Content Space

IP and Europeana Space Pilots: Case Studies

Acknowledgements

This booklet has been developed to support the work of the digital heritage community and especially Europeana. Many individuals and organisations have provided valuable assistance in gathering the information for this publication, which contains stories and lessons learnt about intellectual property during the creation of the Europeana Space Pilots, the hackathons, the business modelling workshops and the incubation periods.

The six case studies would not exist without the input of the Pilot coordinators and of the Pilot participants, who proactively participated in drafting these documents. The work on IP was led and coordinated by Charlotte Waelde at Coventry University, and our thanks also go to Anastasia Somerville-Wong from University of Exeter and Lieke Ploeger and her colleagues of Open Knowledge for their time and expertise in writing and packaging of the information in a comprehensive, accessible and yet rigorous form. All the authors involved in this publication are credited at the end of the booklet, and we also thank them all for their input and efforts.

Important support was provided by Valentina Bachi who coordinated the editing of the booklet and by the colleagues at Promoter SRL for the concept, editing, graphic layout and realisation of the booklet.

A special thanks goes to the European Commission who made this project possible allowing us to experiment with examples of creative reuse of digital cultural heritage with the key aim of demonstrating its business potential.

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Published by **Europeana Space**
December 2016, ISBN 9789082636000

Printed by **Grafitalia** di Sandro Gherardini
zona industriale La Fila, 56037 Peccioli, Pisa, Italy

Graphic design by **Promoter SRL**
www.promoter.it

This volume has been produced in the frame of the **Europeana Space** project.

Europeana Space is a project funded by the European Commission under European Union's ICT Policy Support Programme as part of the Competitiveness and Innovation Framework Programme.

Start date:	1 February 2014
Duration:	36 months (end date: 31 January 2017)
Partners:	29 partners from 13 European countries, and a growing network of affiliate partners
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Showcase:	www.digitalmeetsculture.net/europeana-space
Twitter:	@EuropeanaSpace
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The E-Space Case Studies

The E-Space project aims to increase and enhance the creative industries' use of digital cultural content, especially content accessible via the Internet portal known as Europeana. Funded by the European Commission, its purpose is to create new employment opportunities and foster innovation and economic growth based on Europe's rich cultural resources.

The E-Space consortium is a best practice network of 29 partners from the European creative industries, technology-based enterprises, the cultural heritage sector and higher education. Six thematic areas in dance, games, television, photography, museums and open and hybrid publishing have been explored through pilots, hackathons, Business Modelling Workshops (BMWs), mentoring and incubation activities. These showcased new content and applications based on digital cultural content, demonstrating how these can be commercialised for the mutual benefit of software developers and cultural institutions. The aim was to have at the end, a minimum of six competitive applications ready to be exploited on the market.

The specific business exploitation arrangements for the applications were developed during the project. However, a Description of Work (DoW) established the following key principles:

- all contributors of their own background IP to the development of pilot services and applications would retain full rights;
- Non-Disclosure Agreements (NDAs) could be signed by all participants in hackathons and workshops;
- for products reaching the incubation stage, contracts would be designed and agreed between all relevant participants/partners.

Each partner highlighted any background IP they would have in the project for which they would retain ownership.

The DoW contained provisions for access rights to IP in software and the commercialisation of project outputs, with parties agreeing a Memorandum of Understanding (MOU) in relation to software created for the project, and cloud computing, including website hosting and any other relevant software, and including the treatment of third party open source software.

Partners agreed an open source and open data approach as outlined in the DoW. The DoW stated that any tool or software developed during the project (including the hackathon) should be made available on an open source basis and should be open in terms of its reuse (subject to any pre-existing licence terms governing use). All project deliverables listed as "public", dissemination material and presentations were released under Creative Commons licences and in different formats (MS-WindowsTM compliant formats, PDF compliant formats, and open source formats such as Open Office) and made accessible through the project website and other channels.

Tools were developed by the E-Space IPR Team for the Content Space[1] accessible via the project website. They were available by January 2015 in the deliverable Europeana Space IPR: First Report on Legal Aspects and the Content Space[2] and trialled with the E-Space scenarios and hackathons, then refined and released under open source and open access licences. The tools include rights management, clearance and licensing guidelines, IP strategies for hackathons, guidelines on the sourcing and reuse of open and proprietary content and links to Internet resources. They enable users to form optimal strategies that maximize possibilities for innovation and minimize risks of failure at the business modelling stage due to disputes over ownership, or shortfalls in the funding necessary to clear rights in the tools and content required for a prototype. The project also created a "protected space": this is a space with both legal and technical measures and allows content owners to put high-resolution images within the space, and innovators to experiment with new applications.

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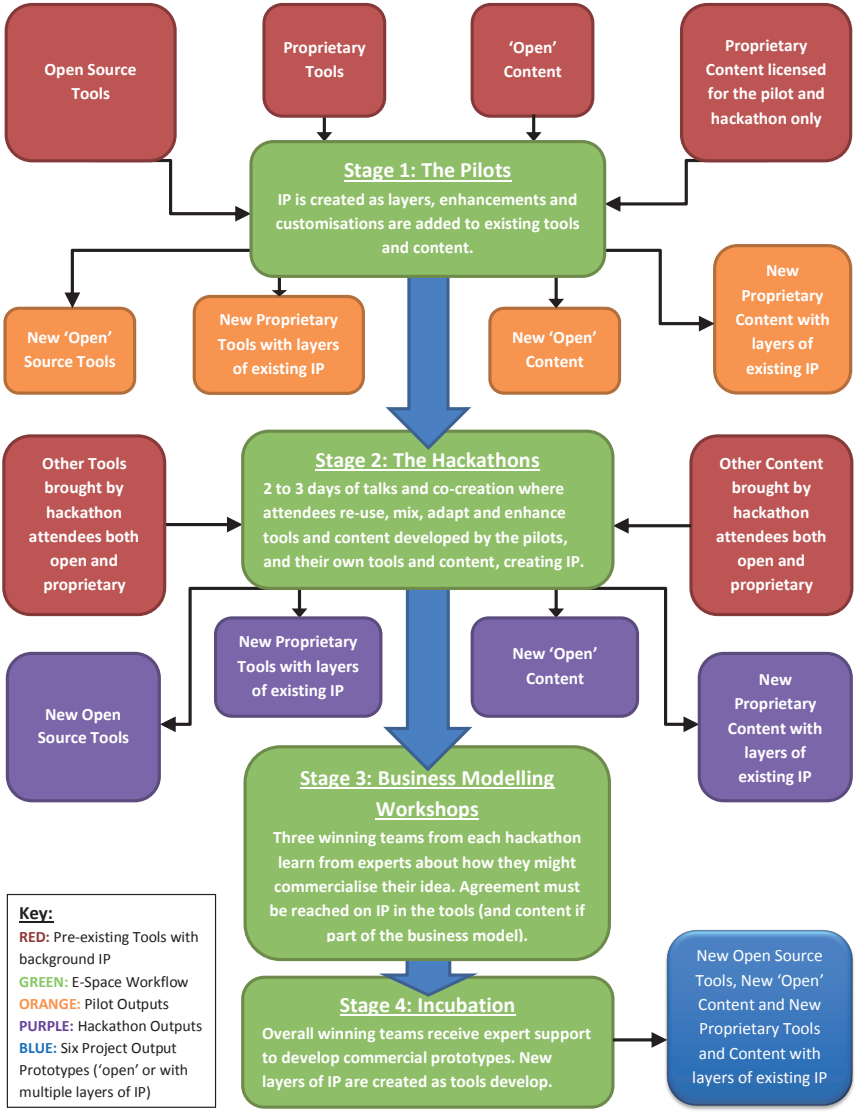
1 http://www.europeana-space.eu/content-space/

2 http://www.europeana-space.eu/wp-content/uploads/2014/04/Europeana-Space-D3.1-and-D3.3-merged.pdf

Creation of IP at the Pilot, Hackathon and Incubation Stages



Television

The E-Space TV pilot exploited the opportunities of reusing Europeana and other digital cultural content in SmartTV applications to create new TV experiences. A technical framework provided an environment to analyse, personalize and present this content. The pilot supported and evaluated two scenarios in which video material was brought out of the archive and onto the viewer's screen.

- *The broadcast scenario developed an HbbTV (Hybrid Broadcast Broadband TV) application based on the Berlin Wall. The SmartTV application targeted a social community, and was based on archive videos about the building of the Berlin Wall in 1961 up to German re-unification in 1990.*
- *The local community scenario focused on applications for an immersive user experience in the living or class room. It investigated use cases such as the elderly re-living personal memories through TV content or pupils learning about historic events. The content included different themes such as: Arts and Culture, Education, Politics, Religion, Society, Sport and History.*
- *A Multi-Screen Toolkit with tools, workshop methods and proof of concepts was developed by the pilot, and made available for the hackathon in April 2015.*

The Europeana TV Pilot and Hackathon

The TV Pilot and Approaches to Intellectual Property

The TV pilot used archive video material to develop an HbbTV application based on the Berlin Wall and a Multi-Screen Toolkit for immersive user experiences in the living or classroom. Three technical partners focused on customised and bespoke developments were responsible for the successful delivery of the pilot: Noterik, an Amsterdam based company with over ten years of experience in developing video applications, focused on back-end services and the multi-screen framework, Proton Labs on the front end SmartTV applications and 2nd screen applications with HbbTV compatibility, and NTUA (the National Technical University of Athens) managed the content and metadata connection between the Apps and the Europeana and E-Space APIs.

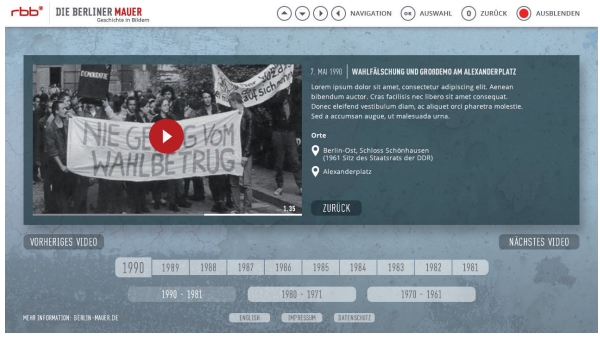


Image of the Fall of the Berlin Wall App, courtesy of Rundfunk Berlin-Brandenburg

The TV pilot decided to use as much "open" content for the pilot and hackathon as possible to avoid intellectual property (IP) issues arising, or at least to minimise the risk of copyright infringement, disputes over ownership, and a lack of funding to clear rights at the business modelling stage. The pilot decided to develop only tools so that the content would be inter-changeable. Therefore, specific content would not be crucial in achieving the ultimate aim of the pilot, that is to showcase how digital cultural content sourced from Europeana and other repositories can be reused and exploited by the creative industries. Content could always be replaced should IP issues arise without undermining this overall objective. IP was, however, generated in the development of the tools during the pilot. In line with the provisions in the DoW, the TV pilot retained ownership of copyright in the HbbTV application as this was their background IP. It was agreed that this would then be used only for demonstration purposes during the hackathon. By contrast, the multiscreen toolkit was developed during the course of the pilot and made available on an open source basis.

The TV Hackathon and Approaches to IP

IP is generated in hackathons through additions, enhancements and remixing of content and/or tools. Given the collaborative nature of work undertaken at hackathons it can be unclear as to who owns IP that is generated during the process. In the case of the TV pilot developments of the tools generated IP and as a result the need to identify ownership. The E-Space IPR Team have created tools to help hackathon owners think about how IP that arises during a hackathon might be managed and these can be found in the E-Space Online IPR Consulting Kit[3].

TV pilot organised two pre-hackathon social events for participants to meet and plan the event. The hackathon organisers took the view that the more

3 http://www.europeana-space.eu/content-space/ipr-toolkit/

the “IP policy” could be claimed as an organic, “bottom up” policy the more likely it was to “work”. The hackathon organisers decided only to highlight some IP risks that could arise at the hackathon, such as attendees using ideas learnt during the hackathon as they were not protectable by IP, but leave it to the participants to come to decisions among themselves about what content and tools they would use and who would own what. The hackathon organisers reasoned that this would preserve the “open” and “free” approach that makes hackathons so successful at innovation. Being prescriptive regarding the strategies and decisions that should be made around IP, or providing written information on the restrictions associated with reuse of tools and content was considered by hackathon leaders to be off-putting for participants and risked stifling creativity and taking up precious time for sharing ideas and building new tools. In addition Daniel Ockeloen of Noterik made it clear in his introductory remarks at a pre-hackathon event, that all hackathon outputs would be assumed to be open for further development with a view to commercial reuse, and that if anyone had an idea for something that they planned to build and commercialise independently they should not bring it to the hackathon.

The TV pilot Hacking Culture Bootcamp took place on 8–10 May 2015 in Amsterdam at Waag Society. This was a 3 day hackathon event for creatives, entrepreneurs, designers, directors and developers, who had the opportunity to develop innovative ideas in teams of creative thinkers and coders. Organisers from Waag Society, Sound and Vision and Noterik, challenged participants to develop prototypes of SmartTV applications, in particular to create new multi-screen experiences with a focus on digitised historical footage, and to experiment with Smart Audio/Video formats in order to come up with inspiring applications that create new TV experiences for the public or private domain, using cultural heritage content available via Europeana and other portals. Participants included game developers, storytellers, interactive designers, and app developers.

Content used for Hackathon

Concerns were expressed by the organisers prior to the hackathon that participants would make use of proprietary content or content that was only available to be used in a safe space. The outcome would be that partners may have to spend time clearing rights rather than focusing on the further development and the market-readiness of the prototypes. In response the hackathon organisers aimed to make use of openly licensed and public domain content. This reinforced the focus of the hackathon onto the tools and their ability to showcase how they could make use of digital cultural content, rather than on the content itself. It was emphasised that what the jury would be looking for from the winning teams would be tools rather than content, and specifically tools that could be used with a range of content.

Several content sources were identified by the organisers for reuse by the TV hackathon participants. These were Europeana, the open data sets on Europeana Labs, Open Cultuur Data, Open Beelden, and EUscreen. Participants at the hackathon were also informed that they had access to content from three partners in the project, Sound and Vision, Rundfunk Berlin-Brandenburg (RBB) – DE and Istituto Luce Cinecittà (Luce) – IT. All hackathon participants were given access to an online Google drive containing guidelines for what content and tools to use during the event. This information includes descriptions of the kind and quality of content included in the archives, the licenses, and links to example topic collections and metadata. This information included descriptions of the kind and quality of content included in the archives, the licenses, and links to example topic collections and metadata, and is now available on the hackathon miniwebsite, that is reachable via the project website.

