

Trends & Issues in Library Technology

IFLA IT Section Newsletter

July 2014

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From the Section Chair

“ Libraries have a challenging dilemma to meet current information needs in a rapidly changing environment while preserving the core long-term value of their print and digital assets.



The IFLA trends report was notable for its reflection on the pervasive impact of technology on society and on libraries. Where technology adoption once took several decades we now see the merging of different technology together in domestic “mash-ups” within the space of years or even months.

Enabling technologies such as linked data and social media tools are democratising access to government and institutional information. This is being extended further by the “Internet of Things” and the integration of unusual blends of technology together. The US military was quick to craft this enabling technology into the military use of drones. However, the transformation of the humble hobbyist plane into a software controlled, internet enabled domestic drone has not been far behind – and now we have headlines such as “personal drone crashes into Sydney Harbour Bridge” (<http://goo.gl/DnHojp>).

The participation in new technology is quite remarkable and libraries are in the midst of this, hosting “hack fests” and environments for experimenting and learning with equipment such as 3D printers. The democratisation of big data balanced by care for privacy is a unique challenge act of our times.

Libraries have a challenging dilemma to meet current information needs in a rapidly changing environment while preserving the core long-term value of their print and digital assets.

While there is incredible speciation of technology, open source communities (and unfortunately hackers) exemplify the ways in which an open approach and flexibility are being gradually favoured over closed systems. The Apache open source computer project offers an interesting challenge to the current platforms, and the movement from desktop to mobile platforms continues unabated. Countries such as Taiwan that have thrived on the desktop platform are re-gearing for a fast-changing environment.



Welcome to a bumper issue of TILT! We have articles on libraries in Chamonix, France, the King Abdullah University of Science and Technology (KAUST) Library in Saudi Arabia, and a report on the UNDP/IPU mission to set up a digital library in the Myanmar Parliament. An international collaboration is underway on describing a technical registry for digital preservation. Even as cloud computing is making in-roads in libraries, many in Brazil are facing implementation challenges.

IFLA 2014 is around the corner, and the list of IT Section events and activities is included here. Please feel free to contact any of your Section officers for more information, and to join us at the IT Section meetings. I look forward to a F2F with many of you in Lyon.

I want to thank our contributors for sharing their news, and encourage all members (and non-members) to submit articles.

Happy reading!

May Chang
*Information Coordinator,
Editor*

Open source and cloud service delivery models are significant areas of current development. Both of these provide opportunities for libraries to be both nimble in a changing environment and flexible despite pressure on costs.

These are all issues that will be on the table in the IFLA Congress in Lyon, France in August. There is never really a bad time to go to France of course, but August is an especially nice time to be there. We have a pre-conference that looks at current events in linked data in Paris, and five sessions during the conference that look at the diverse ways in which technology is impacting libraries, and equally the library response to technology.

Those immersed in or interested in Library Technology will be treated to a techno-gastronomic feast at IFLA in Lyon. If you are coming to the conference look out for sessions that the Information Technology section is organising or sharing with other sections – I am sure you will not be disappointed.

You will also be able to read the papers for all of our presentations in Lyon through the IFLA library. See the section below for more details on our sessions. Consider joining our IT Section meeting on Saturday – guests to the meeting are very welcome. ■

Edmund Balnaves
IFLA IT Section Chair

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IFLA 2014 IT Section Events and Activities

A consolidated list of sessions with IT Section interest/collaboration.

- ★ **IT Section Standing Committee Meeting 1**
Saturday, 16 Aug, 09:45-12:15
- ★ **IT Section Standing Committee Meeting 2**
Wednesday, 20 Aug, 09:45-11:15
- ★ **Linked Data in Libraries: Let's make It happen!**
IT Section and Semantic Web Special Interest Group. Satellite meeting.
Thursday, 14 Aug, 09:00-17:00
- ★ **Cloud services for libraries - safety, security and flexibility**
IT Section.
Sunday, 17 Aug, 13.45-15.45
- ★ **Digital preservation of e-books: Best practice in libraries**
Preservation and Conservation Section, and IT Section.
Monday, 18 Aug, 09.30-12.45
- ★ **Access to law at digital cross roads: Innovative solutions to complex challenges**
Law Libraries Section, Parliamentary Libraries, IT Section, and FAIFE.
Tuesday, 19 Aug, 09:30-12:45
- ★ **User and Interface Challenges Related to Audiovisual and Multimedia Access**
Audiovisual and Multimedia Section and IT Section.
Tuesday, 19 Aug, 13.45-15.45
- ★ **New technologies, information, users and libraries: Looking into the future**
IT Section.
Thursday, 21 Aug, 10:45-12.45
- ★ **How Safe is the Law? Authentication of Official Gazettes: A Worldwide Report**
Law Libraries Section, Services to Parliaments, and IT Section.
Thursday, 21 Aug, 13:45-15:45

Latest IFLA WLIC 2014 program at <http://conference.ifla.org/ifla80/programme-and-proceedings>.

Chamonix Libraries: A Personal View

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When tourists visit France they arrive in infinite varieties. Some come as skiers, seeking an energetic holiday, others as sharp-eyed entrepreneurs in search of a "deal" over in Paris-Est or out at La Défense – and some of those are parents-with-children, or children-with-parents, looking daily for diversion from the confines of some cramped 2-star hotel room.

Perhaps the parents were in France before as lovers, too, returning now to seek a quiet corner where they might renew all that, where again they might enjoy one another and what together they have created. France famously offers many such quiet corners. And many tourists nowadays visit online, virtually, digitally. Petite Poucette¹ "searching", always, for something, and very often finding it in France.

Villages

I first saw Chamonix in several of these ways. Visiting France for only a single "purpose" rarely happens – there is so much there, so many attractions and distractions. In 1992 I visited Chamonix digitally-armed, knowing Minitel and Internet, fully-equipped with a carload of family and books and magazines, all of us excited about skiing and hiking and mountains. As are most Chamonix visitors still, French and foreign, we arrive bearing many expectations, all we've read about elsewhere and more.

Turning the tables, then, what of the local, the Chamoniarde, who must prepare for such onslaughts? What to offer à table, how to entertain, and direct, how to help visitors up the mountains, how to rescue, how to help them down again – and above all, these being French specialties anywhere in their fabulous Hexagone, how to entertain and distract and instruct? A day-in-the-life of a Chamoniarde, very much including any Chamonix librarian, can be a many-faceted adventure.



