Images for the Future: Unlocking Value of audiovisual heritage

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Abstract

Images for the Future is the largest digitization effort in Europe to date. A consortium of 6 partners (including three archives) is migrating a substantial part of the Dutch audiovisual heritage to a digital environment. The project has three objectives: [1] Safeguarding heritage for future generations. Our audiovisual heritage on analogue carriers has a very short life expectancy. In order to ensure long-term access to our collective memory, it is vital to migrate the material to a digital environment. [2] Creating social-economical value: migrating large quantities of audio-visual material is a precondition to unlock the social and economic potential of the collections. More professionals and individuals than ever before will be able to access material, and new services and businesses will be launched. [3] Innovation: by digitizing heritage on a massive scale, a completely new infrastructure will have to be built that can strengthen the knowledge economy of the future. Much is to be expected from recent developments in computer science, especially in the areas of data-mining, information retrieval and in the creation of new environments where content can be used.

To achieve these objectives, the cultural heritage sector is challenged to re-evaluate its business models. This article presents the theoretical framework in which Images for the Future is operating and substantiates this framework with concrete examples of results.

Keywords: business models, digitization, wiki, tagging, YouTube, game, Audiovisual

1.	Introduction

Audiovisual material is a vital component of our heritage, collective memory and identity – all our yesterdays. But in its current analogue format it is difficult to access. Unlike documents which may last for centuries or even millennia, audiovisual recording materials have a life expectancy best measured in decades. Digitization of analogue carries will ensure future access. Over the past years, technologies for large-scale migration have matured. The same is also true for thinking about migration projects in terms of their efficiency and the workflow models they could follow. Although the process is far from complete, approximately 10 million hours of European audiovisual material has already been digitized (Wright 2008). Recently, the audiovisual production process shifted from analogue to digital. This so-called 'born digital' content is directly ingested in asset management systems and will also be kept for posterity as electronic files. Due to digitization and digital production, audiovisual content collections are transforming from archives of analogue material into very large stores of digital data.

Digitization is also a driver to establish new services. Distribution over networks, interoperability with other collections and flexible integration in other environments are just a few of many properties in this new era of enormous potential for audiovisual archives. Therefore, large-scale digitization efforts do not only ensure long-term access, but also have the potential to reveal the social and economic value of the collections. This paper will focus on the latter: the types of services that can be created as a result of large-scale digitization efforts and the social and economical benefits they bring. Value creation is a key notion, as it determines the factors that legitimize (and determine the level of) investments by the government and funding programs. The case of Images for the Future is exemplary: cultural heritage organizations around the globe are currently reinventing their business propositions. In Sections 2 and 3 this notion is examined using the "business model canvas", a model developed by Alex Osterwalder. In Section 4 we will examine the dimensions of business models for cultural heritage and the derived value for a heterogeneous constituency of users, using the "Accumulation, Archiving and Construction" model by Mirko Tobias Schaefer. With this user-centric approach in mind, we will look at some examples of services that we have developed in the past year. This will lay the foundation for further work.

2.	Unlocking Value

The collections of the Netherlands Institute for Sound and Vision in Hilversum, the National Filmmuseum in Amsterdam, the National Archive in The Hague safeguard the memory of the Netherlands as captured in moving images over the past hundred years. As will be demonstrated below, the collections will represent great social and economic value – if and when they become accessible.

Large-scale migration of analogue audio-visual material for preservation and access is exceptionally expensive. For Images for the Future it involves the selection, restoration, digitization, encoding and storage of 137.000 hours of video, 20.000 hours of film, 124.000 hours of audio and more than three million photographs. And this is only the beginning. To truly make the material useful, investments will have to be made to enrich the existing metadata so that they can meet up to the requirements for use. And services

will have to be developed that make the material meaningful and useful for a variety of user groups. Educational institutions, students, teachers, publishers, television and film makers, web designers, graphic designers, artists, software developers, internet providers, museums, theatres, heritage institutions, libraries, etc. will all profit from content becoming digitally available and accessible over networks.

The total investment of this initiative sums up to 173 million Euro. Not an insignificant sum by any means. A strong business model is necessary to support this kind of investment and prove that such an investment will result in long-term socio-economic returns. To substantiate this assumption, the research institute SEO Economisch Onderzoek executed an analysis of costs and benefits of the Images for the Future project. (SEO 2006) This analysis followed the so-called "Research into Effects on Infrastructure" framework defined by the Dutch Ministry of Economic Affairs and the Ministry of Transport. (Eigenraam 2000) This framework shows how the costs and benefits of infrastructural investments such as roads, railways etc. can be determined. In addition to 'hard' numbers, environmental and other 'soft' effects are an intrinsic part of the analysis. The socio-economic returns of these structural investments are calculated over a substantial period of time, in the case of Images of the Future, this period was set at 30 years.

The outcome of the Cost-Benefit analysis was positive: "The total balance of costs and returns of restoring, preserving and digitizing audio-visual material (excluding costs of tax payments) will be between: 20+ and 60+ million." (SEO 2006) The "plus" represents non-quantifiable indirect effects and social benefits that go beyond the users' benefits. Direct effects concern the market for culture and heritage, and the market for information. The project is financed through the so-called Economic Structure Enhancement Fund. This fund is used to finance large-scale infrastructural investments. Direct effects of the investment are revenues from sales, access for specific user groups, the repartition of copyright for the use of the material and so on. The indirect effects concern the product markets and labor market. Within the duration of the project (2007-2014), Images for the Future will generate an equivalent of 300 man-years of work. Social benefits take place outside the markets. For Images for the Future these benefits involve effects like the conservation of culture, reinforcement of cultural awareness, reinforcement of democracy through the accessibility of information, increase in multimedia literacy and contribution to the Lisbon goals set by the EU.

