AtoM, Authenticity, and the Chain of Custody

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Providing access to memory since 2007

AtoM stands for Access to Memory. It is a web-based, open source application for standards-based archival description and access in a multilingual, multi-repository environment.

Download
AtoM 2.0.1

MEET AtoM
(hello world!)
What is AtoM?

Web-based
Open source
Standards-based
Multilingual
Multi-repository

AtoM stands for Access to Memory

It is a web-based, open source application for standards-based archival description and access in a multilingual, multi-repository environment.
The impulse that eventually led to the creation of ICA-AtoM first came out of collaborative discussions between the ICA's Committee on Descriptive Standards, Committee on Information Technology, and UNESCO. In 2001, a draft report was prepared by an ad-hoc committee from ICA-CDS to describe some of the functional requirements necessary for the online presentation of finding aids that conformed to the ICA standards. The draft report references this theoretical system as OSARIS – the Open Source Archival Information System – which became an ongoing topic of conversation between the groups throughout 2002. In November 2003, after performing a survey of existing Archival Management systems, the Committee on Information Technology released an updated report on the functional requirements for the OSARIS project, with the hopes of eventually supporting the development of such a system.

Without a clear source of funding however, the project stalled shortly after that until in 2005, UNESCO provided the ICA with a grant to support the creation of an Online Guide to Archival Sources Related to Human Rights Violations. The ICA and UNESCO decided to use this project as an opportunity to move the OSARIS project forward, and create an open source, web-based application for description and access that would support the ICA standards. In late 2005, Peter Van Garderen of Artefactual Systems was hired to implement this vision. After a thorough technical requirements analysis process, the very first alpha versions of the application were made in late 2006.

There was great interest in the prototype, and a desire to prepare a 1.0 version of the application in time for release at the 2008 ICA conference in Kuala Lumpur, but more resources were required to carry the project forward. Fortunately, institutions such as The Hogeschool Van Amsterdam Archiefschool, Direction des Archives de France, the World Bank Group Archives, and the United Arab Emirates Centre for Documentation and Research all made contributions that allowed the project to continue.
ICA-AtoM 1.0-Beta

- Released at the 2008 ICA Congress in Kuala Lumpur, July 21-27
- Distributed as a demo CD
- Workshop and presentation given
Meanwhile, in May of 2008, leading up to the 1.0-beta launch at the ICA Congress, a steering committee was formed to begin considering the long-term maintenance of the application as interest in the project grew. The Committee held its first meeting at the Dutch Archiefschool in Amsterdam in May 2008. There it drafted the following Project Purpose and Values statement:

The purpose of the ICA-AtoM Project is to provide free and open-source software:

- that enables institutions to make their archival holdings available online, especially those who could not otherwise afford to do so
- that manages archival descriptions in accord with ICA standards
- that provides multi-lingual interfaces and content translation features
- that supports multiple collection types
- that is fully web-based, user-friendly and follows accessibility best practices
- that is flexible and customizable
- that is useful to both small and large institutions alike
- that supports single or multi-repository implementations
At the Amsterdam meeting in May 2008, the Committee also began discussion about the project's organizational structure and business model but these were not finalized at that time. This is the proposed Governance model that had been circulated at the first and second meetings of the ICA-AtoM steering committee.

ICA-AtoM Proposed Governance Model

Meanwhile, development continued as more institutions and organizations showed interest in the project. 2008 and 2009 saw an intensive period of beta-testing conducted by dozens of institutions internationally. Following the 1.0 release further funding for development came from the United Arab Emirates Center for Documentation and Research and the Direction des Archives de France, as well as via Artefactual-led implementation projects in Canada with organizations such as the Archives Association of British Columbia, Library and Archives Canada, the City of Vancouver Archives and Canadiana.org. ICA-AtoM picked up several new themes and features along the way.
It was around this time that Artefactual was last in Brazil. Our founder, Peter Van Garderen, came to speak to the Association of Brazilian Archivists in 2009.

Association of Brazilian Archivists
Third Meeting on Archival Information Databases
Rio de Janeiro, Brazil
16/17 March 2009

“The ICA-AtoM Project And Technology.”
Peter Van Garderen

Artefactual in BRAZIL
At that time, ICA-AtoM would have looked like this:

ICA-AtoM v1.0.5

Overview
ICA-AtoM is an open-source archival description software that is based on the International Council on Archives (ICA) standards. “AtoM” is an acronym for “Access to Memory”.

ICA-AtoM is free, open-source software. It is multi-institutional and supports multi-repository collections. See the online user manual for a full description of the software features.