Libraries

I first visited the Chamonix libraries not for their Minitel or Internet, which had attracted me to France, nor for the business deals I'd been doing down in Paris, nor for our two little boys who were busily skiing at Les Houches, but as relief from a hospital bed: one event of a family holiday which cannot be planned is a bad back – I had been bed-bound in pain for a week, I badly needed "something good to read", I told the Chamonix librarian.

Answer to a librarian's dream anywhere, that question. One of the axioms of library science is the expression, "Do you have a book about horses?" It summarizes the reference-interview, the magical epistemological moment when the librarian divines the real-intention behind a user's search. The librarian response can be so different, depending whether the question comes from a 7-year-old little child, or a svelte youth in jodhpurs and redingote, or a local veterinarian, or a writer, painter, zoning official.

That morning in the BM de Chamonix, I was a middle-aged American businessman, obviously in-pain, up from Lyon with my family, speaking halting French with a rolling Dordogne accent, wondering about of all things the Minitel, and whether the library had an "Internet connection".

"C'est quoi, 'internet'?" was the first response, back in 1992 – but the new hire in the cataloging room knew – and he knew how to rig a power connection to accept my weird American electric plugs. I know the Chamonix librarian's reaction to me: "The questions they try to prepare you for, in library school, but never do completely."

That is what libraries in France are all about, though – libraries anywhere – expecting the unexpected, anticipating the strange question, parsing the "reference interview". I have found most librarians to be very good at it, although many libraries are not.

The libraries in the Chamonix valley, for an example of a very good regional system, are arranged in a network. The French love networks – when I first learned about the Minitel, in Europe, and taught there about the new "Internet américain", heads in the audience nodding knowingly included all the French – systems, ah yes, we understand that – and systems of systems, interlocking and often conflicting, "Well, that just defines French civil administration", a smiling French friend once wryly explained.

From the French I received the best metaphor for the Internet I've ever encountered: "la toile", "the spider's web" – never mind that the digital Ouebbe has no center, while the spider's does, picture instead layers on layers of overlapping and interconnecting, literally internetworking, spiders' webs, elegantly beautiful yet sometimes sinister, immensely practical design, although like the spider's too occasionally sticky.

During that backache recovery visit to Chamonix I learned about all these things and much more, touring the extra-ordinary little valley and its little string of networked libraries. The route from Argentière to Servoz covers 22 kilometers which you can do in 28 minutes, my Google Maps App solemnly and as always too definitely declares – but not in winter, I know from that 1992 backache experience, I remember heavy snows – and never in summer, with all the tourist hordes – and not in Spring or Fall with all the meandering school kids. When does Google “time” its maps, I wonder, maybe only at midnight on Tuesdays in June.

Nostalgia

The Chamonix library network was more primitive, as I remember, back in 1992 – both physically and virtually, things have changed greatly in both respects since. There as elsewhere, what once got recorded on cards, and held in and on cardboard and paper containers, and transported to branches in little trucks or in the backseat of a librarian’s car on the way home, nowadays gets magically managed by The Digital, manipulated via tiny buttons as by users’ grimy fingers poking at little “screens” forever in need of cleaning, even though the users and librarians and reference interviews haven’t really changed much, fundamentally.

Mountain towns anywhere, too, subsist upon strict individuality, and jealousy, both among themselves and in uneasy symbiosis with The City. Two towns visible to one another across a valley could have no telecommunications connection at all. As recently as the 1960s France trunk lines for systems such as “road” and “rail” and “authority” all “led to Rome”, back in those days – from village A you called Paris Central and “booked” your call to village B – in sight, across the valley, as you were shouting to the Paris operator – and she would promise to call you back, hopefully that same afternoon. And when her call came in, André at the café would go find you, wake you, so you could run down to the café and take her call. That was the 1960s, the little separate earpiece for your other ear, at which French friends would swear as they shouted to be heard, was given all sorts of rude names.

By 1992 all that had changed: France by then had better telephone connectivity than the US – California calls from Berkeley to Sierra Nevada towns still could be scratchy, but calls anywhere in France and even international were crystal-clear, and the maddening little extra earpiece was long gone.

Mountain towns in both places hadn’t changed in other respects – they have since – in 1992, however, Tahoe City still could be as different culturally from Southshore, or Quincy, all high in California’s beautiful Sierra Nevada – just as Argentière differed from Chamonix from Servoz, high in France’s soaring Alps.

So it was no mean trick to set up a library network, linking things. Every tiny town has its unique lieux de memoire, fonds local, user eccentricities, local opening hours anomalies, local collection requirements – MARC format compatibility, so much the flavor du jour of library tech conflict during the newly-digital 1980s and 1990s, doesn’t begin to address the realities and complexities of physical linking of libraries with competing traditions and cultures, in tiny towns and neighborhoods – “local notes” and “holdings” data – anywhere, in Haute-Savoie or the Sierra Nevada, or London or New York

City – sometimes “international” can seem far easier than “local”.

In France the process of library networking has a long history. The recent story, the Internet part of it anyway, was greatly assisted in France by the Minitel. Thanks very much to “la-petite-boîte”, by 1992 French librarians, plus a sizeable portion of French information-users, already were hands-on experienced with fundamental digital information tools and concepts such as keyboards, screens, and online access to glowing colored characters via weird little “codes” – to alpha-numeric images and ASCII, then Extended-ASCII, and eventually Unicode – and most important with the basic idea that information, or at least data, useful to them in their daily lives, might be available to them via a tiny television.

Standards

What cemented the online digital experience – the glue which held the toile together, connected each toile to every other, in “The Matrix”² – was that strange consensual thing called “standards”.

In 1992, most of us grand-public “users”, grandly ignorant of the new technology itself and even more of its internal structures, took it for granted that the new information technologies simply would provide what we, the clients, wanted, in formats to which we already were accustomed, decorated with pretty pictures, speaking our language. But what if “our” language was French?

When the Internet first appeared it “spoke” only ASCII – American Standard Code for Information Interchange – 26 mostly Roman letters, majuscules and miniscules in initially-few but increasingly-various fonts, no sign therein of anything non-American, such as an “e accent-aigu” or “accent-grave”, let alone anything in Hindi or much less remotely Chinese.

