The Virtual Museum

Report 1
The Virtual Museum
### Table of contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword – The Kenneth Hudson seminar</td>
<td>5</td>
</tr>
<tr>
<td>Wim van der Weiden</td>
<td></td>
</tr>
<tr>
<td>Introduction of LEM – The Learning Museum project</td>
<td>7</td>
</tr>
<tr>
<td>Margherita Sani</td>
<td></td>
</tr>
<tr>
<td>Introduction: Working Group 1 “Museums of the 21st Century”</td>
<td>9</td>
</tr>
<tr>
<td>Marie Bourke</td>
<td></td>
</tr>
<tr>
<td>Virtual museums – a shift in meaning</td>
<td>12</td>
</tr>
<tr>
<td>Massimo Negri</td>
<td></td>
</tr>
<tr>
<td>Virtual Museums: from opportunity and threat to chance and challenge</td>
<td>20</td>
</tr>
<tr>
<td>Wim van der Weiden</td>
<td></td>
</tr>
<tr>
<td>Virtual networks and the changing position and role of museums and cultural institutes</td>
<td>24</td>
</tr>
<tr>
<td>Dirk Houtgraaf</td>
<td></td>
</tr>
<tr>
<td>The Metamorphosis of the Users and by the Users:</td>
<td>32</td>
</tr>
<tr>
<td>Towards The User Generated Museum</td>
<td></td>
</tr>
<tr>
<td>Giampaolo Proni</td>
<td></td>
</tr>
<tr>
<td>Understanding personalization in museums</td>
<td>40</td>
</tr>
<tr>
<td>Silvia Filippini Fantoni</td>
<td></td>
</tr>
<tr>
<td>The museum space between Reality and Virtuality. The case of the Google Art Project</td>
<td>52</td>
</tr>
<tr>
<td>Davide Gasperi</td>
<td></td>
</tr>
</tbody>
</table>

All of these activities took place in Italy - in Bologna, Cortona, Parma, Prato or Bertinoro - and mostly in cooperation with the Istituto Beni Culturali (IBC) of the Regione Emilia-Romagna. The 2011 edition of the Kenneth Hudson Seminar was organised within the frame of LEM (the Learning Museum); a European project funded by the Lifelong Learning Programme Grundtvig 2010-2013. The subject was ‘The Virtual Museum’.

Twenty years ago interactivity consisted of displays, which visitors could operate. They could, for instance, open lock gates in an exhibition about the production of electricity by means of a flood-control dam. Presentations like this helped in understanding the process. Museums were ‘teachers’, the visitors ‘pupils’. Thanks to (or due to?) the internet – especially web 2.0 – visitors have become more and more participators or partners of the museum. The virtual museum has offered the possibility to create ‘communities’. People can add content to the collections, exhibitions or other activities of a museum. The Museum of Natural History in Toulouse was one of the pioneers in creating a community by collecting amateur photographs of the nature of the region. The amateurs could add their own images in the virtual collection of the museum. But their influence was not limited to the virtual world. The best ones were selected for an exhibition in the museum itself.

This year, a project started in the Netherlands, in which six museums make a selection from their collections and put them in a common virtual storeroom. The linked collections will be presented in a way that people can compose their own exhibitions. The composers can invite others to comment on it, to improve it or even to vote about the best presentation. The winner gets the opportunity to realise his exhibition in a real museum. So, everybody can become a curator! The Database of the Google Art Project contains 30,000 artworks from 151 museums in 40 countries. The participating museums expect that the viewing will also help with the research of the art works. They hope that people will discover something new from behind the computer and will get in touch with the museum concerned. So, everybody can become a researcher!
In this way the virtual museum creates completely new opportunities to get new audiences, not only within the famous circle of 60 km around the museum, but worldwide. The network museum is born!

The aforesaid is just one side of the influence and impact of the modern internet technology on museums nowadays. During the seminar all ins and outs of the virtual museum are illustrated by the speakers: all specialists in their own field. And we all know it is a snapshot of the situation, because nothing changes as fast as internet technology!
The ‘Virtual Museum’ is the first of seven reports which are published within the framework of the EU funded project LEM – The Learning Museum, which aims to create a permanent network of museums and cultural heritage organisations, to ensure that they can exploit their potential as learning places and play an active role with regard to lifelong learning in a knowledge-based Europe.

The project is funded by the Lifelong Learning Programme Grundtvig for the period 2010-2013 and can be regarded as the arrival point of a number of previous EU projects carried out between 2007-2010, which dealt with lifelong learning in museums (LLML and MuMAE), intercultural dialogue (MAP for ID) and volunteering (VoCH), all of which are documented on the LEM website.

LEM not only draws from the materials collected, the lessons learned and the contacts established by its forerunners, but moves one step further in the direction of establishing a permanent space for museum professionals and adult educators to meet, exchange experiences and good practices, and to learn from each other, therefore contributing to the creation of a European community of professionals interested in heritage education and lifelong learning in museums.

The network started with 23 partners from 17 European countries, plus one partner from the United States of America - the Museum of Anthropology of the University of Denver - taking advantage of the possibility opened in 2010 for the first time by the Lifelong Learning Programme, to involve third country organisations.

As a network, LEM aims in the first place to grow and acquire new associate members which, in May 2012, had already outnumbered the founding institutions. A wide range of museums, heritage organisations, academies, institutes for learning and universities are now part of the network, representing 23 countries. There are Ministries, Museum Associations and other umbrella organisations, individual museums, small and large, institutions active in the education field, all working on an equal level and engaged in sharing information, making it available to a wider public and learning from one another.

The philosophy of LEM indeed is that of considering museums not only as learning places, where educational activities are delivered, but as learning organisations themselves, learning from the public, the local community, other agencies and, of course, from other museums.

The idea of peer learning is core in LEM and, in order to support it fully, work has been divided into working groups, each led by a LEM partner.

The research subjects have been chosen by the working groups themselves:

- New trends in museums in the 21st century
- Museums and the ageing population
- Audience research, learning styles and visitor relation management
• Museums as learning places - learning spaces in museums
• Museums and intercultural dialogue

‘The Virtual Museum’ is one of the outcomes of Working Group 1 ‘New trends in the museums in the 21st century’ and of the seminar organised in Bertinoro, Italy on 18 November 2011, as a collaboration between LEM and EMA – The European Museum Academy, one of the LEM partners.

In addition to collecting materials, sharing them on the website and eventually producing a report on the theme researched, working groups undertake study visits to each other or to third institutions, to come in contact with working practices of other colleagues throughout Europe.

This idea of learning by being directly exposed to other people’s practices and experiencing different work environments represents an important added value to the project, not only with regard to the members of the working groups, but more widely, through the LEM mobility scheme which is open to partners and associate partners and provides the possibility of spending some time working in another institution.

In fact, some of the project partners, initially five, but increasingly more, have offered placements to other LEM members for periods lasting from a few days to two weeks to three months. This results not only in the strengthening of ties within the network at a personal, professional and institutional level, but allows individuals to actually learn by being exposed to different working situations.

Dissemination is another important aspect of LEM. International conferences, seminars and round tables are being organised regularly and attract a wide European audience. They are occasions for intensive networking and learning, offer plenty of social events and are combined with visits to local institutions to meet stakeholders. Where possible, they are also live streamed to reach an even wider public worldwide. A number of smaller dissemination events are organised, also at local or national level.

Finally, the website is the digital platform where all the knowledge acquired by the project is kept and made available. It is a dynamic and interactive forum, first of all to receive and exchange materials about the subject area ‘museums and lifelong learning’, and secondly to provide information about the project. It is a virtual learning environment providing information on existing literature, projects and actors and is kept updated through continuous research, data analysis and provision of new information by an international editorial team and by the project partners. Everyone is invited to send materials to be published on the LEM website, and participation is favoured through the use of web 2.0 tools. At the beginning of each month an electronic newsletter is sent out to all those who have subscribed to it.

The website therefore functions as a community-building tool for all those who are interested in the topics addressed by LEM. Through the networking activities of its partners and associates, the website and the dissemination events, LEM expects to reach the whole museum and heritage community and a large part of the adult education sector.

www.lemproject.eu
The first report of the LEM project ‘the Virtual Museum’ falls within the activities of the LEM Working Group: New trends in museums of the 21st century. The reason for undertaking this theme is that Learning Museum Network Project members are aware of the world-wide economic downturn, and that the rate of change in the 21st century is taking place at an incredibly fast pace. They feel a need to strategise for the future, in so far as that is possible. As museums matter to people, museum practitioners are concerned about their ability to ensure access, engagement and outreach, “in such a world, educators are forced to consider with renewed urgency their purposes and their methods”. As a result, the group is drawing on new research in the area of museums of the 21st century, together with looking at potential examples of good practice. The digital world is another essential part of this project. It is a vital medium to convey online messages about the collections being central to the museum, together with staff who engage visitors with the collections, to ensure the museum is made meaningful to the public.

Trends world-wide are reflecting similar experiences to Europe, as the current economic uncertainty is forcing many museums to reassess, re-evaluate and in some cases reinvent themselves. There are at least 38,000 European museums drawing over 250 million visitors a year (over 50% of which did not exist before World War II). It is an impressive statistic that reflects a European-wide desire to create greater access to culture and the collections, but is it sustainable?

In order to chart a way forward, the group developed a work plan at a LEM meeting in Wales, resulting in the creation of an initial trial survey: ‘Key trends in museums of the future’ as a way to identify areas of the museum operation that are declining, ongoing and what is emerging as new key trends, which was disseminated in 2011. The next stage involved discussing at a symposium: ‘Future Forecasting: the challenges facing museums and cultural institutions’ (held at the National Gallery of Ireland in November 2011). Seven guest speakers addressed key issues, joined by a discussion panel, chaired by leading cultural figures. The symposium was attended by 143 people; LEM members took part from Italy, Norway, Greece and Sweden; as it was live streamed (10.00 am - 8.00 pm), it gained 322 unique viewers from across Europe, Scandinavia, Japan and the USA. A rapporteur reported on the symposium.

Meanwhile, the group began gathering research on the subject of museums of the 21st century (online, publications, presentations etc) – all of which they put on a reserved area on the LEM website. A roundtable was convened: ‘The Challenges facing museums on-site and online in the 21st Century’ to draw the
symposium discussion to an outcome (held at the National Gallery of Ireland in March 2012). Three speakers gave keynote presentations, chaired by an academic, leading to a discussion which was opened out to delegates and online participants. Attended by 135 people (LEM members came from Italy, Romania, Greece Italy and Sweden), the roundtable was live streamed (10.00am-1.30pm), receiving 1,408 unique online participants from Europe, South Africa, Russia, Scandinavia, Pakistan, the Republic of Korea, the USA and Canada, who sent questions/comments to futureforecasting@ngi.ie, while the hashtag on Twitter #Roundtable2012 was one of the top trending tags in Dublin that day. The journalist Rosita Boland tweeted from the lecture theatre and the Irish Times devoted a full page to the Roundtable (14/4/2012). A rapporteur noted the main points of the roundtable. Both symposium and roundtable were supported by LEM and held under the auspices of ICOM CECA. The proceedings of the roundtable will be published by LEM in 2012.

A LEM Forum was also held in March 2012, at which the results of the pilot LEM survey were revealed, highlighting familiar issues being impacted on by the economic downturn, including reduced opening hours; the changing role of the curator; the requirement to engage the public through increased exhibitions and temporary displays together with education activities and cultural events; the use of volunteers; and the significance of digital media and social networking. The group plans to issue the full survey ‘Key trends in museums of the Future’ in June 2012, and it will form the basis of a publication on ‘New trends in museums of the 21st century’ in 2013. The Group will meet in Manchester in 2013 to take part in a series of field trips exploring museums that form models of good practice.

The Group is aware that the next generation of museum practitioners will have to think through these challenges carefully, drawing the links more closely between the physical and the virtual so that the museum reaches more people in meaningful ways. Museums of the future will have to rise to the challenge of engaging a wider public. They will have to move beyond the walls of the museum, within which are the original works, to a wider digital world and convey the message that these objects contain poignant stories of being human as well as being works of art. It is hoped to demonstrate that good museum practitioners can bring these works to life, virtually and physically, and in so doing help museums to become dynamic centres of learning, creativity and enjoyment that will strengthen communities and enrich people’s lives. See: www.lemproject.eu.

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The Virtual Museum, a shift in meaning
Massimo Negri

With the growth of the Internet and its functions and the developments in digitisation, in 3D reproductions, in the usability of digital 3D models in terms of navigability, the original idea of the virtual museum as a sort of digital replica of the physical museum had to be strongly revised. Also, the presence of museum digital resources in a kind of merely simplified ‘showcase’ offered to surfers has started declining (although it is still the basis of many museum internet sites) in favour of the attempt to define a new dimension of the virtual museum and an independent dimension of museum life, which finds its roots in the physical museum but it has its own logic of communication, of life and of growth. The social media’s impact on social life has put special emphasis on this last point, managing available innumerable digital resources and at the same time putting new social responsibilities on museums’ shoulders. This short text tries to summarize some points of this process, during which a shift in the meaning of the term ‘Virtual Museum’ has rapidly taken place.

An historical definition of the virtual museum

One of the first recorded definitions of ‘Virtual Museum’ is dated January 1997, written by Jamie McKenzie and published by the ‘Technology & Learning Magazine’.

‘A virtual museum is a collection of electronic artifacts and information resources – virtually anything which can be digitalized. The collection may include paintings, drawings, photographs, diagrams, recordings, video segments, newspaper articles, transcripts of interviews, numerical databases and a host of other items which may be saved on the virtual museum’s file server. It may also offer pointers to great resources around the world relevant to the museum’s main focus.’

Interestingly enough, in McKenzie’s definition the Internet was not explicitly mentioned. In the 1990s the museum community was still debating about whether the web should be regarded as a possible threat or as an opportunity….The discussion about ‘real-virtual’ was also complicated by the emerging notion of the ‘intangible heritage’ (collective memory, etc.) which was inevitably destined to go digital…From the museological point of view, terminology has started (and in some sense still is) registering a permanent shifting of meanings and accents. The term ‘virtual
museum’ in itself, which on this occasion is the focus of our discussion, has been involved in this process: from a sort of a museum showcase reproducing reality on the web or on an electronic device, to a complex independent museum dimension which lives its life in a variety of media.