It's important to note that much of the material kept by the archives is copyrighted. Images for the Future collaborates closely with this important stakeholder group to ensure that the material is used in accordance with predefined arrangements. The underlying assumption is: "everybody wins"; material is made accessible to end users in a meaningful way, and rights holders receive their fair share of the income generated.

Although some of the predicted economic effects are debated, this analysis is in line with other prominent studies on the subject of the effects of digitization, most recently demonstrated in a study on the effects of file sharing in the entertainment industry. (Huygen 2009) Large private enterprises such as Google have signed off on business plans underlying the same assumption. (Varian 2009) Most authors agree that while the new business models have yet to prove durable, it remains crucial to create an environment in which our heritage becomes part of the modern intellectual discourse and that it will create economic value in some form or other.

3.   Business Models

The question remains *how* to maximize the socio- economic impact of the project. When examining the potential positive return of an investment, it is useful to have a tested model as a starting point. In this case we use the business model canvas developed by Osterwalder and Pigneur, that has become a popular reference point. (Osterwalder 2003)
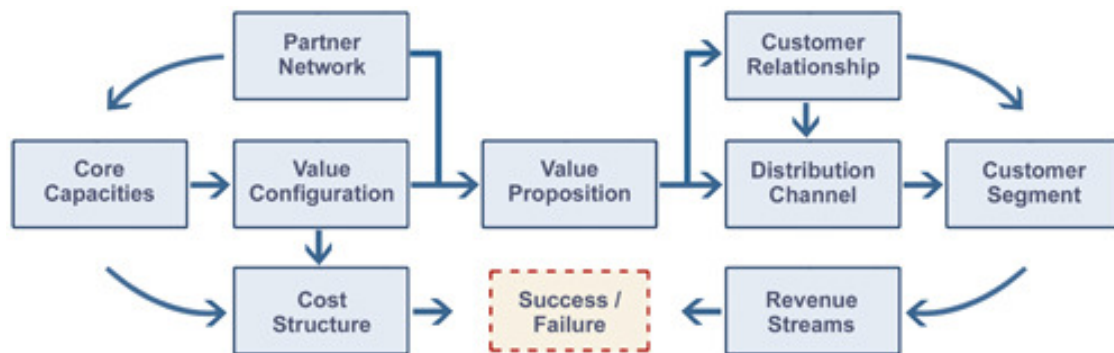

Fig. 1. Business Model Canvas. Osterwalder/Pigneur 2003

In this context a business model is based upon the logic of an organization to achieve its (financial) goals, using nine interrelated building blocks:

The value proposition of what is offered to the market;

The segment(s) of clients that are addressed by the value proposition;

The communication and distribution channels to reach clients and offer them the value proposition;

The relationships established with clients;

The key resources needed to make the business model possible;

The key activities necessary to implement the business model;

The key partners and their motivations to participate in the business model;

The revenue streams generated by the business model (constituting the revenue model);

The cost structure resulting from the business model. (Osterwalder 2003)

It is important to note that – using this model – not only the revenue sources have to be taken into account, but also relationships between the different building blocks that will change as one of the elements changes.

In our case the value proposition of the archive changes while artefacts are being migrated from analogue carriers of information to digital assets. With this migration, the variable cost of distribution has decreased tremendously, which in turn opens up ways to reach many new client segments that were previously difficult or very expensive to reach. Whereas the main client segment of organizations in the cultural heritage domain used to be limited to professional researchers and program makers who would come to the physical location to conduct research, a larger public can now be engaged in using (parts of) the archive that have a specific interest to them. Naturally, this new group has its own specific requirements and therefore will not necessarily be reached using the same channels and services as the professionals. In table 1, the user groups of Sound and Vision are listed.

1. Broadcasters (Public/Commercial, in-outside Netherlands)
2. For profit organizations (for reuse on DVDs, CDs, internet, for commercial screenings and so on)
3. Non-Profit (use in museums, filmfestivals, and so on)
4. Education (primary, secondary, higher)
5. General Public

Table 1. Classification user groups, Sound and Vision

The organization's 'relation' with its user groups is shifting, and will often take place inside an online environment, which in turn changes the nature of the with this group. Instead of a relatively intense, enduring relationship with customers that frequent the building, we are now engaging with a group that may hardly be aware of the institution that is hosting the content.

Similarly, a completely different type of organization will be required to support this new value proposition. Instead of a physical building at the centre of the cost structure, we will quite likely see a shift towards a more platform- driven cost structure.

On an organizational level, different skill sets will be required to support the new value proposition. Such an organizational change will call for new consideration of questions surrounding outsourcing and in-house development. As such, the business model canvas consists of two distinct parts, the back end that defines the cost structure, and the front end that defines the revenue structure.

The business model canvas defines how institutions can capitalize on the new value proposition of digitized audiovisual material. It defines the socio-economic benefits to new client groups in a structured way. With this model as a starting point, we have set out to investigate what could be the most successful value propositions for the client groups that have a vested interest in the content the project is making available. This has resulted in a collection of services that we will describe in the Section 4 below.

