

Beyond the pages: How digitization has helped tell the story of the International Telecommunication Union

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Abstract:

We can learn a lot about an organization and its work by studying the role of its publications and documentation. Grouping materials together by function or in relation to an event places them in context and enables the end-user to gain a better understanding of the contents. Since 2007, the International Telecommunication Union (ITU) Library and Archives Service has scanned over 600,000 pages of historical publications and documents produced by ITU. At first, documents were scanned to fill user requests as they were received. However, the reason for scanning became more strategic when we realized that by systematically selecting publications and documents to digitize we could provide more than just scanned pages. What began as a simple scanning project has developed into a full scale digitization programme. Today, digitized texts, as well as a selection of complementary materials, are publicly available, for free, through the History of ITU Portal web site (www.itu.int/history).

With the History of ITU Portal we are taking an active role in telling the story of ITU by sharing what we have learned about its institutional history through researching and selecting documents to digitize. This has provided us with the means to bring together a variety of documents, as well as other types of content such as photographs and films, that trace the development of the Union. Making the links between these materials shows how the many pieces of ITU's history fit together to tell the story of its growth and evolution as one of the world's first international organizations. Furthermore, by understanding and demonstrating the value of the materials in our collections we are creating a lasting record of ITU's history and ensuring access to its publications and documents.

This paper will explore how our approach to digitization has evolved from simply scanning documents to a means of raising awareness and increasing visibility of ITU's history by providing an engaging and meaningful online presence.

Keywords: Digitization, Libraries, International Organizations, Institutional History, Cultural Heritage

Introduction

One of the main activities of an international organization's library and archives is to maintain the print publications and other documentation produced by its parent organization. The collection and preservation of the organization's output is one way to ensure that a lasting record of its work will be available for the future. Similarly, digitizing print materials by scanning or photographing them provides an alternative means of capturing an organization's work. In addition, digitization can offer libraries and archives a way to increase access to and visibility of their collections by making them available online. Depending on how the materials are selected for digitization, libraries and archives have an opportunity to make existing government records and other cultural heritage materials accessible, but also to contribute to the creation of such heritage (Dahlström, Hansson, & Kjellman, 2013). The role of its publications and documentation can help us learn a lot about an organization. Grouping materials together by function or in relation to an event places them in context and can enable the end user to gain a better understanding of the contents. In addition, the way that the materials are presented can highlight their significance in shaping the work and mission of the organization.

At the International Telecommunication Union (ITU) Library and Archives, our digitization programme has given us an opportunity to thoroughly explore the materials in our collections by carefully assessing them and bringing together a variety of types of documents, publications, and related content, such as photographs and films, which trace the development of the Union. Creating links between these materials has made it possible to illustrate how the different parts of ITU's work and history fit together to tell the story of its growth and evolution as one of the world's first international organizations. Furthermore, understanding and demonstrating the value of the materials in our collections has enabled us to create a lasting record of ITU's history and its work, as well as ensure greater access to its publications and documents.

What is the International Telecommunication Union (ITU)?

The International Telecommunication Union (ITU) is the United Nations specialized agency for telecommunications and information and communications technologies (ICT). It was established in 1865, making it one of the oldest existing international organizations¹. Originally, as the International Telegraph Union, its mandate was to assist with the coordination and regulation of the first international telegraph networks. Over the course of its nearly 150 year history, the Union's mandate has expanded in response to the growth and development in all areas of telecommunications to cover telephony, radiocommunications, satellite communications, the Internet, and emerging communication technologies. While the structure and activities of ITU have evolved and adapted since its founding, the crux of the Union's mission has remained: to connect the world by maintaining and facilitating international cooperation in the field of telecommunications.

Today, ITU's membership is comprised of 193 governments, over 700 Sector Members and Associates from industry, international, and regional organizations, and more than 50 Academic Members. Its headquarters is located in Geneva, Switzerland, with 12 field offices around the world. ITU has three main areas of activity organized in "Sectors":

¹ See *Overview of ITU's History* - <http://itu.int/go/ITUsHistory>

standardization, radiocommunications, and development, which work through conferences and meetings, where members collaborate, take decisions, and negotiate the agreements which serve as the basis for the operation of global telecommunication services. Every year ITU organizes a number of global and regional events, each with a well-defined purpose and outcome that plays a particular role in supporting ITU's mission. These activities generate treaties, regulations, standards, and other types of documentation and decisions. Throughout the process of preparing for and conducting its work, ITU produces an enormous amount of documents, publications, and other materials².

