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# Mobile Services in the Rector Gabriel Ferraté Library - Technical University of Catalonia

## Introduction

The Rector Gabriel Ferraté Library (BRGF) (<http://biblioteca.upc.edu/bib160>, accessed 20 November 2009) is located in the North Campus of the Technical University of Catalonia (UPC) ([www.upc.edu](http://www.upc.edu), accessed 20 November 2009), in Barcelona (Spain). Integrated in the UPC library system (<http://biblioteca.upc.edu/>, accessed 20 November 2009), the BRGF is the biggest library of the university, representing approximately 25% of the total volume of this system. It provides direct services to about 8000 students and academic staff from the Barcelona School of Informatics (FIB) ([www.fib.upc.edu/fib](http://www.fib.upc.edu/fib), accessed 20 November 2009), the Telecommunication Engineering School of Barcelona (ETSETB) ([www.etsetb.upc.edu](http://www.etsetb.upc.edu), accessed 20 November 2009), the Civil Engineering School of Barcelona (ETSECCPB) ([www.camins.upc.edu](http://www.camins.upc.edu), accessed 20 November 2009), twenty-two (22) research departments and their administrative and services staff, as well as to a large part of the general services of the University (Human Resources Service, International Relations Service, Economy Service, etc.).

The technology-related disciplines of the Campus imply a highly technological scenario in which our users not only have a great command of the Information and Communication Technology (ICT) tools, but they continuously utilize these tools in both their academic and personal lives. Here, the latest proposals and innovations in this sector quickly find both market and consumers. In this environment, the BRGF is putting effort into the development of new projects and into the improvement of existing services, with the help of new technologies and available digital tools. The Library is committed to working on new services and innovative projects to meet the needs of its users and, at the same time, to make technology its hallmark.

Mobile services are entirely integrated in the life of our students. Mobile technologies, especially cell phones are embedded within their usual personal apparel and constitute the preferred electronic device of this mobile-generation (m-generation). In fact, in Spain there are more cell phone lines than inhabitants: 52,990,094 lines on March 2009, according to the data published by the Spanish Telecommunication Market Committee, ([www.cmt.es/es/publicaciones/anexos/NM\\_marzo2009.pdf](http://www.cmt.es/es/publicaciones/anexos/NM_marzo2009.pdf), accessed 19 November 2009), *versus* 46,661,950 inhabitants, according to the data published by the National Statistics Institute on January 2009, ([www.ine.es/prensa/np551.pdf](http://www.ine.es/prensa/np551.pdf), accessed 19 November 2009).

Data published by comScore show that regular accesses to Websites via mobile devices reached 26% in Spain in 2006

([www.comscore.com/Press\\_Events/Press\\_Releases/2006/10/European\\_Mobile\\_Internet\\_Access/%2](http://www.comscore.com/Press_Events/Press_Releases/2006/10/European_Mobile_Internet_Access/%2)

[8language%29/eng-US](#), accessed 19 November 2009). The BRGF is convinced that this figure rises rapidly among our students and faculty.

This article offers:

- a list of the mobile services developed at the BRGF;
- a comprehensive description of each of these services;
- the main reasons and motives that lead the BRGF to opt for the implementation of the described features and the way they have been developed; and
- reflections about the current technological context surrounding academic libraries.

Hopefully, sharing BRGF's experiences will increase the knowledge in other academic libraries about new possibilities of setting up mobile services in their respective environments, and encourage librarians to approach their users in a way that allows them to more effectively meet the needs of their students and academic staff.

Mobile services are considered here as more than the access to the information and the library from a mobile device - - but as also encompassing those services that facilitate access to information resources from anywhere or any device, and, moreover, those that exploit the capabilities of these devices to facilitate access to information to the users. Academic librarians can leverage this usage of mobile devices to effectively deliver products and services to students and faculty. At the BRGF we think that being in the same place where the users are and delivering mobile services will be, in the near future, more a need than an option and, therefore, one of our key commitments concerning technology is the development of those services. Moreover, it has been decided not to wait for the field being completely clear but to run the risk of offering a set of mobile applications even if it was not entirely the most secure moment for an immediate success. In fact, the Library feels that in an informational context where with so many competitors the risk would be not to run the risk.

