HANDBOOK

INFORMATION AND COMMUNICATION TECHNOLOGIES IN PARLIAMENTARY LIBRARIES

UNITED NATIONS

INTER-PARLIAMENTARY UNION

INTERNATIONAL FEDERATION OF LIBRARY ASSOCIATIONS AND INSTITUTIONS

H A N D B O O K

INFORMATION AND COMMUNICATION TECHNOLOGIES IN PARLIAMENTARY LIBRARIES

Note

The Global Centre for Information and Communication Technologies (ICT) in Parliament is a partnership initiative of the United Nations and the Inter-Parliamentary Union inspired by the outcome of the World Summit on the Information Society (WSIS) in 2005. The Global Centre for ICT in Parliament pursues two main objectives: a) strengthening the role of parliaments in the promotion of the Information Society, in light of the WSIS outcome; and, b) promoting the use of ICT as a means to modernize parliamentary processes, increase transparency, accountability and participation, and improve inter-parliamentary cooperation.

The Global Centre for ICT in Parliament is administered by the Division for Public Administration and Development Management of the United Nations Department of Economic and Social Affairs.
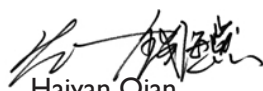
Disclaimers

FOREWORD

In 2005 the United Nations and the Inter-Parliamentary Union established a partnership to support legislatures in adopting and implementing technology to modernize parliament. To this end, the Global Centre for Information and Communication Technologies (ICT) in Parliament was launched in Tunis at the World Summit on the Information Society together with several partners. For the parliamentary community, the Centre quickly became a hub for exchanging best practices, building staff skills, developing peer networks and sharing data on parliamentary ICT. For international bodies and organizations, the Global Centre for ICT in Parliament became a natural partner on ICT-related parliamentary development activities.

The cooperation between the IFLA Section on Library and Research Services for Parliaments and the Global Centre for ICT in Parliament has flourished since it began in 2007. Notable events include the co-organization of trainings on the occasion of the Section's pre-Conferences (2009, 2011, 2012), regional trainings for parliamentary staff of African and Latin American legislatures (2009, 2011), and joint panels during the World e-Parliament Conference (2007, 2008, 2009, 2010, 2012).

The experience gained through this cooperation has demonstrated that much still needs to be done for the potential benefits of ICT to reach all parliamentary libraries. Despite the important role libraries play in the intensive information environment of a legislature, only a few have been able to develop a solid ICT infrastructure and integrate technology tools into their work in new and innovative ways. Many libraries continue to face challenges that stem from inadequate resources for training, limited availability and knowledge of technology and, in some cases, a lack of understanding of the contribution libraries make to e-parliaments.

With this Handbook, therefore, the United Nations, the Inter-Parliamentary Union and the International Federation of Library Associations and Institutions have resolved to narrow this knowledge gap. The Handbook provides parliamentary staff - in senior managerial positions or library and IT staff – with an overview of and guidance on ICT tools and systems that parliamentary libraries can adopt and implement in different ways. These tools and systems should help libraries to perform their mandate more effectively and to deliver more efficient services.

Conscious of the rapid evolution of technology and the information society in general, we look forward to continue our collaboration in the future through further revisions of the Handbook and other joint activities.

Haiyan Qian	Anders B. Johnsson	John Pullinger
Director, DPADM	Secretary General	Chair
Department of Economic and Social Affairs United Nations	Inter-Parliamentary Union	IFLA Section on Library and Research Services for Parliaments

ACKNOWLEDGMENTS

TABLE OF CONTENTS

INTRODUCTION

In recent years, the increasing use of new technologies has raised the demands of parliamentary information users, who are now requiring that information resources be more current, more complete and more tailored to their individual needs, and be disseminated in various formats and through various channels.

Parliamentary libraries have a special role to play in ensuring that these demands are met by legislatures. They are used to provide information services to all members and committees, to parliamentary staff and often to the public. They understand how to integrate parliamentary documents to create a more complete and useful legislative record, and they can provide a more thorough understanding of the political, economic, and social context of a bill by linking it to resources outside the parliament.

Yet, in today's world, acquiring, organizing and integrating parliamentary and external information sources in a way that enables the creation of a knowledge base and specific services for the legislature may not be achieved unless the full potential of information and communication technologies (ICT) are leveraged.

Parliamentary libraries have a number of opportunities to use technologies for improving their services in a way that benefit the whole institution. They can start handling online inquiries from members of parliament and their assistants on line. They can create personalized alerting services delivered to a variety of devices, including mobile. They can build parliamentary information management services that are closely integrated with procedural applications, as well as with Internet and intranet offerings. They can also preserve parliamentary documents in digital formats and link them to paper-based collections.

Advances in technology offer a number of possibilities for parliamentary libraries to facilitate access to their information resources – both to the physical assets held by the library and to its electronic resources. Through attractive portals, collections and archives organized and maintained by these libraries can become dynamic tools accessed on a daily basis by legislators, parliamentary staff and the public to provide background and context to current policy debates.

The findings of the World e-Parliament Reports 2008 and 2010, however, clearly described how difficult it has been for many parliamentary libraries to adopt ICT as a means to better fulfill their mandate and serve the needs of users more effectively. Among the obstacles identified by these Reports is lack of knowledge amongst parliamentary staff about what it is possible to achieve through ICT in a library and what instruments are available to make it happen. This conclusion was confirmed by participants in various events organized by the United Nations, the Inter-Parliamentary Union, the Association of Secretaries General of Parliaments, the IFLA Section on Library and Research Services for Parliaments and the Global Centre for ICT in Parliament.

The purpose of this Handbook is therefore to provide in a concise manner an overview of the ICT software, systems and services that can be adopted by parliamentary libraries, a template for their implementation and a series of references to which parliamentary staff can refer while planning to transform their library into an ICT-based institution.

There are several classes of software, tools and standards that facilitate the overall management of libraries. This Handbook will explore them by also presenting some practical experiences of parliamentary libraries that have deployed such instruments.

Classes of software that this Handbook examines are those related to:

- Research and Reference Desk Services;
- Library Management Systems;
- Digital Library System;
- Document Delivery Systems;
- Content Management Systems;
- Digital Archives;
- Social media and Web 2.0 applications.

Taken together, these systems can provide a powerful platform for effective service delivery by the parliamentary library.

The Handbook also presents the current ICT developments by making reference to standards and case studies. To this end, each section contains further information categorized into:

> **Case Studies**

> **Software and Services**

> **Standards**

A glossary explaining the many acronyms and technical terms used in relation to ICT systems for libraries and a final section dedicated to further reading and additional references conclude this publication.

Throughout the Handbook, however, the reader should not lose sight of the fact that information and communication technologies are a means and not an end in themselves for any institution or organization, and therefore can be best exploited by framing them in the overall mandate assigned to parliamentary libraries by their legislatures.

The *Guidelines for Legislative Libraries*[1] released by IFLA in 2009 situate well the parliamentary library and its values in the institutional context as follows:

> So what can those running legislative libraries put forward as the advantages of having a specifically parliamentary service, rather than suggesting to parliamentarians that they rely on the many other sources of information available to them? Such advantages should be:
>
> ***Parliamentary services are dedicated to parliament, its needs and tempo.*** This means that its staff understand how parliamentarians operate and respond to their needs.
>
> ***Working for parliament not for the government.*** Governments may well be happy to provide parliamentarians with information, but they are likely to do so in a way that supports government policy. In other areas, governments may be reluctant to release information, creating a need for parliamentarians to have an alternative source. Parliamentarians also need independent sources of information if they are to scrutinise the government effectively.
>
> ***Impartial.*** Many people will willingly provide information to parliament and to individual parliamentarians but in the hope of furthering their own cause or their own interests and policy agendas. Governments, in particular, will provide information to parliaments but it will probably be supportive of government policy and may well be spun to further a particular point of view. Information with integrity is available to support (or dispel) his/her argument through

---

1. Cuninghame, Keith, *Guidelines for Legislative Libraries* [2nd completely updated and enlarged edition], Berlin: De Gruyter Saur, 2009. The Original edition, edited by Dermot Englefield, was published in 1993.

the parliamentary library. This service, if a central service must be available and equally accessible for parliamentarians from all parties/factions across the political spectrum. The parliamentarian needs to have confidence that any information from the parliamentary library is balanced and unbiased.

Synthesis from different sources. The range and volume of material available is beyond what busy parliamentarians can cope with. Something that brings together the key points in an accessible fashion which is unbiased but written with a political awareness on issues that may be complex and technical is often what is needed.

Covering the full range of public policy. Parliamentary library services can provide a 'one stop shop' where parliamentarians can seek information on the many and varied topics on which they may be expected to give an opinion.

Confidential to parliamentarians where necessary. Although much of the information produced by legislative libraries may be made generally available, it is often important that those seeking information can be confident that their enquiry will not be disclosed to others, for example, political opponents or the government.

Collective memory. Parliamentary libraries can act as repositories of knowledge. They can do so by storing information which they know is likely to be useful to parliamentarians. Less formally, the staff build up a collective knowledge also based on experience, which helps anticipate needs and enables more recently recruited staff to benefit from the experience of those who have been around longer. Parliamentary libraries are able to preserve essential elements from historic debates or legislative process which may or may not have become part of the legislative record[2].

---

2   *Ibid.,* pp. 21-22.

Chapter 1
CURRENT ICT TRENDS AND IMPLEMENTATION CHALLENGES

Trends in ICT-based libraries

The World Wide Web has transformed information discovery behaviour of clients and the technology available to libraries. Together, these elements are altering the way in which parliamentary libraries work and their capability to deliver resources to members of parliament, institutional users and the general citizenry that the library may serve.

The latest ICT trends are placing even more pressure on parliamentary libraries to become fully conversant with the opportunities offered by technology – or become "ICT-based libraries" as sometime technical literature defines them - and to reflect on their comparative advantage as information providers vis-à-vis other available solutions.

WEB-BASED INFORMATION RESOURCES

Libraries have long used web-based database services to provide detailed research for their clients. However, the last decade has witnessed a strong growth in the availability of rich database and web information resources directly accessible by users on the Web.

A Delphi study[3] by the library of the Parliament of Australia identified these new attitudes towards information discovery, such as the use of Wikipedia and various Google research services, as a potential threat to the current role of parliamentary library and research services. These new information pathways could have the effect of marginalizing the parliamentary library as an information source.

However, the same Delphi study also identified the aspects of the library services that were most valued by its clients:

> *Impartial* – able to ensure that members of parliament were able to obtain information, analysis and advice which was not biased but could report on one or many sides of any issue to meet clients' needs.
>
> *Independent* – able to take a perspective that is not 'captured' by government or policy perspective.
>
> *A gateway* – able to tap into wide quality expertise – through staff, experts fromoutside and collections around the world.
>
> *Understanding* – able to communicate with clients and understand their pressures and time frames and negotiate responses (either from staff of from outside) to meet the clients' needs.
>
> *Builders* – assisting clients to build skills and their own networks – facilitate connections with experts (such as through running seminars).
>
> *Flexible* – able to deal with changing requests and demand generally.

---

3   The Delphi method is a popular tool in information systems research for identifying and prioritizing issues for managerial decision-making. Selected individuals, who have the knowledge necessary to analyze a specific problem, reach consensus without having to physically meet. Most often, a Delphi study is conducted through mail, by telephone, and sometimes by personal interviews and through a series of surveys.

Focused on the whole of parliament – and able to contribute information skills to web sites and other ICT areas.

Connected to our clients needs at a strategic level – setting priorities for service (particularly in research) through engaging with policy leaders in the parliament through consultation with committees and political parties (not with each and every member of parliament in this respect)[4] .

Encouragingly, these aspects echo the sentiments of the IFLA *Guidelines for Legislative Libraries*.

The relevance of the library therefore can be maintained through its ability to focus on the specific needs of the clients, provide accurate research and analysis in an impartial and confidential manner, and offer an effective research synthesis using the information resources available in the library along with the web-based information sources available to the public.

WEB 2.0 AND TWO-WAY COMMUNICATION

The World Wide Web has also provided a general platform for connecting people to information services. A significant phenomenon of the last 10 years has been the impact of Web 2.0 on people's expectations for greater interactivity with service delivery entities and increasing two-way communication between Internet users.

Social media, for example, have recently been profoundly influential in changing the governance landscape. Although the extent of Internet penetration differs from country to country, the use of applications associated to mobile devices have magnified the impact of social media even where Internet access is not widespread. The influence of Web 2.0 is demonstrated by the increasing efforts made by governing institutions towards transparency and openness as a response to the ubiquitous and variable pathways of information flow through social media. This technology evolution has the potential to create new ways of democratic engagement and participation. An example is the e-Democracia website established by the Chamber of Deputies of Brazil (http://edemocracia.camara.gov.br/), where discussion forums, wiki and other collaboration tools allow citizens to interact with legislators who are reporting specific issues in committees or on the floor.

The depth of this information revolution and the changing habits in communication modalities have inevitably impacted on parliamentary libraries, which now need to deploy new technologies and interactive communication in their working environment. In addition, the unusual pressure on parliaments and members to engage with these new technologies suggests that, once conversant in these issues, parliamentary libraries could lead the transformation of parliamentary web services to support interactivity and communication.

Chapter 5 explores in more details the tools and approaches to social media and Web 2.0.

OPEN SOURCE SOFTWARE (OSS)

The "open source" movement emerged as a systematic method of distributing software in full source code and in a manner that ensured its ongoing availability and development with no license fee. The success of this movement has hinged on the ease of collaborative programming in an Internet environment, and on service-based and reputation-based business models for software development. Libraries themselves have an established history in systematic development of standards and in the implementation of data interchange systems. For instance, the Library of Congress has released a range of tools in open source to support MARC (Machine Readable Cataloging). The Z39.50 standard has enabled open inter-networking of library catalogues, and open source code libraries have facilitated the inclusion of Z39.50 in open source solutions for libraries.

---

4   Missingham, Roxanne, *Parliamentary library and research services in the 21st century: A Delphi study,* IFLA Journal 37(1), 2011, pp. 52-61: p. 58.

The first comprehensive suite of software for libraries that was released in open source is the Koha Library Management system. It has an internationally active developer community and has been translated for use in a multi-lingual environment. The first experiments in open source library management systems have helped evolve the sophisticated database schemas supporting current open source library management systems, such as Greenstone, Evergreen and Koha 3. Open source options are now available for most aspects of the core systems needed in carrying out library operations, although they vary considerably in functionality, capability and levels of support.

In fact, one of the challenges in the implementation of open source software is the selection of a sustainable model for ongoing support. This involves the scrutiny of the levels of professional support available internally and externally to sustain an open source installation and ongoing operations. For example, the technical knowledge to install and maintain an open source solution may be unavailable to a small library, which can rely on external hosting and support, a popular model emerging for open source delivery. Conversely, where open source is to be internally supported, it is important to focus on open source solutions that can be sustained through the current ICT architecture used in the parliament.

A common confusion is that open source software means "free". While OSS has no license fees, no information technology system operation is truly free. The ongoing nurturing of a system, software upgrades over time, support for customizations and enhancements, server administration and network costs are just a few of the baseline elements to be considered when selecting a solution. Nevertheless, the amortization of the software support across a widely installed base makes for an effective cost model for smaller institutions. OSS can provide a level of certainty for an institution in its operation costs once established. The larger the community of adopters of open source the stronger the overall support. OSS can also provide a level of security in that there is no proprietary lock-in and the code is visible (and therefore can be corrected). The functional depth of this security will be improved by the work of those adopting the open source model.

DIGITAL LIBRARIES

The parliamentary library manages an increasing access to diverse collection of electronic resources, including material that was "born digital" (parliamentary records, digital publications, and media releases), material digitized by the parliament or the library (for example for preservation reasons), and external resources, such as digital news feeds and e-journals. The increasing complexity of these resources introduces challenges to maintain simplicity in the context of a growing complexity in the underlying resources, leading to requirements for federated searching and single sign-on.

In addition, integration of digital services with more traditional print-based resources is a challenge for both management and staff, particularly in parliamentary libraries with a long tradition of print resources and services.

The Digital Library can act as a repository for the management of all digital documents. It is becoming prevalent in parliamentary libraries to use it both to provide ready access to parliamentary records, news, current affairs and electronic resource relevant to members of parliament and to support their role in preserving the collective memory of the parliament.

OPEN ACCESS

IFLA's *Statement on Open Access*, endorsed by its Governing Board on 18 April 2011, affirms that "Open access is the now known name for a concept, a movement and a business model whose goal is to provide free access and re-use of scientific knowledge in the form of research articles, monographs,

data and related materials"[5]. IFLA adhered to the definition of open access used in the *Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities* [6]. The Declaration indicates that "open access contributions include original scientific research results, raw data and metadata, source materials, digital representations of pictorial and graphical materials and scholarly multimedia material". It also defines that:

> Open access contributions must satisfy two conditions:
>
> 1. The author(s) and right holder(s) of such contributions grant(s) to all users a free, irrevocable, worldwide, right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship (community standards, will continue to provide the mechanism for enforcement of proper attribution and responsible use of the published work, as they do now), as well as the right to make small numbers of printed copies for their personal use.
>
> 2. A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in an appropriate standard electronic format is deposited (and thus published) in at least one online repository using suitable technical standards (such as the Open Archive definitions) that is supported and maintained by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving.

Open Access (OA) publishing models have gained increasing acceptance as they provide a response both to the increasing cost burden of traditional publishing models and to the desire by authors to gain greater visibility for their work. At the same time, these models benefit libraries and their clients by making information more readily accessible.

Open Access publishing has two common models: a) where the authors place a pre-publication copy of their work within their own Digital Library (or institutional repository) or b) where the publications are submitted to an open access journal that funds publications by charging the authors rather than the subscribers for the cost of publication/distribution.

SERVICE ORIENTED ARCHITECTURE (SOA)

There has been a movement in enterprise architectures toward Service Oriented Architectures (SOA). This trend has emerged in an increasingly complex ecosystem of ICT services. Systems designed around a SOA principle expose their processes and business rules at a number of layers, creating multiple points at which these systems can interconnect. For instance, Koha includes not only a web-based interface but also service interfaces for archive harvesting (OAI/PMH), self sign-on (CAS), several service-level interfaces to the circulation work flow, and Web 2.0 interfaces such as RSS. The "loose coupling" of system design allows the substitution of different user interfaces, business rules and process interfaces. As in the case of Koha, other ICT software for libraries have gradually made a transition to SOA frameworks and design principles.

SEMANTIC WEB AND INTEROPERABILITY

Parliamentary libraries may now have to manage multiple systems. For instance, they may have a library management system, a digital library system, a reference management system and an electronic database service. The interoperability of these systems becomes important to avoid complexity for the users. For example, interoperability can allow a single search service to provide access to all the components of

---

5   See the IFLA Statement on Open Access, at http://www.ifla.org/en/news/just-released-ifla-statement-on-open-access.
6   The *Berlin declaration on Open Access to Knowledge in the Sciences and Humanities* of 22 October 2003 was written in English and is one of the milestones of open access movements. See http://oa.mpg.de/berlin-prozess/berliner-erklarung/ .

the systems. In addition, Semantic Web adoption and web service interoperability help to increase the visibility of library resources outside its traditional catalogue.

In recent years, there has been substantial progress toward service interoperability in the key ICT systems for libraries: the Digital Library and the Integrated Library Management System (ILMS). For example, the Open Archives Initiative Protocol for Metadata Harvesting (OAI/PMH) is a well-established metadata interchange framework which has been widely implemented in library systems. It can provide a method for making the ILMS resources and the Digital Library resources visible to Federated Search engines and to regional resource catalogues.

The Semantic Web, a method for resource description in the World Wide Web environment, along with Resource Description Framework (RDF), is another avenue for providing effective interoperability of library resources through rich linked data sets.

A roadmap for the implementation process of ICT

Another set of challenges for parliamentary libraries originates from the necessity to carefully plan the implementation process of the systems discussed in this Handbook, while maintaining stable and robust services to the members of parliament and their staff. The development of a roadmap needs to be situated within the capabilities, resources and constraints of each institution and should focus on those priorities that most meet the needs of the parliament. It should also be framed in the context of the overall development plan of the organization and take into account its ICT strategic objectives.

The first step of this process is to understand the particular requirements of all library users. Typically the parliamentary library has a broad range of stakeholders, including members of parliament, staff, citizens, regional collaborating libraries, and the wider global community via the Internet. It is important to understand the requirements and desires of each group when framing the technology priorities for the library. This process also entails planning for effective service delivery using ICT in order to exploit the full potential of software and systems that will be deployed in the library.

It must be noted that a significant number of information technology projects fail to achieve their goals due to cost escalation, poor software fit, infrastructure issues or other similar causes. Similarly, over ambitious targets or lack of internal capacity can mean that ICT fails to yield its promised benefits.

Therefore, through a proper planning methodology, it is important to judge the order of implementation of the systems on the basis of the needs of the institution and users, to identify the resources available to support them and to evaluate the existing ICT capability within the legislature. For instance, where Internet availability is not strong, the focus may be more on building fundamental resources, such as the catalogue and the Digital Library, rather than concentrating on access to external electronic resources.

The following Roadmap charts an approach for software evolution in a parliamentary library context.

STEP 1: UNDERTAKE A SITUATION ANALYSIS OF LIBRARY SERVICES

When implementing new systems in the parliamentary library, it is essential to understand the needs of the clients that the library serves. These clients include most importantly members, their staff, permanent staff in the parliament and often citizens. The information systems deployed by the library will have a dual role of preserving collective memory over time and meeting the information needs of the library clients. These can be assessed through:

1. quantitative evaluation of the current and previous requests placed to the library, and forecasting of the future requirements, to focus on the development of resources that would help to meet these information needs (for instance by analyzing past data and statistics);

2. qualitative research, for example through focus groups, Delphi studies, and surveys of members and their staff to review their current needs and identify future desires (for example using an online survey on the intranet, perhaps with free survey tools such as SurveyMonkey http://surveymonkey.com/);

3. the involvement of the library staff in parliamentary committees governing the information and knowledge management of the institution.

The survey of the current and future information needs can help to provide the focus and priorities for selecting the investment by the library on information systems. These might be on:

- increasing access to the current collections through an improved Integrated Library Management System (ILMS), or
- providing improved gateways to information resources relevant to parliamentarians, or
- implementing a Digital Library to improve access to a variety of information sources, including parliamentary records, media releases and current awareness items (for example collections of news items on and about parliamentarians), or
- improving systems to support the research services of the library.

An additional way of focusing the situation analysis is to reflect on the key factors that drive effective parliamentary library service delivery:

Focus on parliamentary needs. Identify what services would most facilitate the work of members, their research staff and the parliamentary institution. Consider which ones could be assisted by the adoption of ICT tools and those which can be "quick wins".

Impartiality. Evaluate the technological infrastructure and review the degree to which it delivers access to information in an impartial and confidential manner.

Synthesis from different sources. Evaluate if the library has a trusted role as a reliable information provider and is recognized for its skills in offering synthesis from different sources.

Public Policy coverage. Evaluate the provision of effective research services, and the integration of current awareness and news feeds in information flow provided by the library.

Collective memory. Evaluate how the management of digital and physical resources can reinforce the preservation of the collective memory. In the ICT context, this can include the provision of support for records management and digital library systems.

Quantitative success factors. Identify the existing Service Level Agreements and those that can be establish to cover the main service delivery areas. Evaluate the capacity of the parliamentary library systems to collect information in a systematic manner in support of aggregate reporting on quantitative success factors. Statistics are an important element in communicating the relevance of the library. They can also assist the library to direct its focus in the area of information delivery most needed by the members and the staff of the parliament.

From an information technology perspective it is also important to consider in the situation analysis the ICT services in terms of their "product placement" and therefore the marketing and communication strategies required to ensure awareness of these services. Members of parliament and their staff have a broad range of competing information sources and information demands, and they may not be aware of the benefits of focused service delivery that the library can provide. Member induction programmes, newsletters and information bulletins are one means of communicating the capabilities of the library. Building a presence in Web 2.0 social media forums and having a physical presence in critical parliamentary forums (such as committee meetings) can also play a part.

STEP 2: DEVELOP AN INFORMATION STRATEGY FOR THE LIBRARY

The priorities for the selection of new systems to be implemented by the parliamentary library should be defined by an Information Strategy. The Information Strategy should be based on the findings of the situation analysis and formulated to provide an overall framework for managing and delivering information services that meets the client needs, as well as for the identification of the human and ICT resources needed in order to gather, manage and deliver information in a consistent manner.