Obviously, Images for the Future does not operate as an island. The project is constantly on the lookout for inspirational business model innovations inside and outside the

heritage realm. One interesting example particularly worth mentioning is Saatchi Gallery. Saatchi provides a free online platform on which artists can promote their work to a global audience. Painters, photographers, sculptors, graffiti specialists and video artists post high-resolution images of their work, provide details of their biographies and future shows, link to their friends' sites and "chat" with other artists and art lovers. Collectors can browse, comment on what they find and buy works they are interested in by contacting the artist, without dealing with a gallery or auction house. Saatchi Gallery succeeded in changing their business model: they reach new and larger user groups via their online platform. In numbers: 600,000 visitors used to visit the Thames-side gallery each year, the online platform receives 70 million views per day. (Edgecliffe 2007)

4.   User centric approach

One of the guiding principles of service development at Images for the Future is that it follows a user centric approach. The consortium believes that value creation always starts with the user, in Osterwalder's model the 'front end' of the diagram. Everything else is derived from there. The "Accumulation, Archiving and Construction" model proposed by Mirko Tobias Schaefer is used to measure/analyze the activities of users. Schaefer defined this model for structural mapping of the user activities that are often summarized as user-generated content, convergence, collective production and so on. Schaefer divides the model in three domains; Accumulation, Archiving/Organizing and Construction. This notion is represented in figure 2 below.
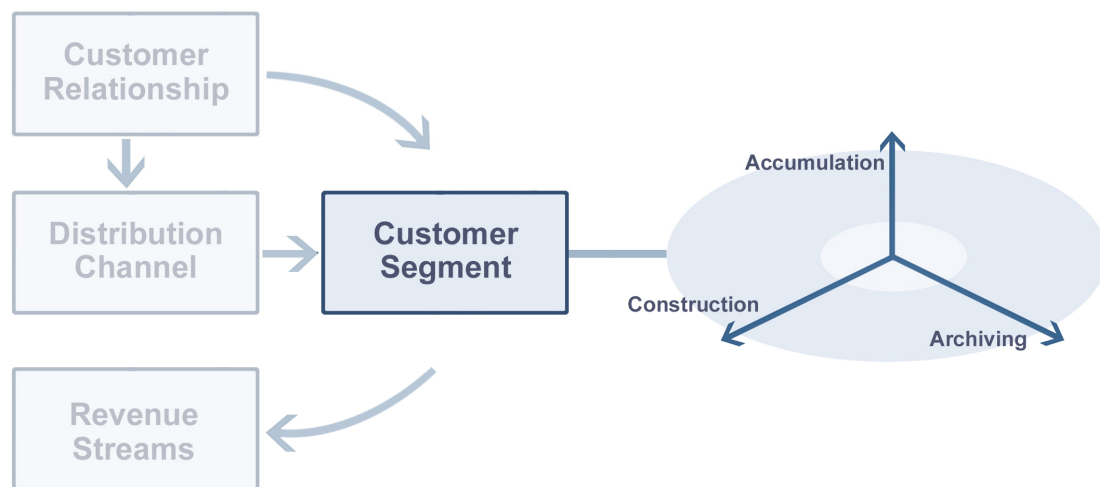

Fig. 2. Value creation always starts with user

Schaefer defines the three domains as follows:

Accumulation describes all activities that revolve around popular media content and products, for the most part initially developed by corporate companies.

Archiving/Organizing: the activity of archiving and organizing takes place on several levels. On an active and intrinsic level users store artefacts, build archives and reorganize cultural resources and knowledge bases. […On a more passive level..], archiving work is done by the multitude of fan sites that organize links to related content

or the many web logs and Web forums that share content originally produced by corporate companies.

Construction is production occurring outside established culture industries. It describes the emergence of new distribution and production means that are not institutionalized and not necessarily controlled by an owner, but rather generally at the user's disposal. It describes the production of new content and new technologies, as opposed to media that comment on or relate directly to popular media productions. (Schaefer 2008)

He writes: "These three domains are not mutually exclusive and overlap to a certain extent. The logic of electronic distribution and the copying of files applies to all of them." It puts users in the centre of the analysis. It needs to be noted that, to a certain degree, the use of this model is an arbitrary exercise. Nevertheless, it provides a way to map differences and similarities between the services offered. In section 4.2 we will use this model to analyze the way users interact with the Images for the Future services described in section 4.1.

4.1   Cases

Digitized (or born-digital) collections can be put to use as educational material, as sources for television programs, in Web applications, games and so on. The starting point is the realization of the broadest possible access to the content, both for developers and end users. As already mentioned in Section 2, it is of vital importance to make arrangements with rights holders regarding the reuse of copyrighted material. Various services have been set up after Images for the Future was launched in the summer of 2007. Below, the most significant services are described.

ED*IT and Academia: video in the classroom

The educational sector is the most important target group for Images for the Future, also in terms of revenue; 60 percent of the income generated from the project is expected to come from services aimed at this market. Using digitized heritage as flexible learning objects is a very promising development and is beneficial for learners of all ages. (Mizuko 2008) Images for the Future will provide access to the content of existing services, such as Teleblik and Academia (http://www.teleblik.nl, http://www.academia.nl, platforms for primary/secondary and higher education respectively) and also develops new services, ED*IT being the flagship initiative.