## Mobile Services @ BRGF

Taking into account the aims, facts and suppositions about mobile services described above, since 2004 the BRGF has transformed its organization by incorporating a computer engineer in its Technological Unit, developing a stable working group which specializes in technology, and taking advantage of the work of student workers from the FIB and the ETSETB. Additionally, we have implemented a number of mobile services to facilitate, improve, and enhance the access and use of our information resources and services. This includes the implementation of a mobile library Website, a mobile OPAC, access to services such as checking out laptops and electronic book readers, SMS notifications from the Library, and QR codes.

### *Mobile Website*

Available at: <http://biblioteca.upc.edu/bib160> (accessed 20 November 2009), through a mobile device or available at: <http://flas.upc.edu/brgf> (accessed 20 November 2009), through a computer.

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Characterizing a Website as *mobile* means that it can be accessed and used from portable devices which are able to connect to the Internet and to display contents through a browser. A mobile Web, in contraposition with a traditional one, is characterized by:

- content simplification, tending to show only essential content due to the small screens of mobile devices;
- austere graphic design, avoiding superfluous pictures and graphics; and
- boost of the real-time publication of content - - the user gets data about the availability of resources which can help him/her to make decisions regarding their information needs (current availability of documents and/or facilities, use of computers, etc.).

As it has been previously noted, due to its omnipresence and possibilities, cell phones are often at the very center of our concerns when deciding new technological services, and a mobile Website is in fact the latest development of BRGF's mobile services for our users - - that is a cell phone friendly, shortened version of the Library's Website designed for mid-range / high end mobile devices. The BRGF made this decision in order to offer a Website with a more attractive design than those allowed by low end devices, which is usually a plain text site with hyperlinks.

Like a normal computer, to use the mobile Web functionalities the device must have a browser and an Internet connection through WiFi or data rate. Our adaptation has been developed entirely by the technical staff of the Library using HTML, Javascript and PHP as development languages and MySQL as the database manager. Initially the BRGF considered the possibility of using an automatic converter -program or application,



generally running on a Website that automatically generates a mobile friendly version of a Webpage from its URL and adapts the library Website to mobile devices. An example of an automatic converter is available at [www.google.com/gwt/n](http://www.google.com/gwt/n) (accessed 19 November 2009). However, after several tests with different converters this option was rejected because, due to the structure and current design of the Library's Website, results were not sufficiently satisfactory. Additionally, given the size of the current Website and the uncertainty of the success of the project between the users, it was decided not to completely develop all the content of the Website for its mobile version, but only a selection according to the following criteria:

- relevance of the contents to be shown;
- usefulness for a *mobile user*; and

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- ease of migration of content.

The second criterion was in fact the main basis for our decision to start up our mobile Website. Basically, we considered the usefulness for mobile users working on our campus of accessing the BRGF services and resources. It would allow them to decide if they wanted/needed to come to the Library building or simply ask for our services on line or through the phone.

The functionalities currently available through our mobile Web follow, presented in the same order as they are displayed on the mobile devices screen - -

- **What's new**

In this section, users can learn about the latest developments in the libraries, campus, schools or UPC. This is an adaptation of the news on the Library homepage; one of the most frequently visited places in our *classic* Website. Because of this, the BRGF considered it indispensable to offer this information through as many channels as possible.

- **General information**

Here, patrons can find general information on the BRGF, including address, operating hours, maps and telephone numbers of the Library's main services.

- **Directory**

The Directory includes a list of names and information about the staff working in the BRGF - - name, profile, e-mail address and phone number. From this list users can call directly to any phone number or incorporate as a contact in their phone lists by simply clicking on the appropriate link through a WTAI interface (Wireless Telephony Application Interface).

- **Mobile OPAC**

Users can link to the mobile version of the catalog of the UPC libraries. The mobile OPAC is explained in detail later in this article.

- **Laptops**

The Library offers a laptop loan service which consists of 23 laptops that users can borrow for a maximum period of 3 hours, extendable in the case of no pending reservations. This is not an exclusive service of the BRGF but a service offered in all the UPC libraries. To get the laptops, users have to go to the loan desk of their library and identify themselves as a member of the University.

This is one of the most successful services at the BRGF, and the Library is continuously looking for new ways to expand it. In the section of the mobile Website for this service, users can view the availability of laptops in the Library and the time of next returns. When the user needs a computer, s/he can determine laptop availability know through a cell phone.