ITU relies on its in-house library and archives to manage the assortment of resources that it produces. Part of the mission of the ITU Library and Archives Service is to acquire, preserve, and provide access to all ITU publications and official printed documents that result from its activities. These publications and documents include the outcomes of ITU conferences, some of which are treaties, as well as conference and meeting documents, circular letters, ITU Recommendations (standards), manuals and handbooks, regulatory publications, and statistics. In addition, it maintains historic archives that document the activities and administration of ITU since its founding in 1865. By preserving and storing these important records the ITU Library and Archives Service ensures that access to the organization's work and history will be available for many years to come. In addition to the storage and preservation of the paper documents, efforts have been made to create digital versions of many of ITU's key publications and documents through its digitization programme. Digitization has provided an opportunity for the ITU Library and Archives Service to increase access to many of the materials in its collections on a global level by making them available online.

From digitization project to digitization programme

The International Telecommunication Union, like other international organizations, produces a significant number of publications as an outcome of its work. In addition, conference and meeting documents, handbooks, information toolkits, and publicity materials also result from the organization's activities. As these materials are produced, they are sent to the ITU Library and Archives to be collected and stored in their collections. As the guardians of ITU's intellectual and administrative output, the ITU Library and Archives are responsible for making these materials available to both external and internal researchers by responding to requests for information.

In 2007, after noticing the frequency of requests for information contained in the Final Acts of ITU's plenipotentiary conferences, the librarian and archivist made the decision to scan this highly used and very useful series of publications. The plenipotentiary conference is a meeting of ITU's Member States and the top policy-making body of the Union. The conference:

- sets the Union's general policies;
- adopts strategic and financial plans;
- elects the senior management team of the organization, the members of Council, and the members of the Radio Regulations Board; and

² See *Brief Guide to ITU Conferences, Assemblies and Events* - <http://www.itu.int/en/history/Documents/GuideToConferencesAssembliesEvents.pdf>

- revises, when needed, the Union's Constitution and Convention.

The Final Acts are the outcome publication produced by the plenipotentiary conference and include the instruments amending the Constitution and Convention, General Rules of Conferences, Assemblies and Meetings, Decisions, Resolutions, Recommendations, Declarations and Additional Declarations.

Beginning with the Final Acts and conference documents resulting from the first ITU plenipotentiary conference, which took place in Paris, France in 1865³, items were taken from the library collection and scanned. The selection and scanning of the publications and documents resulting from subsequent conferences followed. At this stage, not much attention was given to the contents or condition of the materials. The assumption was that because the items were on the library shelves, they were accurate and authoritative. Unfortunately, upon closer inspection, it was determined that many of the items that had been scanned were not always accurate. In fact, in some cases the materials in the library were actually photocopies of original documents. In other cases, the publications were unofficial translations not produced, or necessarily verified as reliable, by ITU. It quickly became clear that in order to ensure the items being scanned were high-quality and authoritative more work would need to be done to properly assess the materials before beginning the digitization process.

The first step was to become more critical in the selection process and the decision was made to locate the source publications in the archives. In addition, rather than just scanning a publication or set of documents, each item was examined in order to confirm that it was complete and official. This step also enabled the ITU Library and Archives staff to gain a better understanding of the contents and function of the materials. The second step was to compare the items kept in the library with those stored in the archives and to catalogue everything. Until this point, the library and archives had maintained separate inventories. In order to create an up-to-date inventory, rich bibliographic records were created for each item. The catalogue records captured the basic bibliographic information such as title and publication date, but also noted any peculiarities that were discovered during the systematic review of the publications and documents resulting from each plenipotentiary conference. All of the items that had resulted from or were related to a particular conference, including unofficial translations, were identified, assessed, and registered in the library catalogue. Not only did cataloguing provide a practical solution for keeping track of the items in the library and archives collections, but it was also a way to increase the visibility of the publications and documents through the online library catalogue. The final step was to provide access to the digitized texts. After each item was scanned, the file, in PDF format, was saved in ITU's document management system. Lists of the titles with links to the files, organized by publication or document type, were created and posted on the ITU Library and Archives web site. The end-user could access the files by clicking on the desired link in any of the lists. It was a simple, but effective way of providing access to the small collection of digitized publications and documents.

