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D2.1 User requirements and IPR implications for User Contributed Content in Europeana

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1. Introduction and context

This deliverable report on all the work done until now in the context of Task 2.1 Operationalise tools to enable end user contributions to Europeana content. It also marks a milestone, namely MS7 User Requirements.

Specifically, it aims to:
- describe scenarios of contextualisation and contribution by users (Section 2.)
- summarise Europeana's efforts in this area (Section 3.)
- report on the rationale behind the Digital Storytelling Platform will support contextualisation by end-users (Section 4)
- define policy regarding IPR of content and metadata contributed by users (Section 5)

2. Context: user engagement and the Europeana strategic plan

Europeana was established in 2008 as Europe's digital library, museum, archive and gallery. From providing access to 3 million digitised objects and 1,000 partners it now has 20 million objects and 2,200 contributing organisations across Europe in 27 EU Member States. In September 2012, Europeana made the descriptive metadata for 20 million objects available on CC0 licences – allowing free creative re-use of that data.

This represents a major success for the programme and has involved close collaboration with cultural heritage organisations across Europe. It also represents a significant cultural shift for the organisations involved and means that Europe now leads other global regions in its approach to open data for cultural heritage. Over the next few years, Europeana's focus will move from being a repository of digital objects toward developing added-value outcomes – exploiting the concrete opportunities that exist to promote learning, creativity, innovation and growth.

By greatly broadening access to the reservoir of works and knowledge that these digital collections represent, Europeana will also lay the foundations for future opportunities to create and innovate that we can only guess at today. In collaboration with partners across the Member States, Europeana will aim to achieve its goals through four main strategic activities:

1. Aggregating content to build an open, trusted source on European heritage.
2. Facilitating knowledge transfer, innovation and advocacy in the cultural heritage sector.
3. Distributing heritage content to users wherever they are, whenever they wish to use it.
4. Engaging users in new ways of participating in their cultural heritage.

The resulting outputs will be measured as set out in Europeana's strategic plan[1].

The work in Europeana Awareness WP2 is closely aligned with the 4th goal.

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[1] Europeana Strategic Plan 2011-2015, March 2012

Typically, the objects contributed to Europeana by data providers have been collected over many decades by publicly funded institutions, and are indexed by expert cataloguers and curators following often elaborate and standardized cataloguing frameworks and controlled vocabularies. Essentially the content contributed by data providers to Europeana can be qualified as both authentic and authoritative. However, the extent of Europeana's success will depend on the kinds of creative interactions with the authentic and authoritative content the service facilitates. As stated by Clay Shirky, media scholar, "public reuse produces a kind of value that doesn't just come from publication. It comes from republication and reuse." Access to the growing corpus of digitized objects is a precondition that will unleash the full potential of Europeana. It is vital to transform the Europeana service from a being relatively passive, searchable repository into a dynamic, interactive service, where users will come to realise that they will be discovering a wide variety of content which interests them as they return to the evolving content time and time again. To this end, Europeana already incorporated several mechanisms, such a social tagging and cross-overs to social media platforms such as Facebook and Twitter. In the near future, Europeana will also invite its users to contribute their own content and will link to information from outside sources such as Wikipedia.

Effectively managed, content and metadata contributed by end users constitute critical contributions that are highly valuable to the European cultural record:
- Contextualisation. Content that can complement, enrich and support interpretation of the compilation of authentic and authoritative content currently being aggregated for, and by Europeana. User contributions can provide access to the real-life experiences, and articulates the voices of ordinary people within the overall context of European history, and contemporary life
- Curation. Users can make unexpected connections between records and create thematic groupings
- Multilinguality. Contributions by end users enhance the multilinguality of the content by encouraging them to tag the content folksonomically in their natural language. From the perspective of students, researchers and learners of all kinds, these kinds of personalized content will be highly valuable as well greatly augmenting the Europeana's content itself as it explores innovative channels for re-use.

Below, we report on the activities in the Europeana Awareness Project. Here, we focus on the activities related to the establishment of the Digital Storytelling Platform that will add a layer of contextual information to the assets available on Europeana.

It is, however, important to view the delivery of the Digital Storytelling Platform in a wider context of user participation in the cultural heritage domain. This is the aim of the following Section.

2. Scenarios for contextualisation and contributions by users

This Section provides a typology of Crowdsourcing in the cultural heritage domain, based on an empirical study of a substantial amount of projects initiated by relevant cultural heritage institutions. We show the path towards a more open, connected and smart cultural heritage: open (the data is open, shared and accessible), connected (the use of linked data allows for interoperable infrastructures, with users and providers getting more and more connected),, and smart (the use of knowledge and web technologies allows us to provide interesting data to the right users, in the right context, anytime, anywhere – both with involved users/consumers and providers).

2.1 Cognitive Surplus

In his recent book *Cognitive Surplus: Creativity and Generosity in a Connected Age* Clay Shirky observes how the Internet changes the way we spend our spare time [39]. The so-called "cognitive surplus" that used to be spent on passive activities (notably watching television) can now be used in a profoundly different way, for new kinds of creativity and problem-solving. He writes, "the wiring of humanity lets us treat free time as a shared global resource, and lets us design new kinds of **participation and sharing** that can take advantage of that resource." Shirky offers Wikipedia as a compelling example. After calculating that creating Wikipedia as it stands today has taken one hundred million hours of cumulative thought, he juxtaposes this to the astounding 200 billion hours people watch TV in the US alone. 200 billion hours would amount to two thousand Wikipedia projects-worth of free time, annually. The statistics provided by Lasar [24] confirm once again this ever-growing reality, e.g. 35 hours of videos are uploaded to YouTube every minute, and 38,400 photos are uploaded on Flickr every hour, and in total 35% of Internet users have contributed a piece of user-generated content at least once.

The very design of the Internet makes these interactions possible. The core design principle underlying the Web's usefulness and growth is openness and universality. In his recent contribution to the debate on net-neutrality, Tim Berners-Lee notes how social-networking sites are creating silos of information that are only accessible under the conditions set by the entity that manages these sites [5]. According to him, locking up information will eventually hinder innovation. He observes, "when you make a link, you can link to anything. That means people must be able to put anything on the Web, no matter what computer they have, software they use, or human language they speak and regardless of whether they have a wired or wireless connection." All interactions and conversations on the Web rely on the principle of universality. As a major implication this leads to a "**democratization" of innovation**. Williamson observes how this will empower "millions of people who hitherto had no means of connecting, networking and sharing their unique insights and knowledge" [47]. It needs to be stressed here that, certainly in the heritage domain, data is oftentimes locked up in silos. Europeana leads the way, as it published data under open conditions, but a lot of work has to be done still.

With the mass uptake of blogging and media sharing sites in the early 2000s, the social dynamic of the Web manifested itself more prominently. Shirky notes how the concept of

cyberspace, where computers and networks are regarded as somewhat alien, is now disappearing [26]: "Our social media tools aren't an alternative to real life, they are part of it", he notes, adding that these tools are increasingly the coordinating tools for events in the physical world. Futurist Mark Pesce observes how the **human instinct of sharing** is amplified as the concept of distance evaporates. "The instinctual sharing behavior of humans remains as strong as ever before, but has extended to encompass communities beyond those within range of our voices" [36]. The egalitarian principles that form the foundation of the Internet, combined with our social instinct and explosion of access points to the network has resulted in an age of hyperconnectivity [11, 36].

Contributing masses tirelessly fill the Internet space with their content, e.g. blogs, comments, reviews, tags and multimedia. The agglomeration of individual contributions through online collaboration is having an important social and economic impact [44]. The term *outsourcing* - finding labor elsewhere - gets redefined on the Web as the *crowdsourcing phenomenon*: "the act of a company or institution taking a function once performed by employees and outsourcing it to an undefined (and generally large) network of people in the form of an open call" [16]. Various organizations are currently exploring ways of engaging the wisdom of the crowd for *creating and editing of content*, *solving problems* or the *organization of knowledge* structures.

In the heritage domain, Galleries, Libraries, Archives and Museums (abbreviated hereafter to 'GLAMs') around the globe are beginning to explore the potential of crowdsourcing. The mass digitisation of analogue holdings is key to heritage organizations becoming an integral part of the Web. In the case of fragile carriers (magnetic tapes and chemical film for instance) digitisation is a means to ensure long-term **preservation** of the information. Digitisation is also a precondition for creating **new access routes** to collections. Once digital and once part of an open network, cultural artifacts can be shared, recommended, remixed, mashed, embedded and cited. In this way attention can be brought to even the most obscure artifacts.

GLAMs and their users are now beginning to inhabit the same, shared information space. New services are being launched that explore this fundamentally new paradigm of participation in the GLAM domain. Participation can have a thorough impact on the workflows of heritage institutions, for instance, by inviting users to assist in the selection, cataloguing, contextualisation, and curation of collections [23]. These activities can be carried out by end-users remotely and can reduce operational costs. These new forms of usage of collections (beyond access) can also lead to a deeper level of involvement with the collections [15].

As funding of many heritage organizations is based on their societal impact, these initiatives will also be of growing importance from a managerial/PR perspective. In this paper, we focus on the potential impact of crowdsourcing, as one of the models in which participation manifests itself.

To study the potential impact, it is important to:
- Classify the different types of crowdsourcing in the GLAM domain (Sections 2.2 and 2.3).
- See where crowdsourcing can have an impact in the key areas of the so-called Digital Content Life Cycle around which many GLAMs are organized (Section 2,2).
- Identify the mutual benefits for all stakeholders (opportunities) and identify potential challenges as a starting point for future work (Section 2.4).

It is important to undertake these actions, as this new paradigm of participation will have a lasting impact on institutional practice, on the visibility, and hence on sustaining the long-term relevance of GLAMs. Studying the opportunities and challenges will help build a more open, connected and smart cultural heritage.

2.2. Crowdsourcing and impact on workflows at GLAMs

In this section, we classify the different types of crowdsourcing initiatives that are currently undertaken in the cultural heritage domain. Specifically, we look at initiatives that are coordinated by GLAMs. We map the different types against a model that describes the different stages of managing digital content projects.

2.2.1 Classifying the Domain

Several authors have been working on a classification of crowdsourcing projects. For instance, the "Crowdsourcing landscape" by Dawson [16] organizes the different crowdsourcing sites in 15 main categories. It illustrates the breadth of crowdsourcing initiatives, including activities related to clothing design, journalism, stock-picking, translation and fact checking.
More closely linked to the topic of this paper, the recent study by Bonney in *Public Participation in Scientific Research* (PPCR) lists three major models of participation within the domain of research [8]. It is also suitable as a categorisation of projects in the cultural heritage domain:

Contributory projects - designed by professionals, where members of the public contribute data;
Collaborative projects - designed by professionals, where members of the public contribute and analyze data, help in refining project design, or disseminate findings;
Co-created projects - designed by professionals, where members of the public are working together, and some of those public participants are actively involved in (all) steps of a process.

The level of the required skillset of users, and the interaction with the 'host' organisation increases; co-creation will require more engagement than adding a 'tag' as part of a contributory project. In effect, contributory projects will be able to attract a broader community, as the skillset is less specific.
Nina Simon, museum consultant and author of *The Participatory Museum* bases her discussion of "Models for Participation" in the museum domain on the work by PPCR [40]. She added a fourth category to the three listed above, namely *hosted projects*, "in which the institution turns over a portion of its facilities and/or resources to present programs developed and implemented by public groups or casual visitors". This additional category is a conceptual departure from the PPCR model, as it relates to the level of institutional involvement (cf. Section 2.2) rather than the required skillset.

Classifications like these are helpful in studying the differences between project types from the level of involvement. In our research we take a slightly different vantage point. As we would like to study the impact of crowdsourcing on workflows, we aim to classify the different types according to their **tangible outcomes.** Also, we wanted to create a classification that encompasses working practices at all GLAM domains. This classification is important in

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order to study the potential impact of crowdsourcing on current working practices in a systematic way. It will help identifying key challenges in operationalizing the concept of participatory GLAMs. It will help to define a research agenda to address these challenges.