The Google drive directed participants first to Sound and Vision open video content provided via the Open Images platform. Open Images[4] gives access to over 4000 videos from Sound and Vision and others under a Public

4 http://www.openbeelden.nl

Domain or Creative Commons BY-SA license. Also recommended were Sound of the Netherlands[5], which gives access to a collection of about 2,500 historical sound recordings, all available under either a Creative Commons – Attribution-ShareAlike license (CC BY-SA) or a Creative Commons – Attribution license (CC BY), and Open Culture Data Search[6], a search engine built by the Open State Foundation used to search through all the data in the Open Cultuur Data API. Content (images, sounds, videos) from various Dutch cultural institutions were included under an open licence.

RBB provided 500 videos from the German broadcast archive and the former East Germany state TV spanning a timeline from the beginnings of the Cold War in the 1960s till the reunification of Germany in 1990. The videos were available via Noterik's Springfield platform for tests and demonstration purposes only, both at the TV hackathon and the pre-event on 9th April 2015. They had no licence for use at the hackathon events and it was taken on trust that they would not be used outside these events, which would be an infringement of the proprietary licences attached to the videos. If these were to be used at the business modelling stage, rights would need to be cleared.

Luce provided access to EUscreen, a collection made up of 2800 video items (to be extended in the next 12 months to about 4000 items) and a uniform set of metadata, with all the videos hosted on the Noterik's Springfield platform. They also provided the collections available on their YouTube channel[7]. Both collections were accessible and usable for both pre-hackathon and hackathon days only. It was agreed verbally that the images used would be deleted from hardware at the end of the hackathon, and Marco Rendina of Luce was on hand to make sure this was done as far as was possible. Luce did not provide any openly licensed content but took advantage of the safe space of the hackathon. They made the content they provided to participants free to use in any way they liked but only within the context of the hackathon. This was by verbal agreement

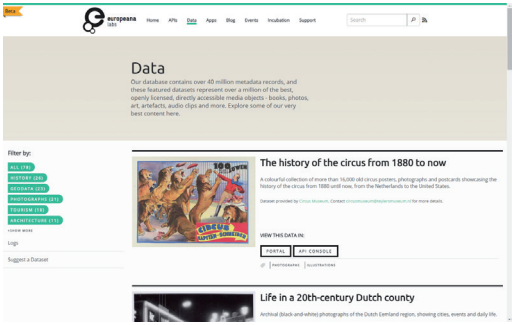
5 http://www.geluidvannederland.nl

6 http://search.opencultuurdata.nl/#/

7 https://www.youtube.com/istitutoluce

during the hackathon discussions which led to the decision that the content would not be used outside this event, and RBB was on hand to supervise, making sure as far as was possible that this agreement was honoured. As the the project's "protected space" was not operational at the time of the TV hackathon so these conditions were based on verbal agreements and trust.

Participants were pointed to the Europeana database[8] where they could access cultural heritage collections from across Europe, either via the Europeana API[9], or by browsing open datasets on Europeana Labs. They were also able to do searches on the Europeana portal itself[10]. The Google drive provided a quick guide on how to do searches on Europeana; advising participants to filter options to narrow down their searches, e.g. by content type (video, image, sound, text) or licence. It stated that the datasets available via Europeana Labs are either under a Public Domain, CC0, CC-BY or CC-BY-SA licence and that the datasets had been tagged with topic information to make them easier to search. The TV hackathon Google drive provided this link to a short screencast[11] introducing the Europeana Labs and the Europeana API.



Europeana Labs - Datasets

8 https://www.europeana.eu

9 http://labs.europeana.eu/api

10 http://www.europeana.eu/portal/en

11 https://www.youtube.com/watch?v=hTAcyfB6EjI

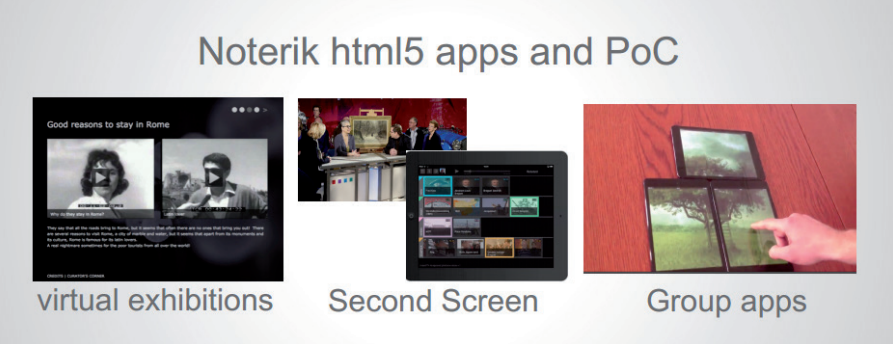
For those new to creative commons licences the following link was also provided via the Google drive: http://creativecommons.org/ and an article at http://pro.europeana.eu/blogpost/creative-commons-licenses-are-great-but-how-to-use-them. More detailed information was also available in the in the Content Space on the E-Space website, in the CC License Chooser[12].

A representative of the World Press Photo Archive (WPPA) was present and participated in the hackathon. The World Press Photo Archive contains only proprietary content, unavailable for reuse. However, since a partner was present, one team made use of it for a prototype, verbally agreeing to use the WPPA content only within the hackathon. This was not the team that was chosen to go through incubation, but nonetheless the team's discussions are ongoing with regard to a prototype and should they wish to use the WPPA materials for a commercial product that will be sold on the open market, they will have to negotiate with the WPPA. It is notable that the content required to showcase the tool was inter-changeable.

Tools used for the Hackathon

As noted above, the TV pilot made an open source platform for multiscreen applications available at the hackathon. A broadcast scenario led by RBB and the local community scenario led by Sound and Vision were presented as inspirational best practices. The aim was for participants to develop prototypes of SmartTV applications that create new TV experiences.

12 http://www.europeana-space.eu/wp-content/uploads/2015/07/spa_cspace_09_cclicchooser.pdf



Tools to be provided in the TV hackathon by E-Space partner Noterik

Noterik provided the main software developed as part of the TV pilot as a multiscreen toolkit for the TV hackathon under an open source licence. In the event it was mostly the Noterik multiscreen toolkit[13] that was used. While no one was making new content in the TV hackathon, the software being developed had the potential to become proprietary, as developers and other participants built upon, remixed, enhanced and otherwise altered the tools provided.

Not all participants made use of the multiscreen toolkit. It was provided on an optional basis, which meant the hackathon participants could choose to use their own systems if preferred. The following links were provided by Noterik to access their tools: Github: http://noterik.github.io and Open Googledoc: http://www.noterik.com/hackathon.

The VBOT platform from Proton Labs, which is not open source, was also made available, although ultimately it was not used in the hackathon.

13 The Multiscreen Toolkit is based on HTML5 and Java, and provides a foundation for building and prototyping of a wide range of video applications. Among other things, the toolkit enables advanced remote control options, co-viewing and collaboration around videos. In addition to offering reusable software components, the toolkit aims to facilitate easy and quick prototyping of multiscreen application ideas and proof of concepts. Examples of applications built using the toolkit include a second screen application for watching enriched TV programs and a spatial spotting application for pinpointing objects in a co-viewer setup.

Post-Hackathon Reflection

Project partners were keen to share the winners' ideas in blog posts and video. Remix, the project partner with oversight of the business modelling and incubation phases, sought to contain this, since, in contrast to a normal hackathon, the winning ideas were intended to be commercialised. It was thought that if too much information was given publicly, then third parties might use these ideas ultimately to the prejudice of the winner – ideas are not protectable unless it is agreed that they are not to be used or shared by way of a non-disclosure (confidentiality) agreement. Consequently, there was discussion about whether a non-disclosure agreement amongst hackathon organisers and project partners should be used in future E-Space hackathons to make sure everyone attending is aware that ideas should not be disclosed outside of their hackathon teams. It was also noted that what was developed could be the subject of a patent. Disclosing information about the invention before a patent was applied for would destroy novelty meaning that a patent would be unobtainable. It was noted that if there was no intention of applying for a patent, then blogging in general about ideas (rather than the specific detail of what is proposed) such that anyone reading it would not be able to recreate the substance of the idea is fine. As with an emphasis on IP before the hackathon, the challenge with introducing a non-disclosure agreement between hackathon organisers and project partners is that it brings a formality to the proceedings. This in turn can make people guarded and less willing to share ideas.

Business Modelling and Incubation

The BMW, organised by Remix, took place in London on 26 June 2015. Three winning teams from the TV hackathon attended.

We Make Known: offer an online platform and physical instillation that allows museum and archive visitors to serendipitously explore large collections by using a special algorithm and exhibition management system.

Bosch: an application inspired by the old theatre method of lighting single performers on stage. Bosch applies this method to art allowing users to add their voice to individual characters which can be layered and played back, bringing a new method of exploration, conceptualisation and engagement to paintings.

Art(f)inder: a mobile application that empowers users via a swiping left (no) right (yes) action to save their art preferences. With each swipe the Art(f)inder algorithm generates recommendations for museums, galleries, archives and libraries for users to visit in new cities. Art(f)inder offers a second social layer matching users with others who "liked" similar works facilitating social interaction and meet-ups.

Much of the BMW focussed on the value that could be extracted from the ideas presented by the participants and for whom. The business modelling was broadly based on an exploration of the Business Model Canvas[14]. The objective of the workshop was to focus on, and critically evaluate, the discussions emerging from this for each team, especially in the context of creative businesses.

On IP, discussion focused at one point on ownership: were they individual employees, or working for themselves? This mattered because it would have an impact on who owned the IP in their work. All members of We Make Known and Bosch were students, and Art(f)inder was an employee working for the digital department in a broadcaster. When questioned he

14 https://strategyzer.com/canvas/business-model-canvas?url=canvas/bmc

was happy that the employer would own (or have a licence of depending on the jurisdiction) the IP in what he was developing.

With regards to the IP in the software being developed, there was discussion around proprietary and open strategies. While each participant almost by default had opted for an open approach to what was they were developing, they were questioned as to whether they might consider making it proprietary. While value could, for instance, be extracted from licensing information from the use of the "products" in the museums sector, value could also be extracted from licensing the software. Relatedly, a proprietary approach could prevent third parties from using the software/apps for the same purpose and thus competing in the same market with the same product.

Ultimately no decisions were made about IP – as that was not the purpose of the BMW.

In deciding which project should go through to Incubation, the judges were drawn to We Make Known because it had several different components, and was well placed to capitalise upon several consumer and industry trends. Among other things, it offered an innovative user interface for online catalogues; an algorithm for serendipitous browsing across different disciplines, and a hardware installation for physical environments. One of the most attractive aspects of this proposition were the multiple revenue models and markets available to them, which were explored with the help of Remix as part of the Incubation process.

Photography

The E-Space Photography Pilot set out to demonstrate a range of possibilities offered by apps, Europeana APIs, and a multitude of tools developed by the open source community, to come up with innovative models involving historical and present-day photography, with monetizing potential and investment appeal.

The featured applications were grouped around three ideas:

1. *Museum applications providing access to Europeana and similar resources which can yield new types of visitor-experiences;*
2. *Storytelling web applications and apps allowing for users to create new stories by mixing historical images from Europeana and other public sources with user-generated content;*
3. *Augmented reality applications enabling historical images to be layered with actual experiences and other material, such as maps and social user data.*

The best ideas and proposals stemming from the hackathon (where developers of innovative applications involving cultural photographic heritage met, exchanged ideas and looked for commonality and interoperability) were channeled through a business modelling event in London. Developers then were able to showcase their work to selected investors.

The Photography Pilot and Hackathon

Courtesy of KU Leuven

The Photography pilot background and approaches to IP

IP based business models underlying the photography industry have been under increasing pressure since smart phones and the Internet enabled ordinary citizens to upload and share millions of images of almost everything and in real time. Private collections still charge individuals for the use of

photographs, while individuals want to and increasingly do use, material already cleared for reuse. Photography agencies, archives, museums and galleries have to innovate to stay competitive.

There is increasing clamour for cultural heritage institutions to digitise and make freely available high-resolution images of public domain works, and to make available collections of 20th Century images with pre-cleared rights. Reusers would like this content to be easily downloadable with all the relevant documentation on associated rights, proper attribution, and with information on how to clear rights for copyright protected material.

Against this background the E-Space Photography pilot[1], led by KU Leuven focused on the potential for the photographic heritage available on platforms such as Europeana[2], Wikimedia Commons[3] and Flickr Commons[4] to be exploited commercially by the creative industries for the mutual benefit of both creative companies and content owners. These repositories contain high quality digital images accompanied by useful metadata.

An earlier European funded project, EuropeanaPhotography, had contributed to the upload of nearly half a million images from early photography to Europeana. The information in the analogue source was translated in detail into the digital file, giving and example of high standards of digitisation.

The E-Space Photography pilot sought to enlarge the corpus of reusable content available in Europeana for use during the hackathon. To this end a Photo Collection Day was organised in Leuven (Belgium) on 27 November 2015. Citizens of Leuven were invited to the City Archive to have their private pictures of the city digitised. Metadata and a content description were recorded, and a licence choice made for the digitised picture. Because an E-Space representative was on hand to discuss licence choices with the citizens, and to explain the differences between the different types of CC

1 See http://www.europeana-space.eu/photography-pilot/

2 See http://www.europeana.eu/portal/

3 See https://commons.wikimedia.org/wiki/Main_Page

4 See https://www.flickr.com/commons

licenses, almost all of them chose to apply the Public Domain mark or a CC-BY licence. These pictures would then be made available on Europeana portal.

The Applications and Content

The Photography pilot has three applications for illustrating to developers and other creatives the possibilities for potentially commercially viable innovations.

First is an existing app that can be used to innovate with existing images — Blinkster[5] — which uses image similarity recognition algorithms to enhance photography exhibition experiences. It can be applied to create easy-to-use repositories for pilot users to create new products, such as storyboards and augmented reality[6].

Second, the pilot demonstrates how people can create new forms of social interaction based on the remixing of digital photographic cultural heritage. The pilot uses images from Europeana and from photography of early 20th century Leuven to create challenges and events whereby people are invited to look for the areas of the city captured by the old photographs, and to take their own contemporary photographic interpretations on their smartphones. This demonstration makes use of the Omeka front-end[7] (already popular with museums and other cultural heritage institutions) and the E-Space back-end. The pilot developed a storytelling app on the Omeka server, with its API set up in the E-Space Portal. This provides a function which is not available in Europeana and by virtue of which end users are able to login to their own profile and upload content available on the Omeka website in order to tell stories using photographic content. They can also upload their own pictures and add them to the mix. These stories can then be shared with other users. A possible educational application of this would be for a

5 See http://www.europeana-space.eu/blinkster/. Blinkster is also in use for the Museums pilot.

6 This app is also explored in the museums pilot See http://www.europeana-space.eu/museums-pilot/

7 See http://omeka.org/

teacher who builds a sample story-board and then asks students to add their own stories.