**The Digital Museum and the Virtual Museum**

On the contrary, in current museum jargon ‘virtual’ seems inevitably associated with the Internet (which was not the case 15 years ago, as we have seen). But it has to be said that our familiarity with virtual reality is not only a matter of digitization and the Internet. For instance, every day we look at the sun, BUT the sun we see at that very moment is dated eight minutes ago. Many of the stars we can see now in the sky do not exist any longer ...they have been dead for a long time. Virtual reality has also been pursued as a theatrical effect with intriguing results in the past. Introduced into theatres in the 1860s, Professor Pepper’s Ghost startled British theatre goers with an effect that allowed live people or objects to slowly materialize into a scene. This is a technique recently adopted in some museums, for example the Wimbledon Lawn Tennis Museum, where the ‘ghostly
figure’ of the famous tennis player John McEnroe speaks to the public in an impressively realistic way by adopting the same method elaborated by Professor Pepper more than a century ago (and adding a bit of contemporary technology too).

It is true that digital resources are also proving to have a pervasive potential in the context of the museum environment, with the consequence that the virtual museum is also present **inside** the ‘real’ museum environment, offering visitors and users ‘virtual experiences’. Museums, by definition the kingdom of real, physical objects, are nowadays increasingly going digital on one hand because they exhibit or anyway make a variety of digital objects accessible, on the other hand because visitors and users of museums can experience ‘de-materialized’ objects **inside** the museum and **outside** the museum, on the web, or via one’s digital devices in the heart of the exhibition or very far from it. An outstanding example of the complex process underlying integration between the tangible exhibition and digital devices of a different nature (portable or not) is offered by the ICT structure of the Museo Galileo (Florence), 2011 European Museum Academy Prize winner.

Digital objects on show, digital experiences everywhere. De-materialized objects, and de-materialized museological interpretation of them is a phenomenon we are living with, but without a clear
perspective of the possible influence of this on the future shape and role of museums. 
In the end a legitimate question arises: is the ‘real’ museum also becoming a mostly digital world, in some sense independently from its physical dimension?

**The Virtual Museum: beyond space, time and collections**

The virtual dimension offer spaces and experiences that go beyond architectural spaces and beyond collections’ limits. Let us try to list very shortly some of the functions that a virtual museum can specifically fulfil:

- Exhibitions on line
- Active role of users in building their own collections
- Visual archives of past temporary exhibitions
- Experiencing the backstage of the museum (storages, restoration workshops, etc.) via a webcam, etc.
- Exhibitions of objects destined to disappear in a short time and digitally recorded for ‘eternity’
- Enrichment of users’ experience: closer access to masterpieces…but at distance (Google Art), augmented reality, 3D modelling,…
- RSS: following history in the making
- Objects on show coming from any possible point of the world at the same time
- The possibility to compare digital objects of the most different physical natures

The recent initiative about the First World War by Europeana has shown the dramatic potential of the creation of ‘virtual collections’ on the web in a worldwide dimension which has also interestingly brought to light evidence of historical facts ignored until then.

**Museums as meeting places**

“I Tweet little tips every day …. and people just follow me. I blog, I am on Facebook, I have thousands of friends on Facebook and this is just how I live” - a participant in the first social media night at the Dali Museum, St Petersburgh, Florida.

This dimension of the museum’s role has been greatly emphasized in recent times. Its roots are to be found in the specific features of the museum’s space: safe, interesting, attractive, entertaining, offering a growing variety of services in addition to its exhibitions, generally large enough to allow people to meet each other, and so on. But the virtual museum can greatly contribute to the growth of this dimension, integrating its tools with the physical sense of the word ‘meeting’.

- Social networking and blogging: following the museum daily
- E-learning and participatory learning environments
- Webcams and other devices allowing people to profit from the museum’s potential at a distance

The museum Internet site becomes a museum in itself, with most of the social functions of the ‘real’ museum available through the web.

The Virtual Museum becomes the result of a complex variety of impulses from a complex variety of actors. The web itself has rapidly changed its meaning and role in our lives.

- The web has become an environment is no longer simply a tool
- The web is something ‘we live in’
• The virtual world is a new human dimension

At the same time Facebook, Twitter, Second Life, Spreaker, and so on offer a further dimension to our social life but also to our inner life and to our museum experience, too.

The ‘real museum’ becomes a combination of all these elements which are also involved in an endless process of ‘becoming’, due to the fast changing technological scene.

A new breed of user

It has been frequently stressed that the change from the notion of visitors to the notion of museum users implies not only a physical presence inside the museum but also does not limit the museum experience to the time spent in the context of its walls. The evolution of the museum environment in terms of interactivity and sharing of knowledge, more than transmitting it, is also part of this process. The contemporary museum is more ‘used’ than ‘contemplated’ by its ‘clients’, and it is loved, enjoyed, discovered and profited of in innumerable different ways by each individual. The reason is not only based on the change in the museum’s way of being and of communicating (which is not a minor part of the discourse, by the way), but also in the users’ anthropological mutation which is frequently happening under our eyes in a way which is difficult to interpret.

It is enough to evoke here three aspects to understand how challenging the situation is.

• Multitask visitors/multitask users: we all are becoming (forced, or thanks to free choice) multitask human beings, able to carry on a variety of duties at the same time and with a growing spectrum of skills involved. This is largely because of technological developments and the consequent reorganization of collective and private life.

• Do you remember the book Ethnographie de l’exposition (ÉPUISÉ), L’espace, le corps, le sens (1991), by Martine Levasseur, Eliséo Véron published by the Centre Pompidou? It presented one of the first elaborated efforts to categorize the behaviour of visitors, and was a book which had a great influence on the sector of visitors’ studies, which later became much larger. Visitors were labelled as ‘the ant, the fish, the grasshopper…’ and in other imaginative but rather effective ways. Let us imagine how complex it would be today to make such an attempt to give a full picture not only of the museum’s visitors but of the museum’s users in all his/her multifaceted aspects…an almost impossible task, a reality increasingly difficult to categorize.

• To complete the panorama we can add the problem of the rapid obsolescence of technological devices, which implies also at a certain stage the obsolescence of given established users’ behaviour. The multitask man also seems to be a very fragile technological entity, subject as he is to a rapid and endless evolution of the same tools which define his individuality.
A Cyber Museology?

We have just entered an era of rapidly growing integration between the physical and virtual dimension as well as of growing contradictions and frictions between these two spheres of human experience. This is not a temporary condition, but a permanent and long-term process. Museums are deeply involved in it and have still a lot to learn…but also a lot to offer to enrich the museum’s role and prevent them becoming irrelevant or perceived as such by the community. What is certain is that a sentence said at the first ‘Museum and the Web’ international conference in 1998 and which sounded like this -

‘Let the museum be the museum and the web be the web’

is no longer possible. The two dimensions are inextricably connected, and the notion of the virtual museum finds its possible evolution in the development of the relationship between these two entities, one quite tangible (the museum environment) and the other one (the Internet) totally immaterial but enormously influential also in terms of museological thinking for the coming decades.
Photo credits

Fig. 1 “Trackman” videoguide of the Galileo Museum. Credits: Galileo Museum, Florence, Multimedia Laboratory

Fig. 2 Use of the “Trackman” videoguide in the third exhibition room of the Galileo Museum where visitors can admire the large armillary sphere of Antonio Santucci. Credits: Galileo Museum, Florence, Photo by Giovanni Volante

Fig. 3 A user connected to the wireless network at the Galileo Museum entrance. Credits: Galileo Museum, Florence, Photo by Sabina Bernacchini

Fig. 4 Presentation of the Galileo Museum accessible through Hotspot close to the museum building. Credits: Galileo Museum, Florence - Multimedia Laboratory
Virtual Museums: from opportunity and threat to chance and challenge

Wim van der Weiden

The impact of the internet on the daily running of a museum is greater than could be imagined at the beginning of the worldwide web (www). About 15 years ago the internet offered the opportunity to create ‘museums without walls’. But at that time this kind of museum was considered as a threat to the ‘brick and mortar’ museum. Whether we like it or not virtuality is a reality nowadays. We must deal with it as a chance and a challenge to reinforce the position of museums worldwide.

Some museum directors feared that due to the availability of the collections on internet fewer visitors would come to the museum itself. For all museums creating their own websites was a challenge. With ups and downs: some scanned for instance all publications without consulting potential users beforehand: or thousands of objects were digitalized without any concrete policy. Users of these kinds of websites were overwhelmed by data. Others however considered the internet an ideal opportunity to approach new audiences: for instance, people who never visited museums. They saw websites as showcases of the museum, as a shop of masterpieces or precious objects.

As a matter of fact expectations on the part of the web visitors were growing. Thanks to the evolving technology museums could meet these expectations. The ‘Virtual Museum’ can be seen as the most recent step in development.

“We can relax here outside all afternoon; the whole collection is on the internet!”
What is a Virtual Museum? It has been defined as follows: “A logically related collection of digital objects composed in a variety of media which, because of its capacity to provide connectedness and various points of access, lends itself to transcending traditional methods of communicating and interacting with visitors….; it has no real place or space, its objects and the related information can be disseminated all over the world”.

This very substantial definition has led to the most simple one: “A virtual museum is a museum that exists only online”. Is that true? And how is this different from a website of a specific museum? Museum websites can be divided into four categories:

– the **Brochure museum**. I.e. a museum website which provides basic information about entrance fees, temporary exhibitions, collections, how to get to the museum, etc.

– the **Content museum**. A museum website mainly focusing on the collections, a database of objects, which can be consulted mainly by experts/colleagues.

– the **Learning museum**. The website offers educational information/online interactivity at different levels for a variety of audiences. It gives in-depth and background information about themes and subjects related to the content of the museum – exhibitions, school programmes etc. The information is presented in a context-oriented way instead of being object-oriented.

– the **Virtual museum**. Such a museum is born when two or more museum websites are integrated – when similar collections from different museums are brought together as one on a website. In the sense that one digital collection is created and as such has become a “museum without walls”.

An example: many years ago – in 1995 – three European Natural History Museums decided to make a mini virtual museum. At that time the expression virtual
museum didn’t yet exist. EU money was provided to produce the so called 300 Pearls website. The three National Natural History Museums of Belgium, Hungary and The Netherlands each selected 100 highlights of their collections and made them available digitally. One of the first virtual museums was born! Visitors of the website could compare and combine objects, which had never been and probably will never be together physically. And that’s exactly the benefit of all virtual museums today. So, indeed a virtual museum is a museum that exists only online!

To get an impression of what kind of virtual museums – the variety and diversity – present themselves on the worldwide web I selected six of them:

- Virtual Museum of Canada
- European Virtual Museum
- Google Art
- Girl Museum
- Europeana
- 3D Ancient Wonders

These examples make clear that whether we like it or not virtuality is a reality nowadays. We must deal with it as a chance and a challenge to reinforce the position of museums worldwide.
Virtual networks and the changing position and role of museums and cultural institutes

Dirk Houtgraaf

Slowly but inevitably we will move into an era of co-creation and connectedness. The main driver is the strong ICT revolution, which stimulates an easy exchange information and knowledge between all kind of scientists, professionals and amateurs. In the short term this will open up opportunities to enhance the role and position of museums. In the long term I think it will even be needed if museums want to keep (or regain) a position of intellectual significance. In this lecture some examples of the recent, ongoing work in the Netherlands will be shown.

Museums as a node in a network

One of the effects I do foresee is a movement from museums as collection-based to knowledge-based institutes with an infrastructural role. In this picture the museum is primarily a meeting point which organizes the exchange and distribution of information and knowledge in a certain domain.

Each museum accumulates the cultural artefacts in the domain for which it has responsibility. These artefacts, objects, are the materialisation of ideas and concepts. The role of the museum is to put them in context and explain and transmit these contexts to an audience. The objects are thus in essence carriers. It is the immaterial context which is the real core business. No museum stands alone in its domain or ‘realm’.
There are often many stakeholders involved, universities, professionals in cultural and societal organizations and amateurs (often organized in organizations too). What makes the museum an attractive partner for all these stakeholders is its permanence, its status (trust) and the opportunity to reach to audiences with exhibits and educational programs. If the museum allows these stakeholders to tell their stories by these distribution channels, and give them public acknowledgement and credits, it has an opportunity it should not let go.

**From ‘a museum with a network’ to ‘a network with a museum’**

The strong cooperative advantages, based on this notion of collaboration with stakeholder, extends to the digital ‘marketplace’. And it is in this collaboration where the digital revolution gives us new powerful tools. Before going more deeply into some of these tools and opportunities, one important lesson from my experience in Naturalis, the Dutch National Museum of Natural History, has to be outlined. When building such an virtual and physical network, to overcome potential mistrust you have to make clear to all stakeholders that your goal is not to be a dominating player. It has to be an equal playing field, in which every organization has its position and the museum is not at the centre of all. Without doubt, the museum will receive due recognition for its efforts and achievements by major stakeholders. It is wise however to remain modest and not to over-emphasize this when telling others, or when publicity is involved. The basics of building a network are thus: truly cooperate, give credits to all parties, share. And additionally: take the lead. Don’t wait but start investing on your own. All others can join (and when the sceptics join much later, take them in with love and understanding). Do show the cooperation to all stakeholders – time and time again.

![Diagram](FIG. 2)
In doing so there will be a transformation of a museum with a network, to becoming a node in a network to (in the end) a network with a museum. This idea that in the end the leading organizational power will be in a virtual knowledge network, where a museum is one outlet, is of course still far off. The first steps however are to become a node in a network and is here some examples which might illustrate how this can be done.

**Naturalis as a node in a network on Dutch biodiversity**

Naturalis, the Dutch National Museum of Natural History, became a very popular museum at the opening of its new exhibits in 1998. This popularity with the audience was not matched by its scientific counterpart. And as Naturalis was an expensive museum for the Dutch government, because of its large collections and its additionally large scientific staff, it was very vulnerable to budget cuts. This had already been a threat for at least two decades, but became more obvious after the investments made for the new exhibits. Naturalis redefined itself as a knowledge centre for biodiversity on Dutch species. And it took off with building a complete overview on all Dutch species, accumulating the knowledge (databases, lists, protective laws, pictures) of its partners and building opportunities for amateurs to join in. The resulting Dutch species list was aimed at the policy makers at governmental agencies. It positioned the museum as a knowledge base of importance, not on its own, but because of its relations. And it had the experts to validate when necessary.
The Dutch Cultural Heritage Agency

Two years ago the Cultural Heritage Agency started an effort to apply the same principles for several domains. As it has mostly been quite a paper-based organization, though some large databases were available, the first steps to be taken were to digitize and organize its data and information-architecture.

These steps are necessary and important. It is a little too much for this lecture and essay to go to deeply into the ICT architecture, but there are two main principles, that will clarify the underlying idea.