ED*IT (http://www.ed-it.nu/) is a multi-medial educational platform that can be fully integrated in existing learning environments. The service will be used for the first time in the 2009-2010 school year and will offer content from Sound and Vision, the Filmmuseum, Public Broadcasters, Nationaal Archief (the National Archive of the Netherlands), and four museums within the fields of technology, national history, history and ethnography. This includes thousands of written sources, tens of thousands of video clips and hundred thousands of stills. The editorial board is made up of experts from the educational broadcasting and library sector. This way, ED*IT can guarantee that metadata and contextual information is fully in line with current educational practice and timely subject matters. Teachers can create their own lesson templates, use already existing ones or collaborate with peers to co-create material.

The foundations of ED*IT lie in existing and widely adopted services for authentication and metadata management operated by Kennisnet. Its design and applications are developed in such a way that it can be used next to, or as substitute for, existing learning materials. The platform offers the ability to search, edit and create online lessons, papers and presentation, timelines and so on. Finally, the ED*IT platform also allows users to upload their own material so it can be integrated in presentations. In a separate project, "Les 2.0", ready-to-use lessons are created using ED*IT material. Schools register for ED*IT and pay an annual fee based on the number of students accessing the service. In February 2009, this fee was set at €1,85 per student in primary education for a two-year contract. The fee for secondary education is one Euro higher.

Sound and Vision Wiki

Although annotations (metadata) created by cataloguers provide key knowledge of the collection of Sound and Vision, they also have fundamental limitations. For example, given the substantial amount of time it takes to generate them, they will not provide a lot of detail, they are also bound to be subjective and only cover one interpretation, where there are many. In short: manual annotations often lack contextual knowledge required to value content.

The aim of the Sound and Vision Wiki (http://www.beeldengeluidwiki.nl) is to add contextual information to the collection of Sound and Vision by inviting "The Commons" to document and share their knowledge about programs, media personalities and media related topics. This is not restricted to universities or journalists; a broad constituency of enthusiasts should be encouraged to contribute to their heart's content.
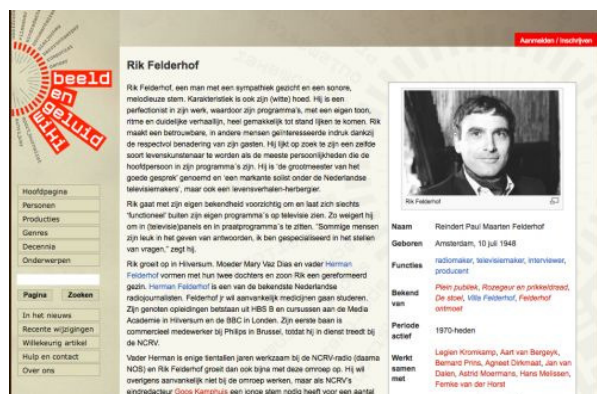

Fig. 3. Sound and Vision Wiki – biography template http://www.beeldengeluidwiki.nl

The Sound and Vision Wiki was launched in February 2008. Some statistics on this semi-curated wiki (people have to register):

- Current number of pages: 34.327
- Registerd users: 1.664
- Views 4,9 million (sept 2010)

The eventual goal is to have 50.000 lemmas by 2014. Offering provenance and reliability are two preconditions to the success of the project. To this end, two staff members of Sound and Vision are continuously monitoring the contributions. They are assisted by a larger so-called "expert council". The Wiki uses the MediaWiki platform, also used by Wikipedia. Contributors are required to register to the site first and by doing so, to the use of the Creative Commons " Attribution-Share Alike 3.0" license, allowing others to use the articles in new publications. (Beeldengeluidwiki 2009)

This resource exists next to the institutional catalogue, governed by professional cataloguers. Within the BRIDGE project, the wiki will be linked to this catalogue, and other sources on the Web that are centered around entities, themes and events. (Bridge 2009) These activities will improve access to the collections, and subsequently income generated for reuse.

Nationaal Archief on Flickr The Commons

Within the project Images for the Future 1,2 million photographs will be digitized. One of the main goals of the project is that the material will be broadly accessible. However, a lot of the items in the collections (in this case from the Nationaal Archief), lack adequate metadata. At present, professional cataloguers and a relatively small group of dedicated volunteers add metadata and contextual information. Given the vast quantity of stills that need to be annotated, the Nationaal Archief realized they needed a broader public to help them and decided to join The Commons initiative.

The Commons was launched early 2008 as a collaboration between the Library of Congress (LoC) and Flickr. The LoC had been looking for a Web 2.0 partner for its digitized collection. On Flickr, 3 million photographs are uploaded daily. Currently, over 3 billion photographs are available through Flickr, and there are 25 million unique tags. (Flickr 2008). The Flickr community of passionate photography lovers, the availability in 8 languages and the approved infrastructure of the site led to the Library's decision to collaborate on this with Flickr. In the course of 2,5 days the photos of the Library of Congress were supplied with 20.000 tags. To quote Clay Shirky, adjunct professor at NYU: "Metadata has been democratized". (Shirky 2008) Metadata no longer belongs only to professionals, but to everybody. Currently, twenty archives contribute to The Commons, a number that will steadily increase.

