

## World Bank Group Archives Access to Memory Implementation: lessons learned

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### Abstract

*The World Bank Group (WBG) Archives selected the open-source platform Access to Memory (AtoM) to support the Arrangement & Description program and the creation of the new Archives Holdings (<https://archivesholdings.worldbank.org/>) website. There were many challenges and opportunities to implementing and customizing open-source software, especially in the context of an archives embedded within a larger organization. This paper will chronicle the full life-cycle process of creating the Archives Holdings website, including lessons learned related to integration with established WBG systems and the collaboration across teams within the organization.*

**Key words:** archival arrangement, archival description, archives information system, open source software, World Bank

### 1. Introduction

The WBG is comprised of five international organizations dedicated to ending extreme poverty within a generation and boosting shared prosperity. The WBG Archives protects the institutional memory of the WBG and provides public access to records of the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). The World Bank Access to Information Policy, launched in 2010, established an environment for the opening of IBRD and IDA records to the public (<http://www.worldbank.org/en/access-to-information>).

The holdings of the WBG Archives consist of a variety of media such as textual records, photographs, maps, film and video, and audio records. Textual records include operational correspondence documenting the WBG's lending operations and relationships with member countries, as well as records relating to economic and sector studies, operations policy development, public relations, and governance.

At present, the WBG Archives' records are primarily paper-based and only accessible to researchers who physically visit the WBG Archives in Washington, DC. In order to make the holdings more accessible to the public, the WBG Archives launched a program to make its large collection of resources easier to discover and available in a way which serves the whole world and not just a few. A key component of this program was the creation of a new platform for publishing archival descriptions and digitized records. The website, launched in the spring of 2015, can be viewed at <http://archivesholdings.worldbank.org> (Archives Holdings) and is built on the open-source platform Access to Memory (AtoM).

This initiative gained support across the organization by aligning with a number of business drivers. By providing online access to descriptions of the materials in the custody of the WBG Archives, as well as a growing set of digitized declassified records, the Archives Holdings website increases the transparency and accountability of the IBRD and IDA. This new site also reduces repeat work by WBG archivists tasked with reviewing and retrieving high value, high request items from the WBG Archives' off-site storage facility by digitizing them for self-service retrieval. In addition, the increased access to archival

description and inventory lists of folders has already begun to empower researchers by enabling them to do more preliminary background work before filing their Access to Information requests.

There were many challenges to implementing and customizing open-source software, especially in the context of an archives embedded within a larger organization. This paper chronicles the full life-cycle process of creating the WBG Archives' website, including lessons learned related to integration with established WBG systems and the collaboration across teams within the WBG Archives' organization.

This is not meant to be a step-by-step guide to implementing AtoM, but rather to make it easier for those tackling this task through sharing the WBG Archives' experiences.

This paper discusses each of the following phases of the Archives Holdings website project:

- Planning
- Institutional Support
- Requirements, Implementation, Testing and Revision

- Deployment and Beyond

## 2. Planning

The planning phase of the implementation of a new technology platform is essential, especially when one needs support from a broader organization, must coordinate integration with existing systems, and is required to adhere to rules governing technology systems and websites.

### 2.1 Identify the problem to be solved

The WBG Archives' goal was to streamline publication of archival description and provide a way to give context to digitized materials. Due to the hierarchical nature of archival description, publishing these descriptions on the World Bank's standard external web site was challenging. This tedious and manual process involved extensive cutting and pasting of the description text, as well as the manual creation of links to artificially maintain the hierarchy. In addition, multiple systems made it easy for the updates and versions to get out of sync.

The screenshot shows the World Bank Archives website. The top navigation bar includes links for Home, Site Map, Index, FAQs, and Contact Us. Below this is a secondary navigation bar with categories like About, Countries, Data & Research, Learning, News, Projects & Operations, Publications, and Topics. A search bar is present with a dropdown menu set to 'Archives' and a 'GO' button. The main content area is titled 'Archives' and features a breadcrumb trail: Home > About Us > Archives > Access to Archives H... > Archives Finding Aids > Records of President Robert S. McNamara. On the left, there is a sidebar with a table of contents including History, Chronology, Access to Archives Holdings, About the Holdings, Archives Finding Aids (with sub-links for Numerical and Topical Finding Aids, eArchives, Request Access to Holdings, and Reading Room Rules), Special Archives Projects, Web Archives, and Site Tools (with a link to Access to Information Request Form). The main content area displays the title 'Records of President Robert S. McNamara' and a 'Return to Fonds Level - Records of the Office of the President' link. A table lists the following details:

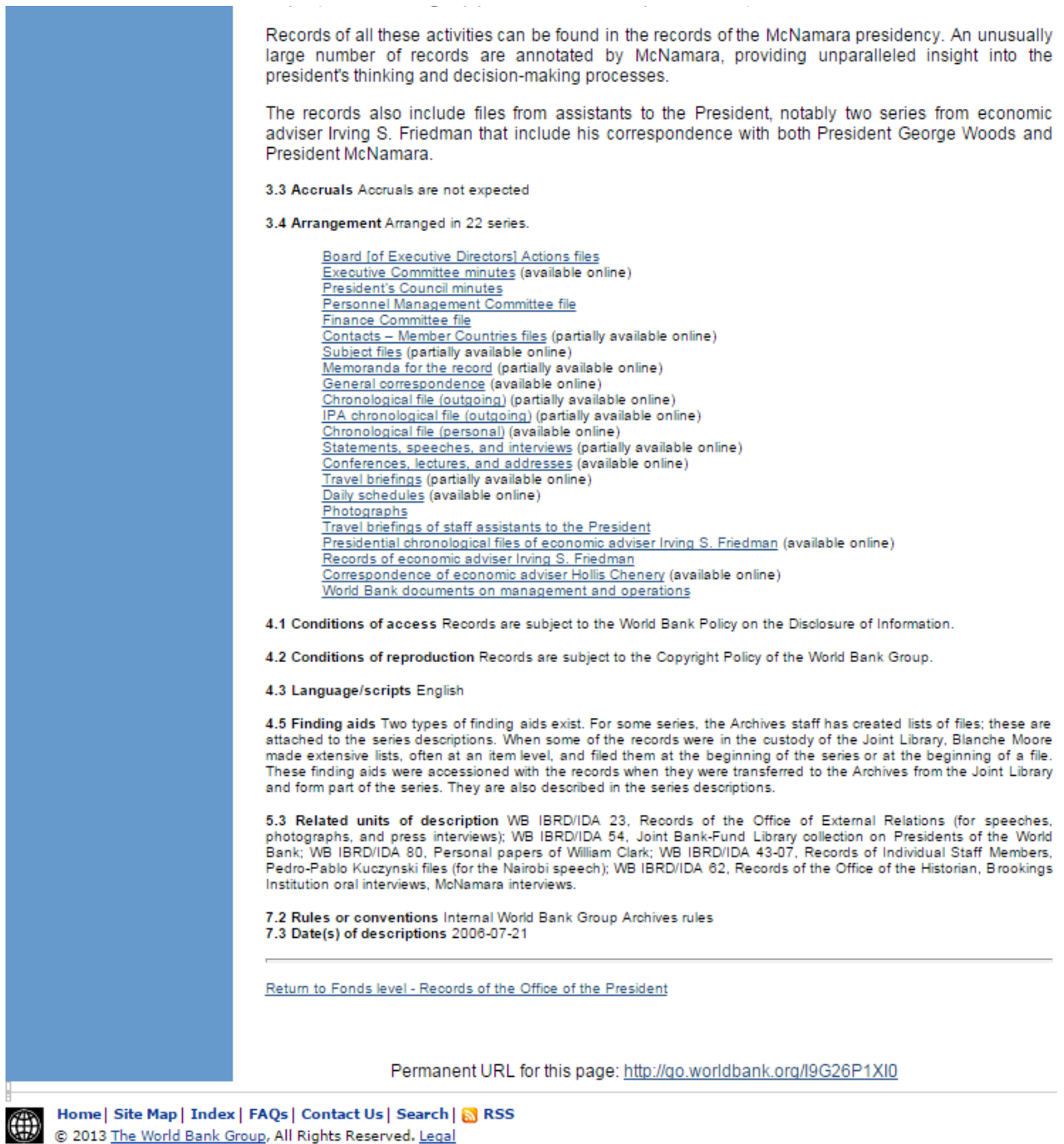
1.1	Reference code(s)	WB IBRD/IDA 03-04
1.2	Title	Records of President Robert S. McNamara
1.3	Date(s)	1968 - 1981(predominant)
1.4	Level	Sub-fonds
1.5	Extent and medium	42.30 linear feet, 95 photographs

Below the table, there are sections for '2.2 Administrative history' (linking to 'Office of the President'), '2.4 Source' (describing the history of the records), and '3.1 Scope and content' (describing Robert S. McNamara's presidency). The '3.1 Scope and content' section includes a paragraph about the volume of records and another paragraph about the Bank's lending and development focus during his tenure. A final paragraph notes that records of these activities are annotated by McNamara, providing insight into his thinking and decision-making processes.

Figure 1: Screenshot of example of WBG Archives description from static HTML website

The WBG Archives' digitization program, launched in 2012, brought an additional tedious manual task of linking each PDF to its corresponding folder title in the correct series description page. As the program scaled up to

digitize more materials, the team identified 'automating the publishing of links to our public PDFs' as a key goal for the new system.



Records of all these activities can be found in the records of the McNamara presidency. An unusually large number of records are annotated by McNamara, providing unparalleled insight into the president's thinking and decision-making processes.

The records also include files from assistants to the President, notably two series from economic adviser Irving S. Friedman that include his correspondence with both President George Woods and President McNamara.

**3.3 Accruals** Accruals are not expected

**3.4 Arrangement** Arranged in 22 series.

- [Board \[of Executive Directors\] Actions files](#)
- [Executive Committee minutes](#) (available online)
- [President's Council minutes](#)
- [Personnel Management Committee file](#)
- [Finance Committee file](#)
- [Contacts – Member Countries files](#) (partially available online)
- [Subject files](#) (partially available online)
- [Memoranda for the record](#) (partially available online)
- [General correspondence](#) (available online)
- [Chronological file \(outgoing\)](#) (partially available online)
- [IPA chronological file \(outgoing\)](#) (partially available online)
- [Chronological file \(personal\)](#) (available online)
- [Statements, speeches, and interviews](#) (partially available online)
- [Conferences, lectures, and addresses](#) (available online)
- [Travel briefings](#) (partially available online)
- [Daily schedules](#) (available online)
- [Photographs](#)
- [Travel briefings of staff assistants to the President](#)
- [Presidential chronological files of economic adviser Irving S. Friedman](#) (available online)
- [Records of economic adviser Irving S. Friedman](#)
- [Correspondence of economic adviser Hollis Chenery](#) (available online)
- [World Bank documents on management and operations](#)

**4.1 Conditions of access** Records are subject to the World Bank Policy on the Disclosure of Information.

**4.2 Conditions of reproduction** Records are subject to the Copyright Policy of the World Bank Group.

**4.3 Language/scripts** English

**4.5 Finding aids** Two types of finding aids exist. For some series, the Archives staff has created lists of files; these are attached to the series descriptions. When some of the records were in the custody of the Joint Library, Blanche Moore made extensive lists, often at an item level, and filed them at the beginning of the series or at the beginning of a file. These finding aids were accessioned with the records when they were transferred to the Archives from the Joint Library and form part of the series. They are also described in the series descriptions.

**5.3 Related units of description** WB IBRD/IDA 23, Records of the Office of External Relations (for speeches, photographs, and press interviews); WB IBRD/IDA 54, Joint Bank-Fund Library collection on Presidents of the World Bank; WB IBRD/IDA 80, Personal papers of William Clark; WB IBRD/IDA 43-07, Records of Individual Staff Members, Pedro-Pablo Kuczynski files (for the Nairobi speech); WB IBRD/IDA 82, Records of the Office of the Historian, Brookings Institution oral interviews, McNamara interviews.

