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Impact of the internet users on the Map Library of Catalonia access collections

Summary

The digital Map Library of Catalonia launched its website on October 31st, 2007. More than two years after that day, the impact both on users and on the map library desk is very important. Searching for maps, relationships with users and print ordering have been deeply transformed by moving to the digital environment. In this paper we will explain which transformations took place in the Map Library of Catalonia.

Introduction

The Map Library of Catalonia started in 1986 as part of the Institut Cartogràfic de Catalunya (ICC), the mapping agency of the Autonomous Government of Catalonia (Spain). Although being a very new institution, the general collections cover 40.000 single maps from the 16th to the 21st centuries from all over the world, and over one thousand maps series with more than 240.000 single map sheets in medium scales from some 200 countries and regions, with scales varying from 1: 1 000 000 to 1: 50 000 or even larger. The map library houses also a photo library with vertical aerial photographs of Catalonia, a library specialized in geography and cartography subjects with a good collection of atlases and collections of globes and technical instruments.

Figure 1: Map Library facilities at the ICC headquarters: physical reading room.

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Number of items in 2009

Maps (number of sheets):	303.213
Books (including atlases):	44.285
Aerial photographs:	351.250
Other photographs:	44.606

The project of the digital map library started in 2002 when the catalogue database was used to build an online application to search and display maps. At that moment, less than 200 items were scanned, using older scanners that provided fairly good quality, and the addition of a large HP Designjet scanner provided new tools to digitize old maps. That first web version of the online catalogue was not updated except for the addition of new imagery, which reached the 1.000 image mark by the end of 2005. By the end of its life span the catalogue was used daily both by web visitors as well as by the library staff, and proved to be the way to go for the years to come. No similar catalogue did exist yet and it was ahead of its time at least in the Spanish panorama of online collections.

In 2006 a new project was launched: the digitization project of the whole archives of the map library. For that purpose, a large Metis DRS2A0 scanner was bought, with funding help from the development agency of the local government, on May 2007, and two new staff members were transferred to the map library: a project manager and a scanner operator. Later two more scanners were added to the project, a Creo IQsmart3 for photographs and A3 materials and an HP8300 for A4 paper materials, while maintaining fully operational the large HP Designjet 4500 roll scanner.

At that point an intensive work began in search of a software platform to build the online collection, which lead to the purchase of the CONTENTdm software platform from Dimema (now backed up by OCLC). The 31st October 2007 the web site was launched at http://cartotecadigital.icc.cat with 5.516 items organized in 12 collections, with materials covering the whole world.

Figure 2: Homepage of the Digital Map Library: virtual reading room.

The digital map library introduced deep changes in the day-to-day work carried out at the map library facilities.

The evolution 2008-2009

Technical evolution

Later on, in February 2008, after some in-house development, a new feature was added to the software platform: free high resolution image downloading. To take advantage of that feature, users had to register at the web site with at least a valid email address, just for accounting purposes. That registration allows the map library staff to conduct data analysis and gather statistics about the usage of the site and the images. This means that any registered user has the chance to immediately download from the map library any item in JPG format at 300 ppi, for free.

That possibility has shaped the way users interact with cartographic heritage in Catalonia, to the point that quite a few post graduate students in geographic careers from all over Europe choose Catalonia for their projects, because of the amount of freely available information online, both actual and historical.

Two years after, the digital map library contains over 28.000 images organized in 21 collections, both for maps and photographs. And still that huge amount of files barely represents a 10% of the total physical items kept in the map library archives, and only a small portion of the total digitized items: 52.380 items digitized in 2008 and 11.744 items digitized during 2009.

Included in these production figures are also the maps digitized for other government agencies and Catalan archives, and the modern maps used for diverse international projects which can't be uploaded to the internet due to copyright restrictions.