Additional information and news
The about page has more information about the project organization. Check the ICA-AtoM discussion group for the latest project information and news.
We've come a long way since then! In October of 2013, we released the 2.0 version of AtoM, which included an improved search index for better scalability and performance, a new user interface look and feel, faceted search and browse, and more. We also launched a new website, and began overhauling the project documentation. The project continues to grow and improve with every major release, and we are currently preparing for our 2.4 release in 2017.

AtoM's Development

- 2012: 1.x
- 2013: 2.0
- 2014: 2.0.1
- 2015: 2.1
- 2016: 2.1.1
- 2017: 2.2
- 2018: 2.2.1
- 2019: 2.3
- 2019: 2.4

AtoM 2.4
- Full bulk import / export via the user interface
- Search index improvements
- Authority records and repositories on the Clipboard
NEW FULL-WIDTH TREEVIEW OPTION: Now an administrator can choose between the current side-bar treeview for hierarchical navigation and context, or a full-width treeview that displays all nodes in the descriptive hierarchy at once. The new full-width treeview also includes a bottom border that can be clicked and dragged to resize. Works with keyboard navigation as well.

Fonds PF41 - John Honsberger fonds

- Fonds John Honsberger fonds
  - Series Personal records
  - Series Editor of the "Gazette" records
  - Series Sound recordings
  - Series Photographs
  - Series Miscellaneous legal documents
    - Item Indian land sale. Grant to Sir Melville Parker, Baronet.
    - Item Indenture relating to the County of Chester, England
    - Item Crown grant to Hannah Asselstine
    - Item Land deed: Canada Company to David Pinkerton
    - Item Deed: George W.D. Asselstine to William Miller

Help pages
- Help searching
- Help browsing
- Using the Treeview

Fond of Osgoode Hall. Photograph of front exterior entrance to Osgoode Hall.
SEARCH, BROWSE, and ADVANCED SEARCH RE-DESIGN. What was previously 3 different page types has been
overhauled into one reusable template, with enhanced options. Now both facets and filters can be used
together, along with Boolean queries, date range searches, and more. The advanced search panel is now
available on all search/browse pages for archival descriptions. Empty facets are hidden by default, and
administrators have some configuration options to hide certain filters if they are not being used.

2.3 RELEASE
CLIPBOARD MODULE ADDED. Now users can add descriptions to a session-based "clipboard" as they explore your holdings, and then view, sort, and print the results from a dedicated Clipboard page. Authenticated users can also perform a CSV export of clipped results. In the 2.4 release, the clipboard will become the basis for a bulk export module, supported by the job scheduler.

2.3 RELEASE

Showing 10600 results
Archival description

Only top-level descriptions

Advanced search options

Print preview  Export CSV

Sort by: Alphabetic

131 results with digital objects
Show results with digital objects

"A Bedtime Story" Movie Poster, 1941
2013.5.6 · Item · 1941
Item is a hand-painted movie poster created by the Capitol Theatre, 1941. It features information about the showing of "A Bedtime Story" on Wednesday and Thursday September 2nd and 3rd, 1941. Additional text on the poster includes: 2nd...
Capitol Theatre

"Adventures of Martin Eden" Movie Poster, 1942
2013.5.9 · Item · 1942
Item is a production company movie poster for "Adventures of Martin Eden" used by the Capitol Theatre, 1942.
Capitol Theatre

"Aidas" Hamilton Lithuanian Girls' Choir Collection
468 · Collection · draft
Collection spans choir activities from 1975-1977. One of the pamphlets includes the choir's history from 1970-1975 and a list of committee members.
Cookies & milk.

"B is for Barns" Research Project Binders, 2013
2014.2 · Series · 2013
Series consists of three (3) binders entitled "B Is for Barns," 2013. The binders contain photographs and information on various barns around Northumberland County, and formed part of the research project/exhibit undertaken by the Port...
Port Hope and District Agricultural Society

"Camco Vision 2010“ Environmental Impact Statement
RENAME MODULE. Now users can edit the permalink (or slug) of their description's URL via the user interface, as well as change the description title without having to edit the whole description, or even edit the filename of any associated digital objects.

2.3 RELEASE
### CONFIGURABLE INVENTORY LIST

An administrator can select what levels of description will be made available in a table-based inventory list, giving users another way to browse lower-level descriptions. The columns are all sortable – and if there is a digital object attached, there will also be a link directly to its view page.