Furthermore, if there are no free laptops at that moment, the user can call the Library through

the link at the bottom of the page and join the waiting list so that, when a laptop is available, s/he will be notified through an SMS.

- **Group study rooms**

The Library offers rooms for group study that can be reserved in advance. A total of thirteen rooms on two floors are available. This is a very successful service and a total of 11,188 reservations were made throughout 2009.

Users must make a reservation through the BRGF main Website and then ask for access to the room at the counter of the corresponding floor showing their university ID card. As with the laptop check out, users can check availability through the mobile Website and, if desired, reserve a room according to their needs. The implementation for reservation of these facilities is not adapted to the mobile Web at the moment because the BRGF intends to develop a more powerful application for use in all UPC libraries.

- **u-win**

While there is only one postgraduate program for videogames at the UPC ([www.talent.upc.edu/professionals/presentacio/codi/20901200/disseny/creacio/videojocs](http://www.talent.upc.edu/professionals/presentacio/codi/20901200/disseny/creacio/videojocs), accessed 20 November 2009), there are some other initiatives and disciplines that utilize gaming within their curriculum and produce videogames as part of the work developed by the students. u-win (use lower-case u), (<http://bibliotecnica.upc.edu/uwin>, accessed 20 November 2009) intends to preserve and spread the production of these games. Even if u-win offers access to free videogames not made in the UPC but recommended by the Library, our main interest are the games produced by the UPC students.

Additionally, u-win is a portal that aims to broaden our range of services to include gaming. The BRGF personnel believe in the educational potentiality of videogames and consider them a powerful tool both for the professors and the students. This opens the door to a more social use of the library which has room for recreation. - u-win also provides a physical space to play, located on floor 0 of the BRGF.



This is the first time that this kind of service is offered in a European academic library and the BRGF has developed a mobile friendly Website for the service, available at:

<http://flas.upc.edu/uwin/m/> (accessed 20 November 2009), featuring the same functionalities available on the main site - - information about the service, games, forums, related resources and contact information. In the mobile version of u-win users will find the games that are mobile adapted. The u-win m-version doesn't offer access to games non-adapted to mobile devices because the team involved in the project considered that trying to play those games on a mobile device would probably frustrate the users. Although the gamers would have to deal with some limitations produced generally by the current mobile navigators, in general they can use this m-u-win the same way they use the main Website.

- **Mobile information resources**

This is a compilation of free and subscribed services that have been adapted for mobile devices. Among the services users can find are IEEE Xplore, PubMed and Refworks databases, some subscribed newspapers and other resources.

Current offerings include links to a limited number of our subscribed information resources from our digital library; at the present time, most of these resources are not adapted for mobile devices. It is predicted that in a few months this situation is going to change perceptibly. EBSCO has announced the imminent adaptation of the EBSCOhost platform which means that the Library will be able to increase this offer very soon (<http://www.ebscohost.com/uploads/thisTopic-dbTopic-1350.pdf>, accessed 7 December 2009).

- **Survey feature**

Periodically, surveys are published on our homepage in order to better ascertain our users' opinions regarding library issues. With the inclusion of the "survey" feature in the mobile Web, the BRGF can obtain more opinions from its users, which positions us to increase the quality and reliability of the information we manage. Formally, the poll includes a short question and a series of multiple choice answers from which the user can select one or more depending on what s/he thinks about the question at issue. Additionally, users have access to a Webpage where they can track the results of the current poll and the previous one. Through the corresponding section of our mobile Website, users can participate in those polls and track its results, in the same way they can through their computer.

- **Ask a librarian**

Any user can complete a form and send questions, opinions and suggestions to the BRGF via our mobile Website. In the case of suggestions, if an answer is desired, the user can choose to have the response sent via email message or an SMS from the Library.

Due to already planned developments in the Catalonian university libraries context, it is expected that this will be the first step towards a collaborative mobile-ized reference service between the university libraries in Catalonia. An example of this vision in action is My Info Quest, available at: [www.myinfoquest.com](http://www.myinfoquest.com) (accessed 19 November 2009).