User evolution

Above all we must clarify that the Map Library of Catalunya is not a very old institution and we don't have great cartographic treasures like manuscript maps. Nor have the origin in the military or as a part of a university. We are a specialized library of a cartography production center and the bulk of our collection are serial maps of the 20th century, most of which cannot be uploaded to the internet because they are protected by copyrights and because, by nature, we should be geo-referencing them -a process we haven't yet begun.

Since the launch of the ICC website in 1998, the number of visits to the Library section steadily grew by 20,000 per year until 2001, and then jumped to 70,000 visits per year during the 2005-2007 period after setting up the online catalogue with map images for the Map Library. On 2009, two years after the opening of the Digital Map Library, the number has raised to 177,640 visits.

The opening of the digital map library has had a huge impact on visualization. The shift from browsing the descriptive record to viewing the map image has dramatically increased the number of users. Bear in mind also that the website of the ICC has long been a pioneer and a reference in search and download of cartography of Catalunya. That page was already well known to a wide audience that upon opening the digital map library had the opportunity to discover old maps. We must stress this point of dissemination of cartographic heritage between a public that would not normally have sought such information.

In terms of exposition, the digital library has been a great success, keeping in mind that old maps cannot be considered mainstream.

Web comparison			
	2008	**2009**	**Increase %**
Visits	92.387	108.349	17,28
Users	76.601	87.473	14,19
Page views	1.227.459	2.229.189	81,61
Time on site	05:25	05:44	5,85
Pages/visit	13,29	20,57	54,78
Data taken from Google Analytics reports			

Table 1: Google Analytics statistics for http://cartotecadigital.icc.cat.

With only 17% increase in the number of visits conducted by a 14% increase on the number of users, the page views have skyrocketed a remarkable 81% during last year. That figure can be explained by the total number of items present in the online collections, which went from 8.000+ elements in 2008 to 27.000+ elements in 2009.

The most relevant figure of the table above is the time on site per visit, which has also increased. Not frequently internet users stay for so long on a single web site and visit some 20 pages during their stay. This can be explained both by the "discovery" factor, meaning that users jump from one map to another and browse a lot of materials related to their first search, as well as by the "research" factor, due to the large amount of information present at the website accompanying the digital items and also to the high quality of the images which allows detailed inspection through zooming and panning of the objects.
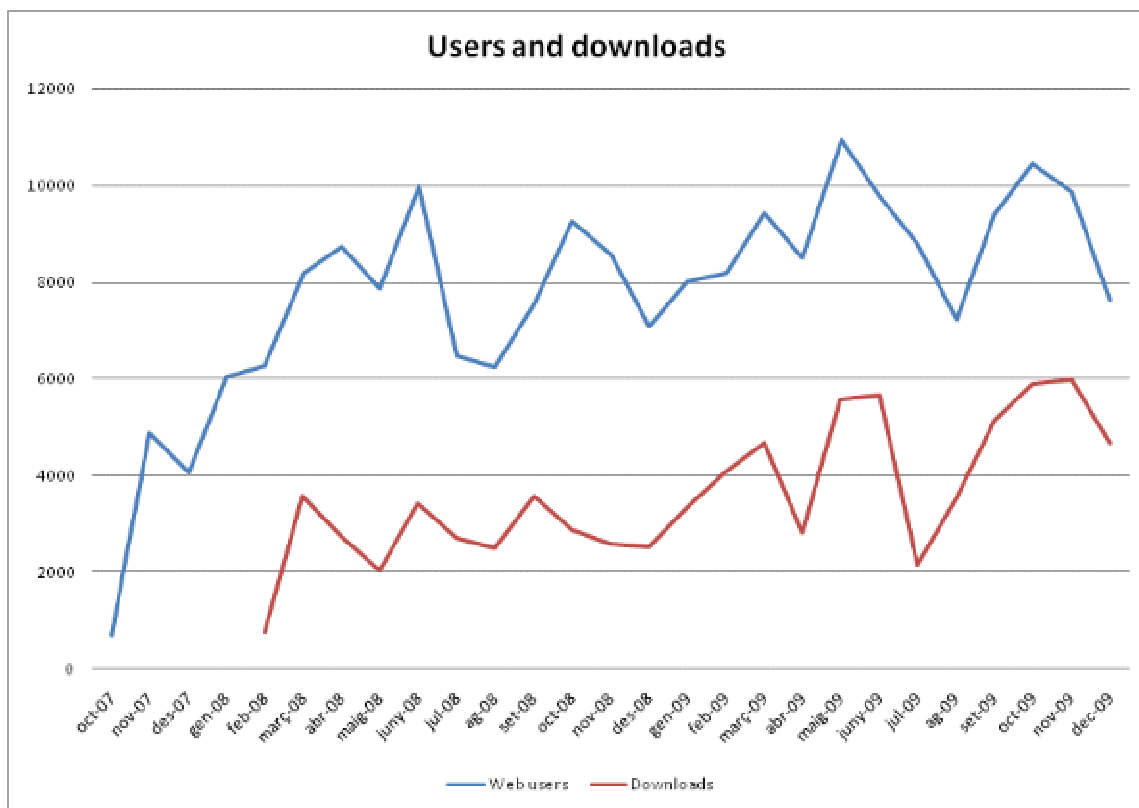