**7.2 Rules or conventions** Internal World Bank Group Archives rules

**7.3 Date(s) of descriptions** 2008-07-21

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[Return to Fonds level - Records of the Office of the President](#)

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Permanent URL for this page: <http://go.worldbank.org/I9G26P1XIQ>

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Figure 2: Screenshot of example of WBG Archives description from static HTML website showing manually linked series descriptions

The World Bank Home • Site Map • Index • FAQs • Contact Us

About Countries Data & Research Learning News Projects & Operations Publications Topics

Archives Search Archives GO

Home > About Us > Archives > Access to Archives H... > Archives Finding Aids > Daily schedules Email Print

## Daily schedules

[Return to Sub-fonds level - Records of President Robert S. McNamara](#)

1.1	Reference code(s)	WB IBRD/IDA 03 EXC-10-4544S
1.2	Title	Daily schedules
1.3	Date(s)	1968 - 1980
1.4	Level	Series
1.5	Extent and medium	1.00 linear feet (4 archival boxes)

**2.4 Source** McNamara took this series with him when he retired in 1981. He transferred it to the Joint Bank-Fund Library on 13 November 1984, and the Library transferred it to the Archives on 27 October 1993.

**3.1 Scope and content** The calendar has daily information on President McNamara's whereabouts, visitors, and telephone calls for his entire office. Itineraries, programs, guest or participant lists, briefings or correspondence pertaining to the occasion are occasionally attached to the daily schedules.

**3.4 Arrangement** Chronological

**4.5 Finding aids** A [folder-level list](#) for this Series is available in electronic form.

Digitized copies of each of the folders may be downloaded via the links below:

- [Daily schedules - Daily schedules 01 \(4/1/1968 - 7/1/1968\)](#)
- [Daily schedules - Daily schedules 02 \(7/1/1968 - 12/31/1968\)](#)
- [Daily schedules - Daily schedules 03 \(1/1/1969 - 7/1/1969\)](#)
- [Daily schedules - Daily schedules 04 \(6/1/1969 - 12/31/1969\)](#)
- [Daily schedules - Daily schedules 05 \(1/1/1970 - 7/1/1970\)](#)
- [Daily schedules - Daily schedules 06 \(7/1/1970 - 12/31/1970\)](#)
- [Daily schedules - Daily schedules 07 \(1/1/1971 - 7/1/1971\)](#)
- [Daily schedules - Daily schedules 08 \(7/1/1971 - 12/31/1971\)](#)
- [Daily schedules - Daily schedules 09 \(1/1/1972 - 7/1/1972\)](#)
- [Daily schedules - Daily schedules 10 \(7/1/1972 - 12/31/1972\)](#)
- [Daily schedules - Daily schedules 11 \(1/1/1973 - 7/1/1973\)](#)
- [Daily schedules - Daily schedules 12 \(7/1/1973 - 12/31/1973\)](#)
- [Daily schedules - Daily schedules 13 \(1/1/1974 - 7/1/1974\)](#)
- [Daily schedules - Daily schedules 14 \(7/1/1974 - 12/31/1974\)](#)
- [Daily schedules - Daily schedules 15 \(1/1/1975 - 7/1/1975\)](#)
- [Daily schedules - Daily schedules 16 \(7/1/1975 - 12/31/1975\)](#)
- [Daily schedules - Daily schedules 17 \(1/1/1976 - 7/1/1976\)](#)
- [Daily schedules - Daily schedules 18 \(7/1/1976 - 12/31/1976\)](#)
- [Daily schedules - Daily schedules 19 \(1/1/1977 - 7/1/1977\)](#)
- [Daily schedules - Daily schedules 20 \(7/1/1977 - 12/31/1977\)](#)
- [Daily schedules - Daily schedules 21 \(1/1/1978 - 7/1/1978\)](#)
- [Daily schedules - Daily schedules 22 \(7/1/1978 - 12/31/1978\)](#)
- [Daily schedules - Daily schedules 23 \(1/1/1979 - 7/1/1979\)](#)
- [Daily schedules - Daily schedules 24 \(7/1/1979 - 12/31/1979\)](#)
- [Daily schedules - Daily schedules 25 \(1/1/1980 - 7/1/1980\)](#)
- [Daily schedules - Daily schedules 26 \(7/1/1980 - 12/31/1980\)](#)
- [Daily schedules - Daily schedules 27 \(1/1/1981 - 7/1/1981\)](#)

**7.2 Rules or conventions** Internal World Bank Group Archives rules

**7.3 Date(s) of descriptions** 2006-06-15

Figure 3: Screenshot of example of list of digitized folders manually linked to PDFs



Since the WBG's archival description program already adhered to the General International Standard Archival Description (ISAD(g)), the most obvious candidate for new publishing platform was Access to Memory (AtoM, also known as ICA-AtoM at the start of the project). AtoM is a web-based, open source platform that supports publication of standards-based archival description. In addition, the WBG Archives had served as a beta site for the AtoM platform - so the WBG Archives was already familiar with the platform and the likelihood that it was a good fit for the WBG Archives' goals.

## 2.2 Estimating time for implementation

The team created a timeline, based predominately on the work our team believed was necessary to coordinate the implementation of the site. Unfortunately, the initial timeline was overly ambitious. It did not take into account the competing priorities of other teams, both those internal to the WBG organization as a whole and those competing for the resources of the small vendor with whom the WBG was working. In addition, it did not account for the time required to navigate all the internal WBG certifications required before launching the completed site.

Ultimately it took an additional year to launch the first version of Archives Holdings.

## 2.3 Identify integration points

The WBG Archives identified two systems requiring integration with Archives Holdings - the central document management system (Documentum), for the storage and publication of the PDFs of the digitized records, and the Electronic Document and Records Management System (HP TRIM) which is used both for maintaining intellectual and physical control over analog records.

## 2.4 Project staffing

The WBG Archives team was able to use some WBG staffing resources for a portion of the work, but most of the work was overseen and implemented by an external vendor who had expertise in the AtoM platform.

The WBG internal team included members with the following areas of expertise:

- Archives: Project lead
- Archives: Team leadership who can speak to design/vision choices
- Archives: Archivists doing archival description
- Archives: Technologist with in-depth knowledge of our in-house records management system

The WBG Archives team needed to reach beyond their staff to find allies in other Bank teams to support the necessary work, including database experts to help automate the data extraction of archival descriptions and staff responsible for the document repository to refine the public document publishing features the Archives depended on for publishing digitized records to the public.

