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# SFU ARCHIVES

## DIGITAL REPOSITORY MANUAL



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### TABLE OF CONTENTS

*Chapters marked with an asterisk (\*) = not yet prepared*

Introduction .....	4
<b>1. ADMINISTRATION</b>	<b>6</b>
1. Administration .....	7
1.1 Policy .....	8
1.2 Strategic Planning .....	10
1.3 Business Planning .....	13
1.4 Contracts and Liabilities .....	16
1.5 Audit.....	17
1.6 Staff and professional development .....	19
1.7 Communications.....	21
<b>2. COMMON SERVICES</b>	<b>23</b>
2. Common Services .....	24
2.1 System Architecture .....	25
2.2 Hardware .....	28
2.3 Software.....	32
2.4 Security .....	38
<b>3. INGEST</b>	<b>40</b>
3. Ingest .....	41
3.1 Acquisition .....	42
3.2 Digital Readiness .....	45
3.3 Transfer Procedures and Tools .....	47
3.4 Digitization .....	50
3.5 AIP and DIP Creation.....	52
3.6 Removals.....	55

<b>4. ARCHIVAL STORAGE</b>	<b>56</b>
4. Archival Storage .....	57
4.1 Fixity.....	58
4.2 Storage Media * .....	59
4.3 Backup and Recovery * .....	60
4.4 Retrieval * .....	61
<b>5. PRESERVATION PLANNING</b>	<b>62</b>
5. Preservation Planning .....	63
5.1 Format Action Plans * .....	64
5.2 Technology Watch * .....	65
5.3 Migration * .....	66
<b>6. ACCESS</b>	<b>67</b>
6. Access .....	68
6.1 Archival Description * .....	69
6.2 Restrictions * .....	70
6.3 DIP Delivery * .....	71
6.4 Backlog Access * .....	72
<b>7. DATA MANAGEMENT</b>	<b>73</b>
7. Data Management.....	74
7.1 Metadata * .....	75
7.2 Search * .....	76
7.3 Reporting * .....	77
<b>DOCUMENT CONTROL</b>	<b>78</b>
MNL-11, Digital repository Manual.....	79

# INTRODUCTION

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SFU Archives launched its digital repository for archival materials in 2016. The purpose of this Manual is to:

- Document technical and policy infrastructure built to date.
- Provide instructions for various tasks, processes, and tools associated with the digital repository.
- Flag gaps in existing documentation and practice.

The Manual is essentially a compilation of links to existing resources with commentary. It does not physically aggregate the documents themselves; it rather points to where they are located in the Archives' filing and information management systems.

The Manual is organized into sections following the main functions set out in the *Open Archival Information System* (OAIS) reference model. These are:

- [1. Administration](#)
- [2. Common Services](#)
- [3. Ingest](#)
- [4. Archival Storage](#)
- [5. Preservation Planning](#)
- [6. Access](#)
- [7. Data Management](#)

Each section of the Manual is divided into chapters treating specific topics. Each chapter has a similar structure:

## Overview

- Gives a brief description of the topic and the current state of the Archives' practices and resources relating to it.

## Resources

- Lists supporting documents and tools and gives their location in the department's information management systems (file classification plan, database, website, wiki).
- Indicates whether a resource can be publicly shared with external institutions or individuals.
  - *Public? Yes* = Resource can be publicly disseminated online or provided on request.
  - *Public? No* = Resource contains personal or confidential information and cannot be publicly shared.
  - *Public? TBD* = Status to be determined.

## Gaps / outstanding TRAC actions

- Flags areas that need to be addressed by further work.
- TRAC = *Trustworthy Repositories Audit and Certification: Criteria and Checklist* (see below, [section 1.5 Audit](#)).
- SFU Archives did TRAC self-audits in 2014 and 2016. These identified a number of required actions. The TRAC numbers are used to cross-reference those TRAC actions against the gaps identified in the Manual.
- If a TRAC number is given, it means that a similar action was previously identified in the TRAC self-audits; consult the TRAC audit documentation for details.

The Manual will be maintained as a single Microsoft Word document, with PDF snapshots released periodically as separate versions. The Word master copy and the PDF versions are maintained in the Archives' file system at ADM006-35 > MNL011\_DRManual.

The Manual is a work in progress. The first release (v1.0, Dec 2017) includes sections that have been identified but not yet completed; these are marked with an asterisk (\*) in the title and in the table of contents.

# **1. ADMINISTRATION**

# 1. ADMINISTRATION

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*Administration* comprises "services and functions for the overall operation of the Archive system" (OAIS 4.1).

Sections:

- [1.1 Policy](#)
- [1.2 Strategic Planning](#)
- [1.3 Business Planning](#)
- [1.4 Contracts and Liabilities](#)
- [1.5 Audit](#)
- [1.6 Staffing and Professional Development](#)
- [1.7 Communications](#)

# 1.1 POLICY

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## OVERVIEW

*Policy* is the body of written documentation that sets out the governance of the digital repository, its general commitments, and the place of digital preservation within the Archives' mandate and within the university as a whole.

- For policy documents relating to specific functions of the digital repository, see the other sections of this Manual.

SFU Archives' mandate derives from university policy *I10.01, Archives, Records Information Management, and Freedom of Information and Protection of Privacy*. I10.01 was last revised in 1997. It is generally focused on paper and analog records and workflows; it needs updating to incorporate digital preservation as a key component of the Archives' mandate.

The department undertook a planning exercise in 2015-16 to develop a mission statement (POL-6). The resulting documents were reviewed and revised in a staff planning retreat in September 2016, and they were finalized in May 2017.

In 2016, the Archives drafted a *Digital Preservation Management Policy* (POL-3) to provide a high-level statement of the Archives' commitments on digital preservation. The policy was finalized in May 2017.

Within the university as a whole, there is a need to identify, locate and coordinate responsibilities for digital records management, preservation and access across campus through the Archives and various stakeholder departments. The revision of policy I10.01 provides an opportunity to begin articulating this vision.

## RESOURCES

### **110.01, Archives, Records Information Management, and Protection of Privacy (Mar 1997)**

- SFU Archives' governing policy, approved by the Board of Governors.
- Public? Yes
- [Link: SFU Policy Gazette I series](#)

### **POL-6, Mission, Vision, and Values (May 2017)**

- High-level departmental mission statement, covering all of the department's program areas.
- Public? Yes
- Link: ADM006-40 > POL006

### **POL-3, Digital Preservation Management (May 2017)**

- High-level statement of the Archives' commitments with respect to digital preservation; latest feedback from SFU Library (May 2017) not yet incorporated.
- Public? Yes



- [Link: ADM006-40 > POL003](#)

## **GAPS / OUTSTANDING TRAC ACTIONS**

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Incorporate Library's feedback into minor revision of POL-3		Low
Review and update I10.01 to reflect changes in the department's mission and growth	3.1.1	High
Identify departmental policies likely to become outmoded due to technology changes and ensure they are regularly reviewed	3.3.2 4.1.1.1 4.1.1.2	High

# 1.2 STRATEGIC PLANNING

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## OVERVIEW

*Strategic planning* sets out the direction, goals and priorities SFU Archives will take to support long-term digital records preservation, management and access at the university.

The Archives does not currently have a formal *Preservation Strategic Plan* as per TRAC requirement 3.1.2. Developing such a plan, with a regular review cycle, should be a priority. Elements for it can be drawn from a number of existing documents, including past project documentation and workplans.

## INITIATIVES TO DATE

### Access-to-Memory (AtoM) testing (2009-2011)

In January 2009, SFU Library installed an instance of Access-to-Memory (AtoM), an open-source application for archival description. The purpose was to allow SFU Archives to test the software, then in its beta release. The Archives' plan was to use AtoM for its public-facing online finding aids and its own internal FileMaker databases for production purposes, using EAD as the means of syncing the two systems. In the end, this did not prove feasible, but through the project the Archives became a participant in the wider AtoM user community and began articulating functional requirements for the access component of a digital repository.

### Proof-of-concept project (2011-12)

In 2011-12, SFU Archives received one-time funding of \$50,000 from SFU's Vice-President, Legal Affairs to undertake a proof-of-concept project for developing a digital repository for archival materials. The project involved installing and testing Archivematica, an open-source software application for digital preservation that was then in its beta release (v0.8). The goals of the project were to gain experience, determine requirements for a digital archival repository, and assess the feasibility of using Archivematica as the platform for it.

As an outcome of the project, both SFU Archives and the consultant (Artefactual, the developers of Archivematica) prepared final reports. Additionally the Archives prepared a memorandum to SFU senior administrators outlining next steps in developing the repository.

### University Priority Fund (UPF) pilot project (2013-16)

In the summer / fall of 2012 the Archives applied for and received funding under SFU's University Priority Fund (UPF) for a three-year pilot project to build on the proof-of-concept project and begin developing the technical and policy infrastructure for a digital repository. Funding was ca \$300,000 per year. The project began in April 2013 and concluded in June 2016. The initial UPF application and project workplans and workplan reviews contain information relevant to strategic planning.

### Post-UPF work (2016–present)

Beginning in 2016-17 the Archives received an increase to its base budget to enable it to sustain its existing infrastructure for digital preservation following the conclusion of the UPF project and funding. Staff resources however were cut, and plans to roll out and implement a university-wide digital records management, preservation and access program were scaled back. The Archives is able to ingest transfers of

digital materials received on an ad hoc basis, and post-UPF it has continued to fund software development projects relating to the open-source platforms on which the repository runs (Archivematica and AtoM).