#### 2.3 RELEASE

<table>
<thead>
<tr>
<th>Identifier</th>
<th>Title</th>
<th>Level of description</th>
<th>Date</th>
<th>Digital object</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF208-PF208-1-2012018-001</td>
<td>Biography and pictures</td>
<td>File</td>
<td>1950, [1970]-1983</td>
<td></td>
</tr>
<tr>
<td>PF208-PF208-1-2012018-001-2012018-01P</td>
<td>Photograph of George Gale</td>
<td>Item</td>
<td>[197:]</td>
<td></td>
</tr>
<tr>
<td>PF208-PF208-1-2012018-001-2012018-02P</td>
<td>Photograph of George Gale</td>
<td>Item</td>
<td>[197:]</td>
<td>View</td>
</tr>
<tr>
<td>PF208-PF208-1-2012018-001-2012018-03P</td>
<td>Photograph of George Gale</td>
<td>Item</td>
<td>[197:]</td>
<td>View</td>
</tr>
<tr>
<td>PF208-PF208-1-2012018-001-2012018-04P</td>
<td>Photograph of George Gale</td>
<td>Item</td>
<td>[1977]</td>
<td></td>
</tr>
<tr>
<td>PF208-PF208-1-2012018-001-2012018-05P</td>
<td>Photograph of George Gale</td>
<td>Item</td>
<td>[197:]</td>
<td></td>
</tr>
<tr>
<td>PF208-PF208-1-2012018-001-2012018-06P</td>
<td>Photograph of George Gale in judicial robes</td>
<td>Item</td>
<td>[197:]</td>
<td></td>
</tr>
<tr>
<td>PF208-PF208-1-2012018-001-2012018-07P</td>
<td>Photographs of George Gale in judicial robes</td>
<td>Item</td>
<td>[197:]</td>
<td></td>
</tr>
<tr>
<td>PF208-PF208-1-2012018-001-2012018-08P</td>
<td>Photograph of George Gale on the bench</td>
<td>Item</td>
<td>22 Oct. 1969</td>
<td></td>
</tr>
<tr>
<td>PF208-PF208-1-2012018-001-2012018-09P</td>
<td>Photograph of George Gale, Queen Elizabeth II and Prince Phillip</td>
<td>Item</td>
<td>26 June 1973</td>
<td></td>
</tr>
</tbody>
</table>
Unfortunately, the Steering Committee that began in 2008 was not sustained, and the project governance model discussed in those early meetings never materialized. Despite this, Artefactual has remained dedicated to maintaining and developing the application. As a private company, we are not eligible for many large grants, and Canada lacks the level of funding initiatives for the cultural heritage sector found in many other jurisdictions, such as the United States. Instead, we have managed to maintain AtoM as a free and open-source project via 2 main approaches – community-based development, and what we like to refer to as the Bounty model of open-source business.

To support the original and ongoing aims of the project, AtoM has always been, and will continue to be, released as open source software - currently, we release it under a strong viral license (AGPLv3) to ensure that the application is not forked or incorporated by someone wishing to charge access to its enhancements. In maintaining our commitment to the original project aims, we also seek in every way we can to lower or remove barriers to the project resources: to this end, Artefactual not only releases the code via our Downloads page and our code repository, we also make our documentation available, our webinar recordings, our wiki resources, our presentation slides, and even as much free support as we can offer via the AtoM user forum, all free of charge. With every major release, we also budget time to review and address many of the bugs reported to us by our user community, with the hope of seeing the project improve progressively in both large and small ways with each public release. To sustain ourselves as a business and be able to continue maintaining and developing AtoM, Artefactual also offer additional paid services - including application hosting, consultation, training, theming, data migrations, and of course, custom development. This business model is sometimes known as “Professional open source” - at Artefactual, we think of it as the Bounty model of open-source development. As a company, we use our resources from these additional services to continue supporting the ongoing maintenance work required to keep the AtoM project sustainable and growing.

Every time we are contracted to develop a custom feature for an institution, we work with the client to ensure the feature respects established national and international standards, and we try to generalize its implementation so it can not only meet the use case of the institution in question, but also be of benefit to the entire AtoM user community. We then include all of these enhancements in the next public release. Whenever possible, we also accept bug fixes and code contributions from our user community, and will handle the review and merging of this code into public releases, as well as its maintenance through subsequent releases, thereby reducing the burden on individual contributors over time. We have a number of development resources on our wiki to help users get started. This is the community-based development heart of the AtoM project. The growth and direction of AtoM is determined by the individuals and institutions who recognize that open-source software requires maintenance to continue to be viable and relevant in the long-term, and who sponsor features, enhancements, and bug fixes that will benefit the project as a whole in addition to meeting their particular institutional or individual needs. This means that AtoM, as an application, is truly what our community makes of it - the current version, like all versions before it, has been made possible thanks to contributions large and small from dozens of institutions and individuals. You can see this on the release announcements we maintain and on the Roadmap part of our wiki for the upcoming releases, where we try to acknowledge all the different institutions and individuals that have helped to make the new features possible. This is one of the joys of community-based development - seeing what we can accomplish as a community when we are all working towards common goals. It also means that institutions with more resources are able to invest in solutions that not only meet their needs, but also benefit the community at large and assist smaller, under-resourced institutions to have access to the same tools and applications. Everyone benefits from any single contribution - whether it is development or contributions to the project in other ways (documentation, user forum participation, papers and presentations, provision of services by other service providers, formation of user groups, and more). Whenever possible, we try to provide further avenues for connection and dissemination of resources via the user forum and places like the Community resources section of the wiki.