And such mere character-set deficiencies were tips of enormous cultural icebergs, in the early Internet: just as there were no “funny-looking” cedillas and umlauts, so there were plentiful baseball metaphors – early Internet developers knew what one another meant by “home run” – but none from soccer or cricket or mahjong. And cultural gaps and misunderstandings ran far deeper, to basic notions of network structure, commercial content, government participation, copyright, privacy, confidentiality. Politically-correct, and politically-corrected deconstructions of networking-speak structuralisms and outright biases have been many. The early Internet was américain, until 1992-3, and few of us, Americans or other, then realized how much so.

The way the Internet has dealt with that limitation during its first 50 years, has been with radically evolving “standards”: rules, of structure and of conduct, formulated by technicians sharing a roughly-common professional knowledge-base and training in their use, rules commonly-shared and usually followed. The Internet has been the product of countless hours of IETF and ICANN and NISO, ISO, many others, TCP/IP vs. OSI in their “protocol-wars”, a tyranny of acronyms which librarians too know well, with their own MARC and other professional standards.

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Building A New Generation Academic and Research Library

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Introduction

Sitting by the shore of the Red Sea, an hour's drive north of the thriving metropolis of Jeddah, the second largest city of Saudi Arabia, a group of ultra-modern buildings is attracting increasing attention from both inside and outside the kingdom. An ever-growing number of top scientists, academic elites, ambitious grad-students, and other seekers of opportunity are gathering here from all corners of the world. In less than 5 years, this former fishing village has become a vibrant campus filled with an atmosphere of zealous discovery and innovation.

In addition to playing the traditional roles of an academic and research institution, KAUST has been spearheading the mission to transform Saudi Arabia to a knowledge-based economy. It has made significant resources available for global collaborative research with first-class industries such as Saudi Aramco, IBM, Boeing, Siemens etc., as well as collaborations with the top science universities around world including Cornell, Oxford, Stanford, and Texas A&M University. Economic development, technology transfer, and industrial partnership programs are a high priority at KAUST, as the University is committed to diversifying and advancing the economy of Saudi Arabia and the Middle East region.



Named after the nation's leader, whose vision and support made the King Abdullah University of Science and Technology (KAUST) a reality, KAUST is a graduate research university that symbolizes a pursuit for the best. Opened in September of 2009, it is organized into three broad science and engineering divisions: Math and Computer Science, Physical Sciences, and Chemical and Life Sciences.



More than just a traditional academic campus, KAUST is also a small city of its own with houses, apartments, public schools, shopping, dining, recreational facilities, security and fire services, a medical clinic, and public transportation services. Among the population of approximately 6000, the demographic snapshot shows that KAUST is a truly “global village”: 20% of the population is from Saudi and other regions of the Middle East, 35% from Asia, 18% from the Americas, 16% from Europe, 10% from Africa, and 2% from Australia.



KAUST Library: from design to building

In such a special academic and research environment, the KAUST Library was designed from scratch as a new generation science library. Situated in the most central and attractive site on the campus, the crystal-like architecture “challenges normative library science by de-emphasizing the library as a repository of books while emphasizing the social dimensions of learning and the access to knowledge through technology”.

The library includes nearly 14,000 square meters of open, flexible, and transparent space seating up to 400 people; a variety of functional zones from quiet individual work stations to group usage areas, including 20 glass-enclosed collaborative learning rooms with large flat display panels, and 12 isolated computer equipped study rooms; comfortable social amenities and informal lounges throughout the library with artistic and fashionable seating designs; a 75-seat conference room featuring dual computer projectors and fully equipped video conference capabilities; computer learning lab equipped with workstations providing advanced software for various science and engineering subjects; a total of 150 computer workstations throughout the building including multi-language keyboards; a café offering hot and cold refreshments and blurring the boundary of formal and informal knowledge sharing, and the list goes on.

To quote the comments from the American Library Association/Institute of American Architects when they awarded KAUST library as one of the best new library buildings in 2011, “while it is constructed in modern building language, this library makes poetic allusions to Arabic architecture recalling the traditional House of Knowledge.”

Having a beautiful and functional library facility is a very important asset. However, to realize the library as a “House of

Knowledge” certainly requires much more effort - from the team of staff to the content collections, and the quality of services. Besides reference and technical services, KAUST library also provides digital repository and campus archive services to collect the output generated by the members of the KAUST academic community as well as other KAUST historical and business materials. Currently the library has 25 staff with varying education background and work experiences. Among them, 15 professional positions are filled through international searches for qualified staff.

Based on our specific geographic situation and the characteristics of a science library, our collections development focuses on the digital arena. This means that the digital materials are preferred over print in collections development. Currently, about 32,000 e-journals and 190,000 e-books are subscribed or purchased from about a hundred major databases and publishers. About 40,000 print books supplement this collection to meet both academic and general reading needs.



Unlike conventional campuses, KAUST does not have a stand-alone bookstore. Course textbooks are supplied by the KAUST library, which acquires copies both for the library’s reserve collections as well as for sale to the students. While KAUST library emphasizes its digital collections, only about 25% to 30% of textbooks requested by our faculty are available as e-books, which is one of the reasons why KAUST remains a hybrid library that includes both print and e-resources.

In line with the vision of KAUST as a research university of science and technology renowned by global benchmarks and rooted in the Kingdom of Saudi Arabia, the library also has been exploring cooperative activities with other libraries in the Kingdom and region. KAUST library is a member of UNESCO’s World Digital Library, active in the Gulf Special Library Association, and has invited many guests to KAUST to help us understand the local and regional library environment.

Library technology: planning and implementation

The KAUST library’s resources and services depend on a robust technical infrastructure, including integrated library systems and a digital repository. From its initial planning, enterprise computing was a key strategic approach for

KAUST as it builds on the modern IT environment. This approach gave KAUST library an opportunity to establish its systems in a broader view and at a higher level from the very beginning. With such a strategic direction and technical environment, the library tries to establish library systems that reflect new trends and that leverage the benefits of new technology, which also allows implementation to be more efficient and effective.

The library purchased almost all of its major systems from Innovative Interface Inc. for bibliographic management, custom services, as well as the online catalog. Millennium has also been used as the integrated library systems. Almost all of the modules have been implemented, including electronic resources management and display tools. The Encore platform was chosen as the new generation discovery tool, which supplies a faceted and “one-stop” search for the library’s collections, including full-text articles within the subscribed databases. The finder aid application and link resolver solution have also been implemented, which allows patrons to maximize their use of the resources. By implementing RFID security and self-check machines, KAUST library makes it possible for fully automated 24/7 services.

