PNRA

Pacific Northwest Railroad Archive Digital Archive Plan

Original: June 16, 2016
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Revised: August 7, 2018
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4 CULTURE

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1. EXECUTIVE SUMMARY

1.1 Aims and Accomplishments

This Digital Archive Plan (DAP) is a component of the *Pacific Northwest Railroad Archive's* effort to assure the long-term preservation, management and discoverability of the PNRA and partner Railroad History Organization (RHO) collections. Specifically, this document provides a framework of operations, policies and practices covering both the technical and non-technical aspects the Archive. The following actions were accomplished in the first phase of this effort, between September 2015 and June 2016.

- PNRA Board performed strategic planning
- PNRA commenced the development of a Financial Plan, Staffing and Succession Plans, and a Disaster Plan
- Fundamental standards for metadata, interoperability, description, preservation, long- term sustainability were incorporated into the DAP.
- PNRA staff and selected volunteers received education on digital archive terminology, principles, concepts, and standards.
- A preliminary arrangement scheme was drafted for PNRA collections (excluded RHO collections).
- The drafting of collection-level findings aids/catalog records for PNRA collections commenced (excluded RHO collections).

A review of five platforms concluded with the selection of the AtoM platform for a trial. It most closely meets the needs of the PNRA in terms of functionality, low cost, backend and frontend ease of use, customization capabilities, and support options. AtoM provides modules for both collection information management and digital object management including an accession log, generation of descriptive records, filtered searching, thumbnail generation, and a customizable public interface.

The following actions were accomplished in the second phase of this effort, between August 2016 and August 2018.

SECTION 3: MISSION, VISION AND GOALS: completed strategic planning effort
SECTION 4: BUSINESS/FINANCIAL PLAN: completed and included in DAP
SECTION 5: STAFFING PLAN: completed and included in DAP
SECTION 6: APPRAISAL AND ACQUISITION:

- Applied minimum level metadata requirements to acquisition procedure.
- Incorporated Section 6.5 below, Acquisition of digital materials, into existing PNRA acquisition policy.

SECTION 7: CONTENT/DATA PLAN

- Incorporated digitization parameters provided here into existing procedures as needed.
- Incorporated Appendix I: Sample Digital Preservation Decision Flowchart into digitization decision-making and prioritization.

SECTION 8: METADATA:

- Adopted Dublin Core data elements to accession and cataloging procedures.
- Mapped and converted PNRA data fields to Dublin Core schema and uploaded content into Atom's platform.
- Incorporated DACS cataloging standards into collection description practices.
- Adopted section 8.4 Digital Image Minimum Metadata recommendations.
- Created DACS-based collection level descriptions for 40 of PNRA's collections.

SECTION 9: PRESERVATION PLAN: Ongoing

- Updated policy statements annually as the new digital archiving platform is implemented and procedures are developed.

SECTION 10: TECHNICAL SYSTEMS:

- Created schematic of proposed PNRA Digital Archive software and hardware components.

1.2 Next Steps

Below is the list of projects and tasks recommended in this document. To start, PNRA can prioritize these items and develop a timeline for completion. This can be done during Phase 3 of the Digital Archive Plan.

SECTION 7: CONTENT/DATA PLAN- Ongoing

- PNRA to design the new website pages to display and search PNRA collections within AtoM
- PNRA and the RHOs to establish a mirror site or sites
- PNRA and RHOs provide up-to-date documentation on software, hardware and systems used if they are uniquely acquired or not already widely available by the software, hardware or system providers.
- PNRA and RHOs stay up-to-date and informed of current and emerging hardware, software and storage technologies.

SECTION 8: METADATA:

- Create DACS-based collection level descriptions for remaining, and new collections.
- Prioritize primary collection descriptions down to item-level

SECTION 9: PRESERVATION PLAN: Ongoing

- Update and expand policy statements annually as the new digital archiving platform is implemented and procedures are developed.

SECTION 10: TECHNICAL SYSTEMS:

- Design server requirements for providing production-level PNRA-AtoM websites
- Purchase additional hardware and software needed for the PNRA-AtoM production websites
- Evaluate the feasibility of the Archivematica preservation platform -- future task.

SECTION 11: ACCESS:

- Register PNRA-AtoM websites with appropriate search engines.
- Wikipedia: create pages for PNRA and RHOs.
- Create online exhibits and timelines utilizing tools like Omeka and ViewShare.

SECTION 12: SUCCESSION PLAN: Complete plan

SECTION 13: DISASTER PREPAREDNESS:

- Complete Plan
- Purchase and create emergency preparedness supplies kit

2. INTRODUCTION

2.1 Project

In 2014, the *Pacific Northwest Railroad Archive* was awarded a 4Culture Heritage Collection Care grant to develop a sustainable Digital Archive Plan (DAP). The aim was to develop a framework of technical requirements and processes, based on best practices, for assuring the long-term preservation, management and discoverability of the PNRA's and its partner Railroad History Organization (RHO) digital collections. This document was created during the first phase of this project, and was updated at the conclusion of the second phase, parts A and B. The following work was completed August 2016-August 2018.

The second phase of this project completed the following tasks:

Phase A:

- ✓ Produced a work plan, scheduled and proposed methods of publicizing project and provided credit to 4Culture
- ✓ Implemented Access-To-Memory (AtoM) on a donated server
- ✓ Configured the AtoM platform to handle descriptive-data characterizing PNRA's collections
- ✓ Designed item record structures to be compatible with AtoM search functions
- ✓ Provided a brief interim report on project activities

Phase B:

- ✓ Trained four PNRA volunteers to enter data into the new system
- ✓ Configured a new PNRA website using the AtoM platform
- ✓ Updated PNRA's DAP with lessons learned
- ✓ Submitted final report documenting project activities including: outreach efforts to publicize the project; final project budget, including all in-kind contributions; and brief project overview for publication and posting on the 4Culture website or in its newsletters

PNRA has developed and refined the DAP and associated processes to manage digital data and improve the online finding aids at the Archive. This Plan acts as a roadmap to direct the improved handling and care of the digital assets in PNRA's collections and assure the preservation of this important King County heritage for future generations. The DAP will be made available to AKCHO members and others in the local cultural heritage community, and can serve as a model for building a digital archive at small, volunteer-ran organizations with limited resources.

2.2 Standards, Best Practices and Guidelines Utilized

Details for these items are provided in Section 14: Resources.

- Describing Archives: A Content Standard, Second Edition (DACS) cataloging standards
- Digital Preservation Coalition
- Digital Preservation Europe Repository Planning Checklist and Guidance (PLATTER planning template)
- Dublin Core, PREMIS and METS metadata standards
- A Framework of Guidance for Building Good Digital Collections. National Information Standards Organization (NISO).
- Library of Congress, digital preservation guidelines
- Minnesota Historical Society digitization guidelines
- Northeast Document Conservation Center (NEDCC) Preservation Leaflets
- Open Archival Information Systems Reference Model
- Preserving Digital Objects with Restricted Resources (POWRR)
- Society of American Archivists standards and best practices
- Trustworthy Repositories Audit and Certification: Criteria and Checklist (TRAC) audit guidelines

2.3 Guiding Principles

- Recommended solutions are appropriate for PNRA resource and staffing levels
- RHO priorities and practices are recognized
- Implementation of digital archiving standards and best practices
- Recommendations are sustainable.
- Digital archives are a relatively immature concept and exist in a rapidly changing technology environment.
- The best approach is a holistic one that addresses administration, management, policy and other non-technical aspects of the digital archive.
- A phased, modular implementation of digital archiving solutions is efficient, wise and prudent in the dynamic technology environment.
- The OAIS Reference Model is the foundation upon which the PNRA digital archive will be built.
- Doing something is better than doing nothing.
- The perfect is the enemy of the good.

Consultants
Rachael Cristine Woody is a consulting archivist in Portland, Oregon. She specializes in emerging community archives and digital project implementation, and has worked with museums, nonprofits, city libraries, liberal-arts colleges, state agencies, and the federal government. Woody holds a Master of Science in Library and Information Science with an Archives Management concentration from Simmons College. She is a member of Northwest Archivist and the Society of American Archivists, and is an alumna of the Archives Leadership Institute.

Elizabeth Stiles Knight was a librarian and freelance consulting archivist in Seattle who worked with historical societies, colleges, nonprofit organizations and families to improve the organization, preservation and access to archival collections. She held a Master of Library and Information Science degree from the University of Washington, was a Certified Archivist, and a Digital Archives Specialist. She was a member of Northwest Archivists and the Society of American Archivists, and a past chair of Seattle Area Archivists.

3. MISSION, VISION AND GOALS

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Tasks
- Continue strategic planning

Appendices
Appendix A: Organizational Chart

3.1 Organization Context and Purpose

Railroads are a major part of Pacific Northwest heritage and helped shape the region; its towns, communications and its economic life. Today railroads continue to play a central role in the emergence of the Pacific Northwest as a significant region of the United States, but their significance and value is not generally apparent to the public. Fostering public understanding of the value, influence and history of railroads is the mission of the nonprofit Railroad History Organizations (RHOs). This is particularly important to the future of the RHOs associated to the major railroads of the Pacific Northwest region of the United States and railroad-related museums in the region with document

collections. These organizations lack facilities to preserve the photos, drawings, documents and small artifacts which contain important elements of the histories of their railroads.

The purpose of Pacific Northwest Railroad Archive (PNRA or Archive) is to be a service organization providing affordable space and services for the benefit of nonprofit RHOs and thereby the public at large. These benefits are intended to strengthen the RHOs by making their railroad history collections much more accessible to the general public, promoting their collections' public use, preserving the collections physically and digitally, encouraging RHO memberships, and ultimately enabling RHOs to continue their missions to preserve and interpret railroad history for current and future generations.

PNRA is organized exclusively for charitable, educational, and scientific purposes, including, for such purposes, the making of distributions to organizations that qualify as exempt organizations under section 501(c)(3) of the Internal Revenue Code, or the corresponding section of any future federal tax code. --*Source: PNRA By-laws, 2012*

Audience: PNRA and RHO collections are of interest to local and national historians, rail fans, and the advertising and publishing industries.

3.2 Organizational Infrastructure

Governance and Organizational Structure: The PNRA is governed by a Board of Directors whose members are drawn from the Railroad History Organizations whose collections comprise the bulk of materials held by the PNRA.

Board President
Vice President
Treasurer
Secretary
Executive Director

Standing Committees:

- Finance Committee
- Facility Committee
- Services Committee
- Community Outreach
- Membership Committee
- Nominating Committee
- Fulfillment Committee
- Information Technology Committee

Friends/Members
Volunteers
--*Source: PNRA By-laws, 2012.*
Purpose: The purpose of Pacific Northwest Railroad Archive (PNRA or Archive) is to

be a service organization providing affordable space and services for the benefit of nonprofit RHOs and thereby the public at large.

Scope: The Pacific Northwest Railroad Archive is comprised of the collections held by four of five- member Railroad History Organizations (RHOs), as well as collections owned specifically by PNRA. RHO collections cover historically significant collections for Washington, Oregon, Idaho and Montana. The RHOs are:

- Boeing Employee Model Railroad Club
- Cascade Rail Foundation representing the Milwaukee Road in Washington State
- Great Northern Railway Historical Society
- Northern Pacific Railway Historical Association
- Spokane, Portland & Seattle Railway Historical Society

Policies and Documentation:

- Archive Services
- Digital Systems
- Mission, Vision and Goals
- By-Laws
- Collection Digitization
- Operating Plan
- Organizational Chart (Appendix A)
- Accession and Deaccession Policies
- Collections Policy
- Membership Policies
- Periodicals Management Policy
- Permission to Publish
- Personnel Policies
- Request Fulfillment Policy
- Staff Training
- Supplies Policy

Funding System: PNRA is funded from RHO assessments, operating revenues, individual contributions and grants. Additional funding comes from campaigns, memberships, sale of image rights, paid research services, traveling exhibits.

3.3 Mission

Provide a permanent institution for the preservation of railroad records from the greater Pacific Northwest area and make them accessible over the Internet.

3.4 Vision

Promote world-wide access to Pacific Northwest railroad heritage.

3.5 Goals

- Implement a smoothly operating computer cataloging system that searches across all collections and presents digitized images of documents
- Develop a strong volunteer staff that meets operational needs
- Complete the building facility and equipment build-out
- Provide operating income to fully fund the ongoing activities
- Develop strong regional community outreach programs and relations with local/regional heritage communities
- Hire professional staff to lead the archive and initiate future key programs

3.6 Strategic Priorities

In 2016, the PNRA Board identified the following top five prioritized initiatives for the next few years. It aspires to have an OAIS-compliant Trusted Digital Repository, as defined by the TRAC audit process by 2020. As of August 2018, the capital campaign aspect of these goals has been completed.

1. Provide continuing revenue
2. Finish building systems
3. Expand volunteer recruitment/leadership development
4. Complete leadership succession plan

✓ Complete capital campaign

4. BUSINESS/FINANCIAL PLAN

Contents

4.1 Plan Goals

This Business and Financial plan is intended to show how PNRA will assure protection of PNRA's digital assets in perpetuity while the Archive navigates any potential fluctuation in the economic climate. As PNRA approaches the end of its first ten years, we will look at where we are today, the important milestones that have been met, and how we can continue the successful track record that PNRA has established since the release of our original PNRA Operating Plan,

1/1/2009. By the end of 2018, it is anticipated that the facility improvements will be nearly complete and we can focus on maintaining the facility. PNRA will then focus on strengthening and decentralizing the leadership of the Archive, recruiting and training additional volunteers, and increasing the accessibility of our collections to international database searches.

4.2 State of the Archive

Stories and observations provided by Archive visitors who have experience at other railroad history archives, indicates PNRA has been successful with its mission and operating goals. The fact that PNRA seeks to inventory and provide digital and internet access to collections and have the background, volunteers and equipment to make it happen, surprises most visitors. Many institutions see preservation as their main goal, and don't place an emphasis on inventorying what is in the collections. Visitors from other railroad archives return home and discuss what PNRA is doing in an effort to encourage their institution towards a similar program.

PNRA purchased the Archive building in June 2010 with strong support from the individual members of its original Rail Heritage Organizations (RHOs), GNRHS, NPRHA and BEMRRC, and by initial membership and capital fees paid by those RHOs. After the building purchase, Cascade Rail Foundation and the Spokane, Portland & Seattle Railway Historical Society joined as RHOs and started paying their membership and capital fees. Facility improvements occupied the next 18-months with the operating tasks of sorting, inventorying, scanning, and cataloging of the collections starting in early 2012. During this early period, PNRA was funded by membership fees from our RHOs, contributions from individual RHO members, and fees from fulfillment services provided to the GNRHS and NPRHA online Stores.

By mid-2017, PNRA completed a Capital Campaign which paid down the original $475,000 building mortgage to $234,058, a reduction total of $240,942. The Capital funding came from a combination of individual contributions and matching funds from the GNRHS and NPRHA. With the substantial debt reduction, Columbia Bank, a Tacoma commercial bank agreed to refinance our remaining building debt. The Board voted to borrow an additional $61,000 to fund the installation of a box-lift system between the lower and main floors, and to establish a "rainy-day fund" to cover anticipated revenue short-falls for at least twelve months in case of a major economic downturn that significantly affects the Archive's revenues. This fund will give the Board enough time to develop a program to keep PNRA viable in the new economic climate.