### Development Philosophy

**Community-based development**

- Standards-based
- Open source / Creative Commons
- Multilingual support
- Generalize specific use cases
- Include all features in public release
- Iterative development via multiple contributions over subsequent releases

**Bounty model of business**

- Maintain: documentation, software, wiki,
- Produce additional resources (e.g. videos, presentations, webinars)
- Participate in user forum
- Offer additional paid services
- Always include development in public project
So far, this approach has worked, and the AtoM project has a vibrant international community of users. This map shows all the different locales where AtoM has been installed, up to version 2.1—and these are just the places we know of.

1 pin per locale; only up to v2.1
Welcome to the United Nations Archives Search Engine

The archives of the United Nations cover four broad areas: the Secretaries-General, Secretariat Departments, Peacekeeping Missions, and Predecessor Organizations. The archives are arranged into Series which fall under larger archival groups (or "Fonds") that are derived from the particular office or agency that created them. The creating agency can be a United Nations department, mission, panel or body, Secretariat-General, or other United Nations functional unit. You can do a keyword search (above), or click the links below to browse through the Fonds and Series. Some of our records are digitized, and if so, these items can be viewed online and/or downloaded.

Whether you are a writer or graduate student, genealogist or historian, successful use of archives depends on a carefully planned research strategy. The strategy should allow adequate time for background research, establish which collections hold relevant archives, and include a work schedule which takes into account the extent of the material to be consulted. If you would like to make an appointment to conduct on-site research, please visit our Contact page.

**Secretaries-General**
- Ban Ki-Moon (South Korea) Term of Office: 2007-present
- Kofi A. Annan (Ghana) Term of Office: 1997-2006
- Dag Hammarskjöld (Sweden) Term of Office: 1953-1961
- Trygve Lie (Norway) Term of Office: 1946-1952

**Secretariat Departments**
- UN Registry (1946-1983)
- Department of Economic and Social Affairs - DESA
- Executive Office of the Secretary-General - EOSG
- Department of General Assembly and Conference Management - DGACM
- Department of Management - DM
- Office for Special Political Affairs - SPA
- Department of Political Affairs - DPA
- Field Service and Successor Bodies
- Department of Peacekeeping Operations - DPKO
The World Bank Group Archives Reading Room will be closed December 19, 2016 to January 6, 2017 inclusive.

The World Bank is open about its activities and welcomes opportunities to explain its work to the widest audience possible. Openness promotes engagement with stakeholders, which in turn, improves the design and implementation of projects and policies, and strengthens development outcomes. The World Bank seeks to facilitate information sharing, broader understanding of development issues, coordinate its activities with other institutions and agencies, and strengthens public support for efforts to improve the lives of people in developing countries. At the same time, the World Bank recognizes its obligation to protect the confidentiality of certain information.

Access to World Bank records may be provided in cases permissible under the provisions of the World Bank Policy on Access to Information.
Welcome

This is the UNESCO Archives homepage for AtoM, our archival description catalogue.

At present, the holdings of the UNESCO Archives are described on a general level with more detailed information being added continuously. The descriptions give a general overview of the records which are preserved in the UNESCO Archives and how they are organized.

For practical reasons, the archives are organized in 16 Archive Groups. To access the list of Archive Groups and their descriptions, please click here. For the moment, we recommend that you navigate through the catalogue by using this list. Searching by keyword will give results that are not necessarily sorted by pertinence.

Please visit the UNESCO Archives Website to learn more about our institution. If you have some information that you think we should add to our descriptions of the actors, please contact us at archives@unesco.org.