In addition, to improve our local service, a chat reference service through an avatar is planned for 2010; this avatar has already been used in our experimentation with 2.0 tools. The goal is to enlarge as much as possible the communication channels with our users in order to allow them to choose the method they are more comfortable with when they want to communicate with the Library. Beyond that, the use of an avatar will facilitate a more interactive communication between the BRGF and the students in an appealing environment and through tools they use in other contexts of their life.

- **Help**

*Help* consists of brief and simple explanations about the mobile Website and the sections and information the user can find there.

In accordance with the nature of the current mobile sites, the BRGF mobile Web is at this moment simple and mostly informative, compared to the main Website, but the Library is already trying to deliver as many m-services as possible. The feedback from our users is good. Starting on 8 June 2009, the mobile Website has received 3,789 hits until 31 October 2009; work has already begun in order to improve this mobile version with new services and new sections and functionalities.

#### *Mobile OPAC*

Available at: <http://flas.upc.edu/cataleg> (accessed 20 November 2009)

Along with the mobile Website, the BRGF decided to implement a self-developed version of the UPC libraries OPAC for mobile devices. The aim was to allow the users to search the catalog from their cell phone or PDA as they would do on any computer, facilitating access to all available information on it. The UPC library catalog works through the Millennium system from Innovative Company. This software, like many others, has a Web portal (OPAC) from which the users can search, and it also optionally includes a module that allows a mobile version of the site. Unfortunately, this module was deemed too expensive for our budget, and we chose to implement an in-house application for the mobile version of the UPC catalog. This feature is also designed for mid-range / high end mobile devices. It includes two parts for implementation and maintenance:

- **Data extraction:** the whole content of the catalog is extracted daily and downloaded into a MySQL database. This is done using the Millennium Scheduler module. This module programs automatic extractions of the bibliographic records and deposit them in an FTP server. The extractions, in a XML format, are later processed by a program created by the UPC's Library Service ICT staff in order to extract the data from the XML and store them in a MySQL database with a structure defined by us to facilitate the search and recovery of the items. This program is written in PHP.
  - **Web interface:** developed using the same programming languages and technologies as the mobile Web and basically working against the MySQL database mentioned in the previous
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section. Furthermore, it performs real-time queries to the Millennium OPAC to obtain the status of each copy of the bibliographic records. This function is critically important because the daily extraction doesn't provide the information in real-time.

The combination of both elements - - data extraction and Web interface, allowed us to create, without the specialized Millennium module, the mobile version of the OPAC of the libraries of the UPC. Three main sections are featured:

- **Search**

This is the main section of the mobile catalog and from here users can launch their searches.

There are two search modes - - simple search, a text field where the user can write their search terms, and advanced search, where the user can specify a field to search (title, author, etc.) and restrict results to a specific library. In the results, the main fields of each item are displayed (title, author and publisher), as is the availability of copies in each location/UPC library. Optionally, access to the full record of each output showing all the information of both the document and each copy is possible through the corresponding icon. This is useful to know the exact location of each copy of the document.

- **Libraries**

As in the BRGF mobile Website, this section displays detailed information on any of the UPC libraries, including address, opening hours and calendar, location map and contact phone numbers.

- **Help**

Here, *Help* consists of a brief operation manual detailing how to use the mobile OPAC and documenting the meaning of icons and colors the user will encounter when browsing through their searches.



Although our application is a less powerful version than the one obtained through the Millennium module, it is indeed a very useful feature. Between June 8 and October 31, 2009 the mobile OPAC received 2,038 hits; we consider this to be a figure interesting enough to make us work to provide more services linked to the catalog, including, for example, a document reservation capability.

#### *Electronic book readers lending service*

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Available at: <http://biblioteca.upc.es/bib160/serveis/ebooks/> (accessed 20 November 2009)

While electronic publishing of books is still a relatively new phenomenon, it offers a world of opportunities for libraries. As Joaquin Rodríguez continuously points out in his blog (<http://weblogs.madrimasd.org/futurosdelibro/>, accessed 19 November 2009), the pre-digital productive model for books is extinguishing and all the actors need to “think digitally” about the processes involved. At the UPC libraries, delivering e-books through our Website was a service launched some years ago, however, in a coming context of threads and opportunities generated by a predicted massive eruption of electronic books; we felt that we had to be ahead of the game and to offer new examples and realities within the new digital book environment.