Figure 3: users at web site and files downloaded.

Although the web site was launched in October 2007, free downloads didn't start until February 2008. The number of downloaded files has almost doubled (29,320 vs. 53,525) from 2008 to 2009, for a grand total of 82,845 files downloaded over a period of 22 months.

These files are JPG format at 300 ppi for maps, and JPG 300 ppi at 10x15 cm. approx. for photographs, close to the preservation quality of the files stored on the Map Library facilities. No digital watermarking has been added to the files since all of them are stamped with the dry seal of the map library.

Of the total users visiting the website, 25% of them are returning users and only 35% came redirected from search engines.

The peaks on the graph above are related to the opening of new collections on the website, as is the slowing down on the end of 2009 due to the fact that no new collections have been added for the last 4 months. A steady pace when publishing on the web is guaranteed to keep visitors returning over and over, which in turn helps spread the word and attract new users. And the increase in visits and items tends to sum up in the global accountability of the website at search engines, and at the end sending over more visitors.

While this is true for new collections, adding single items to existing collections does not have such a noticeable effect possibly due to the fact that new items get buried deeply in the existing collection structure. At this point we are considering adding an RSS option to the site to facilitate the discovery of new materials uploaded to the site, be that collections or items.

Especially interesting are the SEO techniques that can be applied to such web sites holding digital collections, because with a small effort really huge benefits can be achieved in terms of visibility.
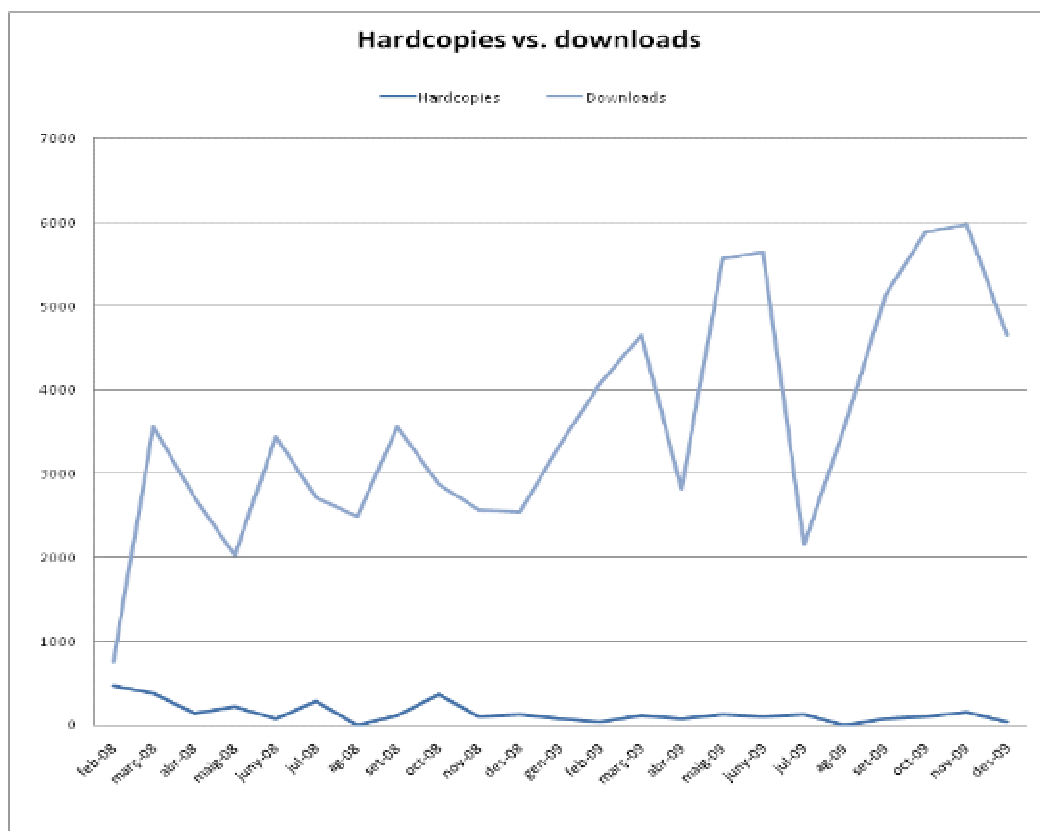

Figure 4: downloaded files at the web site and traditional copies served to readers.

Hardcopies being any kind of printed materials served to real world users, both for free (photo-copies, files on user's pendrives) and paid (plots, printouts, cd's), have obviously been easily out-numbered by web downloads. But there is still a remaining number of users that need not only a hardcopy of the materials, but also a proof that those materials were produced in time and form, and thus come to the map library seeking the guarantee of authenticity the map library can provide for being a part of the local government.

The increased exposure the map library has gained by setting up a web site has produced in turn a growth in the number of requests received over traditional channels. The map library staff has to deal now with an increasing number of emails and phone calls, mainly asking for information, which requires some action on our part: answering questions, taking orders for materials, serving digital copies on CD or DVD, uploading files to an FTP account, honoring reproduction requests and so on.
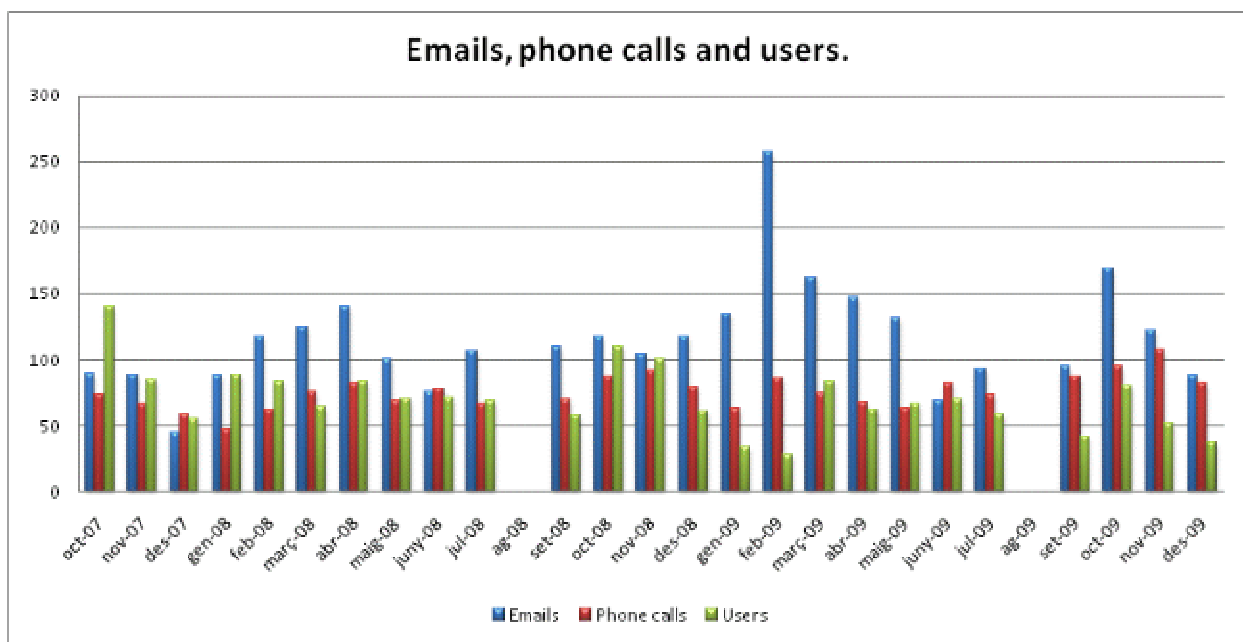