In the summer of 2018, PNRA is in the process of completing five important facility improvements, funded by a Heritage Capital Projects (HCP) grant from the State of Washington. The projects include:

1. Replacement of single-pane with thermos-panes windows;
2. Installation of climate control systems throughout the Archive;
3. Replacement of a rollup door with steel doors in the Receiving area;
4. Porches on the north and south sides of the Archive to route rain water away from the building;
5. Installation of safety treads on both the lower and upper stairs.

4.3 PNRA Financial History

From early 2012 to mid-2018, PNRA's funding has been stable, covered all operational expenses and provided a small surplus which was used to expand programs. At the same time, facility improvements, equipment purchases and special programs have been funded by successful government and foundation grant applications. As of August 2018, PNRA's operating funds are stable at around $65,000 per year with additional funds raised for special projects. The operating funds came from four main sources to cover the Archive's operating expenses: RHO membership fees (34%), fulfillment services (10%), individual contributions (44%), and foundation grants (12%). PNRA doesn't anticipate funding sources changing dramatically in the foreseeable future.

The individual contributions from Friends of PNRA are driven by the illustrated Northwest News newsletter published each quarter since 2011. The publication communicates all the activities at the Archive to keep stakeholders up to date with PNRA's progress and successes. All Northwest News editions can be accessed on the website www.PNRArchive.org. The familiarity with the Archive activities maintains the donor's commitment to PNRA and encourages membership renewal each year. In addition, as more people visit the Archive or hear about it from community presentations, new Friends of PNRA are added each quarter.

PNRA is prepared to maintain the Archive and preserve the physical and digital collections for the long term with the strong support from our RHOs. All RHOs publish quarterly history journals and the collections preserved at PNRA are instrumental to preparing articles and features for publication. The RHOs membership levels are dependent on the sustained quality of those publications, so the ability to easily locate items in the collections is vital to the health of the RHOs.

Many equipment acquisitions and special projects have been funded by 4Culture, the King County agency that distributes a portion of the hotel/motel tax to the arts and cultural organizations of the County. That funding source continues to be available, however many of their grant programs have become more competitive in recent years, though PNRA continues to receive substantial awards from this important source of funding. As the railroad heritage community becomes more familiar with PNRA, additional grant opportunities have become available, such as Moccasin Lake Foundation, BNSF Foundation and the Union Pacific Foundation. To continue PNRA's preservation mission, the Archive needs to maintain strong grant writing capability.

The Archive has not built the monetization of collections into a funding model. This has been the downfall of many of heritage institutions as they tend to set the prices of copies and services high. This dissuades user engagement and promotion of historical materials, while drastically reducing access and use of collections. With reduced use, the funding to the institution is often reduced and threatens the maintenance of and access to collections. In agreement with RHO partners, it is PNRA's intent to only recover direct costs from fulfilling requests for materials to promote use and access to the collections.

Financial details on the following page.

Income	2010	2011	2012	2013	2014	2015	2016	2017
40000 · Income								
Total 41000 · Donations	65,111.00	28,277.31	20,664.24	19,910.00	24,157.78	25,020.72	24,755.38	28,687.23
Total 42000 · Membership Fees	6,825.00	15,600.00	20,025.00	17,700.00	20,400.00	19,725.00	19,705.00	20,455.00
Total 43000 · Fulfillment Revenue		4,720.05	12,014.46	14,289.18	13,372.06	12,260.56	12,084.57	10,287.57
Total 44000 · Designated Project Rev.		7,000.00	56,302.52	15,470.79	4,734.71	8,647.99	17,380.00	10,000.00
Total 45000 · Capital Campaign					5,000.00	136,511.13	30,711.67	76,250.15
Total 48000 · Investment Revenue	21.60	15.94	0.60	2.11	1.49	3.84	4.87	1.00
Total 40000 · Income	71,957.60	55,613.30	109,006.82	67,372.08	67,666.04	202,169.24	104,641.49	145,680.95
Total Income	**71,957.60**	**55,613.30**	**109,006.82**	**67,372.08**	**67,666.04**	**202,169.24**	**104,641.49**	**145,680.95**
Expense								
50000 · Operational Expenses								
Total 51000 · Fulfillment Expenses		2,762.87	5,318.04	4,860.77	4,085.29	4,017.47	3,316.98	3,732.84
Total 52000 · Designated Project Expen.			9,790.77	15,370.06	580.13	3,269.09	11,224.73	5,360.77
Total 53000 · Project Expenses			69.53		22.96			
Total 50000 · Operational Expenses	0.00	2,762.87	15,178.34	20,230.83	4,688.38	7,286.56	14,541.71	9,093.61
60000 · Overhead Expenses								
Total 61000 · Administrative Expenses	6,088.45	1,895.00	2,161.49	5,976.83	5,934.28	8,020.06	6,170.65	10,729.72
Total 62000 · Occupancy Expenses	36,113.58	34,801.34	36,487.15	42,662.65	41,897.93	38,600.98	30,442.99	29,387.00
Total 63000 · Information Technology			1,193.30	1,699.92	1,554.54	2,920.25	5,335.28	3,297.82
Total 65000 · Operations	136.00	6,673.72	4,953.17	5,766.73	5,466.44	5,876.93	6,287.84	9,357.01
Total 60000 · Overhead Expenses	42,338.03	43,370.06	44,795.11	56,106.13	54,853.19	55,418.22	48,236.76	52,771.55
Total Expense	**42,338.03**	**46,132.93**	**59,973.45**	**76,336.96**	**59,541.57**	**62,704.78**	**62,778.47**	**61,865.16**
Net Income	**29,619.57**	**9,480.37**	**49,033.37**	**-8,964.88**	**8,124.47**	**139,464.46**	**41,863.02**	**83,815.79**
Mortgage Reduction	0.00	0.00	0.00	0.00	0.00	**145,000.00**	**20,000.00**	**20,805.00**

4.4 Next Steps

Facility: In 2019, the Archive's comfort and security is expected to improve with the completion of current Heritage Capital Projects work. The Archive will control the temperature of the lower and main floors throughout the year to complement our mild marine climate which doesn't have the extremes of other parts of the United States. We will have cooling during very hot weeks in Puget Sound, but expect the total heating and cooling costs to be near the past costs of the inefficient gas heaters on the main floor. However, if the temperature-control costs prove to be much higher than in the past, PNRA will work with our RHO's to establish appropriate membership fees to offset the new costs.

The Digital Archive will require more training and effort from volunteers, but the extended cataloging will be far more useful when accessible on the international search networks. With the volume of material at the Archive, the number of volunteers needs to be increased to complete the scanning, cataloging and posting of the material on the internet. There is a need for a third server for the AtoM-Search functions, which will increase server hosting costs but is not considered a significant cost increase. The cost of the new server equipment will likely be donated by our larger RHOs.

Leadership: Over the last few years, the Board has assumed that PNRA would hire a paid Executive Director to have responsive future leadership. In light of PNRA's success to date with volunteer leadership, the Board will reassess this assumption about paid leadership. Some hybrid leadership model with a sense of a shared responsibility for the fulfillment of PNRA's Mission by volunteer work crews may be used in the future. Since the RHOs are all-volunteer bodies, it could be beneficial if PNRA mirrors the same sense of shared leadership responsibility.

As of mid-2018, the Archive is attracting many new volunteers with significant management experience who are showing dedication to PNRA's success. A major objective for the next year will be to build a strong committee structure for PNRA to decentralize the leadership for program growth and management of the Archive. With a strong committee structure, the Archive can be led by a strong volunteer executive director or a similar hybrid model and maintain the same level of individual commitment to PNRA's Mission.

Volunteer Recruitment: With building improvements nearing completion, the next major goal is launching an aggressive program for recruiting seniors in South King County. PNRA's archival projects, services, programs and facilities have proven to offer a unique set of activities for the senior-aged population, especially newly retired seniors. The new volunteers would add new day-long work sessions at the Archive each week where they participate in meaningful heritage projects with other like-minded, senior-aged volunteers. This would provide accelerated preservation and online access to important Pacific Northwest railroad history.

Internet Website Delivery provides the main access to PNRA's and RHO's history resources and is a key part of PNRA's Mission. Currently, the five data websites managed by PNRA volunteers receive 16,500 individual visits each year as compiled by Google Analytics software. With the Digital Archive update of search functions on sites and user interfaces, PNRA expect the websites to be much easier to use than and current SharePoint-based systems. While the current

websites store images and databases very efficiently, the "column-filtering" search function is very different than internet-standard: Google Search. Users predominately try to enter words or phrases as they do on Google, leading to inaccurate search results that don't reflect the content of the collections. Using the AtoM platform and a new user interface, it is anticipated that users will quickly be able to drill down to the correct content. When this new platform is available and the volume of posted material increases, PNRA expects the website traffic to increase significantly.

5. STAFFING PLAN

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5.1 Archive Experience

PNRA is an all-volunteer organization where many people lend their skills to the Archive's mission of preserving railroad collections and making them accessible to everyone via the internet. PNRA recruits new volunteers with many different skills and interests at local railroad-related events. The most important aspects for volunteer recruitment are the volunteer's desire to help preserve railroad history and their willingness to learn something new. Many of the tasks handled by volunteers are highly technical. However, PNRA's most successful volunteers are professional retirees who have some knowledge of railroad operations and are able to carry out complicated procedures.

While Archive work is not for everyone, when PNRA volunteers get into a project, they find the work additive and are happy to work on the project week after week. PNRA trains volunteers to perform archival tasks by enlisting professionals to deliver training protocols and train the first group of trainers.

A typical work session of ten participants has:

- One session leader/trainer who matches projects with the volunteer's interest and skills. They then are available during the work session to answer the volunteers' questions and resolve their issues. When not helping others, the leader responds to online requests for photos, maps, drawings or documents, and arranges other collections for the volunteers to work on in the future.
- Two volunteers sorting the contents of banker boxes, preparing an inventory of the box, and adding the inventory to the Archive database used to locate items in the collections.
- Three volunteers scanning prints, slides, negatives, maps or other wide-format documents. It is preferred to scan an item before it is cataloged so the cataloger can work from digital images, instead of the physical item.
- Three volunteers creating catalog records for the scanned images which can then be posted on an internet website with the image.

- One volunteer who resizes the images in PhotoShop, posts them to the servers, creates the image links, and applies those links to the database records so that the image is displayed with its catalog data. This volunteer job requires the most technical skills of all in the work session.

PNRA's Digital Archive Consultant, who helped complete the Phase 2 of the Digital Archive Project, trained the first group of AtoM trainers. Those trainers will then train and assist other volunteers to scan and catalog the collections. The Digital Archive Consultant will be available to develop future training protocols. Through this model PNRA expects to successfully convert the collections previously posted on SharePoint to the AtoM search system.

5.2 Next Steps

A stated PNRA goal is to hold Archive work session during the day, most of the days of each week, along with additional evening sessions. To make this happen PNRA will need more volunteers and session leaders. In 2017, 85 volunteers worked at the Archive, with 48 of those volunteers working at the Archive and the balance working on the Boeing layout. Over that year, the Archive volunteers worked a total of 8,869 hours while at the facility for an average of 185 hours per volunteer. Currently, Archive work sessions are held ten days each month with the average volunteer session running 4 to 6 hours. If PNRA increases monthly work sessions with ten volunteers to 24 per month, the Archive will need to recruit 40 to 50 new Archive volunteers which would double our current volunteer force and their work session hours.

PNRA proposes to start a program to recruit retired seniors from the south King County to work at the Archive to help provide full access to collections using the AtoM platform. The plan is to start the recruitment program in Burien, and later move to the nearby communities of Normandy Park, Des Moines, SeaTac, Tukwila, and Renton. These six communities have active programs for seniors and their senior population totals 26,677, as measured by the U.S. Census Bureau.

This recruitment program will initially require effective partnerships with Burien Senior Programs, Discover Burien and Merrill Gardens in Burien to integrate with other seniors-oriented projects in the Burien community. PNRA's experience with volunteers has shown that many seniors have a strong interest in the history contained in railroad documents being preserved at PNRA, and that interest propels them to become loyal crew members at the weekly sessions.

PNRA expects to work with Burien Senior Programs and Discover Burien to design the program and its promotional plan. After the Burien program is successfully underway, PNRA will expand to the Normandy Park-Des Moines senior programs and follow with expansion to the communities of SeaTac, Tukwila and Renton. Informational partnership discussions with these additional senior programs will be held to adapt the Burien Program to be effective in the other communities.

6. APPRAISAL AND ACQUISITION

Contents

Tasks Completed as of August 2018

- ✓ Updated existing Donor Agreement form.
- ✓ Completed and adopted revised collection development policy.

Tasks as of August 2018:

- Complete collection-level descriptions for PNRA collections. *In progress.*
- Incorporate elements provided below into existing collection development policy.
- Incorporate Section 6.5 below, Acquisition of digital materials, into existing PNRA acquisition policy.
- Apply minimum level metadata requirements to acquisition procedure.

Appendices

Appendix B: Revised Donor Agreement form
Appendix C: Collection-level Description Record, sample

6.1 Current Procedures

Appraisal is the process of identifying materials offered to an archives that have sufficient value to be accessioned. Existing documentation on the PNRA's general policies and procedures for appraisal and acquisition is available in the PNRA Collections Policy and Operating Plan.

The following recommendations are provided to update and expand current PNRA appraisal and acquisition procedures to include digital materials.

6.2 Appraisal: Update Collection Management Policy

PNRA should incorporate the following elements into its existing collection development policy.

1. Statement of purpose of the repository: Provide a permanent institution for the preservation of railroad records from the greater Pacific Northwest area and make

them accessible over the Internet.

2. Types of programs and activities supported by the collections:

- Affordable space to house RHO collections and allow RHO members to preserve materials.
- Equipment for RHO members to digitize and catalog their collections.
- Making PNRA and RHO collections available online.
- Interpretive exhibits promoting railroad history throughout the region.
- Fulfillment of requests for specialized research and copies of materials by trained PNRA contractors.

3. Audiences served: Railroad historians, model railroad hobbyists, scholars and researchers, the general public.

4. Geographic scope: Pacific Northwest, Washington, Oregon, Idaho, Montana

5. Time period:

6. Types of materials collected:

- Photo negatives, prints and slides
- Rare documents, corporate records, and publications
- Non-unique paper documents, files and records
- Oversize objects (maps, timesheets, schematic drawings, etc)
- Digital files (JPEG, TIFF, PDF, text, spreadsheet, database)
- Selected artifacts
- Selected publications

7. Topical scope of collections (subjects, people, organizations):

- railroads
- trains
- locomotives
- cabooses
- engines
- boxcars
- rail
- stations
- depots
- equipment
- operations and traffic
- structures
- advertising
- branch lines
- disasters
- rail yards

8. Gaps or areas of weakness by unit, chronological period, geographic location, or other criteria;

9. Locus of responsibility for acquiring materials. The PNRA Executive Director or the Chairman of the Board of Directors, or the appropriate RHO representative, should be responsible for approving new acquisitions. The PNRA cares for items owned by member RHO's. RHO's may designate materials they have acquired be added to the holdings at PNRA. In addition, the PNRA may accept materials on behalf of the RHO's. The PNRA may acquire materials not related to a RHO under the authority of the Services Committee and the PNRA Executive Director.