It's important to note that participating institutions only publish material that is free of copyright restrictions under a "no known copyright restrictions" rights statement. (Flickr 2009) In November 2008, the Nationaal Archief (together with their partner Spaarnestad Photo) released a collection of several hundred photos. In the first two weeks, the photos of the Nationaal Archief had already received 400.000 views and hundreds of comments and tags had been added, an overwhelming success. Currently, the Nationaal Archief investigates how these tags can be used to enrich their exciting catalogue, a timely research topic. (Trant 2008, Weinberger 2007).
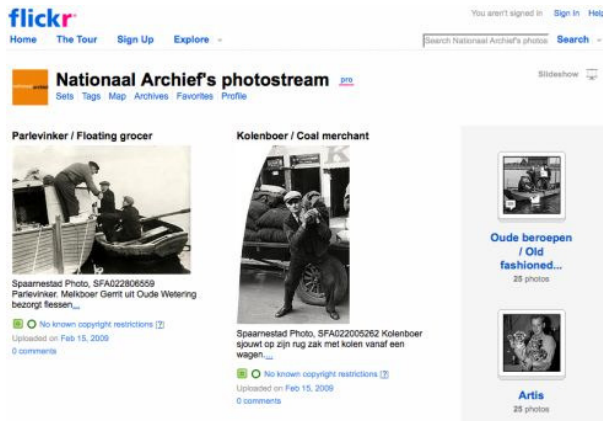
Fig, 4. Flickr The Commons http://www.flickr.com/photos/nationaalarchief/

Waisda? Video Labeling Game

To explore the impact and success criteria of social tagging in the audiovisual heritage domain a large-scale video labelling pilot Waisda? (www.waida.nl) was executed by the Netherlands Institute for Sound and Vision and KRO Broadcasting. The goal of Waisda? (which translates to "What's That?") is to collect user tags that can help bridge the semantic gap between professional annotations and queries by users. Also using tags and their time-stamps, intra video search is enhanced. Finally, Waisda? offers people a new way of interacting with television programmes, thus creating a connecting with the television archive. Waisda? is the world's first operational video labelling game in the cultural heritage field.

Waisda? invites players to tag what they see and hear. They receive points for a tag if it matches one their opponent has entered within a time frame of ten seconds. (see Figure 5. Game interface). The underlying assumption, based on the 'Games with a Purpose' by Luis von Ahn, is that tags are most probably valid if there's mutual agreement. Waisda? introduced three innovations: [i] Using gaming as method to annotate television heritage [ii] Actively seeking collaboration with communities connected to the content [iii] using curated vocabularies as a means to integrate tags with professional annotations.
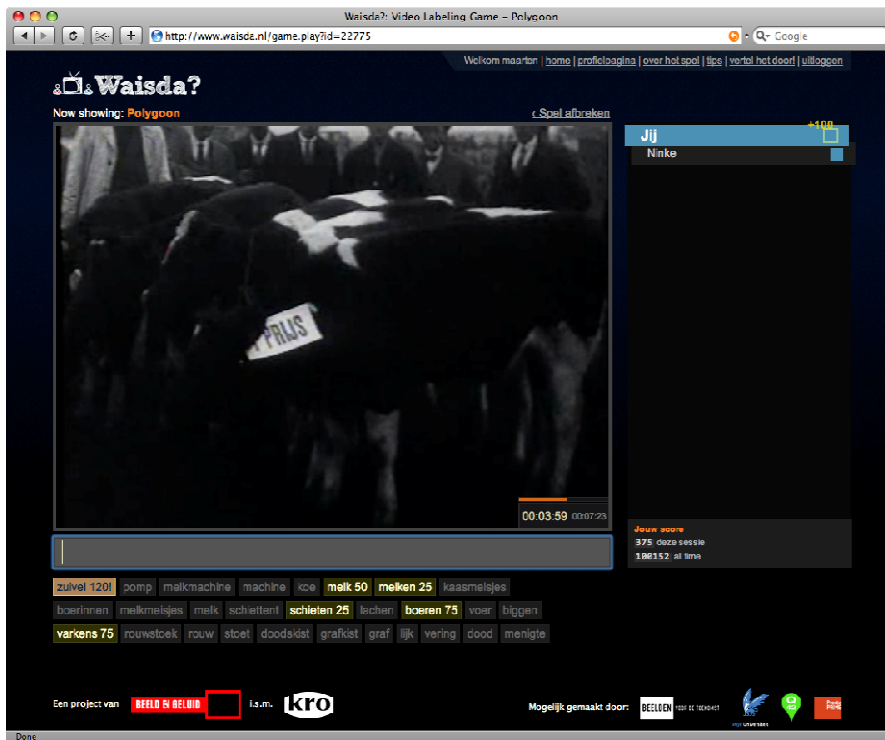
Fig. 5. Waisda? Game Interface

From the launch in March 2009 to November 2009 (period of the evaluation, the website is still operational), over 340,000 tags were added, of which 40.3% consists of matching tags (added by different players within the ten second time frame. In total, 42,068 unique tags have been added. Analyses shows that 5.8% of the tags match with the terms in the GTAA thesaurus the Netherlands Institute for Sound and Vision uses to classify their collection. Also, 23.6% corresponds with Cornetto, the Dutch version of the lexical database WordNet. The usefulness of the tags has been determined by a professional cataloguer. A significant difference was found between the usefulness of tags added to reality shows opposed to tags added to television documentaries. (Oomen 2010)

The results of the pilot project were very promising. First of all, the amount of activity by the players exceeded expectations. Also, it has also been proven that tags can indeed be beneficial for inclusion in the archive, since the professional cataloguer indicated that a lot of the tags be useful. Moreover, there is great interest from the cataloguers and media professionals in general in using the tags to enhance search and retrieval, since they provide much needed time-related metadata, and can be used to provide input for assigning keywords in their daily work. The data set resulting from Waisda? will be used in further research.