Table 1. Classification of Crowdsourcing Initiatives

Crowdsourcing type	Short definition
Correction and Transcription Tasks	Inviting users to correct and/or transcribe outputs of digitisation processes.
Contextualisation	Adding contextual knowledge to objects, e.g. by telling stories or writing articles/wiki pages with contextual data.
Complementing Collection	Active pursuit of additional objects to be included in a (Web)exhibit or collection.
Classification	Gathering descriptive metadata related to objects in a collection. Social tagging is a well-known example.
Co-curation	Using inspiration/expertise of non-professional curators to create (Web)exhibits.
Crowdfunding	Collective cooperation of people who pool their money and other resources together to support efforts initiated by others.

We have been gathering examples of crowdsourcing initiatives across the globe. For instance, by studying the proceedings of leading conferences in this area (e.g. Museums and the Web, FIAT/IFTA, AMIA, Museumnext), interviews with practitioners (contacted through the GLAM-WIKI and Europeana Communities, and the Museum-L mailing list), and tracking a number of significant blogs. In studying the motivations and design of various projects and initiatives, the following classification of six main types of crowdsourcing initiatives emerges (Table 1).
As we will examine in Section 4, each type will present different challenges that will impact the success of the crowdsourcing initiative.

2.2.2 Grassroots Initiatives

Although it falls outside of the scope of this deliverable, it needs to be acknowledged that crowdsourcing initiatives in the GLAM domain can also be executed without institutions being in the lead. A number of coordinated initiatives by groups of users autonomously are currently being undertaken. To name just three examples as illustrations:
- Open Plaques[2] - an initiative that aims to gather data about all the commemorative "plaques" across the globe.
- The Johnny Cash Project[3] - a collective music video, fashioned from drawings done by users from across the web.
- The International Amateur Scanning League - an experiment in crowd-sourced digitisation to help government and other institutions make their archives more widely available [28].

As the presence of GLAMs on the social web matures, we will begin to see crossovers between community- and organization-driven projects. To some degree, the collaboration between the Wikipedia community and the British Museum (cf. Section 3.2) is moving into this uncharted territory.

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[2] http://openplaques.org
[3] http://www.thejohnnycashproject.com

We would like to refer the reader to the research of Melissa Terras [45] that provides an in-depth discussion of grassroots initiatives in the heritage domain, zooming in on amateur digitisation. The seminal works of Yochai Benkler [4] and James Boyle [9] provide thorough analyses of the 'bigger picture' behind collaborative projects, investigating how the Internet is reshaping the current economic, social and political structures.

2.2.3 Crowdsourcing and the Digital Content Life Cycle

In the literature, we found models that define core activities of heritage organizations. These models are used in practice to plan curation and preservation activities for organizations to different levels of granularity. They are useful for heritage organizations as planning tools to organize their resources, and to support management decisions. Notably, the Athena Research Centre [17] examined the model created by the UK-based Digital Curation Centre (DCC). The DCC lifecycle model represents the complex processes found in digital curation in a comprehensive and generic model that can be applied to any discipline. It is widely adopted across the heritage domain. An alternative model proposed by [31] looks at activities undertaken by scholars throughout the research process. It identifies four core activities ("Discover," "Gather," "Create," and "Share") that can also be applied to other domains.

For this deliverable, we use the Digital Content Life Cycle model from the National Library of New Zealand [27]. It is a simplified model, which includes the main activities present in the more extensive and detailed DCC model. It encapsulates the main activities carried out by heritage organizations, through selecting to creating, managing, discovering, using and reusing (including licensing) as well as preservation. The model is cyclical, but it needs to be noted that in daily practice, the order can often differ. For instance, creating descriptions can be done in several stages.
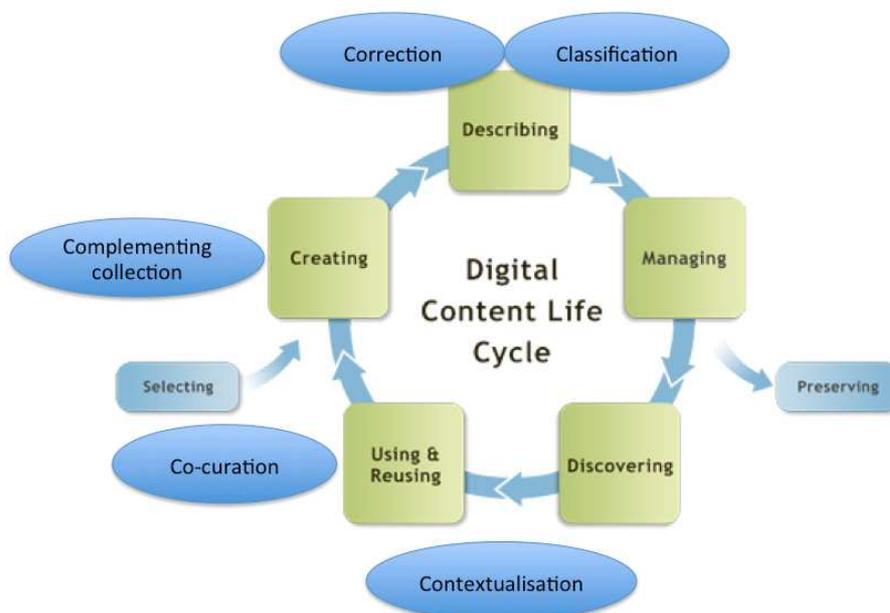

Figure 1. Digital Content Life Cycle and Crowdsourcing

When we look at the relationship between the stages in the Digital Content Life Cycle model and the types of crowdsourcing, the picture emerges that is shown in Figure 1. Crowdsourcing can play a role in all stages of the model: from selection and creation of content, to describing, discovery and use. This clearly underlines the enormous potential of these efforts. The management of the collection itself (including the backup and maintenance strategies of storage facilities) is, at least currently[4], the primary responsibility of professionals; in all other stages of the model, the added value of starting a dialogue between amateurs and professionals is currently being explored.

Five of the six crowdsourcing types we identified can be linked to the stages of the model Figure 1. The sixth one, related to funding, can play a role in each of the stages. Most Crowdfunding initiatives today (cf. Section 3.6) are primarily focusing on projects dealing with the stages 'Using and Reusing' and 'Creating'.

2.2.4 Knowledge Transfer and Organizational Change

In Section 4. we will explore some of the major challenges related to the successful uptake of crowdsourcing. Here, we will show how current advances in research on scientific areas such as knowledge engineering, human-computer interaction and communication sciences can help to address these. The importance of knowledge exchange between the research domain and the operational services cannot be underestimated [35]. Both stakeholders should invest ample resources in learning each other's vocabulary, working methods and embrace opportunities for joint, multidisciplinary projects[5]. This forms the basis for the establishment of an ecosystem for applied research and ongoing innovation. This activity of knowledge transfer can be regarded as an additional dimension to the Digital Content Life Cycle model.

2.3. Typology of crowdsourcing

In this section, we study the different types of crowdsourcing listed in Table 1 in more detail.

2.3.1 Correction and Transcription

A typical example of crowdsourcing corrections is the Australian Newspaper initiative from the National Library of Australia. The Library is overseeing the mass digitisation of 830,000 newspaper pages dating from 1803. The newspaper pages are converted into electronically translated, searchable text through the use of Optical Character Recognition (OCR). Using this technology for historical newspapers delivers poor and inaccurate results. The library launched the first service in the world that allows users to correct the OCR'ed text (Figure 2). Without too much active promotion, a subsequent call for user participation in 2008 was greeted with great enthusiasm by end-users. The administrators note that by "October 2009 over 6000 members of the public had already enhanced the data significantly by correcting over 7 million lines of text in 320,000 articles, and adding 200,000 tags and 4,600 comments

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[4] Note we decided not take peer to peer hosting of files into account. We did not find examples of GLAMs that choose to host their content on peer to peer networks.
[5] For Europeana, not being a heritage organisation itself, this poses additional challenges that need to be taken into account at the initiative develops their online offerings further.

to articles. One exceptional user has corrected over 285,000 lines of text in over 7,000 articles." [20].

Figure 2. Australian Newspaper

Similarly, the project Transcribe Bentham[6] based at University College London (UCL) is working with a range of end-users to complete the transcription of 12,400 of manuscripts of the philosopher and jurist Jeremy Bentham [30]. In October 2010, a consortium including the National Maritime Museum and the Citizen Science Alliance launched its initiative "Old Weather"[7], that aims to collect data on temperatures from historical ship logs. These detailed logs were kept by ships of the British Royal Navy, that sailed around the world from 1905 to 1929. Sailors wrote down temperature, wind and other climate data every four hours. Users perform a task comparable to the Australian Newspapers project (Figure 3). The speed in which this work is carried out is just stunning. By December 2010, 202,904 pages have been transcribed, 25% of the total amount. With this data, scientists will be able to study how oceans transport heat and water around the globe and try to determine how this affects temperature. The Old Weather project is the latest citizen-based science project by the Citizen Science Alliance community, which has enrolled 349,000 volunteers in to process images of stars, galaxies and other astronomical formations [32].

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[6] http://www.ucl.ac.uk/transcribe-bentham
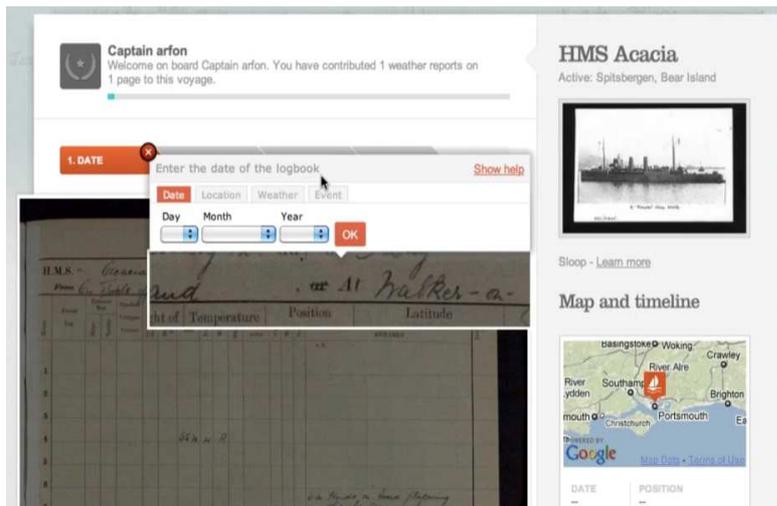[7] http://www.oldweather.org

Figure 3. Old Weather: transcribing ship logs

A fourth example of this type of crowdsourcing is New York Public Library's Map Rectifier Project (Figure 4). This is an online environment in which the public aligns ("rectifies") historical maps from the NYPL's collections to match today's precise maps [19].
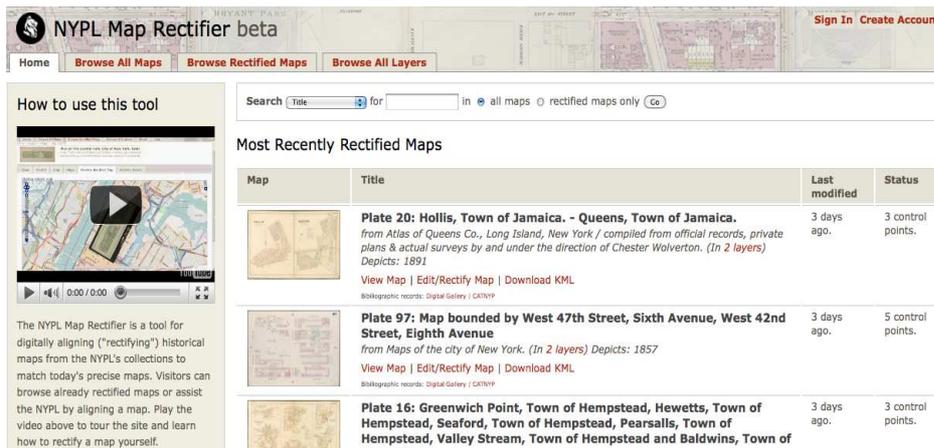

Figure 4. Aligning historical maps

The outcome of this activity will make it possible to create visualizations showing changes in maps over time.

2.3.2 Contextualisation

The term 'contextualisation' has many connotations in the heritage domain. Here, we propose to frame contextualisation in the cultural heritage domain as activities that aim to place or study objects in a meaningful context. Contextualisation has always been part of the 'mission statement' of cultural heritage organizations. Or, in the words of Bruce Sterling "The grand plan here is to protect the legacy of the past while also ensuring one's relevance to the present and future" [42].