10. Cooperative agreements and relationship with RHOs and other repositories.
    - Cascade Rail Foundation
    - Great Northern Railway Historical Society (GNRHS)
    - Northern Pacific Railway Historical Association (NPRHA)
    - Spokane Portland & Seattle Railway Historical Society (SP&SRHS)
    - Jackson Street Roundhouse (JSRH) facility, St. Paul, MN
    - Boeing Employees Model Railroad Club (BEMRRC)

11. De-accessioning policy (existing)

12. Practical procedures for implementing the policy: The PNRA Executive Director, the Board of Directors, and any persons directly involved in evaluating possible donations should be familiar with this policy. I can be referred to as needed when declining donations or determining whether a particular donation is within the scope what PNRA collects.

13. Schedule for evaluating/reviewing the policy: 3-5 years

6.3 Appraisal: Collecting Objectives for Digital Collections

PNRA's digital collections are collectively defined as any creative work, image, document, or digital media-type file that are either "born digital" or represent items in a digital format which serve as a resource for PNRA. The principal emphasis shall be materials and collections related to railroad history and operations from the region, including the transcontinental, regional, logging and industrial railroads. Railroads represented at the PNRA include the Northern Pacific Railway; the Great Northern Railway; Spokane, Portland & Seattle Railway; and the Milwaukee Railroad in Washington State. They may include digital versions of original images, documents, ephemera, company records, timetables, manuals, maps, selected publications, and other hardcopy materials.

6.4 Appraisal: Criteria for Accepting New Materials

When determining whether to accept a donation of records, consider the following:

- Do the materials meet the requirements of the PNRA collection policy?
- Do the materials duplicate collections already held by PNRA?
- Do the materials complement or compete with other collections?
- Do the materials have potential research value?
- What resources will be required to process, store, and provide researcher access to the collection for the long term?
- Are there ramifications to accepting or rejecting the material?
- Would the materials, and potential researchers, be better served by placing the material in another repository?

6.5 Acquisition: Digital Materials

Digital formats accepted: PDF, TIFF, JPEG, JPEG2000, WAVE

Guidelines and procedures:

Exhaustive, upfront reformatting or processing of digital objects can be time-consuming and unnecessary when the value and future use of an object is unclear. Instead, current practice involves minimal initial processing that includes accessioning, assigning minimum-level metadata and a unique identifier, virus checking and validating files. Provided here are the steps for this process.

STEP 1: State accepted methods for acquiring digital materials, eg: flash drive or file transfer (preferred); CD, DVD also accepted.

STEP 2: Perform risk assessment of new digital acquisitions: a physical evaluation of digital material when it first arrives and an analysis of file formats. Physical evaluation is essential to determine if media is stable and readable.

STEP 3: Input into accession log.

STEP 4: Record metadata for digital acquisitions. Whenever possible, record as much information as possible in the donor agreement, at the point of acquisition, or during accession.

Minimum level:

- Unique identifier
- Title
- Creator
- Donor

- Date of materials
- Material types, file formats
- Extent (file size)
- Summary description (scope and content note)
- Conditions governing access

Additional data:

- Accrual or new collection
- Original or copy
- Processing priority
- Preservation actions
- Subject terms

STEP 5: If a non-RHO acquisitions, assign a collection number based on the Arrangement Scheme or record as an accrual, as appropriate.

STEP 6: Determine appropriate level of treatment. Digital media such as CDs, DVDs, disks, and flash drives are fragile and prone to obsolescence. Digital files can be copied to a network or cloud-based storage area designated for minimally processed or unprocessed materials.

STEP 7: Utilize digital preservation ingest tools for digital item preservation, listed here

- Virus checker (eg, MS Defender)
- Spyware checker
- MD5 fixity checker (generates check sums) http://onlinemd5.com/
- FTK Imager (forensic evaluation) http://accessdata.com/product-download
- Bag-It Transfer Utility http://sourceforge.net/projects/loc-xferutils/
- Duke Data Accessioner http://dataaccessioner.org/
- JHOVE format identification and validation tool http://jhove.sourceforge.net/
- Unified Digital File Format Registry http://udfr.cdlib.org/

STEP 8: Create a collection-level record if not an accrual. Update existing collection-level record if an accrual. See Appendix C: Sample Collection-level Description Record, sample.

STEP 9: Label and re-house materials as needed. Record shelf location.

7. CONTENT/DATA PLAN

Contents

Tasks Completed as of August 2018

- ✓ Established a collection-level numbering scheme for PNRA-owned collections.
  - Each collection is associated with a particular donor, even if materials were received in several increments. The Donor ID in AtoM will also serve as the Collection ID for all donations from the donor. Incremental donations can be identified separately as "accruals" within the DACS structure.
- ✓ Finalized the draft Arrangement Scheme.
- ✓ Incorporated digitization parameters provided here into existing procedures as needed.
- ✓ Incorporated Appendix I: Sample Digital Preservation Decision Flowchart into digitization decision-making and prioritization.
- ✓ Two or three copies of all digital objects and collection data are stored in separate locations, should be provided.
  - Current PNRA practice provides for two and sometimes three copies on separate digital resources: 1. The originating workstation; 2. The PNRA network server (PNRA 12); and 3. Hard drives copies monthly from PNRA 12 and stored at other locations than the Archive.
- ✓ PNRA and the RHOs established a mirror site or sites.
  - No unique hardware or software is in use, and documentation for the commercially acquired hardware and software is readily available.
- ✓ PNRA and RHOs stay up-to-date and informed of current and emerging hardware, software and storage technologies.
  - This is an ongoing practice.
- ✓ Trialed AtoM collection data management platform
  - Developed a PNRA-specific DACS-based template for importing descriptions into AtoM. (See DACS and ISAD CSV Template, https://www.accesstomemory.org/en/docs/2.4/user-manual/data-templates/dacs-template/#dacs-template).
  - Identified collections for AtoM platform trial.
  - Obtained current copy of AtoM.

- Completed pilot collection descriptions.
- Imported pilot collection descriptions directly into AtoM

Related Appendices
Appendix D: Open Archival Information System (OAIS) Reference Model, overview
Appendix E: Digital Collection Inventory [PENDING]
Appendix F: Finalized Arrangement Scheme (PNRA-owned collections only)
Appendix G: Digitization Parameters
Appendix I: Sample Digital Preservation Decision Flowchart
Appendix J: Access to Memory (AtoM) Platform information

7.1 Overview: OAIS model and digital object management

Digital collections must be actively managed unlike their non-digital counterparts which can be passively managed. Digital files are inherently more fragile and vulnerable to damage, corruption, and loss. They are also more expensive to manage. Successful digital repositories are based not on expensive or elaborate technical solutions, but rather on careful, thorough planning and good management.

One way to think of a repository, in very simplified, generalized terms, is of a dark archive (master files, usually stored offline), a gray archive (used for managing files, creating copies, reformatting, etc.) and a light archive (the discovery or access platform).

The OAIS model defines digital objects in terms of SIPS, AIPS, and DIPS, submission, archival and dissemination information packages, respectively. Various tools and platforms can be utilized to create, manage and preserve the information packages. See Appendix D: Open Archival Information System (OAIS) Reference Model, overview.

According to the OAIS Reference Model, there are six mandatory responsibilities for a digital repository.

1. Negotiate for and accept appropriate information from information producers.
2. Obtain sufficient control of the information to meet long-term preservation objectives.
3. Determine scope of an archive's user community.
4. Ensure preserved information is independently understandable to the user community.
5. Follow documented policies and procedures to ensure the information is preserved against all reasonable contingencies, and that there are no ad hoc deletions.
6. Make preserved information available to the user community, and enable dissemination of authenticated copies of the preserved information in its original form, or in a form traceable to the original.

The OAIS model also describes the essential functions of a digital repository.:

- Ingest
- Data management
- Preservation Planning
- Archival Storage
- Administration
- Access

7.2 Repository Size and Specifications

Existing repository size – as of August 2018

- Total data: 8.14 TB
- Available to users: 270 GB
- Objects: 882,106 Files

Quantities

- 125,000 digital objects to be archived per year
- 40,000 items scanned per year
- 97% of digital objects are scanned copies of non-digital holdings.
- 3% of digital holdings are born digital

Existing formats

- MSWord
- XLS
- PDF
- TIFF, JPEG images
- MDB MS Access

Digital media

- DVDs and CDs
- thumb (flash) drives
- 3.5," 5," and 8" disks,
- digital files of photos and documents, etc.

Data characteristics

- Data complexity: primarily simple data (spreadsheets-text formats, images, video)
- Data sensitivity: A high proportion contains sensitive information such as:

personal data; bridge structural data; proprietary images. Bulk: Project files; maps; common images, technical drawings

7.3 Collection Description

Materials received by PNRA are organized by collection following the *respect des fonds* principle of keeping collected materials together, as assembled and provided by the collector/donor. These types of collections are referred to as *fonds*. When *fonds* are officially cataloged within AtoM, the catalogers use Describing Archives a Content Standard (DACS) to inform the content provided within the record, including: title, creator, dates, collection descriptions, genre, subjects, etc. Any previously developed descriptions for portions of the collection will be repurposed to conform to DACS and incorporated into AtoM in their appropriate Dublin Core fields. Please see AtoM for a full list of *fonds* and access to collection summaries. A list of digital collections in AtoM as of August 2018 can be seen in Appendix E: Digital Collection Inventory.

7.4 Collection Organization

Requirements

Arrangement Scheme

Archival collections are organized (arranged) both physically and intellectually. Physical arrangement often corresponds with the intellectual arrangement system, which is called an arrangement scheme. An arrangement scheme provides a framework which simplifies the incorporation of new accessions and facilitates locating collections and items. Archival collections of the records of a corporation, organization or other entity are generally arranged by record group, subgroup and series but the scheme can be more granular as needed. Archival collections of materials produced by families and individuals can be organized by collection and series, such as correspondence, images, artifacts, manuscripts, calendars, diaries, etc.

The finalized arrangement scheme for the collections is provided in Appendix F: Finalized Arrangement Scheme.

The RHOs have their own collection organization systems which will be maintained at their discretion. All materials present at PNRA will be included in the single arrangement system.

Item and Collection Numbering

The PNRA and RHOs assign unique identifiers to items that are digitized, but in order to make PNRA and RHO collections more widely findable on the Internet, a collection-level numbering system was needed. As of August 2018, collection numbers have been

created for PNRA collections entered into AtoM. Ultimately, EAD collection-level finding aids should be generated for publishing online. EAD stands for Encoded Archival Description and is XML-based, the de facto standard for online finding aids. Large, online aggregators of archival finding aids, such as Archives West and Archive Grid, require finding aids to be in EAD format. When PNRA is ready, EAD encoded finding aids can be generated from AtoM.

7.5 Digitization Parameters

General Guidelines

- Highest resolution available, not rescaled or interpolated
- Highest bit depth available, 16 bits per channel if available
- Embedded color profile or specified color space used in published version
- Uncompressed
- Unlayered

Master digital images should be stored in a nonproprietary / open source file format that supports long-term preservation of the image. The recommended format most frequently used for master digital images is TIFF or JPEG 2000 (not to be confused with standard "JPEG" format).

The service master is an optimized working copy of the master file, that can be used as a source for all subsequent derivatives. They are also used to create print publications. Creation of a service master from a master will depend on the source file and the resources and time of the organization. Typically, all scans of photos and most scans of historic documentation are more likely to be subject of needing rework and the creation of a service master file. Newer documents may need no rework so need no master service file if resources are slim.

Derivative files are created from the service master or master file and are used for general Internet or network access. Derivative files typically include a preview image, which is sized to fit within the screen of an average monitor or other delivery mechanism and an often a thumbnail image, which is small enough to load quickly and linked to the larger preview image

Derivative files are created from the service master or master file and are used for general Internet or network access. Derivative files typically include an preview image, which is sized to fit within the screen of an average monitor or other delivery mechanism and a often a thumbnail image, which is small enough to load quickly and linked to the larger preview image

File Naming

File naming recommendations (Minnesota Historical Society)

- Use lowercase letters of the Latin alphabet and the numerals 0 through 9.
- Use underscores or dashes in place of spaces
- Characters to avoid: ¬ ! " £ $ % ^ & * ( ) + = { [}] : ; @ ~ # ? < > , | \ ` '
- Begin each filename with a two- to three-character acronym representing the organization's name
- Follow the organization's acronym with an object ID. The object ID consists of any unique numbering scheme already in use to represent the object or, if no such number exists, a short description representing the item
- Include a part designator after the object ID, if it is part of series when applicable
- File names should be limited to 31 characters, including the three-character file extension
- Remember Think long-term
- Select a system that will outlast staff involved in the current project
- Consider the number of files your institution will ultimately be managing
- How simple or easy will it be to make a mistake?
- File names do not take the place of metadata
- Keep them simple and straightforward.

Specific digitization parameters for photographs:

- Parameters for other material formats (maps, text, film negatives and graphics) are provided in Appendix G: Digitization Parameters.
- Digital content management platforms, such as AtoM, that PNRA reviewed, generate thumbnail images.

	Master	Web Access	Thumbnail
File format	TIFF	JPEG	JPEG
Bit depth	16 bit color 24 bit color	8 bit grayscale 24 bit color	8 bit grayscale 24 bit color
Spatial resolution	400-800 ppi	72 ppi	72 ppi
Spatial dimensions	4000 to 8000 pixels across the long dimension, depending on size of original, excluding mounts and borders	600 pixels across the long dimension	150 to 200 pixels across the long dimension

7.6 Packaging

The Open Archival Information System (OAIS) information model is built around the

concept of an information package, which consists of the digital object that is the focus of preservation, along with metadata necessary to support its long-term preservation, access, and understandability, bound into a single logical package. There are three important variants of the information package concept: the Submission Information Package (SIP), the Archival Information Package (AIP), and the Dissemination Information Package (DIP). See Appendix D: Open Archival Information System (OAIS) Reference Model, overview for more information.

Archivematica, a back-end digital archive preservation platform reviewed by PNRA during this planning process, generates SIPs, AIPs, and DIPs. Not all platforms perform this process. As digital archiving systems continue to mature, this function will become typical. Once the initial phases of the new digital archive system are in place, the PNRA will pursue implementation of Archivematica, or a similar system, for the generation and preservation of digital object information packages.