KAUST library decided to go to cloud-based hosting and support. The integrated library system was migrated from campus servers to a vendor’s database center in 2012. By switching to the remote servers hosted by our vendor, we are able to have more dedicated and professional technical support for the library. In addition, full package services such as upgrades, database maintenance and backup allow the library’s technological staff to perform other strategic activities rather than being bogged down by routine operational tasks. There are also many other benefits such as reducing the possibility of mistakes due to misunderstandings between vendors and campus IT, and faster trouble-shooting and problem solving.

Although traditional library services are still a major part of library’s workflow and procedures, the KAUST library system does not confine itself to a traditional self-contained model. With the implementation of mobile services, KAUST library was able to participate in campus IT’s “smart campus” project and became the pilot participant in the journey. We are also working on the integration of the library systems with other campus systems, such as the course management tool, the finance application, the campus “single sign-on” system, and so on. As boundaries become more blurred in the digital world, building an open library system is our direction.

The KAUST library has always considered building an institutional repository as an essential element of its services. KAUST library chose open source DSpace as the technical platform and subscribed to BioMed Central’s Open Repository for this service. It is integrated with the ILS and its metadata is exported to the library’s bibliographical database daily for discovery within the library’s online catalog. The system for the university archives management is under consideration now, and the project of redesigning the library’s website is under way after more than 4 years of practice and usage.



New director and her vision for the library’s future

This March, KAUST Library welcomed its new director, Molly Tamarkin. Before joining KAUST, Molly was the Associate University Librarian at Duke University Libraries in charge of technology strategy, information technology, and technical services. With her rich experience in managing advanced academic libraries, Molly is expected to lead KAUST Library to a new stage. Below is a brief interview with her.

Interviewer: Molly, you have been in KAUST Library for about a month, what is your impression of KAUST library?

Molly: I think the building itself is beautiful and is really ahead of its time. I see libraries in the US looking to build research commons and collaborative spaces, and this library was designed from the very beginning to support collaborative work, intense use of technology, and cultural events. Joe Branin, the founding director, noted that we have the luck of not having a legacy of collections and can start from the ground up. So that has been a big advantage in creating a state-of-the-art facility that makes a statement about libraries in the 21st century. But a library is more than a facility; it is also the staff and the community. The community here is exactly what I expected: an international gathering of scholars focused on science and technology. We have intense research labs and people are very committed to their work. We work with some of the top thinkers in the world, and they inspire me to provide the best information services possible. I also think our library staff reflects the unique nature of KAUST. Nobody works here because he or she grew up on this campus. Everybody selected this university and chose to come here, on the coast of the Red Sea in Saudi Arabia. It is not a place you end up, it is a place you seek. So, I think we have amazing staff who enjoy innovation and change and aren’t afraid to take risks. It is really a privilege to be here. However, it doesn’t mean everything is wonderful and there is nothing to do: we have a lot we want to accomplish!

Interviewer: What is the mission of KAUST library?

Molly: The KAUST library aims to meet the information needs of KAUST faculty, students and researchers and to anticipate and prepare for the future needs of our academic community. So we focus on current needs as well as our preservation mission for the future. Because information comes in many different forms and is not only textual, we must allow for the

preservation and discovery of all data, including visual, digital, and physical objects. These are all sources of information. So I take our mission very broadly.

Interviewer: What is your vision of KAUST Library?

Molly: Well, KAUST's vision is to be a world leader among science and technology universities. So, my vision for KAUST Library is to become one of the leading science and technology research libraries in the world. What does that mean? I believe that means we must meet the needs of our community no matter how difficult it might be to do. Libraries have never been about books; they have always been about collecting information in all available formats, including manuscripts, papyri, tablets, databases, specimens, etc. Now information comes in more packages than ever before, which brings different challenges. We need work with all of our community to preserve and describe information so that it can be used in the future.

Interviewer: How do you achieve this?

Molly: I think to achieve this vision we must be as innovative as possible with regard to curating data, software, and objects. You know, our purchased digital resources are not very different from other universities' science and technology collections. These databases and e-books are pretty standard. What will distinguish us is how we collect, preserve, and describe our unique collections, and make them available to the entire world. One example is the Red Sea Center, which is exploring the Saudi Red Sea in a way that has never been explored before. So they have all kinds of data, maps, and physical objects such as coral specimens to be preserved and presented to the world. It is also a big challenge to virtualize these objects and provide access for educational and research purposes. So we can focus on our unique programs and make their work available. However, we are a service to our community, first and foremost. We need to reflect our community's decisions about academic focus and priorities.

Interviewer: What kind of challenges do you expect?

Molly: We have two challenges. One is common to all university libraries: we occupy a unique place in the university because we are neither wholly academic nor wholly administrative. Our staff and budget represent a large administrative component, but our work is centered around academic output, and our careers develop in a way that is more academic than administrative. It is always a challenge to make sure you're supporting academic needs in a way that is administratively effective. Sometimes our work seems opaque to administrators, so the communication challenge is always there. The other challenge we face is that we have no clear solution to some of our problems. It feels as if we have to solve some problems twice. We have to figure out how to preserve particular research environments in their native context, and then we have to develop a way for doing it to scale. So this is not a package we can buy from a vendor. We have to figure this out as we go along and try as much as we can to use tools that can be generalized to other situations. ■

[continued from page 4]

Thanks to these grand efforts of many, we now have a global toile, "speaking" the languages of many, working cross-platform and over multiple platforms simultaneously. This approximation of Umberto Eco's "lingua perfetta"³ was one of the previous century's, a century of wars, most remarkable achievements. And we have come a long way from when we had to write our French online "comme ça".

Over the years since, French libraries in small mountain networks like that at Chamonix now offer the full panoply of digital techniques⁴. Most wisely have conserved their print collections as well. Visitors to France may access and use information there easily and in all media varieties: data is online, but may be reached in print and on ancient manuscripts and in wonderful old print and video and audio formats too.