There is a long tradition of contextualisation of content in collections by a wide range of users, including scholars, amateur historians and other enthusiasts. They have done so by

writing scientific publications, compiling magazines that document the history of the city they live in, studying their family histories, using archival footage as illustrations for monographs and so on. The involvement of curators, librarians and archivists in these private/scholarly endeavors range considerably, from looking up information to pre-processing data. These interactions between professionals and 'amateurs' are now also taking place online, using an impressive variety of tools and platforms.

The project 1001 Stories Denmark[8] for instance, based at the Danish Heritage Board offers an impressive insight in the history of Denmark by linking objects from contributing heritage institutions to times, places and (perhaps most interestingly) personal stories contributed by end-users that provide context. End-user contributions are a key feature of the interactive design of the portal (Figure 5), giving users explicit attribution for their additions, and prominently inviting users to contribute their own stories about an object.

Figure 5. 1001 Stories

Wiki-style platforms are embraced by many heritage organizations as a means to 'harvest' contextual knowledge from their user base, as they are a way both to facilitate collaborative contributions and to track the history of successive contributions from multiple users. The Netherlands Institute for Sound and Vision, for example, uses a wiki platform to gather contextual information on television programmes, broadcasters, presenters and so on[9]. The service was launched in 2008 and by 2010 over 38,000 pages have been added by almost 2,000 users. The information on the wiki pages will be linked to the catalogue of Sound and Vision, which is managed by professional cataloguers. Sound and Vision actively solicits contributions by the community, for instance by collaborating with several media studies departments, where contributing content to the wiki is part of a research Masters course.

Collaborations between heritage organizations and the Wikipedia community will have a great impact on the way contextual knowledge will be added to cultural heritage content. A first collaboration was initiated by a consortium of US/UK based museums in 2008, within an initiative called "Wiki Loves Art", that aimed to increase the amount of images from museum objects on Wikimedia Commons (the media repository of open content hosted by the Wikimedia Foundation)[10]. This has been repeated a number of times since. For a limited time period, participating institutions open their doors for users to take photographs that are subsequently uploaded to Wikimedia Commons. Contextual information is added as these pictures are attached to Wikipedia pages. In the summer of 2010, a so-called "Wikipedian"

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[8] http://www.kulturarv.dk/1001fortaellinger/en_GB
[9] http://beeldengeluidwiki.nl/index.php/Hoofdpagina
[10] http://commons.wikimedia.org/wiki/Category:Commons_partnerships

(i.e. an individual contributing to Wikipedia) joined the British Museum as part of the museum's first "Wikipedian in residence" programme. Activities[11] consisted of the in-depth curation of Wikipedia pages on masterpieces in the collections of the British Museum. This included one-on-one collaborations, where individual Wikipedians worked with curators on a particular topic [13]. In many cases, the Wikipedia pages now offer more detail than the information available in the museum space itself. The museums decided to use mobile devices (so-called Wikireaders) to offer visitors access to this resource. Another effect of the collaboration has been the increase of traffic to the Website of the British Museum, as the Wikipedia pages include deep links to the institute's website [49].

2.3.3 Complementing Collections

Crowdsourcing can be employed in order to fill gaps in collections. A good example is the UK_Soundmap project[12], launched by the British Library in July 2010. The British Library's Sound Archive wanted to facilitate research into the changing "soundscape" of the UK by providing a rich corpus of sounds. From the UK_Soundmap website: "By capturing sounds of today and contributing to the British Library's digital collections you can help build a permanent researchable resource."[13] The British Library decided to invite users to provide these sounds, using the mobile application Audioboo as one of the main instruments. Users install this application on their smartphone, make recordings and subsequently upload them, together with some contextual metadata including a geo-coordinate. After six months, at the project's mid-way point, the British Library had managed to gather 1,200 sounds though this project. The sound clips are placed on an interactive map (Figure 6) and are also searchable through a set of metadata.
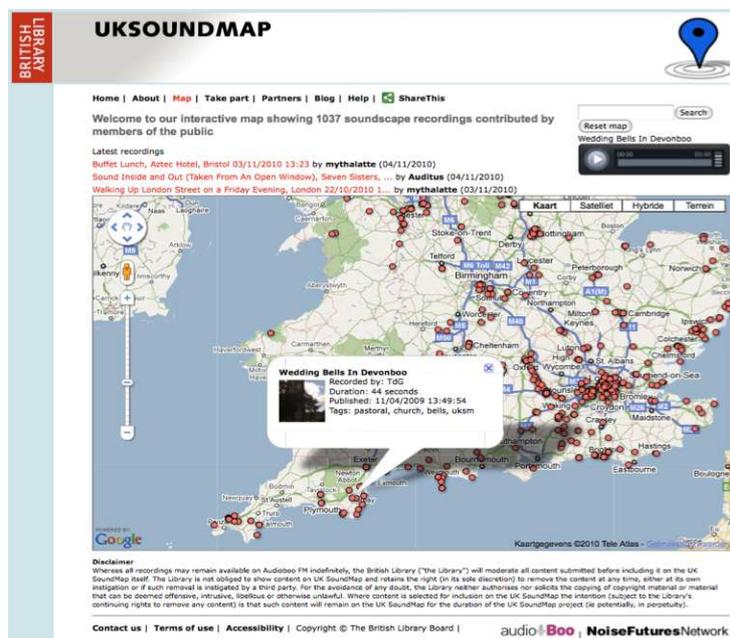

Figure 6. Interface showing the sounds on a map

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[11] https://secure.wikimedia.org/wikipedia/en/wiki/Wikipedia:GLAM/BM
[12] http://sounds.bl.uk/uksoundmap/index.aspx
[13] http://sounds.bl.uk/uksoundmap/index

Wir Waren So Frei is a cooperative project by the Deutsche Kinemathek and the Bundeszentrale für politische Bildung has gathered an impressive collection of images related to the fall of the Berlin Wall by issuing an open call for contributions of content and the stories behind them. Here, the Kinemathek took the responsibility for digitising the photographs and small-gauge films that were contributed by the public, resulting in a unique resource including almost 7,000 items that are available online.

In the UK, the RunCoCo[14] initiative delivers training and support to groups wishing to run community collections. The project is developing training materials, and organizing and running workshops to support projects wishing to follow the community collection model. The project is a direct continuation of the work done for the University of Oxford's Great War Archive, which created an online resource of 6,500 items contributed by the general public[15]. This project is also developing the open-source CoCoCo (community contributed content) software to make it available for any other project to collect user-generated content via the Web. Europeana has embraced this approach, and has been running (in collaboration with local partners) collection days in different EU member states. (Figure 7).
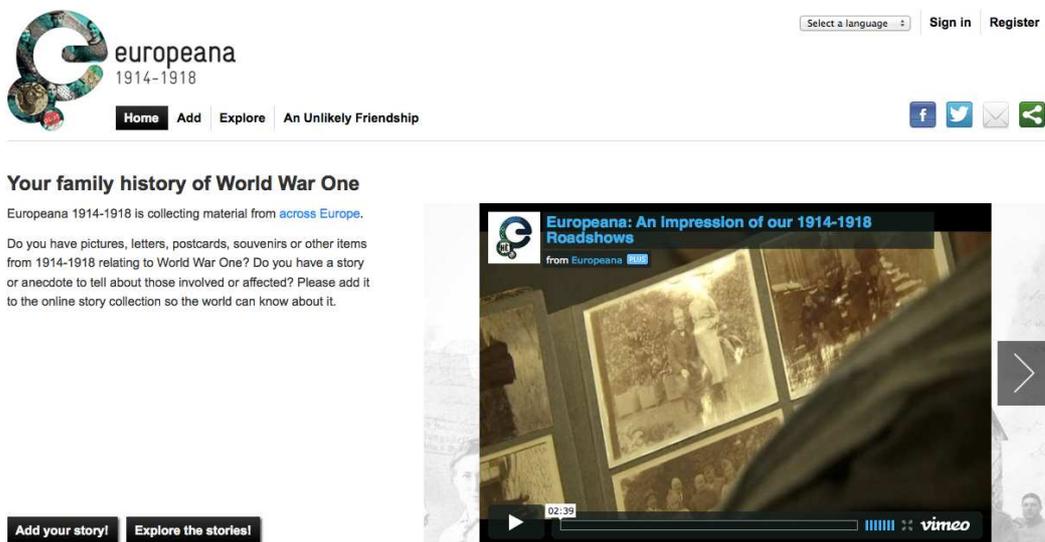

Figure 7. Europeana 1914-1918

A final example of organizations soliciting objects to be added to their collection is the Wedding Fashion[16] initiative from the V&A museum in the UK, that creates a database of photographs of clothes worn for weddings between 1840 and the present. In order to ensure the creation of a useful historical record all entries are accompanied by the year of the event and the names of the bride and groom or partners [17].

2.3.4 Classification

Social tagging has grown to be a popular way for institutions to explore the potentially positive implications of presenting their collections on-line. steve.museum [46], the first large-

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[14] http://runcoco.oucs.ox.ac.uk
[15] http://www.oucs.ox.ac.uk/ww1lit/gwa
[16] http://www.vam.ac.uk/things-to-do/wedding-fashion

scale project to explore the concept of tagging by "the crowd" in the heritage domain, was launched in 2005 [3]. It brings together a number of US and UK based museums that collaboratively "explore the role user-contributed descriptions play in improving on-line access to works of art" [46]. An online environment[17] (Figure 8) was created that allows registered users to add tags to a selection of works from participating museums.

In little over two years, steve.museum managed to gather 36,981 terms, comprising 11,944 terms in 31,031 term/work pairs. At the end of 2010, this number has risen to a stunning 468,120. Tagging is shown to provide a significantly different vocabulary to museum documentation: 86% of the tags contributed through the steve.musem tagging environment were not found in museum documentation [46].

Dozens of GLAMs have embarked on similar projects to steve.museum [46]. For instance, the Powerhouse Museum in Sydney launched their social tagging project in 2006. When a user submits a tag, it is incorporated in the online catalogue. Tags can also be corrected and removed by other users if they are deemed incorrect. Within six months, almost 4,000 tags were added to over 2,200 objects in the online catalogue. Over 500 of these tags "were deleted, edited for spelling, or removed by other users and the system administrator" [12].

Figure 8. steve.museum tagging interface

Another excellent example is Your Paintings. The UK's Public Catalogue Foundatin has partnered with the BBC to create website showcasing the entire collection of publicly owned oil paintings across the United Kingdom. Your Paintings Tagger has (january 2012) managed to gather over three million tags, connected to 26.000 paintings.

In January 2008, the Library of Congress (LoC) published a set of about 3,000 pictures on Flickr, with the goal to reach out "to unknown as well as known audiences" and to collect information about these photos through the audiences' comments and tags [41]. The launch was heavily advertised in the blogosphere and, within a day of the launch of the project, the collection of images had been viewed over a million times. The LoC photo set on Flickr has been expanded gradually since, and still receives about 500,000 views monthly [41]. During the first ten months of the project, the Flickr community placed over 7,000 comments on more than 2,800 pictures. People often commented on the aesthetic qualities of the pictures,

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[17] http://tagger.steve.museum

but a lot of additional factual information was added as well. Within this timeframe, a total of 2,518 people left over 67,000 tags. Of these tags, 1,000 (21%) were unique. On average, 14 tags were added to each photo [41]. The LoC and the photo sharing website Flickr later teamed up to develop a communal page for other cultural heritage institutions with photography collections: Flickr: The Commons[18]. To date, over forty organizations have joined The Commons, and it has established itself as one of the most prominent examples of social tagging.

In 2009, a consortium including the Netherlands Institute for Sound and Vision, KRO broadcasting, and VU University Amsterdam launched the video labeling game called Waisda? (Figure 9). It uses gaming as method to annotate television heritage. Similar to the 'Games With A Purpose' serious gaming concepts developed by Von Ahn, players receive points if their tag matches a tag that their opponent has also typed in within a given time-frame [1]. The game-play of Waisda? focuses on reaction and precision. From the point of the archive, the underlying assumption is that tags are probably valid if there is mutual agreement between players.

Figure 9. Waisda? Tagging interface

Within a period of 7 months, 340,000 tags were added though Waisda?, of which 40.3% are of matching tags, i.e. tags added by two more players within a time frame of 10 seconds [33].