Developing an Information Strategy is one of the main reasons for improving the analysis of the information needs of users as important choices will depend on the findings of such analysis. Chapter 6 outlines techniques to review these information requirements.

A typical Information Strategy will include the vision and mission of the parliamentary library and the strategic goals to be achieved in a given period (normally, 3 to 5 years). Examples of strategic goals include:

- Making information more accessible;
- Reducing the cost and effort of managing and using information;
- Encouraging the development of information skills so that members of parliament can effectively access information resources;
- Improving the quality and reliability of information delivered;
- Ensuring that the parliamentary library has document management processes that meet the requirements to preserve the collective memory of the parliament;
- Having systems that fulfill relevant national and international standards.

The Information Strategy's vision, mission and strategic goals will help define priorities for the ICT systems that are most needed to achieve the objectives of the parliamentary library. For example, in a high-circulation library where the priority of the clients is physical access to the resources, the implementation of an improved library management system may be the first step in implementing the Information Strategy. For a library where the most pressing need is the provision of current news and guidance, the improvement of the ICT support for reference services may be the first priority.

An Information Strategy should also provide a framework for preparing a business case for ICT implementation in the parliamentary library (see Chapter 2).

STEP 3: FORMULATE A PLAN FOR SUPPORTING CORE LIBRARY SERVICES

The particular focus for a parliamentary library in planning and implementing systems for its core services will depend on the priorities defined in the Information Strategy and on the evaluation of the current and future needs and requirements.

Chapter 3 explores the core services that shall be typical of all parliamentary libraries and the systems that could be deployed to deliver them. It covers:

Library management systems - the main tools for the management of the physical assets, from acquisition to cataloguing, from search and discovery to circulation.

Electronic collection building and digital libraries - the methods and tools for providing access to electronic information resources, including subscription databases, e-books and e-journals, as well as for managing a repository of digital resources owned by the parliament.

Reference/research services - the primary point of personal contact with members of parliament, and the means for the provision of targeted information and research relevant to the current needs of the legislators and their staff.

Library and parliamentary websites - the intranet, extranet and public websites of the library, which

are important platforms for information delivery and resource discovery. With the transition to digital resources these instruments may be the main point of contact with clients.

STEP 4: FORMULATE A PLAN FOR MANAGING PARLIAMENTARY RECORDS AND ARCHIVES

The parliamentary library may have a records management role, which will increasingly interrelate with the management of digital resources. Where the parliamentary records are to be maintained in hard copy, an Integrated Library Management System (ILMS) can play an important role in the management of these records. Records management through an ILMS workflow can track the accessioning, location and availability of parliamentary records. In addition, the ILMS can facilitate periodic review/stocktaking of parliamentary records, and the identification and management of the archival Copy for Record and the copy for loan. Finally, the ILMS can support the discovery of parliamentary records through its search interface and web services.

Parliamentary records, however, are increasingly managed and retained in digital form. To this end, a Digital Library could be established to contain a variety of resources that are the result of digitization, information feeds from other sources, the collection and metadata description of news releases, and the digital records of the parliamentary sittings. The parliamentary library must be prepared to manage the entire digital life cycle of these resources, including their preservation.

Yet, the implementation of a Digital Library can be a large project as the lead time in implementing ICT services to support it can take several years. It is therefore important to survey the expected role of the library in this area and to ensure that the correct infrastructure for a Digital Library is in place (see Chapter 3).

Another factor to be considered for the implementation of a Digital Library repository is the requirement for effective work flow processes to mitigate the labour-intensive nature of Digital Library management. The work flow processes may encompass steps to make the data ingestion process and the metadata description of the resources more efficient.

An overview on the implementation of Digital Libraries and record management systems is offered in Chapters 3 and 4.

STEP 5: FORMULATE A PLAN FOR SOCIAL NETWORKING AND WEB 2.0

Web 2.0 provides opportunities for libraries to make services more visible and more accessible. This can entail exploring social media to ensure that libraries are present in the new domains of discourse favoured by their clientele.

The challenge of Web 2.0 for parliamentary libraries is to maintain their relevance in an information environment where members and their staff can draw on diverse sources from multiple channels. Their awareness of the ongoing role of the parliamentary library and the ways it can support their function through innovative services is critical. In this context, it becomes all the more important to focus on members needs by situating the library in the information "places" that they frequent and by providing information synthesis through distribution channels that include Web 2.0. Equally, it is all the more significant to robustly project the role of the library as an effective and impartial information source for members.

Social networking systems have proven to be a key element in interacting with and informing citizens. Staff of parliamentary libraries, for example, can leverage social media to explain the legislative process, quickly disseminate news and information, and receive feedback from citizens. Furthermore, social networking can be an asset for the library staff undertaking research and reference services, but time and investment in professional development need to be considered.

Finally, the library staff may be called on to support and facilitate the use of social networking tools by members and their assistants.

Chapter 5 explores the role of social media and Web 2.0 in parliamentary libraries.

Chapter 2
SELECTION, IMPLEMENTATION AND MANAGEMENT OF ICT SERVICES

Introduction

Information and communication technology options available to libraries are unparalleled. A wisely managed project for implementing ICT in the parliamentary library environment can considerably enhance the services the library provides to its clients.

However, in order to minimize the risks of failure of a project, the selection of suitable specific software for developing and managing services should be undertaken carefully and systematically on the basis of the overall Information Strategy defined by the library.

This Chapter provides an overview of the general principles of software selection and implementation management and outlines the typical approaches to reducing the risk of ICT project failure through:

1. Developing a business case that takes into consideration the current and forecasted needs of the parliamentary library stakeholders;
2. Evaluating software to be implemented in the context of the business case;
3. Developing a managed implementation which stages the delivery of services in a sustainable manner through project management.

Making a business case

The development of a business case for introducing new systems and services is not only about achieving the organization's commitment to funding; it is also about developing an understanding of the purpose and of the extent of the project. The intelligence gathered in identifying the information needs of clients and the elaboration of the Information Strategy framed around these needs will support the development of an appropriate business case.

ICT projects tend to be most successful when they are accompanied by a methodology for project management. PRINCE2 (http://prince2.com), for instance, is a product-focused management technique for the oversight of major projects. It focuses on a product-based planning approach and the organization of projects into manageable and controllable stages to minimize risks. Methodologies such as PRINCE2 require the development of a Project Initiation Document (PID) that defines the outcomes, resources, constraints, and risks associated with the project. Understanding the current systems used in the library and measuring the capacity for new systems is a first step in this assessment. Even if new systems are highly functional, it may be important to assess whether all elements of these systems are to be adopted at once or whether adoption should be staggered over time.

Evaluating software

Irrespective of whether software is commercial or open source, the implementation of systems to meet the needs of the parliamentary library shall be attended by stages of data conversion, training and workflow adjustment that need to be carefully examined. But most importantly, when selecting software, a formal process of evaluation should be considered. This may occur through formal tender processes, or internal evaluations. Either way, it is important to understand the requirements of the library and situate these requirements firmly in the business case to ensure that the new systems deliver their benefits.

EVALUATING SOFTWARE THROUGH TENDER

The risk of failure of software projects can be reduced through a systematic approach to adoption that includes:

- Developing from the business case a set of requirements;
- Evaluating the current information model and data conversion/transition requirements (vendors will need this information in order to be able to estimate the conversion and data migration costs of the project);
- Carrying on a preliminary research to evaluate the availability of software that may fit these requirements;
- Preparing a Request for Proposal or Request for Tender;
- Publishing the Request either to a limited set of probable candidates or more widely, and/or evaluate if the solutions can be developed or implemented internally. This could include open source solutions when the parliamentary library has suitable technical support;
- Selecting a limited set of candidates for detailed evaluation against the requirements. Evaluating software can be a time-consuming process, so a short-list of candidates could include the minimum practical number that can be evaluated with the resources available to the parliamentary library;
- Reviewing vendor presentations (including internal proposals);
- Negotiating an implementation plan with the chosen internal or external supplier, including Service Level Agreements.

Where a formal tender process is required, a Request for Proposal might typically contain:

- An explanation of the evaluation process and time-lines for response;
- An overview of the operation of the parliamentary library;
- Current systems and data model;
- Motivation for change and requirements for the new system;
- The current information architecture (standards, platforms, metadata framework);
- The expected project plan for delivery (estimated time-lines);
- Requirements for training;
- Requirements for data migration.

Vendors should be also required to identify fixed and variable costs, as well as the risks associated with their system.

A more constrained Request for Information might be sent out to select vendors after a survey of software options. However, in determining these options, it should be kept in mind that software solutions are never "free". Whether open source, commercial or free for use, sustaining solutions over time have associated system operational and professional development costs.

The parliamentary library may not be subject to formal tendering processes. However, when a formal tender process is not required, it is still important to evaluate the ways in which implementing such systems will satisfy the particular library needs. An internal software review to appraise the capabilities of the selected system against the current requirements should be undertaken.

As mentioned before, software may be available to the parliamentary library at no charge, or with no license cost. In these situations, however good the software may be, it is essential to recognize that the implementation of the system may fail if it fails to meet the current needs of the clients of the library. For this reason, it remains important to evaluate the software systematically and guide the project implementation in a manner that is focused on the specific library requirements. The business case for the software should not be neglected and an internal evaluation process should also be undertaken to avoid the emergence of potential problems during the project implementation.

Moreover, if the project implementation is not understood in the context of an internal business case that considers the long term relevance and sustainability of the services in the library, the implementation of these systems may not yield the hoped-for benefits for parliamentary clients. In evaluating the implementation approach, an internal assessment should at least look at:

- The current systems and data model;
- The motivation for change and requirements for the new system;
- The information architecture (standards, platforms, metadata framework);
- The expected project plan for delivery (estimated time-lines);
- Requirements for training;
- Requirements for data migration;
- Continuing costs of operating the system.

At the end of this process, there must be an understanding of the expected benefits to the library and an evaluation of the total cost of ownership of the system.

ICT project management

There are well defined approaches to ICT implementation that are designed to reduce the risk of project failures. Most project management approaches divide a project into phases of:

- **Project initiation**
  1. Developing the business case
  2. Defining project governance and executive sponsorship
  3. Defining the project goals and expectation
  4. Defining project risks
  5. Dividing the project into realistic delivery stages
  6. Establishing the reporting processes for the project
  7. Establishing a methodology for change control and issue resolution
  8. Identifying teams to be responsible for project delivery stages

- **Project management**
  1. Breaking down the project into definable stages
  2. Allocating resources for each stage
  3. Defining a project plan for delivery of each stage
  4. Defining targets for each project stage
  5. Escalating issues and change requests through the governance framework

- **Stage review**
    1. Reviewing each project stage on completion for feedback into the next stage
    2. Reviewing each project stage when target dates for deliverables are not met

- **Project completion review**
    1. Assessing project outcomes and follow-up work
    2. Assessing lessons learned

For larger projects - particularly for those associated to significant investments, implementation complexity and/or long duration - a Project Steering Committee should be established. A typical Steering Committee might comprise:

- A business owner – one ICT, library or parliamentary staff who has ultimate responsibility for the benefits and outcomes of the project;
- Major stakeholder representatives - representing the major areas positively affected by the project;
- Major supplier/vendor representatives who are participating in the project delivery;
- Other subject specialists as required to bring specific knowledge and skills.

The Steering Committee should be kept to the smallest practical size to allow regular, brief review of the project governance and progress.

One example of a formal methodology for project management developed for medium to large projects is the PRINCE2 project management methodology. Further information on this project management framework can be found at http://www.best-management-practice.com/, a portal site with information resources on PRINCE2.

ICT service delivery

Information systems are dynamic and require ongoing monitoring and support. Whether managed externally or internally, a service-oriented view is typically the most effective method for achieving the best practical outcome for ongoing system operation. One of the most comprehensive standards for ongoing service management is the Information Technology Infrastructure Library (ITIL), a set of principles and standard for service operation that break down ongoing service management into:

- **Service support**
    1. Service desk management and principles around management of a service desk
    2. Incident management - tracking and resolving issues
    3. Problem management - resolving ongoing issues into an overall strategy for ICT delivery
    4. Change management - ensuring changes are communicated, discussed and agreed
    5. Release management - ensuring system changes are implemented in a coordinated manner that minimizes impact

- **Service delivery**
    1. Service level management - statements of expectation for service delivery by internal and external vendors
    2. Capacity management
    3. IT service continuity management
    4. Availability management
    5. Financial management

With the increasing number of external providers that a parliamentary library relies on, Service Level

Agreements (SLA) become an important means of defining the responsibilities of service providers. A Service Level Agreement can define:

- Performance of the applications provided (for example minimum page response times for the library management system when hosted externally);
- Levels of technical support and support response times;
- Maximum recovery times in case of disaster;
- Data backup and retention policies;
- Privacy policies.

Similar agreements, although frequently less detailed, can be used by the parliamentary library with internal ICT offices or ICT departments of the parliament to define quality and consistency in service delivery.

METHODS FOR ICT SERVICE DELIVERY

Service delivery of systems shall be evaluated and selected in the context of the broader architecture supported by the ICT. The library can draw on a variety of service architectures including:

- *Hosted or "cloud" solutions* **-** where a provider delivers the entire application on its infrastructure, including all associated software, hardware and technical support. In these instances, service delivery is usually web based and a Service Level Agreement is entered into with the provider to define ownership of data, privacy restrictions and levels of service and support.
- *Virtualized servers* **-** virtualization technology allows a single large computer server to be subdivided into multiple different "virtual" servers. VMWare is the most popular example, but Oracle, Microsoft and Linux have virtualization capabilities as well. Virtualization can allow the ICT area to support a range of platforms using a single hardware platform. Some software applications come "out of the box" in a virtual server platform, therefore no software installation is required. Of course, software support is still required.
- *Web 2.0 service solutions* - many powerful search and office productivity tools are available on the web free of charge or on a fee-basis, as illustrated in the previous chapters. There may be no individual Service Level Agreement offered, so a careful inspection of the standard privacy and terms and conditions of these services is important.

PRIVACY AND DATA SECURITY

In order to realize the tremendous benefits of services delivered over the Internet, end-users are required to entrust a growing number of service providers with more and more personal information. This information often deals with aspects of people's lives which are regarded as personal and private and may include information about their identity, physical location, contact details, among other things.

The loss of personal data by a service provider may result in an interruption to the service and a degree of inconvenience to the consumer, but unauthorized access to and misuse of personal information can have longer-lasting consequences. In fact, the possession of personal information can, in some circumstances, be exploited by unethical marketers or by criminals for fraudulent purposes. As a result, the theft, selling and buying of personal data has become an issue that must be treated seriously by service providers and consumers alike.

The privacy and security of personal data entrusted to any service provider must be safeguarded from loss and misuse by the same service provider. Privacy requirements therefore form an important part of the Service Level Agreement with any software and hosting providers.

Most people would be aware that networked applications, unless properly managed, are vulnerable to intrusion by computer hackers. However, experience also shows that abuse of authority and trust by staff with access to computer systems is as much a problem as external intrusion. While most staff are trustworthy and careful, the concentration of personal information within a single repository provides the potential for one incident to have a large and serious effect.

The rich capabilities of Web 2.0 applications also come with associated privacy risks. When the library is building mash-up-style applications or architecting solutions that use a mix of internal client data as well as external services, the library staff should be aware of some basic tenets of privacy around the design of information capture and usage policies for personal data:

- Only minimal personal data should be gathered, and strictly for the intended purpose (for example interlibrary loans);
- Only the minimum information should be collected from clients to achieve the task required;
- Clients should have the ability to access, verify and modify any information in their profile;
- Access to the client functions should not confer access to the administration functions for the application.

RESPONSIBILITIES OF STAFF IN ICT SERVICE DELIVERY

Because of the role the parliamentary library plays in managing information, including personal data of users, measures should be taken to educate parliamentary staff about the need to protect privacy and to implement virtual and physical security measures, backup processes, robust server and network design, and auditing of access to the systems which they manage. Nightly backups of data on systems should be encrypted and retained only as long as necessary to ensure business continuity in the event of system failure.

Staff employment terms should include privacy and non-disclosure conditions, and employees should be given access to systems for which they have responsibility, and to the level required to undertake their tasks.

The parliamentary library may have a responsibility to indicate the usage of any personal data managed, and should communicate its policies to any hosting agencies or departments managing their data. A basic requirement should be that service providers do not sell, rent, share or otherwise communicate the parliamentary library clients' data, unless in a manner required by the parliamentary library.

In this context it is important to establish processes and procedures to mitigate risks that may arise from within the parliamentary structure. In doing so, the following areas need to be considered:

- Accountability of parliamentary staff;
- Education of parliamentary staff;
- Oversight of activities;
- Careful handling of information;
- Monitoring of threats.

Employees should be required to be familiar with the Security Policy and with the Terms of Use for Internet resources. It is important for the library to define and promulgate a Terms of Use for Internet usage by library staff. Such terms of use do not have to be about restriction of information flow or research, but should direct to the appropriate use of Internet aimed at fulfilling the role of staff as information professionals.

The library or the ICT services of the parliament should also define and publish Terms of Use regarding Internet access and usage of library services and terminals for library clients.

RISK ASSESSMENT

The parliamentary library should undertake a risk assessment associated with its systems and resources, and identify processes to mitigate risks. Examples of risks to be assessed are outlined in the following table:

System event	Risk	Mitigation
Misuse of data by employees	Breach of privacy policy	✓ Employee policy security communicated to all staff
Virus infection	System outage and data loss or breach of privacy	✓ Anti-virus installed on all systems ✓ No file shares on servers when not functionally required ✓ Patch update policy on all systems
Hard disk failure	Loss of data due to hardware failure	✓ Mirroring of all system and data disks ✓ Nightly backups of all data ✓ Weekly mirroring of critical systems
Hardware failure Server	Loss of data due to hardware failure, client and office outage	✓ Mirroring of all system and data disks ✓ Nightly backups of all data ✓ Weekly mirroring of critical systems
External Network failure	Loss of data due to hardware failure	✓ Mirroring of all system and data disks ✓ Nightly backups of all data ✓ Weekly mirroring of critical systems ✓ Fail-over arrangements with servers available in the office (e.g. Linux to Linux or Windows to Windows)
Power loss - server	Server outage and loss of data	✓ Redundant power supplies on all servers and fault alerting
Power loss - office	Client access outage	✓ Hot standby servers in DRP Sites located on different network and power service
Hardware failure - internal hubs	Office and external service outage	✓ Hot standby hubs
Network outage - primary data link	Office and external service outage	✓ Maintain a separate high-bandwidth link to the office ✓ Hot standby servers in DRP Sites located on different network and power service
Fire	Office and systems outage	✓ Technical contacts for hardware and asset recovery ✓ Exit and assembly plans for staff
Flooding	Office and systems outage	✓ Technical contacts for hardware and asset recovery (for instance freeze drying for books)
Earthquake	Office and systems outage	✓ Exit and assembly plans for staff

The level of protection undertaken against each risk depends on the likelihood of the risk materializing and the expected impact of an outage on clients. This drives the degree of redundancy that is engineered into the library architecture. Fully redundant live standby servers are possible, but can be very expensive to maintain. They are typically warranted where the outage interval in case of a disaster event for clients must be kept to seconds or minutes. A minimum disaster recovery profile should see off-site backup of data and well documented and tested steps for recovery of this data.

A Disaster Recovery Plan should be associated to each risk event. It should define the contacts, processes and actions during and after the disaster event. It is also important to document the last successful test of this disaster plan.

In locations where power supply is irregular, risk mitigation might include arrangements for mirroring services with other agencies as, for example, by ensuring that catalogue holdings are available through WorldCat.

Staff training

Training of library staff is an essential component of ICT capability building. However, training needs to be timely. If given too much in advance of systems delivery or too much in arrears, it can leave staff struggling when called on to provide support for systems with which they are not familiar or comfortable.

Training must be framed around the roadmap for the implementation process of ICT. For this reason, a training needs analysis should be periodically reviewed in light of the roadmap. This analysis can also be used to identify areas of staff long-term development, especially for those library staff tasked with forward-facing service delivery.

With the transition to an increasing web-based focus on information delivery, there are a number of approaches to web-based self education on the Web 2.0 mix of tools and services. One of the most popular is the "23 things" programme that takes the learner through a Web 2.0 journey relevant to librarians (http://plcmcl2-things.blogspot.com/).

ICT training for members of parliament

Many parliamentary libraries have the responsibility to train legislators on the sheer diversity of resources available to them through the library itself and on the web. They often provide this type of induction courses to newly elected members of parliament and their staff. These can be extended to include training in ICT-related areas such as the use of Web 2.0 resources, use of e-book readers and use of the mobile devices for reference requests.

Such training sessions can be the opportunity to brief staff in members' offices on the constraints of copyrights and the risks associated with plagiarism. They can also be an opportunity to undertake specific surveys about the library to assess the level of understanding and usage of resources by members, in order to evaluate over time what information assets they are looking for.

SOFTWARE AND SERVICES

- Microsoft Project. http://www.microsoft.com/project. Microsoft Project is a widely used Project management tool from Microsoft.
- Basecamp. http://basecamphq.com/. Basecamp is a low cost web-based project management & collaboration tool.
- Project manager. http://www.projectmanager.com/. Project manager is a web based project management and document collaboration system.

STANDARDS

There are emerging standards for Information Technology service management which give guidance on best practice in sustainable service delivery. These principles define methodologies for service delivery and business continuity using Information Communications Technology.

- ITIL. http://www.itil-officialsite.com/. The Information Technology Infrastructure Library (ITIL) is a UK-based toolkit for best practice management of IT resources. It has achieved international adoption as a practical set of guidelines for business continuity, management of ICT services and IT issue management[10].

- Service Level Agreement (SLA). Libraries have to deal with many ICT suppliers. Achieving a suitable performance with them depends on defining service expectations that are agreed with the supplier. There are many guidelines for SLA preparation, including:

  - http://www.service-level-agreement.net - a Service Level Agreement "toolkit";
  - http://www.sla-world.com/framework.htm - a Service Level Agreement "toolkit";
  - http://www.nkarten.com/sla.html - Some commonsense ideas about Service Level Agreements;
  - http://technet.microsoft.com/en-us/library/bb124886%28EXCHG.65%29.aspx. A checklist from Microsoft for Service Level Agreements.

---

7   Wikipedia has an article on ITIL with an example of a Service Level Agreement from Queensland, Australia. http://en.wikipedia.org/wiki/Information_Technology_Infrastructure_Library.

Chapter 3
CORE LIBRARY SERVICES

Introduction

This Chapter addresses the core services that underpin most parliamentary libraries and are central to the fulfillment of their mission.

Information and communications technologies form the foundation of most modern libraries. Starting with automation functions for cataloguing and circulation, the range of tools that a library can draw on has grown progressively over the last four decades. Since the 1990s, mature and robust integrated solutions have been available to manage all aspects of traditional library functions: acquisitions, cataloguing, circulation, serials management and reporting. Electronic journals and books, rich database services and the expansion of multi-lingual capabilities of software platforms have opened up the range of options available to parliamentary libraries.

By 2000 the first examples of open source software for libraries had emerged along with the rapid growth of the Internet as the main vehicle for information communication. In parallel, Digital Libraries and Open Access services were gradually expanding.

Today, through the use of ICT, parliamentary libraries have extended considerably their management responsibilities and oversight over the physical collection to a number of other electronic and digital assets. The core services provided by the library have all introduced significant ICT elements for better delivery. Examples of benefits of ICT for parliamentary libraries are:

1. *Collection building.* ICT can support collection acquisition, indexing, discovery and circulation of the resources.
2. *Reference and research services.* ICT can provide access to a wide range of online tools that facilitate the communication with library staff and access library resources. ICT can also support the delivery and publishing of research results and dissemination of news and information feeds.
3. *Resource sharing.* ICT systems can support the delivery of resources that are not included in the current library collection through interlibrary loans.
4. *Resource discovery.* ICT services provided through Intranets and Web 2.0 tools can facilitate direct access to library resources by clients. Federated Search software can aggregate all library resources into a single search framework. Single sign-on tools can reduce the complexity of accessing multiple resources.

Moreover, parliamentary libraries that are now upgrading their current systems or exploring new services can take advantage of a generational advance in the core systems used by libraries. Library Management systems, Digital Library systems and Document Delivery systems have all been transformed by web-based solutions for the delivery of services. Understanding the information needs and information seeking behavior of members of parliaments, parliamentary committees and other stakeholders is essential to develop the systems and the services that enable effective information delivery by the parliamentary library.