One major organizing principle at the heart of the information structure is that all is structured in our open “3 layer model”. It means that there is a separate semantic layer having all metadata and connecting to
as many different databases as possible. As everything is in the cloud, these databases can be anywhere. Once the connection is made, all is accessible through this one semantic layer. Website-interfaces and apps thus can acquire data through this separate semantic layer. It means too that it is possible to make many different websites on the basis of these datasets. The principle is visualized in figure 5.

The second major organizing principle is that the ICT architecture in-house is based on a component-based approach. There are no separate ‘all-in-one’ dedicated programs, but they consist of ‘components’ which work together. An address book (CRM) is used for many different applications. It is building software like LEGO.
Example 1: Archeological finds (excavations)
The Agency has a database with all Dutch archeological finds. These are mapped. Additionally, with help of the archeological community, a complete thesaurus of all archeological terms has been built. Together this results in the option of showing all specific types of findings and its documentation in a certain region. As the work is in progress, we can show only a beta version. The end result however will be an attractive website where the archeologists and local communities (including the policy makers) can find what there is to be seen in their city or region.
Example 2: State monuments

A comparable example is in the maps for the state monuments. All state monuments are available and mapped. The associated documents, miles of archives, are in the process of digitization and will be attached.

The database is open for others to use, as Wikipedia and several smaller private companies did, to make their own interfaces. In return their information will be included in the databases.

The focus of the Cultural Heritage Agency is on the owners of the monuments and the local government. Therefore more information on for example subsidizing options and on restoration issues will be added.

Most of the other website builders aim at the general audience. But together a network of information and knowledge is built on a common set of data and thesauri.

Concluding remarks

There are many more examples to be shown, but the general picture will be clear: many contributors can work on a common body of knowledge, pictures and maps in a specific domain. It is the future for museums and cultural institutes to become the architects and organizers of these networks. It will reposition these institutes as major players in their knowledge domain and give them an acknowledged, extended position to the audience and funding agencies.
Dirk Houtgraaf worked for 20 years for Naturalis, for the Public Libraries and at this moment for the Cultural Heritage Agency. Most of which will be said here, can be extended to other cultural institutes. I will not go into this, though most of the examples stem from the current work of the Dutch Cultural Heritage Agency. So consider ‘museum’ as a denominator for more type of institutions.

Photo credits

**Fig. 1** A museum can organize the stakeholders in its domain. And for some museum there are more domains it can work in. This scheme was used several years ago in the discussion with the Auckland War Memorial Museum, which could be the organizing partner in the domains on New Zealand history, natural history, as well as military history.

**Fig. 2** When building a virtual network, stay modest. Do not see yourself as a ‘spider in a web’. Take a role as connector & broker, as an intermediate and an organizer of the structural components of the network.

**Fig. 3** Building a virtual network takes the incorporation of many others. In this, each participating organization can have an organizational role for its own partners too.

**Fig. 4** Illustrative example of the Dutch species list in which every species is organized in a thesaurus (picture on the left) and has its own webpage. The webpage information is (virtually) aggregated, as with the pictures from amateurs (middle) or the protective laws from the Dutch government (right).

**Fig. 5** The underlying structure is a 3-layer-model. All (digital) open datasets are part of the (virtual) base layer. All metadata are organized into an independent ‘middle’ layer of thesauri. These thesauri are hierarchical grouped metadata and domain and topic oriented as is the AAT (Art and Architecture Thesaurus) of the Getty Institute. The Dutch species list for example is one of them. These thesauri are to be made in collaboration by the experts and to be freely used by all organizations. Then on top there are the user interfaces. They are the entrance for the users and they will ‘map’ the data in specific constellations according to their use. So the same data can be used in different independent websites or apps.

**Fig. 6** A map of a small Dutch town with one of the archeological finds highlighted. When clicked on this, it will give access to the associated documentation. On the right hand there is a topic within the thesaurus, in this case on iron, which gives access to background information, and by which all findings with a label ‘iron’ can be found.

In the near future this infrastructure will be opened to the archeological community for a controlled, crowd based cooperative effort to improve the detailing.

**Fig. 7** A map of a small Dutch town with its state monuments. Every monument has its own webpage, which in the near future will be partially open to their owners to expand it with their stories, building maps and pictures. The data are open to be used for others to make new interfaces for dedicated audiences.
Cultural heritage in the semiotic view

From the point of view of semiotics, meaning resides in the interpretation. The interpreters of museums are the users. How are they and their interpretations changing in the era of mobile communication, globalization, web 2.0, liquid life and other new trends? For example, what is going to happen with the millions of digital pictures people are taking in museums and exhibitions? Why do tourists take photos of themselves with such paintings as Monet’s Nymphéas in the background?

He will take a few examples of museum use and try to draw some considerations and propose some directions of research.

Why the use of CH? Because, in semiotics, there is quite a strong convergence on the idea that the best way to describe signs and discourse is by looking at what people do with them, to what effects they are used. This approach is rooted in the pragmatic tradition, whose founder was also the founder of modern Semiotics, Charles Sanders Peirce. We are thus interested in studying the practices, that is, the forms of behavior in which CH is involved, and how they are influenced by the recent developments of ICT.

First, however, we tried to define what CH is, and how it is created. In semiotics we are crazy about differences: we say the best way to define something is to establish what it is NOT. So what is NOT CH?

I found a good starting point to answer this question in the exhibition by OMA at the 2010 Venice Biennale. It dealt with preservation in a critical way: “the area of the world declared immutable through various regimes of preservation is growing exponentially”. Rem Koolhas’ studio, in short, posed the problem of how and why
we divide what deserves preservation from what can be deleted, forgotten, destroyed. Of course they were particularly interested in architecture and urban planning.

Cultural Heritage production, the exhibition said, is an operation that separates what must be preserved from what can be forgotten.

Yet, this is not enough. CH is not only what survives the selection of time but, in that set, what is worthy of a specific title.

A Cultural Good or a piece of Cultural Heritage can be defined as any object or event which is indexed (or ‘tagged’) and recognized as such by a community. The whole of such objects and events compose the system of material and immaterial cultural elements that we call Cultural Heritage.

Cultures define some of their own parts as ‘cultural heritage’, and mark them with specific signs. In this scheme, called semiotic square, we can see how the opposite categories ‘preserve’ and ‘delete’ generate the actions of preserving and neglecting. Furthermore, we see how on the upper axis the two categories generate the dimension of memory, which results from the choice between keeping and deleting. On the lower axis, the dimension of oblivion goes from what is not preserved to what is simply not deleted.

Museums

Museums are are probably the most important index system of the CH. They are spaces that automatically define their content as worthy of preservation, protection and admiration. When an object enters a museum, notably an important one, it gains the status
of Cultural Heritage. In a semiotic approach, a painting like the Mona Lisa is a text that stays at the center of a vast system of texts and practices that have produced and are producing its value. For instance, a novel like The Da Vinci Code enlarged and improved the global knowledge of Leonardo, thus rising, so to say, the ‘brand equity’ Da Vinci represents. The value (cultural but also economic and social) of any piece of CH results from the semiotic processes linked to it. They actually produce that cultural good by detaching it from the rest of the encyclopedia, indexing it, and assigning it a place in the ranks and categories of culture.

A museum is thus a space where we can find objects or attend events that are indexed (labeled) as cultural heritage by the context itself.

The system of texts that produces the CH and points to it by indexes can be considered a paratext.

### Makers and users of Cultural Heritage

The role of ‘heritage makers’ or ‘paratext builders’ has been played by many different subjects in history. From Kings to Popes, from art historians to critics, from tv writers and film directors to ministers of culture, from simple people to collectors. We might say that today the production of CH is a complicated process where many subjects negotiate, by conflict and cooperation, the status of a distinguished portion of an encyclopedia. In the particular world of contemporary art this process is clearer than in other fields. A small number of private galleries, auction houses, museums and collectors actually keep the gates of the system, letting in artists and trends according to selection principles that resemble those of fashion.

As for the role of the ‘reader’, or ‘watcher’ of the CH, in the course of history we have witnessed different roles
for the subjects that use or look at the items of CH. We will call them users (I would prefer an expression like reader, but not confined to written texts). CH has had different functions in different societies and cultures, but its ties with cultural identity have always been central. Thus, the subjects that see themselves as the bearers or guardians of that identity have always felt a deep concern for the expressions of CH, regardless of the more or less democratic way it was produced. Even in the Renaissance, when paintings, statues and monuments were personally paid for by lords and popes to celebrate their power and greatness, the reactions of citizens were kept in high consideration. In 2008, for example, the town of Florence was shaken by an embarrassing controversy concerning the placement of two enormous statues that China presented to the city in exchange for the reproduction of Michelangelo’s David. Not to speak of the protests raised by Maurizio Cattelan’s installation at Porta Ticinese in Milan in May 2004, and so on.

In short, CH is a field where simple users feel more than the right, I would say the duty, to express their judgment and opinions. Even more that that: a large part of CH is considered a collective property of the subject whose identity and history it represents. Many Italians, for example, are still angry at the French because Napoleon “stole a lot of our paintings”. They walk the Louvre’s galleries commenting “Ah, look, this was also OURS”. It must be said, to be frank, that the Romans were quite expert in bringing home from the conquered countries statues, columns, paintings, vases and even gods.

Actually, CH has had, and still has, a lot to do with national identities and nationalism, as well as with imperialism. For the first, it had the function of representing and exalting the national identity. Empires, in their turn, have also performed two CH-building actions: erecting their own monuments in the captured cities and carrying home trophies from there. Semiotically, these gestures are a rhetorical figure: metonymy, that is, using a part for the whole. The conquering state asserts its ‘penetration’ and ‘possession’ of the dominated land by imposing its landmarks, and symmetrically ‘brings home’ the conquered country by fetching material pieces from there.

On the other side, CH also has an educational and humanistic side, often open to all people from every country and culture. The Olympic Games in ancient Greece are a well known case of an immaterial cultural good.

Science museums, for example, have the function to popularize science, making it comprehensible and sometimes spectacular, showing its achievements, and the ‘wonders’ of technology. They are a kind of educational museums. Also science is often presented from a national point of view, since cultural institutions are mainly connected to states and public administrations.

With the decline of nationalism and imperialism, new functions were added to CH, and some of the old ones had to be mitigated. Thus, the imperialistic function was presented as ‘discovery’ or ‘passion’ for a foreign culture. Nationalistic function has been turned into education: national CH must be taught in school because it is part of ‘our’ identity (but it is part of that identity just because it is taught in school...). Another new function of CH is that of ‘World Heritage’ that corresponds to the necessity for symbols of a
peaceful and globalized world. The recent media hype for the ‘new seven wonders’ is a symptom of this need (http://www.new7wonders.com/). The temporary exchange of artworks between countries is a new kind of diplomacy. The exhibition of national masterworks in world events like Universal Expo, special anniversaries and so on, are strategic actions aimed at improving the national image on a foreign market. As we may see, in all these cases CH plays the role of a hyper-text, made of many parts that can be separated and joined together in infinite patterns, whose content is a collective identity. This hyper-text is produced, as we said, by a complicated negotiation process between many different subjects, but is still usually validated by a public stamp - usually, but not always. CH can also be a private business. And business, in our system, does not need justification. Big private subjects have already started to produce their portions of CH, sometimes with a vast and popular success: Disneyland was one of the first attempts. Now, commercial centers, private buildings, even factories, are among the must-sees of international tourism.

Now, what is the role today’s users are playing in such a scenario? And what is the influence of user-side digital technology?

**The Digital User**

Digital technology’s recent developments have made a great amount of resources accessible, and opened the road to collaborative content platforms. The User Generated Approach to content has propelled companies like You Tube and Facebook to the topmost positions among the web companies. Collaborative environments like Wikipedia have completely changed the landscape of reference. Experiments like Google Art Project are extending the access potential of the web to the world of museums.

A little more than a year ago, *Il sole 24 ore*, an Italian newspaper, published an article on the relationship between culture and technology. Talking about the iPhone, iPod and iPad applications for virtual museum tours, the journalist wrote “The experts warn that there is the risk that the virtual may replace the real”. One and a half year later, some major museums of the world allowed Google to offer high resolution images of their most famous artworks. It seems the fear that the virtual may replace the real has disappeared. Actually, it was a false fear. The kind of public that
fills great museums is not actually looking for an aesthetic experience that may be well replaced or even improved by a digital representation. They are mainly performing the touristic experience. The visit to a famous capital includes seeing a museum as well as shopping, tasting local food, enjoying the social life, reaching the traditional viewpoints. If a colleague comes back from holiday and says “We’ve been to Moscow, oh, the Hermitage was great! Have you ever been there?”, the reply “No, we look at it on Google” does not make a socialite of you.
I think what is happening, and will be more evident in the next future, is that the way CH itself is produced will change.

Let us make an example
Now it is becoming common to download contents on your mobile instead of using the earphones from the museum’s lobby. The contents are somehow connected to the object you are seeing, by a QR code, a tag, a georeferencing device, an RFID label, a visual recognition program, etc. Yet, you can download the contents from whatever source you can access. Let us suppose a platform begins collecting comments on artworks in a wiki way, and offers them on your mobile. Who can forbid you to use them instead of the official ones? For instance, your moral or religion defines as non proper some works in that museum: using your dedicated guide you can keep your family clear of them. Or you may follow the suggestion of an art critic you trust, selecting only the artworks she picks for you to see.
Furthermore, the system is User Generated, thus you can rank the works you see, the museum management, the cafés, the toilets (ha, the toilets... the weak point of so many old buildings!), the prices, everything. Just as users rate hotels on booking.com or expedia.com.
Users will be able to create their personal museum tours. Communities can elect their favorite works. I don’t know if they already exist, but we can imagine a gay User Generated tour in a great museum, and maybe a painting which is considered of second rank suddenly begins to attract scores of well groomed men, and the museum management wonders why...
The museum begins losing the control of the ‘paratext’, that is, as we have seen, the system of indexes that actually ‘make’ the CH itself.
The UGC approach may change the hierarchy of CH elements, or just draw different routes in the system. It may even bring to light minor venues, attract visitors to a place and take them away from another. And all this independently from the experts. A similar effect can be seen since Lonely Planet has become the most used travelers guide, in particular for some destinations: you see a small restaurant full of foreign tourists, and the others around with only local patrons. It is just because the Lonely Planet writer has written a few lines on a page. Locals maybe wonder why the foreigners seem to know exactly where to go. Text and paratext are not being controlled by the same subject any more.

Let us take a step further.
We can imagine a museum which is actually made up by in a wiki way. Maybe a museum that wants to collect the memory of an immigrant community. It starts by letting people upload pictures of their grandparents on a website. Then sound-recorded stories, and videos from members of the community, and eventually it begins to gather material objects, old
tools that came from the mother country, first selecting
the images and then placing real items in a real space.
All this work will be done by the community itself.  