2.3.5 Co-curation

Projects belonging to the category co-curation focus on the interaction between users and institutions regarding selection activities for (online) publication. "Click! A Crowd-Curated Exhibition" from the Brooklyn Museum is a good example. The museum invited artists to submit electronically a work of photography that responded to the exhibition's theme, "The Changing Faces of Brooklyn", plus a 100-word artist statement. 389 photographs were submitted and subsequently judged by the public, using a custom built evaluation tool. 3,344 evaluators cast 410,089 evaluations and the top 78 images were put on display in the museum [43]. Remarkably, there was a lot of agreement between the crowd's judgment and the judgment of the experts.

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18 http://www.flickr.com/commons/institutions/

Figure 10. Expose: my favourite landscape

A second example is a campaign initiated by the Dutch modern art museum Kröller-Müller Museum earlier this year. The museum invited children to select their favorite landscape from the museum's collection (Figure 10). The 20 works of art with the highest number of votes were put on display in the Winter 2010 exhibition.
The Danish broadcaster DR used a similar methodology in their Bonanza project, which invited the audience to vote for their favorite show from the archive collections to be digitised and made available on-demand first. Bonanza was a great success, as noted by DR in [7]: "The site had more than 12,000,000 video streams during the voting which is remarkable for a country with a total population of about 5,500,000".

2.3.6 Crowdfunding

The final type in our classification is Crowdfunding. This activity refers to the collective cooperation of people who pool their money and other resources together to support efforts initiated by others. The Louvre, for instance, recently managed to raise one million Euro's from online donors to buy a Renaissance painting by Lucas Cranach the Elder. Within a few weeks after the appeal was announced, 5,000 donors responded, donating an average 150 Euros [11].

Initiatives like Kickstarter [26], IndieGoGo, RocketHun, and Voor de Kunst[19] can serve as funding platforms for both artists and cultural heritage organizations. The funding mechanisms on these platforms are quite similar. Creators indicate the target amount, and duration of the campaign. Visitors begin pledging contributions, committing to donate the promised amount if the project reaches or exceeds its funding goal before time expires. Recent research, based on data from 12 leading crowdfunding sites, found that approximately $80 million has been pledged until early 2011. An estimated one million people were responsible for these pledges [2]. However, the study indicated that not all projects get funded, and returns for the crowdsourcing platforms themselves appear modest.

2.4. Challenges and Success Factors

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[19] http://www.kickstarter.com, http://www.indiegogo.com, http://www.rockethub.com, http://www.voordekunst.nl/

Most of the activities in the section above existed in some form before the Web became what it is today. For instance, quite a lot of heritage institutions have been working with volunteers coming to the institute to help to assist on cataloguing of curatorial tasks. Thus crowdsourcing can be seen as a remediation: the effect of new media on old media, causing old media to 'refashion' themselves [6]. The essential difference are those of scale, connectedness between 'e-volunteers', and ease of use, which are fundamentally different in a global online environment thanks to the universality principle of the Internet.

New technology can be used to overcome major challenges in *turning the potential of cognitive surplus into a key asset*. As Holley [20] notes "Libraries and Archives will never have the resources to fully do what they or the users want, so crowdsourcing is an opportunity that should be seriously considered". Technology can ensure a maximum impact of these initiatives by combining the strengths of the machines and the knowledge, common sense, and potential of the human crowd. Important here is to seek the optimal combination for a user-friendly and shared-initiative interaction.

2.4.1 Identifying Success Factors and Critical Challenges

CEO of Crowdsoucing.org, Carl Esposti, identifies seven factors (Figure 11) that need to be considered in the design process of a crowdsourcing project/application.
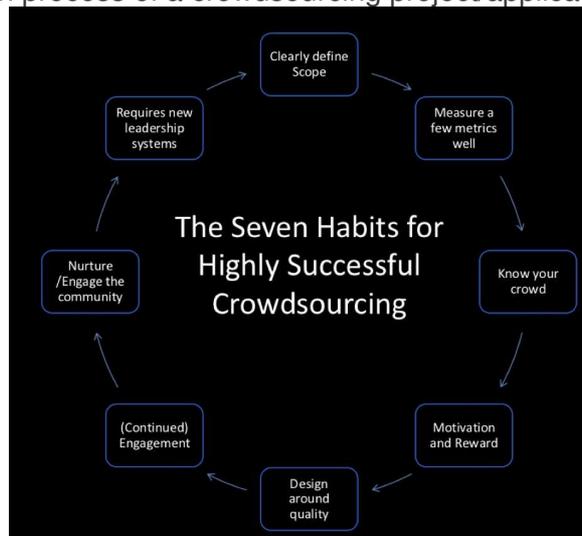

Figure 11. Seven Habits for Highly Successful Crowdsourcing

As mentioned in Section 2.4 an important aspect in achieving open, connected, and smart cultural heritage where consumers and providers are closely involved, is to provide an innovative environment (ecosystem) where the "inhabitants explore the adjacent possible, because they expose a wide and diverse sample of spare parts - mechanical or conceptual - and they encourage novel ways of recombining those parts" (Stephen Johnson, "Where good Ideas come from").

In this section we focus on some of the technological challenges that require multidisciplinary teams working in all the phases of the Digital Content Life Cycle to realize a functional and successful deployment of crowdsourcing in the life cycle.

Currently Semantic Web techniques and methods appear to gain quite some momentum in their deployment in Social Web applications and other mainstream tools. For example, Facebook's use of Open Graph for connecting people and content items across applications, as well as Google's semantics-based search and auto-completion. In this work we explore further the challenges related to the application of such techniques for crowdsourcing in cultural heritage.

Currently, Semantic Web techniques are aiming to (1) improve the understanding of machines of different knowledge domains, (2) aid their reasoning, and (3) discover serendipitous links between items in the collections. In addition, using linguistic, image and video analysis techniques, builds the basis for a new generation of collections with support for quickly growing amount of objects and where annotations capture diverse set of dynamics and perspectives. For example, (1) integrating both professional and amateur perspectives, (2) combining depicted and contextual annotations, (3) allowing for diversity in the type, level of specificity and granularity of the annotations, (4) allowing for multimodal, mixed-initiative, interactive exploration, (5) interlinking with objects from other collections and additional information from external sources.

Challenges that are **related to Semantic Web techniques:**
- Dealing with complex underlying knowledge is challenging in terms of providing explanations to the users.
- Having simple interaction interfaces with a multitude of complex, analytical, summary and interlinked information.
- Providing scalable and robust solutions.
- Stimulating users to contribute specific types of knowledge through engaging them via semantic-based tags and suggestions.

Challenges that are **related to Linguistic techniques:**
- Offering proper exploitation and presentation of multilingual information.
- Providing efficient and effective quick learning mechanisms.

Challenges that are **related to Quality of the data:**
- Maintaining/resolving conflicting information.
- Maintaining and presenting extensive (ever growing) provenance information.
- Creating open and clear reviewing procedures.
- Evenly distributing the contributions of the users over the entire collection.
- Indicating when an annotation is 'good' or 'finished'.

Although all the challenges listed above are at some level important for successfully maintaining the new generation of cultural heritage collection. Below, we will focus on two critical ones: to (1) bootstrap the process with sufficient knowledgeable and loyal-over-time users, and to (2) maintain a reasonable level of quality, in order to sustain the existing levels of reputation, or to expand it.

Users engage in crowdsourcing for either extrinsic motivations or intrinsic motivations. Amazon's Mechanical Turk is probably the most famous example of a platform that is built around interactions based on extrinsic motivations [34]. Mechanical Turk employs individuals (so-called Workers in Amazon's jargon) to perform simple tasks in return for monetary payment. The service has (January 2011 data) over a half a million Workers worldwide from

over 190 different countries, performing a wide variety of tasks, ranging from creating subtitles, categorising websites, counting instances of words in audio files and so on.
The examples in Section 3 are all focused on intrinsic motivations. Here, both GLAMs and their users benefit from mutual recognition. It will foster a more profound way of engagement [25]. On the merits of tapping in to intrinsic motivation, Clay Shirky notes "Amateurs are sometimes separated from professionals by skill, but always by motivation; the term itself derives from the Latin amare—to love. The essence of amateurism is intrinsic motivation: to be an amateur is to do something for the love of it." [39]

Table 2. Motivational factors: two clusters

Motivation	Examples
Connectedness and membership	**Old Weather** builds upon the existing Citizen Science Alliance community that brings together a community of many thousands of volunteers. The enthusiasm of this enormous volunteer army can be leveraged for many projects.
	The Brooklyn Museum tagging project created an online environment where the ***posse members*** (taggers) can meet[20]. This clearly taps into the feeling of belonging to a group.
	Contributors to the **UK_Soundmap** receive a personal thank you note for each recording they upload, e.g. through Twitter messages.
	The **Great War Archive** organized a series of 'real live' events supporting the collection of items that are placed in the online archive.
Sharing and Generosity	The altruistic nature of playing the ***Waisda?* Video Labeling Game** is made explicit: "Help to improve access to audiovisual archives"
	Flickr the Commons has goals to show its users (1) "the hidden treasures in the world's public photography archives", and (2) how their "input and knowledge can help make these collections even richer."
	British Museum curators worked together with Wikipedians in the "Wikipedian in residence" programme for sharing knowledge between amateurs & professionals.
	Initiatives aiming at complementing the collections with content contributed by users, e.g. **Wir Waren So Frei** and **Flickr the Commons,** use open licenses that allow the reuse of content on other platforms. Here, sharing is an integral part of the design of the service.

Discussing social motivations, Clay Shirky points to the work of Yochai Benkler and Helen Nisembaum: "They divide social motivations into two broad clusters - one around connectedness or membership and the other around sharing and generosity" [39]. Both types of social motivations have been taken into consideration in analyzing the successful examples listed above. In Table 2 we organize the projects according to the functionality they provide to motivate the crowd to contribute.
Next to these social motivations listed above, altruism, fun and competition are also regarded as important incentives for users to participate [33].

2.4.2 Quality assurance

Despite the fact that we are witnessing an explosion of user-generated content on the Web, only a small portion of people contribute most of it. About 90% of the online users only consume content and from the 10% left only 1% actively and consistently contribute the majority of the user-generated content [19]. Another issue here is the quality of this content. As noted by Foresman [18], 95% of this content is either spam or malware. Thus, motivating

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20 http://www.brooklynmuseum.org/community/posse/

not only for participation but also supporting quality contributions appears to be a major challenge.

GLAMs earned their reputation over the years by preserving the quality and truthfulness of the information they offered by having full control over the acquisition, organization and the annotation of the collection items. As is often noted, for example by the Europeana initiative [50], one of the distinguishing qualities of heritage organizations is their authority: provide context and trusted factual information. Nowadays, online search engines and "the people formally known as the audience" [37] can easily perform the same activities. This could be seen as a threat to the position of heritage institutions. Allowing the end-users to actively participate, for instance by adding descriptive metadata to catalogues, could corrode this (perceived) qualitative distinction between users and organization staff [10]. Thus, a fundamental change is required of the *old in-situ culture* based on controlled authority and the *new in-vivo reality* based on the wisdom of the crowd and crossing various geographical, age and competency boundaries. Even if the institutions embrace the new style of building reputation (not based on the distinction between amateur/professional, but on the merits of the contributor's knowledge on the subject), they are still facing a quality assurance challenge in an open, decentralized space.

It needs to be acknowledged that the social web is not all "Blue skies and sunshine". The last quote is from Andrew Keen from his book "The Cult of the Amateur" [17], a major critique of peer production, user generated content and phenomena related to the social web. He points at the merits of the expert-based filtering process as beneficial to the quality of information and criticizes how the advent of participatory culture undermines this process. Other authors, for instance Mirko Tobias Schäfer [38] and Jonathan Zittrain [51] also point to potential risks that are unquestionably linked to the concept of participatory culture. But their critiques take a more constructive vantage point.

After analyzing the initiatives, we can conclude most of the GLAMs are very much aware of potential pitfalls in working with the public. For instance, the institutions evaluated the quality of the contributions by end-users. In most cases, the benefits outweigh the caveats. As noted by *Wikipedian in residence* Liam Wyatt: "Unknown risks are accounted for, overestimated, unknown rewards are discounted, underestimated" [49]. As referred to in [23] knowledge is created through conversation. This includes controlling quality in these crowdsourcing initiatives. A combination of technological and interaction aids, psychology principles and community building rules can help to (1) establish behavioural norms, (2) build an image of the desired quality of content, and (3) filter or correct erroneous information. For example, in the *Waisda?* Video Labeling Game, the community itself acts as a filter, as only those terms for which there is mutual agreement between players are considered for inclusion in the archive. Next to this, interactive user feedback is used in order to support users in learning the aspects of good quality contributions. Finally, the creation of a strong sense of belonging to an altruistic community, and making explicit the mutual benefits of the contributed tags, attracts users with diligence and ethical behaviour.