The third application uses old and new images to create augmented reality experiences, where images can be overlaid and mixed to create visual experiences, such as instant time-travel. Possible uses for this are touristic applications where tourists need to find a given place using a photograph. Once they recognise the scene with their camera, a historical image is overlaid on the smartphone screen with appropriate explanations. To this end a tour through Leuven was prepared based on photographs of the Leuven City Archive available in Europeana. A large set of reference images was then created of the actual scenes so that users could recognise the scenes with their smartphones.

The Photography pilot used historical images, both open and proprietary (for which copyright had to be cleared). Pilot content was mostly reusable content from Europeana with a Creative Commons[8] or Public Domain label[9]. However, the pilot also used more specific collections not freely available, such as the City of Leuven's EuropeanaPhotography dataset, which is kept in the Leuven archive and is not available via Europeana. In the context of E-Space, negotiations were undertaken with the city archive to review their position on the rights labelling of this dataset. This will involve a decision at the city council level.

These applications and content were made available at the Photography hackathon[10] which took place on 25–27 February 2016 in Leuven and during which content providers and developers tested new ideas.

User Login

The Europeana portal is a first generation web application and does not yet allow for user login. This limits the possibilities for users to become engaged

8 See http://creativecommons.org/

9 See http://creativecommons.org/publicdomain/mark/1.0/

10 See http://www.europeana-space.eu/hackathons/photography/

and prevents content providers from obtaining information about who is using their content and when. The E-Space Portal[11] by contrast provides the possibility for users to login and to save their own data on the E-Space server alongside both open and proprietary content made available in the E-Space Content Space[12]. The E-Space API provides functionalities to exploit user login data while protecting privacy.

Using the "protected space"

Some content available through Europeana is labelled as Public Domain[13] or is protected by copyright and available for reuse under CC licenses[14]. However for much material it is unclear how it may be reused as no licence or rights label is attached to the work. This causes problems for reuse. Two main concerns underpin the hesitancy of content providers to open up content for reuse: one is that others may profit from the content, bypassing the provider. The other is the concern that the material may be used in ways in which the right holder, or subject, may find unsavoury (see the next section below on ethical considerations).

While some memory institutions hope to supplement their revenue through licensing content, increasing numbers are realising that the hope of significant revenue being generated in this way is slim especially when compared with other funding streams, and so are becoming less concerned about opening up collections – at least from a financial perspective. There are however institutions that have invested significantly in digitisation programmes and who continue to make their content available only with a non-commercial licence (CC-BY-NC) due to the view that the investment must be recovered by charging a fee for commercial reuse. During the photograph collection day in Leuven noted above, most chose to apply

11 http://www.europeana-space.eu/technical-space/

12 See http://www.europeana-space.eu/content-space/

13 See http://creativecommons.org/publicdomain/mark/1.0/

14 See http://creativecommons.org/

the Public Domain mark or a CC-BY licence (for more recent work) to their images. However, during other collection days such as the one held in Pisa during the EuropeanaPhotography project, the choice of a "Non-Commercial" licence was made by many contributors because there was a desire to prevent others from profiting from the images. In Leuven, the photographs were of locations in the city before and after the World War and so there was a general sense of public ownership of these, whereas in Pisa, the subjects of the photographs were more personal and individuals thus had more of a vested interest in being the ones to profit from them, should any profit be made. It is important to note however that the objection to commercial reuse often does not stem from a desire to generate income or to prevent others from making gains; it is more from moral and privacy concerns and copyright is seen as a vehicle to attain these goals. While many would be proud if their family photographs were on display on an historical website, others would feel that their privacy was compromised if the photograph was used in commercial advertising.

Another problem encountered by the EuropeanaPhotography consortium was that of the quality of photographs. Businesses such as Top Photo[15] or Parisienne Photographie[16] shared images that were low quality thumbnails or heavily watermarked thus rendering them largely incapable of reuse. The thumbnail is often visible on the Europeana portal without any associated watermark and bears the Rights Reserved Free Access rights statement. When enlarged, the picture can still be seen through the Europeana portal but along with a clear, visible watermark displaying the company name. Commercial agencies use visible watermarks because they showcase their content in the hope that users will follow the link to the agency's website and purchase a digital image that has the watermark removed. They would be willing to licence the images so long as they are part of the business model – one of revenue sharing.

15 See http://www.topfoto.co.uk/

16 See http://www.parisiennedephotographie.fr/home.aspx

To try and find a solution to these concerns, the E-Space IPR Team offered the idea of the E-Space "protected space". This is a space with both legal and technical measures and allows content owners to put high-resolution images within the space and allow innovators to experiment with new applications. Negotiation over rights and the discussion of a business model then takes place prior to content or tools leaving the "protected space". The E-Space IPR Team provided Rights Clearance Guidelines[17] to assist in this process.

The Photography pilot intended to use the E-Space "protected space" for a limited amount of proprietary and un-cleared content, and were keen on having the legal aspects of this space translated into a technical framework, believing the concept of the "protected space" to be as much a technical one as a legal one. While Europeana rights labelling attached rights to objects rather than people/rightsholders, the E-Space "protected space" allows you to find specific materials you can experiment with under certain semantic conditions. The Photography pilot requested that the metadata on this should be more refined than on Europeana, in addition to having the legal terms and conditions, and that there should be more legal information within this metadata. For example, for the first 100 downloads the software allows, the user/developer can find out whether he/she can upscale to 10,000 by going to an interface to manage and clear rights online. The user should be able to make a selection of images for use for an application, then go to a calculator tool which will reveal that, for example, 60% of the images are CC reusable images and 40% are restricted, and then to be able to calculate the risk this entails. It should also give advice such as suggesting, for example, that a user should change images until there are, for example, 5–10% restricted images that can be properly budgeted for. The Pilot Coordinator recommended that the "protected space" should therefore have very precise contractual negotiations on IP sharing but translated into an IT environment. The API described above would, for example, be one part of this technical framework for the E-Space "protected space". In E-Space, photo agencies still own their collections, so, if using the calculator tool it turns out that 90% of one end user's collection, for example, is open and 10% is closed,

17 See http://www.europeana-space.eu/content-space/ipr-toolkit/

the user can click to go straight to the content provider's website to start negotiation. This approach reflects the reality that copyright management is a part of the risk management of creative industries. Clearing all rights before an experimental business model has matured, in a demonstrator phase, might be cumbersome and lengthy process that could stifle innovation.

The Photography pilot developed API calls and metadata structures to allow this technology to be demonstrated but it proved impossible to finish this technical side of the IP "protected space" within the E-Space project. This kind of structure, however, is not likely to be available elsewhere in the near future.

In the event, the pilot used the E-Space "protected space" for about 60 of the restricted photographs in the KU Leuven collection but the rest of the content used was openly licensed due to the issues highlighted above.

Ethical Considerations for the Reuse of Photographs

Photography is a sector in which attention to moral rights, or "responsible use" of material is prominent. Some content owners during the EuropeanaPhotography Collection Day in Pisa were fearful not only of possible loss of revenue, but also of the possibility for misrepresentation of the subjects of the photographs.

In 2011, Europeana released a Network Paper "Ethics for Europeana[18]", which stated that:

"The documents and information provided to users must be authentic, without falsification or subjective interpretation. Users should be able to make their own interpretation as they like. Therefore, the information must be provided with sufficient contextual data in order to facilitate such interpretation."

However, in a reuse case where metadata (context) and the digital image (content) can get separated the "risk" involved in making the picture freely

18 See http://pro.europeana.eu/files/Europeana_Professional/Publications/Ethics%20Paper%20-%20Network.pdf

reusable is increased. Archives fear that historical family photographs could be reused as, for example, backgrounds in shooting games, or cheapened by their reuse in marketing campaigns.

To address these sensitivities a number of tools are available in the Online IPR Consulting Kit[19] within the Content Space[20] Copyright Tools for Cultural Heritage[21]. In the Twelve Point Code of Ethics[22] tool for best practice in the reuse of photographic heritage content the importance of moral integrity, authenticity and respect in the reuse of digital cultural content is stressed.

The Photography Hackathon and Approaches to IP

The Photography pilot held the hackathon in Leuven on 25–27 February 2016, and invited the developers of the best cultural applications using Europeana photography to share coding experience (APIs), and develop business opportunities.

The challenge for the Photography hackathon was to bring the three applications noted above together such that content providers and users were able to collaborate in innovative ways with the tools and content. The purpose of the hackathon was to find links between photographic heritage content, the general public, amateurs, pro-ams and professional developers through an intermediate software architecture that provides real role identification, and sharing of tasks. The key challenge was to create "tidal innovation" rather than one bright idea for one new micro business model.

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19 http://www.europeana-space.eu/content-space/ipr-toolkit/

20 http://www.europeana-space.eu/content-space/

21 http://www.europeana-space.eu/content-space/copyright-tools-for-cultural-heritage/

22 http://www.europeana-space.eu/wp-content/uploads/2015/07/spa_cspace_15_twelvepoints.pdf

The E-Space IPR Team reiterated the need for clear guidance at the hackathon and pre-hackathon events as to how issues of IP might be anticipated and monitored throughout the process. The IPR team offered documentation on IP and a slide presentation to be made available at the photography hackathon to inform attendees of the options and possibilities in IP for their content and software development.

Fred Truyen from KU Leuven gave a talk to the hackathon participants at the opening event. He stated that hackathon teams would be requested to provide a preliminary IP plan together with their concept, which would form part of the evaluation criteria. IP rights are an integral part of both the supply and delivery chains of successful applications, and should thus be taken into account in the design phase. The IP plan should address such questions as ownership of rights coming in to the hackathon, and those developed during the hackathon; how a sustainable model can be developed where all share in any eventual income stream; how producer IP can coexist with existing supplier IP to the benefit of all.

One of the Europeana Space attendees stated publically that participants brought ideas to the hackathon and that these were often shared during the event. If the participants were worried about others taking ideas, then they should not be brought to the hackathon.

A talk was also given during the opening event on Creative Commons licences.

Content Used for the Hackathon

Apart from open content, hackathon attendees were also able to upload and manage user-generated content, and access protected E-Space content in the “protected space”.

The Photography pilot provided KU Leuven restricted collection and free content from Europeana.

Content provider	Selected collection/s	Type of content	Amount of the sourced content	Copyright
Europeana	The European Library	Images	148	CC BY-NC-SA
openbeelden.nl	Open Images	Video	201	CC BY-SA
Europeana	Digitising Contemporary Art	Images	65	CC BY-NC-SA

For the storytelling app, developers had access to the entire Europeana repository through its connection with the E-Space Portal API. This API also provides access to the digital content from DigitalNZ[23], the MINT aggregation platform[24], and the Rijksmuseum[25]. Users could select items from search results and add them to a personal repository in the "protected space" to build collections and stories.

The content sources for the pilot demonstration were Europeana and single-provider content (see the table below). The single-provider content was filtered on suitability for use at the hackathon.

Content provider	Selected collection/s	Type of content	Amount of the sourced content	Copyright
Private person, Leuven City Archives		Images	190	CC BY
Private person, Leuven City Archives		Images	6	CC BY-NC
Private person, Leuven City Archives		Images	32	Public Domain
Europeana	Leuven City Archives	Images	74	Copyright Protected

** this content, a total of 228 images, was collected during the Photo Collection Day in Leuven on November 27 2015. The images are donated to the Leuven City Archives, and will be uploaded to the E-Space Technical Space. Their metadata information will also be ingested to Europeana.*

23 See http://www.digitalnz.org/

24 See http://dm2e.eu/mint-metadata-interoperability-platform/

25 See https://www.rijksmuseum.nl/en

Tools Available for the Hackathon

Tools from Europeana Labs[26] were provided together with the E-Space API, which gives access to the "protected space". Open tools were provided to connect content management system software such as Omeka to this backend environment.

The metadata API and the storytelling API (Omeka developments) software was made available open source to participating developers at the hackathon. Those who wanted to use it were able to obtain a key free of charge, for reuse of the heritage content. Participants also had access to the JPSearch API[27].

As noted above, it was originally intended that the Blinkster app would be available to be built upon by developers at the hackathon. However, it has a closed licence and no open API for developers to use. It also proved not to be as adaptable as it seemed at the start of the project, as it could not generate an IPhone app. It would therefore only serve half the population at public exhibitions – those with Google android.

Additionally, the most interesting part of the Blinkster app for the Photography pilot was an algorithm, which had been developed by an employee at KU Leuven. This employee owned the IP in the developments but was not involved in the E-Space project. For these reasons the decision was made that Blinkster would only be used for demonstration purposes at the hackathon. It would showcase the kind of app that could be made but would not itself be built upon during the hackathon. Blinkster would remain available with an alternative business model in mind similar to, for example, the Apple Store, where app developers can earn revenue by selling add-ons to the technology with a percentage going to Apple.

26 See http://labs.europeana.eu/

27 See http://jpeg.org/jpsearch/index.html

Post-Hackathon Developments

Of particular note for the Photography pilot was the way in which one team that came together at the photography hackathon was formed and the subsequent developments.

Individuals from two different organisations, and two individuals (one a student) formed a team that eventually called themselves the “StoryPix” team — a name that was an idea of the student.

During the hackathon the team had intensive discussions around their developing concept, discussions that were not always smooth. The team utilised a concept of combining images and sound that one of the team members brought from the earlier E-Space TV hackathon. This was enriched with the idea of another team member to use billboards to create a thematic connection (or story) between billboard images around the city. Two members of the team insisted that StoryPix used content from Europeana, stressing also the connection with local heritage. The final result, StoryPix, won the Photography hackathon in Leuven.

That evening three members of the team, along with a Europeana representative, went to dinner in Leuven. The following day, without saying anything to other members of the team, one of the members of the StoryPix team registered StoryPix for the Europeana Challenge – a competition staged by Europeana, and which had been discussed during the dinner. This registration was just on time for the competition deadline. Virtually the same pitch was used for the Europeana Challenge that had been produced for the Photography hackathon. The individual who registered StoryPix for the Europeana Challenge said nothing to the other members of the team when StoryPix was awarded 15000 Euros by Europeana at the end of March 2016.

The individual who had registered StoryPix with Europeana Challenge went on, as an individual, to attend the E-Space Business Modelling Workshop and enter incubation.