For us it was clear that a rise in the e-book readers market was going to happen and in the autumn of 2008 the BRGF was the first Spanish library to promote a loan service of e-book readers for our users. To achieve our goal, an agreement with the Computer Services of the FIB was established. Computer Services of the FIB were searching for a solution to eliminate paper in the dissertations written for their new Master in Information Technologies, suggesting the necessity of a mobile reading system for the members of evaluation panels. Out of this common interest emerged the decision to develop a joint project for the evaluation of e-book readers already existing in the market and the subsequent design of a lending service for these readers. Finally 5 Irex Iliad readers were purchased.

Concerning the contents, interest was initially directed at distributing a selection of the books published by Edicions UPC (our university press company) and an agreement was established with them to do so. Later 30 technical books published by O'Reilly and a large selection of novels provided for free by the distributor of the e-book reader in Spain, were incorporated into the collection.

The process of lending an electronic book is relatively simple - - the user requests the book at the circulation desk of the Library, library staff performs the loan of the reader through the Millennium system - - the same way than with a printed book, and delivers to the user an e-book reader with a charged battery and a memory card with all the titles of our collections for e-book readers, along with a small guide / operating manual of the device.

Because content can easily be added to the SD card is probably that our users take advantage of the devices they have checked out from the library to read and work with their own documents and books, but in any case the BRGF is not currently offering the possibility to borrow a reader without the corresponding card with content inside.

From a qualitative point of view, the launch of BRGF's e-book readers lending service has meant an increase of the Library's visibility in its technological semblance. Both academic staff and students have shown great interest in electronic e-book readers, and some of them have used the devices to both read the provided e-book collections and also to explore its use and technical performance.

From a more quantitative perspective it is emphasized that during the first year of service the readers have already been loaned 105 times, which means that they have been borrowed more than the 90% of the possible time. The fact that the e-readers are constantly out of the library signifies that each of them has an average of 3 reservations, the maximum number of reservations permitted. Underpinned by the factor *novelty*, the loan index of e-books is much higher than any other segment or collection of printed books available in the BRGF.

The focus has now shifted to expanding the models of the readers. One Papyre and one Kindle, and the contents for them, have been purchased. Apart from that, the Library is working in two areas - - on the adjustment of the formats of the Edicions UPC publications (which are being transformed to XML) and on setting up a new collection of audio books.

Due to the good reception of the lending service of e-book readers at the BRGF, this service is now being extended to other UPC libraries.

### *SMS notifications*

As has been previously noted, cell phones are an extremely powerful channel to reach academic library users, and text messaging is a leading tool when cell phone features are discussed - - this in spite of the fact that recent surveys show that, after years of continuous rise, the number of sent SMS is now falling in Spain as a cell phone service

([http://www.fundacionorange.es/areas/25\\_publicaciones/e2009.pdf](http://www.fundacionorange.es/areas/25_publicaciones/e2009.pdf), accessed 19 November 2009

and [http://www.cmt.es/es/publicaciones/anexos/Informe\\_Anuar\\_2008\\_OK.pdf](http://www.cmt.es/es/publicaciones/anexos/Informe_Anuar_2008_OK.pdf), accessed 19

November 2009. The number of users of SMS continues to rise - - in 2008, 50.5% of Spaniards

declared that they used at least once a week text messaging on their cell phones versus the 48.3% in

the previous year. In any case, SMS continue to be the most used function on the cell phones in

Spain, just after traditional voice conversations, and is, for example, more used than the United

States ([http://www.fundacionorange.es/areas/25\\_publicaciones/e2009.pdf](http://www.fundacionorange.es/areas/25_publicaciones/e2009.pdf), accessed 19 November

2009). It might seem paradoxical that the number of SMS is falling in Spain while the number of users

is rising. According to the Orange Foundation report, this can be explained because of the following -

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- the economic recession generates a contraction of the consumption in Spain, as in the rest of the world;
- the phone calls are increasingly cheaper, which diverts the consume from SMS to voice calls; and
- the eruption of Internet services as Facebook, Tuenti, very popular in Spain, or Twitter that represent an important threat for SMS, especially among the young.

At the BRGF the possibilities of using SMS were considered and it was decided to complement our services with text messaging when requested. There are several services that utilize SMS notification, including laptop loan service - -the user receives a message alert when a laptop s/he

requested is available, reference service information, and any kind of message which the Library considers that can be useful and the user allows us to send an SMS to their cell phone. From 12 December 2007 until 31 October 2009 1,800 messages were sent to our users and a large amount of congratulations were received back. At this moment other possibilities for this service such as alerts connected to interlibrary loan requests or to the UPC libraries catalog, are under consideration.