2.5 Conclusions and further steps in Europeana

We have shown how GLAMs are currently leveraging the 'cognitive surplus' of their user base. By classifying ongoing projects, and mapping these against current work processes (following the Digital Content Life Cycle model) we can conclude that there is an enormous potential for GLAMs to explore making crowdsourcing into an integral part of their workflow.

GLAMs need to be aware of motivational factors, as participation of users is key to the success of these projects. Also, we've shown how technology can aid institutions to improve the quality of contributions, for example by applying filters or linking with external resources.

3. Europeana and User Generated Content

3.1. Europeana and UGC: types of contributions

Europeana is an important driver for innovation in the cultural heritage domain. Crowdsourcing has a lot of attention in the Europeana community. Europeana distinguishes between three types of user contributions:

1. Classification (Metadata)

Supporting end-user annotations on Europeana will be highly beneficial for both visitors of the portal, as user generated tags increase intuitive access to content, and institutions while at the same time users can enrich their own catalogue with novel content contributed by the European-wide user base across portal. These annotations can also be used to support multilingual access to the content in Europeana. Special attention will need to be given how to assess the quality of tags in a challenging multilingual environment as Europeana, supporting 26 languages.

2. Contextualisation (stories)

User contributed stories/narratives can be a starting point for exploring the interconnections between items discovered in Europeana based on intersecting time/space/topic components . Although digital stories can manifest in different ways, they share a set of characteristics which makes them ideal for the purpose of communicating cultural heritage to audiences who may find it difficult - or boring - to access content via passive channels such as search engines or catalogues. Such digital stories are rapidly becoming globally acknowledged as powerful tools for learning, integration, and preservation by providing unique platforms for creativity in the cultural sphere. Stories act to transfer knowledge from previous generations and help to uncover ethnic heritage emanating from different regions and locations in the culturally rich and diverse tapestry of Europe.

3. Completing Collections (gathering digital objects)

User contributions drawn from personal memory may result in submissions of digital objects in their possession, including photographs and other memorabilia, commentaries and annotations. Content may be solicited in the context of stories, but Europeana can also display these objects in other contexts. It is important to note that digital objects from end-users can also be provided via data providers (i.e. not directly through the Europeana portal) and entities such as Wikimedia Commons.
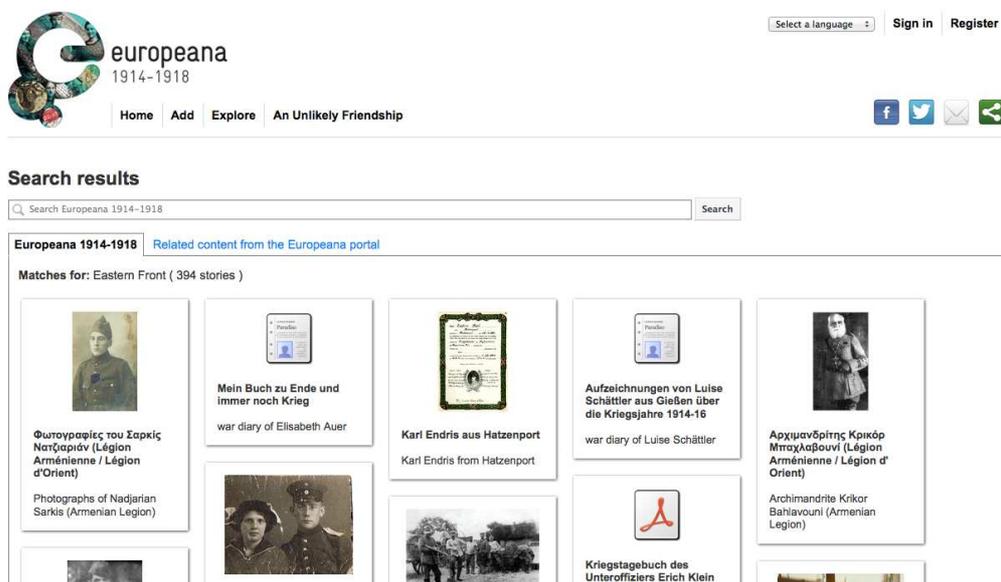
3.2 Europeana and UGC: activities in 2013

Europeana is involved in a number of initiatives, the most important ones are listed below:

1. Content Gathering Campaigns.

Several campaigns relating to Europeana 1914-1918 have been completed/are underway. See Section 2.3.3 Complementing Collections for more context on this activity. In 2013, at least three activities will be undertaken:
- The Europeana Awareness WWI story collection campaign using RunCoCo as the software and Europeana 1914-1918 as the website
- Europeana Collections 1914-1918 (http://www.europeana-collections-1914-1918.eu/)
- Europeana Film Gateway 1914 (http://project.efg1914.eu/) which are projects focusing on aggregating WWI themed content from libraries and audio-visual archives respectively

Figure 12. Europeana 1914-1918

In 2013, a new campaign will be launched, on the events leading relating to the fall of the iron curtain in 1989. At the time of writing, the timeframe for this activity is the following:
- At the beginning of April www.europeana1989.eu site live announcing the project scope.
- End of April first version of the website for review by the partners
- End of April Estonia start of the tour of a cultural heritage bus around the country, which will also promote Europeana 1989
- 15 May feature-complete release candidate site up and running
- 28 May 2013 international press conference, website live and stable
- 4 June 2013 collection event in Warsaw
- End of July, desired special features for Baltic states working (see below)
- 1 August 2013 collection campaigns in 3 Baltic states

2. UGC Taskforce

This taskforce (organised by Europeana network members aims to
- Identification and benchmarking of services and best- practices as building blocks for the creation of Europeana UGC ecosystem
- To be a point of contact for all projects that want to apply UGC approaches within the Europeana network and to encourage cross-fertilization of ideas between projects and identify duplication of effort
- To make policy recommendations for the Europeana Network regarding the role UGC can play in the context of Europeana. The Taskforce aims to present their first report in the third quarter of 2013.

3. Activities in the project Europeana V2

As part of Europeana V2 (WP7 specifically) an inventory was made of software for deployment in- and beyond Europeana[21]. These include:
- Applications for access provision, user interaction and user generated content. Examples are timelines,
- interactive maps, tagging games and annotation tools.
- Applications for metadata management (i.e. the back-office), such as metadata mapping tools, components for metadata harvesting, linked data publishing, recommendation technology, ontology alignment.
- Applications for multilingual access and translation.

In 2012, contributions to the inventory were reviewed. In 2013 two applications will be developed further, based on feedback gathered from the EuropeanaTECH network. They deal specifically with image annotation (based on PyBossa[22]) and video Annotation (based on Wasida?)[23].

4. The Digital Storytelling Engine

This is the focus of this deliverable. In this next Section, we list:
- the design methodology of the Digital Storytelling Platform (DSP)
- the architecture of the DSP
- the way it will be integrated in the 2013 Marketing and Communication strategy.

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[21]

https://docs.google.com/spreadsheet/ccc?key=0Ag_7rVJwt0CpdFRJOEJxdEk4ZEMxQ01jaDgxQXFSTkE#gid=0
[22] https://github.com/PyBossa/pybossa
[23] https://github.com/beeldengeluid/waisda/

4. Digital Storytelling Platform

4.1 Design methodology and front-end designs

The process of designing the project was executed in four consecutive stages. It involved a wide range of envisioned user groups. After Phase 4, the design was completed and the programming work started.

Phase 0: Kick-off in the Hague in January 2012

The project had kick-off at a meeting in January 2012 in Hague. The factors for successful crowdsourcing (see Section 2.4) were taken into account in the conceptual design process:

Success factor	How the DSP takes this into account
Clearly define Scope	The platform should encourage users to share stories, and integrate content from outside sources
Measure a few metrics well	Metrics include: number of users, uploads, content links.
Know your crowd	The primary user group for the first launch are secondary school children between ages of 12-18
Motivation and Rewards	The ability to share stories
Design around quality	Making use of existing know-how of the users. Using drag- and drop for instance
[Continued] Engagement	The launch will be planned together with the Europeana Marketing and Communications team.
Nurture/Engage the community	The DSP will be used in specific campaigns. Thus, it will be possible to reach out to specific user communities.

Also based on the inspiring lectures and workshops that took place there, the design team at project partners SaT (Waste of Time) went home to Copenhagen and started talking the design and interface part through.

The designers felt it was important to end up with a solution as simple as possible from a user point of view, and at the same time inviting and intriguing to use. With that in mind, we started to sketch out some preliminary interface ideas. These ideas were tested with a group of internal designers. We summed the ideas and feedback up and brought them with us to Hilversum in primo March.

Phase 1. Design meeting in Hilversum in March 2012
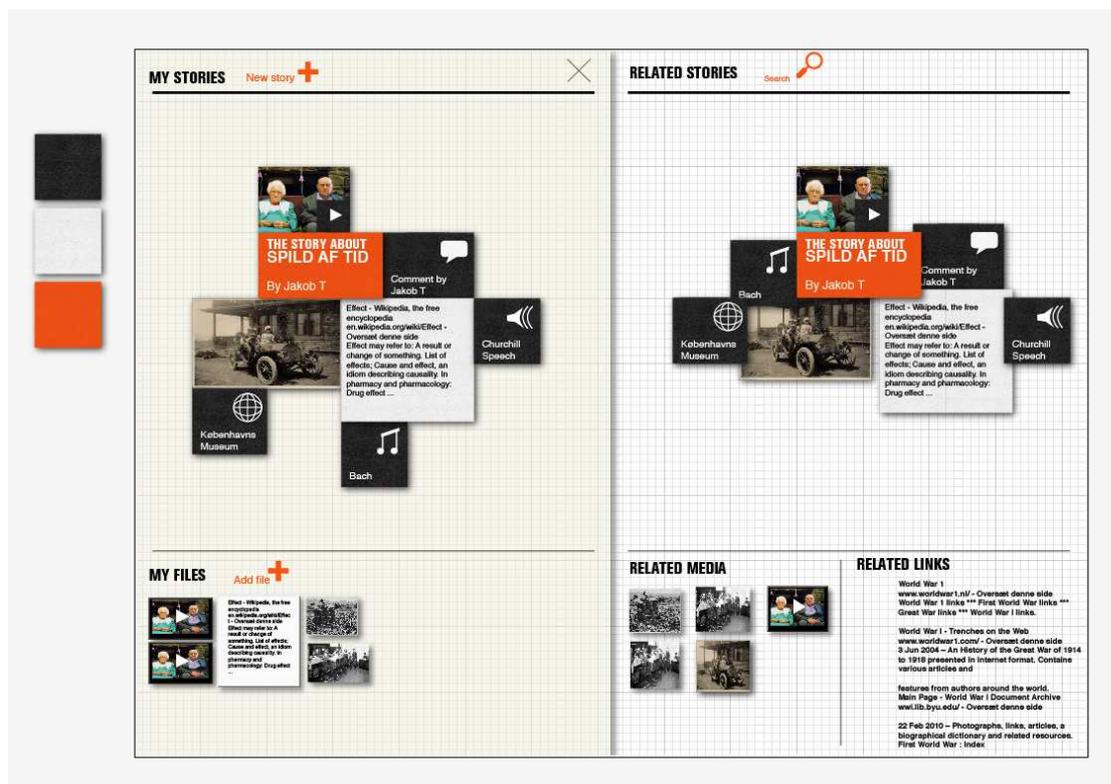
Figure 13. DSP Design
Comment: working with icons, grids and layout in general.

The meeting, which took place at Beeld en Geluid in Hilversum, brought together partners of WP2 and a few partners from other WPs. It was an effective meeting/workshop where, amongst other things, the preliminary design was shown and given valuable feedback. There was also a discussion and definition of the user personas the further design should have in mind when working on it. The Persona's were based on the Europeana Personas Catalogue, developed in the context of the Europeana Connect project. [24]

We went home and started redoing the design on the basis of the feedback it was given, taking the user personas into consideration. This resulted in the first version of the design, which was implemented in a prototype tool and let us to do the first user test.