A string of emails ensued among interested parties. It was agreed that it was not for E-Space to adjudicate between the parties but it was for them

to find their solution. During incubation a new team was formed around StoryPix, which included the individual who registered the innovation for the Europeana challenge but not the other members who had been part of the original team during the Photography hackathon.

Analysing the events through a legal lens leaves open questions as to the ownership of the underlying intellectual property in StoryPix. While ideas are not protected, their expression is: if a dispute arose questions would be asked as to how much of what emerged from the Photography hackathon was idea and how much expression would need to be answered, and in so doing the author and owners of the underlying IP identified.

No new questions on IP arose from StoryPix and the new team during business modelling and incubation.

Dance

The aim of the E-Space Dance pilot was to create a general framework for working with dance content and the metadata accessible through Europeana, and to enable the production of two innovative models of content reuse: one for research purposes and one for leisure.

Two applications were developed based on this framework:

1. *DANCESPACES for leisure, teaching and learning; to share and explore dance content;*
2. *DANCEPRO for professionals and dance researchers; for multi-modal annotation of dance in real time.*

The content of the pilot was drawn from the regional, national and private archival collections of partners and from Europeana. This content embraced contemporary dance, classical ballet and other theatrical dance forms, as well as social and popular dance, folk, national and indigenous dance forms.

The Dance Pilot and Hackathon

Motion in action. Dance workshop at Coventry University, Courtesy of Coventry University

Introducing the Dance Pilot and its Approach to Intellectual Property

The E-Space Dance pilot, led by Coventry University in collaboration with IN2 (an Edinburgh based media management and software publishing company) and the Universidade Nova de Lisboa (FCSH-UNL), created a general framework and taxonomy for working with dance content and metadata accessible through Europeana. The aim was to enable the

production of two innovative models for content reuse, one for research purposes and one for leisure.

The content of the pilot was drawn from the regional, national and private archival collections of partners and from Europeana. This content embraced contemporary dance, classical ballet and other theatrical dance forms, as well as social and popular dance, folk, national and indigenous dance forms. It also encompassed more ancient dance forms including those inscribed on historical artefacts (drawings, objects, paintings, texts and other kinds of inscriptions), notations and other forms of dance scores, books and other textual objects, publicity and marketing materials (posters, programmes, etc.), audio-visual recordings, photographs and digital visualisations (using motion capture and other tracking devices).

DanceSpaces

DanceSpaces[1] is a web-based application for reusing audio-visual content, by creating and sharing dance collections and narratives, and focuses on the needs of the general public, dance enthusiasts and pre-professionals (e.g. dance learners and educators, those who participate in dance as a social and/or recreational activity, dance audiences/viewers and tourists, etc.) who want to share and explore content related to a particular aspect of dance. DanceSpaces was built under the coordination of IN2 and can be accessed on any device that is connected to the Internet. The interface adapts automatically if the visitor is using a smartphone, tablet or desktop.

DancePro

DancePro[2] is an application developed as a new version of the Creation tool software, which is a video annotator, working as a digital notebook in real time for professionals during creative and compositional processes. It

1 http://www.europeana-space.eu/dancespaces/

2 http://www.europeana-space.eu/dancepro/

focuses on the needs of the researchers and dance experts (e.g. dance artists, choreographers), and offers a set of powerful tools for accessing dance content and creating extensive metadata. DancePro was built under the coordination of FCSH-UNL.

Thinking IPR

Pilot Coordinators worked with the E-Space IPR Team throughout the duration of the project, in order to obtain best practice advice on how to handle the performing arts content from a legal (IPR) perspective as they set out to develop DanceSpaces and DancePro. The pilot explored cultural heritage content and the potential for reusing this content using the Europeana database especially. They also explored the potential to stimulate market development using digital technologies in relation to dance cultural heritage content. The IPR Team advised pilot leaders directly with respect to email agreements and permissions with third party content providers. They also provided the resources and tools in the Content Space[3] of the E-Space website and the terms and conditions of use for the E-Space "protected space" for proprietary content, which exists in the E-Space Portal[4], an area protected by both legal and access rights.

Introducing the Applications/Tools

The pilot brought adaptations of existing proprietary software held by partners IN2 and FCSH-UNL to bear in solving the problem of search and discovery of dance content, and creating the two new applications DanceSpaces and DancePro.

IN2 led on the development of the DanceSpaces prototype, which is an adaptation of mymeedia, using dance content scenarios, and which allows any logged in user to become a curator, and create dance collections or

3 http://www.europeana-space.eu/content-space/

4 http://www.europeana-space.eu/technical-space/

narratives. These tools and services were from ON:meedia, the ecosystem where media lives. They include an easily customisable service-oriented platform, where diverse content-based indexing modules can be composed into workflows, and customised to store extracted metadata, annotations and other content in any repository structure. This provides an environment where repository content can be used or reused through the authoring of flexible user interfaces. The user, as a curator, can edit existing collections, or create new collections with just a few clicks, selecting a title, description, cover and display layout. They can upload their own content via an intuitive web interface, or reuse content that is already available on DanceSpaces. From the visual interface displaying all the available content, it is possible to easily assign each piece of content (e.g. image, video, text, PDF) to one or more existing collections or narratives.

For users who are looking for something particular it is possible to easily find the relevant content using a full text search (supporting also logical operators) and a number of facets (e.g. tags). If the aim is to create a narrative, the user can choose to organise with a visual drag and drop interface the elements that were selected for a given story. Changes made are immediately reflected in the published collection or narrative. The look and feel, and even the perceived functionality, of the published collections and narratives, from the perspective a non-logged in user (i.e. a DanceSpaces visitor), depends on the chosen layout. Several templates are available, and it is possible to change the aspect of an existing collection at any time. In this way, access to content is provided in the most flexible way, supporting future creative ideas.

The DancePro prototype 2.0 developed by FCSH-UNL, enables the recording and annotation of videos in real-time, or of previously recorded videos, such as Europeana content. The prototype was tested by professional choreographers, but needed to be developed for more robust use and global distribution. This could be achieved within the framework of E-Space. It allows several types and modes of annotations and is designed to support the creative and compositional processes of professional choreographers

and dancers. It is also of analytic and scholarly use. DancePro can in fact be of use in any domain where the performance of the human body is assessed.

Both tools were developed simultaneously over the course of the project. Each partner developed the back-end and front-end of the prototypes, creating user-friendly interfaces, and evaluated each tool in April and September 2015.

The technology requirements provided by IN2 through the ON:meedia platform included:

- Authoring an environment for the creation of graphical user interface templates and the publishing of (micro) content collections that include rich search functionality and provide facets for refining the search results
- Software infrastructure for the management of different pilot software components.

The technology requirements provided by FCSH-UNL included:

- Software to capture and do manual multimodal real-time annotation of video running on a PC
- Software modules for metadata linking and Europeana API query – available in the portal[5]

Partners reserved all rights in relation to these existing technologies.

IN2 and UNL-FCSH set up the tools for granular content annotation, based on the ON:meedia platform[6], Creation-tool and Knowledge-Base platform. These tools were already developed and tested in previous projects including Adaptive Channels in Europe 2010–2012 (EUTV) and Transmedia Knowledge Base for Contemporary Dance Research Project 2009–2013 (TKB). The tools were adapted and customised by the pilot in order to fit the requirements of the two scenarios. For example, content was annotated using automatic tools for video analysis and concept detection, and the

5 http://www.europeana-space.eu/technical-space/

6 http://www.clunl.edu.pt/pt/projecto.asp?id=1555&mid=157

user interfaces were used for crowd-sourced tagging and content access. Tools were extensively usability tested and evaluated at E-Space events in Portugal (May 2015) and Athens (Sep 2015) and then the menus, annotation and structure were improved and modified both backend and frontend.

Partners reserved all rights both to the background IPR in their existing pre-pilot technologies and in the technologies once adapted, improved or modified for the pilot.

Introducing the Content

The Dance pilot annotation tool captures movement. However, the dance community tends not to release this content as open content, so the pilot decided to focus on using Europeana and other open content for the hackathon. It used restricted content only for demonstration purposes, limiting the possibility for problems to arise at the business modelling and incubation stages with rights clearance for the reuse of the content.

The pilot used both open and proprietary content from multiple sources including the Europeana database and the Siobhan Davies Replay archive[7], which was ready and available to use, by agreement with the pilot, for pilot purposes only. The section below outlines in more detail the content used by the pilot and the pilot approach to IP regarding this content.

Content Sourcing for the Pilot

The Dance pilot faced the challenge of finding content on the Europeana database that was accessible and freely available for reuse. The task proved more difficult than expected. Users expect to be able to find reusable content quickly but this is not always possible on Europeana. The difficulties outlined below, raised important questions that would be further explored

7 http://www.siobhandaviesreplay.com

through the development of the Dance pilot's contribution to the E-Space Massive Open Online Course (MOOC).

The Dance pilot envisaged reusing the digital dance content available through Europeana in the following ways:

- to upload content to the pilot set-up by IN2 platform
- to reuse content for the testing of the mock-ups
- to use content at later stages e.g. usability tests
- to create content collections located on the E-Space "protected space" platform for use during the hackathon
- for an audit of dance content located on Europeana.

The Dance pilot located various single collections that were sometimes proprietary and sometimes available. It was often the case that metadata was listed with no actual access to the content. In such cases, the Dance pilot either contacted the content provider or Europeana directly, or noted the content and listed it as an identified source, with the potential to be reused, without actually reusing it. In one particular case, a Europeana collection entitled ECLAP was identified, which had a variety of still and moving images available, and in this instance, the project's technical coordinator Promoter SRL secured an agreement with the collection custodians. Most of the collections were proprietary or only offered metadata, so the Dance pilot contacted collection coordinators or Europeana directly for assistance with rights clearance. A representative from Europeana Labs offered guidance and directed the pilot towards open-access content and alternative dance collections.

The material the Dance pilot was eventually able to source would determine the future of pilot activities. Given the difficulties with Europeana content, the pilot chose to find alternative content to work with in addition to the still and moving images from Europeana. This allowed the developers to begin testing their mock ups. Without sufficient content to reuse the development and testing of the prototypes would have been difficult. In addition to trying to secure content that was readily available, it was considered that inviting

artists to collaborate with the pilot could be advantageous in helping to disseminate the project and the pilot's activities, creating partnerships with key stakeholders, and identifying artists who could potentially offer and contribute to Europeana, thus serving to enhance the cultural heritage sector with respect to dance.

In the end, the pilot drew much of its content from the ECLAP online library, as well as from the international dance community, such as freelance individual artists. Pilot leaders worked with these individual leaders in the field of dance, sourcing content from Australia, Greece, England, the US and other European countries. The content used was a mixture of openly licensed and proprietary content and, as with the Museums pilot, simple email agreements for reuse were made with content providers external to the E-Space partnership.

Below is a detailed list of the content eventually used by the pilot. The combined hours of sourcing moving content found through Europeana amounted to 65% and the combined hours from non-Europeana material was 35%.

The following content was sourced from Europeana:

- EU Screen (Beta and Project) Images and Video (Approx. 3 hours), IPR is owned by INA, free access but no reuse permissions
- Siobhan Davies Replay, Images and Video (Approx. 10+ Hours), IPR is owned by a third party: Siobhan Davies, an agreement exists to allow usage for research purposes only
- DE Film Institute, Images and Video (Approx. 2+ Hours), restricted access, rights reserved, reuse restrictions apply
- Institute National de l'Audiovisuel (INA). France Images and Video Ca. 1+ hours, restricted access, rights reserved
- The European Film Gateway Video Recordings Ca. 3+ hours, restricted access, rights reserved
- The Swiss National Library, The European Library Images and videos Ca. 3+ hours, restricted access, rights reserved

- ECLAP Images and Video Recording Ca. 5+ Hours, restricted access, rights reserved
- Memory of the Netherlands “150 Years of Advertising in the Netherlands” Reclame Arsennal Collection Images Ca. 2+ hours, restricted access, rights reserved
- OFS Records Music for dance Ca.1.5 hours, restricted access, rights reserved
- Int’l Institute of Social History Netherlan ds Images, Video Recordings Ca. 2 hours, restricted access, rights reserved

Coventry University identified the local artists and other dance practitioners listed below, who could offer non-Europeana dance content to the pilot. This content, along with the content from Europeana, helped to facilitate the development of the pilot’s prototypes.

Decoda[8] (UK), an artist led dance organisation that creates spaces for conversation and practice, and offers residencies, and curates workshop series, festivals and performance events. Decoda supported the E-Space Dance pilot by including the pilot in the Summer Dancing Festival 2014. They were also instrumental in connecting the pilot partners with freelance artists, practitioners, teachers, learners and researchers.

Remnant Dance[9] (Australia), a Perth-based collective of performing artists who offered a variety of content from numerous Perth-based artists.

Levantes Dance Theatre[10] (Greece/UK), a Greek dance theatre company who are Associate Artists of Greenwich Dance based in London.

J Squared Dance Company[11] (UK), who’s Artistic Director Jennifer Essex, also contributed to the E-Space Dance pilot by supplying content to test the pilot’s applications.

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8 http://www.decoda-uk.org

9 http://www.remnantdance.com.au

10 http://www.levantesdancetheatre.org

11 http://www.jenniferessex.com

These partnerships required the assistance of the E-Space IPR Team, who offered advice on the licence agreements. The pilot drafted Licence Agreement contracts, an example of which is available in the E-Space Deliverable D3.6 in the appendix[12] to ensure that the non-Europeana content was protected and that permitted usage was clearly outlined. This rights clearance process was completed by October 2014.

The pilot was initially open to the idea of developing new dance content but the decision was made to focus only on developing the tools because the preference of dance practitioners was that new content would remain proprietary. Due to the lack of open content available for dance, the pilot focus shifted to other movement oriented organisations and gamification options. However, on account of the collaboration between pilot leaders, professional and non-professional dance artists, and makers of dance content, who supplied their existing content for exclusive use within the pilot, these practitioners are now aware of the Europeana database and are more likely to create new content inspired by, or reusing material from repositories like Europeana.

The Dance pilot offered dance content sourced through Europeana to the E-Space Games pilot, which integrated the material into its Creative game. The Creative game asks a player to create a video collage of dancers using the provided footage from the archive. Each player can manipulate, collage and juxtapose imagery. The Game could be used in an educational setting, allowing a user to create new shapes with the intention of visualising new dance scores, and engages the pupil in an interactive way. The tool might test their knowledge of dance steps or other dance related content (i.e geographical location, genre, era, etc.) This game served as an excellent model for partner collaboration and provided another way of reusing digital dance content.