## RESOURCES

### **SFU Archives Archivematica Pilot Project: Findings and Recommendations (Mar 2012)**

- Report by Archives' staff on 2011-12 proof-of-concept project.
- Public? Yes
- Link: ITM002-03 > DigitalRepository
- [Link: Online copy available from the Archives' website](#)

### **SFU Archives Digital Preservation Strategy: Project Report (Apr 2012)**

- Report by consultants (Artefactual Systems Inc.) for the 2011-12 proof-of-concept project.
- Public? Yes
- Link: ITM002-03 > DigitalRepository

### **Towards an SFU Trusted Digital Repository: Pilot Project UPF Application (Aug 2012)**

- SFU Archives' 2013-14 University Priority Fund (UPF) application for a three-year pilot project to develop a full digital repository for archival materials.
- Public? TBD
- Link: ITM002-03 > DigitalRepository

### **Digital Preservation Strategy – Next Steps (Feb 2013)**

- Memorandum prepared by Archives for senior SFU administrators; summarizes the results of the proof-of-concept project and outlines a multi-stage approach to develop the digital repository.
- Public? TBD
- Link: ITM002-03 > DigitalRepository

### **Pilot Project Workplans and Workplan Reviews (2013-16)**

- The Archives prepared detailed annual Workplans and Workplan Reviews for each of the three years of the UPF-funded pilot (2013/14 – 2015/16).
- Public? No
- Link: ITM002-04 > 2016\_DRProject > ProjectAdmin > Workplans

## GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Research preservation strategic plans at other institutions	3.1.2	Medium
Develop a <i>Preservation Strategic Plan</i>	3.1.2	High

# 1.3 BUSINESS PLANNING

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## OVERVIEW

*Business planning* identifies and seeks to secure the financial, human and infrastructure resources needed to sustain the digital preservation program over time.

As part of its University Priority Fund (UPF) pilot project (2013-16), SFU Archives undertook research into cost models and developed a cost projection for converting the project into ongoing program of the Archives. The cost projection was incorporated into a business case that the Archives prepared and submitted to the university in November 2015 as a request for new, permanent funding for digital preservation. Other business planning documents have been prepared in response to particular issues or concerns as they have arisen.

During the external review in 2016-17, the Archives reviewed job descriptions of professional staff and identified competencies expected and required in each of the program areas. These documents remain in draft form. It may be useful to pull out the competencies needed to operate and maintain the digital repository (taking elements from the Archivist and Records Management Archivist descriptions).

As the Archives' digital holdings expand, the Archives should plan for monetary appraisal and insurance.

The Archives has not yet developed succession or contingency plans to ensure the digital objects entrusted to its repository will continue to be preserved in the event that the Archives ceases to operate or has its funding significantly reduced.

## RESOURCES

### **EduCloud Cost Model for Technical Components (Apr 2014)**

- Calculation of SFU Archives' computing infrastructure costs modelled on UBC EduCloud rates as of April 2014; prepared as basis for establishing an annual infrastructure cost with SFU IT Services.
- Public? TBD
- Link: ITM002-03 > DigitalRepository

### **Digital Repository Cost Projection (Sep 2014)**

- Budget projection prepared in 2014 (corrected Aug 2016) estimating salary and operating budget costs for an on-going digital records management, preservation and access program; used as basis of budget request.
- Public? TBD
- Link: ITM002-03 > DigitalRepository

### **Resources for Digital Preservation: SFU Archives / SFU Library (Jun 2015)**

- Identifies overlaps and divergences between the Archives' and Library's respective digital repository projects in terms of shared, common and unique resources.

- Public? TBD
- Link: ITM002-03 > DigitalRepository

### **Budget Request 2016–17: Digital Records Management, Preservation and Access Program (Oct 2015)**

- Formal submission to the university identifying resources required to convert UPF-funded pilot project into a permanent, ongoing program effective 2016-17.
- Public? TBD
- Link: ITM002-03 > DigitalRepository

### **Digital Records Management, Preservation and Access Program (Oct 2015)**

- Single page visual summary of the Archives' 2016-17 budget request.
- Public? TBD
- Link: ITM002-03 > DigitalRepository

### **Enterprise Content Management System (ECM) compared to Digital Archival Preservation and Access Repository (May 2016)**

- Diagram identifying overlaps and divergences between an ECM document repository and the Archives' digital repository.
- Public? TBD
- Link: ITM002-03 > DigitalRepository

### **Professional Job Descriptions / Competencies (Aug 2017)**

- Draft job descriptions with detailed lists of competencies.
- Public? TBD
- Link: HRS001-10

## **GAPS / OUTSTANDING TRAC ACTIONS**

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Update business case for permanent funding of an ongoing digital records management, preservation, and access program	3.2.1, 3.2.1.2 3.4.1, 4.1.2 4.2.7	Medium
Plan / implement monetary appraisal and insurance of digital holdings	3.4.1	High
Develop succession or contingency plan in the event that SFU Archives ceases to operate or has its funding significantly reduced; include criteria for triggering execution of plans	3.1.2.1, 3.1.1.3	High

Review / revise Archives' risk register	3.4.3	Medium
Consult with the University's Internal Auditor on risk management planning for the Archives	3.4.3	Medium

# 1.4 CONTRACTS AND LIABILITIES

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## OVERVIEW

*Contracts and liabilities* represent ongoing commitments of SFU Archives relating to the digital repository that have implications for resource allocation.

The key agreements for the Archives' digital repository are:

- Agreements with SFU IT Services to provision repository infrastructure and host departmental databases.
- Annual Software Maintenance Agreement with Artefactual Systems Inc. to support Archivemata and AtoM software.
- Periodic contracts with Artefactual to development specific software features in Archivemata and AtoM.

The Archives created a *Contracts and Agreements Register* during the course of the UPF project to document all contracts as well as informal agreements relating to the digital repository. The register (an Excel spreadsheet) continues to be maintained, filed at PRS004-01. Not all data is complete, however; dollar amounts for individual contract should be updated.

In the Archives' file classification plan, the actual contracts and agreements are filed at FIN002 under the budget code against which the funds are charged. Project files may include copies. It is not always easy to retrieve non-current contracts, and they are scheduled for destruction after current fiscal year + 6 years. It may be useful to generalize the existing contract register to incorporate all departmental contracts and agreements (not just those relating to digital preservation). If the Archives pursues this option, it should investigate and determine the best format for the register (e.g. continue with the spreadsheet or create a database).

## RESOURCES

### FIN002 Financial Transaction Case Files (ongoing)

- Financial files containing contracts and associated documentation.
- Public? No
- Link: FIN002-10

## GAPS / OUTSTANDING TRAC ACTIONS

<b>Action</b>	<b>TRAC #</b>	<b>Difficulty</b>
Update data (dollar amounts) in the <i>Contracts and Agreements Register</i>		Low
Review and generalize the current <i>Contracts and Agreements Register</i>		Medium



# 1.5 AUDIT

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## OVERVIEW

*Audit* is a process of regular assessment of the digital preservation program against a set of criteria designed to measure its progress. It takes in both assessment of the Archives and its programs, as well as assessments of partner organizations that have responsibilities under the program, e.g. as records producers or service providers.

## ASSESSMENT OF SFU ARCHIVES

The Archives has undertaken a number of self-assessments using the *Trustworthy Repositories Audit and Certification: Criteria and Checklist (TRAC)*. The TRAC Checklist was created in 2003 by a joint task force of the Research Libraries Group (RLG) and the US National Archives and Records Administration (NARA). The Consultative Committee for Space Data Systems (CCSDS) adapted the checklist as a companion piece to its *Open Archival Information System (OAIS)* reference model, and in this form it became an ISO standard (ISO 163563) in 2012.

In December 2013, SFU Archives began using a Drupal database for TRAC compliance assessment. The Drupal tool was designed by Nancy McGovern and her team at the Massachusetts Institute of Technology (MIT), and is distributed by Artefactual Systems Inc. SFU Library installed and hosted the Drupal site between December 2013 and September 2016. Using the Drupal tool, SFU Archives completed its own self-assessments against the TRAC criteria in February 2014 and February 2016.

In September 2016 SFU Archives and Library agreed to decommission the Drupal TRAC site. The tool was not being actively updated, and the Library encountered some difficulties when migrating it through an update to Drupal. Against the backdrop of SFU IT Services' security concerns about retaining online databases that are not being actively updated, Archives decided to export the data and take down the site. The Archives will explore other options for maintaining this data in the future (e.g. Word document, FileMaker database). The Archives should also establish a procedure for regularly self-assessing against the TRAC criteria and explore collaborations with other institutions to engage in informal external audits.

## ASSESSMENT OF PARTNER ORGANIZATIONS

The Archives has not yet developed any procedures for audit of partner organizations in terms of their responsibilities for digital preservation. Preliminary work was undertaken by Joy Rowe, Records Management Archivists, in 2014-16 to develop tools and resources under the umbrella of "digital readiness" to assist university departments in transitioning from paper to digital recordkeeping environments.

## RESOURCES

### TRAC Checklist Database and Action List (Feb 2014)

- Memorandum provides context for 2014 self-assessment against the TRAC criteria.
- Public? TBD
- Link: PRS004-10 > Audit

**TRAC Actions (Feb 2014)**

- Report setting out list of actions arising from 2014 TRAC self-assessment; identifies 121 actions.
- Public? TBD
- Link: PRS004-10 > Audit

**TRAC Review (Feb 2016)**

- PDF print-out of data output from decommissioned TRAC requirements Drupal database.
- Public? TBD
- Link: PRS004-10 > Audit

**TRAC Compliance Drupal Database (Jan 2017)**

- Note to file summarizing reasons for decommissioning the TRAC requirements Drupal site.
- Public: TBD
- Link: PRS004-10 > Audit

**GAPS / OUTSTANDING TRAC ACTIONS**

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Determine best format for maintaining TRAC assessment data		High
Migrate Drupal TRAC assessment data to new format		High
Establish procedures for regular TRAC self-assessment		Medium
Secure funding for regular program audit	3.3.6	High
Explore options for collaborative external TRAC audits		High
Apply for formal TDR certification	3.3.6	High
Establish audit procedures for external organizations (SFU departments, donor organizations) as part of the digital readiness suite of tools		High

# 1.6 STAFF AND PROFESSIONAL DEVELOPMENT

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## OVERVIEW

*Staff* consists of the personnel who operate the digital repository. *Professional development* is a process to expand staff knowledge, skills and experience to support to the ongoing work of digital preservation.