Phase 2. User testing in April 2012

- [24] Rasmussen, Katja Guldbæk (2010). EuropeanaConnect Milestone M3.2.3 Personas Catalogue. Available at:
    ://www.europeanaconnect.eu/documents/M3.2.3_eConnect_PersonasCatalogue_v1.0_20091228.pdf

Figure 14. DSP Design
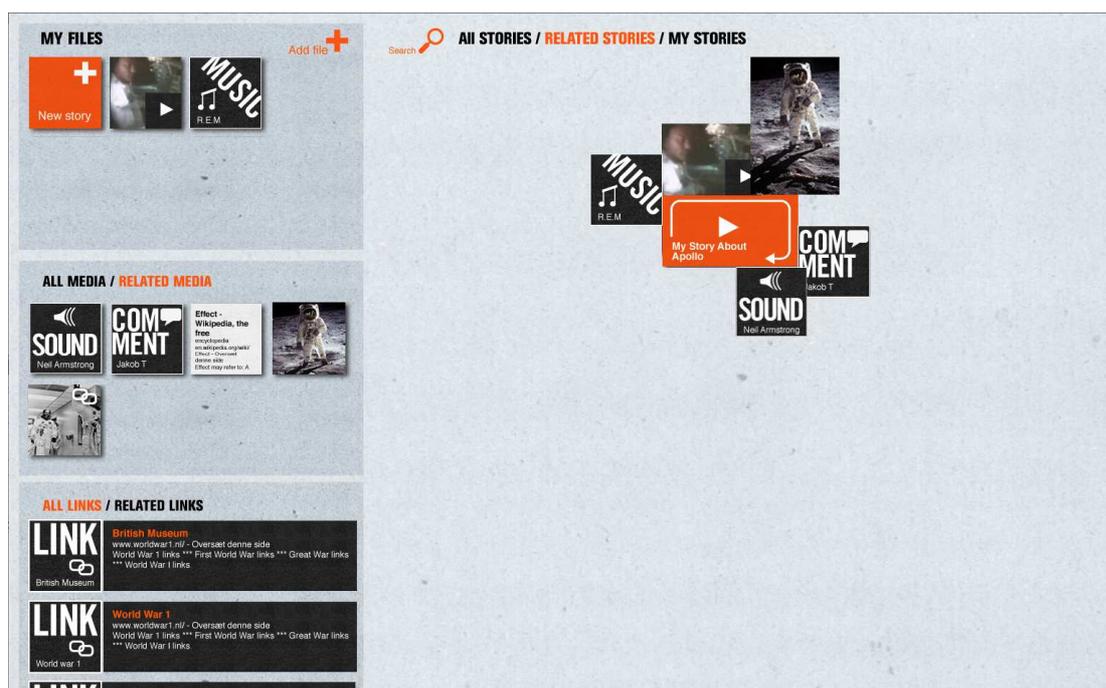*On the left side is the toolbox with the needed tools to create a story – both the users own files and the current files in the databases. The rest of the screen is used for viewing and creating stories – the files of a story revolve around the core story (in this case "My Story About Apollo")*

This user test took place in Copenhagen, at the offices of Spild af Tid, with the presence of Europeana in form of David Haskiya, Product Developer.

It was performed as a "talk aloud" test where users went through viewing and creating a story on the screen.

Four persons, selected with the Europeana personas in mind, were selected: a woman 16 years old, a woman 23 years, a man 28 years and a man 54 years.

They all went through the first version of the design, with Peter Thorn assisting and David Haskiya present and provided a lot of valuable feedback, both in terms of questions asked and opinions given, plus the observations by David and Peter.

The sessions were documented with notes during the sessions. This resulted in a sum-up description provided to WP2 partners. It was also followed up by a design iteration and rework. This rework was the basis of the second version of the design, that was tested by two selected users (a female schoolteacher age 38 and a man at the age of 44), and corrected accordingly. This testing session was both audio recorded and notes were taken during the session.

The version was updated and the result was shown at the meeting in Leuven.

Phase 3. Preview and feedback in Leuven in June
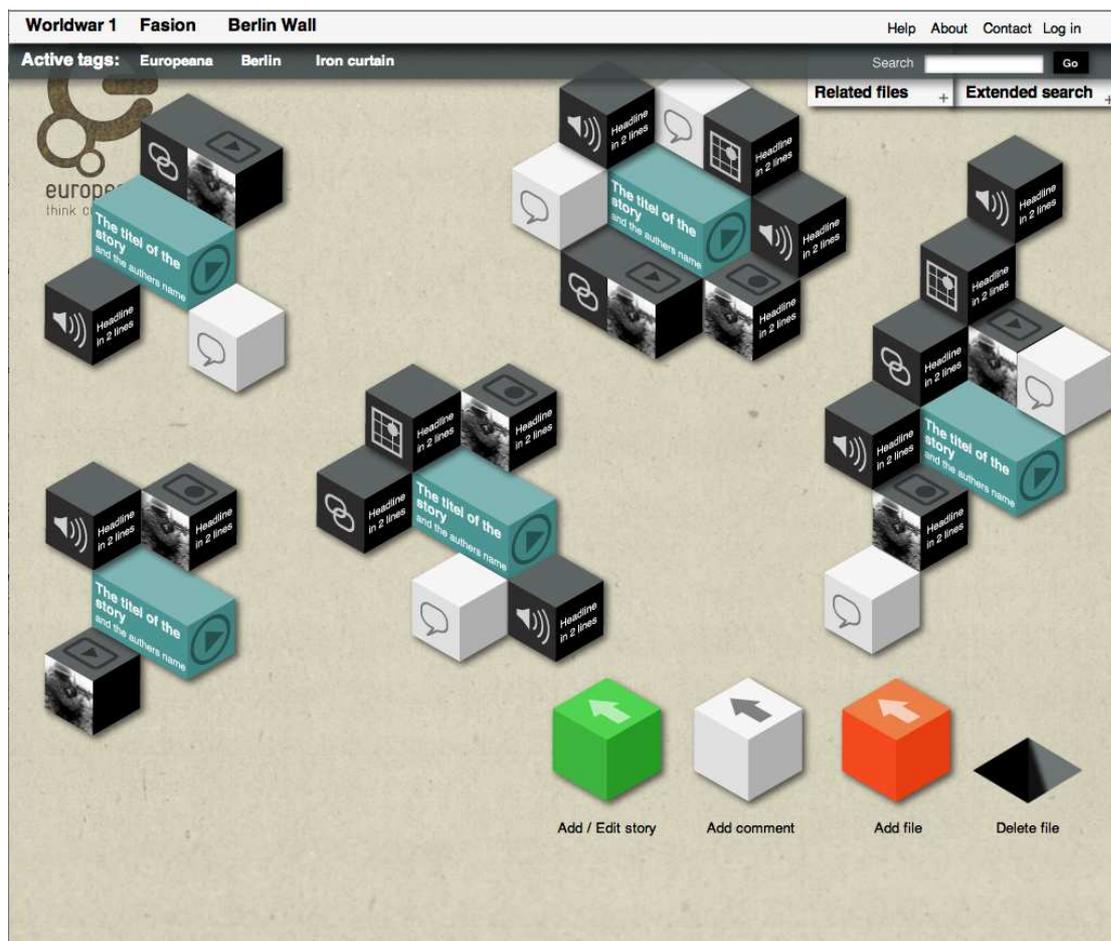
Figure 15. DSP Design
Comment: But the form has changed to get more space for each story, and the menus have been slimmed down.

At the Europeana meeting in Leuven in medio June the second design was previewed. It was again a (not fully) functional prototype that was shown and afterwards discussed with members of the Europeana Netowork, participants of WP2 specifically.

Once again this led to another design iteration that took place over the summer.

Phase 4. Copenhagen workshop in September 2012

In September, a two day workshop was held in Copenhagen, with the presence of most of WP2 technical partners.

The purpose of this workshop was to get even more detailed on the requirements of the Story widget. Annex 2 contains the final list of requirements.

The updated design, still partially based on the second design, was presented, walked through and discussed. It was also partly used as a basis of the overall discussion, both to define and to spot weak points. The definitions were summed up afterwards – all of it documented on a piratepad document (http://piratepad.net/ep/pad/view/ro.xE0PxQSIAcW/latest), and the last design iteration was worked through.

That resulted in the final version, which has afterwards taken as baseline of the bi-weekly Skype sessions. The finalization of the design has also taken place and it has been given to the programmer, to continue production.
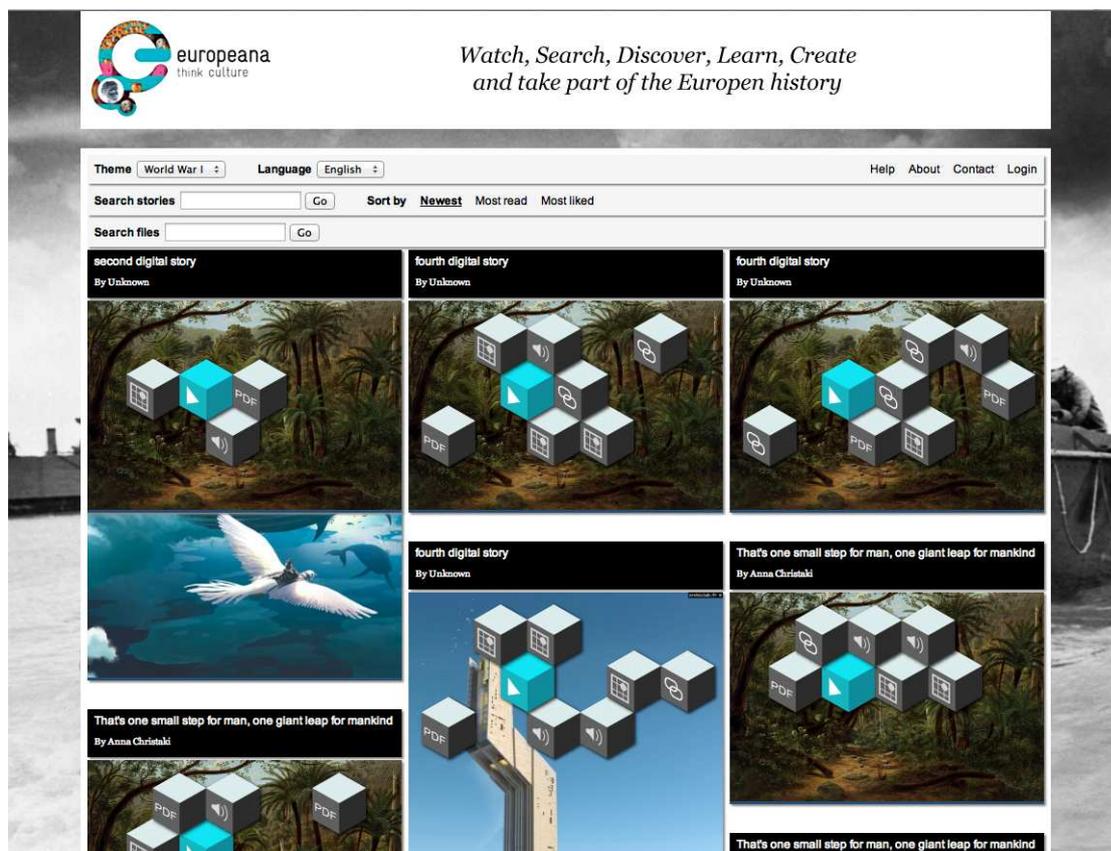

Figure 16. DSP Design
Comment: In this, the final version, the boxes still represents the story and files but each story is now also better represented by a background image.

4.2 DSP Architecture

The Digital Storytelling Platform is being developed using a REST[25]-style client-server architecture. REST was the selection of choice since a REST-based application is a lightweight alternative to Web Services (SOAP, WSDL, etc) and RPC (Remote Procedure Call).
Much like Web Services, a REST service is:
- Platform-independent
- Language-independent
- Standards-based (runs on top of HTTP)

Since the decoupling of frontend and backend was an important requirement for DSP development, a REST-based architecture gives the freedom for application parts to evolve independently.