12 http://www.europeana-space.eu/wp-content/uploads/2014/04/Europeana-Space-D3.6-perspectives-on-creation-and-re-use-of-digital-cultural-heritage-material.pdf

The Dance Hackathon and Approaches to IP

The E-Space project held its second hackathon on the use and reuse of digital cultural content called "Hacking the [Dancing] Body"[13], at the creative offices of CIANT (International Centre for Arts and New Technologies) in Prague on 20–21 November 2015. The hackathon was coordinated by CIANT and the E-Space Dance pilot partners at Coventry University, IN2 and the Universidade Nova de Lisboa. However, CIANT planned a focus for the event that was very different to the pilot activities. They planned to bring in brain/computer interface (BCI) specialists to work with live dancers to experiment with capturing their brainwave information while they are dancing, and to visualise this data in interesting ways.

The hackathon linked dance artists, researchers, scientists, investors and sponsors while also promoting the cultural heritage sector and Europeana's content. Participants reused Europeana dance content to come up with progressive and innovative applications, while also deploying software that empowers and connects artists, creatives, technologists and educators. The hackathon demonstrated that there is great potential for creative engagement in dance content through the development of digital tools, though the interaction between dance and technology is not always straightforward. It was evident that Europeana content has the potential to feed into creative "remixing" artistic activities. Both pilot tools were introduced, and DancePro in particular, sparked interest for use in a variety of ways, inside and outside the dance studio.

The hackathon participants formed teams for two days of focused and intensive collaboration, with assistance from the hackathon ambassadors; experts in programming, BCI technologies, motion-tracking, and cultural heritage. They explored new creative ideas, designing and developing prototypes. The hackathon focused on the reuse of cultural heritage

13 http://www.europeana-space.eu/hackathons/dance-hackathon/hacking-dancing-body/

materials in live performance, cross-media storytelling, motion tracking and transformation of data, and brain/computer interfaces in performance. Participants were encouraged to combine different aspects of these elements to create something truly new and unique, with the potential to disrupt the market.

Hackathon topics were:

- dance (patterns in body movements);
- state of mind (patterns in brain signals);
- cultural heritage content (patterns in history of art);
- light and sound (patterns and rhythms);
- interactive art, dance, body/mind, digital art.

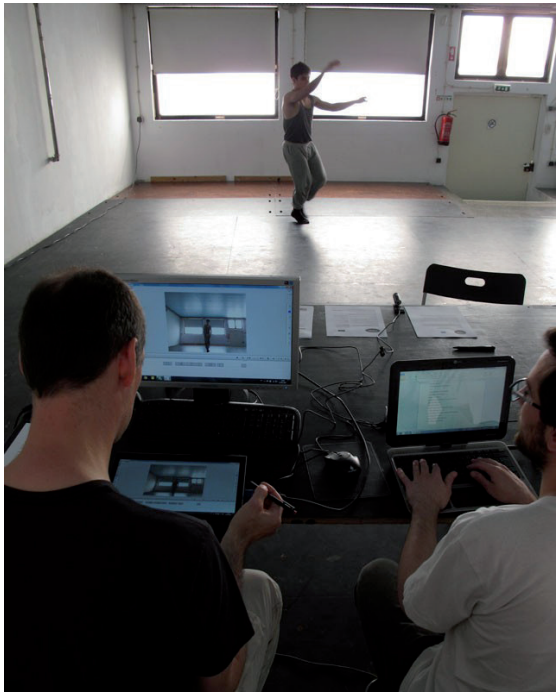
Bringing together dance and technology, photo courtesy CIANT

Teams were encouraged to:

- explore dance and choreography with a virtual notebook, the DancePro tool;
- write their own dance stories using the DanceSpaces tool;

- transform data from motion capture device into visual;
- prepare multi-media project, as a presentation of their stage-design or choreography;
- remix, implement, transpose digital data from Europeana cultural repositories to inspire and create new performances;
- transform the data from the EEG of a dancer during the performance into the visual design (brain-computer interface application).

An international jury was present to reward the three best teams with a trip to London for an intensive BMW, where the team with the strongest concept and business model after the Workshop would go on to win a 3 month intensive incubation package to deliver their ideas to the market.



First user testing session in Lisbon, Portugal, provided by FCSH-UNL.
Photo Credit: Joao Fiadeiro.

The pilot tools were presented and demonstrated, and many participants downloaded the DancePro tool for their use. However, both tools were for "inspiration" rather than for directly feeding into what was produced.

It was suggested by the IPR Team that materials could be handed out or made available in a hackpack relating to IPR at the dance hackathon or pre-hackathon event on 24 October. However, in the end it was agreed that organisers would give a talk on IPR instead, including information about Creative Commons, opening up, attribution and using filters on Europeana to search for reuseable content. Participants were reminded about the E-Space IPR guidelines during this session rather than being specifically given links to the E-Space Content Space IPR tools or other IPR tools or guidelines. This was thought to be a more informal approach that would not overload participants with written instructions that might seem to be restrictive in the hackathon atmosphere, which strives to be one of freedom, experimentation and endless possibility.

The IPR Team also provided pilot leaders the "protected space" terms and conditions, encouraging them, and the hackathon coordinators at CIANT, to use some restricted content that could go in the "protected space" in the E-Space Portal at the pre-hackathon stage. In the event, restricted content and the "protected space" were used by the pilot for the hackathon (see the section below) but not by CIANT. Advice and reminders were given on IPR issues on a one-to-one basis during the hackathon event, and all participants had access to the E-Space IPR guidelines, since the pilot coordinator sent an email to all the participants before the event, introducing the tools and highlighting IPR issues. This included a link to the E-Space Copyright Tools for Cultural Heritage[14] and the Online IPR Consulting Kit[15], containing IPR tools specifically for hackathon organisers and participants and a HackPack Creation Tool.

14 http://www.europeana-space.eu/content-space/copyright-tools-for-cultural-heritage/

15 http://www.europeana-space.eu/content-space/ipr-toolkit/

Bringing together dance and technology, photo courtesy CIANT

Content used for the Hackathon

The hackathon focused on reusing existing dance content to gamify rehabilitation by using the annotation tool. Participants were encouraged to register and browse the E-Space Portal developed by NTUA.

The “protected space” within the E-Space Portal was also used for the event. The pilot created three separate repositories that are housed in the “protected space” and could be accessed by the hackathon participants via a login. The collections were featured online and were a major part of the dance hackathon. Each collection contained approximately 100 still or

moving digital dance images. There were also plans for DanceSpaces to integrate some of the E-Space Portal's APIs in order to more easily import content from Europeana and other open repositories.

The content used, however, was interchangeable, as with the other E-Space hackathons, which meant that the new techniques used for applying BCI technology to dance performance could be applied to any dance content and did not require specific content, which might be restricted. No new content was created either, so there were no IPR concerns regarding the commercial reuse of specific content at the event.

Due to the schedule of development for the E-Space Portal, it was not possible to integrate the APIs into the digital tools created before the hackathon and user tests; this feature in facts was made available later.

Tools used for the Hackathon

Prior to the hackathon, it was decided that the new content and/or tools generated by the participants during the hackathon would be made available for reuse by the general public but it was hard to gauge at the time what content participants would want to use, and how participants would want to use the newly developed software, tools or provided content. Organisers agreed that the hackathon should stress the spirit of creative reuse, and encouraged participants to make content and tools open and accessible. However, the pilot could not ensure that the participants would see this advantage and work in this way.

Both the DanceSpaces and DancePro tools used in the pilot were made available to hackathon participants but for demonstration and inspiration purposes only. Both tools were proprietary, which meant that participants could use them and build on top of them if they wanted to but would not be able to access or modify their source codes. The project's E-Space Portal, based upon the platform developed by NTUA, was also featured during the hackathon, enabling participants to search and discover cultural content from Europeana and elsewhere.

No other tools were made available to hackathon participants either for demonstration purposes or for participants to modify/build upon to create new applications and prototypes. Participants mostly used their own tools, which consisted of commercial and proprietary software for audiovisual productions. No new tools were created during the event by developers building upon these proprietary tools either, with the exception of new patches-packs created during hackathon for VVVV multipurpose toolkit as a plugin for further dance performances. The patches were shared by the programmer on an open source basis and will be provided to the E-Space repository. Overall, innovation lay more in how the teams worked with existing tools in new performance settings.

Prior to the hackathon it was thought that there were likely to be IPR issues arising from ideas presented in draft prototype designs by the winning teams, and that these issues of ownership would need consideration as they moved to next stage. All three winners drew from open Europeana content but the IPR it was thought would relate to the technology they used. However, in the end, the event was not so much about development but more about incorporating cultural heritage material into the performance setting and testing how that material might interplay with the human body. Innovators within the teams were independent artists and independent individuals rather than developers and employees of companies or institutions. There were, therefore, no potential situations where employers might have rights over the intellectual property provided to the hackathon through an employee-participant, or to intellectual property created by that employee (whether alone or through co-creation) because that employee was using company/institutional materials or research, and/or carrying out these creative activities at the hackathon during normal working hours. In the event, rights to any performances and works created by the artists and performers would remain with them as the creators.

Post-Hackathon Reflection

The initial overall theme of the hackathon proved confusing because it was difficult to determine how developers might be able to incorporate cultural heritage into advanced technologies like BCI and motion capturing. How cultural heritage content could be interestingly reused in a dance setting was also a complex question. However, this hackathon did have the potential to take the reuse of digitised heritage content into the 21st century because some very interesting possibilities existed. For example, a painting could be used as the backdrop on stage during a performance, music found via Europeana could be used, and costumes or settings could be digitally extracted from digitised items.

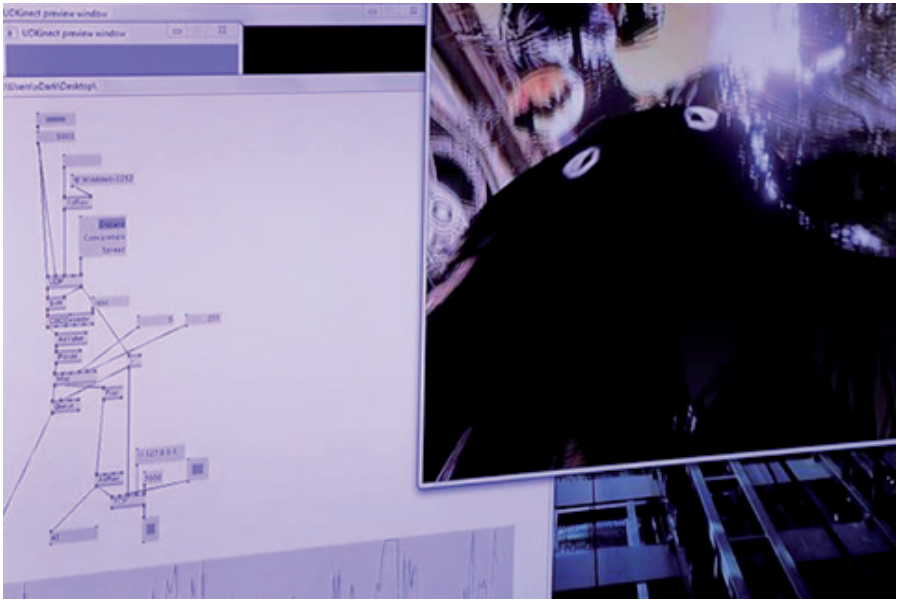


Photo courtesy of the E-Space Dance pilot and hackathon organisers

Hachathon Prague, photo courtesy of the E-Space Dance pilot and hackathon organisers

The hackathon proved to be a great success. CIANT created a flexible and carefree space for innovation, which led to a constant flow of creativity. They had many different technologies on hand for participants to make use of in the two work-spaces available. The participants were a mix of dancers, developers, BMI experts, composers, and designers. Teams were quickly formed with considerable expertise in each. Teams requiring technical or expert guidance were ably assisted by the CIANT team, as well as representatives from the Dance pilot, Europeana and NTUA.

The Dance deliverable contains further information about the pilot and hackathon, including the pilot leaders' own reflections on their approaches to IP. Additionally, here is a link to the video of the Prague Dance Hackathon[16].

16 http://www.europeana-space.eu/hackathons/dance-hackathon/

Business Modelling and Incubation

There were five teams in total at the hackathon but only three could be chosen to be brought to London for the Europeana Space Business Modelling Workshop held by project partners, Remix. In January 2016, the overall winner of the second Europeana Space incubation support package[17] was announced as Nous. Nous are utilising Brain Computer Interface technology to change the way people explore collections and also how institutions can provide recommended pieces to their users. They do this by measuring users' brainwaves, assessing subconsciously whether or not the users like, do not like, or are neutral towards a certain work.

Due to the software being at such an early stage in development, there were no detailed discussions of IP at the BMW regarding tools, prototypes or specific content and how it might be commercialised. It was not decided at this stage whether new content/tools developed by the winning team from the hackathon (which did not include pilot staff in this instance), would be released under proprietary licences as a result of the business modelling stage, in order to make profits for the co-creators involved. This will need to be a business decision taken by the hackathon winners, which will evolve during the incubation process, based on the BMW outcomes.

Lessons Learnt from the Pilot

Europeana connects users to the original source of content, ensuring its authenticity, and giving visibility to a large mass of digital cultural content. However, it has not yet succeeded in always making it accessible, especially for reuse. The user very often has to navigate to the original source in order to use the material. For this reason, the Dance pilot could not rely solely on existing digital platforms, and had to obtain content from diverse sources. Additionally, members of the dance community were often uneasy

17 http://www.europeana-space.eu/wp-content/uploads/2015/03/Incubation-Booklet.pdf

about releasing their dance content to the pilot, and even more reluctant to share and offer images to Europeana. Previous working relationships between the pilot team and independent dance practitioners were needed to ensure that there was enough material for testing the prototypes. The Dance Hackathon, however, provided a great opportunity for members of the Europeana Labs to see live demonstrations of the DanceSpaces and DancePro applications, and this started the process of bringing the two applications into the Europeana Labs family, and therefore, making them available to the wider public[18].

Before joining E-Space, FCSH-UNL had already started a process of patent registration for the tools' concept in the USA, and for the first half of the project, it was thought that registering the patent would be a valuable and rewarding action. However, the increasing costs for the American patent lawyer were becoming unsustainable for FCSH, and its Dean decided to interrupt the process. Free from the restrictions imposed by the patent registration process, which prevented them from sharing the tool with any external users, they were then able to offer access to the tool to the participants in the dance hackathon in Prague. The pilot learnt that when considering patents for digital tools, it is necessary to consider the considerable time constraints involved, and the financial and legal aspects of the process.