7.7 Storage and Backup

Existing:

- Onsite: Local machine copies + PNRA12; website copies on two local machines; external hard drives used for monthly backup
- Offsite: Data center in Tukwila hosting PNRA-owned web servers which maintain a three-day backup.
- Cloud: The Amazon Web Services provides a place for us to store an off-site backup to be used in case our datacenter burns or is flooded and our servers are destroyed. That off-site backup is pulled once a month. We can't operate the sites from this Amazon Web Service, only restore the web site configuration to a new set of servers in case of disaster.
- External drives are refreshed monthly; dark when not being refreshed.
- Work is stored in two locations at the PNRA site

Planned

- The PNRA will continue to utilize its existing configuration of local, remote and cloud-based storage and backup.
- Two or three copies of all digital objects and collection data, stored in separate locations, should be provided.
- Most digital archive platforms offer hosted storage but costs are high. Instead, at least initially, PNRA will integrate AtoM and Archivematica (or similar platform) with its Amazon Cloud site.
- PNRA and the RHOs should eventually establish a mirror site or sites.
- PNRA and RHOs should provide detailed and up-to-date documentation on software, hardware and systems used; changes and updates to hardware, software and systems; tests and evaluations of system functionalities
- PNRA and RHOs should stay up-to-date and informed of current and emerging hardware, software and storage technologies.

- Higher level storage requirements for the long-term preservation of Archival Information Packages (AIPs) are articulated by the Trustworthy Repositories Audit & Certification Checklist (TRAC)[1]. These requirements include: the use of migration, transformations, checksums, multiple copies, distributed storage, and tracking of processing history.

7.8 Collection Information Management

Current Practices

The PNRA stores collection information in myriad Excel spreadsheets, SharePoint and MS Access databases. This includes accession records, item cataloging, collection inventories, donor lists, shelf locations, and other data. This system makes it difficult to organize, manage, process, locate, access digital and non-digital holdings and prioritize tasks and workflows. The PNRA is anxious to migrate to a more unified and coherent system.

Planned

Five of the six digital archiving platforms that PNRA reviewed over the past six months provide collection management functionality. In the fall of 2017, PNRA will perform a trial of the AtoM platform which will provide PNRA with a single interface for accession logs, donor records, location codes, collection- and item-level descriptive records, processing prioritization, metadata standardization, public search interface, thumb-nail image generation, and permission levels for administration, RHOs, and volunteers. For more information on AtoM, see Appendix J: Access to Memory (AtoM) Platform information.

8. METADATA

Contents

[1] Center for Research Libraries. *Trustworthy Repositories Audit and Certification: Criteria and Checklist* (TRAC). 2007. http://www.crl.edu/sites/defaults/files/d6/attachments/pages/trac_0.pdf.

Tasks Completed as of August 2018

- ✓ Established an RHO and collection-level unique identifier scheme; based on the Arrangement Scheme.
    - PNRA has determined a single collection-level unique identifier scheme. The owning RHO will be noted in a data field associated with the collection.
- ✓ Adopted Dublin Core data elements to accession and cataloging procedures.
    - PNRA has adopted Dublin Core elements and DACS descriptive standards.
- ✓ Mapped and converted PNRA data fields to applicable Dublin Core schema for eventual upload to new platform.
    - PNRA has mapped applicable data fields to Dublin Core schema and is populating the content according to DACS descriptive standards using the AtoM ISAD template.
- ✓ Incorporated DACS cataloging standards into collection description practices.
    - PNRA has developed a cataloging process that incorporates DACS standards.
- ✓ Adopted section 8.4 Digital Image Minimum Metadata recommendations.

Ongoing Tasks as of August 2018

- Create DACS-based collection level descriptions for all collections.
    - Ongoing, anticipated completion of cataloging backlog collections in the next 1-2 years.

Related Appendices
Appendix F: Finalized Arrangement Scheme
Appendix K: AtoM Metadata Crosswalks

8.1 Overview

Utilizing appropriate metadata is a core element of a digital archive. PNRA and RHOs should adopt the widely used metadata standards described here in order to improve collection organization, optimize discovery, promote interoperability with external systems and future platforms, and assure long-term access.

There are three types of metadata standards that PNRA should implement: descriptive, preservation and technical. Most of the digital archiving platforms reviewed by PNRA as part of this Digital Archive Plan, such as Archivematica, utilize these standards and some generate the preservation and technical metadata. This section provides guidelines for PNRA staff on needed revisions and standardization of existing cataloging data fields, collection-level description, and a proposed arrangement scheme for PNRA-owned collections. All of these will provide PNRA with foundation of standards-based, widely-adopted metadata schema that will improve collection management practices.

The core metadata standards PNRA will adopt are:

- Dublin Core (DC) for descriptive metadata elements -- AtoM provides a customizable DC template.
- Describing Archives: A Content Standard (DACS) provides the 'cataloging' rules for archival descriptive records -- AtoM provides a customizable DACS template
- PREMIS for preservation metadata -- Archivematica platforms generates PREMIS metadata
- METS for technical metadata -- Archivematica platform generates METS metadata
- Encoded Archival Description (EAD) -- XML-based coding for finding aid interoperability with other discovery platforms and and digital finding aid aggregators. -- EAD encoded finding aids can be generated easily from Dublin Core descriptive records.

8.2 PNRA Metadata Crosswalk

PNRA fields	Dublin Core	DACS	Scope note
Required metadata fields			
		2.2 Name and location of repository	
RHOs? Arrangement Scheme collection IDs Accession No. Collection ID (accession number) Photo ID AFE Item Number	Identifier	2.1.3 Local Identifier (for the individual item)	DACS: 3 elements local repository: not required but a ISIL code request for PNRA has been submitted to Library of Congress. Country: US for United States Note: #2 and #3 useful later for EAD encoded finding aids.
	Title	2.3 Title	Follow DACS guidelines when creating titles.
Begin Date End Date	Date	2.4 Date	Follow DACS guidelines when formatting dates eg, YYYY Month DD. DC qualifier fields
Item Size	Format	2.5 Extent	DC: The file format, physical medium, or dimensions of the resource.

Donor ID Donor Name Photographer	Creator	2.6 Name of creator(s)	DC: An entity primarily responsible for making the resource. DACS: A description of the context in which the materials being described were created, assembled, accumulated, and/or maintained.
	Contributor	2.6 Name of creator(s)	DC: Examples of a Contributor include a person, an organization, or a service. Typically, the name of a Contributor should be used to indicate the entity. A person, organization, or service responsible for the content of the resource.
Collection Description Item Description	Description	3.1 Scope and content	
Location Sublocation Division? Subdivision? Milepost Station, Station Name?	Coverage	3.1 Scope and content	DC: Spatial or temporal
	Rights	4.1 Conditions governing access	DC: Information about rights held in and over the resource. Defaults statement: The collection is open for research use.
	Language	4.5 Language/scripts of the material	Default statement: Materials entirely in English.

Optional metadata fields			
	Source	Custodial history Immediate source of acquisition	
	Publisher	3.1 Scope and content	
Subject NPRHA Cataloging Subject List RR Name State Station Name Division Subdivision Milepost? Names (Persons) Trains Equipment	Subject	Controlled access terms	DC: Typically, the subject will be represented using keywords, key phrases, or classification codes. Recommended best practice is to use a controlled vocabulary. DACS Categories: Names Places Subjects Documentary forms Occupations Functions LC authorities Getty Thesaurus of Geographic Names
	Relation	~~Controlled access terms~~	DC: A related resource
		2.7 Administrative/Biographical history	Create name and organization authority records
Item Type	Type		DC: Recommended best practice is to use a controlled vocabulary such as the DCMI Type Vocabulary [DCMITYPE]: Collection Dataset Event Image INteractiveResource MovingImage, PhysicalObject Service Software Sound StillImage Text
RHO Owner			
Location Sublocation			

	Relation?	5.4 Accruals 6.3 Related archival materials	

8.3 Descriptive Metadata

Minimum Descriptive Metadata:

Unique Identifier
Title
Creator
Donor
Date

Describing Archives: A Content Standard DACS

Note: The PNRA has a paper copy of this book. It is also available online: http://files.archivists.org/pubs/DACS2E-2013_v0315.pdf
(DACS) is an output-neutral set of 'cataloging' rules for describing archives, personal papers, and manuscript collections, and can be applied to all material types. It is the U.S. implementation of international standards (i.e., ISAD[G] and ISAAR[CPF]) for the description of archival materials and their creators.

DACS facilitates consistent, appropriate, and self-explanatory description of archival materials and creators of archival materials. This new edition reflects the growing convergence among archival, museum, and library standards; aligns DACS with the descriptive standards developed and supported by the International Council on Archives; and provides guidance on the creation of archival authority records. DACS can be applied to all types of material at all levels of description, and the rules are designed for use by any type of descriptive output, including MARC 21, Encoded Archival Description (EAD), and Encoded Archival Context (EAC).

Source: Society of American Archivists Technical Standards: DACS: http://www2.archivists.org/groups/technical-subcommittee-on-describing-archives-a-content- standard-dacs/dacs

DACS Single-level Required and Optimum metadata fields

- Reference Code (required)
- Name and Location of Repository (required)
- Title (required)
- Date (required)
- Extent (required)
- Name of Creator(s) (required)

- Scope and Content (required)
- Conditions Governing Access (required)
- Language (required)
- Administrative/Biographical History (optional)
- Scope and Content (optional)
- Access Points (optional) -- subject terms, controlled vocabulary
- Custodial History (optional)
- Immediate Source of Acquisition (optional)
- Accruals (optional)
- Existence and Location of Originals (optional)

Dublin Core

Dublin Core is the de facto descriptive standard for archival materials. It is a relatively simple, generic, XML-based metadata element set applicable to a variety of digital object types.

Dublin Core Unqualified Metadata Element Set

The Dublin Core Metadata Element Set is a vocabulary of fifteen properties for use in resource description.

1. Contributor
2. Coverage
3. Creator
4. Date
5. Description
6. Format
7. Identifier
8. Language
9. Publisher
10. Relation
11. Rights
12. Source
13. Subject
14. Title
15. Type

Access to Memory (AtoM): Dublin Core Metadata Element Set:
https://www.accesstomemory.org/en/docs/2.1/user-manual/data-templates/dc-template/

- Identifier
- Title
- Names
- Dates

- Subject
- Description
- Type
- Child Levels
- Format
- Source
- Language
- Relation
- Coverage
- Rights

8.4 Digital Image Minimum Metadata

Digital Images metadata

Source: Library of Congress Recommended Formats
http://www.loc.gov/preservation/resources/rfs/stillimg.html#photodigital

As supported by format:

- Title
- Creator
- Creation Date
- Place of publication
- Publisher/producer/distributor
- Contact information

Include if available:

- Common embedded schema (e.g., FGDC, ISO 19115, IPTC)
- Language of work
- Other relevant identifiers (e.g., DOI, LCCN, etc.)
- Subject descriptors
- Abstracts
- Key or reference to each data field and technical production information (e.g.
- EXIF metadata from digital camera)

8.5 Technical Metadata

The digital archive platform that PNRA will adopt will mostly likely generate technical metadata. The information provided here is important for PNRA and RHO staff to be aware of.

Metadata Encoding and Transmission Standard (METS)

An XML schema for encoding structural metadata about complex digital objects. METS

also acts as a container with places to insert descriptive, administrative, and technical metadata. From NISO Building Good Digital collections, p. 71

METS is an XML metadata standard intended to package all the information needed to represent a complex object, including both primary files and metadata that describes them. It defines its own structure for representing files and the relationships between them, and allows embedding or referencing descriptive, technical, rights, source, and digital provenance metadata defined by other schemas. METS has various levels of support in digital asset management systems like DuraSpace and Greenstone, and tools such as OpenWMS and the Archivists' Toolkit. This standard grew out of early work on representing complex digital objects by the Making of America II project. METS is maintained at the Library of Congress and through a volunteer Editorial Board.

Source: Society of American Archivists Technical Standards: Metadata Encoding and Transmission Standard http://www2.archivists.org/groups/standards-committee/metadata- encoding-and-transmission-standard-mets

Technical metadata elements

- Fixity
- Size
- Format
- Environment
- Checksum
- Version
- Hardware
- Operating system
- Rendering software
- Embedded images
- Media properties
- Digital provenance
- Type, age etc
- Authenticity
- Digital signatures
- Inhibitors
- Significant Properties

The technical metadata for digital still image may include:

- file format
- file resolution (pixels per inch)
- dimensions (image dimension or size in inches or centimeters)
- bit-depth (e.g., 8-bit, 16-bit, 24-bit, etc.)
- color mode (e.g., RGB, CMYK, or grayscale)
- scanner or digital camera brand, name, and model number
- software (name and version) used to manipulate or compress the image.

Source: University of Illinois Library Best Practices for Technical Metadata
http://www.library.illinois.edu/dcc/bestpractices/chapter_10_technicalmetadata.html#10.2.2
Stilli mage

8.6 Preservation Metadata

The digital archive platform that PNRA will adopt will mostly likely generate preservation metadata. The information provided here is important for PNRA and RHO staff to be aware of.

PREMIS is the de facto standard for preservation metadata. It is a data dictionary and XML schema for the encoding of information necessary to support the digital preservation process. Its data elements are divided into 5 categories, reflecting information on the PREMIS container, objects, events, agenda, and rights. A key feature of the PREMIS model is the definition of Objects as made up of Representations, Files, and Bitstreams. Also of note is the fact that PREMIS considers Objects immutable; if an action is taken on an Object that changes it, the result is a new but related Object. PREMIS intentionally excludes format-specific technical metadata from its scope, assuming implementers will use other relevant standards for tracking this information. The Library of Congress is the official PREMIS maintenance agency.

Source: Society of American Archivists Technical Standards: PREMIS:
http://www2.archivists.org/groups/standards-committee/preservation-metadata-implementation- strategies-premis

8.7 Metadata Harvesting Protocol: OAI-PMH

Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH)

The Open Archives Initiative develops and promotes interoperability standards that aim to facilitate the efficient dissemination of content. The Open Archives Initiative Protocol for Metadata Harvesting is a technology used to share metadata in a mostly automated way. “Data providers” set up servers where descriptions of resources are available using requests governed by the OAI-PMH protocol, and “service providers” collect metadata from multiple data providers and create value-added services on top of the aggregated data, such as cross- repository discovery. The protocol requires at a minimum a Simple Dublin Core record for every resource exposed, but also allows supplemental metadata formats as long as they are represented by a W3C XML Schema. The OAI-PMH protocol grew out of communities wishing to share pre-prints of scientific papers, but was quickly adopted by the larger cultural heritage community. While OAI-PMH is primarily about sharing metadata, some implementers have experimented with using it to share content as well, by providing links to thumbnail images or sharing full METS packages encapsulating or linking to full digital objects.