The Archives' three-year University Priority Fund (UPF) project (2013-16) to develop the digital repository initially envisioned 1.0 dedicated FTE staffing, with additional support from other staff as required. The need for more staffing resources, however, soon became apparent. By the end of the project, the Archives was dedicating 2.25 FTE full-time to the projects, with another 4 FTEs in other positions making significant contributions.

In 2015, the Archives submitted a request for funding to convert the UPF project into a permanently funded, ongoing program at the university. The business case sketched out several options with different staffing compliments. The request was only partially successful: the Archives received an increased to its permanent operating base budget, no new staff positions. Staff resourcing for digital preservation was accordingly scaled back starting in fiscal year 2016-17. 1 FTE (Staff Archivist) dedicates part of their time and 0.25 FTE dedicates all of their time to activities relating to the digital repository.

The UPF project included a strong professional development component, recognizing that staff faced an initial steep learning curve, with an ongoing need to keep current with developments in the fast-moving and multi-disciplinary field of digital preservation. Professional development activities have included attendance at conferences and workshops; and dedicated time to read professional literature.

During the course of the project, the Archives maintained a register of upcoming professional development opportunities (Word document). This has been useful both for documenting events actually attended by staff as well as for flagging recurring events that could be attended in the future. In 2017, the Archives used data from this document to create a more compact register (Excel document) to log events attended; this is filed at PRS004-01. The Archives should review these registers, generalizing them for all departmental programs and functions (e.g. incorporate it into the AIS database system).

## RESOURCES

### **Budget Request 2016–17: Digital Records Management, Preservation and Access Program (Oct 2015)**

- Formal submission to the university identifying resources (including staff) required to convert UPF-funded pilot project into a permanent, ongoing program effective 2015-16.
- Public? TBD
- Link: ITM002-03 > DigitalRepository

### **REF002-45, Preservation Management reference files (ongoing)**

- Files containing conference / workshops materials relating to PD events attended, e.g. iPRES conferences, SAA workshops.

- Public? TBD
- Link: REF002-45

#### SFU Archives Zotero Site (ongoing)

- The Archives has an account with Zotero, an online bibliographic management service. The site support departmental sharing of digital resources (e.g. articles, reports), with standardized citation information and indexing.
- Public? No
- Link: [Zotero website](#)

#### Digital Repository Professional Development Opportunities Register (Feb 2016)

- Register (Word document) maintained during the UPF pilot project (2013-16), recording relevant upcoming events and documenting staff attendance at particular events.
- Public? No
- Link: ITM002-04 > 2016\_DRProject

#### Digital Repository Professional Development Events (Oct 2017)

- Register (Excel document) recording professional development events attended by staff relating to digital preservaton.
- Public? No
- Link: PRS004-01 > General

## GAPS / OUTSTANDING TRAC ACTIONS

<b>Action</b>	<b>TRAC #</b>	<b>Difficulty</b>
Convert former professional development registers into a database format for general departmental use		High
Compare Archives' staffing levels to industry benchmarks and standards in other Canadian universities	3.2.1.2	Medium
Identify core competencies required to operate and maintain the digital repository and assign responsibilities to staff positions	3.2.1, 3.2.1.1, 5.2.3	Medium

# 1.7 COMMUNICATIONS

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## OVERVIEW

*Communications* is the public dissemination of results of the digital repository and the activities of SFU Archives relating to digital preservation.

Activities have included presentations to a variety of audiences (professional, SFU, students, general public); interviews and publicity materials; content on the SFU Archives' website; and dissemination of project reports and documentation.

Activities undertaken are documented across a number of files, above all on the UPF project workplan and individual workplans. Ideally these should be consolidated in a single, more publicly accessible, register.

The Archives from time-to-time receives requests for copies of its system and program documentation. Some resources include personal or confidential information and cannot be shared publicly. For many, however, the access status is currently listed in this Manual as "TBD" (to be determined). To facilitate sharing as widely as possible, the Archives should review all resources currently all TBD resources and make an access determination.

## RESOURCES

### EDU003-10, Presentations Case Files (ongoing)

- Files containing slides and / or speaking notes from various public presentations relating to digital preservation at SFU Archives
- Public? Yes
- Link: EDU003-10 > DigitalRepository

### Digital Preservation Section of the Archives' Website (ongoing)

- Website section added in June 2015; includes overview of the digital repository, procedures and links for transferring digital materials. Last major revision in May 2017 to reflect new webform for transfer requests.
- Public? Yes
- [Link: Archives website](#)

### UPF Progress Reports (2014-2015)

- Reports submitted in fulfilment of University Priority Fund (UPF) requirements; two reports were filed (Sep 2014 and Jun 2015).
- Public? Yes
- Link: ITM002-03 > ProgressReports

**UPF Key Performance Indicators (KPIs) (Oct 2015)**

- Metrics created to support UPF reporting; latest version was prepared in Oct 2015. Should be reviewed to determine whether or not to continue and annually update.
- Public? Yes
- Link: ITM002-03 > KPIs

**SFU Blog: This Day in SFU History (Feb 2016)**

- Blog created as part of Archives' contributions to SFU's 50th anniversary; still online but not (as of May 2017) actively maintained. Includes stories and links relating to material digitized and made available through SFU AtoM.
- Public? Yes
- [Link: Archives website](#)

**GAPS / OUTSTANDING TRAC ACTIONS**

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Develop a <i>Communications Plan</i> for promoting digital preservation at SFU	3.3.4	Medium
Revive annual <i>Preservation Week</i> activities		Medium
Update <i>Key Performance Indicators</i> document and revise annually		Medium
Create and maintain a <i>Communications Register</i> to document activities undertaken		Medium
Review all documents in this Manual listed as <i>Public? TBD</i> to determine access status		Medium

## **2. COMMON SERVICES**

## 2. COMMON SERVICES

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*Common services* are services that all functional components of the digital preservation system draw upon. For purposes of this manual, these are taken in the broad sense of technical infrastructure.

Sections:

- [2.1 System architecture](#)
- [2.2 Hardware](#)
- [2.3 Software](#)
- [2.4 Security](#)



# 2.1 SYSTEM ARCHITECTURE

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## OVERVIEW

*System architecture* assembles and organizes the key technical components of the digital repository into structured relationships.

For SFU Archives' digital repository the key components comprise hardware, software, virtual machines (VMs) and disk space connected over the SFU network.

The Archives' proof-of-concept project (2011-12) had used a single desktop computer to run system software and provide a testing environment for processing and storage.

In 2013-14 the Archives began designing its system architecture in collaboration with SFU Library, SFU IT Services, and a vendor, Artefactual Systems. A system architecture diagram was developed and revised through several iterations as discussions proceeded. Version 6 (Mar 2014) represents the first stable version corresponding to what was subsequently provisioned by SFU IT Services. The diagram was last updated in June 2017 (version 11). All previous versions have been retained in the Archives' file classification plan at ITM007-30 > ArchitectureDiagram.

In May 2017, the Archives created an Excel spreadsheet to document technical specifications for each VM and track changes and SFU branches of AtoM and Archivemata software (customizations and divergences from the standard release).

The TRAC self-audits (2014, 2016) turned up the need to monitor / analyze system performance bottlenecks and implement technology watch on the various components that make up the system. The Archives has not yet developed procedures in these areas.

## SYSTEM DESCRIPTION

### Transfer

To begin ingest, digital materials must be transferred / uploaded to one of three locations accessed by Archivemata pipelines as "transfer source locations":

- VM1: mainly used for digitized output of photographs or textual records.
- AV Digitization Workstation: mainly used for digitized output of audio-video material.
- SFU Vault: mainly used for transfers from producers (SFU departments or private donors).

### Pipelines

The Archives has three Archivemata pipelines for ingest of materials into the system.

- VM2: production site configured for processing larger files (audio, video, or uncompressed photographic files).
- VM3: production site configured for smaller files (textual documents or smaller photographic files).
- VM4: test site used for QA / review of sponsored development features.

## AIP Store

Archival Information Packages (AIPs) are output by Archivematica pipelines to two locations:

- VM5: production site for AIP storage.
- VM4: test site for transitory storage of AIPs output by test pipeline; on the test system, pipeline, AIP Store, and Storage Service all run on the same VM.

## Access

The Archives has three AtoM (Access-to-Memory) sites to provide access to Dissemination Information Packages (DIPs) output by the Archivematica pipelines. Each AtoM instance runs on 2 VMs (one for the backend database and another for the frontend webserver).

- VM6/7: internal production site; use for DIPs output by Archivematica production pipelines, staff data entry, and other descriptive data imports.
- VM8/9: public read-only site, synced with the internal production site on a weekly basis (automatic), with more frequent sync when required (manual).
- VM10/11: test site used for QA / review of sponsored development features.

## Storage Service

Storage Service is an Archivematica application that manages pipeline input and output locations and configuration, and it provides the interface for processing AIP and backlog delete requests.

- VM12: Storage Service for production sites.
- VM4: Storage Service for test site; on the test system, pipeline, AIP Store, and Storage Service all run on the same VM.

## Backup and Recovery

Production AIP Store (VM5) is backed up by SFU ITS.

- Work in progress (scheduled for completion by end of October 2017) will implement AIP encryption, allowing geo-remote backup of AIPs containing personal or confidential information by third-party service providers.
- Pending completion of AIP encryption, records containing personal or confidential information are not ingested into the system.

# RESOURCES

## VM Specifications (Jun 2017)

- Specs for each VM; includes change tracking and documentation of SFU branches of AtoM and Archivematica software (customizations and divergences from standard release).
- Updated by Artefactual whenever upgrades are made to the system.
- The authoritative version is maintained on the Archives' wiki because the staff member responsible for liaising with Artefactual for update does not have access to the Archives' shared.