Despite the difficulties encountered with access and reuse of dance content, conversations with dance artists during the pilot raised considerable interest in the question of how or whether dance should be preserved and freely shared. This has led some artists to consider contributing their content to Europeana, and making it freely available. The focus on IPR throughout the project therefore had a positive influence on the dance community. Questions about cultural heritage online and the monetisation process also proved critical for the dance community to consider, since digital platforms are becoming ever more important for arts communities in general. The E-Space project, and the Dance pilot in particular, have been

18 http://labs.europeana.eu/apps

pivotal in bringing these matters to the attention of dance communities. The pilot will continue to explore different ways in which dance can be valued, and the ways in which artists can disseminate and distribute their work imaginatively, generating new audiences, re-thinking working processes and finding partners in industry who may be able to support growth.

Future Pilot Exploitation of the Tools

IN2 will be driving the further development and commercial launch of DanceSpaces. They are integrating the technology modules developed and information from the user-evaluation sessions into their technology platform and the commercial SaaS (software as a service) MyMeedia which is used worldwide. In 2015, some DanceSpace software modules were already used in commercial service, so the results of the pilot's exploration of the reuse of cultural heritage are already being brought to the market as an additional aspect of this. The pilot is also considering the commercial use of the DanceSpaces tool as a whole with dance enthusiasts as the target market. If this goes ahead the content in the E-Space Content Space will be reused as customers will need an existing broad range of content to choose from in creating their stories before they are ready to use other sources like Europeana or their own content.

It may be possible to offer the DanceSpaces web application under a freemium model in order to encourage users to subscribe to the MyMeedia service. The user evaluation questionnaire results suggested a business model based on advertising and promoted content might be viable, since all those who responded were happy to see story promotions on DanceSpaces. DanceSpaces could also be used in education, where a custom installation of the application may be required, and provided by IN2 as an added value service. João Gouveia, the developer, is currently eliminating the remaining bugs in the prototype to provide a Beta version, and an instruction manual is being produced for imminent publication. Further discussions are taking place within the pilot and at the project's international level regarding whether there is any potential for commercialisation of this Beta version or

whether it should be offered open source, since there are advantages to both approaches. Further usability testing and feedback from the existing choreographers who are testing the tool in real life settings is required for both approaches, though marketing the tool would additionally require further investment and negotiations with interested companies.

Any commercialisation of the other pilot tool, DancePro, will be driven by the New University Lisbon, which has a broader agenda for creating impact beyond the academic community.

Pilot leaders plan to continue to engage outside expertise in IPR to ensure everything progresses as it should, with the continued use and commercialisation of both the DanceSpaces and DancePro tools, and therefore the sustainability of the pilot outcomes.

Open & Hybrid Publishing

The aim of the OHP pilot was to explore the possibilities of developing and embracing different forms and modes of publishing at a time when the traditional publishing model is being challenged by different ways of reading on portable reading devices such as Kindle and iPad, the wide digitisation of cultural resources, and the increased ease and speed of their electronic distribution.

The model for open and hybrid publishing was presented via two key outcomes:

1. *"Photomediations: An Open Book", a creative online experience of a traditional coffee-table book, available in printed version as well as online;*
2. *PDF brochure "A Guide to Open and Hybrid Publishing", to outline possibilities and offer technical and business advice on how to put the model into practice.*

Around these two outcomes, a series of educational activities were organised, ranging from university classes to an online contest and exhibition, and the Hack the Book festival-cum-hackathon.

The Open and Hybrid Publishing Pilot and Hackathon

A Guide to Open and Hybrid Publishing

Introducing the Open and Hybrid Publishing Pilot and its Approaches to Intellectual Property

The focus of this work was on exploring increasingly open and hybrid forms of publishing, thereby disrupting traditional publishing structures and giving people the opportunity to become publishers themselves, and not just consumers of published content. This is especially relevant at a time where

new devices and technologies are available to rapidly spread the ever-increasing amount of digital cultural content. The main goals of the pilot, which was led by Joanna Zylinska (Goldsmiths, University of London) and also included Coventry University, were to make more people familiar with the available open cultural content, as well as to explore a new business model for open and hybrid publishing and share this model with others.

The model for open and hybrid publishing is demonstrated through the production of "Photomediations: An Open Book"[1], a creative online experience of a traditional coffee-table book filled with openly licensed images relating to different aspects of photomedia, as well as academic and curatorial texts. There is also an offline printed version of the written texts available, in the form of a scholarly reader. The second outcome of the pilot is the downloadable PDF brochure "A Guide to Open and Hybrid Publishing"[2], which uses the open book as an example to outline possibilities and offers technical and business advice on how to put the model into practice. The Guide includes a chart entitled "How to create an image-based, open access book in ten easy steps". Around these two outcomes, a series of educational activities were organised, ranging from university classes to an online contest and exhibition, and the Hack the Book festival-cum-hackathon. This case study explores how the pilot dealt with openness, with a special focus on the hackathon and its follow-up.

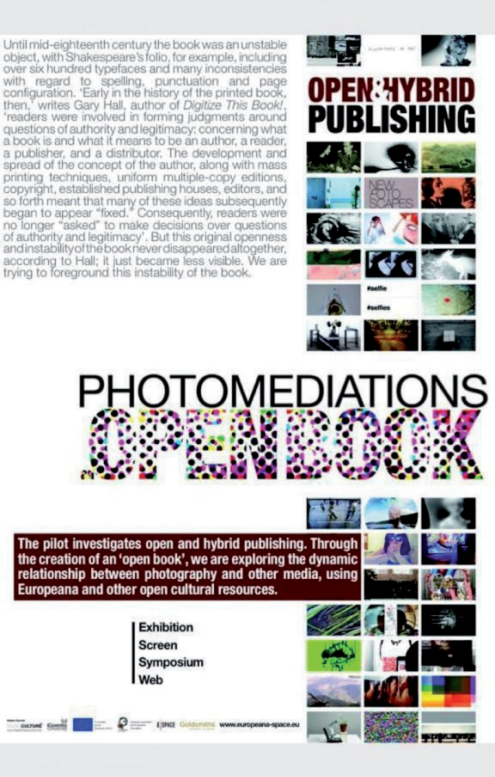
Approach to Openness

Openness was a core aspect of this pilot. The online version of the book was built with open source code, and the images drawn from various online repositories of open access material, such as Europeana, Flickr: The Commons, and Wikimedia Commons[3]. Of the total of 207 images, there

1 http://www.photomediationsopenbook.net

2 Available through https://goo.gl/boRPII

3 For additional information on the image search process see the article 'A Curated Object and a Disruptive e-Anarchive' by Kamila Kuc, October 2015: http://photomediationsmachine.net/2015/10/20/a-curated-object-and-a-disruptive-e-anarchive.



were 68 images (around one third of the total) with more restricted licences, containing NC (Non-commercial) or ND (No Derivative Works) clauses. During the making of the book, an opportunity arose to partner with open access academic publisher, Open Humanities Press, and an online reader of twenty relevant texts was published as a stand-alone book (thus illustrating the pilot's hybrid nature). Since many of these texts had a non-commercial restriction, the paper version of the book is being sold at cost, while the PDF version is made available for free, on an open access basis.

Work also focused on promoting the social and cultural value of openness, and the idea of open access, especially in educational contexts. With the hybrid aspect in mind, possibilities for generating value or revenue were explored as well, such as making the book freely available online, but selling a paper edition next to it. Another major focus was organising the hackathon, the Hack the Book festival (22–24 January 2016) in Athens, which focused on creating a "phygital" (physical + digital) book from scratch by remixing and building upon open content from Europeana, and was preceded by educational demonstrations as well as an evening symposium on open book cultures.

Finally, the pilot is curating an exhibition, both online and physical, a celebration of the possibilities of remixing open digital culture. Through

an open call (Spring 2016), people have been invited to submit still and/or moving image works that creatively reuse – in the form of mashups, collages, montages, tributes or pastiches – one or more original image files taken from Europeana. In this way, different user groups such as students, educators, artists and independent publishers become familiarised with Europeana content and encouraged to get involved in reusing this content in a creative way. Winners were announced in Summer 2016. The real-life "pop up" exhibition launched at the 3rd Europeana conference in November 2016, in Berlin. It also contains instructions for partners and other interested parties on how to re-assemble the exhibition in other places. The online version of the exhibition has taken the format of an open and dynamic online educational space, where images from the pilot can be remixed by all users: http://photomediations.disruptivemedia.org.uk/

Information about image licensing and IP was part of the call for exhibition works and is also part of the educational exercises.

Additional material was added to the online exhibition site by December 2016, featuring an online thematic display of the images around the topic of Photomediations.

Hack the Book

The pilot's hackathon, Hack the Book festival[4], was organised by Onassis Cultural Centre (OCC), in cooperation with Goldsmiths, Waag Society, Coventry University and PostScriptum. The event took place on 22–24 January 2016 in Athens and focused on exploring the book as an evolving, visual and open medium.

Four challenges were formulated for redefining the concept of the book:

4 http://www.europeana-space.eu/hackathons/open-hybrid-publishing-hackathon/

- **Book Design**: focusing on how the physical book object can merge with digital counterparts into a new hybrid form
- **Open Hardware**: researching ways to use open hardware such as Arduino or Raspberry Pi to make a book part of an interactive network of objects, while providing a coherent user experience
- **API**: connecting the object and its API to open data, content and programming tools from Europeana
- **Entrepreneurship and sustainability**: looking at business models that can best support a prototype and secure future sustainability, as well as contributing to the expansion of the digital commons.

Preparations for the festival took place over more than three months. After receiving more than 250 applications, the OCC team invited people to submit their concept notes, and also started a peer-to-peer Facebook group aimed at organising creative individuals into groups, answering inquiries and providing feedback[5]. Applicants were selected by a team of judges, based on their submitted concept notes, to attend a pre-event in early January 2016.

5 https://www.facebook.com/groups/HackTheBookGroup

During the pre-event training day, designers, programmers and artists shared their expertise and offered mentorship to potential participants. Participants were able to book appointments with the experts and discuss their potential projects. Their ideas became more concrete and they got technical support on issues they could not tackle during earlier stages of their work. New groups were formed or combined, and in the afternoon a series of expert talks gave everyone more inspiration and practical examples of hybrid forms of publishing.

Participants were given the chance to submit their updated concepts in the 24 hours after completing the workshop. A final number of 10 teams (35 participants) were selected to participate in the actual event. The criteria for deciding upon the final teams were based on the four challenges described in the open call and on maintaining a diversity of ideas and approaches. Such intense preparation ensured high-quality contributions and impressive prototypes being developed over the final hackathon weekend.

The hackathon itself formed part of a larger festival, with an educational workshop and an evening symposium on open book cultures on the first day. During the hackathon itself, a "genius bar" was available at all times for advice and support, consisting of content experts, designers, programmers and artists. All the information on the programme was made available through the dedicated hackathon website created on the Europeana Space server[6].

Tools and Content Used for the Hackathon

Hackathon attendees were stimulated and guided in using both open data and content from Europeana and other sources, as well as open-source hardware like Arduino. This was already made explicit in the four challenges described in the event announcement, which included questions such as:

6 http://www.europeana-space.eu/hackathons/open-hybrid-publishing-hackathon/

- How can you use Arduino or RasberryPi to its full potential so as to make the book part of an interactive network of objects that provide the user with a coherent operation experience?
- How can you connect the object or the cluster of objects that you have created to open data and Europeana's content?
- How does your proposal contribute to the expansion of the commons (especially the digital commons)?

In addition, the incorporation of Europeana data and the use of open hardware was also further stressed during pre-hackathon preparation and guidance of teams, for example with dedicated talks on this issue during the pre-event. The E-Space Portal was used as the primary tool for collecting and reusing Europeana content.

The organisers decided to focus on data, APIs, physical computing and 3D printing as the most appropriate means for achieving the core objectives of hybrid community building for a number of reasons:

- Data is the raw material of the 21st century artist and designer
- APIs constitute the interfaces to talk with the platforms that contain the data
- Physical Computing is the backbone of the Internet of Things. The focus should therefore be on designing an environment and set of objects that can talk to each other through a flow of data
- 3D printing along with 3D scanning is a great instrument to merge the physical reality with digital design and produce physical objects from digital worlds.

Great emphasis was placed on combining these technologies with more traditional crafts and techniques, such as bookbinding.

At the pre-event people were presented with a list of possible materials to work with, such as electronics components, hardware components, robotics parts (servo motors, Bluetooth, sensors,) Arduinos, RaspberryPis and their accessories, prototyping tools, as well as a 3D printer and various

filaments, a 2d printer and craft supplies. During the hackathon itself, the venue provided two work areas (a printing and a hardware area) with all these materials available to all participants to use and try out, which greatly stimulated experimentation.

Work station during Hack the Book event (still from https://vimeo.com/154731170)

The “genius bar” of content experts, designers, programmers and artists. ensured that participants could get further advice and support during the event. The experts were:

- **Ismini Adami** (Book Artist): Book Binding
- **Iraklis Agiovlasitis** (PostScriptum): Business Models, Sustainability, Financing and Funding
- **Nasos Drosopoulos** (NTUA): API, Data crafting
- **Ilias Giannopoulos** (Fixers): 3D printing
- **Evangelos Kaimakis** (E-D-W): Interaction Design, Meta-products design
- **Dimitris Koukoulakis** (CommonsLab): Physical Computing

In addition, during the 48-hour hackathon there were a couple of "hack-clinics": specific time-slots where questions could be asked and specific issues could be resolved. This has proven tremendously successful, since the objective of the hackathon was not so much to compete on the merits of technical expertise as to unleash the creative potentials of the participants and allow them to get acquainted with advanced technologies made truly accessible to them.

The E-Space IPR team was also present to answer any questions related to IP issues. The organisers chose not to say anything about IP prior to the hackathon starting, and no questions on IP arose from the participants during the course of the event.

Ten final prototypes were pitched at the end of the second day, followed by questions from the jury. The projects were diverse and made use of open source digital cultural assets while rethinking existing interfaces and platforms. The three winners were:

- **Vivl.io**, which pulls open content from classical literary works and encourages children and preadolescent readers to create their own book-specific universe around this;
- **Cook-lee**, an interactive artist cookbook that associates recipes with contemporary artists, and combines knowledge about their work with the cooking experience itself;
- **SinkAFuture** narrates a future dystopic scenario with population displacements, data control centres, geopolitical changes, environmental disasters and capitalist ruins. Through the technique of steganography, they hide data in a series of physical encrypted data fragments that pass on unnoticed as ordinary 3D printed objects.

Post-Hackathon Reflection

The hackathon was very successful. A number of imaginative ideas were explored at the hackathon – many of them showcasing phygital aspects of the book: for example, there was a children's book in a box connected to

a Raspberry Pi with interactive elements, a pop art cookbook with a social media dimension, an expanded online-offline magazine with user generated content, and a museum scroll which visitors could collect on leaving an exhibition. All of these showed fascinating interpretations of the idea of open and hybrid publishing, and have offered a great promise for future development.