The frontend of the DSP application includes all the User Interfaces and will be collecting input in various forms from the user and processing it to conform to a specification the back-end can use. Themes and their corresponding skins will be used to change the appearance of the frontend while the user searches for Digital Stories within a theme (World War I, Europeana 1989, etc).
The frontend is being developed as a thin client using HTML5 and CSS, and interacts with the backend API issuing AJAX (Asynchronous Javascript and XML) calls. The data format of choice for the interaction between frontend and backend is JSON, a light-weight data serialization format based on a subset of JavaScript.

The backend of the DSP is being built as a RESTful web API that will process the incoming data from requests, validate it and save it to a MONGO[26] Database, a document-oriented database system that stores structured data as JSON-like documents. The backend API service is being built in Java and will run on the Play![27] Web application framework, which targets RESTful architectures and supports agile development (less configuration, faster testing etc). The current data model is attached as Annex 3.

All the user uploaded media files (apart from images that will be saved in Mongo DB) will be hosted on the OpenImages[28] media platform taking away the complexity of setting up a dedicated media server for DSP.
The frontend and backend of the application will run as one web service, residing on the same server (Play!). However, configurable widgets of the frontend (search stories and story play out) will be made available for installation as embedded components across partner websites. The DSP application will also need to interact with a number of other available web services like Europeana, YouTube, Flickr etc, to make use of their resources as Digital Story components. Therefore a number of connectors to the APIs exposed by these web services must be developed and embedded to the DSP application.

For the indexing and searching of Digital Stories we will use Solr4[29], a search platform that includes powerful full-text search, hit highlighting, faceted search and quick database integration.

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[25]RESTful-Wikipedia : http://en.wikipedia.org/wiki/Representational_state_transfer
[26]MONGODB homepage: http://www.mongodb.org/
[27] Play Framework Homepage: http://www.playframework.org/
[28] Open Images homepage: http://www.openimages.eu/
[29]Solr homepage: http://lucene.apache.org/solr/

For security and encryption of DSP sensitive data, an HTTPS Proxy will be used. The whole application is being developed as a Europeana hosted service but additionally the digital stories will be published to an OAI/PMH repository where Europeana can harvest them and display them as Europeana items on their portal. All the selected technologies used in the development of DSP are open source technologies.
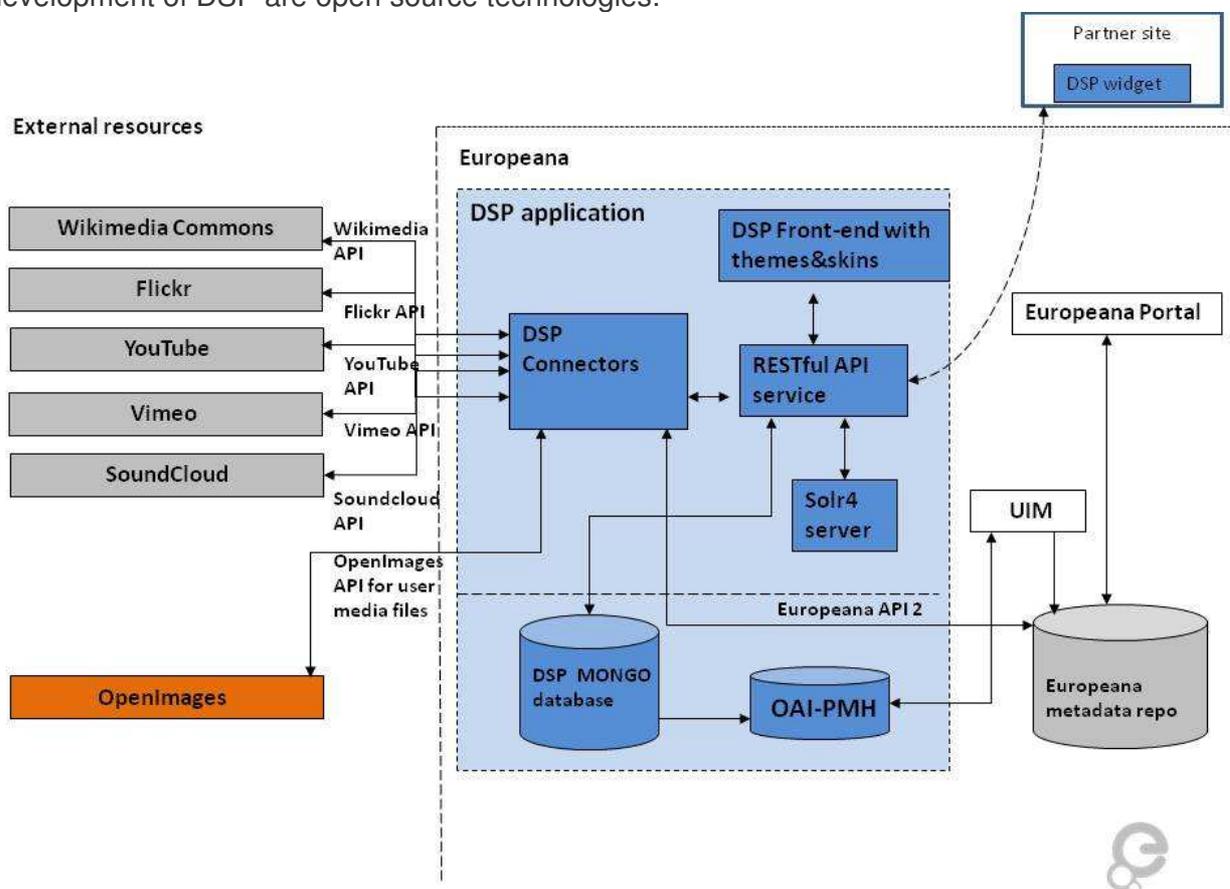
Figure 17. DSP Architecture

4.3 Operational phase: the Digital Storytelling Platform and the 2013 Marketing and Communications strategy

This Section elaborates on the role of the DSP platform in Europeana's 2013 Marketing and Communications strategy.

In 2013 Europeana continues to focus on bringing traffic to the portal. Traffic growth is reached by focused brand campaigns but also by creating awareness for new distribution models. Europeana wants to enable the visibility of all digitised heritage content and open up opportunities for cross-domain, cross-European access. In 2013 Europeana continues to see itself as part of an ecosystem.

The DSP is developed as part of Europeana's End User Engagement program. The platform will function as a stand alone website within the Europeana ecosphere. This is illustrated in the figure below. It is interconnected to Europeana's products and will function as such; this

way the DSP is part of Europeana's general communication and marketing activities. The DSP will rely on the involvement of Europeana's partners. Heritage institutions who work with Europeana 1989 will be motivated to use the platform for their education activities.
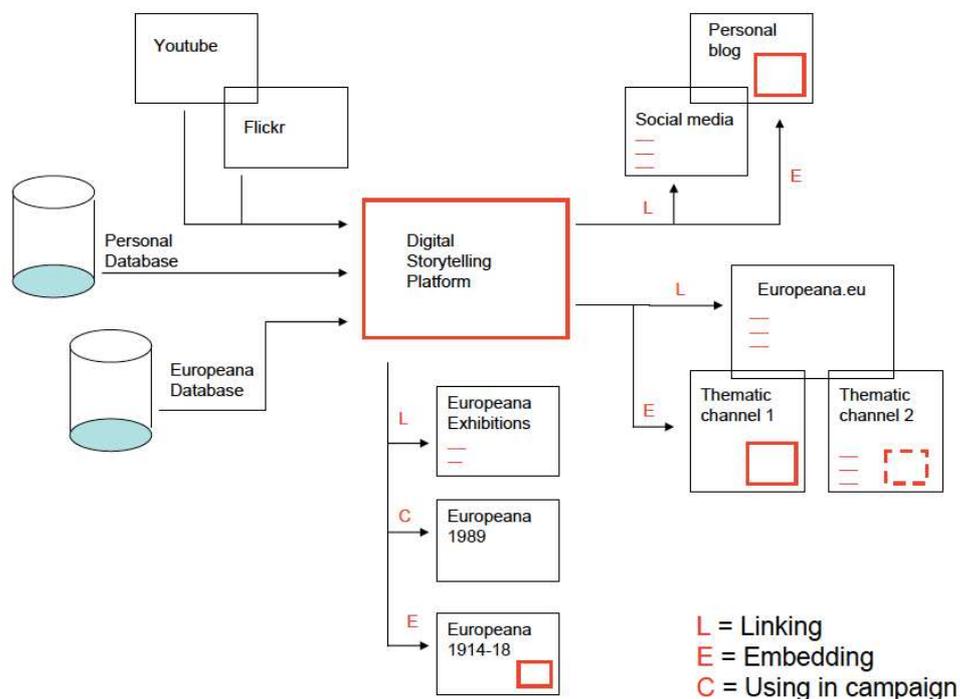
Figure 18. Europeana's End User Engagement program

Europeana Collection & Discovery projects (such as Europeana 1914-1918, Europeana 1989) and the new to be developed Europeana Thematic Channels are vehicles that will closely connect to the DSP. They will link to, embed, or use the DSP in their campaigns to engage followers. The DSP will be launched in 2013 in relation to Europeana 1989. The platform will be featured in the general campaign as a connected stand-alone platform for end user engagement.

5. UGC and IPR

User Generated Content is a valuable and welcome resource to the Europeana portal. It is therefore important that the terms on which UGC is submitted are clear and consistent, allowing maximum reuse of all of the data available through Europeana.

The submission of User Generated Content is governed by the Europeana Terms for User Contributions. These Terms of Use are mandatory for anyone wishing to submit UGC to Europeana, and are agreed to during the User's registration process. They determine under which conditions Users may submit UG, how that UGC may be used and on what terms reuse is allowed. The Terms for User Contribution are identical for all users, and seek to establish the same basic rights to Metadata provided by Users as asked of by Data Providers, as well as similar rights to Content.

Responsibilities

Europeana acknowledges that including content contributed by individual end users can poses challenges in terms of accuracy, ethics, tone of voice and so on. Therefore, a set of responsibilities has been defined in the Terms for User Contribution.

These Terms establish a number of key responsibilities that Users need to be aware of. Furthermore, if a User fails to meet these requirements the UGC can be removed by Europeana and the User's account can be suspended. The main requirements and responsibilities are;
- Europeana provides information about and access to Europe's cultural heritage and user contributions must be related to this objective.
- Users need to ensure that they have sufficient rights to contribute content to Europeana. This means that they either need to be the copyright holder of the content they are contributing, need to have obtained sufficient permission by the original copyright holder to do so, or declare that the content is public domain.
- Users are not allowed to upload content that is racist, discriminatory, pornographic, that may be deemed to be insulting to other users, or groups of people.
- Users not allowed to upload content that is damaging to the reputation of Europeana or its partners and contributors.

Terms for Reuse

It is essential that where UGC is protected by copyright, neighbouring rights or other Intellectual Property Rights that the User must hold sufficient rights in order to make the UGC available to Europeana. This is important because it respects the rights of the author or owner, and in addition ensures that the User gives Europeana, their users, and partners sufficient rights to access, redistribute and re-arrange the content that they have submitted.

There are four types of User contributions recognised by Europeana (described in detail in 3.1): Metadata, Stories, Digital Objects and Specific Datasets.

Metadata is submitted under the terms of a Creative Commons CC0 licence meaning that it can be used by Europeana without any restrictions. An example of Metadata is where users contribute tags, keywords or other descriptive data.

Content, such as Stories and Digital Objects are provided to Europeana under Creative Commons Attribution ShareAlike licence – which means that every re-use of this content will attributed to the User as he or she described themselves in the registration process, and that any modifications to the content can only be distributed under similar terms, described further below.

Specifically, the Creative Commons Attribution ShareAlike license allows anyone:
- To copy, distribute and transmit the work
- To make adoptions of the work and to distribute these adoptions

as long as the following conditions are met:
- Other users must attribute the original author or rights-holder of the work
- When adaptations of the work are distributed these may only be distributed under the same license.

Licensing all user contributions of content under the terms of a Creative Commons Attribution Share Alike license ensures that it can be re-used by other end-users, Europeana's institutional partners and other online platforms such as Wikipedia. This also enables Europeana to make available user contributions as linked data and combine it with content provided by other platforms such as Wikipedia.

In summary;
- User Generated metadata can be reused by anyone without restriction.
- All other User Generated content can be used and redistributed under the terms of the Creative Commons Attribution ShareAlike license.
- The user contributing the content remains free to use their metadata and content without any restrictions.