We can imagine that a large community that has
drawn an appreciated virtual tour in a museum asks
the management to gather the works they selected
in a new dedicated room, or to exhibit some items
from the archives. Users may become kind of
curators, and they will be at the same time visitors and
communicators of their achievement.

We can imagine a large community being able to
buy, by collecting small sums or by giving for free, the
items they want to exhibit. A small private museum in
Sant’Arcangelo di Romagna, Italy, hosts a collection
of buttons. The owner and collector receives a lot of
new items every year as gifts from visitors. The web
will be a perfect medium to spread the call.
This will be a full User Generated Museum.
Furthermore, social networks are very fast media
and have a good penetration. It would be possible
to organize temporary exhibitions where people, for
a day, bring their personal belongings, composing a
short-lived nomadic museum.
There are thousands of blogs that link to art resources
and can build personal tours and report comments.

What will happen to the experts, that is, exhibition
designers, museum managers, curators, critics, art
historians?
Experts must act in this environment as Native Indian
guides, living there and helping users to build their own
personal expertise.
I imagine an open platform with a semi-moderated
access system, assigning ranks to users based on
expertise. For example, art and art history teachers,
graduates, university students, etc. will join with a
‘corporal status’, so to say. The system will be based
on co-optation and may allow promotions to upper
ranks based on the behavior of the member in the
platform.
Ranks, however, will not be based on university
degree or professional status as the only element, but
mainly on engagement and ability to propose tours,
comments, and community works.
The platform will not host any content but just link to
other contents, both inside and outside the web.
This stage is considered temporary, in order to bring
to a completely horizontal community capable of
managing UG competences on CH and building
a network of identities and paratexts. This final
form of the community will be trained to recognize
competences without the need of ranks among the
users. It will be a wiki system.
2 Paratext is a text that, literally, is ‘around’ the main text, with a supporting function. A typical paratext is the title of a novel, the cover, the introduction. See Genette, Gérard, Seuils, Seuil, Paris, 1987.
5 The Indiana Jones saga is a perfect example: Indiana actually steals artworks from foreign countries, but he earns the right to them by the risks he runs, and is not doing it for profit, but for his University’s museum.
8 An interesting project is http://www.hkcmp.org/cmp/index.html, from Hong Kong.
9 See http://bottone.art-italy.net and http://www.bottoni-museo.it/

Photo credits

Fig. 1 The semiotic square of memory and oblivion
In the past 15 years, personalization through IT has become a significant trend in the museum world, where the term has become a keyword in defining the relation between the institution and its visitors. In this article we will discuss how personalization is understood within museums, how it has been applied, as well as why it has been implemented. We will conclude by discussing whether this approach works in the terms envisaged by its promoters and the likelihood or not that this trend will continue in the future.

Personalization is a trend that started to emerge in museums in the second half of the 1990s, with the implementation in these organizations of a series of technology-based projects that had the aim of targeting information to visitors’ specific characteristics, interests and needs. Museums, however, are just one of the many contexts where the need for personalization has emerged. We can find, in fact, other numerous examples in our modern society, from the manufacturing of products, to the promotion of consumer goods, to the delivery of information services. Nike, for example, allows users to customize their shoes by selecting the shape, the colours as well as other details. In the field of marketing, personalized recommendations are a key component of the success of Amazon, where buyers receive recommendations for products based on their purchasing and browsing history as well as what other people that have purchased similar products also bought. Another example is that of personalized news aggregators like Google News, which, together with personalized search engines that memorize users’ locations and previous searches, can support the user in the need for more relevant and targeted information. This is a particularly useful tool in a society where information access has become very easy and people struggle with identifying what is relevant or not amongst the myriad of information. Even though personalization means something slightly different to each sector, as Kemp [2001] points out, the common denominator among these applications is ‘consumer-centricity’. Whether it comes to manufacturing a pair of jeans, recommending a book, or facilitating access to information, personalization is about putting the customer at the centre of the experience. This is accomplished by taking his/her specific characteristics, tastes, and needs into consideration. The idea of giving the customer what s/he wants is a direct response to the abundance of products, services and information that characterizes our society, on one hand, and the growing sense of individualism
in consumer taste, on the other. In summary, people have too much choice and personalization helps them get what they want without much effort. New technology has been remarkably important for the implementation of these principles. CRM databases and ‘personalization techniques’ in particular, have enabled businesses to access and analyze individual customer needs and efficiently tailor products, services or information in direct response to them.

The success of personalization and mass customization is evident in the progressive inclusion of its principles in industries that are normally resistant to change such as the education and cultural sectors, where personalization has been used not only for marketing purposes but also and especially as a way to facilitate information access and support the learning process.

**The need for personalization in museums**

Amongst the first cultural institutions to introduce personalization were museums, which started to experiment with this concept in the second half of the 1990s, predominantly in the areas of marketing, education and technology. Since then, a growing number of projects and pilots have been developed with personalization as an underlying concept. In order to understand the reasons behind the progressive implementation of personalization in museums, it is important to recognize the shift towards visitors-centricity that has characterized these organizations in the past few decades.

The model that has characterized museums since their creation in the 19th century is characterized by a central role of the collection, and “caring for, studying, housing, and exhibiting them were some of the primary tasks of these institutions” [Falk and Sheppard, 2006]. Communication with the public in such a museum is based on a transmission model which sees communication as a linear process of information transfer from an authoritative form to an uninformed receiver, who is cognitively passive. Underlying this approach was a behaviourist view of learning, which perceived visitors as “empty vessels to be filled” [Hooper-Greenhill, 2000]. As a result, galleries are considered to be “spaces of consumption, of viewing and learning for visitors that assembled to take in the specialist information laid out through the different objects in the collection” [Hooper-Greenhill, 2000].

These organizations are run as top-down organizations, where ideas flowed from the head of the organization down to the visitor with no feedback loop from the visitor to the directors and curators [Falk and Sheppard, 2006]. The audience is rarely defined beyond the notion of “general public” and no research is carried out into the levels of information and experience that this abstracted mass of visitor brought with them to the museum.

Even though most museums still function according to these principles, in the past 30 years this museum model has started to crumble in favour of an institution where the visitors, together with collections, play a central role [Anderson, 2004]. A similar shift towards the public has also occurred at the educational level, with the introduction of constructivist learning theories to museums from the 1970s. Based on the writing of Piaget [1929], Vygotsky [1962], and Burner [1960], constructivism claims, among
other principles, that knowledge is not a single, self-contained body of facts that can be transmitted, unchanged from one individual to the other. On the contrary, constructivist theories recognize that the learner, with his background, and prior knowledge, has an active role in the process of making sense of experiences. The role of the museum is, therefore, to provide stimulating environments for learning that take account of the existing knowledge of the learner, and that enable both the use of prior knowledge and the development of new knowledge.

In the 21st century museum, communication between the institution and the public is exemplified by a mutually respectful relationship, a two-way communication model. Instead of transmitting knowledge to a mass audience, the contemporary museum listens and responds sensitively, as it invites the public into a conversation about the future of the museum, the shaping of exhibitions, programs and other activities.

In order to be able to sustain itself, this new museum relies on a bottom up business model, where understanding who its audience is and meeting their needs becomes one of the main priorities of these organizations. Today, museum leaders know that understanding their visitors’ comforts, interests, and needs and adapting content and services accordingly are considered essential. This is where personalization can come in handy.

The necessity to improve the relationship with the visitor through the delivery of personalized information and services responds, in fact, to various needs in museums. For example, when it is employed for the more effective promotion of specific events and programs, it becomes a very powerful marketing tool for these institutions. Personalized information, however, can also be provided with the purpose of facilitating knowledge acquisition regarding the collection, in which case, it represents a valuable mechanism for supporting the visitors’ learning process, rather than a marketing strategy. This is a very important point to consider, as many professionals in this sector have often dismissed personalization simply as marketing rhetoric, not recognizing its value as an educational tool for museums.

**The role of technology**

Even though we can find examples of personalization in museums that do not rely on the use of technology, this is often a pre-requisite for its implementation. As in other sectors, technology is what allows these organizations first to identify visitors, collect and store information about their interests and preferences, create different types of content and finally package and distribute this content differently according to the specific needs of the visitors.

The fact that personalized information requires the use of technology to be created and delivered to the visitor, however, can also represent a major limitation to its more widespread usage, (see section entitled: Personalization in museums: does it really work?). not only because of the limitations implicit in the use of technology in museums but also because the number of visitors who are normally interested or willing to use technology-based applications in museums, probably with the exception of the web, is still quite limited.
Examples of personalization in museums

After addressing the issue of personalization in museums from a more theoretical perspective, we will now focus on the way in which personalization has actually been implemented in these organizations. In particular we can distinguish two main types of approaches. The first projects to be implemented were complex personalized applications developed by European universities and research institutions, which used museums as test beds for experimenting with advanced Adaptive Hypermedia technologies. The main objective of Adaptive Hypermedia is to develop applications, to be used mostly in an educational context, that tailor content, navigation and/or presentation to the user based on his/her specific goals, abilities, needs, interests, and knowledge of the subject, stored in a so-called ‘user profile’ or ‘user model’. Such information concerning the user can be provided either explicitly, by the user themselves (static profiles), or implicitly (dynamic profiles), by recording the navigational behavior and/or preferences of each user in the system.

The late 1990s was also the time when the idea of adapting an existing hypertext to the interacting user by means of a user model came into contact with research into natural language text generation. Researchers in natural language processing were developing dynamic hypertext, where pages are generated ‘on the fly’ and therefore can be adapted on the basis of a user model [Oberlander et al., 1997]. At the same time, the human-computer interaction community was exploring the new world of mobile devices. The ideas of augmented reality and ubiquitous computing of the early 1990s were maturing into exciting experimental systems able to locate the user’s position, and to react accordingly.

Museums, with their heterogeneous visitors moving in the physical or virtual space, looking for interesting exhibits and wishing to deepen their knowledge and interest, were ideal candidates for the implementation and testing of these types of applications, which had the potential of helping them overcome the limitations implicit in the one-size-fits-all approach. It is not surprising, therefore, that museums were chosen as test beds by many research organizations wishing to trial web-based and mobile adaptive applications. Examples of these types of projects are ILEX, HIPS, HIPPIE, PEACH, CHIP, ARCHEOGUIDE, DANAE and The Marble Museum’s Virtual Guide, which use a similar approach to content personalization: they exploit information regarding user preferences, interests and navigation history to provide adapted descriptions of museums’ artifacts and/or personalized recommendations of other possible objects of interest either online or via a mobile device. For a more detailed description of these projects, see Filippini-Fantoni [2003].

By providing personalized and contextualized information, modeled on user interaction with the museums’ virtual or real environment as well as with the system itself, these applications have enormous potential to support the learning process. However their implementation so far has not gone beyond the prototype phase. This is due mainly to the complexity involved in developing such systems, which often require an efficient and reliable wireless network infrastructure, the use of expensive equipment, and the development of complex user modelling algorithms [Filippini-Fantoni, 2003]. The lack of funding and in-
house competences necessary to be able to develop and maintain these solutions has so far severely limited the possibility of implementing them in museums on a more permanent basis.

Regardless of these limitations, these projects have played an important role in the short history of personalization in museums. Presented at specialized conferences like Museums and the Web, ICHIM (International Conference on Hypermedia and Interactivity in Museum), and MCN (Museums Computer Network), where they have caught the attention of some IT, education and marketing specialists, they have certainly contributed to make museum professionals realize how technology can be used to provide visitors with more personalized learning experiences.

Influenced by the development of these first prototypes in an academic context, as well as the success that personalization was enjoying outside of the cultural heritage world, some of the world’s leading museums started to develop personalized applications in house, mostly with the technical support of external companies. However, given the more limited competences and funding available, the approaches adopted by museums have been less sophisticated than the ones used in the academic world. Instead of developing applications that infer user characteristics and interests indirectly from the visitors’ behaviour (dynamic user modeling) and that adapt content on the fly (dynamic hypertext), museums have opted for solutions where the user would either adapt the information on his/her own (customization) or provide direct information that the system exploits to provide personalized but static content (explicit personalization). The above-mentioned kind of individualizations give more control to the user, who either decides the terms of the adaptation and when to employ it or provides directly the personal information necessary to obtain the adaptation.

Being less challenging from a technical point of view, these solutions are more suitable for an effective implementation in museums, where the level of technical competence and infrastructure is still quite low, especially if compared to academic organizations. Amongst these, we were able to identify four different types of applications, such as personalized e-newsletters and marketing campaigns, personal online collections, “My Museum” environments, and bookmarking functionalities, which represent the most popular examples of the implementation of this strategy in museums.

**Personalized e-news**

The most common example of personalization in a museum is the implementation of targeted e-newsletters for a more efficient promotion of their events and programs. Instead of providing everybody with standard e-bulletin concerning the museum’s activities and services, these applications allow the virtual visitor to select upon registration what they want to be informed about. Options normally include education programs, store promotions, membership, children and family or special exhibitions. As a result, every month the subscriber receives an email with a list of exhibitions, conferences, guided tours, concerts, store promotions, etc. based on the interests defined upon registration. Museums with a large variety of events and programs like the MET, Tate, The National Gallery, The Louvre, and the Indianapolis Museum of Art (see Fig. 1) are more likely to offer personalized
e-newsletters to help their visitors identify more easily offerings of interest.

*Personal online collections*
Other types of personalized applications that can help visitors not only to prepare for but also follow-up to the visit, are so-called ‘personal online collections’, which are becoming a common feature on different museums’ websites [Marty, Sayre and Filippini Fantoni 2011]. These applications allow virtual visitors to save favorite objects from the online collection on a personalized page available on the museum’s website. While the specific features of these systems vary, the common hope is that museum visitors who are encouraged to ‘save’ their favorite artifacts at a museum website will develop a stronger interest in the collection. The ability to create personal digital collections, in fact, can serve as a lure, encouraging visitors not only to explore these objects online, but also to visit these objects in person. Excited by seeing their current favorites online and finding new ones at the museum, visitors will hopefully return to the website before and after each visit, looking up more information about their current favorites, and adding new objects to their personal digital collections.