We began as beta users of the ICA-AtoM software. See the About page to learn more about the ICA-AtoM project and UNESCO’s involvement. ICA-AtoM is a fully web-based archival description application that is based on International Council on Archives (ICA) standards. AtoM is an acronym for Access to Memory. See the online documentation to learn more about using ICA-AtoM software.
Additionally, AtoM's multilingual support has allowed our user base to grow around the world, including here in Brazil – here are just 2 examples of themed AtoM sites here in Brazil: The National Archives' Directory of Brazilian Archives.

http://dibrarq.arquivonacional.gov.br
Bem vindo(a)

A base Arch é o repositório de informações sobre o acervo arquivístico permanente da Fundação Oswaldo Cruz, representando a história das ciências biomédicas e da saúde no Brasil. A pesquisa na base apresenta diversos níveis de descrição nos fundos e coleções sob a guarda do Departamento de Arquivo e Documentação da Casa de Oswaldo Cruz. Estão reunidos documentos institucionais e pessoais, dos gêneros textual, iconográfico, cartográfico, sonoro, audiovisual, micrográfico e eletrônico, que abrangem o período de 1756 até os dias atuais. O sistema utilizado e o AtOM, desenvolvido pelo Conselho Internacional de Arquivos, é customizado pela Casa de Oswaldo Cruz de acordo com normas nacionais e internacionais de descrição arquivística.

Informações técnicas

A base Arch é uma versão customizada do sistema AtOM (Versão 2.2) e uma abreviação de Access to Memory. Funcionando em ambiente WEB, é uma aplicação de código aberto destinada à descrição normalizada em arquivos definitivos permitindo um acesso multilíngue numa organização com múltiplos repositórios integrados. Postui alguns recursos adicionais, como geração de inventários a partir da descrição arquivística em qualquer nível de detalhamento, relatórios administrativos, tema específico da base Arch e tradução para o português brasileiro. Para mais informações consulte o Blog.

Informações sobre cooperação institucional

A Casa de Oswaldo Cruz licencia a tecnologia desenvolvida para a implantação da base de dados Arch por meio da celebração de acordos de cooperação. Para mais informações entre em contato com a Assistência Técnica de Cooperação.
You can find many more examples of AtoM sites from around the world on our wiki Users page. If you don't see your institution on this list, please feel free to add a link to your AtoM installation!

AtoM (2.x) sites

- Alberta on Record: Archives Society of Alberta Portal
- Archelon: Ontario's Archival Information Network
- Archives & Research Collections: Carleton University Library
- Archives comunales du canton de Vaud (Swiss)
- Archives of the Anglican Diocese of New Westminster and Provincial Synod of BC and Yukon
- Archives de Montréal
- ARC: the Archival Resource Catalogue of the Association of Newfoundland and Labrador Archives
- Acervos Arquivísticos (Brazillian Portuguese)
- Acervo Arquivístico da Assembleia Legislativa do Estado de Minas Gerais (Portuguese)
- ArchiwestCAN: the Council of Archives New Brunswick's archival database
- Arquivos Históricos que la Universidad Alberto Hurtado (Spanish)
- Arquivo da Social-Democracia (Portuguese)
- Arquivo Digital da Universidade Federal do Rio Grande (Brazilian Portuguese)
- Arquivo Histórico Municipal João Spadari Adami - Caxias do Sul (Brazilian Portuguese)
- Arquivo Municipal Albufeira (Portuguese)
- Arquivo Municipal de Albergaria-a-Velha (Portuguese)
- Arquivo Municipal de Vale do Cambra (Portuguese)
- Arquivo Municipal de Vila do Bispo (Portuguese)
- Arquivos Históricos do Centro de Lógica, Epistemologia e História da Ciência (Brazilian Portuguese)
- Australian National University Archives
- Base Arch - Fundação Oswaldo Cruz (Brazilian Portuguese)
- The Beaton Institute (Cape Breton University)
- Borthwick Institute for Archives - University of York
- British Columbia Institute of Technology Archives & Special Collections
- British Columbia's Digital Strategies
- British Columbia Archives
- British Columbia Digitization Coalition's West Beyond the West Portal
- Bristol Archives
- British Library
- British Library 8x5 (Biblioteca Británica) (Spanish)
- Bibliothèque nationale de France
- Biblioteca de la Universidad de Chile
- Biblioteca de la Universidad de Antioquia (Spanish)
- Biblioteca del Congreso de la República de Chile
- Biblioteca del Congreso Nacional de Chile
- Biblioteca Digital del Estado de México (Spanish)
- Biblioteca Digital del Estado de Jalisco (Spanish)
- Biblioteca Digital del Estado de Queretaro (Spanish)
- Biblioteca Digital del Estado de Veracruz (Spanish)
- Biblioteca Digital del Estado de Zona Norte (Spanish)
- Biblioteca Digital del Instituto Nacional de Antropología e Historia (Spanish)
- Biblioteca Digital del Instituto Nacional de Antropología e Historia (Spanish)
- Biblioteca Digital de la Universidad de Guadalajara (Spanish)
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Now I’d like to move on to discuss the role AtoM might play in the digital chain of custody. I have been asked to speak today about how AtoM can be used to maintain the digital chain of custody from a local records management solution such as an EDRMS, through Archivematica, to an access system such as AtoM.