Such was the excitement about the innovations that it was suggested that blog posts should appear immediately. The hackathon organisers were reminded that it was important not to give so much information away as this might prejudice any eventual commercialisation of the ideas, and to this end, Remix was asked to approve any blog postings by the hackathon organisers and those involved with the E-Space project.

Business Modelling and Incubation

The three winning teams, Vivl.io, Cook-lee and SinkAFuture, attended the BMW led by Remix on Friday 4 March 2016 in London. Remix led the team through a series of exercises designed to help them to think in detail about their business model and to whom their product was targeted. Questions over IP arose in relation to the ownership of the ideas being developed by Vivl.io most particularly because the idea had pre-existed the hackathon and were being developed via a company that had been set up to exploit the ideas. It was stressed that the ownership questions could be dealt with, but that the team should agree on ownership at that stage to ensure that questions did not arise in the future that might cause challenges for exploitation.

Vivl.io was selected to go forwards to incubation. During incubation questions from Vivl.io arose around copyright. One question related to revived copyright in public domain texts when digitised. In other words, did a new copyright arise in a text that was in the public domain through the act of digitisation? The IPR team noted that there was a widely held assumption by many that this was the case: however emerging case law

from the Court of Justice of the European Communities indicated that this was not so because the right sort of originality did not take place in the act of digitisation. It was noted that knowledgeable commentators generally now accepted this view. A second question related to the subsistence of copyright in “new” parts of works created by the Vivl.io team: did copyright arise in, for example, new text and/or images created by the team which then became a part of the work? The IPR team confirmed that copyright would reside in these new “parts” and accordingly it was necessary to think carefully about licensing solutions to take account of this. It was also advised that two copyrights may subsist in the same work. For instance if the team used a work (with an appropriate licence) that was not in the public domain, and then added new original work, then the work would be owned by the original copyright owner and Vivl.io assuming the two works were indistinguishable. This would be an example of joint copyright. Again careful thought would need to be given to licensing. Where two works were distinguishable – for instance if Vivl.io added a new image to an existing text work – then there would be two separate copyrights – one in the text and one in the image. In all cases care needed to be taken in order to correctly identify the copyright status of any existing works used by Vivl.io to ensure, where necessary (if the work was not in the public domain) the correct licensing strategy was implemented.

Museums

User engagement, education, interaction, audience development, user generated contents, market competitiveness... These are some of the key elements that museums and memorials need to take into account nowadays, while still facing "old" challenges such as the optimisation of decreasing financial resources, the update of collections, and the design of new exhibition paths.

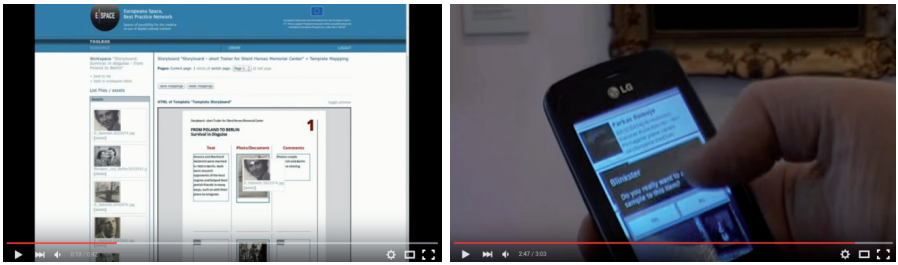
The E-Space Museums pilot set out to create ready-to-use solutions for content and exhibition curators but also for end users, that maximise results leveraging on the archive of multimedia contents available in Europeana combined with web-based and mobile solutions.

Two distinct products are the result:

1. *The Toolbox, a web-based application dedicated to museum curators, for the design of brand new educational videos and promotional worksheets blending the museums/memorials contents with the heritage of Europeana.*
2. *The Blinkster mobile app enriches the exhibitions with Europeana contents, due to features such as augmented reality, object recognition and geolocalisation, for visitors' education and entertainment experiences.*

The two solutions developed in this pilot were tested in a diversified international scenario of museums and memorials from Germany, Lithuania and Estonia.

The Museums Pilot and Hackathon



Video showing worksheets within the Toolbox and a preview of the Blinkster app.

Introducing the Museums Pilot and its Approaches to Intellectual Property

With the rise of mobile technology and the use of mobile applications, museums are increasingly focused on making use of these technologies in the best way they can, to attract new visitors and enhance their visitors' experience. The E-Space Museums pilot explored how the large amount of available digital cultural heritage content could be reused in an innovative way for education and "edutainment" purposes. The work built upon already existing solutions which were then developed by the small and medium-sized enterprise (SME) partners in real use cases with customers.

The pilot delivered two separate products:

- **The Toolbox**: a web app designed for educational staff and curators in museums and memorials, focused on enhancing the museum experience with additional information, images and stories (especially drawn from Europeana), tailored to collections and exhibitions.
- **The Blinkster app**: aimed more directly at museum visitors, this app allows people to take pictures with their mobile phone and receive supplementary information about the item or image in front of them. To make this possible, institutions have to populate the back-end database with both images and text.

The pilot took this dual approach because both applications had great potential to enhance the experience that museums offer to their audiences: either through increasing the available information and stories around a specific collection, or by allowing visitors to access additional information about the museum objects which they choose to scan themselves. The Toolbox solution is developed primarily for small and medium sized institutions with limited resources in terms of staff and money. In addition, a series of events and evaluation activities further fine-tuned these two products, and evaluated their effectiveness and usability.

The Toolbox work was executed by Lehmann & Werder Museumsmedien in collaboration with cultural institutions such as the German Resistance Memorial Center (GDW) and the Silent Heroes Memorial. In the second half of 2015, the web app was delivered, together with worksheets and materials produced by the memorial through the use of the Toolbox.

For the Blinkster app, EUREVA provided the technology, with the Stiftung Preußischer Kulturbesitz (SPK), the Lithuanian Art Museum (LAM) and the Estonian Ministry of Culture (EVK) functioning as content providers. The overall co-ordination of the pilot was the responsibility of Fondazione Sistema Toscana (FST).

In March 2016, the pilot organised a hackathon challenging participants to redefine the museum experience and take their new ideas to the market.

This case study will explore how the pilot dealt with openness in terms of IP, with a special focus on the hackathon and its outcomes.

Approach to Openness

The pilot took different approaches to the two products it delivered, with the Toolbox being more open in nature than the Blinkster app. The Toolbox was created using open source software (a Linux / Apache web server with a Typo3 CMS installation), while Blinkster was built with proprietary software. The architecture of Blinkster was already in place at the beginning of the project, and EUREVA continued the development on both systems that were agreed for the Europeana Space project: iOS and Android.

However, both apps make use of open cultural data. For the Toolbox, information and images can be added to create worksheets for educational work and storyboards for media productions using specifically designed templates. Data can be uploaded from local sources or from Europeana directly. By using the Europeana API, the Toolbox makes this data easily available for its users. In the pilot's application of the Toolbox with the GDW and the Silent Heroes Memorial, images were drawn from Europeana, Wikimedia Commons, the RBB and a number of specific repositories relevant to the topic (such as www.searchformajorplagge.com). Of the total number of images used, around 15% had an open licence, while the remaining 85% had either an NC (non-commercial) or ND (No Derivative Works) restriction.

There was a close collaboration with the University of Exeter (IPR Team) to develop the agreement for the use of content between the German Resistance Memorial Center and Museumsmedien, listing all used data (photos and documents). Pilot partners also greatly valued the technical and IPR support by E-Space partners, which facilitated the use of digital content from sources other than the content provider itself.

With the Blinkster app, a museum visitor can take a picture of an object to receive extra information about it, such as descriptive text or additional links, and it therefore acts as a possible substitute for traditional museum

audio guides. During the pilot, the E-Space content providers tested the app by providing content from their museum collections. Through a process of feedback and evaluation, several features were improved or added to the application. Although the app itself is built with proprietary software, most of the content provided by SPK, LAM and EVK consisted of openly licensed content from Europeana, which was further enriched by its links to other, largely open material from sources such as Wikipedia. Of a total of around 1100 images, around 80% were available as CC0 or CC-BY — only content provider SPK had a policy of using a non-commercial restriction for their images to prohibit commercial use.

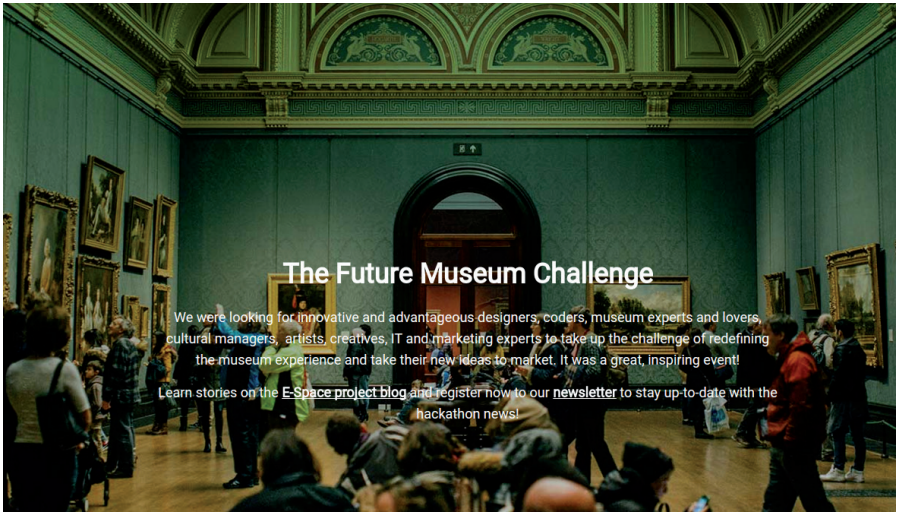


Image from the hackathon website: http://www.europeana-space.eu/hackathons/museums

The Future Museum Challenge

The Museums pilot hackathon was entitled "The Future Museum Challenge", and took place on 17–18 March 2016 in Venice, Italy. Organised by the Ca' Foscari University of Venice and Fondazione Sistema Toscana, with fellow pilot partners Museumsmedien, SPK, LAM and EVK, the event invited participants to re-invent the future museum experience. It focused on building new products, and developing creative ideas that would bring mediation strategies in museum environments up to a 21st century standard, for example, by enhancing content, engaging the audience and improving the educational experience. The products developed would not only be creative, but also able to produce sustainable business models.

Following the initial announcement, 120 participants registered and were invited to attend a pre-event on 5 March 2016, during which more information was given on the hackathon concept, followed by a questions and answers session with the organising team. A total of 16 teams, consisting of a mix of designers, coders, museum experts and regular visitors, cultural managers, artists, creatives, IT and marketing experts took part in the event itself.

On the first day, several talks by project partners introduced participants to key outputs of the Museums pilot for inspiration, as well as more information on the E-Space project and Europeana. The IPR tools in the E-Space Content Space[1] were mentioned during these introductory talks, but the tools were not used by participants at that time, because they became engaged in concept design rather than the use of specific content. These introductions were followed by a 48-hour marathon of brainstorming, Q&A, networking and preparation of the final pitches, which were given at the end of the event. The jury — consisting of Remix (the partner responsible for the mentoring and incubation of the winners), several pilot partners, a representative of Europeana, IT and museum experts — selected three winning projects for participation in the BMW in London.

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1 See http://www.europeana-space.eu/content-space/

Tools and Content Used for the Hackathon

Hackathon participants were encouraged to use open data and content from Europeana, with one of the opening talks focusing on the Europeana API. The technical solutions developed within the E-Space Museums pilot, the Toolbox and Blinkster app, were introduced at the start, and content providers SPK, EVK and LAM showed how their digital content had been used for enrichment.

During the event, participants had access to the Toolbox and Blinkster, as well as to millions of digitised cultural heritage items from around the world via the E-Space Portal. Museum experts were present to discuss audience needs, from the marketing and educational perspectives, to e-learning educational endeavours, as well as general information on how these institutions operate. Additionally, technical staff was on hand to assist with development issues, and business modelling consultants helped shape participants' ideas for the marketplace.

Discussions at the Future Museum Challenge

Although participants were encouraged to use Europeana content and technology from E-Space, the event was very flexible and participants also had space to develop ideas in other directions. This resulted in 16 final pitches of projects that spanned a wide range of different applications, of which the following projects were selected as the winners:

- **YourMuseum**: a mobile app that enables visitors to see more than what is seen from the usual visitor's eye, a sort of "behind the scenes" stories about artworks;
- **SpicedApp**: an app that spices up the museum visit with edutainment features;
- **PostArt**, which developed a way to share contents and emotions from the museum visit through the production of specially printed postcards and other gifts.

Post-Hackathon Reflection

In the process of registration for the hackathon, a question came up from a potential participant about the public presentation of ideas developed at the event. She was curious to know whether the ideas that were pitched were somehow protected, preventing the ideas that would not go on to win from being "stolen" following their presentation at the end of the event. The IPR team replied that this kind of protection is not possible, since only ideas in tangible form are protected by copyright; ideas themselves are not protectable until they are written/drawn/recorded in some form. One way to overcome this is to enter into a confidentiality agreement. However the view was taken that "within the E-Space project, we should not request or require participants at the hackathons or business modelling workshops to enter into confidentiality agreements. We feel that this would send out the wrong signal to the participants. These events are about experimentation and ideas sharing. We have found that open discussion at the events can greatly increase innovation and the ideas that individual participants work on."

Though the question of protection for ideas came up prior to the hackathon, issues around intellectual property did not come up during the event itself.

Following the hackathon, it was anticipated that the YourMuseum, PostArt and SpicedApp winners would need support and guidance in their approaches to dealing with IP and ownership as they entered the business modelling stage.

Business Modelling and Incubation

The winning teams attended the BMW led by Remix on 16 May 2016. The workshop was very useful in supporting participants as they explored the business potential of their project ideas, in order to evaluate which were most suitable for progression through to the intensive incubation phase.

The workshop was organised in two main sections: Creating Value and Resourcing Value Creation.

Although a one-day session might not have been sufficient to answer every question, the broad sketches of ideas and opportunities developed during the course of the day enabled the selection of a successful team to progress through to incubation. Participants refined their ideas during a guided exercise that started with examining value propositions and mapping potential business models, and ended with value creation and delivery. The thinking around value delivery took the effective management of IP into consideration as one of the essential elements.