One of the greatest contributors to the successful implementation of the Archives Holdings website was the National Digital Stewardship Residency (NDSR) resident who spent nine months as part of our team. The NDSR program was run by the United States Library of Congress (LoC) and funded through a grant from the United States Institute of Museum and Library Services (IMLS). This individual was highly trained and very dedicated to assisting the project, and had applied specifically to work on Digital Stewardship challenges related to digitization and the publication of digitized materials online.

### 3. Institutional support

The WBG is a very large institution with many standardized processes, both relating to allocating funds to projects and ensuring the even application of technical and design standards. It was crucial to the Archives' project's success that the team learn the ins and outs of all these processes.

Gaining the support of the leaders within the WBG required methodical outreach and evangelism on behalf of the final vision of a clean, efficient, easy to maintain web platform that improved awareness of and access to WBG archival materials. With each new ally the team worked its way up the organizational hierarchy. The Archives also identified staff within the organization who had a solid understanding of the funding process and who were able to identify the best path to success.

One technique used to help gain financial support for the Archives' project was to bundle the request with other requests related to a larger project. In comparison with the WBG's general projects, the Archives' project was very small. The funding request for the Archives' combined effort of digitizing analog records and building the Archives Holdings website was bundled under the umbrella of the existing Access to Information implementation program.

Once the Archives had secured both funding and administrative backing, the team was able to move on to identifying the red tape blocking the path to building the new web platform.

#### 3.1 Approvals:

At the WBG, the project needed approval from a number of different teams, often more than one type of approval from the same team.

The Web Programming Office had to give the project two approvals - the very first and the very last. In order to create a website on a platform that differs from the Bank's standard, the Archives team had to explain why the standard platform could not solve the Archives' problems. After the site was complete and all other approvals had been secured, the Web Program Office performed a mandatory final review of the new website before providing a 'launch approval'.

The Enterprise Architecture team reviewed both the 'as is' and 'to be' states of the existing process for publishing archival descriptions and digitized records. This process was very beneficial to the project work. The process of explaining the existing and planned work clarified the Archives' understanding of exactly what was necessary to build. In addition, the diagrams produced by the Enterprise Architects were very useful in communicating with many different stakeholders throughout the implementation.

The Office of Information Security did two types of reviews: one review of the system design and then a full scan after the final implementation was complete. The system design review was the catalyst for a number of key updates to the original system design. It was this feedback that led to the separation of the staging and production servers and implementation a web-based solution to enable simplified Comma Separated Value (CSV) upload and deployment of new content to the production server.

Each of these approval processes brought new smart people into the project. New people who could look at what the Archives team was trying to build with fresh eyes and ask questions the Archives' staff might not have thought to ask. In some cases, the team had ready answers for these questions - but in other cases new areas of concern were

identified that forced re-examination of the plans.

#### **4.0 Requirements, implementation, testing and revision**

The requirements for the Archives Holdings website (<http://archivesholdings.worldbank.org>) were driven by a combination of the problems our team sought to solve and the necessity of passing through the approval processes described above.

The initial technical design for implementing the Archives Holdings website envisioned the entire application running on a single web server. This single server would host a single instance of the AtoM software platform. In order to upload new content to this website, a member of the WBG Archives would log into the actual server and initiate a custom program. This program would run scripts to pre-process the archival description data and then upload the content into the Archives Holdings website in a 'draft' mode. A member of the WBG Archives would then log into the Archives Holdings website via a web browser,

review the uploaded content, and then initiate a publish action to 'push' the content live.

Before the system was even built, this approach was rejected by multiple stakeholders. The WBG Office of Information Security was not comfortable with WBG Archives staff connecting directly to the server to run programs. The vendor recommended to separate the web server and database server onto separate servers to improve performance. Finally, as the WBG Archives team learned more about the way that the 'draft' mode worked, they sought alternative approaches. The vendor provided a new design that took all of these issues into account, along with the experiences of other clients, and recommended a new plan.



## 5. Deployment and beyond

The diagram below shows the final architecture that was used for building the WBG Archives' AtoM platform:

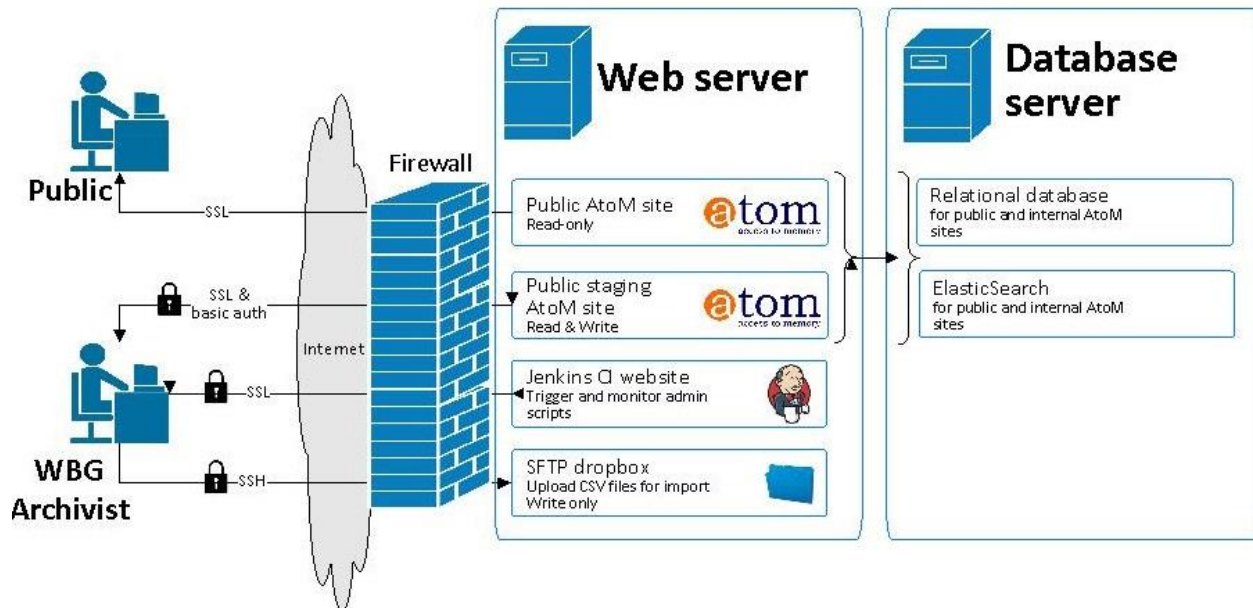


Figure 4: Final architecture used for the WBG Archives AtoM platform implementation