- Public? No
- Link: [Archives wiki > Digital Repository Project](#) (master doc)
- Link: ITM007-30 > ArchitectureConfig (copy)

### SFU Archives Digital Repository Infrastructure (Jun 2017)

- Diagram showing technical components of the digital repository (VMs, hardware, software) and their relationships.
- Master copy is kept on Google Drive (owner = archives@sfu.ca) to facilitate sharing with Artefactual.
- Current copy should be kept on the shared drive and on the SFU Archives' wiki (Digital Repository Project).
- Public? Yes
- Link: Google Drive (master doc)
- Link: [Archives wiki > Digital Repository Project](#) (pdf copy of current version)
- Link: ITM007-30 > ArchitectureConfig (pdf copies of all iterations)

## GAPS / OUTSTANDING TRAC ACTIONS

<b>Action</b>	<b>TRAC #</b>	<b>Difficulty</b>
Document procedures for updating the VM specs spreadsheet		Low
Update specification spreadsheet and infrastructure diagram when AIP encryption work is completed		Low
Conduct audits of performance bottlenecks	5.1.1.2, 5.1.1.6	High
Create technology watch procedures	5.1.1.2, 5.1.1.4, 5.1.1.6	High

## 2.2 HARDWARE

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### OVERVIEW

*Hardware* represents the components of the digital repository in their physical aspect.

The Archives does not maintain the hardware used by SFU IT Services to run its VMs or provision storage disk space, and it does not have the associated documentation. This section of the Manual focuses on the hardware components in the Archives' custody and control which have been integrated into the repository system architecture.

The Archives maintains a number of separate *Equipment Registers* in the form of Excel spreadsheets (filed at EQS001-30), but these are not complete. Most items have a documentation case file (filed at EQS001). Information about the VMs and software used in the digital repository is captured in the *VM Specs* spreadsheet. In the long-term SFU Archives should consolidate all its equipment and infrastructure registers into single document or database.

### CURRENT HARDWARE

#### Desktop computers

2 desktop computers

##### Linux machine

- Antec PC, 21.5 inch Sonata III 500; 2 CPUs, 8 GB RAM, 4 TB disk.
- Originally set up as an Archivematica processing station for the proof-of-concept project (2011-12); as Archivematica switched to a web-based interface, a stand-alone work station was no longer needed.
- Re-purposed as a transfer location for non-SFU transfers over the network (2014-16); no longer required with the incorporation of SFU Vault as the main transfer method.
- Used since 2014 to run the BitCurator environment; as Jan 2017, the main use of this computer is to provide a BitCurator test environment.
- Assigned DNS name arbutus.archives.sfu.ca.
- Assigned inventory number 016 in Archives' Computer Inventory.

##### Mac OS machine

- Originally purchased in 2015 as planned workstation for photo digitization.
- Moved to the Stacks area and set up in Apr 2017 as the Audio-Visual Digitization Workstation.
- Assigned inventory number 025 in Archives' Computer Inventory.

#### External hard drives

3 external hard drives.

### Jenkinson1

- 4 TB, file system formatted as FAT32.
- Purchased in 2014 to enable the Archives to manually transfer large files that could not be easily transferred over the network.
- Currently (Oct 2017) storing email accounts pending ingest and which contain sensitive personal or confidential information; housed in the FireKing file cabinet.

### Jenkinson2

- 4 TB, file system formatted as exFAT.
- Purchased in 2015 to provide temporary backup for files pending ingest from digitization projects undertaken for SFU's 50th anniversary.
- Currently (Oct 2017) connected to the Mac AV Digitization Workstation for temporary storage of video digitized output; do not remove from Workstation.

### Mac HD

- 320 GB, file system formatted as exFAT.
- Salvaged from old ARMD Mac laptop.
- Can be used as temporary transfer device.
- Registered in Equipment Inventory as P007.

## Disk drive readers

2 USB drives to support transfer and ingest of materials transferred on floppy drives, DVDs, and CDs.

### USB Apple Superdrive (CD/DVD)

- Typically stored with flatbed scanner in photo digitization workstation cubicle.

### 3.5 inch floppy USB drive

- Typically stored with AV Digitization computer.

## Flash drives

The Archives has a number of flash drives, primarily used to support manual transfer of materials; most were accumulated from donors' transfers.

- Stored in the supplies cabinet in the Stacks area.
- There is one large drive (64 GB) that can be used to transfer digitized output from vendors to Archives.

## External drive caddies

1 drive caddy enables connection of salvaged hard drives (currently laptop only) to other computers via USB.

### 2.5 inch USB 3.0 SATA III HDD caddy

- StarTech S2510BPU33
- Obtained in 2017 from ITS on salvage of an old ARMD laptop and currently used to house the laptop's hard drive (wiped).
- Registered in Equipment Inventory as P007.
- Stored in television cabinet.

### Write-blocker

1 write-blocker used to ensure that data and metadata on transfer devices is not inadvertently overwritten on transfer and ingest.

### Tableau T8-R2 Forensic USB Bridge

- Typically stored with AV Digitization Work Station or in television cabinet.

### Flatbed scanners

2 scanners used for Archives' in-house digitization.

#### Epson Perfection V750 Pro

- Connected to Reference Archivist desk workstation.
- Mainly used for photographic material (negatives and prints).

#### Epson Expression 1100XL Photo Scanner

- Stored in photo digitization workstation cubicle.
- Mainly used for work orders for textual and graphic materials assigned to Records Centre Clerk or Office Assistant.
- Suitable for some oversized.

### Audio-video digitization equipments

2 AV racks with playback decks, with video converter (Black Magic Intensity Shuttle) and audio-only converter (Behringer UFO202 Audio Interface).

- See GDL-46, *Digitizing Videotape* for full details and specifications of AV digitization equipment.

## RESOURCES

### EQS001-20, Equipment Case Files (ongoing)

- Case file for each item of equipment; includes purchase documentation, warranty information, and manuals.
- Public? No
- Link: EQS001-20 > Case files

**Computer Inventory (Feb 2017)**

- Register (Word document) assigning a unique ID to each computer in the Archives department; records some technical specifications of individual items.
- Public? No
- Link: EQS001-30 > Inventories

**AV Inventory (Jun 2017)**

- Register (Excel spreadsheet) documenting all equipment associated with the audio-visual digitization station (AV racks).
- Public? TBD
- Link: EQS001-30 > Inventories

**GDL-46, Digitizing Videotape (May 2017)**

- Includes overview of digitization equipment.
- Public? Yes
- Link: ADM006-15 > GDL046

**Work Term Final Report: Project Status (Mar 2016)**

- Project report by Michelle Curran, Project Archivist, relating to Archives' SFU 50th Anniversary project; includes section on digitization equipment purchased or used during the project.
- Public? No
- Link: ARC004-01 > Digitization

**GAPS / OUTSTANDING TRAC ACTIONS**

<b>Action</b>	<b>TRAC #</b>	<b>Difficulty</b>
Consolidate various equipment inventories in a single document or database		Medium
Acquire an external disk caddy for desktop computer hard drives		Low
Acquire a FRED (forensic recovery of evidence device)		Medium
Prepare a risk assessment of hardware	5.1.1	High
Monitor ongoing viability of current hardware	5.1.1.1	High
Conduct audits of hardware capacity versus actual usage	5.1.1.2	Medium
Contact ITS for its policies relating to support, maintenance and replacement of hardware supporting repository infrastructure	5.1.1.5	Medium

## 2.3 SOFTWARE

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### OVERVIEW

*Software* comprises the computer programs and applications that support and automate operations throughout the digital repository.

Open-source applications form the core of SFU Archives' digital repository – Archivematica for digital preservation, Access to Memory (AtoM) for access, and OwnCloud (SFU Vault) for transfer. These are supplemented by a number of other open-source or commercial software products and by SFU custom-built tools and databases.

### CURRENT SOFTWARE

#### Core applications

##### Archivematica

- Open-source digital preservation software developed by Artefactual Systems Inc.
- Supports ingest of digital materials into the repository, creation of Archival Information Packages (AIPs) and Dissemination Information Packages (DIPs).
- Archives has three instances installed: two production sites configured for different materials (textual vs audio-visual) and one test site for QA / review of sponsored development work.
- The production sites will typically run an SFU branch of the latest public release, i.e. the public release + any completed SFU-sponsored features that are not yet in the public release.
- Vendor documentation: [Archivematic website](#).
- SFU Archives documentation: *Archivematica Implementation Guidelines (GDL-50)*.

##### SFU AtoM

- SFU's implementation of Access-to-Memory, an open-source application for archival description and dissemination of digital materials.
- Supports RAD-compliant archival description of analog and digital holdings.
- Receives DIPs from Archivematica as the access component of digital repository.
- Archives has three instances installed: an internal production site for data entry; a read-only site synced with production site for public access; and a test site for QA / review of sponsored development work.
- The production and public sites will typically run an SFU branch of the latest public release, i.e. the public release + any completed SFU-sponsored new features that are not yet in the public release.
- Vendor documentation: [AtoM website](#).
- SFU Archives documentation: *SFU AtoM: Data Entry Guidelines (GDL-39); Informal Access Review and Copyright Review: Criteria for Application (GDL-43)*.



### SFU Vault (OwnCloud)

- SFU's implementation of the OwnCloud, an open-source file-sharing and syncing software.
- Used as the primary means for transfer of digital materials to SFU Archives from both university departments and private donors.
- Vendor documentation: [OwnCloud website](#).
- SFU documentation: [ITS website SFU Vault page](#).
- SFU Archives documentation: *Transfer Digital Materials to SFU Archives: Procedures for Records Producers (PRC-57A); Procedures for Archives (PRC-57B)*.

## Supplemental open-source or commercial software

### BitCurator

- Open-source application bundling digital forensic tools installed on the Antec machine (arbutus).
- Use to date has been primarily experimental / testing (e.g. creating disk images, running analytical reports on disk images); software has not been integrated into ingest workflows.
- Vendor documentation: [BitCurator website](#); QuickStart Guide downloaded and saved to shared drive at ITM004-10 > BitCurator.
- SFU Archives documentation: *Workflow and Index to BitCurator Quickstart Guide (PRC-58)*.