Open Images

Open Images (www.openimages.eu) is an open media platform that offers online access to audiovisual archive material from various sources to stimulate -creative- reuse. Footage from audiovisual collections can be downloaded and remixed into new works. Users also have the opportunity to add their own material to the Open Images and thus expand the collection. Open Images provides an API, making it easy to develop mashups. The platform currently offers access to over 750 items from the Sound and Vision archives, notably from the newsreel collection. This amount will grow substantially over the coming years as new items will be uploaded continuously. Both by Sound and Vision, but also by third parties such as EYE Film Institute Netherlands (www.eye.nl) and a number of archives from the EUscreen (www.euscreen.eu) Best Practice Network. To support these partnerships Open Images will enable partners to build their own branded portal using the Open Images infrastructure.
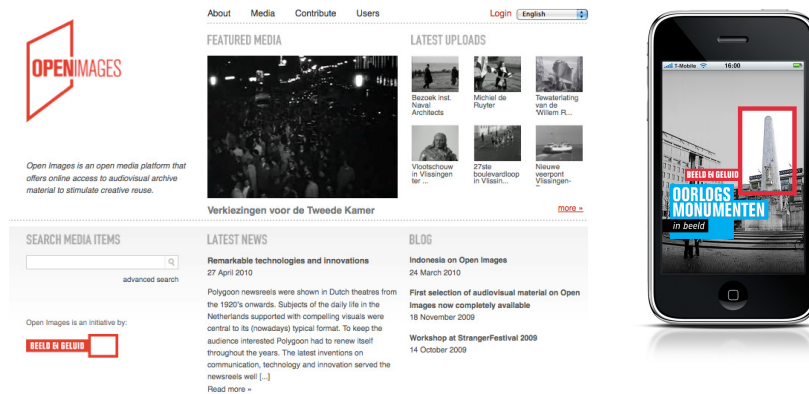

Fig. 7. Open Images Homepage and Mobile Application

Items are available under Creative Commons licenses or are part of the Public Domain and labeled as such. The 'open' nature of the platform is further underscored by the use of open video formats (Ogg Theora), open standards (HTML5, OAI-PMH) and open source software components. Furthermore, all software that is developed within the scope of Open Images is released under the GNU General Public License (www.openimages.eu/source).

Items published on Open Images and the accompanying descriptions (metadata) are accessible through an Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). This enables third parties to retrieve the stored metadata and media files in a structured way.

In 2010, further work focuses on:

Video on Wikipedia. In cooperation with Wikimedia Netherlands, Open Images continuously contributes audiovisual content to the Wikimedia Commons. Currently, OAI-PMH-based technology is developed to fully automate the ingestion process. Already more than 200 items from Open Images have been uploaded and are used to enrich hundreds of textual Wikipedia entries with related audiovisual content. In March 2009, these entries were viewed over 500,000 times. This shows the potential for the audiovisual heritage sector to collaborate with the Wikimedia Foundation to reach new and greater audiences within a meaningful context.

Open Video on Mobile Devices. By the end of this year Sound and Vision will launch a new location-based service offering mobile access to relevant audiovisual heritage related to historical landmarks. This services consists of a mobile application that connects to a Drupal installation that is used to harvest relevant open repositories (Open Images, Wikipedia, Flickr: The Commons) and relate harvested items to landmarks (and their corresponding geolocations). Users of the application can consult these items on-site – based on their GPS location – and also contribute their own material to the landmarks.

To promote reuse and further development of the architecture and to ensure that other institutions can easily participate, the complete architecture is based on open source components. Because all information and relations to the online content are centrally stored, it is relatively easy to develop applications on top of the Drupal based architecture. Because the content is separated from the application, this also makes the applications very lightweight. Applications can be an iOS based application (like our first iPhone application), but with a similar effort this can also be an Android of Symbian OS based application.

Pinkpop Visual Search

The Dutch Pinkpop festival, the oldest annual rock festival in the world, celebrated its 40th birthday in 2009, giving rise to a number of festivities. One of these was the launch of the website www.hollandsglorieoppinkpop.nl ('Pride of Holland at Pinkpop'), an experimental video search application offering an innovative way to browse through a collection spanning 40 years of concert videos dug up from the archives of the Netherlands Institute of Sound and Vision.

The application is a unique publicly accessible demonstration of the application of state-of-the-art multimedia retrieval technology. It allows visitors to browse concert recordings and interviews based on automatically detected visual concepts and speech transcripts respectively. (Fig. 8)

Fig. 8. Video Player With Visual Concepts

To accumulate feedback on the performance of the technology, the user is challenged to flag both hits and misses. Users watch the videos without interruption and are encouraged to provide their feedback by graphical overlays that appear on top of the video. The threshold to participate is deliberately kept low. Users do not need to sign up and can provide their feedback just by clicking buttons. With the thumbs-up button they indicate that they agree with the automatically detected label for the video fragment. If they press the thumbs-down button, the user is asked to correct the label. Within a few clicks the user can select another pre-defined label or create a new label on demand. In addition, we allow the users to indicate whether the start or end of the fragment is inconsistent with the label. One out of ten visitors of the thousands that visited the website the past month really did so, providing valuable information for further improvement of the technology. In order to find a balance between an appealing user experience and a maximized user participation, we motivate online users to participate by providing them with access to a selection of exclusive, full-length concert videos. All

user feedback is stored in a database together with the users IP addresses and user sessions.