Integrated Library Management Systems (ILMS)

One of the core roles of the library is to provide efficient access to its assets and resources for members, their staff and other users. The traditional card catalogue is being replaced by ICT-based electronic catalogues, often made available on the Internet as an Online Public Access Catalogue (OPAC).

The cataloguing of the resources that appear on the electronic catalogue can be achieved through a standalone system or through an integrated approach which ties together the whole life cycle of a library asset, from acquisition to disposal: the Integrated Library Management System (ILMS). Most Integrated Library Management Systems will at least support a budget-based acquisitions module, cataloguing and authority support, online catalogue access, serials and subscription management, and circulation. This traditional set of functions can be significantly extended when the system also supports Web 2.0 capabilities (such as tagging and book reviews) and client self management (self-renewal). Finally, these features may be further extended with RFID for asset tracking and self-checkout.

The ILMS can facilitate the management of resources at all stages of:

- Purchase suggestion management (possibly integrated with Acquisitions);
- Acquisitions - Purchase Orders (possibly with Electronic Data Interchange), tracking of orders, receiving of orders, tracking of orders against funds/budgets);
- Integration of acquisitions with the cataloguing process;
- Cataloguing (and copy-cataloguing using Z39.50 or MARC import of catalogue records);
- Presentation and searching through the electronic catalogue and/or Online Public Access Catalogue (OPAC);
- Serials management (for print subscriptions);
- Preparation for circulation: barcode and allocation of shelf location or storage location;
- Selective dissemination and communication of items held through web and syndication methodologies (for example new items lists);
- Reservation of items and reservation workflow (request, retrieval, inter-branch transfer and fulfillment);
- Circulation (loans, loan overdue alerts, returns, fines and fines management);
- Reporting on circulation history, holdings, borrowers and other information in the system. Both transactional and management reports are needed;
- Resource management (stocktaking);
- Support for RFID (where applicable).

An ILMS can therefore be central to the management of library resources. Typically the focus of ILMS is on the management of physical assets (books, journals and other print publications). However, many ILMS come with a good, integrated search engine, which can play an important role in discovering the digital resources owned by the library.

Effective ILMS software can yield great efficiencies in service delivery and day-to-day operation of the parliamentary library. With the advent of Web 2.0 library systems could be categorized as "generation one" (in-house desktop-based cataloguing system) and "generation two" (services that are web-enabled, online and Web-2.0 capable). A generational "leap" in functions is possible by adopting library management systems that have made the migration to fully web-enabled operation.

New standards for bibliographic metadata

There are two new key standards that will affect existing cataloguing systems for libraries:

Functional Requirements for Bibliographic Records (FRBR) is a methodology for gathering all associated "expressions" of a work into a unified view. This will affect how MARC and other metadata standards for cataloguing describe items in the catalogue. Changes are being defined to MARC to accommodate the FRBR view of cataloguing. Existing cataloguing systems based around MARCXML rather than MARC are likely to accommodate this change reasonably well.

Resource Description Framework (RDF) is a recommendation from W3C for the classification of data on the web. RDF is increasingly being used by libraries to create linked data sets. RDF goes beyond classification to describe metadata as a set of "triples" comprising the subject, the object and the actual value of a given subject or description item. It will be increasingly important that the cataloguing system of the library can export and provide web services in an RDF format for inter-operations with other libraries.

ILMS workflows

Integrated Library Management Systems also tend to have an embedded workflow for common tasks such as circulation.

The common workflow tasks supported by the ILMS are:

Holds and reservation workflows. The workflow stages for holds/reservation management can include rules about who can make reservations on items and on what types of items. A hold might generate an alert to the library regarding the item that is being requested and the library may need to organize an inter-branch transfer or an inter-library loan. The next stage of this workflow may trigger an alert (e.g. SMS or email) to the client advising of the item's availability once it has been located by the librarian. The complexity behind these tasks is managed by the software itself.

Circulation workflows. Typical circulation workflows are check-out and check-in, but with an Integrated Library Management System they may also entail processes for online renewal, automatic pre-due and over-due notices, fines management and inter-library loans tracking.

Cataloguing workflows. An integrated approach to the library management system can allow the acquisitions process to flow through to cataloguing. Once catalogued, the process of preparation of resources for use by library clients may involve stages of cataloguing-in-process workflow steps. These can involve the preparation of the asset for shelving as well as the process for detailed cataloguing. Finalization of cataloguing may automatically flow through to RSS feeds of new items alerts, and online web-based promotion of new items.

Metadata enhancement workflows. When the ILMS is indexing a variety of digital resources, workflows can support the enhancement of metadata associated with these items. For instance, digital documents that are added to a parliamentary Digital Library might be subject indexed in the ILMS. Workflow processes can facilitate the capturing of the digital documents in the Digital Library and indexing of the document in the ILMS.

EXTENDING THE ILMS WITH WEB 2.0

Web 2.0, including social networking, provides a vehicle for the integration of multiple services in order to offer a framework for highly personalized access to resources. The ILMS can be further extended to recognize the interactive nature of Web 2.0 functions in information systems.

Web 2.0 functions in the ILMS are commonly called "Library 2.0" functions, and can include:

- Tagging, or the ability for clients to add their own identifiers ('tags') which are visible to others on the library catalogue;
- Reviewing, or the ability for clients to annotate entries in the library catalogue with their own comments;
- Mash-ups, by making the catalogue available through web services to allow clients to create their own views of the library resources.

These aspects are further discussed in Chapter 5.

MOBILE DEVICES: EXTENDING THE REACH OF THE LIBRARY

Mobile devices, such as smart phones and tablets, provide an increasingly popular platform to access web-enabled applications as they can bypass infrastructural obstacles posed by fixed networks. For legislators and their staff, these devices are progressively becoming the entry point to library research and electronic resources. In this context, it is important for parliamentary libraries to assess and monitor the ways in which they need to adapt their information services to these new platforms and to review periodically with their users their preferred methods for information delivery.

Parliamentary libraries must monitor:

- The effective use of current systems in the constrained screen space of mobile devices;
- The ability to deliver full text content to these devices. For instance, some document formats may be difficult to read on some mobile devices;
- The security and authentication constraints to achieve this while maintaining the integrity of library services.

Web pages and full text resources can be adapted to the mobile context, sometimes with quite simple adjustments to the style sheets used for web pages.

Nowadays, content management strategies for the parliamentary library should take into account the impact of mobile devices. Enabling access through these devices can extend the reach of the library and the accessibility of the collection and research services, and may be as important as a presence in the Web 2.0 environments.

RADIO FREQUENCY IDENTIFICATION (RFID)

RFID (Radio Frequency Identification) is a smart tag which replaces barcodes in books, client membership cards and other devices. When an RFID tag is included in an item, the item can be checked out simply by placing it near a reading mat. The chip in the RFID tag can be programmed with information and can also act as a security device. It is commonly used by libraries for self-checkout and has had considerably take-up in public libraries where circulation rates are relatively high but collection sizes are small. It has relevance to both records management and library asset management.

The annual RFID survey by Mick Fortune (http://www.mickfotune.com/Wordpress) indicates that self-service is a key justification for RFID, followed by cost reduction, with less focus on security and resource sharing (Inter-Library Loans). This is possibly because the High Frequency (HF) tags currently used for RFID implementations in libraries have a limited scanner range and therefore have limited suitability for bulk stocktaking and stock management functions.

RFID is most useful for libraries with high levels of circulation or where self checkout is important. The relevance of RFID to the parliamentary library will therefore depend on the level and type of circulation of the library resources. Self-checkout using RFID can provide benefits by enabling access to library resources at times when the library is unattended. Self-checkout also has benefits for libraries that have high lending rates.

CASE STUDY

Implementation of RFID technology in the Library of the Parliament of Norway

In April 2007, the Library of the Norwegian Parliament (the Stortinget) started to use RFID to manage its collections. This choice was associated to the adoption of a new integrated library management system, Aleph500, and was based on the decision to use a technology that held more possibilities than barcodes.

In particular, RFID is used by the Library, which is only open to internal users, for identifying the single items of the collection for lending purposes. All items that users can loan are tagged with RFID labels, including books, periodicals, maps, language courses, and audiobooks.

There are a number of benefits in using this system, such as self-service for clients or easy system updates when moving material from one location to another. For example, it became possible to handle stacks of periodicals rather than one at a time.

Since the price of the RFID technology has decreased over the last years, the costs of its installation are now becoming competitive with those of other technologies. Costs for antennas and conversion units must be also taken into account when implementing RFID, but they are a one-time investment.

RFID technology has additional managing advantages, such as "wands" that facilitate search for misplaced materials.

The greatest challenge that can be identified when implementing RFID technology in a library is the work to be accomplished to place tags in all the collections, since every single item must be handled manually. In this regard, the Stortinget Library decided to first place tags to the open shelf collection (about 10.000 items), a work that took two weekends to be finalized. The rest of the Library items are being gradually tagged when single items are loaned.

Prepared by the Library of the Parliament of Norway

The experience of integrating Koha and DSpace in the Library of the Parliament of New South Wales, Australia

When the parliamentary library of New South Wales began using Koha as its Library Management system and DSpace as its digital repository, the staff did not do so to make a political statement about the viability of open source software. "This was just the software that fulfilled our requirements," said Deborah Brown, Parliament's chief librarian.

While having a physical collection, NSW Parliament library's lifeblood is digitized news media. Parliamentary libraries in Australia are granted a parliamentary copyright exemption for provision of news and media resources for the Parliament. On this basis they reproduce and store dozens of articles each day for the use of the members of parliament and their staff, who make up their user base. When members of parliaments are sitting for parliamentary sessions many of them are far from their constituencies, so it is essential to have a reliable source of news clippings from the regional papers covering their ridings. The library has a service that scans for mentions of all the members' names in the regional papers, and digital full text versions of those articles are stored in DSpace to ensure their accessibility so the members can keep up to date with policy development research.

The news articles are received in digital form from a news provider and are imported through an automated process into the Digital Library. However, the metadata is extended by a library staff-member who reviews the seven metropolitan newspapers with subject headings specifically relevant to members. These articles are digitally clipped and catalogued and put into the repository, as are the various media releases put out by legislators (the NSW parliamentary library is the State's only centralized collection of those electronic media releases).

To handle these requirements, as well as their physical collection the library has been using a digital repository combined with library management software since 1997, but 2010 saw their shift to Koha and DSpace. The division of tasks, which is maintained in their current open source implementation, has Koha storing the detailed metadata in bibliographic records, while DSpace stores digital entities themselves with "just enough metadata to get by". When an item is loaded into DSpace it also gets loaded into Koha for detailed cataloguing, and electronic documents can be loaded into DSpace through Koha. DSpace is used as a repository, while Koha is used as the principle search engine.

Integrating the two approaches took approximately 6 months for the conversion. News clippings can be imported, get indexed, and have authorized subject headings applied in 2-3 hours each day. Most articles are loaded using an automated process customized for the library which creates the DSpace and Koha initial entries. Some subject headings are automatically generated from the externally provided electronic clippings files. DSpace and Koha workflows are used to add the additional subject heading work as part of the standard workflow. Subject cataloguing is enhanced through the use of auto fill-as-you-type subject cataloguing forms.

Prepared by Justin Unrau (Prosentient Systems) with feedback from Deborah Brown and Chris Burns from the parliamentary library of NSW, Australia.

ILMS

Open Source

- http://emilda.org/. Emilda - (Realnode Ltd 2008): a small open source project with an attractive interface and a good installed base in small libraries.
- http://open-ils.org/. Evergreen - (Georgia Public Library Service): a more recent open source system with a good installed base and strong "hype" in the blogs.
- http://www.solis.org.br/gnuteca/. Gnuteca - a Brazilian open source system with strong non-English installed base.
- http://koha-community.org/. Koha - the oldest open source system, with a strong installed base.
- http://obiblio.sourceforge.net/. OpenBiblio - a system popular in small libraries, with simple installation and an effective presentation.
- http://sourceforge.net/projects/phpmylibrary/. PhpMyLibrary] developed in the Philippines and released not long after Koha. This system championed the use of MARC to facilitate adoption.
- http://www.pmbservices.fr/nouveau_site/pmbservices.html. PMB: a French open source system with strong European installed base.
- Winlsys CDS/ISYS is a free library management system sponsored by UNESCO with a wide installed base in smaller libraries.

Proprietary

- http://www.librarytechnology.org/LibraryTechnologyReports.pl - Library Technology Reports is an excellent profile of proprietary and open source solutions, reports on capability and current providers.
- http://en.wikipedia.org/wiki/Integrated_library_system. Wikipedia also has a profile of ILMS software.

Tools for the System Librarian

- There are also a range of tools that facilitate the day-to-day role of the system librarian for data conversion, querying databases.
- http://people.oregonstate.edu/~reeset/marcedit/html/. MarcEdit (software for MARC data conversion).
- http://www.oclc.org/ezproxy/ - EzProxy (widely used for single sign-on to database services).
- http://www.codeutility.com/Products/UniversalSQLQueryTool/UniversalSQLQueryTool.html. Codeutility SQL (Structured Query Language) query tool.
- http://squirrel-sql.sourceforge.net/. SQuirrel SQL query tool.

Cataloguing & Metadata

- http://www.aacr2.org/about.html. Anglo American Cataloguing Rules 2 (AACR2): an influential international standard that is the basis for many other standards.
- http://www.loc.gov/marc/. Machine Readable Cataloguing (MARC): a standard method for interchange of bibliographic data – note MARC21, UNIMARC and MARCXML.
- http://archive.ifla.org/VI/3/ubcim.htm. IFLA Universal Bibliographic Control and International MARC Core Programme (UBCIM). UNIMARC Information.

Classification

- http://www.oclc.org/dewey/. Dewey Decimal Classification (DDC): created in the 19th century by one man to classify all human knowledge, the DDC is currently owned by OCLC, and is probably the most popular classification system internationally.
- http://www.udcc.org/. Universal Decimal Classification (UDC): first published around 1900 and since then extensively revised and developed, it is a multilingual classification scheme for all fields of knowledge. Published, in whole or in part, in 40 different languages, it is used worldwide. Managed at the beginning by the International Federation for Information and Documentation (FID) it is now owned and revised by the UDC Consortium.
- http://www.loc.gov/catdir/cpso/lcc.html. Library of Congress Classification (LCC): created shortly after the DDC, Library of Congress takes a more complex approach to classification. It was originally designed to describe the books in the Library of Congress, not all of human knowledge, so it tends to focus on the United States.
- http://www.ifla.org/IV/ifla62/62-qiyz.htm. Chinese Library Classification (CLC) beginning in the 1970s, the CLC is used in most information institutions in the People's Republic of China.

Library registries

- http://www.globalregistries.org/rifcs.html. ISO 2146 ISO 2146: An ISO standard for registries of library organizations.

RFID

- ISO 28560 - A proposed ISO standard for data present on RFID tags.

Electronic resources and digital libraries

The increasing presence of digital resources has resulted in the growing complexity of collection building and resource management by libraries, including subscriptions, digital libraries, digital news feeds, and digitization of resources owned by the parliament. This additional complexity can lead to requirements for a federated search capability (integrating into a single portal the major information resources), a workflow management system (to manage the complex processes in electronic collection development), and single sign-on (to simplify access to multiple underlying database resources).

The diverse range of electronic resources that the parliamentary library may need to manage include:

1. Online electronic databases services - with search services and possibly full text;
2. Digital libraries - for managing digital documents either born-digital or converted to digital form;
3. Syndication feeds - information feeds providing current information resources based in information preferences (for example, news feeds);
4. Electronic subscriptions - including e-books and e-journals.

When the parliamentary library is responsible for the management of assets created by the parliament, the systematic management of these assets through the electronic workflow and the Digital Library systems represents an important role for this institution.

The rapidity of technological development brings also long-term difficulties in the management of intellectual and creative output in digital form. Very often, libraries and museums have a key role in the preservation of analytical and creative endeavors over the long term. However, while the preservation of printed works is well understood, most libraries are ill equipped to undertake research into the preservation of new media artifacts and creations. Moreover, the widespread adoption of information technology as an integral part of the research process, and the proliferation of software vehicles for content creation, mean that on the basis both of cost and volume of content creation, the meager budgets of most libraries are simply not sufficient to sustain the role of comprehensive collection builders.

Finally, inherent risks of technological obsolescence can be associated to Digital Library collection building. However issues of obsolescence should not represent an obstacle to the move to management of electronic resources, but rather issues that need to be addressed by the institution when building a Digital Library. Information systems inevitably go through a continuous series of transformations over time, as do digital objects stored in an information system.

ELECTRONIC COLLECTION DEVELOPMENT

The resources involved in electronic collections are complex. They can include image libraries, subscriptions to digital news feeds, subscriptions to database services, e-books (electronic books), and internally created digital documents.

Because of this complexity, a systematic digital collection development policy is recommended. This will help to effectively integrate the disparate digital resources into a unified collection. Usually, the library's intranet or website will be the portal through which clients can access this collection. The searching of resources may be further unified through a federated search approach.

The collection development process should include a review of electronic collection requirements based on the information needs of members and staff. For parliamentary libraries, the distinctive focus of the end user requirement is to access parliamentary archives, news and current affairs feeds, current awareness bulletins and press releases, as well as digitally-born resources such as electronic books, databases, statistics and e-journal resources that contain analysis of public policy issues. A survey of current and future requirements for electronic resource access will assist in categorizing electronic collection requirements in two broad areas: Digital Library services (including digital archives) managed by the library, digital resources provided through subscription and document delivery. Library users can be informed about new material in both these areas through news and alerting services.

The library should undertake an asset audit to determine the needs/requirements for digitization for purposes of both access and preservation. On-demand digitization requirements to support reference services, document delivery and alerting services (e.g. full text disseminating of news items in relation to parliament and its members) should also be reviewed. Both of these digitization processes will feed through to the Digital Library which can preserve these entries as a permanent record.

If the parliamentary library has responsibility for archives, the need to build an effective document management or Digital Library system will be imperative. The library can use a Digital Library framework to improve access to current and historical information. Some parliaments, for instance, use digital libraries to store media releases from members and news stories related to members. In other cases, the parliamentary library plays an important role in preserving the collective memory of the parliament, and the Digital Library can be used to support the digitization of historical resources held by the library for purposes of historical preservation and ease of access. These archives can form an important information resource on the parliamentary website.

The selection of appropriate software for Digital Library management is a significant project for the parliamentary library and will entail a software selection and implementation process similar to the implementation of other major core library services (see Chapter 2). The selection process should begin with a requirements gathering process to determine the types of media and assets that the parliamentary library will be responsible form, since there are many solutions that can provide very effective management of full text and image documents. Management of video materials is more demanding - both in software and data storage requirements. Broadly the classes of software that can address the requirements of storage and preservation of digital resources are:

- File system management tools;
- Document Management Systems;
- Digital Asset Management;
- Digital Library systems.

File systems approaches to the Digital Library

Useful documents of historical value may already be in digital form and can be managed by the library. Many Digital Library systems grow from a simple file-system approach to collecting digital documents relevant to the members, with the library being the logical repository for these documents. While the collection of documents remains relatively small, this approach can be quite effective. The ILMS catalogue can potentially be used to collect metadata relating to these documents and provide searching for the documents held on the file store.

When the collection of digital document grows, such an approach will become unmanageable. While the file system is maintained and preserved, there is a high risk that documents are removed from the file system without reference to the associated metadata. The library catalogue, being mainly focused on descriptive and subject cataloguing, does not always have sufficient metadata for ongoing records management of archival electronic resources.

Document management systems

The Document Management System can provide an intermediary approach to Digital Library management for a parliamentary archive, when the focus is on managing largely internal-facing digital documents and not on long-term interoperability and data exchange. For parliamentary libraries starting in this area, Digital Library software is the better choice when possible, although using an existing and already installed Document Management application may be the beginning of a Digital Library strategy.

Digital asset management

If the library is responsible for capturing, preparing and distributing large collections of images, audio or video, it may be necessary to consider the use of digital asset management solutions. This class

of software is deployed by broadcasting and media organizations to manage the workflow around ingestion, preparation, metadata annotation and retrieval of non-text digital assets. However, this is not a frequent choice in parliamentary libraries.

Digital Library systems

The Digital Library system is in many ways similar to the Document Management system, but extended to provide a public-facing web interface and an underlying archiving system. The Digital Library is therefore the choice for long-term ongoing management of a digital archive of text-based digital resources (and often also for image libraries). Digital Library software normally has integrated capabilities for metadata exchange with current standards. Even if in the early stages of electronic collection development interoperability may appear to be of limited relevance, such metadata can be used in many different ways. For example, Web 2.0-based services can use metadata to feed through to alerting systems.

Software for Digital Library systems is available commercially and in open source, and is robust and stable. Common software choices are WinISYS CDS, DSpace, Greenstone and for larger libraries Fedora Commons.

Interoperability and metadata

Metadata is the information describing objects in the Digital Library. For instance, the item title, author, dimensions and format are all examples of metadata. Metadata serves three purposes in the Digital Library:

Descriptive metadata - As with traditional cataloguing, digital objects need to be described and identified so that they can be discovered within the Digital Library. Digital Library metadata standards for describing objects serve the same role as AACR2 and MARC standards for traditional catalogues. Examples of Descriptive metadata standards commonly used in Digital Libraries are Dublin Core Metadata Initiative (DCMI), Metadata Object Description Schema (MODS), and Metadata Encoding & Transmission Standard (METS). While DCMI is probably more widely used by Digital Libraries, MODS and METS provide a fuller descriptive framework as a successor to MARC. DSpace and Greenstone use DCMI as their descriptive metadata framework.

Semantic metadata - Semantic metadata provides the subject classification and relationship information for objects in the Digital Library. While this may be based on a traditional name/value pair of identifiers (subject = 'Parliamentary History'), the current trend is to move to Resource Description Framework (RDF). RDF underpins many projects that are realizing the possibilities of the Semantic Web for purposes of stronger metadata description of documents on the web (and in archives). A semantic metadata description goes beyond the name/value descriptive pair to describe metadata in a series of "statements" in a subject, object and predicate statement (the title of the book is 'The history of Parliaments'). Central to the concept of RDF is the ability to unify concepts across many resources in a meaningful way. Fedora Commons implements RDF as its underlying schema.

Harvesting metadata - There are many Digital Library systems - commercial, open source and in-house developed. Irrespective of the internal metadata approach for description and subject classification of the objects in the library, support for a harvesting metadata standard provides a means for interoperability between Digital Library systems. The most widely implemented harvesting system is Open Archives Initiative Protocol for Metadata Harvesting (OAI/PMH). This scheme supports metadata "harvesting" between digital libraries to allow discovery of digital resources between systems. Kete uses OAI/PMH for its internal schema. DSpace, Greenstone, Fedora Commons and Kete support an OAI/PMH harvesting interface.

The long term interoperability of the library's digital resources with other digital resources being developed in the country and regionally will be enhanced or impeded by the level and quality of the metadata that is collected and associated with the digital resources. The selection of a metadata framework should be undertaken in the context of existing projects at national and regional levels. In this light, it is worth approaching the National Library to discuss metadata standards and examining metadata standards being implemented regionally in other parliamentary libraries.

Minimum metadata requirements

Parliamentary libraries should ensure that the Digital Library system chosen uses one of DCMI, MODS, METS or RDF, and supports OAI/PMH for purposes of interoperability.

Digital Library systems: workflow, ingestion/digitization and digital preservation

Workflow management is also crucial to Digital Library operation. In the case of Digital Libraries, the process of importing digital documents can be complex. This import workflow is commonly known as the digital ingestion process. One of the challenges to institutional acceptance of a Digital Library system is the efficiency of the ingestion process. In fact, the more complex the workflow, the less likely will be the institutional acceptance of the new system.

The open design of the Digital Library system in this area is also important, for example to allow the addition of "plug-ins" adapted by institutions to suite their local preference for file uploads. DSpace for instance supports several paths for file uploads, including:
  • An integrated, highly structured and configurable web-based workflow system;
  • A batch-oriented file upload system for bulk ingestion;
  • Use of plug-ins or internally built workflows using API's (Application Programming Interfaces) such as the SWORD interface in DSpace which allows direct submission of documents in Microsoft Word format.

Some Digital Library systems focus on their archival role: long-term preservation and management of digital records. Other systems focus on the presentational role: facilitating the discovery of the digital resource. Large volume digitization projects, such as those for parliamentary archives, may require a focus on strong workflow systems to simplify the ingestion process.