Figure 5: requests and visits to the map library desk.

Up to 80% of the interaction is coming from well informed users that have already been at the website and require more precise information. The remaining 20% of user attention is diverted usually to the web site, which means that at some point will come back, better informed. And then there is about a 25% of the overall incoming requests that end up by paying a visit in person to the map library to perform further research or review materials that are not online. The conversion factor applied to web visitors drops to a mere 0,56%. We are a specialized library with 4 external users and 1,5 internal user per day on average.

As more and more materials are being digitized and uploaded to the website, real world visits will come from the research group, while the less informed users will simply find the answers online. What remains to be seen is whether the users will keep coming to the map library facilities, since the trend shows a small decrease during last year.

One characteristic linked to the display of the collection is its internationalization. We have users from all over the world. But we are also locally much better known. We already said we do not have very exclusive maps, but quite a few that can be found in other collections. Since the launch of the Digital Map Library many institutions, companies and citizens address us asking for mate-

rials for their exhibitions and publications, because they can download the images from the web site and later ask for the administrative permission to reproduce them. Currently almost all the exhibitions held in Barcelona that display maps have one or more pieces from our library, something unusual a few years ago. Usage permits raised from 175 in 2008 to 1,275 in 2009, and there is a small number of works being used without the permission of the Map Library.

A separate case are those websites that list the contents of the Digital Map Library via OAI-PMH (Open Archive Initiative Protocol for Metadata Harvesting http://www.openarchives.org/) also called aggregators. Currently our data can be accessed from the unified catalog of Catalan universities, from the search engines of the Catalan government, from DIGMAP and many other sources including national portals like in Australia. However, the duplication of sites can lead to some confusion to users or, worse, to a collapse as in the case of Europeana. What type of portals will be used in the future: thematic, unified, regional? We should try to address this subject closely.

We should also mention the participation of users in cataloging of documents. Many people contacted the Map Library to clarify or correct or add details to records and documents we have published online. We always double-check the information provided, and if correct we modify the records and answer back with a thank you message. This is another aspect of user relation we should follow closely: crowdsourcing, that is, users reaching where staffers or library resources cannot.