Conclusion

France, for me, has served as a microcosm of the Entire World – Out There, to my somewhat isolated American compatriots of the US digital world – insulated as we are by our two great flanking oceans, refreshing innocence, and innovations, and our congenial if sometimes naive notions of universality, political fundamentals, and baseball metaphors.

Voltaire wrote of Pangloss with scorn, but of Candide fondly. The worldly-wise and cynical French must think of Candide, still, when they see Americans approach, with US ideals of brotherhood and democracy bulging from our pockets, albeit relatively less money than before.

But the digital world is different now from our 1950s post-war era, the 1960s invention of the Internet, and the 1990s presentation of it to the Outside World: it is typically French that they have been in the forefront of the nouvelle vague of each of these developments, with their Minitel and digital library networking adventures.

And it is typically French, as well, for them to present to the foreign observer their unique perspectives on the world's newest technologies in the context of such interesting and beautiful scenery, such as Paris, and Lyon, and one of the world's most remarkable mountain valleys, Chamonix. ■

Notes

- (1) Michel Serres. *Petite Poucette* (2012).
- (2) William S. Gibson. *Neuromancer* (1984). John Quarterman. *The Matrix: Computer Networks & Conferencing Systems Worldwide* (1990).
- (3) Umberto Eco. *The Search for the Perfect Language* (1995).
- (4) <http://www.mediatheques-valleedechamonix.fr>

Cloud Computing in Brazilian Libraries and Implementation Challenges

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Introduction

The application of cloud computing in libraries has become very popular in the last few years. There are many advantages of moving to the cloud. According to Romero (2012), the advantages of cloud computing are: cost reduction, scalability, lower investment/reduced risk, support included and greater security and accessibility. Although librarians around the world are discussing about digital preservation and securities issues in the cloud, Brazilian librarians are one step behind and thinking twice before migrating their data to the cloud because there are some peculiarities in Brazilian legislation that affects directly the way of purchasing/hiring services and storage data.

Brazilian Overview

Brazil has some specific characteristics and it explains why generally Brazilians libraries are embracing the cloud slowly.

The territory is huge and in some areas the Internet connection is not good enough to provide stability to cloud services. Moreover, there is an economic division in the regions. Neri (2012) said that Brazil is above the world average of people who have Internet in their homes (approximately 33% of the total population). According to Neri (2012) shows the percentage per state: in Maranhão State only 15,16% of population has computer access and fewer have Internet connection (10,98%). On the other hand, São Paulo State, considered one of the richest and well-developed State of Brazil, 56,9% of population has computer access and 48,22% have Internet connection through them.

Saito (2013) addressed a survey to the library of three public universities in São Paulo State to detect the reasons of the low penetration of cloud in Brazil. The three universities were: São Paulo University (USP), University of Campinas and São Paulo State University. 60% of survey participants said they know the concept of cloud computing. 35% pointed out that they face problems with legislation and bureaucracy of their purchasing department, and 21% indicate there is a problem with Brazilian legislation (Fig. 1).

Regarding the cloud, there is a law called Internet Civil Mark that affects the libraries. Both the Internet Civil Mark and the problems with purchasing/bidding are aspects that are affecting the application of cloud in Brazilian libraries. The issue about bidding affects specially the public libraries.

Bids Law

One problem that Brazilian libraries face is that public institutions that receive financial income from Brazilian government must hire services or buy goods that cost more

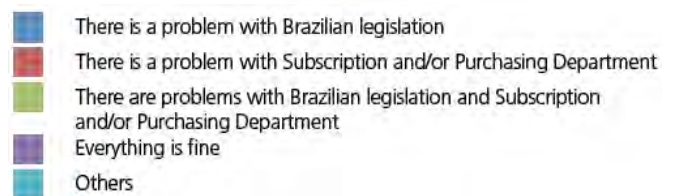
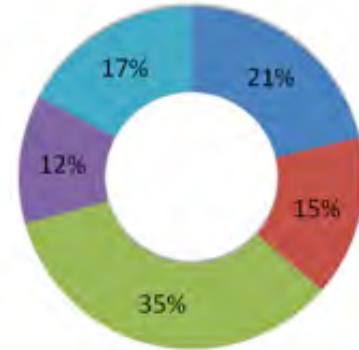


Fig. 1: Problems in the request for bids¹

than BRL8.000,00 (approximately USD3.500,00) through request for bids. For instance, goods, such as books, must follow the bids law (number 8.666).

The process of bids is very complex and does not permit libraries to have a quick and simple way of purchasing. If a library hires a service in the cloud, whenever it needs to be renewed, if there is a problem during the process, the provider may probably cut the service if the payment is delayed by 90 days and Brazilian libraries' patrons will not be able to access the content.

The law provides some exceptions in the case of a unique provider or if there is a need of a specific provider by unenforceability. In the latter, a technical report must be written demanding legal support. Most of the time, it is costly to the institution in terms of time and energy from the staff.

Internet Civil Mark

Internet Civil Mark, also known as "Internet Constitution" is a law (number 12.965) that establishes the regulation about Internet issues in Brazilian territory. The law project started in 2009 and it was accelerated in 2013 because there were rumors that Brazilian citizens and companies (including government agencies) were being spied on by the National Security Agency (NSA) of the United States of America (Snowden's revelations).

Moulaison and Corrado (2011) pointed out that “libraries have a professional and legal obligation to keep certain data, such as circulation records and patron information, private and secure. Librarians need to be aware how national laws ... might affect what they do in the cloud”.

At the beginning, the project foresaw that all data of Brazilian citizens needed to be hosted in data centers in Brazilian territory. If it was accepted, it could impact dramatically the way libraries host their data. This topic was very polemical because the price to host data in Brazil could be more expensive than in other areas. Moreover it is indicated to do backup files in data centers in different areas to avoid the loss of information in case of a disaster. This obligation was later eliminated from the project.

One positive point is the net neutrality. According to Joch (2009), the network neutrality is “the principle that Internet users should be able to access any Web content or use any applications, without restrictions or limitations from their Internet service provider (ISP)[...]”. Brazilian citizens could give their opinion in the proposal redaction.

The project was approved by the Chamber of Deputies on March 25, and by the Federal Senate on April 22. There was a huge pressure by President Dilma Rousseff to approve the law quickly as she intended to show it during the “Global Multi-stakeholder Meeting on the Future of Internet Governance” or NET Mundial that happened in São Paulo/ Brazil on April 23-24.