It must be underscored that the Digital Library system will change over time. These changes may entail institutional name changes, website redesigns or changes to the website platform. One way of supporting the portability of electronic resources through website and organizational changes is the use of Digital Object Identifiers (DOI). These generally require the registration of objects through a central referencing agency that provides a reference to the current web page/resource location. DSpace, for instance, includes full integration with the public DOI handle.net service (Corporation for National Research Initiatives 2010). It also incorporates functionality to host and manage the library's own DOI service.

Interoperability between the Czech and Slovak parliamentary libraries

The award-winning joint digital parliamentary library embracing the two parliaments of the Czech and Slovak Republics represents a valuable case study in the integration of digital resources (http://www.nrsr.sk/dl/). The project was established in 2002.

This experience illustrates the rich benefits of building a focused Digital Library system that achieves the key goals of:

- Preserving the collective memory of the two Parliaments;
- Providing a rich resource for discovery of legislative and parliamentary publication;
- Providing a preservation framework in case of natural and other disasters;
- Allowing quick access for members of parliament and their staff;
- Providing a framework for interoperability between two parliamentary libraries.

The availability of off-the-shelf Digital Library software makes interoperability between Digital Libraries a practical option for small-to-medium sized parliaments.

Eva Malackova, Director of the Library of the National Council of the Slovak Republic, and Karel Sosna, Director of the Library of the Parliament of the Czech Republic, published a paper at the annual IFLA congress in Korea, 2006 on the Joint Czech and Slovak Digital Parliamentary Library, available at: http://archive.ifla.org/IV/ifla72/papers/087-Malackova_Sosna-en.pdf.

Visegrad Digital Parliamentary Library

In 2008, the core service of the Joint Czech and Slovak Digital Parliamentary Library was extended, to encompass the parliamentary libraries of the Czech Republic, Hungary, Poland and Slovakia into the Visegrad Digital Parliamentary Library: http://www.v4dplplus.eu/ (called Visegrad Digital Parliamentary Library Plus after the Austrian Parliamentary Library joined the network in 2010).

The main effort of the project is to provide fast and easy access to current and past activities of the legislators of the respective countries through a single portal, as well as to guarantee preservation of the historical documents.

Digital Library Metadata

Metadata schemas for digital libraries are typically XML based.

- **MARCXML**. MARCXML is a direct mapping of MARC tags to an XML schema. It therefore provides a rich, and deep, bibliographic framework. While good for data interchange it is a little more difficult than some standards for data transformation.

- **DCMI** http://dublincore.org/specifications/. DCMI - Dublin Core Metadata Initiative: a flexible metadata standard with many flavors. It is the basis for many born-digital resources, and is providing a framework for new methods of resource description. DCMI is one of the possible successors to MARC for bibliographic description and data interchange. Dublin core provides a minimum set of metadata for a simple digital collection. Qualified Dublin Core (QDC) is an extension of Dublin Core with better capability for mapping to RDF. Dublin core is widely adopted in open source Digital Library systems (for instance, Greenstone and DSpace use DCMI for the underlying metadata but can present this information through "crosswalks" in other schemas).

- **MODS** http://www.loc.gov/standards/mods/. MODS - Metadata Object Description Schema - is a metadata schema developed by the Library of Congress in 2002 for complex bibliographic description as a close successor to MARC, but better oriented to digital object description.

- **METS** http://www.loc.gov/standards/mets. METS - Metadata Encoding & Transmission Standard) - is a metadata standard that provides a description framework suited to complex hierarchical object structures with associated usage rights.

- **PREMIS** http://www.loc.gov/standards/premis/. Preservation Metadata Implementation Strategies (PREMIS) - Metadata Encoding & Transmission Standard) - is a metadata schema focused particularly on preservation. It is not typically implemented in smaller Digital Library systems. It is one of the most complete (and therefore complex) descriptive frameworks with an object oriented view of the objects broken down into metadata covering the objects, their intellectual entities (a particular expression such as book or web page), events associated with the object, agents associated with preservation or use, and rights statements regarding the object.

- **RDF** - Resource Description Framework - RDF is a metadata descriptive framework emerging from the Semantic Web development oriented to complex description of metadata in the form of "statements". In RDF the "subject" is a resource, the "predicate" a property of the resource and the "object" a given value - for example a specific PDF object "x" (Subject) has a subject (predicate) of value Science (object).

- **OAI/PMH**- Open Archives Initiative / Protocol for Metadata Harvesting - is an important metadata schema for Digital Library interoperability. Crosswalks - or XML schema transformations - are used to implement an OAI/MPH harvesting service for a Digital Library. Most Digital Library systems support OAI/PMH.

Digital libraries & archives

- http://nssdc.gsfc.nasa.gov/nost/isoas/. Reference Model for an Open Archival Information System (OAIS).

Electronic resources and digital subscriptions

The diversity of electronic journals, books and resources presents another challenge for the parliamentary library: that of discovery. Full text resources may be spread across internal digital archives, electronic databases, e-book subscription services and free online websites, making it difficult for users to navigate through and find information. The parliamentary library website can play an important role in organizing the relevant resources around subject areas important to the parliament to facilitate their discovery. Discovery of electronic resources can also be facilitated through training and awareness sessions - especially briefing sessions that the library may host for newly elected members and their staff.

E-BOOKS, E-JOURNALS AND ELECTRONIC CONSORTIA ARRANGEMENTS

The transition to electronic delivery of traditional print publications is well underway in many libraries, as library users show a strong preference for electronic over print formats for research and information discovery. This has driven a rapid change in collection development in many libraries to include the management of electronic subscriptions and resources.

It is in the area of journal subscriptions where the transition to an electronic delivery has been the most evident. Access to these electronic resources can be achieved by direct subscription with the relevant publisher or through aggregate providers of electronic journal subscriptions. Some publishers offer also consortia arrangements that can be negotiated by groups of libraries or at the national level. For example, major information vendors such as Proquest, Ovid, EBSCO and Lexis/Nexis offer aggregate and consortia based subscriptions that provide a single fee to access a database, usually with full text documents, across hundreds of journals. Collaborating with other libraries - for example, with University libraries - in negotiating consortia access arrangements, can reduce the individual cost for membership to such resources. However while consortia arrangements may reduce the cost of some electronic resources, they need to be scrutinized to ensure that the parliamentary library obtains a good selection of relevant publications. The information needs of universities are often quite different from those of parliaments.

In developing countries, there may be specific arrangements to provide access to subscription databases at considerably reduced prices. Parliamentary libraries may also be able to draw on the assistance from Eifl.net (http://www.eifl.net/) in order to gain access to e-journals, e-books and open access resources at lower costs.

As part of the licensing subscription the parliamentary library should consider its needs for the local archiving of electronic journals. When publishers allow, it may be possible to store electronic journal articles in a local Digital Library (with appropriate restrictions for access). Such a local archive provides for long-term archival management of important digital subscriptions and may also provide a useful knowledge resource when integrated with other assets in the Digital Library.

Supporting e-resource reading software or hardware may also be required, for example for e-book readers. The library may need to maintain and lend a collection of e-book/e-resource readers for members of parliament or ensure that the standard operating environment available to them includes relevant software.

Key questions in the selection process for these electronic services include:
- *How is access granted (and what access management is available from within the parliamentary computing system and for those accessing remotely or externally)?*
- *What is the best price available with the best mix of electronic resources relevant to the library?*
- *Are schemes available to assist parliamentary libraries in developing countries?*
- *Can the library partner with other libraries/institutions to reduce to cost for subscription?*
- *Does the provider support single sign on?*

OPEN ACCESS JOURNAL RESOURCES

The traditional model for publishing journals and books has been challenged by a new model for distribution: Open Access. Resources published through Open Access are free for the client accessing the resource (through the Internet). Publishing is usually funded by requiring the author to pay a fee when submitting an item for publication. Some institutions also maintain Open Access repositories for pre-publication copies of research work created by the institution. Finally, some journals that are released on a subscription basis make their publications free for access after an embargo period.

Many electronic journals are now available by Open Access. It can be beneficial to integrate the metadata related to these Open Access journals in the catalogue to facilitate awareness of and access to these online resources. There are now good online indexes of electronic Open Access publications (refer to Resources below).

ELECTRONIC SUBSCRIPTION WORKFLOWS

E-journals and e-books have a different workflow, quite distinct from the management of traditional print serials. This workflow demands the establishment of processes for the review and selection of electronic resources (that is, conscious collection building of the items in the electronic resource collection as a whole). For example, the selection process can include negotiating with several suppliers, as there may be considerably overlap of coverage between different subscription suppliers.

The steps should at least include:

1. Developing an e-resource collection building policy that identifies the subject categories relevant to the parliamentary library;
2. Researching the potential suppliers and what Open Access coverage is available for these resources;
3. Negotiating between different suppliers when the content can be sourced from several suppliers;
4. Ensuring that suppliers provide effective metadata against a standard usable by the library to facilitate integration with the catalogue and/or search engine. For instance, provision of MARC-format records or NewsML XML records associated with the records supplied;
5. Where necessary, updating e-book devices with full text content;
6. Identifying processes to automatically load data (and, when necessary, catalogue or enhance resources with metadata);
7. Publishing resources through traditional channels and web 2.0 distribution channels;
8. Subscription tracking and renewal processes;
9. Periodic reviewing of processes to detect and address content overlaps between subscription provider (duplicate subscriptions are commonplace in aggregate and consortia subscriptions).

When the parliamentary library has subscriptions to content that needs to be retained in the long term, it should negotiate with the publisher an agreement for placing the articles in a local Digital Library.

E-Book formats and devices

The emergent e-Book market has a range of formats for popular devices. The four most commonly used formats are: text, Kindle (an Amazon publishing format), ePub (an Adobe format) and HTML. Kindle and ePub support a Digital Rights Management (DRM) function which can restrict the usage of the item. For instance, DRM can be used to simulate traditional book lending by limiting the number of times and duration an item can be checked out.

The parliamentary library may need to support a number of platforms and devices to meet the needs of its clients and staff through e-resources and digital subscriptions. At the same time, documentation products created by parliamentary library and research services should be increasingly offered to clients in formats which are suitable for e-readers and mobile devices.

Case Study

Scriba: an open source eBook conversion tool developed by the Senate of Italy

Scriba eBook Maker is a software service implemented by the Senate of Italy for converting into eBook formats (i.e. ePub, zip, and soon also Kindle-compatible formats) contents already available in other formats (e.g., HTML, Pdf, XML, etc.).

It is an open source tool useful to create documents for e-readers, and specifically designed for reducing the use of paper in the legislature. Because of Scriba, the eBook versions of parliamentary documents are now publicly and freely available on the website of the Senate of Italy.

Internet users can download eBooks created using Scriba in two distinct ways. One way is to download the eBook version of a specific parliamentary document (e.g. a bill, an amendment, a debate, etc.) by clicking on the "ePub" button located at the top of the webpage showing the HTML version of a document. The second way is to access a dedicated webpage (http://www.senato.it/ebook) where it is possible to select a set of parliamentary documents and download all of them as a single eBook or "parliamentary dossier". From the same page it is also possible to download some ready-made eBooks of particular interest (daily press clipping, order of the day, last published acts, etc.).

The initial idea for this project came from the Press Office of the Senate of Italy, which was willing to offer to tablet device users a news service in eBook format. The ICT Department of the Senate addressed this need by designing and developing Scriba as a general and re-usable Java tool. This allowed the Senate to release the software as open source (adopting GPL3 license). As a result, this tool is freely re-usable, modifiable, embeddable and distributable. The project is available on the open source software development hosting service Sourceforge (http://scribaebookmake. sourceforge.net/).

Prepared by the Senate of Italy

SOFTWARE AND SERVICES

- http://www.eifl.net/. **eifl.net** provides low cost access to e-journal, e-book and open access resources for developing countries in Africa, Asia and Europe. They support a number of programs in facilitating access to knowledge through licensing arrangements, open access infrastructure, copyright guidance and advocacy, and promoting the adoption of open source.
- http://www.wikibooks.org. **Wiki Books** contains a large collection of books free for download.
- http://www.gutenberg.org. **Project Gutenberg** has more than 36,000 e-books for free download. A number of e-book formats are supported.
- http://books.google.com. **Google Books** has full and partial contents of e-books, some for purchase, some free for access.
- http://gallica.bnf.fr. **Gallica** is a major project by the National Library of France, with French, English, Portuguese and Spanish interface with a broad collection of French books, manuscripts, maps, images periodicals and sound recordings.
- http://www.digitalbookindex.org. **Digital book index** is an index of English language e-book titles.
- http://www.librostauro.com.ar/librostauro.php. **Libros Tauro**, is a Spanish e-book index.
- http://manybooks.net. **Many books** has more than 25,000 e-Books, across 36 languages.
- http://www.doaj.org. **DOAJ** is a directory of Open Access Journals- a directory of more than 2000 scientific and open access journals across 111 countries and many languages.
- http://roar.eprints.org/. **Registry of Open Access Repositories (ROAR)** is a directory of open access repositories. The directory has more than 1,500 repositories. Highlights the importance of interoperability of online electronic resources. It is International in scope.
- http://www.scirus.com/. **Scirus** is a specialized search engine from Elsevier focused on scientific research and researchers. It has faceted searching that can filter on Digital Libraries.

STANDARDS

- http://en.wikipedia.org/wiki/International_Digital_Publishing_Forum. **EPUB (Electronic Publication)** is a free, open e-book standard promulgated by the International Data Publishing Forum.
- http://en.wikipedia.org/wiki/Adobe_Systems. **Portable Data Format** (PDF) is a widely used format for digital e-book distribution. It includes some capabilities for rights management. The specification is managed by Adobe but made available free of charge.
- http://www.tei-c.org/index.xml. **Text encoding initiative (TEI)** is a markup standard for texts in the Humanities.

ALERTING SERVICES AND NEWS FEEDS

Members of parliament and their staff rely on access to current information, public policy developments and news feeds. Tipically, news feeds will be sourced by commercial news gathering agencies that provide selective dissemination of information relevant to organizations. For parliaments this may include:

- News items on or about members of parliament;
- Press releases;
- Journal publications and parliamentary publications in their interest areas.

NewsML (www.newsml.org) is the most commonly used XML interchange standard for disseminating the metadata associated with news items (http://www.iptc.org/site/Home/). Selective dissemination agencies will typically provide the full text news content and associated NewsML metadata to subscribing agencies, sometimes with associated full text or PDF images of the articles.

The role of the parliamentary library can be to disseminate this information, and possibly also to aggregate this information in a Digital Library.

This process will entail:

- Receipt of data feeds from dissemination agents comprising NewsML metadata and the text or PDF versions of the articles;
- Workflow processes to ingest this information into a local Digital Library;
- Dissemination functions (through the intranet, extranet, website and RSS) to deliver this information to members of parliament and other library clients.

Some content may be subject to licensing restrictions that limit the extent to which content is disseminated. In this context it may be necessary to limit access to the electronic repository or Digital Library in which this content resides. Many Digital Library systems provide the workflow processes for ingestion and selective access to digital content.

Alerting services, including push methods (routing lists, email) and pull methods (such as RSS) can provide targeted information delivery to parliamentary library clients. Routing lists are a standard process available in most Integrated Library Management Systems (ILMS) to distribute print serials on a selective basis.

Google news (http://news.google.com) is a free source for international news that allows regional and topical based news feeds.

NEWS BULLETINS AND FEEDS

The library should also develop a communication strategy around the needs of members of parliament and their staff. When the library has the responsibility to undertake significant research, or to disseminate the research produced by other parliamentary offices, the information can be communicated through e-news bulletins or Web 2.0 tools (see Chapter 5).

Bills Digests - Library of the Parliament of Australia

The users of the Library of the Parliament of Australia can subscribe to an RSS feed that brings to their desktop or mobile device a service called Bills Digests.

Bills Digests provides a plain English summary of bills and detail their purpose, background and main provisions. It delivers an independent and timely perspective on all government legislation complementing the legislative material provided by the Government.

(http://www.aph.gov.au/Help/RSS_feeds)

Bills Digests is also accessible online on the webpage of the Parliamentary Library (http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library), where it is possible to download summaries by year (from 1976 until today). Documents are now made available in pdf and ePub formats. (http://www.aph.gov.au/Parliamentary_Business/Bills_Legislation/bd)

STANDARDS

- **NewsML** http://www.newsml.org. The most commonly used XML interchange standard for disseminating the metadata associated with news items (http://www.iptc.org/site/Home/). Selective dissemination agencies will typically provide the full text news content and associated NewsML metadata to subscribing agencies.

- **RSS** http://www.rssboard.org/rss-specification. RSS is a popular syndication format. Many web content management systems provide RSS capabilities to provide a syndication-based alerting service for clients when web pages or web resources change. It is an alternative way for the distribution of news feeds.

- **XML** http://www.w3.org/XML. At the core of all syndication systems is XML, a standard for the Markup of text and data. XML is a simple, hierarchical, methodology for making data – and in particular for libraries text data – accessible for ICT systems. By discretely identifying elements of data with markup, data can be inter-changed and shared more effectively.

- **XML News** http://www.xmlnews.org/docs/tech-overview.html. An alternative XML standard for news syndication.

SINGLE SIGN-ON

As the number of electronic resources managed by the library grows, so does the complexity of accessing these resources. Many subscription providers of electronic resources will have different sign-on methodologies to access their resources. In this environment, the library faces the challenge of providing simple access to underlying resources that are gathered in quite complex and different ways.

IP address authentication is offered by most providers. This entails providing access to the electronic resource on the basis of the Internet address of the library and allows the library clients to access these resources without sign-on, but only when used locally at the library. This approach requires no further authentication by the user. The solution has one principle weakness: remote users cannot access the service unless they gain access through a VPN (Virtual Private Network). This weakness is sometimes addressed by adding a further layer of software: the proxy server. The role of the proxy server is to locally authenticate users and then pass their web page requests through a local "proxy" service which

fetches the web pages from the remote service on their behalf.

Another approach widely used by libraries is 'single sign-on'. Users of the service sign in with a user-name and password (or authenticate) only once (for instance through the library management system or through the parliamentary intranet sign-on). This automatically provides the necessary authentication to remote electronic databases.

Two systems have gained increasingly acceptance in libraries:

- Athens - a commercial single sign-on service that has a wide number of agreements with existing electronic database vendors;
- Shibboleth - an open source framework for developing a single sign-on service.

The choice of service depends a great deal on the parliamentary library's current infrastructure and capabilities.

FEDERATED SEARCH

In addition to the ILMS catalogue, the library may have access to several online databases of electronic full text content (such as journal subscriptions). The library may also have specific journal subscriptions separate from these consortia database subscriptions, often managed by a "databases" reference page on the local intranet or website. This requires the reference services and library clients to discriminate the most appropriate electronic resource for a given query. The library may also have a subscription to a variety of online database resources and it is not always easy to know which of these resources is relevant for a particular information requirement. The federated search solves this dilemma by bringing many of the library resources together in a single search. And as the complexity of these resources grows, federated searching is becoming an important factor in the library architecture.

Commercial providers such as Serials Solutions (http://www.serialssolutions.com) provide software which allows a single search platform across both the local catalogue and electronic subscription content (such as Summon). Some open source library management systems can also provide a platform for federated searching. For instance, Koha provides search capabilities through the Zebra search engine. This engine can itself index different types of resources (such as the Digital Library content). This opens the possibility of making the catalogue not only a portal to the physical assets managed by the library but also a metadata hub to the wider electronic assets available through the library.

There are alternatives to federated search software. Google has focused on providing a "single" search framework, which is in fact a heterogeneous set of search engines, including:

- Google Search;
- Google Scholar search;
- Google Maps search;
- Google "my library".

Google scholar allows direct linking to a specific library collection (http://scholar.google.com/intl/en/scholar/libraries.html) making it a viable low-cost framework for federated searching.

Another impressive resource that also searches to the article level and can link through to the library is OCLC's WorldCat. Membership of OCLC allows to make a library collection visible in WorldCat, and the WorldCat search includes some article-level searching.

Regional groups have also established their own unified searches. An example of this is the Federated Parliamentary Library System (FPL) established by the Africa Parliamentary Knowledge Network.

The Federated Parliamentary Library System (FPL) of the APKN

The Federated Parliamentary Library System (FPL) is an initiative of the Africa Parliamentary Knowledge Network (APKN). It provides a unified search across 18 African parliamentary libraries using the Koha integrated library management system as the search framework. This resource is available as a public catalogue at http://fpl. apkn.org/. A Google-style search can be used to discover resources across all member libraries with four language interfaces implemented.

SOFTWARE AND SERVICES

Single Sign On

- Shibboleth. http://shibboleth.internet2.edu/. An open-source single sign-on software framework.
- Athens. http://www.teldan.com/Templates/showpage.asp?DBID=1&LNGID=1& TMID=84&FID=636. A commercial system which integrates with many current consortia subscription vendors such as EBSCO and Proquest.
- EZProxy. http://www.oclc.org/ezproxy/ and http://www.oclc.org/ezproxy/: proxy. Software widely used by libraries to provide access to underlying IP-address authenticated resources.
- Active Directory. http://www.microsoft.com/en-us/server-cloud/windows-server/ active-directory.aspx. Microsoft's single-sign-on technology .
- LDAP - Lightweight Directory Access Protocol: a commonly used protocol for single-sign-on to systems. Many software packages support LDAP to allow a single authentication on local systems.

Digital Library and Digital asset management

- DSpace. http://www.dspace.org. DSpace provides an integrated solution to the Digital Library. It has a built-in workflow for document ingestions. Its presentation layer is highly structured, allowing content to be divided into collections, sub-collections and communities. It is very widely used, internationally and as a result support exists. It has a strong support for language internationalization. DSpace has 96 language packs.
- EPrints. http://www.eprints.org. EPrints, like DSpace, has a wide installation base, and is popular as a method for digital resource delivery. It has a smaller base of language internationalizations and is more focused on the presentation layer/user interface than DSpace. It is an integrated solution. EPrints has 19 language packs.
- Fedora Commons. http://fedora.commons.org. Flexible Extensible Digital Object Repository Architecture (FEDORA) Fedora provides a systematic tool for management of digital archives. As such it is not an integrated Digital Library solution such as E-prints or DSpace, but provides the archival base for a Digital Library system. It can therefore serve a role as the core component of a Digital Asset Management system, Digital Library system or archive for a Content Management system. DSpace and Fedora have announced a project to work together on an approach that allows a DSpace front-end to a Fedora archive. https://wiki.duraspace.org/display/DSPACE/DSpace-Fedora+Integration+FAQ.

- Greenstone. http://www.greenstone.org. Greenstone was developed by the New Zealand Digital Library Project at the University of Waikato and has been supported by UNESCO. It has a strong base of implementation in non-governmental organizations and has 4 core language packs.

- Kete. http://kete.net.nz/. Kete is a further contribution of the Horowhenua Library Trust and Katipo Communications Ltd. funded to the open source community. Like Koha, it has a good presentation layer and is more focused on the user interface than the underlying archival management of the digital resources. Kete has 21 language packs.

- Knowledge Tree. http://www.knowledgetree.com/. Knowledge Tree is a document management system that uses the Amazon S3/Cloudfront to store data.

- Activae. http://activae.cenatic.es/. Activae is a robust and scalable Spanish-language digital asset management system. Activae is an open source product of Cenatic. It is Python based DAM (like Cyn.in, Notre DAM and some proprietary DAM solutions such as AssetBank). It includes a transcoding server. Like DSpace it has a strong built-in workflow and is Dublin Core-based.

- EnteMedia. http://entermediasoftware.com/. EnterMedia is an integrated digital asset management system with some capability for transformation and extraction of embedded metadata, written in Java with an XML metadata framework (rather than a database back end).

- FocusOPEN. http://www.digitalassetmanager.com/. FocusOPEN is a product with an "open source" version and a commercial version with a range of support options. The free for distribution option includes a wide range of strong digital asset management functions. Written in ASP.net for Windows servers.

- TRIM. http://www8.hp.com/us/en/software/software-product.html?compURI=tcm:245-936980&pageTitle=TRIM-Software. One of the earliest and best known commercial enterprise Records Management systems, supported by Hewlett Packard.

Aggregate Electronic Resource Providers

- Zebra. http://www.indexdata.com/zebra. "Zebra is a high-performance, general-purpose structured text indexing and retrieval engine. It reads structured records in a variety of input formats (e.g.. email, XML, MARC) and allows access to them through exact boolean search expressions and relevance-ranked free-text queries".