Source: Society of American Archivists Technical Standards: OAI-PMH
http://www2.archivists.org/groups/standards-committee/open-archives-initiative-protocol-for- metadata-harvesting-oai-pmh

8.8 MARC Code for PNRA

The MARC Code List for Organizations contains short alphabetic codes used to represent names of libraries and other kinds of organizations that need to be identified in the bibliographic environment. It is maintained by the Library of Congress. A MARC Code for the Pacific Northwest Railroad Archive was assigned in March, 2016. It is useful if PNRA chooses to generate MARC encoded versions of its finding aids into the OCLC WorldCat worldwide library catalog. This code was created for PNRA by the Library of Congress on March 18, 2016

WaBuPNRA
Normalized: wabupnra
ISIL: US-WaBuPNRA

8.9 Implementation

The good news is that increasingly, digital archive platforms and collection data platforms provide templates for entering descriptive metadata and some generate preservation and technical metadata as part of their suite of functions. The AtoM and Archivematica digital archive platforms provide the following metadata functionality.

- Dublin Core (DC) for descriptive metadata elements -- AtoM provides a customizable DC template.
- Describing Archives: A Content Standard (DACS) provides the 'cataloging' rules for archival descriptive records -- AtoM provides a customizable DACS template
- PREMIS for preservation metadata -- Archivematica platforms generates PREMIS metadata
- METS for technical metadata -- Archivematica platform generates METS metadata
- Encoded Archival Description (EAD) -- XML-based coding for finding aid interoperability with other discovery platforms and digital finding aid aggregators. -- EAD encoded finding aids can be generated easily from Dublin Core descriptive records.

9. PRESERVATION PLAN AND POLICY STATEMENTS

Contents

Tasks

- Update and expand policy statements annually as the new digital archiving platform is implemented and procedures are developed.

Appendices

None as this time.

9.1 Introduction

The Pacific Northwest Railroad Archive was formed in 2009 and in June 2010 it acquired the building in which it now resides. Over the past five years, the PNRA has focused its efforts on renovating the 6,000 sq ft space and acquiring the necessary shelving and equipment to accommodate its collections and activities and meet the needs of its participating Railroad History Organizations. It has a very enthusiastic, knowledgeable and productive core of volunteers who assist in scanning, cataloging and managing the collections. During this time, the PNRA has acquired a number of grants which have brought in outside experts in archives and cultural heritage preservation to assure it is properly addressing critical preservation concerns. The PNRA has reached a point in its development where it is ready to address long- term preservation of its digital collections and data.

A preservation plan is a core policy element of any digital archive. The plan provided here is a preliminary one, based on the digital preservation policy framework developed by Ohio State University.[2] Some sections will be completed as the PNRA implements its Digital Archive Plan and is able to better codify core digital preservation practices.

[2] Noonan, Daniel. W. 2014. Digital Preservation Policy Framework: A Case Study. Educause.http://er.educause.edu/articles/2014/7/digital-preservation-policy-framework-a-case-study

9.2 Guiding Principles

- As described in the vision, mission and its statement of purpose, the Pacific Northwest Railroad Archive is committed to the long-term preservation of PNRA and RHO content.
- Digital preservation is an integral part of PNRA processes and activities.
- Processes, policies, and the institutional commitment are transparently documented and in sync with RHO policy.
- Levels of preservation and time commitments are determined by the PNRA Executive Director; the PNRA Board, which includes RHO representatives and when appropriate, in consultation with a professional archivist.

9.3 Operating Principles

- Develop a scalable, reliable, sustainable, and auditable digital preservation infrastructure that supports RHO and PNRA needs.
- Comply with the Open Archival Information System (OAIS) and other appropriate digital preservation standards and practices.
- Ensure that the digital archive is as interoperable as possible by utilizing open-source options whenever feasible.
- Manage, monitor, and upgrade the hardware, software, and storage media components of the digital preservation function in accordance with archival practice, quality control specifications, RHO needs and security requirements.
- Ensure the integrity of the data.
- Document digital preservation actions, policies and procedures, including archival storage policies, procedures, and practices that ensure effective capture, ongoing and reliable archival storage, and responsiveness to inevitable technological change.
- Secure metadata (e.g. administrative, descriptive, preservation, provenance, rights, and technical) necessary for the use of the digital assets.
- Comply with copyright, intellectual property rights, and/or other legal rights related to copying, storage, modification, and use of digital resources.

9.4 Scope (categories of commitment)

The levels of commitment as outlined below recognize that developing solutions for "born digital" materials informs solutions for the other categories; it does not imply that these assets are inherently more valuable or important than any of the other categories and/or our traditional, analog materials.

1. Existing digitized versions of print or analog materials
   Reasonable measures will be taken to extend the life of the digital objects with a readily available print analog. However, the cost of re-digitizing as needed will be weighed against the cost of preserving the existing digital objects.

2. Non-digitized collections and items
3. Born-digital materials (no available analog)
   Every reasonable step will be taken to preserve materials that are unique holdings of PNRA or an RHO and that do not have a print version, or when re-digitizing is not possible, and/or no analog versions are located elsewhere. Also included are digitized materials that have annotations or other value-added features making them difficult or impossible to recreate.
4. Born digital materials
   Efforts will be made to ensure preservation in perpetuity of material selected for preservation.
5. Other items and materials
   No preservation steps will be taken for materials requested for short-term use such as materials scanned for research purposes, promotional materials, exhibits, or for content that is deemed unessential.

9.5 Implementation

Implementation of the preservation policy will occur based on this plan and its successive phases, as resources allow, and in line with RHO needs.

9.6 Roles and Responsibilities

PNRA recognizes the following stakeholder categories for its digital preservation program. The terminology is adapted from the OAIS Reference Model.

- Producer: The role played by those persons or entities that provide the information to be preserved. Producers include collectors, creators of content, and others.
- Management: The role played by those who oversee the management and operation of the digital preservation program.
- Administration and management: PNRA staff, board, work teams, and volunteers who are responsible for the daily operation of the digital archive as well as the selection, cataloging, scanning, physical preservation of PNRA holdings.
- Cooperating Entities: This includes the member Railroad History Organizations (RHOs):
  - Cascade Rail Foundation
  - Great Northern Railway Historical Society
  - Northern Pacific Railway Historical Association
  - Spokane, Portland & Seattle Railway Historical Society
- User Groups: The role played by those persons or organizations who search, access and use the PNRA collections.

9.7 Formats

PNRA preserves the following file formats: PDF, JPEG, JPEG2000, TIFF, WAVE.

9.8 Collaboration

Digital preservation is a shared community responsibility and often most successful when the assets, expertise and capacities of related organizations collaborate. Below are existing and proposed collaborations that will strengthen PNRA's digital preservation efforts -- and increase the discoverability of and access to its collections.

- RHOs
- Jackson Street Roundhouse, St. Paul, Minnesota
- Association of King County Heritage Organizations (AKCHO)
- Archives West
- Digital Public Library of America

9.9 Selection and Acquisition

See Section 6: Appraisal and Acquisition and existing RHO policies for this process.

9.10 Access and Use

See Section 11: Access. This policy section will be articulated once PNRA is farther along in the process of implementing the new digital archive platform.

9.11 Review Cycle

The Preservation Plan and Policy Statements will be reviewed annually and expanded as needed to include additional policy statements until the PNRA and RHOs feel the policy framework is established and stable enough to extend the review period.

10. TECHNICAL SYSTEMS

Contents

Tasks Completed as of August 2018

- ✓ Created a schematic of proposed PNRA Digital Archive software and hardware components.
- ✓ Trialed and customized AtoM content and data management platform.

Future Tasks

- Evaluate the feasibility of the Archivematica preservation platform.
- Evaluate hardware system for LINUX web server to support AtoM.

Related Appendices
Appendix D: Open Archival Information System (OAIS) Reference Model, overview
Appendix J: Atom Platform Information [includes committee review]
Appendix L: Levels of Preservation

10.1 Current Technical Specifications

Specification	PNRA
Present external network speed (xMbps).	18 Mbps
Present internal network speed.	Cisco RV130 Wireless Router, 1.0 Gbps
Existing digital repository size.	Data: 8.14TB Objects: 882,106 Files
Existing digital repository elements: Collection data management.	Accessions: 456 Collections: 267
Existing digital repository elements: Storage strategy.	Onsite: Local machine copies + PNRA12. Backed up on 9 TB External Drives. Refreshed monthly; dark when not being refreshed. Website copies on two machines. Offsite: 5 PNRA-owned web site servers in Data Center in Tukwila.
Existing digital repository elements: Backup	Web sites hosted at Tukwila data center backed up every three days; Also Amazon cloud backup.
Existing digital repository elements: Access	PNRA12 Websites: SharePoint & SQL Server
Estimated distinct end-users which access the repository annually	34,310 average in 2015
Amount added to archive.	2014: ~0.5 TB 2015: ~1.0 TB

Expected amount added to archives per year.	1.3 TB
Estimated quantity of digital objects currently ingested per year.	Scanned: 97% Born digital: 3%
Quantity of digital objects to be archived per year.	125,000 files per year Scanned: 97% Born digital: 3%
Existing digital media and formats.	Excel: PDF: Images: Access MDB: CD: DVD: External Drives: Note: most digital objects are scanned copies of non-digital holdings.
Existing digital file formats and quantities	TIFF, JPEG, PDF, XLS, MDB
Primary acquisition method.	Non-digital items donated to PNRA.
Data complexity.	Primarily simple data (spreadsheets-text formats, images, video)
Data specialization.	Moderate, some knowledge of railroads required.
Data sensitivity. What proportion is sensitive?	High: personal data; bridge structural data; proprietary images. Bulk: Project files; maps; common images, technical drawings
Access rights	Proprietary: Controlled access to high resolution data. Bulk Data: Open
Source of metadata.	Extracted or created by hand from non-digital accessions.
Interoperability standards	None presently.
Software support strategy.	All software is supported by Microsoft with local help desk by volunteer-members.

Minimum metadata requirements for discovery (description)	unique ID, title, creator, donor, date, and keyword fields, i.e. railroad, station, state, etc.
Specify digital object formats the repository will accept.	Excel; Tiff; JPEG; PDF;
Metadata standards to be implemented.	DACS (collection-level description) Dublin Core (item-level description) PREMIS (preservation) METS (technical)

10.2 Digital Archive Platforms Reviewed

Platforms

Five platforms were reviewed by PNRA, including Archivematica, Atom, Content DM, DSpace Direct, and Preservica. Information provided below is on the two platforms PNRA will trial, Archivematica and Atom. Review information on the other platforms is available at PNRA.

Process

A platform review committee was assembled to review the platforms, led by consultant Elizabeth Knight and Gary Tarbox. Members of the committee were: Greg Arndt, Bill Kajdzik, and Chuck Soule. Each member received a packet of information on the OAIS Reference Model, basic digital archive terminology and concepts, a few articles containing reviews of current platforms, and information on the POWRR (Preserving (Digital) Objects with Restricted Resources Tool Grid. POWRR performed a comprehensive review of current digital archiving platforms and tools and developed a matrix of functionalities.

After each platform demonstration, the committee members met to discuss the pros and cons of each platform relative PNRA's needs and wants. Elizabeth Knight, Gary Tarbox, and Chuck Soule met with Ann Lally, Head of Digital Initiatives Program at the University of Washington to discuss platforms and UW's use of ContentDM, in particular. It was concluded that AtoM most closely met the needs of PNRA in terms of functionality, cost, back-end and front-end ease of use, customization capabilities and ability to integrate with the Archivematica (a back- end digital object preservation platform that can be utilized for the long-term preservation). The AtoM + Archivematica system, if adopted by PNRA, will lead to a successful application of becoming a Trusted Digital Repository (TRAC).

10.3 AtoM and Archivematica

Archivematica

- OAIS-compliant, backend system, which can be implemented locally via free download or hosted, which manages digital collections through a suite of web-based services.
- Generates SIPs, AIPs and DIPs, metadata, can normalize to new file formats.
- Cloud-based hosting uses Amazon cloud service.
- Artefactual offers archivesDIRECT which combines Archivematica with DuraCloud storage. https://www.artefactual.com/services/hosting/
- Integrates with AtoM front end which provides accession log, generation of heirarchical descriptive records (collection, series, item)
- $10,000 annual fee for 1 TB Archivematica plus $625 for AtoM
- $24,999 annual maintenance agreement package available from Artefactual. https://www.artefactual.com/services/maintenance/

AtoM

- See Appendix J: AtoM Platform Information
- Free download. Standards-based, OAIS-compliant, open source
- Offers backend and frontend collection information management including accession log, generation of descriptive records, filtered searching,
- customizable public interface. https://www.artefactual.com/services/atom-theming/
- Permission levels
- Hierarchical data management (RHO, collection, series, item)
- Metadata templates. Uses Dublin Core and recognizes DACS (both descriptive metadata standards to be used at PNRA)
- Filtered searching categories: subject, language, repository, creator, name, genra (photos, maps, etc) Some customization available, based on Dublin Core fields
- Can upload taxonomies, thesauri
- generates thumbnails and reference images
- Integrates with Archivematica for full digital archive repository functionality and long-term preservation.
- Artefactual data migration service: https://www.artefactual.com/services/data-migration/
- Artefactual hosting $1700-$3000 annually https://www.artefactual.com/services/site- hosting/

11. ACCESS

Contents

Tasks

- Wikipedia: create pages for PNRA and RHOs.
- Create online exhibits and timelines utilizing tools like Omeka and ViewShare.

Appendices

None at this time

11.1 Current Access Policy and Mechanisms

Audience

PNRA and RHO holdings are of interest to local and national historians, scholars, and rail fans, advertisers and publishers.

Current access procedures

- PNRA homepage provides access to PNRA collections and links to: GN-NP Joint Archive, NPRHA website and collections; Cascade Rail Foundation website; GNRHS website and archives. Approximately 10% of PNRA digitized content is available via the SharePoint website.
- PNRA and RHOs would like to offer much easier search functionality for users. SharePoint was not designed to serve as a robust, publicly searchable digital archive interface.
- Researchers can also contact the PNRA or a RHO directly to inquire about specific holdings.
- A single rights policy for RHO and PNRA-owned collections has been developed and is referenced in AtoM archival descriptions.

11.2 Digital Access Policy Statements

An Access Policy statement has been developed by PNRA and it has been included in PNRA's Collection Management Policy. The Access to and Use of the Collection statement contained within the Collection Management Policy is referenced and linked within AtoM records.

The OpenDOAR Policy Tool can be utilized to present access policies for digital content to

user community. OpenDOAR Access Policy criteria include:

- Metadata Policy - for information describing items in the repository.
  - Access to metadata; Re-use of metadata
- Data Policy - for full-text and other full data items.
  - Access to full items; Re-use of full items
- Content Policy - for types of document and dataset held.
  - Repository type; Type of material held; Principal languages
- Submission Policy - concerning depositors, quality and copyright.
  - Eligible depositors; Deposition rules; Moderation; Content quality control; Publishers' and funders' embargos; Copyright policy
- Preservation Policy
  - Retention period; Functional preservation; File preservation; Withdrawal policy; Withdrawn items; Version control; Closure policy

11.3 Proposed Discovery and Access Methods

- Website: will become AtoM interface, which is customizable.
- Provide an AtoM search box on RHO websites.
- Wikipedia: create pages for PNRA and RHOs.
- Create online exhibits and timelines utilizing tools like Omeka and ViewShare.
- Upload descriptive records to OCLC Archive Grid
- Register repository in OpenDOAR registry

12. SUCCESSION PLAN

Full Succession Plan Under Development

This plan is intended to assure the preservation of PNRA's digital materials in perpetuity in the event of changes to staff or operational capacity, funding, changes in scope, technological changes and innovations, crises, or other fundamental changes. It recognizes that organizations last for a finite period of time. Contingency plans and exit strategies will also be addressed.