AtoM and Chain of Custody

When considering digital preservation best practice, one of our primary points of reference, in terms of standards, would be the Open Archival Information System Reference Model, colloquially referred to as OAIS.
The OAIS Reference model was first developed by the Consultative Committee on Space Data Systems, and became an ISO standard in 2002, ISO 14721. Similarly we can look to the Trustworthy Repositories Audit and Certification checklist or TRAC standard, first begun in 2003, then significantly developed by a joint task force of OCLC/RLG and NARA, and finally refined by the CCSDS in 2011 and accepted as ISO 16363 in 2012. This standard aims to provide a list of metrics for digital preservation readiness of an organization that wishes to be OAIS-compliant.
There are other models, such as the InterPARES 2 Chain of Preservation model, which can also be examined for requirements. The International Research on Permanent Authentic Records in Electronic Systems (InterPARES) 2 Project was an international research collaboration that ran from 2002 to 2007 via the University of British Columbia, with a focus on analysing the challenges to preserving "experiential, interactive, and dynamic records."

One of the outputs of the project was a full elaboration of the Chain of Preservation Model, which attempted to use UML Interaction diagrams to model the tasks, workflows, and actions required of an ideal archival system to maintain the chain of custody from the moment of creation, through a record's lifecycle, into preservation and eventually access.
However, if we are using OAIS, TRAC, or the Chain of preservation model to evaluate AtoM, we must remember that AtoM only addresses some components of OAIS when viewed in isolation. As the ISO 14721 is currently structured, it seems to imply or assume a single monolithic theoretical system that manages all steps, from transfer through to consumer access.
AtoM’s primary function is as a description and access system—though we might also argue that some of the functions described in OAIS as relating to management, administration, and data management, can conceivably also be covered by AtoM. Applying standards such as OAIS and TRAC against AtoM in isolation will therefore always only be a partial evaluation.
In the InterPARES model, once again, only a small part – A4.5 and its sub-points on access to record outputs, can be said to apply if we try to evaluate AtoM in isolation from other policies, procedures, and systems that might be used to fully support an OAIS-compliant repository environment.

InterPARES2 Chain of Preservation

**A4.5 – Output Records**

**A4.5.3.4 – Provide Access**
These visions of a single monolithic architecture don't explicitly acknowledge the paradigm shifts in application technology development—we are no longer building giant one-size-fits-all applications. Instead, we have new design patterns for scalability and maintenance, such as distributed application models and service-oriented architectures; we maintain micro-services and focus on inter-application communication via APIs, so each component can be good at one specific task instead of mediocre at many.

This image shows the typical deployment of AtoM at a medium-to-large institution: as you can see, even AtoM itself cannot be thought of as a single, self-contained application. In these kinds of deployments, we usually have at least 4 different servers: the search index and database are installed on their own server for performance, while separate test and internal read/write production servers support data entry on the staff side. This is proxied via the web server through a firewall, to a read-only public web server.

All of this to say: while OAIS, TRAC, the InterPARES Chain of Preservation, and other standards and models are extremely valuable resources for digital preservation preparedness according to international standards and best practices, they do suffer limitations when applied to isolated components of real-world technology environments, and we must remember this when trying to apply them as tools for evaluating one component at a time. That is not to say that they do not have use, however.

The real world is rarely as simple as our models.
So with this caveat in mind, let’s take a look at some of the recommendations for description, access, and authenticity found in ISO16363, and see how they might be applied to AtoM. Before we do so, I’d like to quickly review the current integration between Archivematica and AtoM.
Archivematica allows a DIP's objects and metadata to be uploaded to an existing parent in AtoM by passing a slug – the unique part of a description's URI. You can include Dublin Core metadata with a DIP upload, either by including a CSV with object-level metadata at the time of transfer, or providing aggregate level metadata via Archivematica's DC metadata template during processing. The SIP arrange module in Archivematica also allows an archivist to perform some basic arrangement of the hierarchy prior to upload, by fetching the AtoM levels of description and providing a user interface for simple arrangement prior to upload.
4.5.2 - The repository shall capture or create minimum descriptive information and ensure that it is associated with the AIP.

Discussion: The repository should show that it associates with each AIP, minimum descriptive information that was either received from the producer or created by the repository. Associating the descriptive information with the object is important, although it does not require one-to-one correspondence, and may not necessarily be stored with the AIP. Hierarchical schemes of description can allow some descriptive elements to be associated with many items.
It is also possible to supplement your arrangement and description in AtoM. A user could then export the full hierarchy as EAD XML or as CSV, and create a new AIP in Archivematica to store this information. Archivematica will allow the creation of a pointer to an existing AIP to indicate a relationship between the 2 AIPs.