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Annex 2. Functional requirements

ID	Functionality	Description	Available to
42	User registration	User data is saved to MongoDB	All
43	User login/logout		All
44	User account preview	User should be able to view his registration details, his stories and story blocks, his uploaded content, comments on his stories and any flags on his content	All registered users
45	Update user profile	User can edit his registration details and password	All registered users
46	List/preview DSP users	available to admins for user management	Admins
47	Manage user	Update user's role , change password. Available to admins	Admins
1	Create new story	Initiate story (story title and theme). Add more textual data (keywords+description)	Contributors, Editors, Admins
2	Create new story block	Link to external datasource (Europeana, YouTube etc) with title, description, keywords, map link etc	Contributors, Editors, Admins
3	Save story block	Minimum one digital object link + title	Contributors, Editors, Moderators,Admins
4	Add block to story	Attach a story block to a story. Maximum 12 story blocks (configurable)	
5	Save digital story	Draft and published state. Minimum one europeana object + one other digital object(story block) + title to be publishable.	Contributors, Editors, Moderators, Admins
6	Delete story		Contributors (only their own), Editors, Moderators, Admins (any story)
7	Delete story block	Story block can be deleted if there are no references to it	Contributors (only their own), Editors, Moderators, Admins (any block)
8	Edit story	Edit the story blocks and textual data that make up the story	Contributors (only their own), Editors, Moderators, Admins (any story)
9	Preview story block	Block presentation and playout	Web users, Contributors, Editors, Moderators, Admins
10	Preview story	Story presentation and playout	Web users, Contributors, Editors, Moderators, Admins
11	Search in stories	Search through text descriptions	Web users,

		as well as story blocks (digital objects that make up the story)	Contributors, Editors, Moderators, Admins
12	Search and display Europeana results	Search with Europeana API v2, pagination and preview of results	Contributors, Editors, Admins
13	Add link from other data sources to story	Add url link to story block (Youtube, SoundCloud, Flickr etc)	Contributors, Editors, Admins
14	Upload user image	Image will be resized and saved to Mongo DB. After upload is complete image with title (+ description, + keywords etc) will be saved as new digital object	Contributors, Editors, Admins
15	Multilingual ui	User interface in several languages	All (web users, contributors, editors, moderators, admins)
16	Add comment to a user story		Contributors, Editors, Admins
17	Flag content as inappropriate	Add flag with a description on why it was flaged	Contributors, Editors, Admins
18	Edit comments	Ability to browse all comments and edit/delete them	Moderators, Admins
19	Preview flagged content	Ability to view flagged content and edit/delete it	Moderators, Admins
20	Skinnable ui	Ability to select a background image for the DSP	Admins
21	Share story on facebook + twitter		Contributors, Editors, Admins
22	Support for different user roles	Web users, Admins, Moderators, Editors, Contributors. UI adapts to every role (extra/hidden options according to access level)	
24	How-to page and useful email addresses		All
25	Cross browser complatibility	Test functionality on IE 8+, Firefox 1.3+, Chrome 20+, Safari 5.1+	
26	Responsive web design	Graphic design that adjusts dynamically based on device used. Foundation or Twitter Bootstrap can be used	
23	OpenID, Facebook and Twitter login support	Facebook Connect , Twitter OAuth APIs to be used. Open ID Connect when it is ready.	
27	Related stories	Viewing a story will cause related stories to be displayed	All
28	Upload user videos	Video uploaded to OpenImages. OpenImage link + title (+description, keywords etc) make new story block	Contributors, Editors, Admins
29	Link in maps	Adding a map link to every story block (add Map coords to db)	Contributors, Editors, Admins
30	Search and display results from external datasources (YouTube,Vimeo,Soundcloud, Flickr)	Search, pagination and results preview. Start new story block using selected result	Contributors, Editors, Admins
31	Skinnable top banner	Different banner for each story	Admins

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|			
		theme	
32	Font colour selection	Different font colour for each story theme	Admins
33	Ability to see where a story block was used	Include a list of stories where block is used when it is previewed by user?	All
34	Login in with My Europeana account	Single Sign-on will be developed by Europeana and integrated to the platform	
35	Europeana Object suggestions	Based on story text user puts in, Europeana Object suggestions will appear	Contributors, Editors, Admins
36	Upload user sounds	Sound uploaded to OpenImages. OpenImage link + title (+description, keywords etc) make new story block	Contributors, Editors, Admins
37	Add pdf links to stories		Contributors, Editors, Admins
38	Login with Google+ account		
39	Activity feed on user page	Notifications on new stories, user story blocks or stories used etc	Contributors, Moderators, Editors, Admins
40	Add comment on story block		Contributors, Editors, Admins
41	Video of how to build a digital story		All

Annex 3. Data Model

This is version 0.4. Under review at the time of writing (January 2013).

Entities:

DigitalStory
StoryObject
User
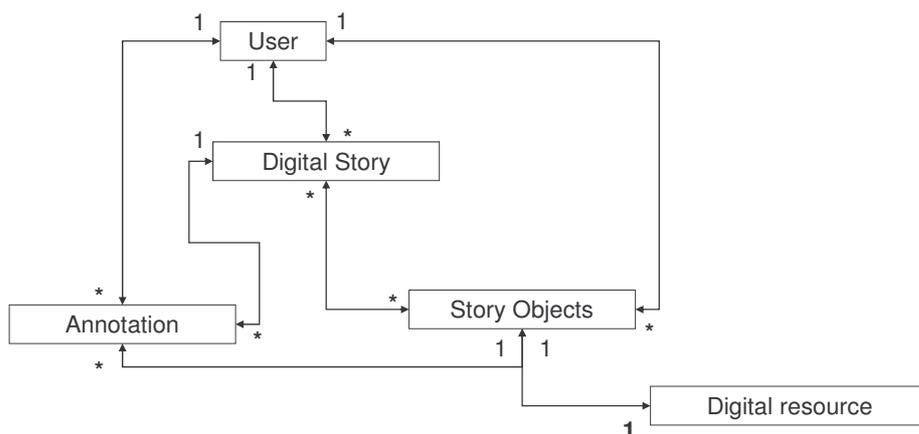
DigitalStory:

Property Name	Type	EDM Value Type	Mandatory	Cardinality	Description
title	String	Literal	Yes	1	The title of the Digital Story
description	String	Literal	Yes	1	A description provided by the user for the Digital Story
tags	Array of strings	Array of literals	Yes	1	An array of tags added by the user for indexing/search purposes, display of related story objects & stories.
creator	DBRef	reference	Yes	1	Reference to the ID of the user entity who created the story
coverImage	DBRef	reference	Yes	1	Reference to the

					id of the user uploaded image (resized to specific size). If no cover image is provided default will be used based on story theme
thumbnail	DBRef	reference	Yes	1	Reference to the id of the thumbnail image (generated by the system when user creates the story, default_theme.jpg if no cover image is used).
isPublished	Boolean	boolean	Yes	1	Indicates if the digital story will be visible or not on browsing/search
isPublishable	Boolean	boolean	Yes	1	If all mandatory fields exist then true.
forReview	Boolean	boolean	No	1	Flags the digital story for review.
id	ID object	reference	Yes	1	A unique ID for the DigitalStory assigned by the system at creation time.
storyObjects	3D Array with DBRef for story object, story object position and order: [DBRef,int,int]	3D Array [reference, int, int]	Yes	2-12	An array of references to story objects with a position (position in grid) and order (play out order) for each one. Min size=2 (one Europeana story object + one story object from different data source . Max 12.)
theme	DBRef	reference	Yes	1	Reference to the id of the theme the digital story belongs to
language	String	Literal	Yes	1	The language used for title & description. ISO 639 will be used
dateCreated	Date	Literal	Yes	1	The date the story was created (auto generated in DB).
license	string	Reference	yes	1	the value given

					here should be the rights statement that applies to the digital representation at the URL. By default set to Creative Commons PDM

StoryObject:

Property Name	Type	EDM Value type	Mandatory	Cardinality	Description
title	String	Literal	Title or description must be present	1	The title of the Story Object. Inherited from the digital resource or given by the user if digital resource is user generated
description	String	Literal	Title or description must be present	1	A description provided by the user for the Story Object if the digital resource is uploaded by the user else inherited from the digital resource (YouTube, Flickr etc).
additionalInfo	String	Literal	no	1	Any additional info about the digital resource. Useful when the resource is not uploaded by user, and user wants to add comments on how it connects with the story
creator	String (url)	reference	No	1	Reference to the profile of the user entity that created the digital resource or the name of the creator of the object. (e.g a link to the youTube user that created the video, a link to the profile of

					the DSP user that uploaded the object etc)
contributor	DBRef	reference	Yes	1	Reference to the ID of the user who created this story object
source	String (url)	reference	Yes	1	The url of the digital resource in its original datasource (e.g. the youTube link where the youTube video resource can be viewed, the Europeana landing page for the item)
tags	Array of strings	Array of literals	No	1	An array of tags added by the user for indexing/search purposes
type	Enumerated string	Literal	Yes	1	Value will be one of the story object types accepted by the system, e.g. video or audio etc. The type will also be used to display the thumbnail of the story object.
url	String (url)	reference	Yes	1	A valid URL pointing to a digital resource associated with the Story Object(e.g. youtube video link)
id	ID object	reference	Yes	1	A unique ID for the StoryObject assigned by the system at creation time.
language	String	Literal	Yes	1	The language used for the story object metadata. ISO 639 will be used
loc	2d array [x,y] Decimals (long,lat)	3d array [x,y,z] of decimals	No	1	Coordinates in decimal degrees of the longitude

					and latitude associated with the story object
dateCreated	Date (predefined format)	Literal	No	1	A date associated with the story object.
license	String(url)	Reference	yes	1	the value given here should be the rights statement that applies to the digital representation at the URL.

User:

Property name	Type	Mandatory	Cardinality	Description
id	ID object	Yes	1	Unique id assigned by the system
login	String	Yes	1	Min length=3. Accepted chars: a-z A-Z 0-9 - _ . @
password	String	Yes	1	Min length=6.
fullName	String	Yes	1	
email	String	Yes	1	
address	String	No	1	
town	String	No	1	
country	String	No	1	
gender	String	No	1	
age	Int	No	1	
role	Enumerated String	Yes	1	Value is one of: admin,moderator, editor,contributor. Set by default on registration to "contributor".
accountActive	boolean	yes	1	Indicator for active/inactive accounts. On registration it is set by the system to true.
accountCreated	Date	yes	1	System generated date of user creation

Story Image:
The story images will be stored on MongoDB GridFS and will be accessed over HTTP just as every other digital resource. The user will only provide the original image and then the rest of the thumbnails etc will be automaticaly generated, stored and linked.

Property name	Type	Mandatory	Cardinality	Description
id	ID object	Yes	1	Unique id assigned by the system

originalImage	String	Yes	1	A unique FileName identifier that points to the GridFS location where the Original Image is stored
storyImage	String	Yes	1	A Story Image FileName identifier pointing to GridFS for a Story Image version of the original one.
relatedThumbnail	String	Yes	1	Pointer to a generated thumbnail that will be used for the Related objects.
objectPreview	String	Yes	1	Pointer to a Preview Image for the Object.
objectThumbnail	String	YES	1	Pointer to a Thumbnail for the Object.
userId	String	YES	1	The user who upload the image

Themes:

Apart from being a parameter of a Digital Story a theme also provides skinning options for the ui:

Property	Type	Mandatory	Cardinality	Description
id	ID object	Yes	1	Unique id assigned by the system
title	String	Yes	1	The theme title as it will appear on the theme list. Max length=30 chars
description	String	Yes	1	Theme description (to be used for sub banner). Max length=300 chars
wallpaper	DBRef	Yes	1	A reference to the image id to be used for the background of the theme. The

				image is stored in GridFS (specific dimensions required)
banner	DBRef	Yes	1	A reference to the image id that will be used as theme banner. Image should contain the theme title, Europeana logo and logo of partner domain. (specific dimensions required)
minibanner	DBRef	Yes	1	A reference to the image used as theme banner on smaller screen sizes. Minibanner will be generated by the system when banner is loaded. (specific dimensions required)
background	String	yes	1	Hex notation of the background color used for the main screen
default	boolean	yes	1	Indicates if this is the default theme (active when user chooses to search in all themes)