Draft Plan Sections

12.1 Internal Commitment and Plan Priorities
12.2 Current Challenges
12.3 Internal Training and Leadership Development
12.4 Emergency Leadership Transition Plan
12.5 Preservation Tasks

Tasks
Complete Succession Plan

Appendices
None at this time.

12.1 Internal Commitment and Plan Priorities

The PNRA Board is committed to a systematic transition plan for all leadership positions. Officers, Key players and Volunteers are included in the succession plan. Officer positions will be the highest priority for implementation of back-up plans, documenting of standard processes and development of future leaders. Key Players such as crew leaders and committee chair- persons will be the second priority. Volunteers who work in all forms of supporting the archive will be the third priority.

12.2 Current Challenges

The age of all Officers, Key Players and Volunteers requires that plans be in place for daily back-up as well as replacement in an emergency situation.

Expansion of work crews and adding additional work sessions to meet the Mission will require additional volunteers and leaders at all levels.

12.3 Internal Training and Leadership Development

At this time the PNRA does not have a systematic training or leadership development process. Currently orientations and training for work projects is informal and peer to peer. Specific work such as special scanning or processing materials has been presented to a limited number of volunteers by archive professionals.

12.4 Emergency Leadership Transition Plan

Executive Director

The Board President will replace the Executive Director in an emergency. They may act as Board President and Executive Director on an interim basis as determined by the Board. Or the Board may elect to have the Board Vice-President take over as the Board President.

President of the PNRA Board

The Board President will be replaced by the Board Vice-President in an emergency.

Treasurer

In an emergency the Executive Director and the Board President may take over the duties of the Treasurer for an interim period of time determined by the Board. Past Treasurers will be used as an advisory group to assist in transition.

12.5 Preservation Tasks

PNRA is adopting widely recommended standards and practices to assure the preservation of its digital collections beyond the lifetime of the repository. These standards and practices assure compatibility and interoperability with future systems, the ability to retrieve or migrate collections and collection information, re-formatting of obsolete file formats to assure access, and redundancy to prevent loss. Standards include the are not limited to the widely-adopted Open Archival Information System (OAIS) Reference Model; Dublin Core, PREMIS, and DACS metadata standards, and a preference for open source tools and platforms over proprietary systems.

PLATTER:

Manage obligations to ensure preservation of material beyond the lifetime of the repository.

TRAC Audit criteria:

Repository has an appropriate, formal succession plan, contingency plans, and/or escrow arrangements in place in case the repository ceases to operate or the governing or funding institution substantially changes its scope. *Evidence: Succession plan(s); escrow plan(s); explicit and specific statement documenting the intent to ensure continuity of the repository, and the steps taken and to be taken to ensure continuity; formal documents describing exit strategies and contingency plans; depositor agreements.*

13. DISASTER PREPAREDNESS

Draft Plan Sections

13.1 Environmental: dPlan Disaster Preparedness Plan
13.2 Technological
13.3 Organizational (economic, staff, purpose)
13.4 Security

Tasks

- Completed Plan
- Purchase and create emergency preparedness supplies kit

Appendices
None at this time.

14. REVIEW AND UPKEEP

This Plan is a living document for the Pacific Northwest Railroad Archive and is intended to be used, changed, and updated to reflect current practices and work to make collections discoverable to a wider audience and assure the long-term preservation of digital collections.

PNRA has tested and selected AtoM as its collection platform and is currently migrated collection content in the collection management system. As this effort continues to unfold, elements of this plan will be implemented, revised or expanded. The first review and modification of this plan occurred upon the completion of the second phase of this process, August 2018.

The practice of preserving and managing digital information in perpetuity is undergoing rapid change as technologies evolve, systems improve, and emerging standards and best practices are adopted. Thus, this Plan and the process undertaken to achieve the ultimate goal of the PNRA receiving Trusted Digital Repository (TRAC) status, will be updated and modified to adapt to new information and opportunities.

15. RESOURCES

American Association for State and Local History (AAHSL)
URL: http://www.aaslh.org/
Description: Provides leadership, service and support for the preservation and interpretation of American state and local history.

American Alliance of Museums: Standards and Best Practices
URL: http://www.aam-us.org/resources/ethics-standards-and-best-practices

Center for Research Libraries. Trustworthy Repositories Audit and Certification: Criteria and Checklist (TRAC). 2007.
URL: https://www.crl.edu/sites/default/files/d6/attachments/pages/trac_0.pdf
Description: Many of the TRAC criteria were incorporated into the PNRA Digital Archive Plan. An audit is required to be certified as a Trusted Digital Repository. DRAMBORA is another self- audit tool.

Describing Archives: A Content Standard, Second Edition. 2013
URL: http://files.archivists.org/pubs/DACS2E-2013_v0315.pdf
Description: Official content standards of the U.S. archival community. Conforms with the International Council on Archives (ICA) standards and incorporates all ICA data elements.
Note: PNRA has a printed copy of this document.

Digital Curation Centre (DCC)
URL: http://www.dcc.ac.uk/
Description: World-leading center on digital information curation.

Digital POWRR Project
URL: http://digitalpowrr.niu.edu/
Description: From 2012-2014, the Digital POWRR Project, an Institute of Museum and Library Services (IMLS)-funded study investigated, evaluated, and recommended scalable, sustainable digital preservation solutions for libraries with smaller amounts of data and/or fewer resources. The PNRA Platform Review Committee utilized POWRR to identify and evaluate selected repository platforms.

Digital Preservation Coalition: DPC Handbook
URL: http://www.dpconline.org/advice/preservationhandbook
Description: The Handbook provides an internationally authoritative and practical guide to the subject of managing digital resources over time and the issues in sustaining access to them.

DigitalPreservationEurope: Repository Planning Checklist and Guidance (PLATTER) 2008.
URL: http://content.yudu.com/Library/A10tra/PLATTERRepositoryPla/resources/6.htm
Description: This planning model was adopted as the framework for the PNRA Digital Archive Plan.

Digital Preservation Management: Tools and Techniques
URL: http://www.dpworkshop.org/workshops/management-tools
Description: Provides guiding principles, policy framework information, and a checklist for determining an organization's readiness to address digital preservation.

Federal Agencies Digitization Guidelines Initiative (FADGI)
URL:
http://www.digitizationguidelines.gov/guidelines/FADGI_Still_Image_Tech_Guidelines_2015-09- 02_v4.pdf
Description: Draft Technical Guidelines for Digitizing Cultural Heritage Materials (September, 2015)

Hirtle, Peter B., E. Hudson and A.T. Kenyon. 2009. *Copyright & Cultural Institutions: Guidelines for Digitization.* Ithaca: Cornell University Press.
URL: https://ecommons.cornell.edu/bitstream/handle/1813/14142/Hirtle-Copyright_final_RGB_lowres-cover1.pdf;jsessionid=B459720CE13E2E8C3CB3072450E4D3A7?sequence=2
Description: Describes copyright law and issues that directly pertain to digital collections held by cultura heritage institutions.

Image Permanence Institute
URL: https://www.imagepermanenceinstitute.org/
Description: Provides information, consulting services, practical tools and preservation technology to libraries, archives, and museums worldwide.

Lavoie, Brian F. 2014. *The Open Archival Information System (OAIS) Reference Model: Introductory Guide (2nd Edition).* DPC Technology Watch Report 14-02 October 2014. Digital Preservation Coalition.
URL: http://www.dpconline.org/component/docman/doc_download/1359-dpctw14-02
Description: The Open Archival Information System (OAIS) was originally developed as part of a broader effort to develop formal standards for the long-term storage of digital data generated from space missions. The OAIS has since formed the foundation of numerous architectures, standards, and protocols, influencing system design, metadata requirements, certification, and other issues central to digital preservation.

Library of Congress: Digital Preservation
URL: http://www.digitalpreservation.gov/
Description: Provides technical and metadata digitization guidelines and format stability information.

National Information Standards Organization (NISO): Framework for Building Good Digital Collections, Third Edition.
URL: http://www.niso.org/publications/rp/framework3.pdf
Description: An essential resource which provides an overview of the major components and activities involved in creating good digital collections within the context of the four core types of entities: collections, objects, metadata and initiatives.

Northeast Document Conservation Center (NEDCC)
URL: http://www.nedcc.org/
Description: Provides preservation best practices (preservation leaflets series) and training opportunities.

Society of American Archivists: Standards and Best Practices
URL: http://www2.archivists.org/standards
Description: Establishes standards and best practices for archival institutions. Also publishes educational materials and provides training.

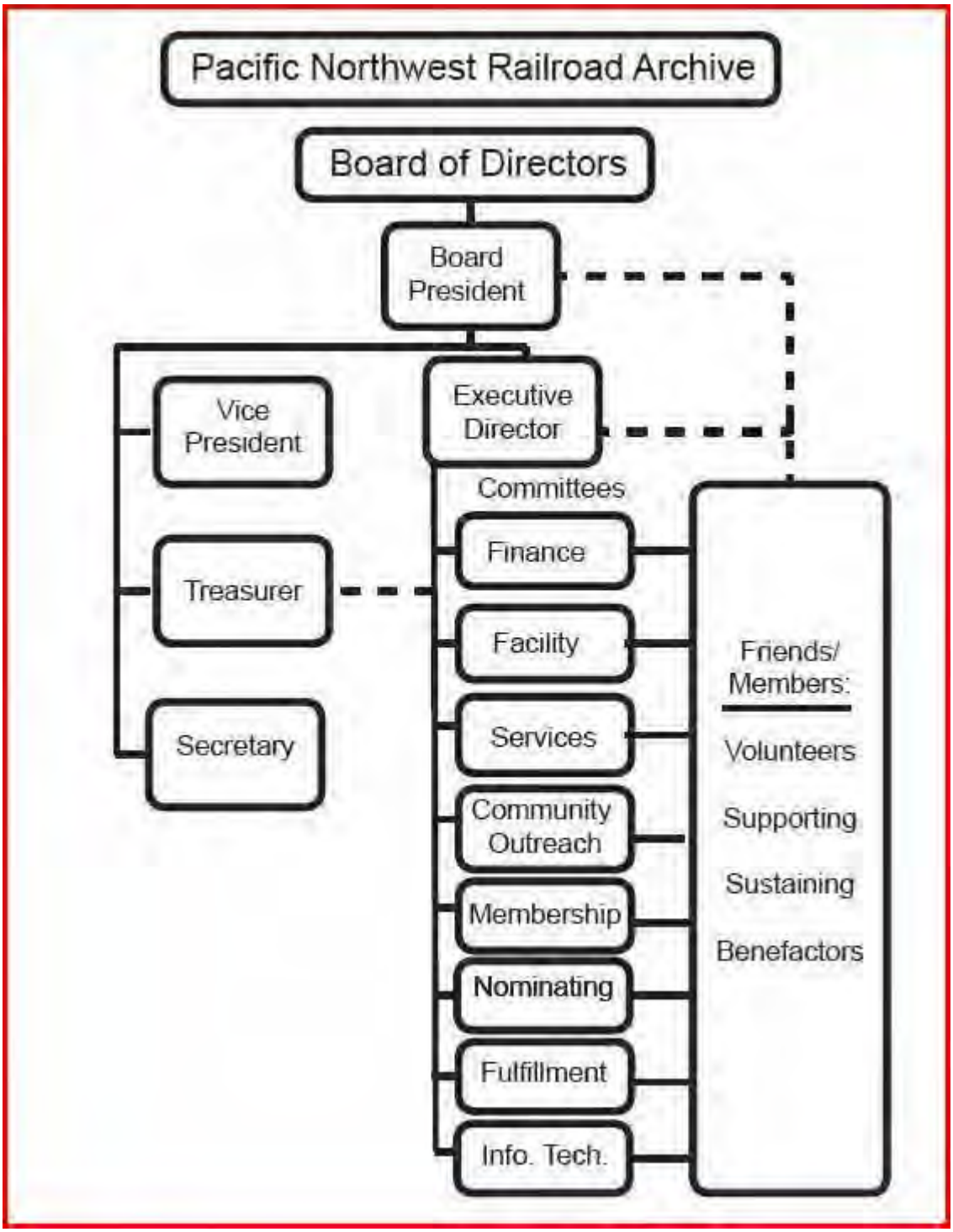
Space Data Systems Practices: *Reference Model for an Open Archival Information System. OAIS.* (Magenta Book). 2012.
URL: http://public.ccsds.org/publications/archive/650x0m2.pdf
Description: Technical recommended practice for use in developing a broader consensus on what is required for an archive to provide permanent, or indefinite long term, preservation of digital information. The primary conceptual model recommended for use by digital repositories. Note: This is a very long and technical document. Read the Lavoie Introductory Guide to the OAIS, listed here.

Well-intentioned practice for putting digitized collections of unpublished materials online (endorsed by SAA)
URL: http://www.oclc.org/content/dam/research/activities/rights/practice.pdf
Description: " ...a good basis for establishing a community of practice that will increase and significantly improve access to collections of unpublished materials for the purpose of furthering research and learning. It promotes a practical approach to identifying and resolving rights issues that is in line with professional and ethical standards."

Western States and Territories Preservation Assistance Service (WESTPAS)
URL: http://westpas.org/
Description: Provides regional disaster response assistance service and training workshops.

APPENDICES

Appendix A: PNRA Organizational Chart



Appendix B: Revised Donor Agreement form

Accession Number

Pacific Northwest Railroad Archive
Donor Agreement

I,_____, the legal owner of the records or duly authorized agent of the legal owner,_____, of the records and materials described below, do hereby unconditionally and irrevocably give and transfer to the Pacific Northwest Railroad Archive all of my rights, title, and interest (including all copyright and related rights) in the records and materials, as an unrestricted gift without limitation, except as on the attached inventory.

1. Restrictions – The records and materials listed on the attached inventory shall be available for access and use by the public without restrictions unless specified in this document or the attached inventory. If any restrictions are imposed, a termination date must be stipulated.

2. Disposition – Except as instructed in this agreement the Pacific Northwest Railroad Archive may transfer, sell, discard, or dispose of all or any portion of this collection as the Pacific Northwest Railroad Archive shall determine without prior notice or permission.

3. Duplication – The Pacific Northwest Railroad Archive reserves the right to duplicate, reproduce, scan, migrate, or otherwise reformat these records for purposes of preservation, security and/or dissemination for research, education and use within the limits of copyright law.

4. Exhibition – The Pacific Northwest Railroad Archive can freely exhibit the records and materials in this collection physically or online.