One of the first examples to be developed by a museum was “My Met Gallery” (now My Saved Items – Fig. 2), which has been available since 1999 on the Metropolitan Museum’s website. Here visitors can select from the online collection sets of favorite artworks that are saved on a personal page that may
be updated again later. In some cases, these personal online collections can be annotated with comments to create actual online personalized exhibitions that can be published or sent via email to friends and families. Examples are available on the websites of the Virtual Museum of Canada\textsuperscript{2} and the ArtsConnected\textsuperscript{3} (online educational tool of the Walker Art Center and the Minneapolis Art Institute) to mention two of the most popular ones. These tools are particularly useful for people using online digital collection information for research and educational purposes. Teachers, for example, can select a list of artifacts for the visit, set up study sets, provide personalized recommendations, and/or test the knowledge acquired during the visit by asking their students to create personal exhibitions. By supporting visitors' individual interests, these solutions can be very useful in supporting the learning process regarding objects in the collection. Personal online collections can also be of support to those wishing to plan their trip carefully to the museum. The Getty\textsuperscript{4}, Tate Modern\textsuperscript{5}, Tate Britain\textsuperscript{6} and the Musée d'Orsay\textsuperscript{7} in Paris, for example, offer applications that allow online visitors to create a printable map of the selected artworks in preparation for a planned visit.

“My Museums” environments

Personalized applications like those described above can be made even more complex by adding additional tools that contribute to the creation of an actual “personal environment” within the museum’s website, which can be customized according to one’s needs: visitors can select links to their favorite sections of
the website, access their personalized agenda and store links to images, information or articles for future consultation or research. This type of application is mainly conceived for frequent visitors or for special categories of visitors who use the website as a working tool, such as teachers, journalists, experts, students or researchers. Once the page has been created and eventually customized, visitors can log in every time they access the website to find all the information they need. The Metropolitan Museum of Art, for example, now provides a complete “My Met Museum” area on their website. It includes the already mentioned “My Saved Items”, “My email notifications” “My settings” and “My membership”. Similar applications are available on the website of the Boston Museum of Fine Art, the Musée d’Orsay, and the Musée du Louvre.

**Bookmarking applications**

While “My Museum” applications allow visitors to save objects and/or information from the museum’s website on a personal page that can be accessed and updated overtime, bookmarking functionalities allow visitors to save information of interest from interactive kiosks and mobile devices in the galleries for later use after the visit. The bookmarks can be retrieved either via links in an email sent to the visitor or via a page on the museum’s website, accessible through a username and password. In both cases, the information provided is personalized in the sense that it is created specifically for the individual visitor based on his interests or path explicitly recorded during his/her visit [Filippini Fantoni & Bowen, 2007].

When well-integrated into the visitor experience, bookmarking can be a powerful tool for facilitate learning and for extending the visitors’ experience beyond the museum’s walls. In fact, visitors can be overwhelmed by the vast amount of information presented in kiosks or on mobile guides. Bookmarking can help them build a record of their experiences, which they can then consult after their visit [Fleck et al., 2002]. The ability to save an important part of the content and access it at home or in another context allows the visitor the possibility of focusing more on discovery and the aesthetic experience while in the museum and to leave the more traditional didactic aspects for later.

Research also indicates that repetition is a major mechanism for retaining memories over time [Brown & Kulick, 1997], so bookmarking can play an important role in increasing visitors’ knowledge about a collection or exhibition as well as stimulating a positive response and the intrinsic desire to learn more. Because of this great potential, in the past few years some of the world’s leading museums have been progressively incorporating bookmarking facilities in their kiosks and mobile guides.

One of the first examples of the implementation of bookmarking features on a gallery kiosk was Visite Plus, an application developed between 2000 and 2003 by the Cité des Sciences et de l’Industrie in Paris and still in use today, which records the path followed by the visitor in the galleries using a bar-coded ticket [Topalian, 2005]. The procedure typically works as follows: visitors are invited to insert their ticket into a Visite Plus registration point, where they indicate their language preference, any eventual disabilities, and email address. From this point on, the Visite Plus system records each access to an interactive exhibit, including the results of games or quizzes played by
the visitors at the kiosks. After the visit, visitors can go online and gain access through their own private web portal to a dynamic presentation of their actual visits (their paths results at quizzes and games, multimedia creations). Similar applications are currently available at the Tech Museum of Innovation in San Jose, which also uses RFID-tagged tickets to allow its visitors to save and retrieve content produced by visitors at the kiosks [Wageman, personal communication 2006 – see Fig. 3] and at the Natural History Museum [Barry, 2010]. Despite being more frequent in science and technology museums, where the use of interactive kiosks in the galleries is more common, these types of applications can be found also in art museums. The J. Paul Getty Museum, for instance, developed in 2005 a series of multimedia kiosks [Filippini Fantoni, 2007] available both at the Getty Center and the Getty Villa, which allow visitors to access and save content of interest (videos, descriptions of artworks, artist biographies) concerning the museum’s collection, history, architecture, etc. The bookmarked information can be accessed at the kiosk itself during subsequent visits or on a personal web page created on the museum’s website.

In more recent times, bookmarking has also been extended to mobile technology that accompanies visitors through the galleries, capturing spontaneous interests and bursts of curiosity so that visitors can follow up on what catches their attention during the visit. One of the first examples was Guidebook, a project developed in 2000 by the Exploratorium Museum in San Francisco in cooperation with the
Concord Consortium and the Hewlett-Packard Laboratories in Palo Alto. Besides delivering visitors with audiovisual information about the exhibits in the museum, this handheld device was able of ‘remembering’ a visit to the museum by allowing visitor to bookmark exhibits of interest, and to send user-captured souvenir photographs to a personalized webpage for viewing after the visit [Hsi, 2008]. Since 2000, when this first prototype was introduced, a series of other projects have been developed based on similar principles at Tate Modern, the Natural History Museum in London [Barry, 2006], the Dulwich Picture library [Filippini Fantoni & Bowen, 2008] and the Boston Science Museum [Reich & Chin, 2006].

One of the underlying principles behind the implementation of these tools is that a certain level of continuity is guaranteed, not only between the different phases of the museum experience (pre-, during and post-) but also and especially between what happens in the galleries and what goes on online (the ‘virtual’ and the ‘real’). To describe this phenomenon, the term virtuous circle has been used.

Personalization has been very helpful in this respect because it provides an added value that pushes visitors to become engaged. The fact that the information provided after the visit takes into consideration the specific interests and needs of the visitors, is certainly a stimulus to actually continue the exploration in the museum or at home, thus supporting the learning process.

**Does personalization in museums really work?**

In the previous sections we have seen how the delivery of personalized information through the use of technology in museums has the potential to facilitate the promotion of events and programs, help visitors prepare for the visit and support learning both during, and after their experience. Different examples were described of how these principles have been put into practice by museums so far, including projects developed within academic circles to test the implementation of adaptive technology, as well as a number of more simple in-house applications. In this final part, we will focus on understanding whether personalization actually works as envisioned by its promoter. Addressing these issues is of fundamental importance, not only because of the complexity and the costs that are normally associated with the implementation of these solutions, but also because the number of museums that are developing personalized applications is constantly growing.

The results of studies conducted so far, which are described in detailed in Filippini-Fantoni and Bowen [2007] reveal that usage of personalization features is, with the exception of a few projects, fairly limited, quite superficial, and confined mainly to certain categories of visitors such as young people, experts, teachers, students and frequent visitors.

For example the number of visitors creating online personal collections, personalized tour plans or using “My Museum” environments is very small, especially if compared to the overall number of website visitors (usually less then 1% of these). On the other hand, take-up rates for other applications such personalized e-newsletters, targeted emails and bookmarking applications, are slightly more encouraging, even though substantial differences exist amongst projects. While positive results were recorded for the Tate Modern 2005 multimedia tour and the Tech
Tag system at the Tech Museum of Innovation, with bookmarking rates well over 40%, other projects lag well behind these numbers. Click-through rates, which indicate the percentage of bookmarks that follow up and go online to access the personalized information after the visit, are generally even lower than bookmarking rates. With the exception of the Tate Modern and the Boston Museum of Science’s applications [Reich & Chin, 2006], for which respectively 44% and 37% of those that had used the bookmarking feature followed up online, all the other projects recorded much lower click-through rates.

Besides the lack of interest or time from the majority of the visitors who do not feel the need to prepare for and follow up on their visit, evaluations have also highlighted that other factors might be behind such results. These include: the impact of curiosity, which seems to affect the way people use these applications, the fear of sharing personal information, technical issues, lack of visibility, transparency and evaluation, as well as a series of other ‘structural problems’ such as bad project management, poor maintenance, slow decision making, and limited budgets.

Most of the issues that we have listed above, however, are not only typical of personalization tools, but also seem to affect other technology-based applications in museums, which suffer from similar results. This seems to suggest that the real problem is not so much with the notion of personalization per se, but rather concerns the massive usage of technology that the implementation of this strategy requires. This issue represents a major constraint for museums, not only because they have limited IT competencies and budgets, but also because the majority of their visitors are not that interested in or familiar with technology. As a consequence, until these organizations find more effective ways of implementing IT-based applications and the use of technology becomes more widespread in their visitors’ everyday lives, it will be necessary for museums to lower their expectations regarding the effective usage of most technology-based applications, including personalization.

Conclusions

In the past few years we have witnessed the implementation of a series of technology-based applications in museums, that deliver personalized content to the visitors in an attempt to promote events and programs more effectively and to support visitors’ learning. Examples include personalized e-newsletter, online personal collection, “My Museum” environments and bookmarking tools. Despite the limited success of some of these applications, given that the need to take into account the different characteristics of the visitors when delivering content and services remains relevant for museums, whose audience is progressively more heterogeneous, we can conclude that the interest of these organizations for personalization is likely to continue.

However, the capacity of implementing personalization tools will remain confined mostly to larger institutions, which can afford to invest more substantially in digital technologies. In particular, the more traditional and cost-effective solutions, such as targeted marketing campaigns, personalized e-newsletters and bookmarking tools that have been adopted so far, will continue to be implemented together with new
approaches. The constant technology evolution, in fact, might soon offer new opportunities for museums in terms of personalized content delivery.

1 https://www.metmuseum.org/mymet/sign-up (last accessed 11/9/2012)
3 https://www.mfa.org/mymfa/index.asp
4 http://www.louvre.fr/user/register
5 https://www.metmuseum.org/en/mymet/sign-up
7 http://www.tate.org.uk/britain/explore/etb.jsp
8 https://www.getty.edu/mygetty/
9 http://www.tate.org.uk/modern/explore/
10 http://www.tate.org.uk/uk/explore/etb.jsp
11 http://www.lovre.fr/user/register
12 Source: http://my.thetech.org/

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Photo credits

**Fig. 1** Registration form of the Indianapolis Museum of Art e-newsletter

**Fig. 2** Screenshot of My Saved Items from the Met Museum website

**Fig. 3** Screenshots of the personalized website, that can be accessed using the number indicated on the RFID-tagged ticket.

12
The museum space between Reality and Virtuality. The case of the Google Art Project

Davide Gasperi interviews Simona Panseri

In the past 15 years, personalization through IT has become a significant trend in the museum world, where the term has become a keyword in defining the relation between the institution and its visitors. In this article we will discuss how personalization is understood within museums, how it has been applied, as well as why it has been implemented. We will conclude by discussing whether this approach works in the terms envisaged by its promoters and the likelihood or not that this trend will continue in the future.

The Google Art Project is proposed as an interface for accessing museum collections. It reproduces the museum spaces to allow virtual exploration. It offers uncommon levels of magnification of the works of art, and a rich array of background information. In short, the Google Art Project exhibits the state of the art in technological possibilities and shows us a possible path of technology-supported development in the fruition of museum assets. Yet, its innovative elements, the fruition possibilities it offers and the role it might play in this domain prompt many questions about its characteristics and about the role that the project can play in relation to museums.

Q1 - We have read about the fruitful and mutual satisfaction between the Google Art Project staff and the museums. What were the issues on which museums have provided their expertise in the development of the project?
A1 - First of all the Google Art Project is a project that was born as a 20% project within Google, which is the kind of project that some people with a specific interest decided to run without an assignment from the company. This project was born as an idea of two or three googlers who have a passion for art and wanted to make it accessible for everybody around the world. Google developed the platform that allows the masterpieces to be displayed, museums decide which content adds to the platform. So, from our side, we have developed the technological platform and the museums have selected the artworks and provided the additional information that is included in the project.

Q2 - It seems one of the key factors in the collaboration between the Google Art Project and museums is that of providing the information content surrounding the works. Does Google use content developed by museums for their own websites or does it ask museums to produce specific content for the Google Art Project?
A2 - Google asked the museums to provide whatever content they already had or they wanted to produce for this project. And there has been a variety of answers: some of the museums have provided us with documentation, video or audio materials that they had already put on their website. Others had these contents available but they were not displayed on their website. Some others have even produced ad hoc materials. We have not put any specific constraints on them, it was up to the museum to decide. For instance, the Tate Gallery has produced a video, a very peculiar one, with twin girls who enter a museum for the first time in their lives and stand in front of The Twins, a painting that is part of the museum collection. The video is depicting their reactions to this piece in terms of how it is painted, but also the scene and how the twins were feeling about it. It was completely up to the museum to decide to do that.

Q3 - The Google Art Project, besides offering the chance to explore the museum’s space virtually, gives us the chance to magnify visual works of art and access information such as the cultural context of each work: history, content and artistic beauty, owners, chronology, etc. Data aggregation is one ICT field where a lot of research is going on. Should we expect that the Google Art Project will come up with some innovative tools to expand the encyclopaedic background of the works of art?

A3 - What will come after is very hard to say. The project has been started as an experiment for understanding how the opportunities offered by Google Art would have changed the way in which users are attracted by art works, and consequently how museums could display them. It is certainly true that since the launch of the project we, together with the museums, have been trying to understand the behaviour of the users and the possibilities this is offering to museums for leveraging the cultural heritage they host. We have certainly announced that we would like to go on with the project, involving more museums, but in fact there is nothing to announce at the moment.

Q4 - Regarding the development of the tool: the Google Art Project proposes the exploration of the museum’s physical space, but the museum exhibits change frequently. Do you have an upgrade programme of the photos?

A4 - That’s true. Some of the museums’ physical spaces do change frequently, some others don’t. In fact at the moment we are not looking at upgrading what we already have on-line, but rather, I think, we should be looking at expanding the project to additional museums. The idea in general is not that visiting the museum through the Google Art Project will be substituting in total the visit to the real museum, it’s a way to bring people closer to the museums and help the museums show what they have and attract users. In fact, it is very interesting that, for instance, one of the directors of the Italian Ministry of Culture, Mr Resca, said that since the Google Art Project was launched at the Uffizi Museums, rather than a drop in actual visits, they have seen a growth in real visits. We can’t say that the growth is due to the Google Art Project, of course, but for sure we can say that it has not had a negative impact. So, it would be nice, for instance, for a visitor to discover that the museum has a different exhibition
than the one we filmed with our street view trolley in the rooms.