In contrast with the original plan, the final implementation uses two servers. One is dedicated to the database and search indexes for the site. The other hosts two instances of the AtoM software, a secure file transfer protocol (SFTP) dropbox, and a Jenkins CI website (<https://jenkins-ci.org/>). One instance of AtoM is the public 'read only' website which does not permit any login or modification via the web browser interface. The second AtoM website, the 'staging instance' is used for all data upload, static content updates, and quality assurance.

The SFTP dropbox provides a location for the comma separated value (CSV) data import files to be received.

The Jenkins CI website enables a web-based method of launching two administration scripts. The first script pulls the CSV data import file from the WBG's SFTP server to the SFTP dropbox. The second script

replicates the entire staging instance onto the public read-only website.

When users navigate to <http://archivesholdings.worldbank.org> they are unaware of this complexity - all they see is the clean and efficient final website that helps them learn about and access the WBG's archival records.

This is a screenshot of the new description page for the Records of President Robert S. McNamara:

**THE WORLD BANK**  
IBRD · IDA | Working for a World Free of Poverty

World Bank Group Archives Holdings

Subfonds - Records of President Robert S. McNamara

- Subfonds Records of President Robert S. McNamara
  - Series Daily schedules
  - Series Statements, speeches and interviews
  - Series Board [of Executive Directors] Actions files
  - Series Contacts - Member Countries files
  - Series IPA chronological file (outgoing)
  - Series Travel briefings of staff assistants to the President
  - Series Correspondence of Economic Advisor Hollis Chenery

Records of the Office of the President » Records of President Robert S. McNamara

Identity area	
Reference code	WB IBRD/IDA EXC-10
Title	Records of President Robert S. McNamara
Date(s)	• 1968 - 1981 (Creation)
Level of description	Subfonds
Extent and medium	42.30 linear feet of textual records; 95 photographs
Context area	
Name of creator	Office of the President -- Robert S. McNamara (President, 1968 - 1981)
Repository	World Bank Group Archives
Immediate source of acquisition or transfer	The history of the McNamara Presidential records is complicated. Some series were transferred to the Archives from the Office of the President. Other series contain records that President McNamara took with him when his tenure at the Bank was completed, ...
Content and structure area	
Scope and content	Robert S. McNamara became World Bank President on April 1, 1968 and served 2 full five year terms and a partial term, laving on June 30, 1981. The records are a very full account of his long and active presidency. Every part of the world is reflected in ...

Inventory list

- Browse fonds as list
- Show all digital objects
- Reports

*Export*

- Dublin Core 1.1 XML
- EAD 2002 XML

*Related people and organizations*

Office of the President -- Robert S. McNamara (President, 1968 - 1981) (Creator)

Figure 5: Screenshot of the new description page for the Records of President Robert S. McNamara

After the first version of the Archives Holdings website was launched, the WBG Archives promptly prioritized a list of outstanding enhancements to the user interface.

One of the most important upgrades made to the Archives Holdings site between the initial launch and the Phase II rollout was the ‘inventory list’. This page was envisioned as an easy way for researchers to view all the folders and items belonging to a series (or sub-series) on a single page. The WBG Archives’ description program does not describe at the folder or item level. Only a few basic attributes are available at this level: id number, title, date(s), disclosure status, and URL to a

PDF (for those records which have been digitized).

The original inventory list, shown in the screen-shot below, provided all these attributes on a single report and made it very easy for researchers to identify and download digitized materials. Unfortunately, this list was created based on an existing report. The navigation to this page required selection of a sorting attribute (title, id or date), and therefore prevented search engine crawlers from navigating to this page for indexing. It also did not match the look and feel of the rest of the site.

Original Inventory List (after sorting selection was made):

The screenshot shows the 'World Bank Group Archives Holdings' page. At the top, there is a navigation bar with the World Bank logo and the tagline 'Working for a World Free of Poverty'. Below this is a search bar and a 'Print preview' button. The main content area is titled 'File list' and contains a table of records. The table has four columns: '#', 'Folder ID', 'Title', 'Dates', and 'Disclosure Status'. The records are numbered 1 through 14 and represent 'President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 01' through 'Chrons 14'. The dates range from 1968-4-1 to 1976-5-1. The disclosure status varies between 'PARTIAL DISCLOSURE' and 'DISCLOSED'.

#	Folder ID	Title	Dates	Disclosure Status
1	01771531	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 01	1968-4-1 - 1968-7-1	PARTIAL DISCLOSURE
2	01771532	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 02	1968-7-1 - 1968-12-31	PARTIAL DISCLOSURE
3	01771533	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 03	1969-1-1 - 1969-12-31	PARTIAL DISCLOSURE
4	01771534	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 04	1970-1-1 - 1970-3-3	DISCLOSED
5	01771535	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 05	1970-3-1 - 1970-12-31	DISCLOSED
6	01771536	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 06	1971-1-1 - 1971-7-1	DISCLOSED
7	01771537	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 07	1971-7-1 - 1971-12-31	DISCLOSED
8	01771538	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 08	1972-1-1 - 1972-5-31	DISCLOSED
9	01771539	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 09	1972-6-1 - 1972-12-31	DISCLOSED
10	01771540	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 10	1973-1-1 - 1973-12-31	DISCLOSED
11	01771541	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 11	1974-1-1 - 1974-12-31	DISCLOSED
12	01771542	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 12	1975-1-1 - 1975-7-1	DISCLOSED
13	01771543	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 13	1975-7-1 - 1975-12-31	DISCLOSED
14	01771544	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 14	1976-1-1 - 1976-5-1	DISCLOSED

Figure 6: Original Inventory List as implemented in first deployment of Archives Holdings website

For the enhanced version, the goal was to fix the following issues:

- align the look and feel with the rest of the website's UI

- remove the gating ‘sort question form’ that prevented crawling of this page by search engines
- replace the sort question form with in-place column sorting by clicking the column headers

The image below is the mockup created to communicate to the vendor the vision for the new page. This was accompanied by detailed behavioral notes about what would happen for each possible place one might click or interact with the page.