Mapping ISO 16363 to AtoM

Object level metadata can be added to a transfer via CSV, or aggregate metadata can be added via Archivematica’s web-based DC template. In both cases, data will be copied to AtoM during DIP upload.
4.5.3 The repository shall maintain bi-directional linkage between each AIP and its descriptive information.

Discussion: Repositories must implement procedures to establish and maintain relationships to associate descriptive information for each AIP, and should ensure that every AIP has some descriptive information associated with it and that all descriptive information must point to at least one AIP.
One of the examples the standard offers for how a repository can demonstrate meeting this requirement is including a persistent identifier or locator associated with the AIP.

- In AtoM, every DIP object uploaded to AtoM includes both the Object UUID and the AIP UUID, maintaining a relationship and chain of custody.
- Archivematica will allow a choice between MD5, SHA1, SHA256, or SHA512 checksum algorithms to avoid the risk of collisions.
- Archivematica’s access tab keeps a record of uploads to access systems (AtoM).
4.6.2 The repository shall follow policies and procedures that enable the dissemination of digital objects that are traceable to the originals, with evidence supporting their authenticity.

Discussion: ...A repository should record the processes to construct the DIPs from the relevant AIPs. This is a key part of establishing that DIPs reflect the content of AIPs, and hence of original material, in a trustworthy and consistent fashion. DIPs may simply be a copy of AIPs, or may result from a simple format transformation of an AIP. ...This requirement is concerned only with the relation between DIPs and the AIPs from which they are derived; elsewhere the link between the originals SIPs and the AIPs is considered.
The Archivematica METS.xml captures PREMIS-based technical and preservation metadata about all processes that are run on the original objects, providing a great deal of granularity, and allowing future users to understand exactly what was done, and by whom, to create the preservation and access objects.

In this excerpt, we can see a normalization command for an image that was converted by the tool ImageMagick, captured in the METS file as a PREMIS event.
and here we can see an example of extracting the OCR text layer from a preserved PDF, using a tool called Tesseract. The tool version, and even the command used, are all included.
The discussion notes on 4.6.2 also mention the relationship between the DIP objects and the originals – "This requirement is concerned only with the relation between DIPs and the AIPs from which they are derived; elsewhere the link between the originals SIPs and the AIPs is considered."

To reiterate, this is maintained via the File and AIP UUIDs which are passed to AtoM during DIP upload. The upload action itself is also captured in Archivematica’s access tab.
4.6.1 The repository shall comply with Access Policies.

Discussion: Depending on the nature of the repository, the Access Policies may cover:

- statements of what is accessible to which community, and on what conditions;
- requirements for authentication and authorization of accessors;
- enforcement of agreements applicable to access conditions;
- recording of access actions.

Access may be managed partly by computers and partly by humans; checking passports, for instance, before issuing a user ID and password may be an appropriate part of access management for some institutions.
This is where AtoM has the most options for compliance. First, AtoM's basic functionality can be used to meet some of the requirements. For example, the ISAD(G) template, along with many of the other standards-based templates available in AtoM, include a field where archivists can capture conditions governing access. AtoM's publication status module allows users to mark some descriptions as draft, thereby hiding them from public view. Additionally, AtoM's permissions module allows an administrator to configure access to different entities – including the digital object master, the reference image derivative, and the thumbnail.

The features alone, used in conjunction with internal policies and procedures, might be enough to meet the requirements outlined in 4.6.1. But there are also even more advanced ways to manage access to DIP objects in AtoM.
AtoM includes a robust PREMIS rights module that allows an administrator to make the PREMIS rights statements attached to archival descriptions actionable on digital objects. You can configure the PREMIS act, and then select how access is granted to the master digital object (as in the original upload), the reference display image shown on the archival description view page, and on the thumbnails used in search and browse pages. These settings can be configured differently for each PREMIS rights basis (e.g. Copyright, License, Statute, Policy, and Donor are the defaults). Since PREMIS rights bases are included in a user-editable taxonomy, then if a new basis is added, it will automatically show up in the settings page so it can be configured.

Mapping ISO 16363 to AtoM

Permissions

PREMIS access permissions

<table>
<thead>
<tr>
<th>PREMIS act</th>
<th>Allow</th>
<th>Conditional</th>
<th>Disallow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master</td>
<td>Reference</td>
<td>Thumb</td>
<td>Master</td>
</tr>
<tr>
<td>Copyright</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>License</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Statute</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Policy</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Donor</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Each basis can also include a separate, customizable access statement for both disallow and conditional access rules, which will be shown to the user in place of the restricted digital object.