Cloud Initiatives in Brazil

There are some institutions in Brazil like USP and Pontifical Catholic University of Rio Grande do Sul (PUCRS) that already have initiatives in the cloud.

São Paulo University²

USP is a public university, and one of the largest in Latin America with about 58,000 undergraduates and 28,000 graduates. The numbers in USP libraries are also very impressive: 46 libraries in ten cities of São Paulo State and approximately 800 employees working in these libraries.

USP owns a private Cloud known as “Nuvem USP” or Cloud USP, and was the first university in Latin America to have this kind of infrastructure. The project was launched in 2012 and cost BRL200 million (approximately USD89 million).

The administrative systems such as human resources, academic files and email accounts are hosted in the cloud.

Regarding the use of Cloud USP for São Paulo University libraries, the Integrated Library System (SIBiUSP) does not use it currently. ILS and other software, such as discovery tool, are installed locally in traditional servers. USP libraries use Aleph 500 version 20 and Primo, both from Ex Libris. The migration to version 20 happened in 2011 and the application Busca Integrada (Primo Local) was launched in 2012. Busca Integrada is a discovery tool that offers research in one interface for its OPAC, journals subscribed by USP, open access journals and content subscribed by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES). CAPES is a huge consortium offered by Brazilian government

that provides electronic access to 37 million full text articles and 130 referential databases for associated institutions.

Pontifical Catholic University of Rio Grande do Sul³

PUCRS is a private university located in Rio Grande do Sul State, in the South of Brazil. The Irmão José Otão Main Library uses state of art technology in its installation.

PUCRS has an application called “Pesquisa Múltipla” that provides a simultaneous search in different sources such as OPAC, open access and subscribed journals by its institution and journals subscribed by CAPES. This application uses Ex Libris’ Metalib Plus, and is hosted in the cloud. Soon they will move to Primo hosted by Ex Libris.

Other applications, for instance, the academic system, it is hosted in traditional servers.

Final considerations

Brazil has a large territory and the distribution of resources is not homogeneous. Some areas do not have good Internet connection and the application of cloud computing can not be done. Another aspect that must be considered is Brazilian legislation.

Hiring services in the cloud by request for bids can be a complex process so it is common that libraries host their data in traditional servers even if they cost more than to host in the cloud. On the other hand, the recently approved Internet Civil Mark can be a guideline for libraries in terms of how to store data and for Internet connection (net neutrality).

USP and PUCRS already initiated moving to the cloud but with different approaches and they show the diversity in Brazil. However, they do not reflect the reality of most Brazilian libraries as most of them do not have the same financial structure to build a private cloud and hire the service directly from the vendor, in that order, to lead projects like that. ■

Notes

- (1) This chart was adapted from Saito (2013) by authors.
- (2) The authors were authorized to use the information of USP libraries by its Technical Department of the Integrated Library System (DT/SIBiUSP).
- (3) The authors were authorized to use the information of PUCRS Libraries.

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What Would an Ideal Technical Registry for Digital Preservation Look Like?

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Introduction

In July 2012, the National and State Libraries of Australasia (NSLA) approved funding to define the requirements for a Digital Preservation Technical Registry. The team working on the project thus far comprises the National Library of New Zealand, the National Library of Australia, the National Archives and Records Administration in the United States, the University of Portsmouth and Archives New Zealand.

The Technical Registry will support any/all digital collecting and preservation institutions in understanding, characterising, validating, identifying risk and ensuring long term safekeeping of digital collections. The Registry is intended to extend previous work including PRONOM¹, the Unified Digital Format Registry (UDFR)², the Planets Core Registry³, and the current expressions of technical information used in the Rosetta⁴ and Safety Deposit Box⁵ systems, which are based on the PRONOM model.

We are currently in a process to build a consortium to apply for funding for the development and deployment of the Registry. These exploratory discussions include national library colleagues from the German National Library, the National Library of the Netherlands, and the British Library. Clearly, the support of the Conference of Directors of National Libraries would be highly beneficial to the eventual success of the proposed Registry.

The Technical Registry

The Technical Registry is an interactive database that works with an institution's digital preservation system, and describes and documents different:

- file formats in relation to a format's specification, specific individual implementations and characteristics
- software, OS and applications relevant to accessing formats
- hardware components and configurations relevant to accessing formats
- physical format carriers relevant to accessing formats
- relationships between file format versions with the software that can be used to view (or render), edit and save them
- relationships between software, hardware and physical carriers
- risks associated with using these components in a digital preservation programme.

The issue for libraries: collection management for digital collections

Digital material is reliant on intermediary mechanisms (usually software or hardware) to maintain accessibility and to retain original meaning. Management and preservation of digital items in collecting institutions depends on an accurate understanding of the provenance, technical

characteristics, dependencies, and requirements of the files or records that make up their collections.

Without full knowledge of the nature of the digital collections being acquired for libraries, it is not possible to make informed decisions about:

- the technical risks inherent in digital items being collected
- the library's ability to make the items accessible now
- how to manage or preserve the digital collection to make it accessible in future years.

As in the physical world, digital collections are prone to certain 'agents of deterioration'⁶. Dissociation – the loss of objects and related metadata (context, provenance) – has long been recognised as a risk to the effective management, preservation and provision of access to physical collections. It is also the key risk that needs to be controlled to ensure effective collection management, preservation and ongoing access to digital collections. This is because for digital items, collection management and preservation practice depends entirely on maintaining an accurate understanding of the provenance, technical characteristics, dependencies, and requirements of the files or records that make up the digital collection.