Although the workflow had been streamlined, the process of selecting, assessing, and scanning publications and documents was time consuming. In addition, due to limited staff resources, there was only enough time to meet once a week to work on the digitization project. As a result, things proceeded very slowly. In 2009, two years after beginning the

³ See: *International Telegraph Conference (Paris, 1865)*
<http://www.itu.int/en/history/Pages/PlenipotentiaryConferences.aspx?conf=1&dms=S0201000001>

scanning project, it had become clear that more time and resources were needed to properly identify, assess, catalogue, prepare, and scan documents for the growing digital collection. An additional librarian was hired to focus solely on completing the ITU plenipotentiary conferences digitization project. During this period, a key decision was made: publications and documents would be grouped together in relation to the conference that produced them. By bringing all of the materials together in this context, it became possible to facilitate the end-user's understanding of their content and function. Furthermore, it provided an opportunity to highlight the evolution and development of the publications and documents over time and their significance by indicating how they fit into the history of ITU.

The decision to group materials together by conference compelled a re-examination of the way that the publications and documents were being presented on the ITU Library and Archives web site. Providing a list of links to the digitized items was effective, but limiting since it only allowed the end-user to view the materials individually and out of context. Consequently, the decision was made to create a web portal where the publications and documents would be grouped together by conference. Within the portal, a web page would be created for each conference and include links to digitized versions of all of the official documents resulting from that particular conference, as well as some background information such as a summary of key decisions, the number of Member States present, and the name of the chairman. A link to the library catalogue was also included so that the end-user could locate all of the materials, both print and electronic, relating to a specific conference including unofficial, non-ITU documents. Through the web portal the end-user would have access to key ITU publications and documents, as well as the contextual information that would permit them to understand how the various texts functioned within the organization. In addition, by providing the materials chronologically the end-user could trace ITU's organizational development over the course of its history.

The History of ITU Portal⁴ launched in early 2010. In addition to the conference web pages, a general overview of ITU's history, a list of secretaries-general, and a brief timeline were also included on the web site. Overall, the Portal garnered positive feedback from colleagues within the organization and external researchers. Putting the collection of historical publications and documents online and making them available for free not only increased access to some of the organization's most important historical records, but also provided an opportunity to highlight its contributions to the international community over time.

As work progressed on the ITU plenipotentiary conferences project, the value of taking what had been learned during the digitization process and applying it to other series of documents in the ITU Library and Archives collections became increasingly apparent. As a result, the decision was made to expand the project to include the other treaty-making conferences held by ITU, namely the administrative telegraph and telephone conferences and the administrative radio conferences. What began as a simple scanning project focusing on a single series of publications was developing into a full-scale, on-going digitization programme with two goals: producing high-quality, authoritative digitized versions of key publications and documents and, more significantly, telling the story of the International Telecommunication Union.

⁴ See *History of ITU Portal* - www.itu.int/history

Making improvements

Despite the initial success, within six months of launching the History of ITU Portal, several areas for improvement were identified. For example, there was no search functionality and the site navigation was not particularly intuitive. In order to find something, the end-user had to know exactly what they were looking for. The Portal had been created with limited technical resources, but the lack of searchability was also due, in part, to the fact that the metadata related to the digital files and the information presented on the Portal was stored in multiple locations on different shared drives and in various repositories. While considerable effort was made to place ITU's publications and documents into context, it wasn't helping anyone if the materials and information about them was nearly impossible to find!