**Mapping ISO 16363 to AtoM**

**PREMIS access statements**

<table>
<thead>
<tr>
<th>Copyright</th>
<th>Disallow statement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Access to this record is limited due to copyright restrictions. Please contact the Reference Archivist for more information on accessing this record.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>License</th>
<th>Conditional statement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Access to the original record is limited to those visiting the Reading Room, who sign a statement attesting to non-commercial usage. Please contact the Reference Archivist for more information on accessing this record.</td>
</tr>
</tbody>
</table>
These shots show the module in action. On the top left, we see the Edit form for a PREMIS rights statement, drawn from PREMIS 2.2. Below that we can see a rights statement as shown on the view page of an archival description – at this time, these rights statements are only visible to authenticated users – public users will see the access statements customized in the settings, and shown here in the bottom right corner image. Additionally, users can apply a PREMIS rights statement to a parent description such as a fonds or collection, and have it be inherited to lower levels: either all lower levels, or just those with digital objects attached. This saves users from having to enter the same Rights statement many times.

Mapping ISO 16363 to AtoM

Edit PREMIS Rights

Manage Rights inheritance

View Rights

Rights access statement
In this image we can see how, when access to the thumbnail is restricted via a PREMIS actionable rights statement, AtoM will show a default icon based on the digital object type (audio, image, sound, text, or other). This way, users still get an indication that there is a digital object available – clicking on the description itself will reveal the customized access statement, which can be tailored to provide further information on how to access, if needed.

### St. Catharines Local Council of Women fonds
CA ON00028 RG 76 · Fonds · 1918-2001
The first series, Administrative Records, includes annual reports, constitution and by-laws, correspondence, minutes and resolutions. The second series, Non-administrative Records, includes the activities of the Council including membership lists, ...
St. Catharines Local Council of Women

### Waterloo Lutheran Seminary collection
CA ON00362 U151 · Collection · 1910 -
The collection consists of various textual records including correspondence, reports, notes, promotional material, constitution and by-laws, newspaper clippings, material for publication, award applications, special event programs, church service ...
Waterloo Lutheran Seminary
AtoM also includes a simple module to manage Rights holders – so you can track who holds the rights applied, and how to contact them.

Mapping ISO 16363 to AtoM
Finally, AtoM 2.3 also includes a module for configuring a copyright pop-up statement, for cases where access will be granted, but the archivists wants to provide an access message that must be reviewed and acknowledged before access is granted. This can be useful for copyright statements that restrict use for commercial purposes, for example. AtoM users can use in-line HTML and CSS to customize the pop-up however they wish. There is a built-in preview option in the settings page. Here is the edit form, with some example code added:

```
<div class="alert-danger"><h1>Notice</h1></div>
<p>This work is copyright-protected and copyright may not belong to SFU. SFU makes a copy available for download under the fair dealing provisions of Canada’s Copyright Act.</p>
<p><strong>By clicking “Agree” you agree that you will use the copy only for your own personal study, research or other use permitted under fair dealing. </strong>Any other use may require permission of the copyright owner. It is your responsibility to negotiate permissions directly with the copyright owner.</p>
<p>Details relating to copyright may be given in the Terms governing use, reproduction, and publication note in the description record or its parent fonds, series or file. Consult the Reference Archivist for any additional information relating to copyright ownership and duration of protection. For more information on your rights and responsibilities under fair dealing, please consult SFU’s Copyright Office.</p>
```


And here is an example of the preview.

Mapping ISO 16363 to AtoM
AtoM, Archivematica, and Chain of Custody

- Ability to include and upload DC metadata
- Archivematica’s Access tab
- File and AIP UUID stored in AtoM
- Original objects always kept in AIP
- METS file captures all transformations
- AtoM PREMIS actionable rights settings
- ISAD(g) access statement fields
- AtoM Rights holder module
- Publication status and User/Group permissions

Of course, there is always room for improvement! As a community-funded project that develops iteratively over each version, we depend on community submitted development and feature sponsorship to be able to improve AtoM and Archivematica. Here are a couple ideas of ways that AtoM and Archivematica might further be improved to support ISO 16363 requirements:

**Future development possibilities**

- Shared Format Policy Registry between AtoM and Archivematica
- Ability to start transfers from AtoM uploaded masters
- Better 2-way communication and updates between systems
- Ability to send metadata (EAD XML or CSV) to Archivematica as a separate AIP that can be related via pointers to an existing AIP containing digital objects
QUESTIONS?

info@artefactual.com

Thanks!
RESOURCES

AtoM homepage: https://www.accesstomemory.org

AtoM demo: http://demo.accesstomemory.org

Roadmap: https://wiki.accesstomemory.org/Releases/Roadmap

Documentation: https://www.accesstomemory.org/docs/latest/

User forum: https://groups.google.com/forum/#!forum/ica-atom-users