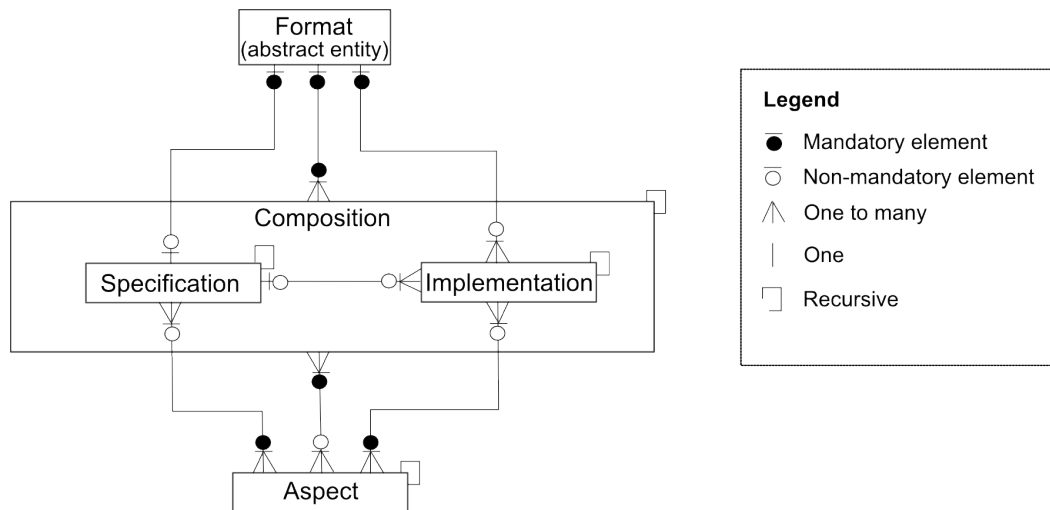
Risk management

The Technical Registry enables the risk of dissociation to be controlled and ensures digital assets are well managed and able to be preserved. It does this by addressing the knowledge base required to understand digital objects by capturing the technical information related to the format at a very granular level.

Without effective digital collection management and preservation, we face an increasing growth in the number of unrenderable files in our collections. The lack of a global, consolidated, open, flexible, authoritative and trustworthy registry of technical information impacts all institutions involved in digital collecting, management and preservation. Time and effort wasted finding, interpreting, and matching the required information, and the potential for use of incorrect information will negatively impact digital collection management and preservation efforts.

The digital workflow

With digital collections this information needs to be assessed and captured in association with the acquisition process. Until this information is known, effective management of these collections is not possible and the risk of being unable to undertake preservation actions, or undertaking inappropriate preservation actions, increases. Granular information about formats that exists for digital items currently being collected is likely to be lost and unobtainable if not captured at acquisition.



As digital acquisitions increase, particularly in the born digital domain, all digital collecting institutions will require the organisational strategies, policies and capabilities to provide them with an understanding of the digital objects and formats in their collections. The Technical Registry enables this information to be captured and stored in an open, collaboratively designed, developed and maintained system.

So what's new?

The project has developed the following documentary collateral to date:

- vision document
- logical data model
- data dictionary
- system actor descriptions and use cases
- registry quality attributes
- combined user stories
- draft solution architecture document.

The key innovation in the proposed Registry (complementing the integration of a wide range of currently disparate sources) is re-conceptualising of the notion of a format. What do we do if we have an object of a particular format in our repository that is not compliant with the specification for that format? How do we distinguish between different versions of formats over time? Where do we go to find the information over the life of a format? The Registry is designed to be able to answer these questions.

The proposed format model for the Registry introduces four new concepts to extend current usage and provide a greater range of expressiveness at both the macro and the micro level (Specification, Implementation, Composition and Aspect). Including format, these are defined as follows:

Format: A “particular arrangement of data or characters in a record, instruction, word, etc., in a form that can be processed or stored by a computer” (Oxford University Press, 1989).

Specification: A formal statement of the precise features and characteristics (Aspects) by which a format may be identified, i.e. a formal statement of the attributes and precise requirements which a format must satisfy.

Implementation: An actualisation of a specification.

Composition: All of the Aspects associated with a format as manifested by differing Implementations of a Specification.

Aspect: A discrete feature/characteristic of a format, either as referenced within a specification or as found in an object ‘in the wild’.

By using this nomenclature we hope to be able to provide a complete representation of a format (its composition) via its formal description (a specification), by how it is manifested in digital objects in the wild (an implementation) and by its most granular components (its Aspects).

By then expressing the format’s relationships with hardware, software, renderers, carrier medium associated dongles etc we hope to be able to provide an integrated source of actionable data to inform preservation planning and action within any digital preservation programme regardless of vendor or system.

Finally, the Technical Registry needs to be sustainable to ensure its long-term viability and its safe transition from development to viable business model. Complementing this is the need for an open community-based approach to its ongoing growth. We are currently in discussions with a range of institutions to try and determine the best way forward for eventual development and deployment of a global Digital Preservation Technical Registry. ■

For more information, contact steve.knight@dia.govt.nz.

Notes

- (1) <http://www.nationalarchives.gov.uk/PRONOM/Default.aspx>
- (2) <http://udfr.cdlib.org/>
- (3) <http://www.openplanetsfoundation.org/planets-core-registry>
- (4) <http://www.exlibrisgroup.com/category/RosettaOverview>
- (5) <http://www.digital-preservation.com/>
- (6) Canadian Conservation Institute. Ten Agents of Deterioration. <http://www.cci-icc.gc.ca/caringfor-prendresoides/articles/10agents/index-eng.aspx>. Accessed 14 February 2014.

Open Source for an Emerging Democracy

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Myanmar Parliament

The Union of Myanmar (previously Burma) is a country that is only just now reintegrating in the international community. It is ranked among the poorest countries in South-east Asia, and the forth-coming census is expected to reveal for the first time in 30 years what the actual population figures are – expected to be about 60 million, or three times the population of Australia. After a new constitution in 2008 set the framework for the current democratic institutions, a new capital named Nay Phi Taw was built in the middle of the country.

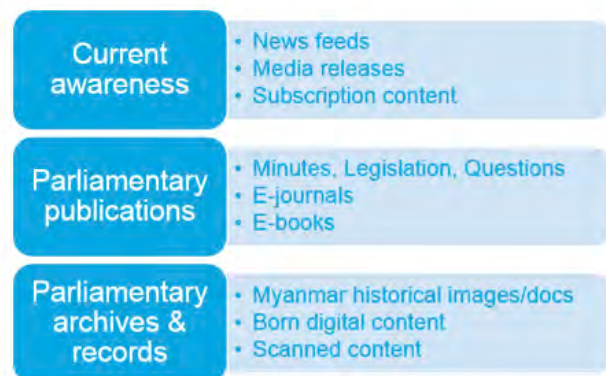
The Inter-Parliamentary Union (IPU) and the UNDP are working with the Myanmar Parliament to undertake institution building projects. One of the initiatives arising from this is a project to build a digital library providing access to the work of the parliament to members and staff. While such a resource is taken for granted in most established parliaments, the Myanmar Parliament are quite literally building their democratic institution from ground up in an incredibly short period of time.