Originally, the goal of the digitization programme was to provide access to scanned versions of official publications and documents. However, as each series of publications and documents was examined it was becoming clear that they could be used to tell the story of ITU's creation, development, and evolution. Taking a critical approach to digitization has shaped the work of the ITU Library and Archives digitization programme since its early days. In addition to clearly defined selection criteria, a high level of quality assurance is applied throughout the digitization process. The aim has never been to scan on a mass scale, rather the focus has been "qualitative in the sense that it concentrates on what is unique and contingent in the documents" (Dahlström, 2012, p. 463). The challenge was figuring out how to present ITU's historical publications and documents in the most interesting and useful way for the end-user.

After carefully reviewing the History of ITU Portal the following decisions were made:

- do more to capture and present publications, documents, and information that capture ITU's history and evolution;
- create more access points to the digital collections and information available on the Portal; and
- implement tools to enable the end-user to find what they were looking for.

In order to fulfill these requirements a complete redesign of the Portal was required. In addition, it was imperative that the metadata related to and resulting from the digitization programme be stored in a centralized database. Therefore, an additional staff member was hired to assist with the web and database development needs required for the redesign project.

Telling ITU's story

Up until this point, the focus had been on digitizing publications and documents that had resulted from ITU's treaty-making conferences. However, as work progressed on the redesign of the History Portal the idea to tell the story of ITU kept coming up. The majority of the work that ITU does results in the production of publications and documents. Indicating the connections between the publication and document series and the conferences that contributed to their creation was an essential step in facilitating the understanding of the materials. Similarly, some of the more complex publications required special treatment and the ITU Library and Archives staff endeavoured to make them more comprehensible by creating publication timelines to track the changes made over time. The Historical Statistics

Collection⁵ provides a good example of a complex series of publications that not only trace ITU's work, but also its role in the developing field of telecommunications.

The Historical Statistics Collection includes the series of statistical reports produced by the Union covering the period 1849-1967 for telegraph, telephone, radio, and telex services. These sets of statistics provide an interesting perspective on the use and development of communication networks and technology in the late 19th and early 20th centuries. Collecting, synthesizing, and publishing telecommunications statistics has been a key part of ITU's mandate throughout its history. When the second International Telegraph Conference (Vienna, 1868) decided to create a permanent central secretariat for the Union, it specified preparing and publishing telegraph statistics as a primary responsibility for the International Bureau of Telegraph Administrations (Union télégraphique internationale, 1868, p. 30). The new Bureau immediately set in place a rigorous procedure of gathering data from the national authorities using a uniform questionnaire, and following up as necessary to complete and harmonize the information. The first set of statistics was published in 1871 and included data related to telegraphy. Subsequently, as new technologies emerged, ITU incorporated into its work the collection of statistics related to telephony, radio, and telex services.

The statistical publications produced by ITU demonstrate an interesting aspect of the Union's role as an international organization. Taking on the responsibility of gathering and collating statistical data is one of the ways that the Union has engaged with its Member States since its early days. In addition, these publications illustrate the growth and expansion of telecommunications around the world. The statistical publications can also be read in terms of the political and geographical changes that have taken place globally during a specific time period. Today, ITU continues to collect, verify, and harmonize telecommunication and ICT statistics for about 200 economies worldwide. This information is disseminated through a number of statistical, analytical, and methodological publications including the *ITU World Telecommunication/ICT Indicators (WTI) Database* which contains time series data for around 150 different types of telecommunication and ICT statistics. By examining the evolution of its statistical publications it is clear that ITU has always recognized and responded to changes in telecommunications by making efforts to keep track of the development, growth, and use of emerging technologies on an international level.

Due to the wide scope of this collection, the process of selecting, assessing, and digitizing the statistical publications was challenging. When ITU published its first set of statistics in 1871 it was collecting and disseminating one type of statistical data (telegraph) and producing a publication in a single language (French). However, over the next ninety-six years the number of statistical publications grew to four (telegraph, telephone, radio, and telex) and the number of languages increased to three (French, English, and Spanish). In addition, since the statistical publications were produced annually there were a large number of volumes to process. Finally, knowing that the *WTI Database* included data covering periods from 1960 to the present, we decided to select and scan only the publications produced up until the point when the four series of statistics were merged in 1968 to create a single publication, the *Telecommunication Statistics*.