### *QR codes*

Available at: <http://biblioteca.upc.es/bib160/serveis/qr/> (accessed 20 November 2009)

A QR code is a system to store information within a dot matrix or two-dimensional bar code. A QR code acts similarly as a classic bar code but enables the storage of considerably more information, both textual and numerical, through a codification within a comparatively small image. The QR acronym comes from Quick Response since its creators, the Japanese corporation Denso-Wave, sought a high speed reading for the code. A definition of a QR code is available at [http://en.wikipedia.org/wiki/QR\\_Code](http://en.wikipedia.org/wiki/QR_Code) (accessed 7 December 2009).

Initially, QR codes were created to manage stocks in a large variety of industries but recently, especially in Japan, their use has been diversified and the codes are more focused on the consumer thanks to the spread of software that allows reading the codes on a cell phone. The main objective for these new uses is comfort since the use of QR codes might avoid manual introduction of data in the user's cell phone. To read a QR code one needs only a cell phone equipped with a camera and a tiny free application which can be downloaded from multiple Websites. At the BRGF QR codes are used in the following ways - -

- posters to promote new web services. Included within the QR code are the name of the service and the URL to access it. In this way the user is not compelled to remember the web address or to write it on a piece of paper that, in most cases, will be lost; and
- registration forms to use the computer facilities in the Library. The code contains the username and the password needed to use the equipment in the computer classroom at the BRGF. The main aim here is to allow the user keep the data in their cell phone thus replacing pen and paper, and saving the library from printing this information again and again as the user repeatedly loses the piece of paper where s/he had written their username and password.



In both cases library staff tries to facilitate the storage of useful information in the cell phones, avoiding pen and paper. This is time saving for the library, and saves both paper and ink, but the

main benefit is the comfort for the user since s/he doesn't have to remember data or collect pieces of paper. Consequently, user satisfaction increases.

## Conclusion

Academic libraries have historically offered their services onsite, even if that offer was basically technological. Equipment and space, and their transformation, continue to be key components of success in academic libraries, but today we find ourselves immersed in a new context where commercial and communicational interaction is held more and more through mobile devices. It seems not only compelling but also critical to develop new channels focused on the delivery of services through mobile functionalities. As M. L. Jacobs (2009) has said, "along with a new generation of technology, we have a new generation of users (...) [the] ING, the information now generation. How better to describe a group of users that expects every thing at their fingertips regardless of where they are? And it is time for us to make and open mobile gates; there is no meeting someone half way to remain relevant".

The Rector Gabriel Ferraté Library, serving the biggest campus of the Technical University of Catalonia, dwells in a highly technological environment, considers technological services as its hallmark, and library access on-the-go as one of its priorities. During the last years, and through an adapted organization incorporating a computer engineer, implementing a working group for technology, and recruiting student workers from ICT schools in the campus, the BRGF has developed a portfolio of mobile services in a deliberate effort to increase the possibilities to access both equipment and informational resources of the Library. Sometimes this has been done even if staff knew that it wasn't yet the time for a particular service or device. For example, a loan service for e-books readers was launched when both the technology and the contents available were not sufficiently developed in our opinion, but our intent was that the concept of "taking my library with me" would be exploited by our users in a way that the BRGF would continue to be somehow "their library". Another example is the choice of mid-range / high end mobile devices as the gadget to access our mobile Website in a moment when many of our students don't own an expensive cell phone. Here, it was determined that this was not such a long shot if one takes into account that smartphones are a rising market.

Nevertheless, being ahead of the curve and ahead of the game are assessed to be good strategies in general from the point of view of our position as a technological library and from the perspective of service usage, as the figures and the valuations of the users seem to confirm. The BRGF is convinced of this *modus operandi* and is already thinking of both the transformations and improvement of our current mobile services. We look forward to exploring new possibilities to enlarge the features of our mobile Website in order to offer the same services currently offered through our main Website (*one web* concept), to library instruction, podcasting, videoconference, instant messaging or chat reference service. *Learning by doing* will stand as one of our mottos concerning m-services.

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