Q5 - As we know, the information on museum collections that can be gained from space exploration are manifold: the exhibition contexts of the works of art, for example, are always meaningful. The juxtaposition of works in the rooms and the succession of halls tell us much about the identity of the collections and the exhibition criteria. Are you planning any design developments to highlight these aspects?

A5 - The Art Project platform is in a way already helping users to compare how different museums build their exhibitions. The visitor can not only look at a specific artwork but can also go into the rooms, as if he were really visiting the museum, and he will have the possibility to gather some of the information the museum has decided to provide by choosing some rooms or some works in the rooms. There is a floor plan that you can look at, so that you know the sequence of the contents in each room of the museum, but I think that, again, the idea is not to replace a real visit to the museum with the Google Art Project, but rather to allow users to gather more information and get a closer view of some art works, with the possibility to make comparisons between artworks by the same artist that are displayed in different museums. Think of Van Gogh. There are several of Van Gogh’s works in the Google Art Project which are displayed in many different museums. To view them it would require a lot of travelling, a lot of time and in any case they wouldn’t be available for comparison in real life.

Q6 - In addition to high resolution images, what was the relationship with the museums during the choice of the works to be explored? Who chose them? What other criteria were used in addition to the notoriety and the preservation of the copyrights on images? When will we see more high resolution images?

A6 - The selection of the works was up to the museums, so each museum decided not only which art works would be provided in very high resolution but also, in general, which ones would be made available for the Google Art Project. Each museum made a selection based on their own criteria. So it is up to the museum to explain the reasons for the selection.

Q7 - After the publication of the Project, how are you developing the collaboration with partner museums? On what issues is Google focusing together with them? Are there new museums to be involved? And finally: is it Google contacting the museums or do the museums propose their collaboration?

A7 - As I said before, the first launch of this project was a sort of experiment and for sure we are trying to understand how users use the platform. For instance it has been surprising to discover how many private collections have been created immediately after the project went live. Anyone can build a private collection by selecting specific art works or details of different art works and share them with people of their choice: people in the same class, students - if you are a teacher - or with friends. What we are doing now, together with the museums, is to try and understand the impact of the Art Project in terms of visits to the museums’ websites. We are certainly looking into developing this project further, but we don’t have anything to announce at the moment. However, I can tell you that after the launch we have received a lot
of interest from many different museums around the world.

**Q8** – The Google Art Project presents itself as the access point to museum collections, but what is the role it wants to play with respect to museums? Does it aim to be a Web communication resource independent from museums, or does it try to become a Web communication integrated tool for each museum involved in the project?

**A8** - The aim of the Google Art Project is to help users access very important and relevant content. The relationship between the Google Art Project and the website of each museum is dependent on the museum itself. What we have seen so far is that the Google Art Project has been a very good source for additional contacts for the websites of the different museums, therefore bringing new users and new visitors.

**Q9** – The Google Art Project provides enhanced access to works held in museums and the information on them. It links works by the same artist in different museums, giving us the opportunity to enjoy selections of monographs without an expert curator. The latter, however, is the specific task of museums, yet the Google Art Project can perform it independently, since it can act as a unified interface to access worldwide museum collections. If Google is not interested in producing its own contents, i.e. exhibitions, does this mean that it is not interested in this important dimension of cultural heritage and industry?

**A9** - Each museum which has decided to take part in the Google Art Project has considered as an important added value the fact that users can access independently the different art works that the museum holds. Museums have provided guidance to users through additional multimedia information, but it was seen as an added value the fact that each user could access the artwork from his own perspective and find his own reasons to connect to different artworks. I have been talking to the curator of one of the museums involved and she confirmed that it is important to offer multiple perspectives, because it is true that physical spaces - like museums - can change their exhibitions from time to time to propose different perspectives to visitors, but they can provide only one perspective at a time. The idea of multiple perspectives that the Internet can provide is something that the museums consider valuable, both for themselves and for the users.

**Q10** - On the side of fruition, the Google Art Project represents an advanced customisation tool, allowing the user to create personal art collections of works of art. This is an excellent tool for educational purposes or to plan real visits. Does the project include other forms of enjoyment and use of art heritage? Are you finding emerging use habits or unexpected fruition styles by collecting users’ behaviour?

**A10** - As I said before, the customisation tool of the private collections has certainly been one of the most successful in this project. When we built it, we thought it could be useful for educational purposes but, given the numbers of the private collections that have been created, we believe that they are probably created not only for educational reasons, but for specific interests. However, private collections are private, so we won’t go into them and we don’t know exactly which emerging trends users are highlighting.
Q11 - New initiatives to enhance the Italian artistic heritage constantly emerge from Google’s relationship with the Italian Ministero dei Beni e delle Attività Culturali. Is the Google Art Project a step towards the development of interfaces for accessing cultural heritage? Can we think of the Google Art Project as an application interface? Does it make sense to think of a Google Art Project application for archaeological sites and places of historical interest outside museums?

A11 - It is true that, not only in Italy, Google is devoting a lot of resources and interests in the leveraging of the cultural heritage. It is our mission to make information accessible and we are certainly aware that not all the information can be found in written text and that a lot of valuable information resides in culture, so it is important that we find ways to make this cultural heritage accessible.

StreetView is an example. On StreetView we are creating special collections and we have developed new ways to go into these cultural sites without being disruptive. For instance, we are using a tricycle or a trolley, instead of the car. But this is not the only thing. For instance, we are working with important archives like the Nelson Mandela archive in order to digitise them and make them accessible. So I would definitely say that the Google Art Project is part of the broader effort of leveraging the cultural heritage.

By the way, Google has announced that we are building a European Cultural Institute in Paris with the aim of pursuing additional projects in this direction.
ASSETS is a project which aims to improve the usability of Europeana, a vast digital collection enabling people to explore the resources of Europe’s museums, libraries and archives. Starting from the contribution of the Luigi Micheletti Foundation, I will consider both Europeana and ASSETS as useful points of reference for a debate on the ‘virtual museum’. In other words: what can these projects offer to cultural institutions trying to bridge their specific digital divide? In particular, I will focus on Europeana’s strategies for expanding and involving users and on some potential ASSETS contributions in facing museums’ digital troubles.

A long time ago museums could see all objects as having some potential for use in understanding the past of their chosen subject: “Victorian museums were venues in which each object representing the subject was desired and collected in attempt to provide a full catalogue of the subject”. Over the last decades it has became clear that museums cannot continue to acquire items without becoming larger and less manageable institutions.

Sometimes digitisation seems the most up-do-date avatar of this Victorian bulimia, as if digital media were supposed to can grow indefinitely, gathering (virtually) everything and avoiding the material constraints which limit the collection of physical objects. Still, also the indefinite expansion of digital collections is not a simple process to manage, and absolutely not ‘for free’. It is evident that physical objects and bytes are not exactly the same. What it is not always evident is that also digital items need material resources (i.e. very powerful servers and a lot of money), and that their expansion in the virtual space cannot occur without posing serious problems of sustainability.

In this contribution I will present Europeana and the related ASSETS project as a case study for a better understanding of both the options and the problems related to the collection of digitised books, paintings, films, museum objects and archival records. I will consider these projects from the vantage point offered by the content provision’s work done by the Luigi Micheletti Foundation.

In the first part, I will present the structure and the goals of Europeana and ASSETS. In the second part, I will focus on Europeana’s strategies for expanding and involving users and I will explore the potential impact of ASSETS’ services on the ‘virtual’ life of museums and archives.
ASSETS for Europeana, Luigi Micheletti
Foundation for ASSETS

The life of Europeana is short but successful. Europeana’s prototype was launched in 2008, with the goal of making Europe’s cultural and scientific heritage accessible to the public. In the legal document governing the operations of the Europeana Foundation we find the following objectives: “to facilitate formal agreement across museums, archives, audiovisual archives and libraries on how to co-operate in the delivery and sustainability of a joint portal; to stimulate and facilitate initiatives to bring together existing digital content; to support and facilitate digitisation of Europe’s cultural and scientific heritage.” Europeana spent 2009 and 2010 creating an operational service and ingesting a critical mass of data from some 1,500 providers across Europe. Today the European digital library already holds 20 million items, including videos, movies, newspapers, paintings, music archives. Renowned names such as the British Library in London, the Rijksmuseum in Amsterdam and the Louvre in Paris are featured alongside smaller organisations across Europe. Together, their assembled collections allow the exploration of Europe’s history from ancient times to the modern day.

The ASSETS project (Advanced Service Search and Enhancing Technological Solutions for the European Digital Library) aims to improve the usability of Europeana. During the two-year project (2010-2012), ASSETS developed advanced services to improve the search of multimedia objects, the navigation and user interface, involving directly targeted user groups in requirements analysis, design, large-scale implementation, testing and evaluation. Moreover the problem of long-term access to digital contents and their preservation has also been faced. The ASSETS project, co-funded by the European Commission within the CIP-Policy Support Programme, is implemented by a consortium including 24 international partners (cultural institutions, broadcast and technological companies) from Italy, Austria, Spain, Netherlands, Greece, France, Germany, Belgium, Cyprus, Luxembourg, Sweden, and one partner from Japan. Furthermore, UNESCO’s participation in the project guaranteed a worldwide coverage.

Through the ASSETS project, partners achieved the following main outcomes:
- a set of value-added search, browsing and long-term access services to directly enhance the content accessibility and improve the usability of Europeana’s operational services (development will be coordinated by CNR – Consiglio Nazionale delle Ricerche);
- a large-scale validated implementation of such services in the real context of use of Europeana;
- a set of recommendations, guidelines and best practices concerning the technology adaptation, and service roll out strongly contributing to the promotion of the standards and specifications addressed in Europeana, paving the way for an increased interoperability;
- making new multimedia digital content available to and accessible by Europeana portal, as delivered by content providers in the ASSETS consortium.
The Luigi Micheletti Foundation is involved in the ASSETS project as content provider: it provides to ASSETS (and by this to Europeana) part of its digital archives. Moreover, the Luigi Micheletti Foundation, in collaboration with EMA – the European Museum Academy⁵, has taken part in the dissemination activities: it helped to publicise the project to other cultural institutions and to disseminate the know-how on the technical procedures of the use of new services, raising awareness of the use of Europeana as digital resource among end-users.

The day after digitisation. Ideas and tools from Europeana and ASSETS

What happens the day after the digitisation?

Often archives and museums make huge efforts in digitising their heritage. Still, sometimes they conceive digitisation as a goal, and not as a tool. Nevertheless, contemporary museums must consider themselves as part of a cultural information landscape, and digitisation can play an important role in making
museums ‘cultural memory organisations’. As Kathy Gee put it: ‘One reason for having museums is not simply to conserve and store objects, but to preserve the information or knowledge that objects embody’.

The problem is: how can museums use the potential offered from digitisation and Internet? How could they engage people in their virtual venues? Here are some ideas and tools from Europeana and ASSETS.

**Europeana for museums. The collaboration with Wikipedia and the virtual exhibitions’ project**

Reading the strategic plan of Europeana, one can note that the collaboration with Wikipedia is presented as a promising way for engaging users: ‘We will devote increasing resources to initiatives that bring out the value of the contribution that users can make. We will continue to work with Wikipedia to develop opportunities for collaboration. Wikipedia’s model of user involvement, multilingual content, range of cultural and scientific coverage and extensive interpretation offers strengths that are complementary to Europeana’s’. Europeana wants to reach out to and engage with users in collecting, augmenting and curating content, and Wikipedia is considered a strategic partner.

In fact, a collaboration between Wikipedia and Europeana seems reasonable, since these institutions are really ‘complementary’ from several points of view. For example, both Wikipedia and Europeana are non-profit foundations with the goal to make information and knowledge freely accessible - Wikipedia from a global and total, all subjects, perspective; Europeana from an European and ‘culturally-oriented’ perspective. While Wikipedia has focused on community-creation of information, Europeana aggregates existing professionally documented information. Wikipedia has the network of engaged citizens and a huge audience, Europeana has the network of GLAM-experts. In this sense, forms of convergence between Wikipedia and Europeana seem worth exploring. Like other current initiatives, this collaboration could encourage culture-sector professionals to improve Wikipedia in their area of expertise.

Still, my personal impression is that, in the present state of the art, this cooperation appears as promising as it is risky. From my point of view, Europeana can offer the digitised works related to Wikipedia’s pages on persons, places, periods and subjects, but contextual and factual information provided from Wikipedia is sometimes too inaccurate or misleading. To put in the words of Alan Shapiro: ‘Knowledge is based in society and as such Wikipedia not only represents knowledge, but also stupidity. And what most people believe in society is based on accepted clichés’. A closer reading of some of Wikipedia’s pages shows that we have not yet obtained a good compromise between community-creation of content and the work of scholars who have dedicated a lot of research on particular issues. For this reason, the collaboration on the editorial level is crucial for the future convergence between Wikipedia and Europeana. It is important to note that Europeana has already worked as a sponsor of ‘WikiLovesMonuments’ and as part of the project ‘Europeana Awareness’ that started in 2012.

Europeana’s project on virtual exhibitions is closer to the routine of museums and archives. By putting
a virtual exhibition online, a museum can be open 24 hours a day and can reach audiences that would never be able to visit their venue.

In fact, Europeana is just a repository of digitised objects of cultural heritage. But a repository is not yet a museum experience: to offer this, the objects must be contextualised, meaning must be added. Or, to put it in other words, curated. Museums do this in many ways: they display a selection of objects, in a specific order, they add stories, they explain, etc. Europeana is looking at ways to turn a repository into a museum-like experience.

Europeana’s virtual exhibitions are showcases of the content available on the portal. Provided with extensive curatorial information, these exhibitions allow people to learn and discover even more about the displayed items. The goal is to add service layers that add meaning, context and/or curation to the objects. In particular, one of the main goals of Europeana is to make the exhibitions more interactive: to allow viewers to add their comments, or to offer them the possibility to create their own exhibitions and share them on places outside our portal.

Europeana is limited in the number of virtual exhibitions which can be offered. For this reason, Europeana makes the exhibition platform available to the partners and host their exhibitions. In this sense, museums could be providers of virtual exhibitions: if they do this in addition to the content they already provide to Europeana, they add layers of context/meaning and in this way they become ‘context providers’ instead of just ‘content providers’. An example is the MIMO virtual exhibition. Another example is the exhibition ‘From Dada to Surrealism’, a museum exhibition that got a virtual version in Europeana.

**ASSETS (not only) for Europeana. New open source technologies for cultural institutions**

In this final part I will present the way ASSETS services can be used and exploited by cultural institutions not directly involved in the project.

ASSETS tools are mainly designed to support the enhancement of the services Europeana provides to the digital libraries community, so their natural exploitation is based on the successful integration within Europeana. Nevertheless, they could be very useful in supporting other digital libraries and cultural heritage institutions as well as private companies, using digital objects to improve the quality of their content and effectiveness of search experience by the community they involve.