At the national level the Parliament, known as the Pyidaungsu Hluttaw (Union Assembly), consists of two chambers – the Pyithu Hluttaw (House of Representatives) with 440 seats and the Amyotha Hluttaw (House of Nationalities) with 224 seats. 75% of the members of both Houses are directly elected with the remaining 25% being appointed by the Commander-in-Chief of the Defence Services. A third house, the Union Assembly is a joint sitting of both “lower houses”. The Parliament was re-established in 2010, following national elections. In 2012 the IPU organized two assessment missions, and jointly with UNDP a project formulation mission to assist the parliament in identifying its future requirements as it strives to become a modern and effective institution.

Edmund Balnaves (Chair, IFLA IT Section, from Prosentient Systems, Australia) was chosen as the Australia expert to undertake the technical implementation and training in the DSpace system, while a team from Chile lead by Claudia Cuevas (past President of the Chile Library Association and head of library services in the Chile Parliament) was chosen as the library expert to provide training in digital library services.

This was a challenging project as there was little infrastructure in place within the parliament to support such a project. Dr Balnaves supplied a small server for initial development and training in DSpace during the first visit. This facilitated the initial setup of the DSpace digital library, and was used in the workshops to evolve the document and collection and functional requirements for DSpace in the Myanmar Parliament. However, a critical component of the project was the selection of a local Information Technology vendor to provide ongoing support for the server and software. Three technical workshops were provided with the Parliament and the vendor in installation, management and support of the DSpace system.

The role of the digital library in Myanmar Parliament



Also vital was the enlisting of the relevant sections of the Parliament to understand and support the project locally. To achieve this, management and staff workshops were held over the two visits to Myanmar. For instance, staff and management were consulted in the division of work in building and managing DSpace. Dealing with 3 separate chambers required careful coordination with the directors in each chamber.



The following were the agreed roles in ongoing administration and collection building:

Committees and Library

- Submit documents (simple web process)

Library - review submissions and add subjects

- Approve submitted documents
- Update collection and community information (e.g. news)

ICT - DSpace administration

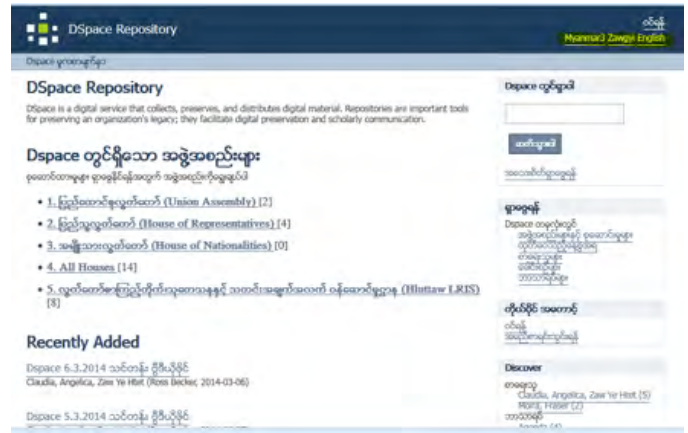
- Create communities and collections
- Manage users and groups (security)

InyaLand - System support

- Server management and backups
- Adding new metadata
- Adjusting submission forms

Early in the implementation it became apparent that the language contextualisation of DSpace would be complicated by the lack of a generally accepted standard for encoding the Burmese character set. Operating independently from the international community, and making do with what they had at hand, there were some innovative but very non standard approaches to Burmese language encoding based around standard US keyboard layouts. As a result, several encoding methods are used, and keyboard input differs according to the coding method used. The result is that different staff are familiar with different encoding methods and character sets, even within the parliament itself. Storing different character sets for the same language was not within the standard DSpace implementation.

However, being open source, some nice and ultimately simple customisation was possible to accommodate this problem. Dr Balnaves undertook (quite low level) technical work to develop transcoding scripts that may facilitate data entry in Myanmar3 and Zawgyi encoding formats. This allowed flexibility in making a decision on the language encoding for the digital library. Google appears to have standardised on Myanmar3 - a Unicode encoding method for the character set which is good for web and repository implementation.



In a joint meeting with Deputy directors in each parliament, a ground-breaking agreement was reached between the Myanmar Parliaments to standardise on the Myanmar3 character set.

While a dictatorship can rule by decree, a functioning democracy needs access to and visibility for the legislative process. Making the work of the parliament accessible to members of the legislature and to the public is therefore very important. By implementing a digital library the parliament can also keep a permanent historical record of its work.

Myanmar has built a parliamentary and legislative framework in an extraordinarily short time. The investment in the new capital Nay Phi Taw is indicative of the determination to establish the young democracy. There are significant challenges ahead for the new democratic institution, as anyone who has seen the 25% reserved seats for Military nominees to the parliament will understand. In Yangon, the rapid emergence of mobile phone companies and infrastructure spells the transition to a more open information economy. This is critical time to engage with Myanmar and to encourage the resources (such as information access to bills and legislation) to allow the development of informed debate. ■



The Information Technology (IT) Section promotes and advances the application of information technologies to library and information services in all societies, through activities related to best practices and standards, education and training, research, and the marketplace. The scope covers IT for creation, organization, storage, maintenance, access, retrieval, and transfer of information and documents for all types of libraries and information centers; IT for the operation of libraries and information centers; and, related management and policy issues. Of primary importance are applications of IT for supporting access to and delivery of information.

The section meets annually at the IFLA Congress; in between congresses, members collaborate with other Sections on programs and workshops. There are election ballots every two years as members complete their 4-year term. Currently, there are 21 standing committee members from 19 countries.

The IT Section is one of the largest in IFLA with over 300 members from nearly 80 countries, from all types of libraries, and a range of disciplines. We welcome all members (<http://www.ifla.org/membership>).

The IT Section's website at <http://www.ifla.org/it> has news and resources regarding activities of the Section, session minutes, publications, and membership details.

The IFLA-IT email list provides a forum for members to exchange ideas and experience in the use of information and communication technologies in libraries. The list address is ifla-it@infoserv.inist.fr, and subscription is at <http://infoserv.inist.fr/wwwsympa.fcgi/info/ifla-it>.

The *Trends & Issues in Library Technology* (TILT) newsletter is published twice a year in June and December.

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