### OfflineImap

- Open-source utility used to export email from SFU Connect (Zimbra) in maildir format in preparation for ingest to Archivematica.
- Vendor documentation: [OfflineImap website](#).
- SFU Archives documentation: *Transfer SFU Email to Archives: Procedures (PRC-64)*.

### Adobe Acrobat Pro

- Proprietary software mainly used in digitizing textual documents: combining files, converting to PDF, running OCR on the text.
- SFU has an institutional license; can only be installed on university-owned computers by ITS.
- Vendor documentation: [Adobe website](#).
- SFU Archives: *Scanning a multi-page document and assembling the scans into a single PDF (PRC-10); Processing Scan Requests (PRC-60)*.

### Amadeus Pro

- Proprietary software mainly used to manage digitization of audio recordings.
- Vendor documentation: [HairerSoft website](#).
- License and disk image on shared drive at ITM004-10 > AmadeusPro.

- SFU Archives documentation: *Converting Analog Audio Recordings to Digital Audio Recordings Using Amadeus Pro (PRC-11)*.

### **Black Magic Media Express**

- Proprietary software for Black Magic video capture hardware.
- Used to manage digitization of video recordings.
- Vendor documentation: [Media Express website](#); manual downloaded and stored on shared drive at ITM004-10 > BlackMagicMediaExpress.
- SFU Archives documentation: *Guidelines for Digitizing Videotape (GDL-46)*.

### **Epson scanning software**

- Proprietary software for Epson scanners.
- Use to manage digitization of photographic materials and textual records.
- Vendor documentation: [Epson website](#).

### **FTP clients**

- Open-source utilities Cyberduck and FileZilla used to upload digitized materials to Archivematica transfer source locations.
- Vendor documentation: [Cyberduck](#) and [Filezilla](#) websites.

### **FileMaker**

- Proprietary software used to create the AIS (Archival Information System) database (see below).
- FileMaker Server software is run by ITS; Archives runs FileMaker Pro clients on desktops.
- Server and clients currently (as of Oct 2017) running v14.x; latest FileMaker release is v16.x.
- License keys and disk images on shared drive at ITM004-10 > FileMaker.
- Vendor documentation: [FileMaker website](#).

### **ClamXAV anti-virus**

- Proprietary interface running open-source anti-malware and anti-virus ClamX tool.
- Used to scan digital media carriers supplied by vendors, producers or researchers during a transfer of digital objects.
- License key and disk image on shared drive at ITM004-10 > ClamXAV.
- Vendor documentation: [ClamXAV website](#).

## SFU custom-built tools

### AIS (Archival Information System) database

- Relational database supporting Archives' programs and operations.
- Manages metadata relating to digital transfers (Repository module > Transfer table).
- Registers Archivemata-created backlog packages and AIPs (Repository module > Archivemata Object table).
- Tracks digital materials accessioned to the repository through the transfer and ingest process (Archives module > Accession table).
- Documentation: *AIS4 User Manual (MNL-4)*; *AIS4 Data Dictionary (MNL-5)*.

### SFU MoveIt

- Desktop application for packaging materials for transfer to SFU Archives, using the BagIt specification.
- Documentation: *SFU MoveIt User Guide (GDL-44)*.

### Checksumruntime

- Desktop application for comparing the checksum of a transfer package before and after transfer, using the checksum generated by SFU MoveIt on creating a transfer Bag.
- Documentation: *Transfer Digital Materials to SFU Archives: Procedures for Archives (PRC-57B)*.

### CLI DIP upload scripts

- Two command line scripts to automate upload of digital objects to existing AtoM descriptions.
- Use when analog material previously described in AtoM is digitized.
- Use when digital material previously ingested to Archivemata for "metadata-only DIP upload" is cleared for online dissemination.
- Documentation: *CLI DIP Upload: Procedures (PRC-66)*.

### Ache264

- Drag-and-drop desktop utility for converting uncompressed digitized video file to compressed H264 file.
- Documentation: *Guidelines for Digitizing Videotape (GDL-46)*.

### AtoM sync scripts

- Cron script syncs the internal production AtoM site with SFU AtoM public site weekly.
- Command line scripts can be run manually to sync the sites at any time.
- Documentation: *Sync AtoM Public and Production Sites: Procedures (PRC-67)*.

### Email conversion script

- Python script converting maildir to mbox in preparation for ingest to Archivematica.
- Documentation: *Transfer SFU Email to Archives: Procedures (PRC-64)*.

## RESOURCES

### ARMD policy documents

- GDL-39, *SFU AtoM: Data Entry Guidelines*
- GDL-43, *Informal Access Review and Copyright Review: Criteria for Application*
- GDL-44, *SFU MoveIt User Guide*
- GDL-46, *Guidelines for Digitizing Videotape*
- MNL-4, *AIS4 User Guide*
- MNL-5, *AIS4 Data Dictionary*
- MNL-11, *SFU Archives Digital Repository Manual*
- PRC-10, *Scanning a Multi-Page Document and Assembling the Scans into a Single PDF*
- PRC-11, *Converting Analog Audio Recordings to Digital Audio Recordings Using Amadeus Pro*
- PRC-57A, *Transfer Digital Materials to SFU Archives. Procedures for Records Producers*
- PRC-57B, *Transfer Digital Materials to SFU Archives. Procedures for Archives*
- PRC-58, *Workflow and Index to BitCurator Quickstart Guide*
- PRC-60, *Processing Scan Requests*
- PRC-64, *Transfer SFU Email to Archives: Procedures*
- PRC-66, *CLI DIP Upload: Procedures*
- PRC-67, *Sync AtoM Public and Production Sites: Procedures*
- Master copies of guidelines, procedures and manuals cited above are created / maintained as Word and PDF documents stored on the ARMD shared drive at ADM006.
- Public: Yes
- Link: ADM006

### SFU custom-built digital repository utilities

- Ache264 video conversion utility
- AtoM sync scripts
- Checksummertime checksum utility
- CLI DIP upload scripts
- Email conversion script

- SFU MoveIt package utility
- Master copy of scripts or desktop applications should be stored on the ARMD shared drive at ITM002-40.
- Public? TBD
- Link: ITM002-40 > DR Utilities

### Procedures for Digital Repository tools (Dec 2015)

- Brief procedural and how-to information relating to various small tools developed in the course of the digital repository project.
- Should be reviewed, and content pulled out into updated, stand-alone procedures or guidelines as necessary.
- Public: TBD
- Link: ITM002-40 > DRUtilities

## GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Review / update / consolidate digitization documentation		Medium
Review / restructure Procedures for Digital Repository Tools document		Medium
Prepare a risk assessment of software	5.1.1	High
Monitor ongoing viability of current software	5.1.1.1	High

## 2.4 SECURITY

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### OVERVIEW

*Security* is the ensemble of technical, policy, and procedural controls put in place to protect the hardware, software, file systems, and content of the digital repository from unauthorized access or intervention.

Responsibility for security is shared between SFU IT Services, SFU Archives, and the vendor Artefactual Systems Inc. SFU ITS manages security on the network as a whole. As software developers, Artefactual build in certain security features in Archivemata and AtoM; and through the annual maintenance agreement liaise with SFU Archives and ITS to ensure application security meets SFU requirements. The Archives is responsible for managing users accounts in its software applications.

The Archives currently documents user and system passwords through a simple Word document (itself password protected). This is a less than ideal solution and the Archives should investigate other options (e.g. a password manager).

Administrator access to VMs is managed by SFU ITS through inclusion of email addresses on SFU mail-lists. Particular firewall (port) settings are documented on the *VM Specifications* spreadsheet.

In 2017 the Archives sponsored development work in Archivemata to support AIP encryption. The rationale for this was that records containing personal or confidential information will be transferred to the repository; AIPs will be maintained locally, with redundant backups copies stored remotely by third parties. SFU does not want to commit unencrypted data containing personal or confidential information to the custody of third parties. For details of AIP encryption, see section 3.5 AIP Creation below.

The Archives does not currently have a general *Digital Repository Security Plan*. It should develop one as a long-term goal. Its format could follow requirements set out in TRAC 5.2.1 / 5.2.2, i.e. identify all security risk factors and implement controls to address each of these. In developing the *Plan*, the Archives should review the TRAC self-audits undertaken in 2014 and 2016 which identified a number of outstanding actions relating to security.

### RESOURCES

#### TRAC Reviews (Apr 2014, Feb 2016)

- Archives' self-audit against the TRAC criteria identified a number of security-related issues that should be reviewed in developing a Security Plan.
- Public? No
- Link: PRS004-10 > Audit

#### VM Specifications (Jun 2017)

- Includes column for *Open ports* and *Open port rules*.
- Public? No
- Link: ITM007-30 > ArchitectureConfig

**Archivematica Implementation Guidelines (Oct 2017)**

- Update with AIP encryption instructions / guidance when feature has been deployed.
- Public? TBD
- Link: ADM006-15 > GDL)50

**GAPS / OUTSTANDING TRAC ACTIONS**

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Investigate options for better managing departmental passwords		Medium
Update <i>Archivematica Implementation Guidelines</i> (GDL-50) with AIP encryption instructions		Medium
Document ITS security upgrades that may impact the digital repository	5.1.1.4	High
Develop a <i>Security Plan</i> that identifies risk factors associated with data, systems, personnel, and physical plant; and implements controls for each	5.2.1, 5.2.2	High

## **3. INGEST**



# 3. INGEST

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*Ingest* comprises "services and functions to accept Submission Information Packages (SIPs) from Producers (or from internal elements under Administration control) and prepare the contents for storage and management within the Archive" (OAIS 4.1).