During the assessment, all of the copies of the statistical publications from the selected period were brought together from the library and archives collections. As the copies were reviewed, we found a number of inconsistencies in the holdings of both collections. Significantly, we

⁵ See *Historical Statistics Collection* - <http://www.itu.int/en/history/Pages/HistoricalStatistics.aspx>

discovered that neither the library nor the archives had a truly complete set of any of the series of statistical publications. For some publication years, we had multiple copies whereas, in others, only a single copy existed. Additionally, in many cases, a number of addenda had been issued as loose pages following the publication of each set of statistics. The library copies were often annotated and modified by pasting portions of the addenda directly onto the pages of the volumes. The assessment process was time-consuming, however by bringing together the holdings of both the library and the archives collections it was possible to identify and find solutions to these problems. We decided to compile a complete set of each type of statistical publication, including copies of each addendum, and store the original publications in the archives collection. The sets of original publications would be used for scanning in order to ensure that the digitized version was as accurate and complete as possible. In addition, we decided that a complete set of each statistical publication would also be included in the library collection. However, in some cases since it wasn't possible to include an original copy we decided to print and insert copies of the missing years once the scanning was complete.

Scanning the statistical publications presented another set of challenges. Since the statistics were presented in tables that were printed across two pages they had to be scanned together as a single page in order for the data to be readable by the end-user. Therefore, we chose to use our book-scanner instead of the faster sheet-feed scanner we use for the majority of our scanning projects. Using the book-scanner allowed us to produce the required results, but it was time consuming because it required scanning each publication manually, page by page. Furthermore, in some cases, the pages did not line up correctly and post-scanning image correction using image processing software was required. In addition, due to the varying paper quality of the originals, we often experienced issues with bleed-through. All of these issues meant that the scanning technician had to regularly pause to adjust the scanning software settings.

When creating the layout for the web presentation we quickly realized that the structure we had used for the Conferences Collection would not work for the Historical Statistics Collection. The conferences produced multiple types of publications and documents and we found it useful to also include background and supplementary information. In contrast, we determined that the best way to present the historical statistics was to provide the end-user with direct access to the digitized materials. Therefore, we decided to present all of the statistical publications together using chronological lists of each type of statistics on a single web page. This way the end-user could select the desired list, quickly scroll through the list to locate the publication that they were searching for, and access the PDF file with one click.

Finally, as a way to show the evolution of ITU's statistical publications series, we created a timeline to illustrate the changes that the publication has undergone over time. In addition, in order to demonstrate the connection between the Union's work in the past with its current activities a link to the current ICT Data and Statistics Division web site was included on the Historical Statistics Collection web page.

When it comes to telling the story of ITU providing access to its publications and documents is essential. However, while there is an enormous amount of information contained in these documents they tend to be quite technical and dry. In order to provide a more multidimensional view of the Union, we have made the effort to find and scan complementary materials that would give a "face" to ITU's work. This has included locating photographs of ITU conferences and other events, identifying articles in the ITU journal, and

scanning newsletters, brochures, and publicity materials. In addition, we have created a number of web pages that highlight other aspects of the organization's history such as the past and present elected officials, the evolution of ITU's logo, and the creation of the ITU monument. Including these materials has provided an opportunity to include a human element and contributed to the organizational narrative being captured by the History of ITU Portal.

Creating paths to ITU's history

One of the biggest problems with the first version of the History of ITU Portal was that there was only a single access point to the digitized publications and documents – through a specific conference page. The idea was that grouping the various publications and documents by conference would help the end-user understand ITU's process of creating and publishing some of its key texts such as its convention and sets of administrative regulations. However, while this was helpful in the sense that it demonstrated the connection between each conference and its output publications, it meant that in order to locate specific materials on the Portal the end-user needed to know exactly where to look. Therefore, unless the end-user knew precisely what they were looking for, it was unlikely that they would find it easily on the web site. This structure wasn't very user-friendly and it also meant that many publications and documents were being inadvertently hidden.

In order to solve this problem and increase the visibility of the variety of publications and documents available on the Portal, digital collections were created based on publication type. In some cases, such as with the administrative regulations⁶, creating a separate digital collection allowed the publications to stand on their own as opposed to being hidden amongst the conferences. In parallel, improvements were made to the conference web pages so that access to the digitized materials was clearer. The links to the publications and documents were placed in a tabbed box that allowed the different types of materials to be presented distinctly.