Agreed and accepted

_____	_____
Signature of donor or agent	Signature of PNRA representative
_____	_____
Print Name	Print Name
_____	_____
Date	Date

Donor or agent contact information

Name: _____

Full street address: _____

Phone number: _____

Email address: _____

Summary description of donation

Title	
Date range	
Extent *Quantity; number of boxes or containers.*	
Creator *Whenever possible, please provide biographical or historical information on the creator or originator. This can be included in a separate document.*	
Summary Description	
Material types (*documents, diaries, images, audio/visual, ephemera, artifacts, digital files*)	
Any restrictions on access?	

Notes	

Digital collection information

Delivery format	
Donation file size (MB)	
File formats	
Source	
Born digital or scanned copies	

Collection Inventory

Donors or agents are requested to provide a box or container-level inventory of the items in the collection. This can be provided as a separate attachment.

Item or container	Description

Biographical/historical information including sources

Donors or agents are requested to provide any biographical or historical information on the creator or originator of the collection if available.

Pacific Northwest Railroad Archive Use Only

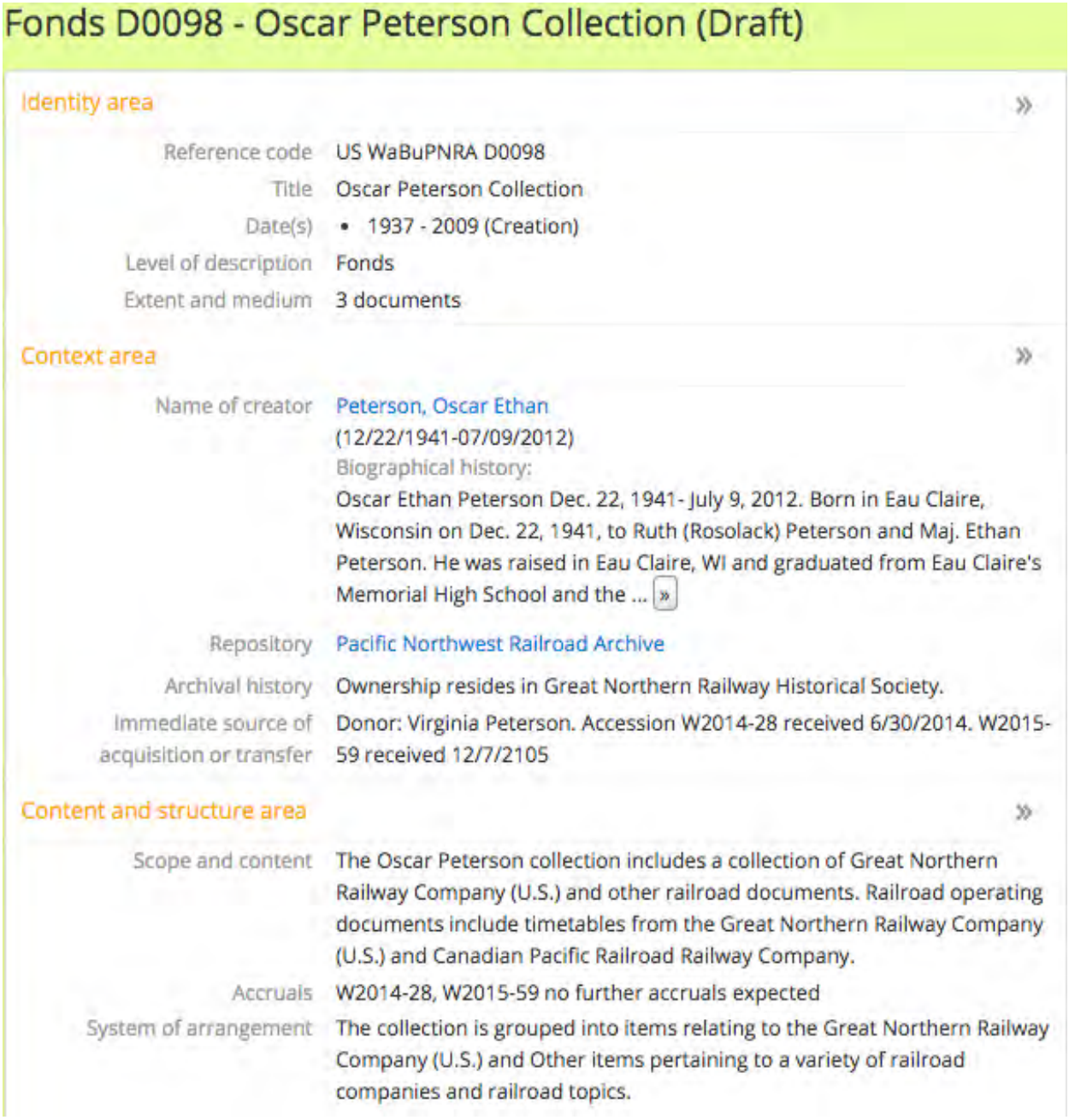
Location:
Accrual information:
Acknowledgement sent:
Processing note:

Date: Signature:

The Pacific Northwest Railroad Archive thanks you for your donation.

Pacific Northwest Railroad Archive | 425 SW 153rd Street, Burien, WA 98166 | (206)349-6242

Appendix C: Collection-level Description Record, sample



Fonds D0098 - Oscar Peterson Collection (Draft)

Identity area

Reference code	US WaBuPNRA D0098
Title	Oscar Peterson Collection
Date(s)	• 1937 - 2009 (Creation)
Level of description	Fonds
Extent and medium	3 documents

Context area

Name of creator	Peterson, Oscar Ethan (12/22/1941-07/09/2012) Biographical history: Oscar Ethan Peterson Dec. 22, 1941- July 9, 2012. Born in Eau Claire, Wisconsin on Dec. 22, 1941, to Ruth (Rosolack) Peterson and Maj. Ethan Peterson. He was raised in Eau Claire, WI and graduated from Eau Claire's Memorial High School and the ... »
Repository	Pacific Northwest Railroad Archive
Archival history	Ownership resides in Great Northern Railway Historical Society.
Immediate source of acquisition or transfer	Donor: Virginia Peterson. Accession W2014-28 received 6/30/2014. W2015-59 received 12/7/2105

Content and structure area

Scope and content	The Oscar Peterson collection includes a collection of Great Northern Railway Company (U.S.) and other railroad documents. Railroad operating documents include timetables from the Great Northern Railway Company (U.S.) and Canadian Pacific Railroad Railway Company.
Accruals	W2014-28, W2015-59 no further accruals expected
System of arrangement	The collection is grouped into items relating to the Great Northern Railway Company (U.S.) and Other items pertaining to a variety of railroad companies and railroad topics.

Continued on next page:

Conditions of access and use area

Conditions governing access	Please see Section VII of the Pacific Northwest Railroad Archive Collection Management Policy for further information on access.
Conditions governing reproduction	Please see the Pacific Northwest Railway Archives Reproduction Policy for further information.
Language of material	• English
Script of material	• Latin

Access points

Subject access points	• Great Northern Railway Company (U.S.) • Railroads
Name access points	• Peterson, Oscar Ethan (Creator) • Great Northern Railway Company (U.S.) (Subject) • Canadian Pacific Railway Company (Subject)

Description control area

Institution identifier	WaBuPNRA
Rules and/or conventions used	Describing Archives - A Content Standard (DACS) 2nd Edition 2013
Status	Draft
Level of detail	Partial
Dates of creation revision deletion	Creation 2/10/2018, revised 6/12/2018
Language(s)	• English
Script(s)	• Latin

Accession area

W2014-28

Appendix D: Open Archival Information System (OAIS) Reference Model, overview

OAIS Reference Model

Source: *OAIS Introductory Guide, Second Edition*. 2014.
http://www.dpconline.org/component/docman/doc_download/1359-dpctw14-02

Executive Summary

The Consultative Committee for Space Data Systems (CCSDS) initiated work aimed at developing formal standards for the long-term storage of digital data generated from space missions. Part of this effort involved the development of a reference model for an 'open archival information system' (OAIS). The reference model would represent a comprehensive and consistent framework for describing and analyzing digital preservation issues, provide a sound footing for future standards-building activity, and serve as a point of reference for vendors interested in building digital preservation products and services. The OAIS reference model was approved in January 2002 as ISO International Standard 14721; a revised and updated version was published in 2012 as ISO Standard 14721:2012.

The central concept in the reference model is that of an open archival information system. An OAIS-type archive must meet a set of six minimum responsibilities to do with the ingest, preservation, and dissemination of archived materials.

An OAIS-type archive operates in an environment populated by three types of entities: Management, Producer, and Consumer. A special class of Consumer is called the Designated Community: the subset of Consumers expected to independently understand the archived information in the form in which it is preserved and made available by the OAIS. An OAIS-type archive's external environment could also include interaction with other OAIS archives.

The reference model identifies and describes the core set of mechanisms with which an OAIS- type archive meets its primary mission of preserving information over the long term and making it available to the Designated Community. These mechanisms are summarized by the OAIS functional model, which defines six high-level services, or functional entities, that collectively define the OAIS's preservation and access operations:

1. Ingest,
2. Archival Storage,
3. Data Management,
4. Preservation Planning,
5. Access, and Administration.

Operating alongside these six functional entities are Common Services, which consist of

basic computing and networking resources. An OAIS-type archive will implement each of the six functional entities, along with Common Services, in the course of building a complete archival system.

The reference model provides a high-level description of the information objects managed by an OAIS-type archive. The OAIS information model is built around the concept of an information package, which consists of the object that is the focus of preservation, along with metadata necessary to support its long-term preservation, access, and understandability, bound into a single logical package. There are three important variants of the information package concept: the Submission Information Package (SIP), the Archival Information Package (AIP), and the Dissemination Information Package (DIP).

The AIP is the information package variant which the OAIS is committed to perpetuate over the long term. Construction of the AIP begins with the Content Data Object – the information that is the focus of preservation. The Content Data Object is accompanied by Representation Information: information necessary to render and understand the bit sequences constituting the Content Data Object. The Content Data Object and its associated Representation Information are collectively known as Content Information. Long-term retention of the Content Information requires additional metadata to support and document the OAIS's preservation processes. This metadata is called Preservation Description Information, or PDI. PDI consists of five components:

1. Reference Information;
2. Context Information;
3. Provenance Information;
4. Fixity Information; and
5. Access Rights Information.

Packaging Information binds Content Information and Preservation Description Information into a single logical package; Descriptive Information supports the discovery and retrieval of Content Information by an OAIS's Consumers.

The OAIS reference model includes a discussion of different classes of interoperability across OAIS-type archives: independent archives, cooperating archives, and federated archives. The reference model also notes that archives can interoperate through shared functional areas.

The Open Archival Information System (OAIS) Reference Model: Introductory Guide (2nd Edition) Executive Summary

A number of initiatives have used the OAIS reference model as a conceptual foundation and starting point for more focused work in digital preservation. Areas of application include, but are not limited to, 'OAIS compliant' repository architectures and systems; repository self- assessment and certification; metadata requirements for digital preservation; methods and protocols for encoding and exchanging archived information;

and other OAIS-related standards.

Because the reference model is a conceptual framework rather than a blueprint for concrete implementation, the meaning of 'OAIS-compliant' is necessarily vague and open to interpretation. A key element in the design of OAIS is its flexibility and level of abstraction: it makes no assumptions about how the concepts and models in OAIS are to be implemented, and imposes no requirements concerning the technologies used to support the implementations. Despite the attendant ambiguity, the notion of OAIS conformance has been beneficial, to the extent that it helps consolidate understanding of the fundamental requirements for securing the long-term persistence of digital materials – a necessary condition for building well-understood, interoperable, and ultimately, trusted digital preservation systems.

Perhaps the most important achievement of the OAIS reference model to date is that it has become almost universally accepted as the lingua franca of digital preservation, shaping and sustaining conversations about digital preservation across disparate domains, and supplying a general mapping of the landscape that stewards of our digital heritage must navigate in order to secure the long-term availability of digital materials. Alignment with concepts defined in OAIS helps orient a technical implementation, draft standard, or other activity within the broader repository context that the OAIS reference model defines, making it part of a cohesive 'big picture'. It seems reasonable to conclude that OAIS has become a foundation resource for understanding digital preservation, a language for talking about digital preservation issues, and a starting point for implementing digital preservation solutions.

It is possible to identify a few limitations associated with OAIS's impact. Very few of its concepts have been directly and formally operationalized as standards in their own right. A design, a protocol, even a standard can self-declare itself OAIS-conformant (but without an explicit accounting of how conformance is actually manifested). Initiatives can use OAIS concepts as a means of labelling or describing various components within their structure (but these concepts can be used quite superficially, more as an expositional shorthand rather than a detailed mapping); OAIS can be cited as a foundation or starting point for a particular initiative, or alternatively the initiative can declare itself informed by OAIS (but without necessarily any elaboration on how this was so). It is useful to remember that an OAIS-type archive is still one built primarily on OAIS concepts, not an OAIS suite of standards. The digital preservation community would benefit from a careful assessment of where more precise and authoritative definitions of OAIS concepts and relationships would accelerate progress in achieving robust, widely applicable, and interoperable digital preservation solutions.