Sections:

- [3.1 Acquisition](#)
- [3.2 Digital Readiness](#)
- [3.3 Transfer Procedures and Tools](#)
- [3.4 Digitization](#)
- [3.5 AIP and DIP Creation](#)
- [3.6 Removal](#)

# 3.1 ACQUISITION

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## OVERVIEW

*Acquisition* is the function that determines the types of materials the digital repository will seek out and accept, identifies creators of such materials, appraises materials, and negotiates the terms and conditions of their transfer.

For SFU Archives, these activities are subsumed under its general acquisition function (for both analog and digital materials). The Archives' acquisition mandate flows from its governing university policy (I10.01), but it has not fully articulated this in a formal *Acquisition Policy*.

The primary tool for acquiring university records is the *Records Retention Schedules and Disposal Authority* (RRSDA). RRSDAs apply to both paper and electronic records. They were originally designed, however, in a context of paper records and workflows, and their adaption to digital record-keeping systems remains a work in progress.

The primary tool for acquiring private records is the *Donation Agreement*. In 2015 the Archives reviewed the agreement template in order to better address issues relating to digital materials and to modernize its language. As of Oct 2017, the revisions have not yet been finalized. In 2016, the Archives created *Guidelines for Donating Digital Records* (GDL-45) aimed at private donors.

In 2013 the Archives undertook an inventory of its digital holdings, including both born-digital transfers as well as digitized surrogates of analog originals. The inventory included materials on digital media carriers (optical disks etc.) and the Archives' webdav server in the Virtual Stacks directory, and it estimated holdings at ca. 750 GBs. Much of this material needs to be appraised; none has been yet ingested to the repository. The focus of the inventory, moreover, was on enumeration of known rather than discovery of unknown digital holdings. It is likely that there are many digital media carriers undiscovered in backlog boxes in the Archives' stacks. The inventory should be updated, with a view to discovery of these untracked objects.

As part of the UPF project (2013-16), SFU Archives created a register of known records series (university and private) created in digital form and suitable for acquisition. The was last updated in 2015.

The Archives has not developed any appraisal tools specifically for digital records. The *Format Policy Registry* (STN-9) stipulates preferred and acceptable digital file formats for transfer.

## RESOURCES

### 110.01, Archives, Records Information Management, and Protection of Privacy (Mar 1997)

- SFU Archives' governing policy from which its acquisition mandate derives.
- Public? Yes
- [Link: SFU Policy Gazette I series](#)

### What We Acquire

- Acquisition statement on the Archives website.

- Public? Yes
- [Link: Archives website > Home > Donor resources section](#)

### **SFU Records Retention Schedules and Disposal Authorities (RRSDAs)**

- Timetables regulating the lifespan of all records in a certain class and determining their final disposition (destroy or transfer to Archives).
- Public? Yes
- [Link: RRSDAs section of the Directory of University Records \(DUR\)](#)

### **FRM-9, Donation Agreement form (Mar 2016)**

- Template for Donation Agreements with private donors.
- Revisions dealing specifically with digital materials in progress.
- Public? Yes
- Link: ADM006-10 > FRM009

### **GDL-45, Guidelines for Donating Digital Records (Oct 2017)**

- Created in 2016, with subsequent minor formatting revision Guidelines aimed at private records donors.
- Public? Yes
- Link: ADM006-15 > GDL045

### **STN-9, Format Policy Registry (Jul 2017)**

- List file formats the Archives currently accepts for transfer to the digital repository, with guidance on preferred and acceptable formats and indication of level of support.
- Public? Yes
- Link: ADM006-55 > STN009
- [Link: available from Archives' website from the Digital Preservation Section](#)

### **Register of Potential Acquisitions: Born-Digital Records (Oct 2015)**

- Registers records series created and maintained in digital form and known to include records of archival value.
- Public? TBD
- Link: ARC001-54 > Register of Leads > Born Digital

### **Inventory of Digital Holdings (Aug 2013)**

- Inventory of digital materials accumulated by Archives through on-demand digitization and ad hoc born-digital transfers on media carriers.

- Public? TBD
- Link: ARC001-02 > DigitalInventory

### Digital acquisitions planning files

- Case files documenting issues relating to particular file formats or record types.
- Note that issues pertaining to specific fonds are documented in the appropriate Collections File (ARC001-40).
- Public? No
- Link: ARC001-02 > Planning

## GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Prepare a formal <i>Acquisition Policy</i> that addresses both analog and digital materials		Medium
Review / revise format of RRSDAs to better address digital records		High
Complete revision of <i>Donation Agreement</i> template	3.5.1.3, 4.1.1.1	Low
Review / update <i>Inventory of Digital Holdings</i> , particularly with a view to locating undiscovered digital media carriers in boxes of analog holdings		High
Develop an ingest plan for appraisal, selection, ingest, and arrangement and description of backlog digital media carriers		High
Review format of <i>Register of Potential Acquisitions</i> to assess utility and determine best format; if retaining, update contents		Medium

## 3.2 DIGITAL READINESS

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### OVERVIEW

*Digital readiness* is the idea that in order to transition from paper to digital as the preferred format for authoritative business records, records creators must meet certain baseline requirements to ensure the trustworthiness and reliability of their records and thereby minimize risk to their institutions.

Digital readiness aims to articulate the minimum requirements, identify gaps in existing practice, and create tools to facilitate implementation. It is really more of a records management than an ingest function, but is included in this section of the Manual because it will have a direct impact on the quality of the records ingested to the digital repository.

In SFU's context, digital readiness touches on:

- Digitization of paper original source records by SFU units in the conduct of business.
- Creation of born-digital records.
- Storage and retrieval of digitized and born-digital records.
- Application to digital records of records retention schedules originally designed for paper records and workflows.
- Long-term preservation of records scheduled for destruction but with long semi-active retention periods.

The Archives began work on digital readiness as part of its three-year UPF project (2013-16), but much remains in a preliminary stage.

### RESOURCES

#### **GDL-38, Digitization of Original Paper Source Records (Feb 2015)**

- Guidelines for SFU departments on scanning records originally made or received in a paper format and stored in an electronic format during their active and semi-active period.
- Public? Yes
- Link: ADM006-15 > GDL038
- [Link: Online copy available from Archives' website](#)

#### **STN-2, Standard Naming Conventions for Electronic Records (Oct 2010)**

- Rules for naming digital files.
- Should be reviewed / revised in light of the Archives' own experience in using the rules.
- Public? Yes
- Link: ADM006-55 > STN002

**Developing Electronic Records Management (Jun 2014)**

- Report by Joy Rowe, Records Management Archivist, assessing the Archives' Records management program against ARMA's Generally Accepting Recordkeeping Practices (GARP).
- Highlights gaps in the program with respect to digital records.
- Public? TBD
- Link: RMP000-02 > Planning > Developing Electronic Records Management

**Digital Readiness Assessment Project Report (Mar 2016)**

- Report by Joy Rowe, Records Management Archivist, summarizing work done on digital readiness as part of SFU Archives' UPF project (2013-16).
- Public? TBD
- Link: RMP000-02 > Planning > Digital Readiness Tools

**GAPS / OUTSTANDING TRAC ACTIONS**

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Review / revise existing file naming standard (STN-2)		Medium
Build on existing body of work to develop a digital readiness suite of tools as part of roll-out of electronic records management		High

## 3.3 TRANSFER PROCEDURES AND TOOLS

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### OVERVIEW

*Transfer* is the act of moving digital objects from the producer to the Archives for ingest into the digital repository. All transfers of born-digital records to the Archives are accessioned in the Archives' AIS database.

Transfer procedures are documented in *Transfer Digital Materials to SFU Archives* (PRC-57). The key elements are:

- An online *Digital Records Transfer Request Form* to initiate transfer.
- SFU MoveIt, a desktop utility to package digital materials for transfer in a standardized format using the BagIt specification.
- SFU Vault, the university's file-sharing application, for the actual transfer of materials.
- The AIS database to manage transfer and accession metadata.
- Archivematica pipelines to ingest the material to the digital repository.

Transfer procedures are presented separately for producers (PRC-57A) and the Archives (PRC-57B). Those for the producer focus on the transfer request form, SFU MoveIt, and SFU Vault; those for the Archives on using the AIS for managing the overall process and associated metadata.

Alongside the general transfer procedure, it is likely that the Archives will need to develop more specific procedures for particular record types or file formats that require other tools. To date, the Archives has drafted one such document for transferring email (PRC-65).

Special operations required to export records from particular systems should be documented on the appropriate collections file. For an example, see the note on how records were exported from Student Services Course Outlines Database for transfer to Archives (fonds F-107).

Since 2013 the Archives has from time to time experimented with BitCurator open-source digital forensics software, mainly in the context of creation and analysis of disk images prior to ingest to Archivematica. BitCurator tools, however, have not yet been integrated into transfer or ingest workflows.

### RESOURCES

#### PRC-57A, Transfer Digital Records to SFU Archives: Procedures for Producers (Apr 2017)

- Transfer procedures from point of view of records creators.
- Public? Yes
- Link: ADM00-45 > PRC057
- [Link: Download available from Archives' website](#)

**PRC-57B, Transfer Digital Records to SFU Archives: Procedures for Archives (Oct 2017)**

- Transfer procedures from point of view of Archives staff.
- Public? Yes
- Link: ADM006-45 > PRC057

**Digital Records Transfer Request Form (Apr 2017)**

- Online form completed by a producer of digital records (SFU department or private donor) to initiate the transfer process.
- There are separate and slightly different forms for university and private records.
- Public? Yes
- [Link: Archives' website](#)

**Checksumruntime desktop utility (Jun 2017)**

- Drag-and-drop utility for comparing the checksum of a transfer package before and after transfer.
- Public? Yes
- Link: ITM002-40 > DR Utilities > Checksumruntime

**SFU MoveIt desktop utility (Jun 2017)**

- Creates a standardized transfer package using the BagIt specification.
- Separate versions for Mac OS and Windows.
- Public? Yes
- Link: ITM002-40 > DR Utilities > SFU MoveIt
- [Link: Downloads available from Archives' website](#)

**GDL-44, SFU MoveIt User Guide (Aug 2016)**

- User guide for SFU MoveIt utility.
- Public? Yes
- Link: ADM006-15 > GDL044
- [Link: Download available from Archives' website](#)

**PRC-64, Transfer Email to SFU Archives: Procedures (Mar 2016)**

- Special procedures for exporting email from SFU Connect for transfer: email is converted to maildir on export, then converted to mbox for ingest.
- Note that procedures are based on test scenarios only.
- As of October 2017 the Archives has the technical ability to transfer email but is waiting on development of AIP encryption before beginning actual ingests.