The screenshot shows the World Bank Group Archives Holdings page. At the top, there is a navigation bar with the World Bank logo and the tagline 'Working for a World Free of Poverty'. Below this, the page title is 'World Bank Group Archives Holdings' with a search bar on the right. The main content area is titled 'Folder Level List: Records of President Robert S. McNamara Series - General correspondence'. Below the title is a breadcrumb trail: 'Records of the Office of the President > Records of President Robert S. McNamara > General correspondence'. The main content is a table with four columns: FOLDER ID, TITLE, DATES, and DISCLOSURE STATUS. The table lists 10 folders, with folders 05, 06, and 07 highlighted in red.

▼ FOLDER ID	▶ TITLE	▶ DATES	▶ DISCLOSURE STATUS
1771531	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 01	1968-4-1 - 1968-7-1	PARTIAL DISCLOSURE
1771532	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 02	1969-1-1 - 1969-12-31	PARTIAL DISCLOSURE
1771533	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 03	1970-1-1 - 1970-3-3	DISCLOSED
1771534	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 04	1970-1-1 - 1970-3-3	DISCLOSED
1771535	<a href="#">President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 05</a>	1970-3-1 - 1970-12-31	DISCLOSED
1771536	<a href="#">President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 06</a>	1971-1-1 - 1971-7-1	DISCLOSED
1771537	<a href="#">President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 07</a>	1971-7-1 - 1971-12-31	DISCLOSED
1771538	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 08	1972-1-1 - 1972-5-31	DISCLOSED
1771539	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 09	1972-6-1 - 1972-12-31	DISCLOSED

Figure 7: Mockup of New Folder Level List

Shown below is the initial version created by the vendor of the new inventory list page.



THE WORLD BANK  
Working for a World Free of Poverty

World Bank Group Archives Holdings

Search World Bank Group Archives

Folder/Item list: Series - General correspondence

Records of the Office of the President » Records of President Robert S. McNamara » General correspondence

Identifier	Title	Dates	Disclosure status
01771541	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 11	1974-1-1 - 1974-12-31	DISCLOSED
01771542	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 12	1975-1-1 - 1975-7-1	DISCLOSED
01771543	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 13	1975-7-1 - 1975-12-31	DISCLOSED
01771544	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 14	1976-1-1 - 1976-5-1	DISCLOSED
01771545	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 15	1976-5-1 - 1976-12-31	DISCLOSED
01771546	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 16	1977-1-1 - 1977-7-1	PARTIAL DISCLOSURE
01771547	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 17	1977-7-1 - 1977-12-31	PARTIAL DISCLOSURE
01771807	Chronological files (incoming) - Chrons 18	1978-1-1 - 1978-5-31	PARTIAL DISCLOSURE
01771808	Chronological files (incoming) - Chrons 19	1978-6-1 - 1978-7-1	DISCLOSED
01771809	Chronological files (incoming) - Chrons 20	1978-7-1 - 1978-8-31	DISCLOSED

« Previous 1 2 3 Next »

Figure 8: Version one of Inventory List

A number of issues were identified with this initial implementation. The link under the title attribute led to the object's property page rather than directly to the PDF. This was a change from the original implementation. In order to download the PDF, users would need to click through to the property page and then click a second time to download the PDF. In addition, there was no way to tell which items listed had been digitized and had a PDF available without clicking through to each and every property page.

The team discussed these issues with the vendor. The vendor had chosen to implement this way in order to make the inventory list useful to the broader AtoM community. The Archives negotiated with the vendor to find a compromise between the original request and staying with the 'main line' of the code. For those not familiar with standard software development practices, the 'main line' of the

code is the version of the software that makes up the standard releases - without any customizations. Staying with the 'main line' of the code means easy upgrades and therefore getting new features as soon as they are available.

How could the site make it clear to users which objects had PDFs available without forcing them to a property page without any other additional information? How could the vendor be sure that other installations that needed a link from the object title to the property page would be satisfied? How can both issues be solved without making two versions of the software?

The solution was to add a new column to the page that is labeled 'PDF' and takes the user directly to a PDF if available. It makes it easy to see if a digital version is available. To support the WBG's desire to suppress the link

to the property page, a feature was added to enable turning off the link beneath the title.

Identifier <sup>▲</sup>	Title	Dates	Disclosure status	PDFs
01771535	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 05	1970-03-01 - 1970-12-31	DISCLOSED	<a href="#">View</a>
01771536	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 06	1971-01-01 - 1971-07-01	DISCLOSED	<a href="#">View</a>
01771543	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 13	1975-07-01 - 1975-12-31	DISCLOSED	<a href="#">View</a>
01771544	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 14	1976-01-01 - 1976-05-01	DISCLOSED	<a href="#">View</a>
01771810	Chronological files (incoming) - Chrons 21	1978-09-01 - 1978-12-31	DISCLOSED	<a href="#">View</a>
01771812	Chronological files (incoming) - Chrons 23	1979-05-01 - 1979-07-01	DISCLOSED	<a href="#">View</a>
01771813	Chronological files (incoming) - Chrons 24	1979-07-01 - 1979-08-31	DISCLOSED	<a href="#">View</a>
01771531	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 01	1968-04-01 - 1968-07-01	PARTIAL DISCLOSURE	<a href="#">View</a>
01771537	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 07	1971-07-01 - 1971-12-31	DISCLOSED	<a href="#">View</a>
01771538	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 08	1972-01-01 - 1972-05-31	DISCLOSED	<a href="#">View</a>
01771545	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 15	1976-05-01 - 1976-12-31	DISCLOSED	<a href="#">View</a>
01771546	President's papers - Robert S. McNamara Chronological files (incoming) - Chrons 16	1977-01-01 - 1977-07-01	PARTIAL DISCLOSURE	<a href="#">View</a>

Figure 9: Screenshot of final deployed version of the inventory list

After all the hard work that goes into implementing a web platform like AtoM, deployment and maintenance can seem simple in comparison. There are always some final hurdles necessary before making your site available.