Another strategy to facilitate access to the growing amount of information available on the Portal was to organize it into three main areas:

- Explore the Digital Collections – to provide access the collections of digitized documents
- Discover ITU's History – to provide access to things such as articles and films about ITU's history
- Focus on ITU's Areas of Work – to provide access to resources grouped together based on ITU's areas of work

This solution would give the end-user the opportunity to choose between the three access points and help guide them to the information and content that they were seeking, as well as encourage them to make discoveries by using the access points as a way to explore the web site. In addition, to improve navigation within the web site, a menu was added to the left-hand side of every page to allow the end-user to navigate between the main areas of the Portal. Breadcrumb navigation was implemented to show their path through the Portal and indicate the page that they were currently viewing. Finally, a site map listing the complete contents of the Portal was also created.

⁶ See *Administrative Regulations Collection* – <http://www.itu.int/en/history/Pages/RegulationsCollection.aspx>

Implementing better navigation was one improvement, but the problem of organizing the metadata related to and resulting from the digitization programme remained a major issue. In order to centralize the metadata a database was created to store information about ITU conferences, assemblies, and events, as well as the publications and documents. This way, it would be possible to keep track of the connections between ITU's work (conferences, assemblies and events) and the records that it was producing (publications and documents). More significantly, by centralizing the metadata in a database it was now feasible to implement tools that would allow the end-user to browse the digitized content available on the History of ITU Portal. By using the metadata stored in the database it was possible to create lists that offered the end-user the option of sorting, filtering, and grouping the data by a variety of criteria such as conference type, publication type, or date. The result was a much more intuitive and useful way of locating information on the web site.

By the autumn of 2012, the redesign of History of ITU Portal was completed. When the new version of the site launched it featured four digital collections, an expanded collection of articles and media related to ITU's history, improved navigation and increased access points, as well as tools to group and filter the resources available on the web site.

Moving forward

Since redesigning and relaunching the History of ITU Portal, the number of digital collections has expanded to six including a collection of booklets, brochures, and other text-based resources that provide a range of information about the Union and its various activities. The digitization of the publications and documents resulting from ITU's treaty-making conferences is ongoing. However, one significant change to the digitization programme workflow was adapting it so that additional scanning and research projects could be done in parallel with the conferences project. Consequently, the digital collections will continue to grow with the addition of new publication and document series in the future.

In 2013, the ITU Library and Archives staff began work on one its most ambitious projects to date: the digitization of the ITU journal. First published in 1869 as the *Journal télégraphique*, it is a resource with enormous historical value as it not only provides a record of ITU's work, but also gives a unique international perspective on the growth and evolution of telecommunications technology, policy, and industry over time. Providing online access to the *Journal*, a key historic and technical publication, will supply the research community with greater insight into the Union's rich history.

In addition to the continued digitization efforts, there are plans to develop and incorporate an interactive map that will display the locations of ITU conferences, assemblies, and events since 1865 and act as an additional access point to the digital collections.

More significantly, in 2015, ITU will celebrate its 150th anniversary. In anticipation of this milestone event, the ITU Library and Archives staff have been active participants in the research and preparation of activities to mark this momentous occasion.

Conclusion

Researching, understanding, and providing access to ITU's historical records has always been central to the work and mission of the ITU Library and Archives. The digitization programme has evolved from a simple scanning project to something much bigger. By making critical decisions during the selection of publications and documents and by curating the content presented on the History of ITU Portal, the ITU Library and Archives has been able to provide its end-users with much more than just scanned pages. It has provided the ITU Library and Archives with an opportunity to take an active role in telling the story of ITU by sharing what has been learned about the organization's history. The History of ITU Portal has provided the platform to share the Union's historical records and use them to illustrate its history by showing how its work has contributed to and influenced the growth and changes that have occurred in the field of telecommunications over nearly 150 years. Furthermore, the Portal raises awareness and increases the visibility of ITU's history and contributions to the international community by providing an engaging and meaningful online presence.

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