- Public? Yes
- Link: ADM006-45 > PRC064

#### Email conversion utilities (Mar 2016)

- OfflineImap configuration file needed for outputting Zimbra target email folders.
- Python script for convert OfflineImap maildir output to mbox format for ingest to Archivemataca.
- Public? TBD
- Link: ITM002-40 > DR Utilities > EmailConversion

#### PRC-58, Workflow and Index to BitCurator Quickstart Guide (May 2015)

- Instructions for launching the BitCurator environment in the Archives' context, mounting and imaging a disk, analyzing its contents.
- Public? Yes
- Link: ARC005-45 > PRC058

## GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Review / revise email transfer procedures (PRC-65) when the Archives begins email ingest (after AIP encryption operational)		Low
Create special transfer procedures for websites		Medium
Review / integrate BitCurator tools into transfer and ingest workflows		High

## 3.4 DIGITIZATION

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### OVERVIEW

*Digitization* is the process of creating digital surrogates of analog original materials. SFU Archives digitizes selected materials from its holdings for both preservation and access purposes. All digitized material ingested to the digital repository is accessioned in the Archives' AIS database.

- Preservation: Archives digitizes materials at risk of becoming inaccessible through media degradation or format obsolescence.
- Access: Archives digitizes materials in order to make them more widely available to researchers.

There are two main triggers for digitization:

- Archives receives a reproduction request from a researcher for digital copies of archival files or items.
- Archives undertakes a systematic digitization project targeting entire series or substantial portions of series.

The Archives' reproduction services and delivery standards for researchers are set out in POL-1, *Reproduction Services*.

The Archives only began systematic digitization work in the lead-up to SFU's 50<sup>th</sup> Anniversary in 2014-15. As part of project planning, the Archives created a *Digitization Priorities Register*, including a statement of criteria used in ranking prospective fonds and series.

In recent years, the Archives has actively sought out and acquired equipment to enable it to digitize more formats in-house. Digitization of certain materials (e.g. motion picture film), however, must be outsourced to vendors. Over the years, the Archives has created various procedures and guidelines relating to digitization of particular types of records and / or physical formats. Some of these are dated; the latest revision dates often reflect old content simply reformatted to a new presentation template.

In general, digitization documentation needs to be consolidated. As a first start, the Archives in October 2017 created *Digitization Output Standards* (STN-12) to document the default file formats and technical specifications the Archives uses to digitize various document types and physical formats.

### RESOURCES

#### Digitization Procedures and Guidelines

- STN-12, *Digitization Output Standards* (Oct 2017)
- PRC-10, *Scanning a Multi-Page Document and Assembling the Scans into a Single PDF* (Oct 2012)
- PRC-11, *Converting Analog Audio Recordings to Digital Audio Recordings Using Amadeus Pro* (Aug 2016)
- PRC-60, *Processing Scan Requests* (Aug 2016)
- GDL-11, *Motion Picture Film Preservation Guidelines* (Mar 2016)
- GDL-12, *Videotape Preservation Guidelines* (Mar 2016)

- GDL-13, *Audio Preservation Guidelines* (Jun 2010)
- GDL-38, *Digitizing Paper Records* (Feb 2015); note that this directed at a records management audience
- GDL-46, *Guidelines for Digitizing Videotape* (May 2017)
- GDL-47, *Converting Records to PDF for Review Using Adobe Acrobat* (Apr 2017)
- FRM-61, *Video Digitization Checklist* (May 2017)
- Public? TBD
- Link: ADM006

### Digitization Priorities Register

- Identifies fonds and series suitable for digitization, with ranking and criteria.
- Public? TBD
- Link: ARC001-02 > DigitizationPrioritiesRegister

### POL-1, Reproduction Services

- Sets out Archives' reproduction services and delivery standards (timelines).
- Public? Yes
- Link: ADM006-40 > POL001

### Work Term Final Report: Project Status (Mar 2016)

- Project report by Michelle Curran, Project Archivist, relating to Archives' SFU 50th Anniversary project; includes section on digitization projects undertaken.
- Public? No
- Link: ARC004-01 > Digitization

## GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Review, update and consolidate digitization procedural documents		Medium
Update the <i>Digitization Priorities Register</i> ; review formats options for ongoing use.		Medium

## 3.5 AIP AND DIP CREATION

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### OVERVIEW

*AIP* and *DIP creation* are processes that transform input (digital objects transferred or created through digitization) into standardized output – *Archival Information Packages* (AIPs) for long-term preservation and *Dissemination Information Packages* (DIPs) for access.

SFU Archives uses Archivematica for ingest. The *Archivematica Implementation Guidelines* (GDL-50) describe how SFU Archives implements Archivematica. It documents Archivematica pipeline configuration settings, discusses when and how to use Archivematica in different contexts for different outcomes, and provides guidance on Archivematica decision points (which options to select when).

### POLICY

AIPs and DIPs may include copies of the original objects converted into different file formats for preservation and access respectively. SFU Archives' normalization policies are set out in the *Format Policy Registry (FPR)* (STN-10). This lists the file formats SFU Archives accepts and for each indicates the corresponding preservation and access formats. The Archives may take in formats not included on the FPR, but for these may only guarantee bit-level preservation.

The FPR is a document aimed at an audience of records creators; Archivematica includes more detailed machine-readable rules that translate FPR policies into normalization services during ingest. For any given set of objects ingested, the Archives may rely on Archivematica normalization or it may normalize the objects outside of the software prior to ingest.

- Digitized materials are typically created in preservation formats to begin with.
- Access copies are typically created outside Archivematica when there is not a one-to-one relationship between AIP and the DIP objects, e.g. the preservation copy of a bound volume of 1 tiff file for each page, but the access copy is a single PDF file.
- These scenarios are covered in the *Archivematica Implementation Guidelines*.

One piece of documentation still missing is a higher-level document that would identify and describe the main classes of AIPs the Archives preserves (as per TRAC requirement 4.2.1); for each, it would provide an overview of the methods of acquisition, essential properties, designated community, anticipated uses, expected file formats and normalization rules. Examples of classes could be office documents, email, websites, databases.

### AIPS

AIPs are the objects in their original file formats plus preservation copies (if required) plus associated metadata, bundled as a single objects for long-term preservation and management. Archivematica uses METS, PREMIS and BagIt standards to ensure that AIPs are system-independent, i.e. AIPs can be parsed and understood by other software applications and the packages can be transferred to other storage and management systems as may be required.

Archivematica assigns unique IDs to AIPs and all the objects they contains (UUIDs). The Archives records AIP UUIDs and minimal metadata in the AIS database for management purposes (see below [section 7.1, Metadata](#) for details).

Archivematica supports AIP re-ingest. SFU Archives will re-ingest AIPs when it needs to:

- Add new metadata to an AIP.
- Re-normalize objects in an AIP to different file formats due to changes in the FPR rules.

In 2017, the Archives sponsored development work in Archivematica to support AIP encryption. The motivation was to meet (i) the OAIS requirement that redundant copies of AIPs be stored by geo-remote external partners for backup and recovery purposes; and (ii) the SFU requirement that any data containing personal or confidential information must be encrypted before being sent to third parties for external storage.

The approach is to:

- Set up separate spaces in the local storage system for (i) AIPs that do not contain personal or confidential information (*open AIPs*); and (ii) AIPs that do contains personal or confidential information (*restricted AIPs*).
- Ensure that all AIPs (open or restricted) are available in the local system in unencrypted form.
- Replicate restricted AIPs in encrypted form on the local system.
- Send encrypted restricted AIPs and unencrypted open AIPs offline for geo-remote backup by trusted third parties.

The AIP encryption work will come online in late 2017. At that time, SFU Archives' *Archivematica Implementation Guidelines* (GDL-50) should be updated to provide instructions and guidance.

## DIPS

DIPs are access copies of the digital objects ingested plus minimal descriptive metadata. In SFU Archives' configuration, Archivematica can DIPs to SFU AtoM (Access-to-Memory). For any given set of objects ingested, the Archives may:

- Not create a DIP at all – no public access, "dark archives".
- Create a DIP, store it offline and send metadata only to SFU AtoM – materials are discoverable by the public, but there are access or copyright restrictions.
- Create a DIP and send both object and metadata to SFU AtoM – materials are open with no restrictions and can be directly accessed by the public.

The *Archivematica Implementation Guidelines* describe the various scenarios and provide instructions.

## RESOURCES

### GDL-50, Archivematica Implementation Guidelines (Oct 2017)

- Guidelines for using Archivematica in the context of SFU Archives' workflows.
- Public? TBD

- Link: ADM006-15 > GDL050

### STN-9, Format Policy Registry (FPR) (Jul 2017)

- Standard for the management of file formats ingested to the digital repository.
- Shows acceptable and preferred file formats; gives normalization formats for preservation and access copies; indicates the level of preservation commitment for any given format (bit-level, watch, full).
- Public? Yes
- Link: ADM006-55 > STN009
- [Link: Online copy available for download](#)

## GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Identify and describe the main classes of AIPs the Archives preserves.	4.2.1	High
Document AIP encryption procedures when work is deployed, either by updating GDL-50 ( <i>Archivematica Implementation Guidelines</i> ) or through a stand-alone procedures document		

## 3.6 REMOVALS

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### OVERVIEW

*Removal* is the act of deleting objects from the digital repository materials that were previously transferred and accessioned.