A few of the final steps the Archives team needed to perform:

- request and have a new URL created
- install analytics tracking codes

- coordinate with the WBG's search indexing team
- coordinate with the team responsible for mapping DNS addresses

The WBG Archives staff ensured that documentation of the new system was created, both for maintenance and for day to day updates of the system.



## **6. Lessons learned**

### **6.1 Identify the problem to be solved**

It is crucial that your team identify, agree upon, and clearly document the problem that your project seeks to solve.

### **6.2 Estimating time for implementation**

Once a timeline is determined, double it. If you have ever worked on a major software project, you will already know that everything takes longer than you think it will. Or at least longer than you want it to. When you add in that most archives do not have extensive software development teams at their disposal and must adhere to the standards and rules that govern systems being built in their organization, everything gets just that much more complicated.

### **6.3 Identify integration points**

During the planning phase, you should also identify all the systems within your organization with which you need to integrate. The WBG Archives identified two systems - the central document management system (Documentum), for the storage and publication of the PDFs of the digitized records, and the Electronic Document and Records Management System (HP TRIM) which is used both for maintaining intellectual and physical control over analog records.

### **6.4 Project staffing**

Staffing your project will likely need to be an ongoing effort. A few staff will likely work on

the implementation from planning through deployment, while others will only be recruited to work on specific challenges. Some institutions have in-house staff available with skills in software development and implementation, but many archives will need to reach beyond their organization to find individuals or an organization to do their implementation.

### **6.5 Institutional support**

One of the biggest challenges for many archives is gaining institutional support for a new web platform project such as implementing AtoM. Consider the meaning of 'institutional support' to be defined broadly and cover everything from securing financial sponsorship to garnering all the approvals necessary to move your project forward in adherence to your organization's rules.

Start with your team and work to get leadership on your side. Once you have secured this support, consider what approvals you need in order to build your system. Make sure you know all the 'hurdles' you must clear in order to launch your platform with the blessing of your organization. Look at these approval requirements as ways to identify possible partners. This can also help your team take advantage of the different skill sets from across the organization.

### **6.6 Find allies and be inclusive in building your team**

Depending on the skill sets of the staff within your archives, you may need to be open to defining your team more broadly. Be prepared to look for partners across your organization, and to recognize their contributions. Collaborate both within your team and with units across the organization. Your team does need clear leadership and a small inner-circle

of individuals who will review and approve all designs and problem resolutions. Your team also needs resources to reach out to when faced with challenges and questions which cannot be resolved by the core team within the archives. If possible, look for opportunities to take advantage of grant funding for adding specialized knowledge to your team.

## 6.7 Engage critical stakeholders early

The earlier you engage with those who are critical stakeholders, the sooner you can clarify requirements that may impact your implementation. All of those mentioned in the 'institution support' section above focused on a different aspect of the site the WBG Archives wanted to build. The sooner the team engaged with each stakeholder in the process, the sooner the plans could be adapted to handle the additional requirements.

## 6.8 Requirements

It is often the case that this phase and the prior listed phases will likely overlap. The main way that you can turn your vision into reality is to clearly and precisely define the requirements. There are many different templates available to streamline this process. Which exact template used does not matter, as long as your final document is very detailed. You must assume that the only things which will be done are those clearly defined in your requirements document. Resist the urge to expect that a phone conversation or side-email thread discussing something means it will be included in your implementation.

## 6.9 Implementation, testing and revision

If you are using a vendor, the hardest part about the implementation phase is waiting for it to be complete. It is useful to have a regular meeting time with the implementation team to handle questions and to ensure that they are adhering to the timeline. As mentioned above, implementation almost always takes longer than you plan for - but staying in regular communication will mean that you are quickly aware of blocking issues.

Many issues can be avoided by keeping the following in mind:

- test data will be needed - the more 'real' this data is, the less likely it is that the actual data will cause issues at the last minute
- make sure the versions of your operating system and basic libraries in the build environment match what will be needed in the production environment
- be very clear with those building the system about any security requirements that might prevent implementation choices from being acceptable

It can be frustrating to feel bogged down by underlying technical issues or security concerns, but the key here is to stay flexible and remain focused on your final product.

When you are given the opportunity to review the implementation at various stages, do so with a great eye to detail. When you see issues, document everything about how that issue was generated - including screen shots and step-by-step instructions.

## 6.10 Be persistent, yet flexible

You won't be able to get everything you want in your website. Funding, technical hurdles, and differing visions across your organization can all force selection of some features over others. It is important to clarify your priorities and keep your eye on the final vision.

## 6.11 Streamline and document communication

Select one member of your team to coordinate communication with a point of contact within your vendor's team. This individual should ensure that all decisions passed along to the vendor have been vetted and approved by the appropriate team within your organization. These decisions should be carefully documented in writing and saved for reference.

## 6.12 Document issues meticulously

When you find that there is a difference between what you expected and what has been implemented, it is crucial to capture the discrepancies in as much detail as possible - especially when your vendor is not local to your organization. Through a combination of screen captures and documenting all the steps and data required to reproduce, you can ensure that the individuals evaluating the issues understand where the miscommunication originated.

## 6.13 Document requirements meticulously

This leads to the preventive corollary: document exactly what you want for your implementation. Try not to assume anything when creating your requirements documents.

Imagine that you have never had a phone conversation with the people about to build your system. You cannot assume that something mentioned in passing was taken as a how things should be done in the future. If you create mockups of what you expect screens to look like and include detailed behaviors for every step of every process, you are much more likely to NOT end up having to document issues as described above because things will just be right in the first place.

## 6.14 Leverage existing institutional systems

This lesson ties back to being flexible. Taking advantage of organizational systems that you can leverage can save your project time and effort. Existing institutionally supported systems have already navigated all necessary approvals. While integration with these systems can seem like extra work, this type of integration can reap returns through reinforcing your network of allies. The WBG Archives leveraged two existing systems - one for publishing PDFs online and one for the storage of the 'gold master' of the archival descriptions. Both of these integrations went a long way to remove roadblocks to approval of the implementation plans by the World Bank Security team.

