12	18	12
Workshop	Lausanne, Switzerland	50	18	19
OK Festival 2014 / http://2014.okfestival.org	Berlin, Germany	600	18	22
Preparation of a workshop of the twelve leading academic publishers from PL, EE, HU, BG, RO, HR, RS, BiH to take place in Spring 2015		12	18+19	5
Advocating a project of evaluation, survey and development of a forgotten collection of Judaica in Sofia (BG) comprising books and documents from 5 centuries and appr. 12.000 objects as a long term project that should result in having that content digitized and integrated into Europeana Cloud		37	18+19	5
Athena Research And Innovation Centre - Discussion of work on Europeana Cloud with the DARIAH community at the annual	Rome, Italy		20	3

Event and Description	Location	Number of Participants	Month	Part-ner
DARIAH Consortium Meeting				
iKNOW paper	Graz, Austria,	200	20	14
Paper at 14th International Conference on Knowledge Technologies and Data-driven Business / http://i-know.tugraz.at/	Graz, Austria	450	20	22
Writing (as first author) the paper "Studying the history of philosophical ideas: supporting research discovery, navigation, and awareness". Accepted for Iknow 2014, 14th international conference on Knowledge Technologies and Data-driven business, 16-19 September, Graz 2014.	Graz, Austria		20	33
Athena Research And Innovation Centre - Paper presentation of Europeana Cloud work at the EuroMED 2014 Conference	Limassol, Cyprus		22	3
Twitter	@MRL57 and @cerl_org	460 followers		6
CERL website	http://www.cerl.org/collaboration/projects			6
Twitter @dialnet: some tweets about Europeana Cloud	Online	4.400 followers		9
Publication information on Dialnet website / http://dialnet.unirioja.es/	20.8 million visits/year 69.5 million page views/year			9
Announcement on the Ministry of Culture web page for aggregation	knjiznica.hazu.hr			10
Regular progress to internal staff teams	Edinburgh, Scotland	30		28
Info about project to Czech library community using digital library system Kramerius	Czech Republic	50		20
Presentations of data archiving	Sweden	180		29
Presentation at the website of the Swedish National Data Service	http://snd.gu.se/sv/projekt/internationella-projekt	25		29
Blogpost on Contributing Back from Europeana Research Platform to Europeana (prepared for Europeana Cloud Blog)			24	22
Lecture at HTW Berlin	Berlin (DE)	c 30	26	22
Blogpost on Europeana Research Blog	http://research.europeana.eu/blogpost/population-displacement-as-a-result-of-conflict-in-the-21st-century		28	25
Conference: Ensuring Long-Term Data Preservation, and Adding Value to Scientific and Technical Data (EUMETSAT)	Darmstadt (D)	c 50	28	13
IDCC15 - International Digital Curation Conference: a 4-day event for those working in Digital Curation	London, UK	c 500	29	25
KCL "Blue Skies Above, Solid Ground Below" Early-stage Career Digital Humanities Conference	London, UK	c100		25
CERL seminar: Large-scale digital infrastructures and their users	The Hague (NL)	c 60	29	13
INFORUM 2015: 21st annual conference on professional information resources	Prague (CR)	c 200	29	1
Article on API work in IDCC Journal			31	25
Presentation of the eCloud project and services at the General Assembly of the Europeana Fashion consortium	Antwerp (BE)	c 30	31-32	16

Event and Description	Location	Number of Participants	Month	Part-ner
Presentation of the eCloud project and Europeana Research at research seminar in Archives, Libraries, Museums	Uppsala (SW)	12	33	29
CARARA 2 workshop: Content licensing	Athens (GR)	c 50	33	13
Poast Presentation at 16th International Society for Music Information Retrieval Conference (ISMIR)	Malaga (SP)	c 45	33	13
"Poster at ISMIR: Musicology of Early Music with Europeana Tools and Services Erik Duval, Marnix van Berchum, Anja Jentzsch, Gonzalo Alberto Parra Chico, Andreas Drakos"	Malaga (SP)	c 45	33	2,13,22,36
CARARE workshop: data partner services for DSI-project	Brussels (B)	c 35	34	13
Blogpost on Agroknow blog and disseminated through AIMS to community	http://blog.agroknow.com/?p=3573			2
Social media promotion through Agroknow Facebook and Twitter accounts				2
Workshop at AGRERI premises	Athens (GR)	c 10	34	2
Presentation of the eCloud project and Europeana Research to researchers of the history of education	Uppsala (SW) and online	22	34	29
Article on ACM Transactions on Intelligent Systems and Technology	http://dx.doi.org/10.1145/2766459			7
Workshop meeting with the Finnish national aggregator (National Library of Finland)	Helsinki (FI)	6	35	18
Information letter to the Danish Europeana Network about E-cloud deliveries and results	Copenhagen (DK)	35	36	11
Lecture at German Library Congress on rights and license normalization in OAI metadata	Leipzig (D)			31
Workshop: Innovative research questions and tools, working with the Europeana Newspapers Collection	Amsterdam (NL)	25	36	13
Blogpost on Named Entity Recognition for Newspaper Archive (prepared for Europeana Cloud Blog)			36	22
Blogpost on Topic Mining for Newspaper Archive (prepared for Europeana Cloud Blog)			36	22
Poster developed for WP1 work at DH2016 in July 2016 (accepted)	Krakow			25
Presentation in round table discussion CAA2016	Oslo	20	38	3
Tweets - numerous tweets promoting all of the blogs mentioned above, plus key Cloud-related news	@Europeanaeu	25,317 followers	on-going	1
Tweets from Europeana Cloud account for all the above	@europeana_cloud	895 followers	On-going	1
Liason meetings with SURFnet and Wageningen Research University	The Netherlands	5	On-going	2
Tweets (WP4 Leader)	@MRL_57	151 followers	on-going	6
Tweets (CERL)	@cerl_org	69 followers	on-going	6
Facebook posts	http://www.facebook.com/groups/99706868239/	44 members	on-going	6
LinkedIn post	http://www.linkedin.com/gr	53 members	on-	6

Event and Description	Location	Number of Participants	Month	Part-ner
	oups?gid=1770657&trk=myg_ugrp_ovr		going	
Digital Display slides for eCloud project (part of looping presentation on display screens of all projects housed within Trinity Long Room Hub)		Overall approx 200 per week	on-going	23
Liaison with LIBER SII working group			on-going	26