It is worthwhile to note that the developed services are based on open source technologies and this affects the business model and the exploitation concept. Applications based on open source technologies save money, support easy re-engineering and are tightly connected to offering added-value services.

ASSETS results can allow institutions to improve the discovery of their collections without duplicating and wasting time and money, and contributing in users engaging in digital archives.

Museums, archives, public and private libraries facing
large amounts of digitised data need a number of specific tools: services for harvesting and normalizing metadata, tools for linking historical documents to a bibliographic record provided by a very heterogeneous set of experts, tools for a improved search experience with better recall and higher quality and uniformly classified metadata etc. Moreover, museums need a content management system to provide day-to-day access to the digital collections, even if they may lack technical infrastructure and qualified staff. Often, museums need support to ensure that their heritage will be professionally managed, controlled, and backed up to meet its longterm management responsibilities. Access to materials in digital repository, including the rights to retrieve, use, alter, or delete items, needs to be restricted to a limited number of museum staff.

Here I will present only four ASSETS’s services.18 I hope that these short descriptions will make clear the reason ASSETS can be also ‘for museums’, and not only ‘for Europeana’:

Search recommendations and Metadata based ranking
This tool improves:
1) Query Suggestion Service, to show how query suggestions can improve the user’s search experience. In this scenario, while the user is interacting with the ASSETS portal, query suggestions system will provide related queries that can help the user in better specifying his information need;
2) Metadata Based Ranking Service, to provide an enhanced ranking function that exploits knowledge mined from query logs.

Image search engine integrated
This tool improves the Images indexing and retrieval.

Digital Preservation Risk Management
The Preservation Risk Management provides a preservation risks estimation. The service computes risk analysis for given data and generates rule based preservation plan recommendation.

Digital preservation notification
This service aims at supporting the adequate communication/notification of events and changes which can potentially impact on long-term accessibility and usability of the digital library objectives. Notifications have to be addressed to data curators which have expressed interest and capabilities for reacting and properly maintaining the digital library objectives. So whenever events, potentially impacting the digital preservation are identified by systems, those events are notified to the data curators, allowing trigger corrective actions. This service is targeted to technical roles, such as programmers, developers (who want to add feature to their digital libraries), content providers (who want to understand the behaviour of the deployed service).

Some final notes on the ASSETS’ impact on Luigi Micheletti Foundation

The Foundation’s website will offer more specialised forms of data search and retrieval, thanks to the specific tools developed by ASSETS technical partners. In particular, as the main actor of the Museum of Industry and Work of Brescia, the Luigi Micheletti Foundation is interested in Digital
Preservation Services, with special reference to procedures for events that could impact on long term content access.

2 «The sustainable museum can be defined as one with a fully strategic approach to collections management, which includes programmes of community engagement, documentation, storage improvement, acquisition, and disposal», Nick Merriman, «Museum Collecting and Sustainability», Museum Management & Curatorship 17 (1): 3-21, p. 5.
3 Luigi Micheletti Foundation (see <http://www.fondazionemicheletti.it>) is a non profit institution which is concerned with research on contemporary history. The Foundation has a wide variety of documentary heritage: library, newspaper library, archive, picture library, photo library, film library and media center. The Foundation also publishes books and magazines, promotes research and study projects, organizes conferences and seminars. The Micheletti Foundation is also the main promoter of Musil – Museum of Industry and Work in Brescia (see <http://www.musil.bs.it>), for which, since the Eighties, it has gathered a rich collection of exhibits of industrial archaeology.
6 See <http://www.europeanmuseumacademy.eu>.
7 More about the meaning of this phrase in Peter van Mensch, Léontine Meijer-Van Mensch, New Trends in Museology; Museum of Recent History Celje, 2011, pp. 79-85.
10 P. 19.
11 For all these points I am indebted to David Haskiya, Product Developer for Europeana. See his inspiring blog: <http://kadmeianletters.wordpress.com>.
12 The project «Wikipedia GLAM» (<http://commons.wikimedia.org/wiki/ Commons:GLAM>); 31 March 2012) could become a sort of point of reference in this domain.
14 Particularly interesting is a comparison between the Wikipedia-England's page dedicated to the film Russian Ark (see <http://en.wikipedia.org/wiki/ Russian_Ark>) and the Wikipedia-Italy's page dedicated to the same film (see <http://it.wikipedia.org/wiki/Arca_russa>). From this «museological» example (the film is completely played inside the Hermitage Museum in Saint Petersburg) one can easily conclude that (1) English page is by far more accurate and more thorough than Italian page and (2) Wikipedia's articles in a controversial area (like arts, literature or cinema) can be a mixture of clichés and real knowledge (while Wikipedia's pages in a non-controversial area, like basketball, are almost always really good).
15 See <http://exhibitions.europeana.eu/about-exhibitions>. Many thanks to Anne Marie van Gerwen (Marketing & Communication Manager, Europeana) for making clear to me the goals and the strategies of Europeana in this domain.
18 For the full list see <http://www.assets4europeana.eu/>. Thanks to Morena Rizzo and Anna Rita Guadagni (Ciaotech) for providing me with a draft of the Exploitation Plan. This document helped me to better understand the potential re-use of ASSETS services by museums, archives and other cultural institutions.

References


Photo credits

Fig. 1, 2 Making digitization at the Luigi Micheletti Foundation (Brescia), Luigi Micheletti Foundation
Fig. 3, 4 The laboratory for video archive’s digitization at the musil - Museum of Industry and Labour (Brescia), Luigi Micheletti Foundation
Fig. 5 One step toward industrial heritage’s digitization: making photos of the “Cinemobile” (a truck for travelling cinema), Luigi Micheletti Foundation
Fig. 6 A photo of the “Cinemobile”, Luigi Micheletti Foundation
Fig. 7 The “Cinemobile” travels to Europeana, Luigi Micheletti Foundation
Fig. 8 A photo of a card from the FLM’s archive on Italians interned in military camps during the II World War, Luigi Micheletti Foundation
Fig. 9 The same card in Europeana, Luigi Micheletti Foundation
<table>
<thead>
<tr>
<th>Species</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>heros (Choricinus)</td>
<td>55</td>
</tr>
<tr>
<td>heros (Bericera)</td>
<td>53</td>
</tr>
<tr>
<td>Helarius</td>
<td>84</td>
</tr>
<tr>
<td>heterodon (Atelecyclus)</td>
<td>24</td>
</tr>
<tr>
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<td>10</td>
</tr>
<tr>
<td>Hexapus</td>
<td>15</td>
</tr>
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<td>75</td>
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<tr>
<td>Hippolyte</td>
<td>84</td>
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<tr>
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<tr>
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<td>54</td>
</tr>
<tr>
<td>hirtipes (Erigina)</td>
<td>54</td>
</tr>
<tr>
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<td>32</td>
</tr>
<tr>
<td>hirsutissima (Dromus)</td>
<td>40</td>
</tr>
<tr>
<td>holatusus (Barthana)</td>
<td>72</td>
</tr>
<tr>
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<td>17</td>
</tr>
<tr>
<td>hoplocleites (Alpheus)</td>
<td>83</td>
</tr>
<tr>
<td>horrida (Sarthenope)</td>
<td>47</td>
</tr>
<tr>
<td>Huenia</td>
<td>57</td>
</tr>
<tr>
<td>Hyas</td>
<td>51</td>
</tr>
<tr>
<td>Hyastenus</td>
<td>54</td>
</tr>
<tr>
<td>hybrida (Doclea)</td>
<td>70</td>
</tr>
<tr>
<td>hypsteis (Lithodes)</td>
<td>73</td>
</tr>
<tr>
<td>Ibacus</td>
<td>80</td>
</tr>
<tr>
<td>Ilia</td>
<td>66</td>
</tr>
</tbody>
</table>

<table>
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<td>55</td>
</tr>
<tr>
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<td>84</td>
</tr>
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<td>24</td>
</tr>
<tr>
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<td>75</td>
</tr>
<tr>
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<td>84</td>
</tr>
<tr>
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<td>32</td>
</tr>
<tr>
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<td>40</td>
</tr>
<tr>
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<td>72</td>
</tr>
<tr>
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<td>17</td>
</tr>
<tr>
<td>Integer (Hushe)</td>
<td>71</td>
</tr>
<tr>
<td>Iroratus (Cancer)</td>
<td>83</td>
</tr>
<tr>
<td>Iroratus (Platyergus)</td>
<td>47</td>
</tr>
<tr>
<td>Japana (Dorippa)</td>
<td>57</td>
</tr>
<tr>
<td>Japonica (Mita)</td>
<td>70</td>
</tr>
<tr>
<td>Japonica (Corcellana)</td>
<td>58</td>
</tr>
<tr>
<td>Japonicus (Astaur)</td>
<td>82</td>
</tr>
<tr>
<td>Japonicus (Eriochrus)</td>
<td>82</td>
</tr>
<tr>
<td>Japonicus (Macrophil)</td>
<td>66</td>
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<tr>
<th>Species</th>
<th>Page</th>
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<tr>
<td>Krasinus (Salinurus)</td>
<td>76</td>
</tr>
<tr>
<td>Krasinus (Macrochera)</td>
<td>82</td>
</tr>
<tr>
<td>Krasinus (Salapaga)</td>
<td>82</td>
</tr>
<tr>
<td>Krausus (Oecypode)</td>
<td>59</td>
</tr>
<tr>
<td>Kraulus (Oedarsus)</td>
<td>65</td>
</tr>
<tr>
<td>Lacinaurus (Lambrus)</td>
<td>74</td>
</tr>
<tr>
<td>Lacteus (Gelosimus)</td>
<td>55</td>
</tr>
<tr>
<td>Lacteus (Gelosimus)</td>
<td>53</td>
</tr>
<tr>
<td>Lacteus (Sorcellana)</td>
<td>65</td>
</tr>
<tr>
<td>Laevimana (Eriphus)</td>
<td>63</td>
</tr>
<tr>
<td>Laevimana (Eristus)</td>
<td>47</td>
</tr>
<tr>
<td>Laevius (Aeglea)</td>
<td>45</td>
</tr>
<tr>
<td>Laevis (Alpheus)</td>
<td>34</td>
</tr>
<tr>
<td>Laevis (Eudora)</td>
<td>37</td>
</tr>
<tr>
<td>Lalandus (Gecarodea)</td>
<td>41</td>
</tr>
<tr>
<td>Lalandus (Salinostus)</td>
<td>65</td>
</tr>
<tr>
<td>Lalandus (Palinurus)</td>
<td>64</td>
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<tr>
<td>Lalandus (Pelocarptus)</td>
<td>44</td>
</tr>
<tr>
<td>Lalandus (Pelocarptus)</td>
<td>44</td>
</tr>
<tr>
<td>Lambrus</td>
<td>41</td>
</tr>
<tr>
<td>Lamellatus (Senaeus)</td>
<td>64</td>
</tr>
<tr>
<td>Lanata (Dorippa)</td>
<td>57</td>
</tr>
<tr>
<td>Lannata (Leptopodia)</td>
<td>53</td>
</tr>
<tr>
<td>Lancerifer (Cicconia)</td>
<td>61</td>
</tr>
<tr>
<td>Lur (Salaemon)</td>
<td>57</td>
</tr>
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<td>Laterally (Gecaricus)</td>
<td>41</td>
</tr>
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</table>
Cultural institutions have often drawn a sharp separating line between ‘visitors’, who physically go to museums, archaeological sites, etc. and Internet ‘users’, who visit websites, YouTube, Facebook pages, download podcast, etc… Visitors are those that cultural institutions care for, while Internet users are often considered as ‘nice’ but not really ‘significant’. The aim of this paper is to challenge this point of view, arguing that, firstly, the two categories are merging into one, meaning that Internet users are becoming visitors and, from a demographic point of view, the two groups are becoming a unique group: those interested in cultural content. Secondly, from a cultural (and economic as well) point of view, why should Internet users be less important than actual visitors? An institution could ‘speak’ to them (by different means, of course) simultaneously, considering ‘virtual and physical’ visitors’ of the same relevance.

Let us consider for example the case of SFMOMA, the modern art museum of San Francisco, with its award-winning website (www.sfmoma.org). The museum was founded in 1935, and currently owns more than 27,000 artworks. The overall budget is about 30million Euros per year, with something like 600,000 visitors per year. The cost of the first version of the website, created in 1995 (when most of the cultural institutions did not even know the existence of web technology!) was approximately 7,000 Euros. The latest revision, completed in 2008, cost 400,000 Euros (not including the costs for revising the content, which was taken up by the departments involved, employing about 17 staff).

The current version of the website is impressive: more than 9,000 objects available for search, more than 5,000 interactive visualizations, 350 video files, 200 audio files, educational resources for teachers, an online bimonthly magazine, an online press room, a blog, an online store, downloadable Apps (iTunes and Apple store), and presence on social spaces (Facebook, Twitter, YouTube, Flickr). It is relevant to
notice that the financial resources for maintaining and further developing the website is included in the ordinary budget of the Museum, and not from other sources or within the frame of special projects. This implies that communicating through a website has become part of the mission of the Museum, and not something additional. **Internet users were 2.8 million per year - 4.5 times the number of physical visitors!** Can any cultural institution consider this community of Internet users as less relevant than the community of actual visitors?

**Museums can take care of visitors by organizing and presenting exhibitions, providing paper leaflets and catalogues, billboards, audio guides, multimedia guides, etc... Internet users are taken care by an array of online services** (as those described above for the SFMOMA).

‘Conservative’ cultural institutions consider ‘visitors’ as their real audience, the ones they are working for and taken into consideration in their mission. Internet users, instead, are often considered not a real audience: ICT literate are not included or taken into any consideration in the mission of the institution, nor in the job description of the director or the curators. In this paper we try to argue that all cultural institutions should move beyond this conservative point of view and begin a new approach, considering their Internet audience as important and as real as the physical visitors.

**Our experience**

In the past TEC-Lab (USI) and HOC-LAB (Politecnico di Milano), have developed a number of cultural heritage related multimedia applications, for different partners and different institutions. The subjects vary from archaeological content in Syria, to Roman archaeology in Milan, to contemporary art exhibitions, photography, and many more. A standard feature is present across the different productions; several user experiences and several technologies (web, smartphones, tablets, audio devices, interactive installations, audio guides, etc...) are dealt with the same content (possibly after small adaptations). Our approach can be synthesized with: ‘one production → several deliveries’.