## 6.15 Automate everything that can be automated

If you have the resources available to automate manual processes, take advantage of this opportunity whenever possible. For example, while it was possible to manually extract the archival descriptions stored in the WBG Archives HP TRIM records management system and convert this data into CSV files for upload into the AtoM system - the team was able to automate this process to

remove as much human intervention as possible.

## 6.16 Operations and maintenance

When planning for the long term sustainability of your new open-source platform, don't forget that after launch you will still need to pay for ongoing operations and maintenance. For the Archives Holdings website, this consisted of hosting fees and an annual support contract. While you may have the resources to cover some of these expenses through the use of organizationally sponsored hosting and on-staff maintenance, this should be a conscious decision made at the start of your project.

## 7. Conclusion

At the start of a major technology project, the scale and details can seem overwhelming. It took more than three years to get from the WBG Archives' first attempts to gain backing for the AtoM project all the way through to deploying the second version of the website. The list of everyone who contributed to this effort is very long and includes members from multiple teams within the World Bank and the external vendor. Keeping meticulous track of the details while not losing sight of your final goal can be a challenge. The good news is that you will find individuals both within and outside your organization to help you along the way. Implementing open-source platforms

has the added benefit of the community using the same tool. Often you will not be the first person to encounter your challenge. In addition, the open-source model will often result in your installation getting new functionality due to some other organization funding its development.

The Archives Holdings website has been a great success for the WBG Archives, receiving positive feedback from WBG leadership, as well as from both internal and external users. In the first four months of the site's existence it has had over 2,500 unique visitors and over 16,000 page views.

## Biography

Jeanne, currently an archivist at the World Bank Group Archives, works on digital preservation and leveraging technology to improve access to archival materials. In her spare time she writes speculative fiction short stories. Before becoming an archivist, Jeanne spent over 20 years designing relational databases and creating custom software. Since 2006, she has authored Spellbound Blog (<http://www.spellboundblog.com>) on topics at the intersection of archives and technology with a special focus on electronic records, digitization and access. She can be found on twitter @spellboundblog.

Appendix: Archives Holdings Content Process Flow

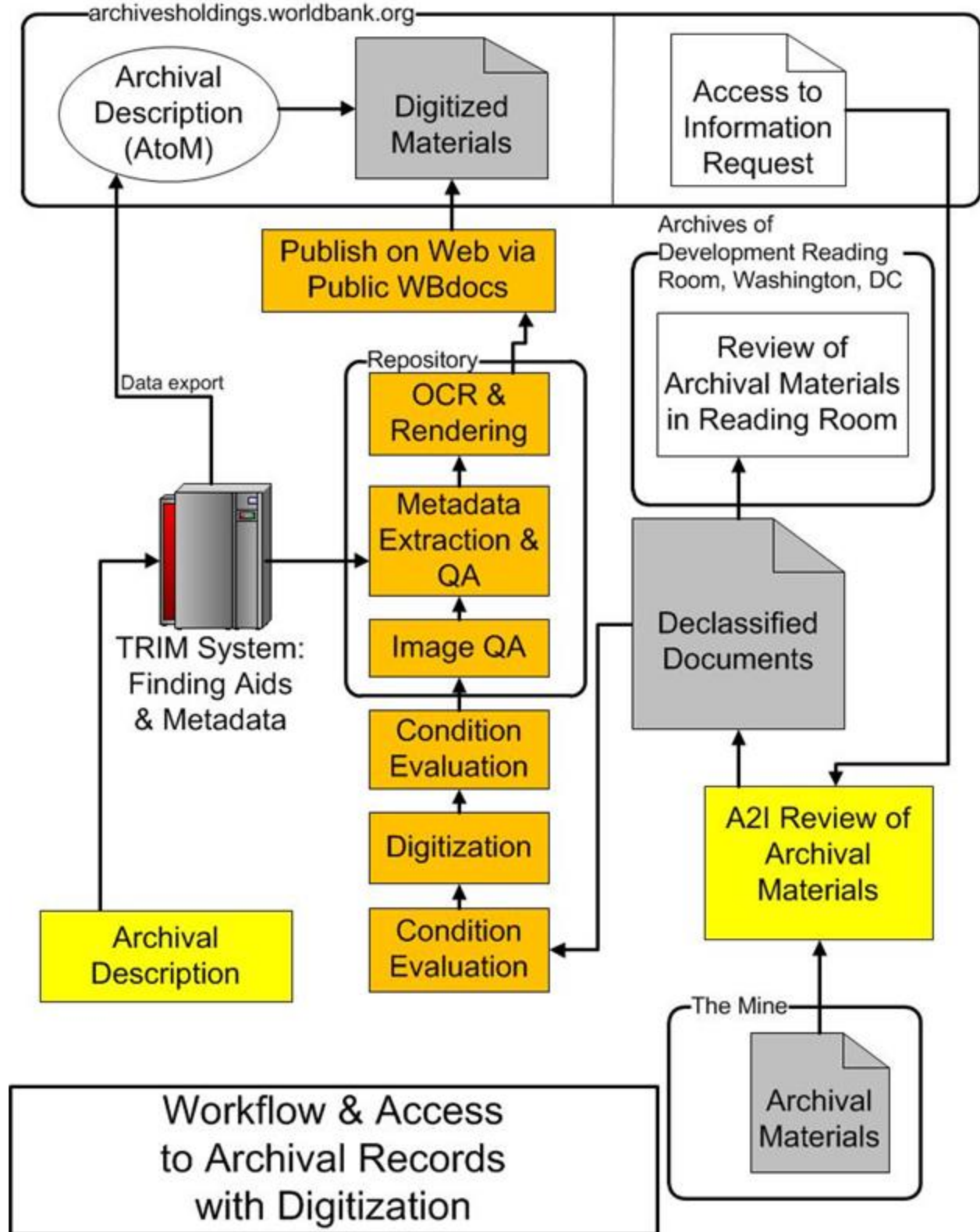


Figure 10: Archives Holdings content process workflow