The technology has been developed over the past years by Dutch Universities, notably within the scope of the MultimediaN research programme. (Snoek 2009) The main component is the MediaMill semantic video concept detection engine developed by the University of Amsterdam. The engine translates pixels to text, enabling the automatic labeling of visual concepts in video such as 'guitar player' and 'drummer' The concept detection was trained to detect visual concepts using manually labeled examples. Thousands of features, related to the form, color and texture of images are processed in order to automatically create a link between a given segment and the concepts in the semantic video search engine. As a result, users can quickly browse to various concepts in a concert video using a custom-built video player that displays concepts on a timeline. Besides searching through concert recordings, users can also browse through interviews deploying automatically generated speech recognition transcripts.

YouTube Branded Channel

In 2007, Sound and Vision was one of the first archives in Europe to offer access to a selection of their collection though a branded channel on YouTube. Currently, over 200 items can be viewed online, most of them originate from the newsreel collection. The clips have been viewed a stunning millions times, making the YouTube branded channel one of the most visited in The Netherlands.
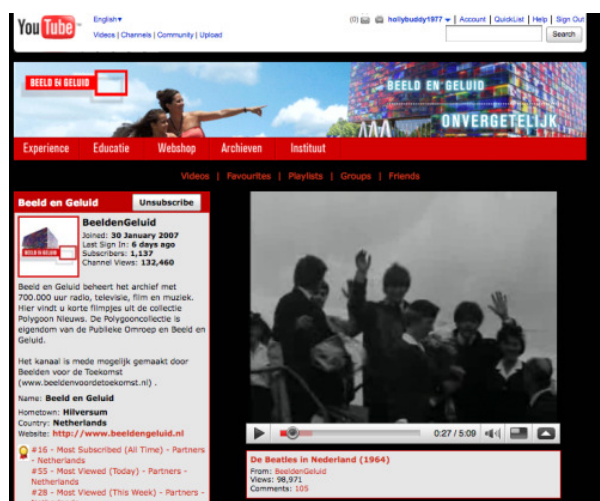

Fig. 9. The most popular clip: the Beatles visiting the Netherlands in 1964 http://www.youtube.com/beeldengeluid

With this collaboration, Sound and Vision reaches a broad audience. Interestingly, several thousand users have registered to the feeds of the Branded Channel and many of them add comments. Sound and Vision also uses the channel to promote events and (more recently) to promote the use of the Sound and Vision Wiki.

Filmotech.nl

"Filmotech.nl" is the working title of a soon to be released video-on-demand platform. Initiated by the Association of Dutch Feature Film Producers (NVS), Filmotech.nl is a collaborative effort of the Dutch film industry, including three partners from Images for the Future: Sound and Vision, the Filmmuseum and Knowledgeland. The platform aims at providing access to the complete Dutch film repertoire and to a substantial selection of European content: feature films, television dramas, shorts, documentaries and animation. It will be unprecedented in size and depth, and enriched with metadata, context and historical background information. Filmotech sets out to be a service in the consumer market

Work in progress

The "creative industry" is an umbrella term for companies that include publishers, television and film producers, distributors, broadcasters, internet providers and so on. Next to the education sector and the general audience, the creative industry is the third target audience for Images for the Future. In 2009 a footage sales platform (www.dutchfootage.com) was launced, aimed at the international professional market, was launched. It is aimed at the international market.

Furthermore, negotiations are ongoing between the Images for the Future consortium and rights holders about the possibility to offer access to the collections in libraries through existing services operated by the Netherlands Public Library Association (VOB), notably its common catalogue Bibliotheek.nl. This would be a major step forward in reaching out to a wider audience. In parallel, the VOB will introduce so-called Web 2.0 functionalities on Bibliotheek.nl, allowing users to tag, review and rate the library's contents.

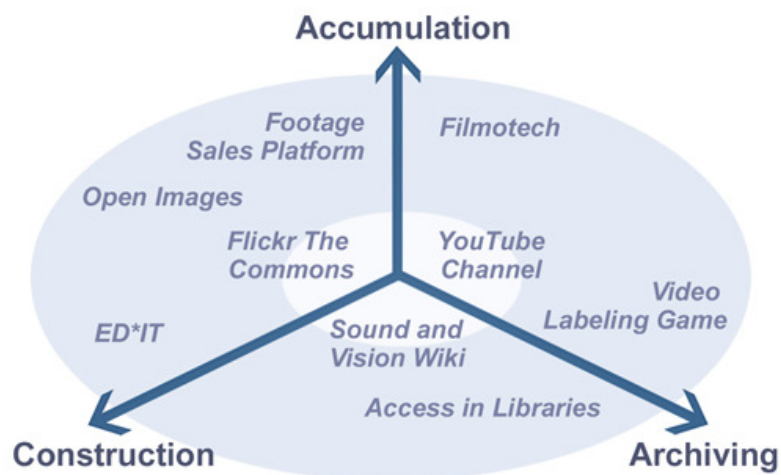4.2 Accumulation, Archiving and Construction model

Fig. 10. Accumulation, Archiving and Construction

If we try to plot the cases on the "Accumulation, Archiving and Construction" map, it becomes clear that Images for the Future already offers various value creations by users.