- Summon. http://www.serialssolutions.com/summon/. Summon is designed to provide access to the entirety of a library's collection, be it journal articles, books, or media clippings, through a single search that provides relevancy-ranked lists of results. This is a product from the Proquest family and is integrated tightly with their databases.

- EBSCO Discovery Service. http://www.ebscohost.com/discovery. Another all-in-one package, integrated with EBSCOHost's large number of databases.

- Google Search, Google Scholar and Google Books. http://google.com and http://scholar.google.com and http://books.google.com.

Reference and information services

The provision of information and research assistance to members of parliament and their staff is an critical role for the parliamentary library, normally facilitated by a 'reference services' section. The reference service section is often the main interface between the library and the parliament, and as such is the most affected by changing trends in information seeking behaviour.

The advent of Web 2.0 and social networking brings tools of extraordinary depth and sophistication at no charge to the fingertips of the library clients. The proof of the relevance of the library therefore relies on its ability to fulfill its role of providing an impartial, authoritative, and timely information service.

A number of ICT systems can facilitate the work of information research and provision. The traditional ICT tools supporting reference services have been: request tracking, database research and document delivery systems. Request tracking systems provide a workflow for submission, tracking and fulfillment of client requests, as well as statistical reporting for purposes of periodic reporting. Database tools have traditionally been the means by which reference services have extended the reach of research beyond the core library collection. Document delivery systems formed the means by which the results of research could be fulfilled for the client by use of other libraries resources.

Parliamentary libraries share some characteristics with Law libraries in their need to build a knowledge base of known information requirements of the parliament. As reference queries are resolved they can form the basis of a knowledge base. They may also be used in a web-based FAQ to assist other users following the same information path. Reference tracking systems naturally form an element of the library knowledge base. Furthermore, this knowledge base can include the provision of alerting services to target the information needs of members (such as news feeds).

A further element of effective knowledge management by the library is the evolution of the profile of the specific information needs of clients, potentially through an appropriate Customer Relationship Management (CRM) system.

The reference services should also inform the collection building activity of the library. As one of the principle interfaces with the library clients, the types of requests placed and the relationships established with clients can give guidance and direction in the priorities for print and electronic collection priorities.

As with Integrated Library Management Systems, reference tracking systems (such as the well-known RefTracker software) have an implicit workflow.

This includes:

1. Reference request submission forms and request services (including email and Mobile device submission) are made available.
2. The request is recorded in the reference tracking system.
3. Reference tasks are allocated where appropriate and a confirmation of the task request is provided to the client (usually by email).
4. The request is researched. As part of this process the resources used are recorded.
5. Client response is prepared: electronic resources are collated and supplied.
6. Feedback is requested (often as part of the response to the client).
7. Response is reviewed automatically or manually for inclusion in FAQ and knowledge base.
8. Requests are periodically reviewed for purposes of collection building - with statistics on resource usage and library Key Performance Indicators (KPI).

The reference service of the library is one among many information sources that members and their staff will draw on. The library is in a unique position to provide a well researched and informed advice on issues raised. The delivery of these services needs to balance timeliness with relevance.

While Web 2.0 could be seen as presenting a challenge to the traditional approach to information service delivery, it also provides an opportunity for very personal service provision. This can include the substitution of web-based forms for information service requests through social media communications or instant messaging.

Awareness of this service can be enhanced through marketing techniques and a high level of accessibility of the service. Marketing is an important element of the reference services and can include:

- Presence in relevant Web 2.0 forums for visibility of the library services and also for placement of requests;
- Induction and training programs for incoming members of parliament;
- Current awareness bulletins in areas relevant to members of parliament;
- Newsletters;
- Visibility and promotion of the service through the Intranet.

REFERENCE TRACKING SYSTEMS

The starting point for effective management of client information needs is an analysis of the system requirements to track client requests. The growing set of tools that the library can draw upon, and the increasingly complex information requirements of clients, can make the process of tracking requests quite complex. Apart from the benefits of facilitating the efficient fulfillment of a client's request, the effective tracking of requests can enhance the library's ability to analyze the areas of most needs and demands. There are a variety of tools that can be used to effectively track requests. A starting point, for instance, is to use the productivity tools at hand to build to-do lists and integrate them with calendar functions to provide event alerting. Open source (Open Office), commercial (Microsoft Office) or Web 2.0 (Google Docs) tools all provide extensible instruments for tracking requests that can provide the initial core of a reference tracking system.

The systematic management of the workflow around reference requests may also go beyond the capabilities of standard productivity tools. The use of software designed for reference tracking will typically provide a structured workflow around the reference tracking process. A simple reference tracking system will include:

- Online request forms, email or instant messages for submission of information service requests;
- Resource management tools to allocate the request;
- Request tracking tools to allow the management of the request (through internal resources, databases or document delivery systems);
- Providing the results to the client;
- Recording the results in order to build up a knowledge resource of requests over time;
- Statistical reporting.

The use of Instant Messaging or short message services (SMS) for interactive response to service requests has an immediacy that can be attractive to clients. Staff resourcing and training for such a service needs to be carefully considered as clients must trust that its use will elicit a timely response. There are many commercial and open source instant messaging solutions available, some designed for library requirements. Some of the aspects that may be important in the selection of Instant Messaging solutions can be:

- Capability for integration with the reference tracking system/knowledge base;
- Ability to save sessions, review session transcripts;
- Capabilities for anonymous operation where relevant;
- Ability to route requests between staff.

The extension of the instant messaging approach to SMS offers the ability for parliamentary users to submit requests "on the fly".

CLIENT RELATIONSHIP MANAGEMENT (CRM) AND KNOWLEDGE MANAGEMENT

The introduction to this Handbook underlined the need for the parliamentary library to focus on the information requirements of members of parliament and their staff, and to provide impartial information synthesis from disparate sources to service their needs. Some libraries are moving away from the concept of the "Reference Desk" as a point of information delivery. They are focusing on a more personalized service management that may be framed around the concept of Client Relationship Management (CRM). An effective CRM encompasses elements of event management and information needs analysis. It may also feed into and draw on a knowledge management resource to facilitate effective response to client information needs. The information for a Client Relationship Management (CRM) may emerge from the implicit knowledge of staff as well as from the information captured in the reference tracking system. The CRM model should include the elements of knowledge management that will allow effective fulfillment of known information needs and a history of questions asked and resources commonly used. This information can also inform the direction of collection building.

The CRM should capture:

- Member/staff contact details;
- Their information needs;
- Contact history;
- Report and request history;
- Syndication preferences and interest areas;
- Key events (to allow alerts for follow up and escalation of issues).

SOFTWARE AND SERVICES

REFERENCE TRACKING AND CLIENT RELATIONSHIP MANAGEMENT

Examples of Instant Messaging platforms (there are many more)

- Library3lp. http://libraryh3lp.com. A commercial solution that can be added to websites with a range of add-ons covering a broad range of platforms.
- Pidgin. http://www.pidgin.im. A popular Open Source IM solution with a large range of plugins.
- LiveZilla. http://www.livezilla.net. A free solution with extensibility through commercial extensions (for example statistics). Script-able and flexible.

Software for SMS Reference

- Library3lp extension for Android support. http://libraryh3lp.com/docs/sms-gateway-google-voice.html. Extending libraryh3lp capabilities into SMS.
- Google SMS. http://www.google.com/sms/. Google SMS - a new commercial platform from Google providing a framework for building simple applications for SMS submission of requests.
- Windows Live Messenger. http://get.live.com/messenger/overview. Windows Live Messenger. Microsoft's free messaging solution.

Online sharing or video based support

- Skype. http://skype.com. Skype is VOIP-based software for voice and video conferencing, providing support for desktop viewing.
- Windows Live Messenger. http://get.live.com/messenger/overview. Microsoft's free messaging solution, also supports video.
- Unyte. http://www.unyte.net. An improvement to Skype's desktop sharing.

Office productivity tools and simple Client Relationship Management

- Open Office. http://www.openoffice.org/. A rich open source office productivity suite.
- Microsoft office. http://office.microsoft.com/en-au/. Microsoft's ubiquitous office suite.
- Google docs. http://docs.google.com. A scriptable web-based collaboration environment including document creation.

Reference Sources

- Directory of Open Access Journals (DOAJ). http://www.doaj.org/.
- MARS. http://www.ala.org/ala/mgrps/divs/rusa/sections/mars/marspubs/marsbestindex.cfm. An index of "best" free reference sources from 2000-2010.

Reference Tracking

- LibStats. http://code.google.com/p/libstats/. A simple, free, open source program for collecting reference statistics in the library.
- AltaRama. http://www.altarama.com/page/RefTracker.aspx. RefTracker from AltaRama is a well-known commercial package which manages requests for reference help with associated workflow to track the request to fulfillment.
- Desk Tracker. http://www.desktracker.com/ (Compendium Library Services). A commercial program for logging and helping to manage reference queries. Also see Knowledge Tracker (http://www.knowledgetrackerlib.com/) from the same company.

STANDARDS

- Guidelines for Behavioral Performance of Reference and Information Service Providers (Reference and user Services Association board of Directors) http://www.ala.org/ala/mgrps/divs/rusa/resources/guidelines/guidelinesbehavioral.cfm.

DOCUMENT DELIVERY

The number of books, journals and electronic resources published is much greater than the collection of any parliamentary library, no matter how well resourced the library may be.

Libraries have a strong history of collaborative sharing of resources. Document delivery systems allow libraries to draw in the wider network of libraries to prepare a more complete response to information requests. Document delivery systems rely on aggregation of the holdings of regional, national or sectional groups of libraries into Union Catalogues. These Union Catalogues are an essential element

in the discovery and supply of holdings and can extend the research reach of the library through access to national, regional and global resources. The fulfillment of requests for resources in another library is called "Inter-Library Loan" (ILL). Standards for fulfillment exist, and there are also standards for electronic workflow management of the inter-library loan process. The International Standards Organization (ISO) Inter-Library Loan standard ISO 10160 and ISO 10161 are relevant (Inter-Library Loan Application Standards Maintenance Agency 1997) and the electronic placement and fulfillment of ILL requests is common in some regions.

Electronic delivery is rapidly becoming the favored means of inter-library loan fulfillment, especially when the source material is already in digital form. However, such fulfillment may be constrained by licensing and copyright restrictions. For instance, some consortia limit electronic delivery to non-profit research organizations only.

A number of commercial and government delivery services (such as Infotrieve) can provide documents on a per-item fee basis in a more timely manner than traditional inter-library loan systems, where speed of delivery is critical.

DOCUMENT DELIVERY WORKFLOW

Document delivery systems facilitate the workflow management of inter-library loans. Libraries have a long history of collaboration through inter-library loans, and the national and international processes for fulfillment are well understood by them. While document delivery systems can vary in capabilities, the key functions they can support are:

- A request form, sometimes integrated with the search engine (or possibly part of the reference tracking system) to enable library clients to raise document delivery requests;
- A submission request function that allows the discovery of libraries with the wanted resource and the placement of an ILL request;
- A tracking function to track the request through to fulfillment;
- A delivery function to deliver the item to the client;
- Management of the loan to the client and recall at the relevant due time for return (sometimes integrated with your ILMS);
- Reporting for copyright and management reasons of ILL requests;
- Where applicable, billing and voucher management systems.

Similarly, the library will receive inter-library loan requests from other libraries and will use a workflow system to track this loan through to return. Key functions for this element of the document delivery workflow are:

- Receiving an ILL request;
- Discovering the resource and arranging document delivery to the requesting institution;
- Tracking the loan through to return;
- Where applicable, using billing and voucher management systems;
- Reporting for copyright and management reasons of ILL requests;

SOFTWARE AND SERVICES

- OCLC Document Delivery management. http://www.oclc.org/isoill/default.htm.
- Inter-Search. http://www.intersearch.com.au/. Inter-Search Document Delivery management.

> **Document Delivery**
> - ISO 10160:1997 Information and Documentation - Open Systems Interconnection - Interlibrary Loan Application.
> - ISO 10161-1:1997 Information and Documentation - Open Systems Interconnection - Interlibrary Loan Application Protocol Specification.
> - ISO 10161-2: Information and Documentation - Open Systems Interconnection - Interlibrary Loan Application Protocol Specification - Part 2.

Content management: intranet, extranets and websites

The parliamentary library may be responsible for part of the management of the intranet, extranet and website of the parliament. The starting point for evaluating the role of the parliamentary library in this context is the development of a *Content Strategy*. The content strategy can help determine the focus of content presentation in each of the three modes of information delivery. Above all, the content strategy should be directed to the needs of members of parliament and their support staff.

The intranet provides the means for focused delivery of resources to legislators and their officers.

Elements of the content strategy relating to the intranet might include:
- A focus on news feeds and access to current information and briefings targeting the members and their staff;
- Access to digital resources that are available only to members;
- Access to research and reference services;
- Extension of the visibility of the intranet to remote users through the extranet;
- Provision, through a Virtual Private Network access, of a framework for secure authenticated access for those not using services locally in the parliament;
- Single-sign-on or proxy systems to provide web-based access to members without multiple passwords.

The public website provides the means for more widely reaching interested communities, such as schools, universities and the general public. In addition to information about the role and functions of parliament, the library can provide valuable information on its collection and resources.

Typical contents of the public website can include:
- News and research publications;
- Digital library resources (for example Legislation, Media releases or Minutes);
- Resources for members of Parliament;
- Training times and schedules;
- Resources for Schools and Researchers;
- Forms and resources for raising requests;
- Contact information.

Please refer to the following detailed guidelines on content management for parliamentary websites: http://www.ictparliament.org/node/691[8].

---

8 Inter-Parliamentary Union, *Guidelines for Parliamentary Websites,* [Geneva]: Inter-Parliamentary Union, 2009.

GETTING STARTED

Minimal infrastructure approaches

There are several approaches to building an intranet that require minimal existing infrastructure. Wikis provide a simple, quick and low-investment approach to presenting content online. Once familiar with the Wiki *syntax* they can be an effective method for information presentation. An example of an internal wiki tool for documentation is DocuWiki (http://www.docuwiki.com). Google provides a free hosted facility for document management that allows forms-based scripting and collaborative document preparation (http://docs.google.com).

Managing the web server

There are a multitude of web and wiki-style content management systems available in Open Source. Two that have a large international installation base are Joomla and Drupal. Joomla has some nice existing modules that suite libraries getting started in document management, such as DocMan (http://extensions.joomla.org/extensions/directory-a-documentation/downloads/10958) and has a good language support (http://extensions.joomla.org/extensions/languages/translations-for-joomla).

ACCESSIBILITY

Most public and corporate entities are under an obligation to ensure that their websites fulfill at least the minimum requirements for web accessibility, especially for public-facing websites. The most commonly accepted standard for accessibility are the Web Content Accessibility Guidelines (WCAG), which can be found at http://www.w3.org/TR/WCAG20/. The thrust of these guidelines is sensible and practical. They are divided into four categories: perception, operation, understandability and robustness. First and foremost, websites should provide text alternatives to all non-text content and time-based media. Content should be amenable to presentation in different ways (for example a simplified layout for website readers). WCAG guidelines have quite practical implications in site design that can readily be implemented with new websites, although retro-fitting existing web applications may be difficult.

They recommend:

- That design is improved to ensure that web pages can be easily read by screen reading software for sight-impaired readers. For instance, style sheets rather than embedded styles are preferred. HTML coding should use DIV statements rather than TABLE statements for structural layout;
- For web pages with forms to fill out, that all form fields should have labels explaining what the field is for;
- That all images should have descriptions (the "ALT" tag);
- That redirection to an external website should happen without warning;
- To use strong color contrast on pages and to avoid flashing images;
- To make good use of metadata, especially the title tag and the language attribute;
- To create a good page organization, for example with the ability of skipping past navigation and layout structure to directly access the content of a page;
- More recently, the captioning of all video where relevant supporting text is not provided.

The parliamentary library websites can be tested for practical compliance using one of the screen reading applications available (see Software and Services).

SOFTWARE AND SERVICES

Website content management

- Joomla. http://www.joomla.org/. Joomla has good language capabilities and a wide range of "plugins" that support functions such as document management for simple document repositories.
- Drupal. http://drupal.org/. Drupal has strong language capabilities but less "off the shelf" setup.
- Sharepoint. http://sharepoint.microsoft.com/en-us/Pages/default.aspx - Microsoft's popular corporate intranet and web content management product.
- Google Docs. http://docs.google.com. Google Docs is Googles newest contribution to their fold - a simple easy web site development tool that includes document collaboration capabilities and some scripting for forms handling.
- Wordpress. http://wordpress.org/. A tool that allows rapid development of well styled sites.
- MediaWiki. http://www.mediawiki.org/wiki/MediaWiki. MediaWiki has limited styling by effective development of collaborative documentation sites.
- DokuWiki. http://dokuwiki.org/. DokuWiki is a good tool for documentation sites.
- Kete. http://kete.net.nz/. Kete is from the originators of the open source Koha ILMS, Kete is a "wiki-inspired" content management system with more natural support for multimedia than most wiki software. It is open source.
- PHPBB Forums. http://www.phpbb.com/. PHPBB is a bulletin board system. It integrates with many content management systems as a tool.
- vbulletin. http://www.vbulletin.com/. vbulletin is a proprietary bulletin board system.

Accessibility testing

- Jaws. http://www.freedomscientific.com/downloads/jaws/jaws-downloads.asp. Jaws is a commercial screen reading application.
- NVDA. http://www.nvda-progject.org. NVDA is a free screen reading application.

STANDARDS

- Guidelines for Parliamentary Websites: http://www.ictparliament.org/node/691. A document prepared by the Inter-Parliamentary Union and the United Nations Department of Economic and social Affairs, through the Global Centre for ICT in Parliament, March 2009. Available in English, Spanish and French.
- ISO Accessibility guidelines: http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=39080|ISO 9241-171:2008 Accessibility .
- W3C Web Accessibility guidelines: http://www.w3.org/TR/WCAG20/ .

Chapter 4
ARCHIVES AND RECORDS MANAGEMENT

Introduction

This Chapter briefly addresses the role of ICT in facilitating the archives and records management process, including Records Management systems, in parliamentary libraries. It must be noted that only a few parliamentary libraries fulfill this function for their parliament. When they do, however, their responsibility of preserving the history of the legislature contributes, beyond the institutional boundaries, to preserve the collective memory of the nation. Therefore, when no such record keeping is maintained by other departments of the parliament, archives and records management can be an important area of initiative for a parliamentary library.

Archives and disaster recovery

Several well-known disasters have impacted parliaments and their archives.

Most notably:

- The 1834 fire in the Parliament of the United Kingdom, which destroyed most of the records of the House of Commons prior to that date;
- The burning of the Parliament buildings in Montreal in 1849 during rioting;
- The 1916 fire in the Parliament of Canada (the Library survived).

Fire, earthquake, and simple deterioration can all pose serious threats to library archives and collections. Therefore, developing a plan to ensure that the most important historical documents are adequately managed is crucial. Equally important is the preparation of a business case, on the basis of the plan's objectives, to be reviewed and approved by the senior management for establishing a robust archives and records management system or for upgrading the existing one.

From a systems point of view, this can include the proper technical storing of the materials in conditions that ensure their long term preservation and periodic inspection and review. Typical issues for archival maintenance to be addressed in the business case are: environmental control; building maintenance (fire and flooding controls); storage; handling and access controls; security and acquisition policies; and, retention rules to ensure that required items are marked and retained for archival purposes.

Furthermore, ICT provides new opportunities for preserving archives and the plan could envisage the extension of policies in this area. For example, a policy of digitization can enhance the preservation prospects by ensuring that all valuable physical assets have an equivalent digital copy which can be kept locally and in networked copies. In this context, it is important to select file formats that are likely to remain stable as technology develops, for example RTF (Rich Text Format) or PDF (Portable Document Format) or XML-based document formats such as OpenDoc or Office Open XML. In some cases libraries may include multiple formats for binary document to comply with accessibility regulations.

Review of current record keeping capabilities

Among the first steps to be undertaken in developing a plan for archives and records management is to assess the parliamentary library's capabilities in this area through an audit of the unique physical assets held by the library itself and a review of the high risk areas where records and information management procedures are required.

The assets that may be unique to a parliamentary library include:

- Transcriptions, audio and video records of the parliamentary plenary and committee proceedings;
- Media releases by members;
- Private papers deposited by members of parliament;
- Collections of private political papers and records of political bodies and pressure groups;
- Journals;
- Papers related to parliamentary administration;
- Papers and reports arising from briefings, enquiries and other research.

However, the scope of the record-keeping by the parliamentary library may be broader than this. The International Standards Organization definition of a "record" includes "recorded information in any form, including data in computer systems, created or received and maintained by an organization or person in the transaction of business and kept as evidence of such activity" (ISO 15489).

Records management systems principles

The role of the library in managing assets may encompass both physical and digital assets. Records management of digital assets can include documents produced and distributed through desktop productivity systems, emails, financial reports, and of course the output of parliamentary committees and plenary meetings.

The proper archival management of these resources needs to achieve several goals. The archival strategy needs to be able to ensure that documents:

- Are genuine and original;
- Are accurate and can be trusted (that is, they are authoritative copies);
- Are complete and unaltered (or at least alterations are annotated and understood);
- Are secure for relevant level of authorized access, alteration or removal;
- Can be retrieved effectively through search tools; and,
- Are organized coherently with other relevant records.

The management of archival copies of physical items requires asset management policies that are different from the usual library lending policies. For instance, the library should identify the "authoritative" copy of the item, which normally will not be lent. To this end, any system developed to support records management needs to follow consistent processes for asset management.

These processes include record capture, registration, classification, security management, appraisal and review, storage, tracking and disposal steps, all as a part of a life cycle of records management, as outlined below:

- *Record Capture processes* - a set of rules governing what records should be kept
- *Registration* - the processes whereby records identified for preservation are assigned a unique identifier and basic description information (such as the date of capture, time, title of the item and source)
- *Classification and indexing* – the secondary processes whereby more extensive metadata can be added, including information on retention
- *Security and access management* – the definition of levels of access and usage restrictions for items.

- *Appraisal and review* – setting review processes for preservation and, where relevant, disposal
- *Storage* – the maintenance, handling and storage of records in accordance with their physical and digital preservation requirements for as long as legally and culturally required
- *Use and tracking* – the development of procedures to ensure that only those who are allowed have relevant access to assets and that such access is tracked if relevant.
- *Disposal or retention* – the development of procedures for how items should be disposed of and data migrated across formats for longer term retention (for example physical to digital).

Across all these steps metadata is vital to ensure the management and accessibility of records. Both document management systems and digital library systems will typically have elements of these processes integrated in their workflows. See Chapter 3 for more details on the characteristics of these systems and their associated workflows.

Developing an archives management plan

The plan for archives management should be formulated to include the workflow processes, training requirements for staff and any environmental changes necessary for good archives management. The plan should also include a disaster recovery assessment, which evaluates the risks and associated actions for ongoing records management and preservation, as well as the physical and technological elements for recovery from a disaster. Furthermore, the plan itself should be stored in locations accessible other than on the parliamentary network and include the following information:

- Actions for relevant staff during and after a disaster (for example safe communication capabilities in case of flooding);
- Insurance when applicable;
- Contacts for organizations to act on technological recovery (for instance contractors to freeze-dry books and media to prevent damage from mold);
- Contacts for recovery of information technology assets (the website, the library management system, the digital library) including system recovery documentation.

When the parliamentary library has a specific responsibility in this area, the designation of an archives officer may be necessary to ensure that processes for record keeping and preservation are maintained in the parliament.

Of course, it is important to document over time the policy decisions around record keeping, including retention rules, transportation, storage and disposal.

Record keeping metadata

There may be specific national metadata standards for record keeping that need to be adopted. For instance the AGLS (Australian Government Locator Service) Metadata standard is used by Australian Government agencies to describe records and archives (http://www.naa.gov.au/records-management/publications/AGLS-Element.aspx).

Dublin Core is an important metadata framework that can be expressed as Open Archives Metadata (http://www.openarchives.org/sfc/sfc_oams.htm). The metadata elements of Dublin core are principally oriented around bibliographic data, but have been extended as a convenient form of metadata interoperability to cover many other records. Many of the digital library systems discussed in the previous chapter include capabilities for metadata enhancement of records and objects stored in the system. For example, METS (Metadata Encoding and Transmission Standard) is a well-known schema used for many records and archives and designed for digital libraries (http://www.loc.gov/standards/mets/).