During the BMW participants were challenged to look at their ideas from completely new angles, and respond to feedback on the decisions they had made. Awareness was raised that in changing one aspect of a business model, all other aspects are affected. Participants' ideas and concepts therefore changed drastically during a BMW based on the decisions they made. While none of these changes were final, it opened up a world of possibilities for the teams, and allowed the E-Space team of judges

and advisers to better understand, not only the products, but also team dynamics, goals, and attitudes.

In the event no further specific questions were raised about IP by any of the teams either during the BMW or subsequent incubation.

Games

The aim of the Games pilot has been to develop three game demonstrators, which draw upon content from Europeana, in order to meet two key aims:

1. *show game developers and businesses the potential for using digital cultural heritage content with a view to inspiring new products.*
2. *demonstrate how the gamification and participation with cultural heritage content can cultivate new forms of interaction for a wide range of audiences.*

The Games pilot produced three game demonstrators:

1. *a casual game; simple and aimed at a mass audience;*
2. *a creative game, designed to let users play and remix content;*
3. *an educational game, providing additional value behind the fun of game play.*

Each type of game is designed to appeal to a different user group, but still with the overall objective of showcasing digitised cultural heritage content (from Europeana) in a fun way.

The Games Pilot and Hackathon

Image of the casual picture restoration game

Introducing the Games Pilot and its Approach to Intellectual Property

Computer games are popular leisure and teaching tools. As generations become increasingly “native” to digital technologies, games and interactive technology more generally plays an advancing role in everyday life. Games are now played on mobile phones, tablets and computers, as well as

through consoles, meaning that the potential modes of production are vast and varied. The market is constantly changing and growing, and developers are often looking for new approaches.

The E-Space Games pilot set out to engage with this growing field through the development of three game demonstrator prototypes, which were developed to appeal to a range of audiences, for use in a variety of contexts; a casual game that is simple and aimed at a mass audience; a creative game allowing remixing of content; and an educational game that brings a fun element to learning. These games demonstrators draw on artistic Europeana Content to encourage use and experimentation with Europeana through interactive engagement.

The pilot took the view that it should not try to create a state of the art game in a market that has many competing brands. Within the budget of the pilot, there would be little scope to do this, and it would also be inappropriate to use project funding in this way. Considering best use of the funding and generating a wider reach, it was decided to create three smaller game demonstrators rather than a single one. The focus is therefore upon the potential of the games to inform the development of new tools and ways of engaging with cultural heritage, through Europeana and beyond. With this in mind, the pilot has taken an open approach to sharing the prototypes, disseminating them and sharing the source code with participants at the Games hackathon.

The Casual game demonstrator focuses upon restoration of paintings drawn from Europeana. Based upon the 1980s arcade game QIX, users have to clean/restore paintings quickly; if this generates a sufficient score, they progress to the next painting. The game demands focus and speed, and encourages the player to engage with cultural heritage through a process of revelation of the painting. Information about the artist, title and location of each painting is available within the credits section, and via the Information tab.

The Creative game demonstrator allows users to create remixes of video content, based upon the simple drag and drop technique. It is themed around dance and the playful experience of mixing and matching archived videos of contemporary dance in order to create new “mashups”. Players

are presented with a library of dance clips video content that has been curated by the members of the Games and Dance pilots that they are then able to sequence together on a timeline. Attributions are clear, meaning that the user is able to conduct further research of these clips via Europeana.

For the Educational game demonstrator users are presented with a portrait from Europeana; they are challenged to recreate it either by taking a selfie or taking a photograph of friends. The game encourages close engagement with the painting, and draws users in through its relationship to the popular "selfie" craze. Once the picture has been taken, a series of colour and tone filters can be added to alter the picture; the objective is to get the photograph as close to the original picture as possible. For each portrait, information is available relating to archive source, the artist, arts and historical context for the image.

Coventry University's Serious Games Institute (SGI) team carefully planned the design of each type of demonstrator, not only to create an enjoyable player experience, but to illustrate the potential for cultural heritage content to be reused. Different approaches were experimented with, including initial consideration of HTML5 to have the demonstrators available on multiple platforms. In the end the Unity3d platform was chosen because of graphics performance and flexibility.

Challenges of Sourcing Content

The intention was that content for the Games pilot was to be drawn primarily from Europeana with supplementary resources accessed via other archives. For the purpose of the pilot, copyright and quality were considered to be the two defining factors in the selection of media:

- the necessary usage permissions and restrictions had to be examined and understood;
- the media had to be of suitable fidelity to promote the aesthetic appeal of the games and fit with the overall vision for the pilot.

One of the main challenges was always likely to be the tension between providing users with the ability to add content to games dynamically using

the database interrogation facilities available in order to provide a more open experience, and curating the aesthetic presentation and suitability of content in order to provide an engaging user experience.

The Casual game uses content from Europeana; originally it was to be based on specific images available through Europeana within the theme of "games". These were contributed by a particular provider, who, in the final period while the game was in the development phase, elected to remove them from Europeana. This meant that the only content left available for use in the game was the low resolution thumbnails. These were not suitable assets to progress the development of the game, thus it was necessary to change the concept of the game, whilst remaining in the casual arena.

A further challenge was contending with inconsistent metadata structures returned by the Europeana API. For instance, provider names or item descriptions can be held in several different places within the data returned by that API, so it was necessary to set up several rules to check the location and existence of such data, in cases where it even exists at all. For the specific cases of images, video and audio (media data that apps were built around) the usable URL of the assets may be conveniently part of the data package returned by the API, but it is also just as likely to be absent altogether. In all instances, the URL of a container page of the providing archive was present, and in the case of the asset URL missing it was necessary to find the asset. However, in a number of cases the asset provided at the direct URL has been significantly lower fidelity than the corresponding asset in the container page.

Members of the Games and Dance pilots collaborated to curate of a library of dance content videos to form the creative game demonstrator. This became a "static" library of videos drawn from different archive sources (including Europeana sources), that have been downloaded and inserted into the demonstrator, rather than using a dynamic system of loading videos into the software using search terms at run time. This approach has been selected in order to provide the user with a coherent experience as videos were selected based on aesthetic content, quality of image and licensing being "pre-loaded" there are no download times for users and therefore no

negative impact on their download service and any tariffs for data. Also the experience of using the demonstrator and having access to content is not to be reliant on that content still being available directly from Europeana.

Coordination of the Games Pilot and IP

The pilot's work began in February 2014 and methodology was established with the Pilot Coordinator acting as the interface between the project and Serious Games developer at Coventry University. The pilot reviewed Europeana content with partners, and storyboarded themes for the games demonstrators. It was decided that the team would hold meetings every three months to discuss idea, progress and ensure that work was being conducted within the timescale.

Unfortunately, the Pilot Coordinator left the university in August 2015, just at the point where the games were to become available for user testing, this meant that development of the games stalled while the team was reorganised. The Project Coordinator decided that at this late stage of the pilot's work, the Coventry University based Dance pilot team and Project Manager would take over, rather than wait for a new Pilot Coordinator to be recruited. This led to a delay, as the new team assessed the situation; this was hindered further, as the developer of the three games had also left the university during this period and therefore, none of the original games development team was in place by the end of 2015.

One of the challenges facing the new team was the lack of documentation regarding the development status of the game demonstrators and the also the situation relating to IP. By returning to old e-mail discussions and through meeting colleagues of those involved originally, a picture began to form. The issue with being unable to access dynamic content was understood, as was the use of libraries of content for each game, all with attribution of sources. However, there was a wider question, that could have implications for the hackathon and that related to the intellectual property of the source code used within the development of the games. Did it belong to Coventry University or could it be shared with hackathon participants (and other

interested parties)? Would the source code be available to be shared with participants at the hackathon in April 2016?

Source code for the games was provided to the new pilot team in late February 2016, which was checked by partner imec. In parallel, SGI forwarding standard terms relating to foreground and background IP. When asked to quantify foreground and background definitions in relation to the game demonstrators, no answer was available. This was a direct result of none of the original team still being in place and no clear documentation maintained to establish any demarcation at the onset of the work. SGI did however give the E-Space project permission to share the source code with hackathon participants and partner imec therefore placed it into an accessible git repository.

The Games Hackathon and Approaches to IP

The organisation of the Games hackathon was a task to be sub-contracted; the event was scheduled to take place in April 2016. The departure of the Pilot Coordinator also impacted upon this process, as his initial planning became inviable without his involvement. This led to procurement being initiated at a relatively late stage, as the new pilot team tried to understand the game demonstrators and their IP status.

In light of this change, it could be considered that the hackathon ultimately took place too early, although the weekend of 16 and 17 April 2016 was the only date that would fit with the diaries of the organiser and project personnel. The hackathon was held at Game City, the National Gaming Centre in Nottingham, UK and was preceded by a Salon event for participants in London the week before. The organiser set a very artistic and creative tone for the event which was entitled Art//Games//Hackathon. Tim Hammerton introduced Europeana to the group and NTUA presented the E-Space Portal as a way to access content.

Image from the Games Hackathon

The new pilot team ensured that messages about the project's work were communicated to participants within the invitation letter; that they would have access to the code of the three game demonstrators; and that three teams would be selected to progress to the business modelling stage and then potentially onto business incubation, based upon their business idea and integration of digitised cultural heritage within their gaming concept.

Intellectual property was discussed during the morning introductory session of the event, with copies of the E-Space guides for hackathon organisers and attendees circulated. As with other project hackathons, the message given was that it is not possible to protect an idea. If participants were worried about their concept being taken by others, it would be better to not reveal it. Following this discussion, there were no further IP related questions during the hackathon.

The hackathon was not as successful as had been hoped or as other hachathons within the project had been. None of the teams chose to use the source code for the three games and may not have been aware of it in advance; the cultural heritage requirement and progression to business modelling aspects were not the main consideration of participants. Three teams were selected as hackathon winners to progress to the business

modelling stage, but none significantly featured the requisite cultural heritage element. Although they were asked to incorporate it into their planning for the next stage, participants were reluctant and ultimately, by not meeting the project's specified criteria, none progressed to the business incubation stage.

Although the hackathon may not have produced teams that would be supported to start a business, the results are as interesting to consider as those from other successful project hackathons. The loss of the original Pilot Coordinator meant that new plans had to be put into place at short notice and availability meant that the date was a little earlier than was ideal. The creative tone set by the organiser may not have encouraged the use of cultural heritage content and the recruitment of teams with a desire to establish their own business (in the way that a project partner may have done). It could equally be considered that gaming is a sector that has a regular hackathon culture and that participants were familiar with the traditional ethos rather than the business orientated nature of the E-Space hackathon and therefore did not want to progress further. Regardless of the outcome and despite the multiple hurdles faced by the pilot team, a hackathon was held and was enjoyed by those that attended the event.

Lessons Learnt from the Games Pilot

When reflecting upon the Games pilot, the assumption that all staff would remain in place for the duration of the pilot and that verbal agreement and understanding was enough was flawed. Although it is not unusual for some people to leave, in this case all of those involved in the Games pilot had gone by the mid-point of the project, and a new team had to gain an understanding of the status of work. This was particularly relevant to IP, as there was uncertainty over the application of foreground and background IP; what might be shared with hackathon participants and what is owned by Coventry University. When commissioning any product development, a document ought to be drawn up at an early stage that clearly outlines the expectations of both parties that remains in place regardless of any staffing changes.

The selection of content for use within the game demonstrators was not as smooth a process as had been envisaged. Originally the selection of dynamic content was planned, but due to the difficulty of accessing content via Europeana it was replaced with a static library. This is an important consideration for future game based work that incorporates digitised cultural heritage content. At a later stage in the project, the E-Space Portal became available that would help to address this requirement through its federated search functionality.

Reflections and Conclusions

Being a partner on the Europeana Space project with the remit to develop the IPR strategy and to support the pilots has been an enlightening experience. While copyright is a key aspect in the use and reuse of digital cultural content and of the tools used to exploit it, copyright and innovation tend to be "uneasy bedfellows". From the development of the prototypes by the pilots, through the experimentation with content and tools in the hackathons, to the moulding and shaping of ideas in the business modeling workshops, and the development of the winning ideas in incubation, so copyright and innovation have sometimes worked hand in hand, sometimes been distant, and sometimes operated in opposition.

There have been some notable copyright innovations developed by the IPR team during the course of E-Space. The importance of the "protected space" to some participants has been significant: a space designed to give innovators and entrepreneurs room to experiment with tools and content with important parameters placed on reuse without permission from rightsholders. The project has also given the IPR team the opportunity to develop a suite of copyright tools for cultural heritage: an on online IPR toolkit; an open content exchange platform; a MOOC module on IPR for cultural entrepreneurs; and a series of case studies narrating the IPR lessons learnt by each theme (photography; games; open and hybrid publishing; dance; Europeana TV; and museums). Of these, particularly notable copyright innovations are the tools that have been developed for managing copyright in hackathons; the IPR case studies bringing together the lessons learnt; and the open content exchange platform bringing together all sorts of information on "open" content and tools which can be used by cultural entrepreneurs.

There have also been some common IPR lessons learnt. One was the difficulty for some pilots in finding accessible content where the copyright status of that content was known and copyright owners findable. In part this is one of the challenges posed by the lack — or complete absence — of metadata

accompanying digital content whether via centrally funded platforms such as Europeana, or collections held in distributed repositories. While the IPR online toolkit seeks to assist by providing information on copyright and information law such as the orphan works directive, the reuse of public sector information provisions and rights clearance, these measures are not always – or often – relevant or practical for the cultural entrepreneur seeking to innovate with limited funds. The consequence was that many pilots had to work with specially sourced content at not insignificant cost, often made available via the "protected space".

Not "thinking IP" can have its consequences, and this was seen both in the Games pilot and the Photography hackathon. In the Games pilot, IP problems beset the development of the tools and fundamental questions arose over who exactly owned the source code; for the Photography hackathon, a failure to clearly address ownership of IP arising from the process and a subsequent fracturing of the team, resulted in a breakdown of relations and, ultimately, potentially unclear ownership of the kernel of the innovation. Knowing a little about copyright does mean that it is possible to know when questions should be asked. The open and hybrid publishing pilot was an example of this. Not only was the IPR team closely involved in assisting with IP questions during the course of the pilot, but in addition, when the winner of the business modeling workshop was in incubation, they knew that copyright questions had to be addressed — which were — and the IPR team were able to assure the entrepreneurs that their chosen strategy worked within the copyright framework.

As a closing thought: some may argue that Moore's law is now obsolete, but nonetheless, no-one would dispute that technologies are with us to stay. Equally, copyright law is not going to go away. When seeking both to nurture innovation and to recognise the important role that copyright plays in underpinning innovation, we need to find ways in which they can act in mutually supportive ways. Within the constraints of the project, the IPR strategy underpinning E-Space has sought to do just that, and the IPR is immensely proud of the projects' achievements.

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