Experiences cover traditional websites, multimedia guides, audio guides, podcasts, interactive support within exhibitions, virtual exhibitions, just to mention a few. Content is also delivered via YouTube and Facebook. Essentially, we try to combine several different factors: low budget, short time for delivering the production, caring for different types of users, different situations of usage, different moods of the users, etc... TEC-Lab is the standard partner for the cultural events in Lugano, and has recently developed a number of different multimedia solutions. In the following, we mention a recent selection.

Four different multimedia sections have been developed on the occasion of ‘NIPPON’ (www.nipponlugano.ch), a set of four exhibitions plus a number of collateral events on Japanese culture taking place in Lugano from 23 October 2010 to 27 February 2011. The four exhibitions were dedicated to: (1) the world-renown photographer Nobuyoshi Araki (‘Araki. Love and Death’); (2) albumen photography (‘Ineffable Perfection’); (3) erotic prints from the XVII-XIX
Each exhibition was supported with a thematic multimedia narrative (describing the most relevant and general aspects of the exhibition) and a catalogue narrative, describing selected work from each exhibition.

The two narratives were linked together but could also be used independently.
In addition a special interface has been developed on this occasion: ‘Nippon at glance’ (http://www.nipponlugano.ch/en/at-a-glance/web/) where all the fragments of narratives are glued together, allowing serendipitous and relaxed browsing.

For the exhibition ‘Man Ray’ (Spring 2011, Museo d’Arte, Lugano), dedicated to one of the most influential artists of the 20th century, photographer, painter, maker of objects and experimental films, a slightly different multimedia solution has been provided (www.manraylugano.ch). The main narratives consisted of excerpts from the autobiography of the artist (‘Self Portrait. Man Ray’) while the detailed narrative
consisted, again, of notes on specific artworks. In addition, this exhibition has provided the occasion for experimenting with the idea of adding a virtual tour, i.e. a view of the exhibition as it was actually held, providing a stronger feeling of ‘being there’.

For the exhibition ‘Consonanze – dialogues across time’ (Museo d’Arte, 16 October 2011 – 8 January 2012), a trip across different periods of art history, from the 15th century to contemporary art, three different multimedia narratives have been organized (www.consonanzelugano.ch - one on the general themes of the exhibition, one on a selection of works, and one with very short biographies (less than 30 seconds!) of selected artists exhibited in the show.

For the most recent exhibition, dedicated to the Italian artist Giorgio Morandi (Museo d’Arte, 10 March-1 July 2012), a further different solution has been developed (www.giorgiomorandilugano.ch). In this case three narratives have been created: the ‘themes’ (analysed and approached by Morandi during his life and artistic career), ‘the techniques’ (experimented throughout his creations) and, again, ‘a selection of works’.

In addition, the potential value of the virtual tour has been fully exploited, transforming panoramic photos into elements of a real multimedia guide (www.giorgiomorandilugano.ch/en/virtual-tour.html). Panoramic views are enriched with hotspots that can be used to activate the fragments of the narratives, and with an audio file, guidance to the most relevant
FIG. 6

CONSONANZE
Discourses across time, Museo d’Arte, Lugano, Switzerland
16 October, 2011 - 8 January, 2012

Multimedia

Themes

Highlights

Artists

FIG. 7

GIORGIO MORANDI
Museo d’Arte Casa di Lugano
18 March, 2012 - 1 July, 2012

Multimedia

I temi della mostra

Le tecniche dell’artista

Selezioni di opere

Tour Virtuale
information of the room. Such virtual tours may be used at home to visit the exhibition virtually, or can be used, with an iPad, an iPhone or any tablet, in the museum as a multimedia guide to support the exhibition visit.

**Users, visitors: empirical studies**

While creating multimedia content, we asked ourselves what were the needs of multimedia users and which were the main differences, with respect to traditional visitors. We organized a number of visitors’ studies in which we used various methodologies in order to collect different kind of data, such as online questionnaires, interviews and questionnaires at the events’ locations. Due to the lack of space, we decided to discuss only the most relevant data in this paper. For more details, please read our publications mentioned in the reference section.

The studies took place around five exhibitions in Lugano. In the first study, completed in 2008 on the occasion of the exhibition ‘Enigma Helvetia’, we collected 119 online surveys (we will refer to them as online users) contacted through the mailing list of the museums, and 82 surveys at the exhibition’s premises. More than 70% of the online users had been at the exhibition and 54% of them had visited more than six exhibitions in the previous 12 months, and only 9% had visited less than three exhibitions in the same period of time. The usage of multimedia over internet was surprisingly high: 26% of users browsed
the multimedia narratives for more than 20 minutes, and 58% for a time span between five minutes and 20 minutes. It is interesting to notice that, as shown in Figure 9, there was a clear correlation between ‘expertise’ (i.e. the number of exhibitions visited in the previous year) and the time spent on the Internet.

In the following study, conducted in 2009 on the occasion of the exhibition ‘Look at me’, 108 visitors were interviewed at the museum’s premises. The expertise of the visitors was quite relevant, since 64% visited more than six exhibitions in the previous 12 months. The distribution of age respected the regular museum-goers’ profile, 55% of them being between 40 and 60 years of age, with an equal proportion between ‘young’ (less than 40 years of age) and ‘elderly’ (over 60).

Some of the findings were quite interesting:

- The majority of visitors (55.4%) did not prepare at all before the visit (as shown in Figure 10), in the sense that they did not consult any resources, i.e. books or website. Those who did some preparation, for the most part looked for practical information.

- Expert visitors (66%) were even less inclined to look for material before visiting the exhibition.

- Visitors used little traditional (i.e. paper based) support during the visit and, as we expected, expert visitors used even less support.
Visitors (as shown in Figure 11) were strongly interested in getting additional material after their visit: 60.3% declared that they would have liked to have material to understand better what was exhibited. For expert visitors the percentage was even higher (69.2%). For instance, an expert visitor declared: “No, maybe later. During the visit … I like being surprised and trying to understand … on my own. Then, if I’m interested in something, I investigate later…”

The third study, conducted between the end of 2010 and the beginning of 2011, was developed on the occasion of the exhibition presented in the frame of ‘NIPPON’. 255 interviews were collected from visitors at the exhibition’s premises after the visit. Only 30% of the visitors were ‘experts’ (i.e. having visited more than six exhibitions in the previous six months); this low percentage could probably be explained by the fact that the subjects of the exhibitions were more appealing to a wider audience.

The age distribution, instead, was typical: a higher percentage (60%) of middle-aged visitors (between 40 and 60 years of age). Some of the most interesting findings were the following:

![Sources of Information about the exhibitions](image)

FIG. 12
The majority (56.4%) has used Internet to get information about the exhibition.

For getting additional content the following were the media preferences:
- Web via a PC was the preferred medium: 61.5%. 68% for young visitors, 32.5% for the elderly.
- Traditional (paper-based) media came second with a percentage of 45.5%.
- Web via mobile (smart-phone or tablet) was surprisingly high, 29.4%; for the elderly it dropped to 15%.
- The preference for downloading material was surprisingly low at 18.4%, with a mere 5% for the elderly.

Other audience studies were carried out in 2012 and the results seem to be similar to those above.

Conclusions

Our conclusions could be summarised by the following statements:

A. Demographically, visitors and Internet users (of cultural heritage websites) are becoming the same group of people. As Internet users grow up, some of them will also visit cultural institutions and therefore their websites too. Technology will not bring new audiences, but the traditional audience will adopt the Internet for culture (as for any other matter). Therefore, we can begin speaking of Internet visitors of the same relevance as physical visitors.

B. In this transition era, some of the oldest (and most conservative) visitors will prefer paper over technology. But, at present, they probably represent a minority and in future years they will become a niche category. Communicating without technology will become more and more marginal for cultural institutions (as for newspapers and anyone else).

C. For obvious reasons, Internet visitors can be much more numerous than physical visitors (five times, 10 times and even more). Virtual content (over Internet) can reach a vast audience worldwide, with only a fraction of this being also a physical audience.

We can quote Dana Mitroff Silvers, Head of Online Services of SFMOMA: “In order to track ROI, the institution must first define the primary goals of the website and related initiatives. For example, is the primary goal to send more visitors through the front door? Is the primary goal to reach as many virtual visitors as possible? Or, is the primary goal about creating an educational resource that promotes learning and education?

“At SFMOMA, the primary goal of the site has always centered around delivering rich educational resources that tell the stories of modern and contemporary art and artists, and the museum has invested institutional resources in developing one of the richest assortments of multimedia content of any modern or contemporary art museum (www.sfmoma.org/explore)”.

We can also quote an online newspaper, mentioning the opinion of the director of the Metropolitan Museum:
“… making it a more open and understandable museum, largely by thoroughly rethinking the way it uses technology […] so that patrons will eventually be able to read and watch videos about art museum-wide on their phones and tablet computers. And it is venturing as never before into the rapidly evolving field of what museum administrators call ‘visitor engagement’: a social science aimed at trying to reach every patron, from the first-timer to the seasoned scholar.

…

Trying to open up art museums to the broadest possible audience while maintaining standards can be a tricky balancing act - one that large institutions like the Brooklyn Museum and the Victoria and Albert in London have struggled with as they introduce more technology to galleries and use more entertaining approaches to attract visitors. But the task is one that confronts almost all art museums now as they compete against pop culture and try to foster a new generation of museumgoers.

Mr. Campbell said that technology, which the Met has embraced only slowly, is one of the best ways to bridge those kinds of gaps without sacrificing any of the seriousness or ambition of the museum’s exhibitions and collections. He describes it as a way to ‘demystify the museum through digital means’.

The Met’s research has found that 40% of the people who come to the museum have first visited the Web site.”

If the reader thinks that the above works only for large, well financed institutions, we must recall that the multimedia solutions described in Section 2 had a cost of 6,000-10,000 Euros each (with the largest cost due to the virtual tour). Each solution was, at the same time, a multimedia guide for physical visitors, and a website (or a podcast) for virtual visitors. Therefore, the budget is not the issue: a cultural institution may speak to an Internet audience at the same time as it speaks to its visitors. It can be done and, we believe, it should be done.

Acknowledgements

Our thanks go to the people of HOC-LAB (Politecnico di Milano, Italy) and TEC-LAB (Università della Svizzera italiana) who work passionately at the development and deployment of 1,001 stories, and to all the ‘Dicasteri’ and the museums of the city of Lugano, as well as to all who participated in the creation of all these multimedia narratives.

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2 HOC-LAB, Politecnico di Milano, Italy
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2011


2010


2009


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2007


2006


Photo credits

Fig. 1 A screenshot from the thematic narrative of the exhibition ‘Araki’.

Fig. 2 Users can access highlights on their own or as ‘linked’ to thematic narratives.

Fig. 3 The ‘mosaic’ of ‘Nippon at a glance’ over iPad.

Fig. 4 A screenshot from the narrative for the Man Ray exhibition: based on excerpts by the artist, ‘Self Portrait’.

Fig. 5 A screenshot from the virtual tour, showing one of the rooms of the exhibition ‘Man Ray’.

Fig. 6 A screenshot from the Multimedia page for the exhibition ‘Consonanze-Dialogue across time’.

Fig. 7 A screenshot from the Multimedia page for the exhibition, ‘Giorgio Morandi’.

Fig. 8 A screenshot from a view of the virtual tour, showing one of the rooms of the exhibition, ‘Giorgio Morandi’.

Fig. 9 The correlation between length of consultation and ‘expertise’ for the exhibition, ‘Enigma Helvetia’.

Fig. 10 Visitors with NO PREPARATION before going to the exhibition ‘Look at Me’.
European Museum Academy
The Istituto per i Beni Artistici, Culturali e Naturali (IBACN)

The IBACN of the Region Emilia-Romagna was founded in 1974 to support and advise the Regional Government in policy making and act as an advisory body to local authorities in the field of cultural heritage, including museums, libraries, archives, natural and built heritage.

IBACN’s activities with regard to heritage and museums include: research, documentation and ICT, renovation of museums and development of temporary exhibitions, definition of methodologies for conservation, funding of restoration projects, setting of museum standards, training of professionals, development of public services and educational activities, publishing, etc. With a staff of over 90, IBACN is very active at national, European and international level and has been involved in many EU funded projects, all of which are documented in its website. IBACN also networks with organisations such as ICOM International, European Museum Forum, European Museum Academy, European Museum Advisors, NEMO, to improve the quality of heritage and museum provision and the qualification of staff.

For further information on our activities, please look at the IBACN website:
www.ibc.regione.emilia-romagna.it

The European Museum Academy (EMA)

EMA is a non-profit Foundation established to reflect museums at the international level, to promote research on museography and museology as a high cultural activity, to provide constructive criticism and promote discussion on new exhibitions and museums, and to diffuse museological knowledge and ideas among members of the profession. It aims to promote the conception and development of new as well as of traditional museums as tools of social change.

EMA organises activities, publishes reports, runs special projects and award schemes, and raises funds for a wide range of sectors. Training programmes, including staff exchange programmes for young professionals, are being arranged, as well as programmes concentrating on quality management. Partnerships are being developed with a growing number of organisations with the same interests in the museum and cultural sectors.

Twenty-six countries are currently represented within the EMA organisation.

For further information on our activities, please look at the EMA website:
www.europeanmuseumacademy.eu
Dr. **Marie Bourke** works at the National Gallery of Ireland where, as Keeper and Head of Education, she looks after the public programmes and acts as Secretary to the Board. Her publications include: *The Story of Irish Museums 1790-2000, culture, identity and education* (Cork: Cork University Press, 2011, reprint 2012); *Discover Irish Art*, co-author, Dr. S. Bhreathnach-Lynch (Dublin: NGI, 1999); *Art in Transition* (Dublin: NGI, 1998); Exploring Art (Dublin: NGI, 1997); exhibition catalogues: *Museums Matter*, co-author, Dr. J Bell (Dublin: Irish Museums Association, 2008); *Drawing Studies: A Celebration* (Dublin: NGI, 2007); *Learning from Art* (Dublin: NGI, 2004); *Charles Lamb RHA Galway Paintings* (Galway: Galway Arts Centre, 1998), *Children’s Art* (Dublin: NGI, 1992), *Painting in Focus: Frederic William Burton’s ‘The Aran Fisherman’s Drowned Child’* (Dublin, National Touring Exhibition Service, 1987). She has lectured widely on Irish art, museum and cultural studies, and edited 10 editions of NGI Museum Proceedings. A former chairperson of the Irish Museums Association (2006-09), she is Adjunct Professor in the School of Art History and Cultural Policy at University College Dublin and a member of the Governing Authority of the University of Limerick.

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Omniversum, both in The Hague. He was a member
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Organization for Scientific Research).
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With the support of the Lifelong Learning Programme of the European Union.
This project has been funded with support from the European Commission.
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