Record keeping systems

The previous chapter already discussed Digital Library systems that can support archives management. Core technologies that support good records management are barcoding and RFID (Radio Frequency Identification, already presented in Chapter 3).

Barcoding of physical assets is cheap and durable and simplifies the process of undertaking periodic stocktakes/reviews of assets. RFID can be useful both for tracking and asset reviewing where tracking of items is more critical.

SOFTWARE AND SERVICES

Digital Library for Digital asset management

- **DSpace.** http://www.dspace.org. DSpace provides an integrated solution for the Digital Library. It has a built-in workflow for document ingestions. Its presentation layer is highly structured, allowing content to be divided into collections, sub-collections and communities. It is very widely used, internationally and as a result support exists. It has a strong support for language internationalization. DSpace has 96 language packs.

- **Greenstone.** http://www.greenstone.org. Greenstone was developed by the New Zealand Digital Library Project at the University of Waikato and has been supported by UNESCO. It has a strong base of implementation in Non-Governmental organizations and has four core language packs: English, French, Spanish and Russian.

- **DLXS**. http://www.dlxs.org/ A hybrid open source/commercial Digital Library system also used for document management.

Records Management software

- **Accutrac.** http://www.ironmtn.com.au/records/accutrac/. Iron Mountain provides a product focused on records management.

- **EDC RC.** http://www.docudatasoft.com/. DocuData Software Corporation's records and document management solution.

- **DHS's Total Recall.** http://www.dhsworldwide.com/. DHS records and document management.

- **EMC Documentum.** http://www.emc.com/domains/documentum/index.htm. A well-known enterprise document management system.

- **TRIM.** http://www8.hp.com/us/en/software/software-product. html?compURI=tcm:245-936980. TRIM is one of the earliest and best known commercial enterprise Records Management systems, supported by Hewlett Packard.

Chapter 5

CURRENT DEVELOPMENTS IN SOCIAL MEDIA AND WEB 2.0

Introduction

This Chapter presents an overview of social media and Web 2.0 developments and explores the ways in which social media is relevant to the parliamentary library, both as a tool for research and as a means of promoting library services.

One of the phenomenal developments of the last decade has been the acceptance and transformation of the web from a purely informational resource to a two-way, highly engaged medium of communication. This has occurred across cultural, national and economic boundaries. Web 2.0 and Social Networking have been the buzz-words underlying this transformation. Web 2.0 refers to a "second generation" of web-based services typified by two-way dialogue, collaboration and information sharing.

However, Web 2.0 is not a single concept. Rather it is a metaphor for the convergence of technologies that enable rich participation and remixing (mash-ups) of applications. The elements of content creation and participation were most obvious in the emergence of blogs and other tools for personal expression on the web. The ease with which personal narrative could be interwoven with other websites and other information sources was a key transition from the web as a one-way information source to a place for interactive discussion. Social networking has extended this further by providing immediacy to personal expression in a context of networked relationships.

In this context, the library no longer stands as the principal reference point for the accumulated knowledge of an organization. It remains, however, one of the trusted sources of knowledge. This presents both opportunities and challenges for the library. Amidst the diversity of rich information sources now available to anyone with an Internet connection, the parliamentary library itself must assert its role as:

- A trusted source of impartial information;
- A source of advice and training for those navigating the diverse resources available to them;
- A point of reference to facilitate understanding and filtering of these diverse resources; and
- A reliable point of permanent records and potentially also a distribution point for these records so to contribute to the wider resources.

This presents a professional development challenge for libraries: to be conversant and even situated in the middle of these new tools while maintaining a firm grip on the responsibilities for trustworthy management of information resources on behalf of parliament.

Leveraging Web 2.0 for research

The physical collection of the library is only one of the reference points for research to meet the needs of parliament. For the parliamentary library research may begin within its boundaries, but it will certainly extend beyond those. Many of the resources now available for research are free, and are being used by library clients themselves.

The role of parliamentary information professionals therefore is important, particularly because two key concepts in searching remain central:

- Exhaustivity: the degree to which the research touches on the full range of information resources and search results that meet the client's needs;
- Specificity: the degree to which the research is exactly what the client needs.

The research may have to mediate information of mixed quality and reliability already obtained by the users. Just as doctors face the phenomenon of patients coming with their own Google search results on their ailments, so information professionals must help analyze and integrate information received from quite disparate sources.

In addition to being a unique new phenomenon of communication between groups, Web 2.0 also presents additional opportunities for research by the library on behalf of its clients. Michael Sayers neatly encapsulated the new generation of research tools available to the library in the term "Searching 2.0". In fact, beyond the borders of the library and its traditional research databases and catalogue, a rich set of resources is available in the Web 2.0 domain.

The research process itself is changing with the "quantum affect" of Web 2.0 participation. The research may itself leave a trail of participation behind through tagging, reviews and blogging that enrich the overall information resource.

Some of the key Web 2.0 resources available to researching in the parliamentary library are listed below.

THE GOOGLE GAGGLE

Google search is still the pre-eminent search engine. The ranking algorithm, based on frequency of links to a given page has proven effective over time, even when distorted by the sale of keywords and/or by strenuous efforts of entities aiming at distorting rankings to their own ends. However, the Google search is not the only rich resource provided by the imaginative crowd at Google. Probably more important for research purposes are the new members in the Google fold.

Google scholar (http://scholar.google.com.au/). It indexes research articles, legal patents legal opinions and journals, providing a free vehicle for citation-based searching. While a big draw card for academics, this can also be a useful method for background research on key topic areas of interest to members of parliament.

Google books (http://books.google.com/). It is the latest Herculean effort by Google to become the hub for discovering all publications. It represents an extraordinary research resource. A result page in Google books is an example of the mash-ups possible in web 2.0, with reviews, cover art, related works, tag clouds of terms in the work, bibliographic information (including subject relationships) sample pages of scans, links to commercial providers of the work and "find in a library" linking to WorldCat.

Google maps (http://maps.Google.com). By providing Google maps as an online resource that was simultaneously accessible as a web page and as a tool for others to mash-up with geographical information, Google has provided an immeasurably effective resource. Google maps is replete with metadata and therefore represents a search tool for not only location discovery but also for searching about places, people and things.

Google blog (http://blogsearch.google.com/). It provides a search engine specifically on blogs.

Google news (http://news.google.com.au/). It is a news feed that can be regionalized and taken as an RSS feed (for example all news items mentioning a given person).

Google+ (https://plus.google.com).It is Google's latest response to Facebook with video chat (hangout).

There are potential privacy issues with Google services as there are with most major search engines.

The IP address, search keywords and sites visited may all be tracked. Alternatives such as Scroogle (http://www.scroogle.org and https://ssl.scroogle.org) leverage Google to yield search results that preserve privacy without advertisements. These systems give a level of privacy because they do not pass through to external sites the search terms used, and insulate the searcher from logging and recording of search interests. Other search engines such as ixquick (http://www.ixquick.com/), attempt to protect the privacy of the search process.

WorldCat

WorldCat (http://www.worldcat.org), managed by the library Goliath OCLC, represents an aggregate collection of OCLC members around the world and contains over 1.4 billion items. Among the various functions, "Ask a Librarian" connects to a librarian in an affiliated library.

Wikipedia

Wikipedia is a multilingual, web-based, free-content encyclopedia project based on an openly editable model and written collaboratively by largely anonymous Internet volunteers. It represents a phenomenal resource. Established in 2001, it has carved out a unique place in the web. Its content may often be of questionable authenticity, and can be fraught with misuse and inaccuracy. Nevertheless, its sheer scope makes it unequaled in breadth of content. Irrespective of whether the information professional disdains or lives by Wikipedia, it is important to be aware of its presence in the information sphere. For the parliamentary library this can include:

- Establishing a profile on Wikipedia for the library;
- Becoming familiar with its search and alerting capabilities;
- Being aware of its use by members of parliament and their staff.

Wikipedia has a free-text search similar to Google, including the ability to qualify search terms.

Members of parliament may want to monitor on Wikipedia references to themselves or to topics they are interested in. Registering on the wiki allows users to contribute and edit articles, as well as to mark pages to "Watch". This will result in email alerts when there is activity on a 'watched' topic.

Facebook, YouTube, Flickr

Social networking allows individuals and organizations to describe their interests and activities and develop a community of common interests. The core group of social networking tools represented by Facebook, YouTube and Flickr represent a vast, raw, resource of content and information. Each of these resources has a separate search engine, and most have a form of advanced search which at least allows searching by types of media and currency of publication (for instance the "search options" in YouTube). As with Wikipedia, YouTube has a subscribe option to monitor particular pages or "channels". Yahoo's Flickr also has an advanced search allowing filtering by media type or date, and a range of functions to annotate through tagging or "favourites". Unlike Flickr and YouTube, Facebook requires sign-in for searching. The search options are limited. The importance of Facebook is networking and "presence", and the integration of Facebook with other Web 2.0 functions such as Twitter.

Blogs

A blog is a personal web page focused on issues of interest to the author. The blog is typically about immediacy of the thought, an idea and the personal expression of views. There are many free blogging websites and tools that integrate with them. For instance, WordPress has both web and smartphone

applications tools for quick update of blogs. While blogs are a common method of outward communication by the library, they are also an important resource to be tracked and monitored by the library staff. Legislators may maintain blogs, and the indexing and referencing of these by the parliamentary library can provide a valuable resource on the intranet or extranet. Political commentators, journalists and specialist are increasingly using blogs to supplement their traditional publishing vehicles. Some news indexing products have begun to include blogs in their services. Similarly, when researching issues for members, reference to blogs and media releases may be important. Google blog search mentioned above may be a useful service in this context.

Social media as information and marketing channel

The parliamentary library is for and about its current and future clients and their specific information needs. It is important that the information professionals who are part of the parliamentary library understand the complex network of information and communication channels used by the library's clients. For this reason, if no other, the social network toolkit is an important part of the resources used by the library. Furthermore, today there are many opportunities for using social media as an information channel about the library and for alerting services and the dissemination of information.

WIKIS

Wikipedia is just one in a class of web based documentation tools that enable quick, easy and collaborative development of web content. Wikis are characterized by a simple writing syntax that allows, after a short learning curve, simple collaborative development of web-based information. It can complement an intranet for purposes of documentation and information delivery. The software supporting Wikis - DokuWiki (http://www.dokuwiki.org/dokuwiki) - is light-weight, does not require a database, is very simple to install, and is complemented by a wide range of "plugins" than extend its functionality. The wiki can be used for a broad range of support tasks in the library, from documentation to knowledge management.

BLOGS

A blog is probably the first, easiest and most personal Web 2.0 presence the parliamentary library can establish. The library is the conduit of news on information, events and resources that are very suitable to blogging and can attract a considerable following. Types of news suitable for a parliamentary library blog include:

- New titles and resources available through the library;
- Summaries of news feeds relevant to members of parliament;
- Book reviews;
- Events and activities.

RSS

Libraries are great content creators as well as content managers. The parliamentary library may be the custodian of a range of information resources that are of vital interest to legislatures. This may include current news feeds, new publications and media releases from other members. In addition, the library may be responsible for managing the intranet, extranet and web contents not only of the library but of other departments/services of the parliament.

RSS (Rich Site Summary – or now Really Simple Syndication) is a simple means of distributing this information to others on a selective or wholesale basis. The technology for RSS is already integrated

into many library and information applications. Clients can consume RSS syndicated feeds easily through standard web browsers and email clients. Moreover they can, as with all Web 2.0 resources, reshape these feeds themselves in different ways. Blog updates can also be syndicated through RSS.

TWITTER

Twitter is a vehicle for very short and immediate communication to a wider audience. A "tweet" is a short communication (of no more than 140 characters) that can be "followed" by others that may be interested. Tweets can be an effective tool for communication *between* information professionals. It can be a means of researching and tracking developments and announcements by members of parliament and others individiuals of interest to the parliamentary library and the parliament as a whole. What differentiates a "tweet", as opposed to RSS, is the personal nature, the immediacy and the brevity of the communication. Twitter is not just a valuable Web 2.0 tool in itself but tweets can also feed into other social media tools, such as Facebook and Blogs. They are a useful means of keeping abreast of developments through the use of hashtags (a way of quickly referencing Twitter topic areas) and other "back channels".

FACEBOOK, YOUTUBE, FLICKR

Why does the library need to have a presence on Facebook when it already has its own web presence? The value of a Facebook page for libraries is in taking the library into the online conversations and information networks of the clients themselves.

A presence on Facebook is a portal not only for communicating with clients, but also with other libraries. The library presence should be judged on a mature assessment of:

- The capability of the library to maintain and keep its presence relevant and to ensure it is up-to-date and significant for its clients;
- The degree to which the legislators and staff are themselves using Facebook.

As with tweets, the attraction of Facebook lies in the sense of personal engagement that it represents, and therefore the outward expression of the parliamentary library in the community.

YouTube and Flickr can also be a vehicle for delivery of library resources and for visual marketing of the library. YouTube is widely used for delivery of educational and training resources such as video tutorials. Flickr can provide a method for publicising photographs of events within the library.

TAGGING

Tagging is the means by which clients can interact with the library information systems. Tagging allows the client to create topic terms that express their particular interest, add them to the library's information systems and share these "tags" with others. It is one of the ways in which the catalogue and other resources can be opened up and allow clients to interact with these resources through social networking.

Tagging transforms an otherwise static resource into a dynamically evolving and inter-connected resource. The ILMS software for the library catalogue may already support tagging. Similarly, many of the news and information resources that the library uses for research and reference activities will already support tagging. By engaging actively with tagging - and by tagging the results of existing research, the library can help members and their staff find the most relevant information and resources that meet their needs. There are risks associated with tagging and the inappropriate usage of tags. But these risks are balanced by the additional utility offered by the ability of clients to select particular resources from the library collection and share these selections with others.

In addition to the engagement through the Web 2.0 social networking sphere, the parliamentary library can engage in a more fundamental way by opening up its own unique services through web services. The library can be a rich source of useful information by and about the members it serves. Enabling web services that others can consume is a way of going beyond the use of other's tools by contributing the range of information services available on the web.

To be useful, such services need to be built in a metadata framework that facilitates interoperability. Services can be delivered through a set of functions or "Application Programming Interfaces" (API's). These may be implemented through:

- Web services - programmatic interfaces between a client system and a web server
- AJAX and other JavaScript-based services - such as those used by Google maps to provide simple mapping services using JavaScript.

Social media for democratic engagement and participation

Social media has been revolutionary in the full sense of the word. It has changed the ways in which citizens engage with their government, and also opened up new channels for two-way communication between individuals and between organizations and individuals.

There is considerable room for risks, mistakes and failures in an area where there are poorly defined rules for etiquette and behavior. Nevertheless, the parliamentary library has the potential to play an important role in facilitating the effective introduction and use of these tools in the parliamentary environment, and to make resources available to members of parliament, committees and staff to use and understand these services.

Because the effective implementation of social media tools has been achieved only in a few parliamentary libraries, this is an area where the exchange of experiences and practices among libraries may be most valuable, possibly through their global and regional networks.

CASE STUDIES

Library of the House of Commons of the United Kingdom

Social media is actively used by the House of Commons of the United Kingdom to connect citizens to the work and business of Parliament and parliamentarians. All of these initiatives, developed under the leadership of the Librarian, can be found at http://www.parliament.uk. They include:

- Select Committee forums to enable engagement with diverse groups such as armed forces personnel, prison officers, post office users, university students, health service patients, engineers, victims of domestic violence;
- YouTube to share popular (e.g. Prime Minister's questions) and other parliamentary material;
- Flickr to share images, such as those related to events in Westminster Hall;
- Facebook;
- Twitter, which has been used, for example, to crowd source questions for Ministers' evidence sessions at Select Committees;
- Lords of the Blog – site for members of the House of Lords to share their stories of work in Parliament;
- Interactive computer games for school children such as MP for a Week and My UK.

Prepared by the Library of the House of Commons of the United Kingdom

Ligas Mayores - Library of the National Congress of Chile

The Library of the Congress of Chile is making wide use of social media to successfully encourage citizen participation and communication with members of parliament. The strategy of the Library has been to offer tailored made content for its diverse audiences. Recent efforts have focused on young people, legal professionals and indigenous communities. The media used range from Blogs, Podcasts and Wikis to Facebook, Twitter and YouTube, as it is evident from the Library's homepage (http://www.bcn.cl/).

The need to pioneering experiences with social media emerged from the need of establishing a technological platform that would allow the increasing number of senior citizens in Chile to participate in politics and engage with their members of parliament. The result was the creation of Ligas Mayores (Major Leagues), a blog aimed at over 60s (http://ligasmayores.bcn.cl/). The objective was to become acquainted with the interests and worries of this group of citizens, as well as to create a network among senior citizens to make their voices heard by the National Congress.

In the past three years this community has helped develop information literacy skills, and organized meetings and seminars. As a result, today around 2,000 people actively participate in the Ligas Mayores blog, by writing and commenting on different issues.

The importance of this platform became evident when a Committee on Senior Citizens was established in the Chamber of Deputies and members asked blog participants to hand in a shortlist of issues to be addressed by the Committee. The Blog community reacted by channeling and responding to suggestions, influencing directly the agenda of the Committee and future law-making.

Prepared by the Library of the National Congress of Chile

SOFTWARE AND SERVICES

Standalone software

- Mozilla Thunderbird. http://www.mozillamessaging.com/en-US/thunderbird/all.html. Mozilla Thunderbird supports an RSS feed. Indeed most modern email clients now have an RSS reader built in. Mozilla Thunderbird is the most popular open source alternative to Microsoft's Outlook.

- Tweetdeck. http://tweetdeck.com. Tweetdeck is a program for organizing and posting to various social media services including Twitter (who now owns Tweetdeck), Facebook, FourSquare, LinkedIn and anything with a Twitter-compatible API, though they haven't integrated Google Plus (often abbreviated as Google+ or G+) as of this writing. Software like this allows easier monitoring of hashtags and lists as well. It is available for desktop clients as well as mobile devices.

Wikis

- DokuWiki. http://www.dokuwiki.org/dokuwiki. It is a documentation-oriented Wiki tool with no database requirements, quite easy to install.

- MediaWiki. http://www.mediawiki.org/wiki/MediaWiki. MediaWiki is similar to DocuWiki, oriented to news and RSS.

Google Products

- Google Reader. http://reader.google.com. Google Reader is web-based RSS reader, with support for organizing and sharing individual articles and RSS feeds. It's useful for accessing RSS feeds away from the desktop.
- Google Scholar. http://scholar.google.com.au/. Google Scholar indexes research articles, legal patents legal opinions and journals, providing a free vehicle for citation-based searching.
- Google Books. http://books.google.com/. Google Books provides access to books, with reviews, cover art, related works, tag clouds of terms in the work, bibliographic information (including subject relationships) sample pages of scans, links to commercial providers of the work and "find in a library" - linking to WorldCat.
- Google Maps. http://maps.Google.com. Google Maps provides a search tool for not only location discovery but also for searching about places, people and things, including an extensible Application programming interface (API) that allows integration with your own website.
- Google Blog. http://blogsearch.google.com/. Google Blog. http://blogsearch.google.com/ - provides a search engine indexing blogs specifically.
- Google News. http://news.google.com.au/. Google News provides a search engine and news feed from news sources around the world.
- Google Plus. http://plus.google.com/. Google Plus is Googles' latest foray into social networking.

Alternatives

- Scroogle. http://www.scroogle.org. Scroogle leverages Google to yield search results that preserve privacy and without advertisements.
- Ixquick. http://ixquick.com/. This search engine has protections for the privacy of the search process.
- Ning. http://ning.com/. Ning is a (commercial) tool to create your own social networking site.
- WorldCat. http://www.worldcat.org. WorldCat is OCLC's interlinking catalogue of books.

- OStatus. http://ostatus.org. OStatus is an open standard for distributed status updates. It is currently used by StatusNet, the software behind the open-source Twitter alternative Identi.ca (http://identi.ca).

Chapter 6
IMPACT MEASURES AND STATISTICS

Introduction

Library statistics are an important means for library self assessment and performance management. Statistics serve several purposes: to provide evidentiary support of the ways in which the library fulfills its role, to guide the library in decision making about investment and budgetary planning, and to guide progressive improvement of service delivery. Methodologies for gathering and harnessing library statistics have a long track record in major countries.

For example, the EU project LibEcon2000 (http://www.libecon.org/) sets a regional direction for consistent data collection for library statistics, which itself facilitates measurement of performance at the national level through the use of consistent statistics.

The Global Centre for ICT in Parliament has undertaken regular surveys of ICT in parliament, including in parliamentary libraries, whose information provides valuable feedback for libraries in setting their direction. The findings of these biennial surveys are presented in the World e-Parliament Reports, released periodically by the United Nations and the Inter-Parliamentary Union[9] .

An important resource for the library is the IFLA Library Statistics Manifesto published by the IFLA Statistics and Evaluation Section (http://www.ifla.org/publications/ifla-library-statistics-manifesto), which includes a model questionnaire. The Manifesto clearly sets out the importance of statistics in supporting the library within the institution, as they can demonstrate the added value that the library provides to its users and help create and maintain confidence in it.

Performance measurement of libraries is not simply about collecting usage statistics, collection sizes and budgetary information on staffing, acquisitions and electronic resources. It also entails a continuous process of assessment that involves eliciting the end user's opinion of library performance.

The ISO 11620 standards also encourage the measurement of the quality and effectiveness of the services delivered, as well as the achievement of the goals and objectives of the library.

Current standards for the collection of statistics in libraries are proposed by ISO TC46/SC8, the section of the International Standards Organization (ISO 2789 and ISO 11620) in Europe, and the National Information Standards Organization (ANSI/NISO Z39.7) in the United States. Major projects such as LibEcon2000 have illustrated the strategic benefit of having global statistics consistent across libraries regionally and nationally, and have informed subsequent efforts toward consistent standards for statistical gathering. Organizations such the International Coalition of Library Consortia (ICOLC -http://www.library.yale.edu/consortia/webstats.html), JSTOR Web Statistics Task Force (http://www.library.yale.edu/~kparker/WebStats.html), and the D-Lib Working Group's Digital Library Metrics

---

9   United Nations, Inter-Parliamentary Union, Global Centre for ICT in Parliament, World e-Parliament Report 2008, [New York]: United Nations, 2008 [http://www.ictparliament.org] and, United Nations, Inter-Parliamentary Union, World e-Parliament Report 2010, prepared by the Global Centre for ICT in Parliament, [New York]: United Nations, 2010 [http://www.ictparliament.org].

(http://www.dlib.org/metrics/public/) demonstrate the considerable interest in improving standards for library measurement.

Measuring resources use

Most integrated library management systems are equipped with a suite of tools for reporting on collection usage by categories of borrowers and items. The types of statistics that should be collated and tracked monthly and annually are:
- Acquisitions by type of borrower and type of item against budget;
- Circulation statistics (reservations/holds and borrowings);
- In-house usage statistics (many systems will allow tracking of usage by checking in items left on desks and stacking trolleys by checking these in before shelving. This can provide a valuable measure of in-house usage);
- Overdue rates and return rates;
- Search statistics (what subject and keywords are searched);
- Web-based statistics (what parts of the library website are most frequently used;
- Digital library usage statistics;
- Reference queries by client and by type of query and resource used.

Measuring electronic collection

The breadth and diversity of electronic systems presents specific challenges to gathering common statistics across various platforms and services. Different suppliers, when they supply usage statistics, may do so in a variety of different ways. Nevertheless, assessing electronic usage as part of statistics gathering is most critical for parliamentary libraries at a juncture of transition in the use of library services. An important task of the library is to assemble best equivalence measures of usage, taking different source figures. For instance, while one vendor might provide statistics on searches undertaken and downloads made, another might break this down to collection or title categories.

There is no question that electronic systems can extend parliamentary library services beyond the normal opening hours. When these services are delivered through an internal library "proxy", some tracking is possible for these resources. Some vendors may provide information on when the services are being used. For instance JSTOR provides reports detailing the breakdown by hour of access and services used.

The parliamentary library will probably have to use a combination of information elicited from web server logs, its own internal systems and vendor provided reports to gather a clear picture of electronic systems usage.

WEBSITE USAGE STATISTICS

Usage statistics can give a good indication over time of the important parts of the library websites (intranet, extranet and Internet). As there are many tools that enable analysis of these usage statistics, the following points represent some guidelines for reviewing them.
- Page hits are useful as a relative measure over time and to measure the relative popularity of different pages and sections of the site. They are not an indication of the number of users, since much usage may be masked by website caches.
- Customer visit figures are an approximation of the number of unique customers visiting the

library website. They rely on the web server logs to give an estimate of which pages a single customer has used over time (as distinct from usage by discrete different customers).