There are several scenarios under which SFU Archives removes digital materials from its repository:

- Cancel a transfer in order to reprocess it (e.g. because a mistake was made).
- Appraise objects in backlog for destruction (i.e. they are not selected for permanent preservation).
- Delete an entire AIP in order to reprocess it (e.g. because a mistake was made).
- Delete an AIP in order to deaccession it (i.e. the records will be destroyed or transferred to another repository).

The *Archivematica Implementation Guidelines* (GDL-50) provide instructions for the various scenarios, but the Archives has not yet developed procedures for documenting removals.

### RESOURCES

#### GDL-50, Archivematica Implementation Guidelines (Oct 2017)

- Guidelines for using Archivematica in the context of SFU Archives' workflows.
- Public? TBD
- Link: ADM006-15 > GDL050

### GAPS / OUTSTANDING TRAC ACTIONS

<u>Action</u>	<u>TRAC #</u>	<u>Difficulty</u>
Develop procedures for documenting removals (discarded portion of transfers)	4.2.3	Medium

## **4. ARCHIVAL STORAGE**



# 4. ARCHIVAL STORAGE

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*Archival storage* comprises "services and functions for the storage, maintenance and retrieval of Archival Information Packages (AIPs)" (OAIS 4.1).

Sections:

- [4.1 Fixity](#)
- [4.2 Storage Media](#)
- [4.3 Backup and Recovery](#)
- [4.4 Retrieval](#)

# 4.1 FIXITY

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## OVERVIEW

*Fixity* ensures that objects in the digital repository do not have their contents altered in any undocumented way. In SFU Archives' system, Archivematica creates checksums for each object received in the transfer and ingest process. *Fixity checking* periodically compares an object's current checksum against the checksum originally assigned to determine if its contents have altered.

In 2015-16 SFU Archives sponsored development work in Archivematica to add support for:

- On-demand fixity checking through CLI script at the collection-wide or individual object level.
- Email notification on fixity check failures.
- Display of time and results of fixity checks in Storage Service.

The Archives still needs to document this work in procedures for running fixity checks on demand and procedures for handling fixity check fails (see section 4.3 below, *Backup and Recovery*).

## RESOURCES

### ITM002-15, Archivematica development case files (Ongoing)

- The correspondence relating to feature development work for fixity checking contains the elements for procedures documentation.
- Public? No
- Link: ITM002-15 > Archivematica > FixityChecking

## GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Create a procedure to track all incidents of data corruption or loss and document remediation actions to remove sources of problem	5.1.1.3.1	Medium
Prepare a procedure for fixity checking		Medium
Ensure that copies of SFU-specific scripts are stored on the shared drive at ITM002-40 > DRUtilities		Low

## 4.2 STORAGE MEDIA \*

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### OVERVIEW

### RESOURCES

### GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Document how ITS service migrate data when storage media is replaced	5.1.1.5	

# 4.3 BACKUP AND RECOVERY \*

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## OVERVIEW

## RESOURCES

## GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Confirm with ITS the ability to re-create repository from backup	5.1.1, 5.2.4	
Document ITS backup procedures	5.1.1.2, 5.2.4	
Develop a <i>Disaster Recovery Plan</i>	5.1.2.1	

# 4.4 RETRIEVAL \*

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## OVERVIEW

## RESOURCES

## GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Action	xx	High

## **5. PRESERVATION PLANNING**

# 5. PRESERVATION PLANNING

---

*Preservation planning* comprises "services and functions for monitoring the environment of the OAIS, providing recommendations and preservation plans to ensure that the information stored in the OAIS remains accessible to, and understandable by, the Designated Community over the Long Term, even if the original computing environment becomes obsolete" (OAIS 4.1).

Sections:

- [5.1 Format Action Plans](#)
- [5.2 Technology Watch](#)
- [5.3 Migration](#)

# 5.1 FORMAT ACTION PLANS \*

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## OVERVIEW

## RESOURCES

## GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Determine significant properties to be preserved for each file format	4.1.1.1	
Research preservation plans at other institutions	4.1.1.1	
Draft preservation policies	4.1.1.1, 4.1.1.2	
Review / update Digital Object Test Corpus		Medium
Adopt a unique identifier for our repository	4.2.4.1.1	
Document any changes to the assignment of unique identifiers (only relevant if we abandon current system)	4.2.1.3	
Confirm with Artefactual that Archivemata can produce a complete list of assigned unique identifiers (may need to fund this report functionality)	4.2.4.1.4	
Review other repositories' policies re: ensuring understandability of objects to designated community	4.2.7.1	



## 5.2 TECHNOLOGY WATCH \*

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### OVERVIEW

### RESOURCES

### GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Draft procedure(s) for regularly revisiting preservation pathways and their continuing adequacy (i.e. technology watch)	4.3.1	
Build partnerships with other repositories to discuss digital preservation best practices. Make community supported decisions whenever possible with regards to preservation and access format policies	4.3.2, 4.3.3	
Set review cycles for all preservation plans	3.3.2.1, 4.3.3	
Monitor community practices (FPR)	4.3.3.1	

# 5.3 MIGRATION \*

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## OVERVIEW

## RESOURCES

## GAPS / OUTSTANDING TRAC ACTIONS

<u>Action</u>	<u>TRAC #</u>	<u>Difficulty</u>
Action	xx	High

## **6. ACCESS**

# 6. ACCESS

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*Access* comprises "services and functions that support Consumers in determining the existence, description, location and availability of information stored in the OAIS, and allowing Consumers to request and receive information products" (OAIS 4.1).

Sections:

- [6.1 Archival Description](#)
- [6.2 Restrictions](#)
- [6.3 DIP Delivery](#)
- [6.4 Backlog Access](#)

# 6.1 ARCHIVAL DESCRIPTION \*

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## OVERVIEW

## RESOURCES

## GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Action	xx	High

## 6.2 RESTRICTIONS \*

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### OVERVIEW

### RESOURCES

### GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Action	xx	High

## 6.3 DIP DELIVERY \*

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### OVERVIEW

### RESOURCES

### GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Research other institutions' practices re: monitor access delivery failures	4.6.1.1	
Determine how the Archives should communicate to members of its Designated Community the differences between DIPs and AIPs (e.g. a DIP might exist as an mp4, but the AIP might exist as a high resolution HD file)	4.6.2	
Track complaints about AtoM access failures	4.6.2.1	

## 6.4 BACKLOG ACCESS \*

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### OVERVIEW

### RESOURCES

### GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Action	xx	High



## **7. DATA MANAGEMENT**

# 7. DATA MANAGEMENT

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*Data management* comprises "services and functions for populating, maintaining, and accessing both Descriptive Information which identifies and documents Archive holdings and administrative data used to manage the Archive" (OAIS 4.1).

Sections:

- [7.1 Metadata](#)
- [7.2 Search](#)
- [7.3 Reporting](#)

# 7.1 METADATA \*

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## OVERVIEW

## RESOURCES

## GAPS / OUTSTANDING TRAC ACTIONS

<b><u>Action</u></b>	<b><u>TRAC #</u></b>	<b><u>Difficulty</u></b>
Action	xx	High

## 7.2 SEARCH \*

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### OVERVIEW

### RESOURCES

### GAPS / OUTSTANDING TRAC ACTIONS

<u>Action</u>	<u>TRAC #</u>	<u>Difficulty</u>
Action	xx	High

## 7.3 REPORTING \*

---

### OVERVIEW

### RESOURCES

### GAPS / OUTSTANDING TRAC ACTIONS

<u>Action</u>	<u>TRAC #</u>	<u>Difficulty</u>
Action	xx	High

# **DOCUMENT CONTROL**

# MNL-11, DIGITAL REPOSITORY MANUAL

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## VERSION HISTORY

<b>Version history</b>			
<b><u>Version</u></b>	<b><u>Date</u></b>	<b><u>Finalized by</u></b>	<b><u>Version notes</u></b>
v0.2	Oct 30, 2017	Richard Dancy	Restructured to current format. Snapshot – sections 1-3, part of section 4 completed; most of section 4 and all of 5-7 not completed.
v0.1	Jan 26, 2017	Richard Dancy	First iteration created as simple list of documentation organized by category

## SECTION HISTORY

<b>Section history</b>		
<b><u>Section</u></b>	<b><u>First completed</u></b>	<b><u>Last revised</u></b>
<b>1. Administration</b>	v0.2	
1.1 Policy	v0.2	
1.2 Strategic Planning	v0.2	
1.3 Business Planning	v0.2	
1.4 Contracts and Liabilities	v0.2	
1.5 Audit	v0.2	
1.6 Staff and professional development	v0.2	
1.7 Communications	v0.2	
<b>2. Common Services</b>	v0.2	
2.1 System Architecture	v0.2	
2.2 Hardware	v0.2	

<b><u>Section</u></b>	<b><u>First completed</u></b>	<b><u>Last revised</u></b>
2.3 Software	v0.2	
2.4 Security	v0.2	
<b>3. Ingest</b>	v0.2	
3.1 Acquisition	v0.2	
3.2 Digital Readiness	v0.2	
3.3 Transfer Procedures and Tools	v0.2	
3.4 Digitization	v0.2	
3.5 AIP and DIP Creation	v0.2	
3.6 Removals	v0.2	
<b>4. Archival Storage</b>	v0.2	
4.1 Fixity	v0.2	
4.2 Storage Media		
4.3 Backup and Recovery		
4.4 Retrieval		
<b>5. Preservation Planning</b>	v0.2	
5.1 Format Action Plans		
5.2 Technology Watch		
5.3 Migration		
<b>6. Access</b>	v0.2	
6.1 Archival Description		
6.2 Restrictions		
6.3 DIP Delivery		
6.4 Backlog Access		
<b>7. Data Management</b>	v0.2	
7.1 Metadata		



<b><u>Section</u></b>	<b><u>First completed</u></b>	<b><u>Last revised</u></b>
7.2 Search		
7.3 Reporting		