As mentioned earlier, the three domains can overlap. YouTube and Flickr provide platforms for the storage, annotation and distribution of videos. These services combine professional and non-professional content, and also serve as a platform for community involvement. Although content can be placed on other platforms, most activities take place on the institutionalized platforms. ED*IT combines institutional and user generated content and offers the possibility for users to create new productions (i.e. lesson templates, timelines, presentations and so on). Construction takes place outside of the professional realm, so ED*IT is positioned towards Construction.

Open Images is based on a completely 'open' philosophy. The platform encourages users to remix content and distribute these new productions on whatever channel they prefer. Open Images uses Creative Commons licenses so that people will be obligated to mention the source of the material they use from contributing archives. Several services are placed between the nodes Construction and Archiving. The Sound and Vision Wiki, for example, is used primarily as a platform to gather contextual information on the collection collectively. The initiative that aims at providing access to audiovisual content in libraries is positioned near the Archive node, as its goal is to structurally access heterogeneous sources (books, magazines, videos, CDs), using Web 2.0 to add valuable information to the catalogue.

The Footage Library is the only service in the model that mainly targets professionals. A fee needs to be paid to rights holders to repurpose (remix) archive holdings. Filmotech.nl has the same business proposition, but aims (primarily) at the consumer market. Here Accumulation relates to the way this platform allows users to watch archive content next to more current releases.

The Video Labeling game will result in tags that relate to visual concepts in videos. In a second phase, these will be used to provide users with more fine-grained search capabilities. Therefore, it is placed close to the Archiving node.

The table below is a summary of the value proposition for each of the services, as well as a classification of the nature of participation by users. The relative significance of an activity in a given service is represented by its font size.

Service	Value proposition	Creation
ED*IT	Access to an elementary collection is free, schools pay a fee for added services on the platform (edit facilities, lesson templates)	Construction Accumulation
Open Images	Allowing access to material in near-broadcast quality for reuse in new productions. Facilitate orders of high-quality material. Offer snippets from	Accumulation Construction

	DVDs as teaser.	
Sound and Vision Wiki	Using outside knowledge to secure knowledge on the collection and by doing so, increasing accessibility and reuse.	Construction Archiving
Nationaal Archief on Flickr The Commons	Using outside knowledge to secure knowledge on the collection. Using an existing platform (plus active community) as a proportional tool.	Construction Accumulation Archiving
Video Labeling Game	Using outside knowledge to secure knowledge on the collection in a game-like setting. Use space for advertising.	Archiving Accumulation
YouTube Branded Channel	Using an existing platform (plus active community) as a proportional tool.	Archiving Accumulation Construction
Footage Sales Platform	Offer access to a part of the collection to professionals in the creative industry. Fee based on type of reuse and intended audience.	Accumulation (by professionals)
Filmotech.nl	Offer access to a part of the collection in a platform aimed (at least initially) at the consumer market. Income is generated on a pay-per-view basis.	Accumulation Archiving
Access though libraries	Negotiate a fee with copyright holders concerning the availability of content in libraries. Charge for access through lending fees or subscriptions. Using Web2.0 to enhance search experience.	Archiving Construction

Table 2. Value proposition and Creation

The table shows how value is created in different ways. The current portfolio of services already covers the three corners of user-centered value creation. Interestingly, ED*IT, Footage Sales Platform and Filmotec (that generate direct revenue measured in Euro's) are all tied to Accumulation. Schaefer notes how "this domain […] has considerable potential for confrontations between users and copyright holders." (Schaefer 2008) However, Images for the Future approaches the relation between users not so much as a confrontation between conflicting interests. Copyright holders are by definition an integral part of the business model, as a constituent in the "Partner Network", so new services will also bring benefit to them.

6.   Concluding remarks

A myriad of services can be created as cultural heritage splashes into the digital age. Due to user-demand, growing availability of digital collections, increased connectivity, maturing of data mining, and semantic web technology (to name just a few), thinking about services is evolving in an increasingly rapid pace. There is clear interest for well-documented and tested services that add value to digitized collections that can serve as best practices. As new value propositions will be key in giving organizations the perspective, the confidence, the contacts, the tools and the funding to launch major digitization projects. (Blue 2008)

In this article, the notion of service development by cultural heritage institutions has been linked to value creation by users. Perhaps not surprisingly, business models can be based on a variety of value creations, from subscription-based models (i.e. ED*IT) to completely free services (i.e. Open Images). This exercise proved to be insightful. It provides proof that digitized cultural heritage can be used in endless ways and within various contexts, meeting expectations of a heterogeneous group of users.

Obviously, a lot more research is required to precisely supervise the return-on-investment of digitization efforts, be it "hard numbers" or social benefits. This work is conducted by organizations in the cultural heritage field across the globe.[1] Initial findings are encouraging. In the Netherlands for example, organizations working within Images for the Future have recently witnessed a steep rise in requests by professionals, consumer sales and the utilization of material in education. Also, public-private partnerships are being forged that will certainly increase the impact of the project through (for example) the exploitation over new distribution channels and devices.

As we increasingly live our lives on-line, we need to be sure cultural heritage stays part of it. Images for the Future aims to create a framework for action that will advance thinking in this area to make this a reality.

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[1] The Research Blog (http://research.imagesforthefuture.org/) maintained by the project will continuously report on developments in this area.

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