- Usage by hour of day. This information can be very useful in measuring times during which the website receives peak usage during the week.
- Referral information. When provided by the library web logs, this can give useful statistics on where customers came *from* to reach the library website.
- Search keywords and phrases. It gives an indication of topic areas used by customers using the website.

It is particularly worth reviewing changes in statistics usage patterns before and after major website changes.

Measuring customer satisfaction

The measurement of customer satisfaction is newer territory for libraries, but provides important feedback that can be particularly valuable in judging strategic decisions. Quantitative and qualitative research methods are part of the basic research toolkit.

Quantitative methods are applied to the analysis of population data, controlled trials, surveys, census, econometrics, ratings analysis and many other areas. Quantitative research involves population sampling techniques, which give the capacity to analyze and the ability to generalize theories. There are many texts on the most effective approaches to Quantitative research.

The mission of Qualitative Research is the discovery of new phenomena through careful in-depth examination of the results of non-quantitative investigation. The scope can be anything from the detailed study of a single case to the textual analysis of large amounts of free-form survey data. Approaches to Qualitative Research include:

- Case studies;
- Focus groups;
- Delphi method;
- Content analysis;
- Action research.

CASE STUDIES

The in-depth analysis of a particular organization, situation or environment can highlight possible cause/effect relationships that are not otherwise apparent. They allow the realization of generalized models through the detailed understanding of specific cases. They are, of their very nature, open to interpretation, and subjective. A case study may involve re-interpretation of existing data in a new way.

FOCUS GROUPS

Focus groups can be an efficient way of rapidly gathering many different opinions in a relatively short space of time. A selected panel of users discussing issues in an environment controlled by an interviewer, potentially involving a series of iterations on questions, can provide immediate feedback on questions being tested. With an experienced interviewer, follow-up questions can arise immediately to reveal aspects that were not yet considered. In this way key issues can be identified quite early.

The risk of focus groups is the potential domination of strong individuals, whose opinion tends to occupy the discussion space. Similarly, interviewer bias can subtly be communicated to the participants. Generally, the focus group is useful for measuring consumer reaction, evaluating consumer-purchasing decisions, and measuring the use of products and services. They can be an effective approach to measuring the potential target audience reaction to a proposed idea.

The question design for focus groups yields best results when the target groups are taken through several phases in the development of their ideas leading to the central questions. Normally the focus group will go through four phases:

- *Introductory questions.* These introduce the broad interest area. Their main purpose is to stimulate the initial discussion among the participants.
- *Transitional questions.* The group should be led through more concrete questions, examples or case studies, which focus the discussion in the interest area.
- *Key Questions.* The key focus group questions are introduced by the interviewer when the group has reached a suitable level of discussion and engagement in the interest area. The main interest areas should be directly addressed. Feedback, discussion and the furthering of interesting aspects of the discussion are a key role of the moderator.
- *Final Questions.* A final series of questions can be used to wrap up the discussion and give a sense of closure, as well as exploring ancillary topics of interest arising from the key questions of the focus group.

Generally, results are gathered from four or more focus groups and these are compiled using a Qualitative Data analysis tool such as NVivo (http://www.qsrinternational.com/).

The Delphi method

The Delphi method is an approach to forecasting using expert panels. Like a focus group, discussion and panel sessions are used to elicit opinions and ideas regarding developments that may be on the horizon. This is an iterative process that may see several groups exchange their ideas as they work to a consensus on key future trends, issues or research directions. In the nature of these panels, very strong facilitation is necessary to avoid an early convergence to consensus or the domination of one individual or theme. In the final round of a Delphi session, questions are often ranked in priority or probability. Such techniques are often a useful approach to formulating options in cases of high uncertainty. The work by Lindstone and Turnoff (1975) presents a comprehensive appraisal of the Delphi approach.

Content analysis

In many cases researchers already have a rich resource of content available for textual mining. Content analysis looks at trends and occurrences and meanings in such texts. Word frequency, contextual analysis, semantic analysis of texts, clustering and other analysis methods now rely heavily on Information Systems. Software tools such as ATLAS*TI and NUD*IST are particularly strong in methods for content analysis using Grounded Theory. Other packages focus on thesaurus based and probabilistic analysis of texts: Semio Taxonomy and Intelligent Miner for texts being two examples. Hamlet is a software tool that focuses on various techniques for word frequency analysis. Linguistic analysts also have at their disposal a range of software applications focused specifically on lexical analysis: such as Interlinear Text Processor and Shoebox.

ACTION RESEARCH

Finally, Action Research is an immensely popular method for situational based research. Rather than attempting to compartmentalize the researcher and the subjects of the research, Action Research assumes the active engagement of the researcher in the problem and its resolution. It is focused on applied research, and continual refinement.

CONSISTENCY

Consistency over time is important in the use of both qualitative and quantitative statistics, particularly where they are used to measure key performance indicators and strategic decisions for the library.

Reporting and key performance indicators

Libraries in most organizations are now subject to an unprecedented level of scrutiny as to their role and relevance. Parliamentary libraries are not exempt from this scrutiny. Therefore, it is important that the parliamentary library begins to prepare the statistics that demonstrate its utility and impact on the daily life of the parliament. For management reporting purposes, these statistics are often presented in terms of Key Performance Indicators (KPIs). Ground work with management is needed to ensure that these indicators reinforce the relevance of the parliamentary library service. Similarly, ground work is needed within the library to ensure these KPI results are truly reflective of the breadth of service delivery.

The purpose for gathering these statistics is to keep the parliament informed of the ongoing contribution and value of the library and to facilitate the direction of resources where they are most needed. The parliamentary library should prepare an annual report on its undertakings which brings together the achievements and activities of the year. KPIs should be developed under the guidance of the senior management of parliament to reflect priorities for the library in supporting the work of the legislature.

The annual report can present:
- Key Performance Indicators which might include:
    - collection usage statistics;
    - collection development statistics;
    - research service statistics (requests, reports);
    - training delivered;
    - website usage and statistics.
- The major projects and achievements for the previous year;
- The major tasks facing the library for the forthcoming year.

Library of the House of Commons of the United Kingdom

The House of Commons Library uses management information reports as a basis for understanding how its services are being used and making decisions about priorities and pressure points in service delivery.

| Satisfaction with Services (excluding don't know and don't use)			
Members		Members' staff	
Information and Research Services	99%	Information and Research Services	98%

Reach		
Members using the Library 5+ times in the last 12 months (target 90%)	92%	Jun-12
Members using the Library 10+ times in the last 12 months (target 75%)	81%	Jun-12

Indicators			
Research papers available for 2nd reading debate for govt bills / top 7 PMBs	100%	YTD ending	May-12
Debate packs available 24 hours before relevant debate	77%	YTD ending	May-12

Logged Enquiries (Research & Library)
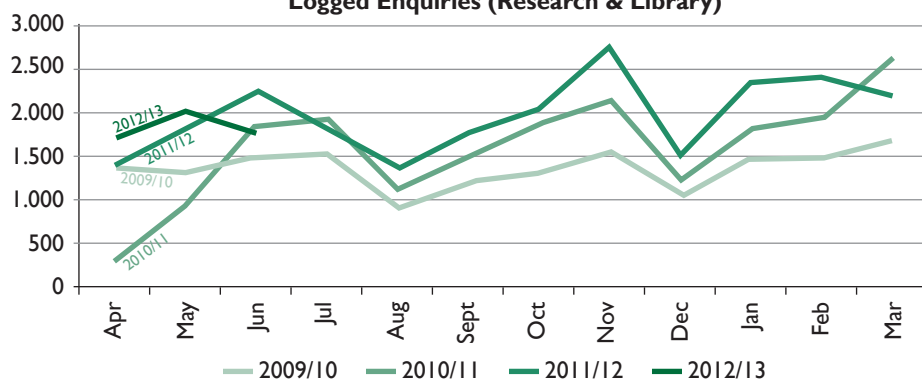
Date	Number of enquiries	% deadlines met	% undeadlined in 14 days	Quick Log Enquiries
May-11	1,797	99%	100%	654
May-12	2,015	98%	99%	721
Jun-12 (at 5 Jul)	1,763			648
Last 12 months	24,012	98%	99%	8,526
2010/11	19,196	98%	99%	7,907
2011/12	23,679	98%	99%	8,342

Prepared by the Library of the House of Commons of the United Kingdom

Web site statistics measurement

- **Google analytics.** http://www.google.com/analytics/. Google analytics is a popular tool for measuring website usage statistics. By use of a small piece of JavaScript embedded in the web pages, it gives good tracking reports.

- **Piwik analytics.** http://piwik.org/. An open source alternative to Google analytics. This may require a little extra installation time on servers, but has quite powerful reporting capability similar to Google analytics.

- **AWStats open source log analyzer**. http://awstats.sourceforge.net/. AWStats is a powerful open source log analyzer. Your IT area should be able to assist you in providing log files from your intranet and extranet. This tool requires some initial configuration time, but has strong reporting capabilities, including keyword search usage. Since it operates off the log files, it is not restricted to showing only public web site usage statistics.

Examples of statistics gathering approaches

- **LibEcon.** http://www.libecon.org/. A European initiative to gather consistent individual and regional statistics on libraries.

- **LIBQUAL.** http://www.libqual.org/home. LIBQUAL is a not-for-profit structured set of services to "to solicit, track, understand, and act upon users' opinions of service quality". The merit of the system is its widespread base and the ability to assess individual library results against a large performance base gathered over time. It is managed by members of the Association of Research Libraries (principally large university libraries). The approach and methodology are strong, and could form the basis for similar regional evaluation arrangements for parliamentary libraries.

- **International Collections of Statistics.** http://www.caul.edu.au/caul-programs/caul-statistics/interstats. A useful reference resource provided by the Council of Australian University Libraries.

Procedures

- Guidelines for the Introduction of Electronic Information Resources to Users. http://www.ala.org/ala/mgrps/divs/rusa/resources/guidelines/guidelinesintroduction.cfm. These guidelines from the ALA are useful descriptions of some procedures necessary to help users make the most of the electronic services provided by the library. They also have a document on Implementing and Maintaining Virtual Reference Services http://www.ala.org/ala/mgrps/divs/rusa/resources/guidelines/virtual-reference-se.pdf.

Statistics

- ISO 11620:2008 Performance Indicators. http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=37853. This standard defines performance indicators for libraries and defines steps for establishing these performance indicators.

- ISO 2789:2006 International library statistics. http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=39181. Defines standards for international performance reporting by libraries.

GLOSSARY

A

API - Application Programming Interface: A set of standards for developers to use when interfacing with an existing application.

ASCII - American Standard Code for Information Interchange: Along with EBCDIC, an early English-language character encoding format for digital text encoding. Most text editors can save content in ASCII format.

ASP (server) - Application Service Provider: A particular business and delivery model for licensing of applications using a centralized server delivered over an Internet framework. ASP applications are sold as services and delivered through a network, relieving customers from managing the necessary underlying IT infrastructure.

B

Bandwidth: The rate at which information can be passed between computers. A wider bandwidth means that more content can traverse the network in a shorter amount of time.

Blog: A blog is a personal web page focused on short and long issues of interest to the author. The blog is typically about immediacy of the thought and idea and the personal expression of views. There are many free blogging websites and tools that integrate with them.

Browser: software for navigating the Web, retrieving documents and other files, commonly in HTML mark-up format.

C

Cloud computing: Cloud computing is a technology model which allows organizations to run and deliver IT systems and services over a network, avoiding the need for physically hosting servers and equipment, as well as installing software locally. Typically for libraries this entails the use of Software as a Service. A library might subscribe to a software provider to provide its library management system, in which case the software, data and processing are all accessed over the network, typically using a web browser.

CMS - Content Management System: software for managing intranets, extranets and public websites.

Codec: The compression and decompression algorithm for audio and video content.

CRM - Customer Relationship Management: software for tracking customer preferences, interests and requirements.

CSS - Cascading Style Sheet: The CSS defines rule-based presentational instructions for HTML content mark-up. The Style Sheet has the merit of gaining a greater freedom from the specific encoding of procedural mark-up within the text itself (with the <font> tag and others).

D

DAM - Digital Asset Management: A class of software for managing multi-media resources, from capture through to retrieval and presentation.

DCMI - Dublin Core Metadata Initiative: A standard for consistent metadata identification and description of Internet resources.

Descriptive Metadata: As with traditional cataloguing, digital objects need to be described and identified so that they can be discovered within the Digital Library. Digital Library metadata standards for describing objects serve the same role as AACR2 and MARC standards in traditional catalogues.

Examples of Descriptive metadata standards commonly used in Digital Libraries are Dublin Core Metadata Initiative (DCMI), Metadata Object Description Schema (MODS), and Metadata Encoding & Transmission Standard (METS). While DCMI is probably more widely used by Digital Libraries, MODS and METS provide a fuller descriptive framework as a successor to MARC. DSpace and Greenstone use DCMI as their descriptive metadata framework.

Digital Watermarks: A unique digital signature embedded in a document, image or multimedia item, in a manner very similar to the traditional watermark on paper. Digital watermarks, however, can contain meta-data about the content or the content creator. This meta-data might identify: a) Ownership; b) Extra data and information; and c) Embedded hyperlinks.

Document Delivery: The workflow process for managing Inter-Library Loans (ILL's).

DOM - Document Object Model: The strictly hierarchical specification for the ontological structure or organization of a document. HTML is an example of a DOM.

DTD - Document Type Definition: The specific set of rules defining what elements and attributes may be used in SGML and XML documents or files.

E

EDI - Electronic Data Interchange: The exchange of business documents (and financial transactions) in the course of business operation.

EDIFACT: A business document exchange ontology.

Extranet: A website designed to provide web-based access to a specific group of web users (rather than a public website accessible to everyone).

F

Facebook: An example of a Web 2.0 social networking platform that allows members to load their profile of interests and to communicate and inter-network with other members.

Flash: An animation component from Macromedia for use in web Browsers. Open source documentation for the Flash document format has been released.

FRBR - Functional Requirements for Bibliographic Records: A methodology for gathering all associated "expressions" of a work into a unified view. This will affect how MARC and other metadata standards for cataloguing describe items in the catalogue. Changes are being defined to MARC to accommodate the FRBR view of cataloguing. Existing cataloguing systems based around MARCXML rather than MARC are likely to accommodate this change reasonably well.

FTP - File Transfer Protocol: One of the earliest file interchange protocols on the Internet. Still a very popular protocol. Generally passes passwords in free text and so has major security limitations.

H

Harvesting metadata: There are many Digital Library systems - commercial, open source and in-house developed. Irrespective of the internal metadata approach for description and subject classification of the objects in the library, support for a harvesting metadata standard provides a means for interoperability between Digital Library systems. The most widely implemented harvesting system is Open Archives Initiative Protocol for Metadata Harvesting (OAI/PMH). This scheme supports metadata "harvesting" between digital libraries to allow discovery of digital resources between systems.

Host: Any computer that is the central point of connection to run an application or obtain information (e.g. a Web server). In the Internet a Client Web Browser connects to a Host Web Server to exchange HTML and other information.

HTML - HyperText Mark-up Language: A set of mark-up instructions for creating documents for use on the World Wide Web. The HTML standard is defined and controlled by the World Wide Web

Consortium (W3C). An SGML-compliant DTD for HTML (XHTML) has been published by W3C.

HTTP - Hypertext Transfer Protocol: This defines the communications protocol by which Web Browsers and Web servers communicate.

Hypermedia: The general conceptual approach to interlinking multimedia documents through all forms of object links (including text hyperlinks).

Hypertext: The specific implementation of hypermedia in text form. A particular word or phrase is made active (through mouse click or keyboard action) to launch another related document. The term was coined by Ted Nelson in 1965. The HTML "a" anchor tag is used for hypertext formatting in the World Wide Web.

I

IEEE/LOM - The IEEE Learning Object Model: An ontology for describing learning objects. Popular in the IT community for describing IT technical/theoretical literature.

IFLA - International Federation of Library Associations and Institutions: The international body representing libraries and the library profession.

ILL - Inter-Library Loan: Provision of an article or book by another library for use by your library on a loan basis.

ILMS - Integrated Library Management System: Software for managing all elements of the library collection - in particular, catalogue search, acquisition, cataloguing, serials management and circulation. Known as Library Management System (LMS) or Integrated Library System (ILS) or Integrated Library Management System.

Internet: An internet is a group of networks of computers that are connected by a common protocol. The Internet refers to the global connection of computers using the TCP/IP protocol.

Interoperability: Distinct systems and organizations working together are said to be "inter-operating". Interoperability is thus the property of systems and organizations to share objectives, policies, and information to work together. IEEE defines interoperability as "the ability of two or more systems or components to exchange information and to use the information that has been exchanged". For instance, interoperability of library catalogues and digital library systems can facilitate the development of a unified search interface across both, or single sign-on between both systems.

IP - Intellectual Property: The tangible output of creative intellectual activity in a particular expression – e.g. a book, a programme, a piece of music, a poem, an invention.

IP - Internet Protocol: A protocol defining the numerical addressing and routing rules on the Internet.

ISO 639-2: An international standard for country codes. Used by XML and HTML for country definition.

ISO ILL: An international standard for Inter-Library Loans workflow management. Used by Document Delivery Systems.

J

Java: A high-level, object oriented programming language developed by Sun Microsystems. A "p-code" language, it is designed to be portable across most operating platforms through the use of a small "virtual engine" specific to each operating system. That portability and its object-oriented design has been a factor in its popularity.

JavaScript: A popular scripting language developed originally by Netscape Communications in order to animate HTML pages. It is only loosely based on Java.

K

KM - Knowledge Management: The class of software and domain of research concerned with the

encoding and discovery of knowledge as a resource.

KWIC - Key Word In Context: A search result display which shows the keyword searched in the sentence context in which it occurs.

L

LAN - Local Area Network: A group of computer connected together for high-bandwidth file and application sharing.

LDAP - Lightweight Directory Access Protocol: A commonly used protocol for single-sign on to systems.

Library 2.0: A term describing library systems that are enabled for collaboration and interaction in a Web 2.0 style and the use of Web 2.0 functions by the library.

LMS - **Library Management System**. See ILMS above.

M

MARC - Machine Readable Cataloging: A metadata ontology for exchange of bibliographic information – note also MARC XML.

Mark-up: The placement of identifiers in text from which can be inferred information regarding the presentation, formatting and structure of the text or which adds additional commentary regarding the text (but not part of the text).

Metadata: The descriptive information about an underlying resource is called Metadata. For library resources typical metadata might include the title, author, descriptive information and subjects.

Multimedia: Any combination of text, audio animation and video content in a digital form.

N

NewsML - News Mark-up Language: A content exchange framework specifically designed for XML interchange and syndication of news items.

O

Obsolescence: Specifically in the context of technology: the way in which computer hardware or software becomes out of date in a way that renders its use progressively more difficult or costly.

Ontology: A formal definition of the relationships between content "objects" and framework for describing these content "objects."

OPAC: Online Public Access Catalogue. The OPAC is the web interface of a library electronic catalogue that allows searching library collections from the Internet (typically now web-browser based).

Open Source: The Open Source & Free Software Foundation is a trust-based means of developing high quality software. Distribution of the source code is free, and redistribution on this same basis is mandated through a licensing agreement. The economic argument for such an approach depends on the "reputation value" of the product leading to income through services and as a means of ensuring that a particular software product remains and develops in the open community of developers.

P

Parser: An application that semantically deciphers content according to specific rules or structures. An XML parser facilitates the hierarchical exploration of an XML document. A language parser may attempt to discover the grammatical constructs in a sentence or computer algorithm.

PDF - Portable Document Format: A widely used method text markup methodology for document editing, printing and publishing.

Persistence: Establishing a reliable and long-term (rather than transient or anonymous) presence that can last beyond a particular interaction. URL persistence concerns the availability of a web page over the long term at a known location. Session state persistence relates to the use of Cookies to maintain a specific information relationship over time between a browser and a web server.

Protocol: The formal set of rules for communication between network devices or applications. Protocols are generally managed and published by international standards organizations.

R

RAD - Rapid Application Development: The use of a heterogonous mix of software development tools and development methodologies to accelerate the design process.

RDF - Resource Description Framework: The RDF specification (Lassila & Swick, 1999) aims to provide a formal model using directed graphs to describe the semantics of metadata and of cataloguing web-based resources.

RFID - Radio Frequency Identification: A method for creating wirelessly readable tags for library holdings.

RSS - Rich Site Summary or Really Simple Syndication. RSS is a methodology for syndicating (distributing) news items and information updates on a subscription basis. It is a "pull" based syndication. That is, clients subscribe to the RSS service and download updates in their own timing.

RTF – Rich Text Format: A widely used method text markup methodology for document editing, printing and publishing.

S

Semantic Metadata: The semantic metadata provide the subject classification and relationship information for objects in the Digital Library. While this may be based on a traditional name/value pair of identifiers (subject = 'Parliamentary History'), the current trend is to move to Resource Description Framework (RDF).

SCORM: Similar to the IEE/LOM, but providing a richer framework describing the metadata ontology describing educational objects and resources.

Script: A loosely timed, often interpretive, computer programme. Often embedded within an application framework to add user control or dynamic functionality to an application.

Search Engine: A means of cataloguing, classifying and searching based on ranking rules for content on the Web.

SGF - Structured Graph Format: Defines an XML metadata format for exploration of overlapping hierarchies of content - especially websites.

SGML - Standard Generalized Mark-up Language: A universal syntax for defining mark-up language. A "meta-language".

SLA - Service Level Agreement: Defines the performance in terms of delivery of services between a client and a provider. The SLA can include metrics for response times, processes for problem resolution, levels of availability and other items that are important for effective ongoing delivery of the service.

SOAP - Simple Object Access Protocol: A protocol, now integral to Web Services, for process interaction with a Web site over standard HTTP communication channels.

Social networking: The process of using social media tools to build relationships between individuals and groups on the web.

Style Sheet: A method for defining the look and presentation of a web page by a set of cascading rules for fonts, spacing, position and design of the page.

T

TCP/IP - Transmission Control Protocol/Internet Protocol: The protocol-level for communication on an Internet. Defines the addresses to be used, the routing rules for traversal of the network and the protocols for file and data interchange.

TEI - Text Encoding Initiative: A key text mark-up standard for SGML mark-up of texts in the humanities.

Twitter: A Web 2.0 social networking function allowing very short messages to be sent out from multiple devices and subscribed to by an interested audience.

U

Unicode: An international standard for binary character set encoding of text in different languages.

UNIMARC: A variation of MARC sponsored by IFLA - the IFLA Universal Bibliographic Control and International MARC Core Programme (http://archive.ifla.org/VI/3/p1996-1/sectn1.htm).

Unix: An operating system developed in the 1960's and a popular platform for Internet applications.

URI - Uniform Resource Identifier: A generalized format for resource identification. A URL is a specific implementation of a URI.

URL - Uniform Resource Locator: The address of a document or other Internet resource.

W

W3C - The World Wide Web consortium: Responsible for publishing the WWW standards.

Web 2.0: The class of web-based services that deliver social networking and collaborative services on the web. This embraces a broad range of platforms such as Facebook, Twitter, and mash-ups using Web services.

Web Services: The set of protocols which enables the discovery and integration of business functions (for use by applications) and accessible through the Internet.

WSDL - Web Services Description Language: An ontological specification language for Web Services.

WYSIWYG - What You See is What You Get: Multimedia content is edited on-screen with the mark-up hidden and presented as it would be finally published.

X

XML - Extensible Mark-up Language: A popular implementation of SGML used for information exchange. XML is a simple, hierarchical, methodology for making data – and in particular for libraries text data – accessible for ICT systems. By discretely identifying elements of data with markup, data can be inter-changed and shared more effectively.

XSL: A set of standards for transforming XML into some final form. XSL defines a scripting language for style sheets (XSLT) that can transform an XML mark-up format to another format based on transformational rules, with the source XML and XSLT style sheets defined by XPATH (the workflow language of XSL).

Z

Z39.50: A network-aware OSI-based search engine used to share Digital Library collections. It defines query language properties and methods for persistence of searches.