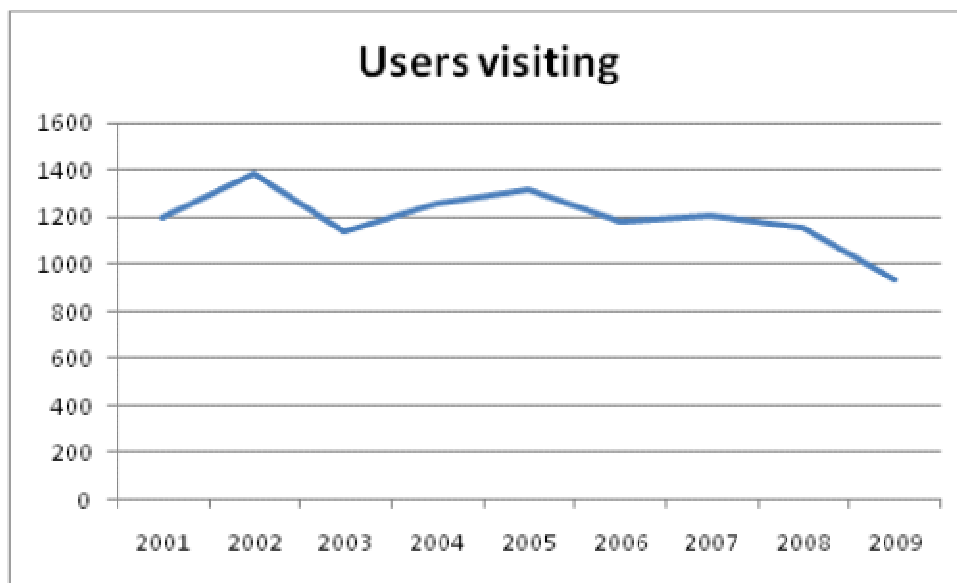And yet we have experienced a decline in real world users:

Figure 6: visits to the map library reading room.

We have almost banished the photocopies and we only provide digital copies (printouts), or rather let the users photograph the documents (copyright permitting), and we do scan on demand per user request. This drastic decrease in the usage of paper has been a determining factor for awarding the environmental ISO 14001 to the ICC.

All in all this has significantly modified the tasks of the Map Library staff regarding customer service.

Staff evolution

The staff devoted exclusively to the digitization process is comprised of one full-time scanner operator for the large scanner that also serves the smaller scanners, and a part-time scanner operator for the roll scanner used to digitize newer and not fragile originals.

These two employees are helped part time by the staff member in charge of feeding materials to the scanners, which is a tough job that requires a lot of time. Each new work load for every scanner is always accompanied by a complete delivery notice built around the list of materials, with the necessary administrative metadata required to name and store the digital files.

And still another member of the staff works part time in the quality control of the scanner production, addressing naming issues, correcting metadata entries, organizing the storage, generating jpg images and contributing in general to the workflow by avoiding production downtimes.

So out of 10 people working at the map library, one works full time in digitization and then three more spend as much as 80% of their shift providing for the workflow. Another member of the staff, the cataloguer, doubles also as the coordinator for the online collections, uploading new materials and fixing whatever is broken. At peak times, up to 7 out of the 10 members of the map library staff can be working at the same time in different tasks related to the "going digital" process.

The process of acquisition, inventory, cataloging, digitization and publishing is undertaken by the map library with its own resources, but the process of deploying the software and developing new features is supervised by the IT staff of the ICC, the agency the map library belongs to. And the storage behind the digital map library, from backups to online disk availability is also provided by the staff at the data processing facilities of the ICC. Should the map library have to take over all these operations, the staff would have to be increased by at least 3 people and a lot more economic resources.

For some specific projects, cataloging and digitization have been outsourced to third parties, working under the strict surveillance of the map library staff and following the procedures and guidelines established by the map library.

A fact of the digitization process that is least known is that digitizing a collection of objects doubles the number of items to be curated. And that is a huge effort.

New users with new profiles, new goals of the digital library

The opening of the Digital Map Library has had two basic impacts on the Map Library:
  • External: exposition and increased internationalization of the Map Library.
  • Internal: changes in the structure and functioning of the work of the Map Library.

Users have changed and so have changed the work patterns of staff of the Map Library, but we should not ignore that the analog Map Library still exists with its own tasks and workload. Combining them both is one of the challenges we have not settled yet.

Digitization of maps, as has happened with every kind of image, is allowing a very wide dissemination of cartographic heritage, not excluded from dangers such as digital preservation and so. Now we have to move on and start thinking about preserving "born digital" mapping: there's already a growing amount of historical cartography and we still have not made a serious approach for the future.

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