FURTHER READING AND RESOURCES

Software and resources

Digital libraries

- 'Cenatic Activae' (2011), Cenatic, viewed 18 October 2011, http://activae.cenatic.es/.
- Donohue, T. (2011), 'DSpace-Fedora Integration FAQ', viewed 19 October 2011, https://wiki.duraspace.org/display/DSPACE/DSpace-Fedora+Integration+FAQ.
- 'DSpace' (2011), Duraspace, viewed 18 October 2011, http://www.dspace.org.
- 'EnterMedia DAM Software' (2011), EnterMedia Software Inc., viewed 18 October 2011, http://entermediasoftware.com/.
- 'EPrints - Digital Repository Software' (2011), University of Southampton, UK, viewed 18 October 2011, http://www.eprints.org.
- 'Fedora Repository' (2011), Fedora Commons Inc., viewed 18 October 2011, http://fedora-commons.org.
- 'FocusOPEN Digital Asset Manager' (2011), Daydream Interactive Ltd., viewed 18 October 2011, http://www.digitalassetmanager.com/.
- 'Greenstone Digital Library Software' (2011), New Zealand Digital Library Project, viewed 18 October 2011, http://www.greenstone.org.
- 'HP TRIM Software' (2011), Hewlett-Packard Development Company, L.P., viewed 18 October 2011, http://www8.hp.com/us/en/software/software-product.html?compURI=tcm:245-936980&pageTitle=TRIM-Software.
- 'Kete' (2011), Horowhenua Library Trust & Katipo Communications Ltd, viewed 18 October 2011, http://kete.net.nz/.
- 'KnowledgeTree Online Document Management Software' (2011), KnowledgeTree Inc., viewed 18 October 2011, http://www.knowledgetree.com/.

Document delivery

- Balnaves, E. (2005), 'Systematic Approaches to Long Term Digital Collection Management.' *Literary and Linguistic Computing*, 20(4): p. 399-413.
- Balnaves, E. (2007), 'Ensuring equitable participation in a resource-sharing network?: Gratisnet case study.' *Australian Academic and Research Libraries*, 38(4): p. 252-7.
- Interlibrary Loan Application Standards Maintenance Agency (1997), 'An Introduction to the ISO InterLibrary Loan Application Standards' *ISO ILL Protocol Standards*, viewed 17 April 2011, http://www.collectionscanada.gc.ca/iso/ill/standard.htm.
- 'Intersearch Interdocs' (2011), Prosentient Systems Pty Ltd., viewed 18 October 2011, http://www.intersearch.com.au/.

Electronic resources and Open Access

- 'Best Free Reference Web Sites Combined Index, 1999-2011 RUSA Machine-Assisted Reference Section (MARS)' (2011), American Library Association, viewed 18 October 2011, http://www.ala.org/ala/mgrps/divs/rusa/sections/mars/marspubs/marsbestindex.cfm.

- 'DigitalBookIndex: World's Virtual Library' (2011), Digital Book Index, viewed 19 October 2011, http://www.digitalbookindex.org.
- 'Directory of Open Access Journals - DOAJ' (2011), Lund University Libraries, viewed 18 October 2011, http://www.doaj.org/.
- 'EIFL' (2011), Electronic Information for Libraries, viewed 18 October 2011, http://www.eifl.net/.
- 'Free eBooks by Project Gutenberg' (2011), Project Gutenberg, viewed 19 October 2011, http://www.gutenberg.org.
- 'Gallica digital library' (2011), Gallica, Bibliothèque nationale de France, viewed 19 October 2011, http://gallica.bnf.fr.
- 'Google' (2011), Google, viewed 19 October 2011, http://google.com.
- 'Google Books' (2011), Google, viewed 19 October 2011, http://books.google.com.
- 'Google Scholar' (2011), Google, viewed 19 October 2011, http://scholar.google.com.
- 'Libros Tauro' (2004), Libros Tauro, viewed 19 October 2011, http://www.librostauro.com.ar/librostauro.php.
- McClintock, M. (2011), 'ManyBooks.net', viewed 19 October 2011, http://manybooks.net.
- 'Registry of Open Access Repositories' (2011), School of Electronics and Computer Science at the University of Southampton, viewed 19 October 2011, http://roar.eprints.org/.
- 'Scirus - for scientific information' (2011), Elsevier, viewed 19 October 2011, http://www.scirus.com/.
- 'The Complete Discovery Solution' (2011), EBSCO Industries, Inc., viewed 19 October 2011, http://www.ebscohost.com/discovery.
- 'The Summon Service' (2011), Serials Solutions, viewed 19 October 2011, http://www.serialssolutions.com/summon/.
- 'Wikibooks' (2011), The Wikimedia Foundation, viewed 19 October 2011, http://www.wikibooks.org.

LIBRARY MANAGEMENT AND SERVICES

- AGORA (2011), 'Agora-parl.org: Portal for Parliamentary Development', AGORA Partners, viewed 18 October 2011, http://www.agora-parl.org/.
- Alford, D. (2002), 'Negotiating and Analyzing Electronic License Agreements' *Law Library Journal*, 94(4): p. 621-644.
- Ayre, C., & Muir, A. (2004), 'The Right to Preserve: The Rights Issues of Digital Preservation.' *D-Lib Magazine*, 10(3)(March).
- Balnaves, E. (2008), 'Open source library management systems: a multidimensional evaluation.' *Australian Academic and Research Libraries*, 39(1): p. 1-13.
- Cuninghame, K. (2009), 'Guidelines for Legislative Libraries', 2nd edition, De Gruyter Saur, Munich.
- Ellis, S., Heaney, M., Meunier, P. & Poll, R. (2009), 'Global Library Statistics' *IFLA Journal* 35(2), p. 123-130, viewed 18 October 2011, http://archive.ifla.org/V/iflaj/IFLA-Journal-2-2009.pdf.
- Keast, D., & Balnaves, E. (2009), 'Open source systems bring Web 2.0 to special libraries.' In *International Conference of Medical Libraries*, Brisbane, viewed 19 October 2011, http://espace.library.uq.edu.au/view/UQ:179870.
- IFLA Statistics and Evaluation Section (2010), 'IFLA Library Statistics Manifesto', viewed 10 October 2011, http://www.ifla.org/publications/ifla-library-statistics-manifesto.
- Missingham, R. (2011), 'Parliamentary library and research services in the 21st century: A Delphi study' *IFLA Journal* 37(1), p. 52-61.
- Reference and User Services Association (2006), 'Reference and User Services Guidelines for

introducing Electronic Info Resources to users', American Library Association, viewed 18 October 2011, http://www.ala.org/ala/mgrps/divs/rusa/resources/guidelines/guidelinesintroduction.cfm.

- RUSA MARS/RSS Virtual Reference Committee (2010), 'Implementing and Maintaining Virtual Reference Services', American Library Association, viewed 18 October 2011, http://www.ala.org/ala/mgrps/divs/rusa/resources/guidelines/virtual-reference-se.pdf.

- Watt, I. (2010), 'Changing visions of parliamentary libraries: From the Enlightenment to Facebook' *IFLA Journal* 36(1), p. 47-60.

LIBRARY MANAGEMENT SOFTWARE AND SYSTEMS

- Balnaves, E. (2008), 'Open source library management systems: a multidimensional evaluation' *Australian Academic and Research Libraries* 39(1), p. 1-13.

- Bülow, A.E. & Ahmon, J. (2011), 'Preparing Collections for Digitization Facet', London.

- Breeding, M. (2008), 'Major Open Source ILS Products' *Library Technology Reports* 44(8) p. 16-31f.

- Breeding, M. (2008), 'Open Source Library Automation: Overview and Perspective' *Library Technology Reports* 44(8) p. 5-10.

- Breeding, M. (2011), 'Library Technology Reports', viewed 18 October 2011, http://www.librarytechnology.org/LibraryTechnologyReports.pl.

- Chalon, P. X., Alexandre-Joaquim, L. et al. (2005), 'Open your mind! Selecting and implementing an integrated library system:the open-source opportunity' 10th European Conference of Medical and Health Libraries, Cluj-Napoca , Romania, 11th-16th September 2005.

- Dorman, D. (2004), 'The Case for Open Source Software in the Library Market' *Ubiquity* 4(47).

- 'Emilda' (2008), Realnode Ltd, viewed 18 January 2008, http://www.emilda.org/.

- 'Evergreen' (2008), Georgia Public Library Service, viewed 18 January 2008, http://www.open-ils.org/.

- 'Gnuteca' (2008), Cooperativa de Soluções Livres, viewed 18 October 2011, http://www.gnuteca.org.br/.

- 'Koha' (2008), Koha Development Team and Katipo Communications Ltd, viewed 18 January 2008 http://www.koha.org/.

- 'PMB' (2008), PMB Services, viewed 18 January 2008, http://www.pizz.net/.

- Stevens, D. & Stetson, M. (2008), 'OpenBiblio', viewed 18 January 2008, http://obiblio.sourceforge.net/.

PROJECT MANAGEMENT

- 'Basecamp' (2011), 37Signals LLC, viewed 19 October 2011 http://basecamphq.com/.

- 'Microsoft Project 2010' (2010) Microsoft, viewed 19 October 2011, http://www.microsoft.com/project.

- 'Project Manager' (2011), Project Manager Online Ltd., viewed 19 October 2011, http://www.projectmanager.com/.

RECORDS MANAGEMENT SOFTWARE

- 'Accutrac Records Management Software' (2011), Iron Mountain Incorporated, viewed 19 October 2011, http://www.ironmtn.com.au/records/accutrac/.

- 'EDC Record Center Software' (2011), DocuData Software Corporation, viewed 19 October 2011, http://www.docudatasoft.com/.

- 'EMC Documentum' (2011), EMC Corporation, viewed 19 October 2011, http://www.emc.com/domains/documentum/index.htm.

- 'HP TRIM Software' (2011), Hewlett-Packard Development Company, L.P., viewed 18 October 2011, http://www8.hp.com/us/en/software/software-product.html?compURI=tcm:245-

936980&pageTitle=TRIM-Software.

- 'Total Recall Records Storage and Management Software' (2011), DHS Worldwide, viewed 19 October 2011, http://www.dhsworldwide.com/.

REFERENCE DESK SUPPORT

- 'Desk Tracker' (2011), Compendium Library Services LLC, viewed 18 October 2011, http://www.desktracker.com/.
- 'Google Docs' (2011), Google, viewed 18 October 2011, http://docs.google.com.
- 'Google SMS Applications' (2011), Google, viewed 18 October 2011, http://www.google.com/sms/.
- 'Knowledge Tracker' (2011), Compendium Library Services LLC, viewed 18 October 2011, http://www.knowledgetrackerlib.com/.
- 'Libraryh3lp' (2011), Libraryh3lp, viewed 18 October 2011, http://libraryh3lp.com.
- 'Libstats' (2011) viewed 18 October 2011, http://code.google.com/p/libstats/.
- 'LiveZilla Live Help' (2011) LiveZilla GmbH, viewed 18 October 2011, http://www.livezilla.net. LiveZilla is a free solution with extensibility through commercial extensions (for example statistics). Script-able and flexible.
- 'Lotus Sametime Unyte' (2011), WebDialogs, Inc., viewed 18 October 2011, http://www.unyte.net.
- 'Office' (2011), Microsoft, viewed 18 October 2011, http://office.microsoft.com/en-au/.
- 'OpenOffice.org - The Free and Open Productivity Suite' (2011), Oracle, viewed 18 October 2011, http://www.openoffice.org/.
- 'Pidgin, the universal chat client' (2011), Pidgin, viewed 18 October 2011, http://www.pidgin.im.
- 'RefTracker' (2011), AltaRama, viewed 18 October 2011, http://www.altarama.com/Products/RefTracker.
- 'Skype' (2011), Skype Limited, viewed 18 October 2011, http://skype.com.
- 'SMS Gateway: Google Voice'(2011), Libraryh3lp, viewed 18 October 2011, http://libraryh3lp.com/docs/sms-gateway-google-voice.html.
- 'Windows Live Messenger 2011' (2011), Microsoft, viewed 18 October 2011, http://explore.live.com/windows-live-messenger.

SINGLE SIGN ON

- 'EZproxy' (2011), OCLC, viewed 19 October 2011, http://www.oclc.org/ezproxy/.
- 'Shibboleth' (2011), Internet2 Middleware Initiative, viewed 19 October 2011, http://shibboleth.internet2.edu/.
- 'Single Sign On (SSO) - Athens' (2008), Teldan Information Systems, viewed 19 October 2011, http://www.teldan.com/Templates/showpage.asp?DBID=1&LNGID=1&TMID=84&FID=636.
- Wikipedia contributors, (2011), 'Active Directory' *Wikipedia, The Free Encyclopedia*, viewed 19 October 2011, http://en.wikipedia.org/w/index.php?title=Active_Directory&oldid=455825469.
- Wikipedia contributors, (2011), 'Lightweight Directory Access Protocol' *Wikipedia, The Free Encyclopedia*, viewed 19 October 2011, http://en.wikipedia.org/w/index.php?title=Lightweight_Directory_Access_Protocol&oldid=455374150.

STATISTICS

- Destailleur, L. (2008), *AWStats - Free advanced log file analyzer for web, ftp or mail statistics (GNU GPL)*, viewed 19 October 2011, http://awstats.sourceforge.net/.
- 'Google Analytics' (2011), Google, viewed 19 October 2011, http://www.google.com/analytics/.
- 'Piwik - Web analytics' (2011), Piwik, viewed 19 October 2011, http://piwik.org/.

Tools for the systems librarian

- 'EZproxy' (2011), OCLC, viewed 19 October 2011, http://www.oclc.org/ezproxy/.
- Reese, T. (2011), 'MarcEdit' viewed 19 October 2011, http://people.oregonstate.edu/~reeset/marcedit/html/.
- 'SQuirreL SQL Client' (2011), SQuirrel SQL, viewed 19 October 2011, http://squirrel-sql.sourceforge.net/.
- 'Universal SQL Query Tool' (2011), CodeUtility, viewed 19 October 2011, http://www.codeutility.com/Products/UniversalSQLQueryTool/UniversalSQLQueryTool.html.
- 'Zebra' (2011), Index Data, viewed 19 October 2011, http://www.indexdata.com/zebra.

Standards

Cataloguing and metadata

- 'Anglo American Cataloguing Rules 2' (2006), AACR Fund, viewed 18 October 2011, http://www.aacr2.org/about.html.
- 'MARC Standards' (2011), Library of Congress - Network Development and MARC Standards Office, viewed 18 October 2011, http://www.loc.gov/marc/.
- 'Universal Bibliographic Control and International MARC Core Programme' (2004), International Federation of Library Associations, viewed 18 October 2011, http://archive.ifla.org/VI/3/ubcim.htm.

Classification

- 'Dewey Services' (2011), OCLC, viewed 18 October 2011, http://www.oclc.org/dewey/.
- 'Library of Congress Classification' (2011), The Library of Congress, viewed 18 October 2011, http://www.loc.gov/catdir/cpso/lcc.html.
- Zhang, Q., Liu, X. & Wang, D. (1996) 'Contemporary Classification Systems and Thesauri in China' *62nd IFLA General Conference - Conference Proceedings*, viewed 18 October 2011, http://www.ifla.org/IV/ifla62/62-qiyz.htm.

Document delivery

- 'ISO 10160:1997 Information and Documentation - Open Systems Interconnection - Interlibrary Loan Application Service Definition' (1997), International Organization for Standardization, viewed 18 October 2011, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=22247.
- 'ISO 10161-1:1997 Information and Documentation - Open Systems Interconnection - Interlibrary Loan Application Protocol Specification' (1997), International Organization for Standardization, viewed 18 October 2011, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=22248.
- 'ISO 10161-2: Information and Documentation - Open Systems Interconnection - Interlibrary Loan Application Protocol Specification - Part 2' (1997), International Organization for Standardization, viewed 18 October 2011, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=21389.
- 'ISO ILL: The international standard for interlibrary loan' (2011), OCLC, viewed 18 October 2011, http://www.oclc.org/isoill/default.htm.

Electronic resources

- 'Sustainability of Digital Formats Planning for Library of Congress Collections: WARC, Web ARChive file format' (2008), Library of Congress, viewed 5 January, http://www.digitalpreservation.gov/formats/fdd/fdd000236.shtml.

- 'TEI - Text encoding initiative' (2011), TEI Consortium, viewed 18 October 2011, http://www.tei-c.org/index.xml.
- Wikipedia contributors (2011) 'EPUB' *Wikipedia, The Free Encyclopedia*, viewed 18 October 2011, http://en.wikipedia.org/w/index.php?title=EPUB&oldid=456038840.
- Wikipedia contributors (2011) 'Portable Document Format' *Wikipedia, The Free Encyclopedia*, viewed 18 October 2011, http://en.wikipedia.org/w/index.php?title=Portable_Document_Format&oldid=455816838.

Library registries

- Global Registries Organisation (2009), 'The Registry Interchange Format - Collections and Services (RIF-CS)' *Global Registries* viewed 18 October 2011, http://www.globalregistries.org/rifcs.html.
- 'ISO 2146:2010 Information and documentation - Registry services for libraries and related organizations' (2010), International Organization for Standardization, viewed 19 October 2011, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=44936.

Metadata

- 'DCMI Specifications' (2011), Dublin Core Metadata Initiative, viewed 18 October 2011, http://dublincore.org/specifications/.
- 'Extensible Markup Language (XML)' (2011), W3C, viewed 18 October 2011, http://www.w3.org/XML.
- International Press Telecommunications Channel (2011), 'IPTC Web - News Exchange Formats - Which NewsML standard do you want?' viewed 18 October 2011, http://www.iptc.org/cms/site/single.html?channel=CH0087&document=CMS1206527546450.
- 'MARC 21 XML Schema' (2011), Library of Congress, viewed 18 October 2011, http://www.loc.gov/standards/marcxml/.
- 'Metadata Encoding and Transmission Standard: METS' (2011), Library of Congress, viewed 18 October 2011, http://www.loc.gov/standards/mets.
- 'Metadata Object Description Schema: MODS' (2010), Library of Congress, viewed 18 October 2011, http://www.loc.gov/standards/mods/.
- 'PREMIS: Preservation Metadata Maintenance Activity' (2011), Library of Congress, viewed 18 October 2011, http://www.loc.gov/standards/premis/.
- RSS Advisory Board (2009), 'RSS 2.0 Specification' viewed 18 October 2011, http://www.rssboard.org/rss-specification.
- Wikipedia contributors (2011), 'Open Archives Initiative Protocol for Metadata Harvesting' *Wikipedia, The Free Encyclopedia*, viewed 19 October 2011, http://en.wikipedia.org/w/index.php?title=Open_Archives_Initiative_Protocol_for_Metadata_Harvesting&oldid=452500037.
- Wikipedia contributors (2011), 'Resource Description Framework' *Wikipedia, The Free Encyclopedia*, viewed 19 October 2011, http://en.wikipedia.org/w/index.php?title=Resource_Description_Framework&oldid=455224714.
- XMLNews.org (1999), 'XMLNews Technical Overview' viewed 18 October 2011, http://www.xmlnews.org/docs/tech-overview.html.

Reference desk management

- MOUSS Management of Reference Committee (2004), 'Guidelines for Behavioural Performance of Reference and Information Service Providers' American Library Association, viewed 18 October 2011, http://www.ala.org/ala/mgrps/divs/rusa/resources/guidelines/guidelinesbehavioral.cfm.

RFID

- 'ISO 28560-1:2011 Information and documentation – RFID in libraries – Part 1: Data elements

and general guidelines for implementation' (2011), International Organization for Standardization, viewed 18 October 2011, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail. htm?csnumber=50996.

SERVICE DELIVERY

- 'Establishing a Service Level Agreement' (2005), Microsoft, viewed 18 October 2011, http:// technet.microsoft.com/en-us/library/bb124886%28EXCHG.65%29.aspx.
- 'Information Technology Infrastructure Library' (2011) APM Group Ltd., viewed 18 October 2011, http://www.itil-officialsite.com/.
- Karten, N. (2008), 'Establishing Service Level Agreements' viewed 18 October 2011, http://www. nkarten.com/sla.html.
- 'Service Level Agreement and SLA Guide' (2008), viewed 18 October 2011, http://www.service-level-agreement.net.
- Wikipedia contributors (2011), 'Information Technology Infrastructure Library' *Wikipedia, The Free Encyclopedia* viewed 18 October 2011, http://en.wikipedia.org/w/index.php?title=Information_Technology_Infrastructure_Library&oldid=456115514.
- 'Your Service Level Agreement Template - A Sample SLA' (2003), viewed 18 October 2011, http:// www.sla-world.com/framework.htm.

STATISTICS

- 'ISO 11620:2008 Information and documentation - Library performance indicators' (2008), International Organization for Standardization, viewed 18 October 2011, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=37853.
- 'ISO 2789:2006 Information and documentation - International library statistics' (2006), International Organization for Standardization, viewed 18 October 2011, http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=39181.

Web 2.0 and Web content management

ABOUT WEB 2.0

- Ally, M. & Needham, G. (2010), 'M-libraries 2: A virtual library in everyone's pocket', Facet, London.
- Blowers, H. (2007), 'Learning 2.0 : 23 things you can do to become web 2.0 savvy', viewed 19 October 2011, http://plcmclearning.blogspot.com/.
- Sayers, M. (2009), 'Searching 2.0', Facet, London.
- Theimer, K. (2010), *Web 2.0 Tools and Strategies for Archives and Local History Collections*, Facet, London.

ACCESSIBILITY TESTING

- 'JAWS 12 Downloads' (2011), Freedom Scientific, Inc., viewed 19 October 2011, http://www. freedomscientific.com/downloads/jaws/jaws-downloads.asp.
- 'NVDA' (2011), NV Access Inc., viewed 19 October 2011, http://www.nvda-project.org.

WEB 2.0 SEARCHING AND RSS

- 'Google Blog Search' (2011), Google, viewed 19 October 2011, http://blogsearch.google.com/.
- 'Google Books' (2011), Google, viewed 19 October 2011, http://books.google.com.
- 'Google Maps' (2011), Google, viewed 19 October 2011, http://maps.google.com.
- 'Google News' (2011), Google, viewed 19 October 2011, http://news.google.com/.
- 'Google Reader' (2011), Google, viewed 19 October 2011, http://reader.google.com.
- 'Google Scholar' (2011), Google, viewed 19 October 2011, http://scholar.google.com.

- 'Google+' (2011), Google, viewed 19 October 2011, http://plus.google.com/.
- 'Ixquick Search Engine' (2011), Ixquick, viewed 19 October 2011, http://ixquick.com/.
- 'Mozilla Thunderbird' (2011), Mozilla, viewed 19 October 2011, http://www.mozillamessaging.com/en-US/thunderbird/all.html.
- 'Ning' (2011), Ning Inc., viewed 19 October 2011, http://ning.com/.
- 'Scroogle' (2011), Scroogle, viewed 19 October 2011, http://www.scroogle.org.
- 'TweetDeck' (2011), TweetDeck, viewed 19 October 2011, http://tweetdeck.com.
- 'WorldCat.org: The World's Largest Library Catalog' (2011), OCLC, viewed 19 October 2011, http://www.worldcat.org.

WEBSITE CONTENT MANAGEMENT

- 'Drupal' (2011), Drupal.org, viewed 19 October 2011, http://drupal.org/.
- Gohr, A., and the DokuWiki Community (2011), 'DokuWiki', viewed 19 October 2011, http://dokuwiki.org/.
- 'Google Docs' (2011), Google, viewed 18 October 2011, http://docs.google.com.
- 'Joomla!' (2011), Open Source Matters, Inc., viewed 19 October 2011, http://www.joomla.org/.
- 'Kete' (2011), Horowhenua Library Trust & Katipo Communications Ltd, viewed 18 October 2011, http://kete.net.nz/.
- 'MediaWiki' (2011), WikiMedia Foundation, viewed 19 October 2011, http://www.mediawiki.org/wiki/MediaWiki.
- 'phpBB - Free and Open Source Forum Software' (2011), phpBB Limited, viewed 19 October 2011, http://www.phpbb.com/.
- 'SharePoint' (2011), Microsoft, viewed 19 October 2011, http://sharepoint.microsoft.com/en-us/Pages/default.aspx.
- 'vBulletin' (2011), vBulletin Solutions, viewed 19 October 2011, http://www.vbulletin.com/.
- 'WordPress' (2011), WordPress, viewed 19 October 2011, http://wordpress.org/.

WIKIS

- Gohr, A., and the DokuWiki Community (2011), DokuWiki, viewed 19 October 2011, http://dokuwiki.org/.
- 'MediaWiki' (2011), WikiMedia Foundation, viewed 19 October 2011, http://www.mediawiki.org/wiki/MediaWiki.