Figure 1: OAIS Functional Model

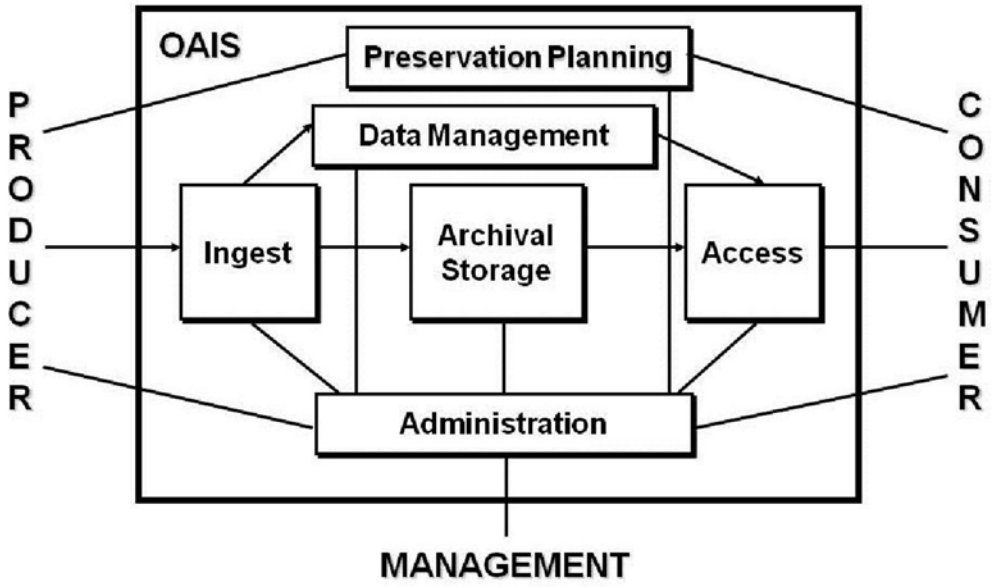


Figure 2: OAIS Information Packages (SIP, AIP, DIP)

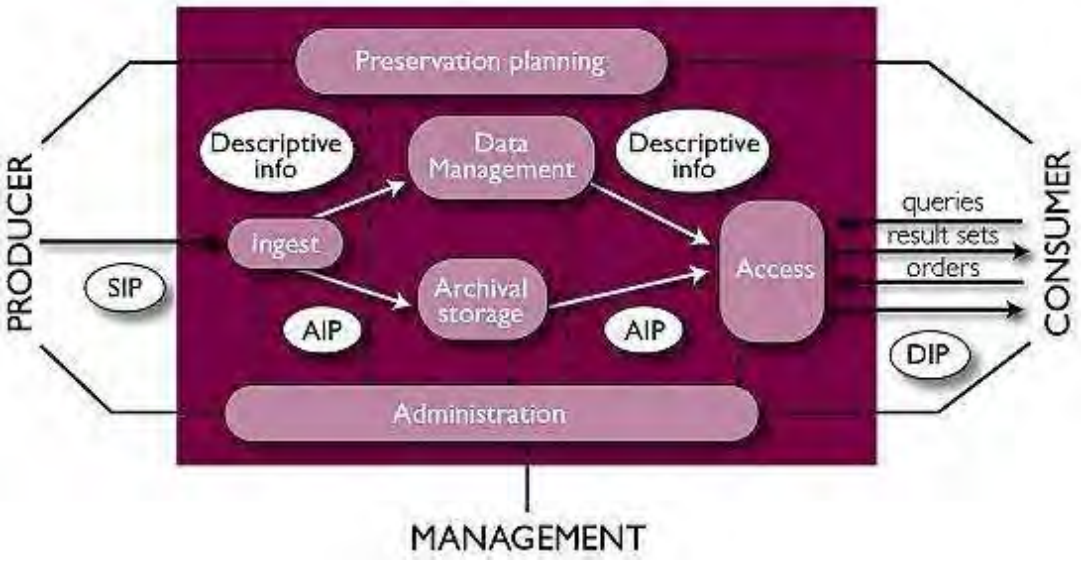
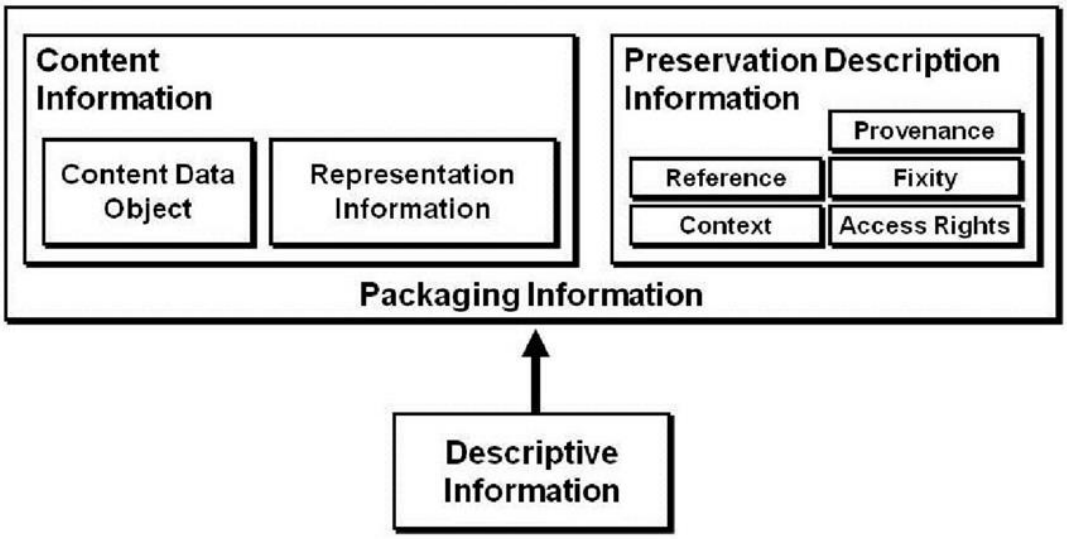


Figure 3: OAIS Archival Information Package (AIP)


Content Information
Content Data Object
Representation Information
Preservation Description Information
Provenance
Reference
Fixity
Context
Access Rights
Packaging Information
Descriptive Information

Appendix E: Digital Collection Inventory

For an up-to-date account of PNRA digital collections, please see AtoM. As of August 2018, these 40 collections have been entered into AtoM.

Alden M. Raney Collection

Barney Donahue Collection

Charles Felstead Collection

Charles Maslow Collection

Chuck Soule Collection

Delbert Jacobson Collection

Ed and Ruth Eckes Collection

Edward Berntsen Collection

Floyd Larson Collection

Gary Tarbox Collection

Harold Stewart Collection

James Frederickson Collection

James Mattson Collection

Jim Kruzberger Collection

John Clem Collection

Joseph McGee Collection

Mac McCulloch Collection

Michael J. Denuty Collection

Oscar Peterson Collection

Peter N. Halgren Collection

Reynolds Brightshue Collection

Richard Batie Collection

Robert E. Kelly Collection

Robert Hundman Collection

Russell Johnson Collection

Stephen Irwin Collection

Steve Panzik Collection

Timothy Miller Collection

Tom Bonsett Collection

University of Washington Deposit

Vance Colyar Collection

Walter W. Ainsworth Collection

Wendy Johnson Collection

Western Railway Museum Deposit

William Harrison Collection

William J. Neill Collection

William Kajdzik Collection

William Lofdahl Collection

William Petryk Collection

William Pochmerski Collection

Appendix F: Finalized Arrangement Scheme for PNRA Collections
August 2018

Figure 1: Series and Subseries

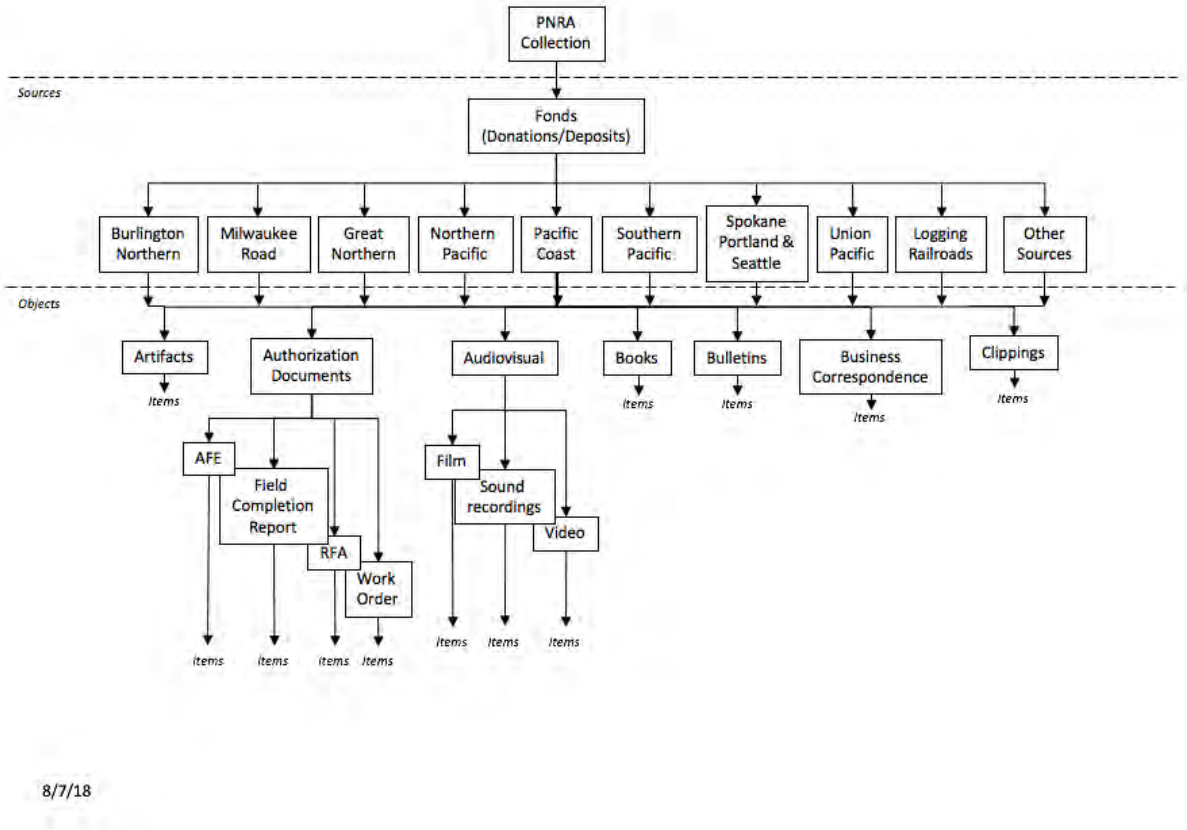


Figure 2: Engineering Records Subseries

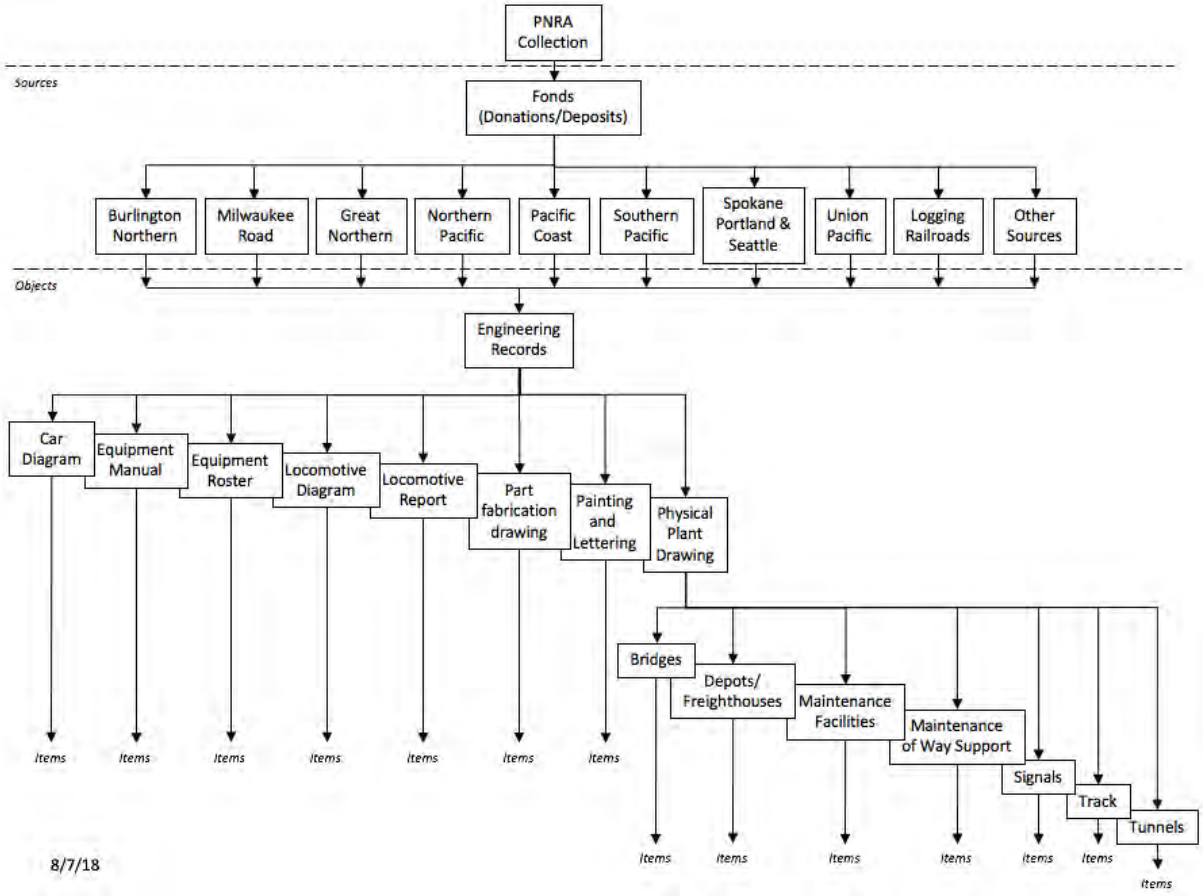


Figure 3: Subseries Continued

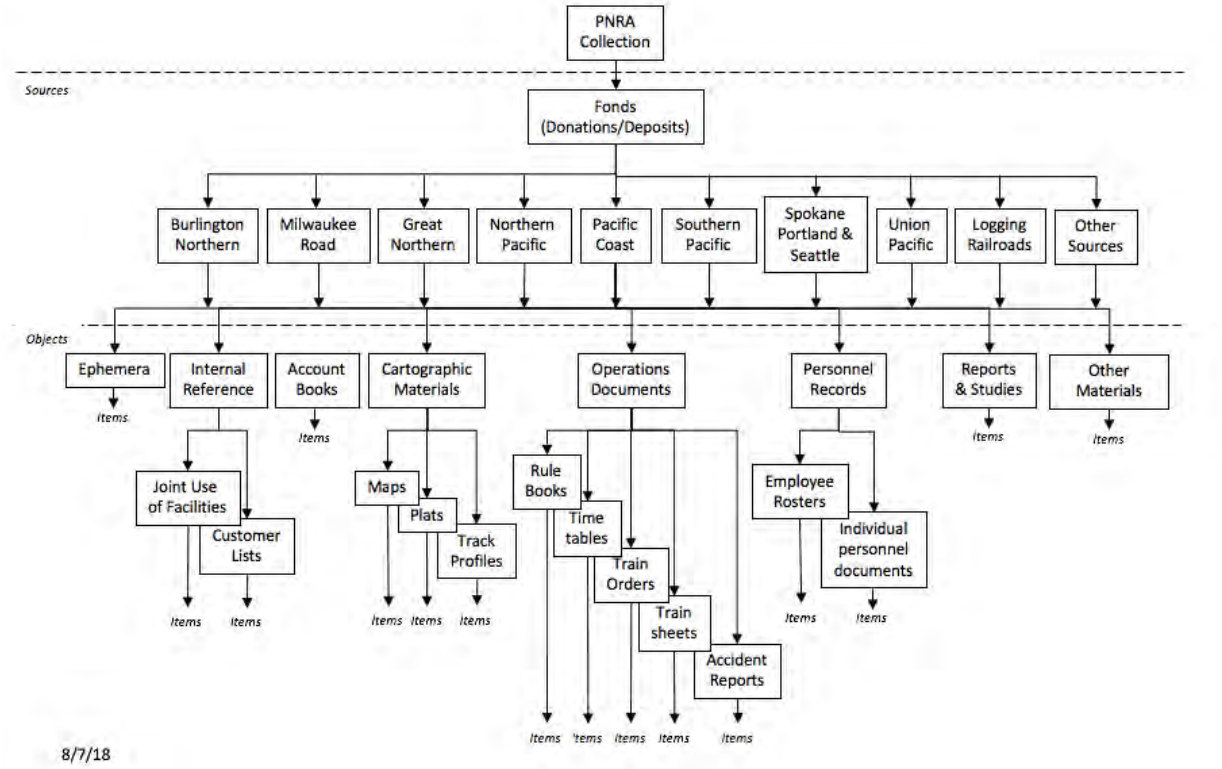
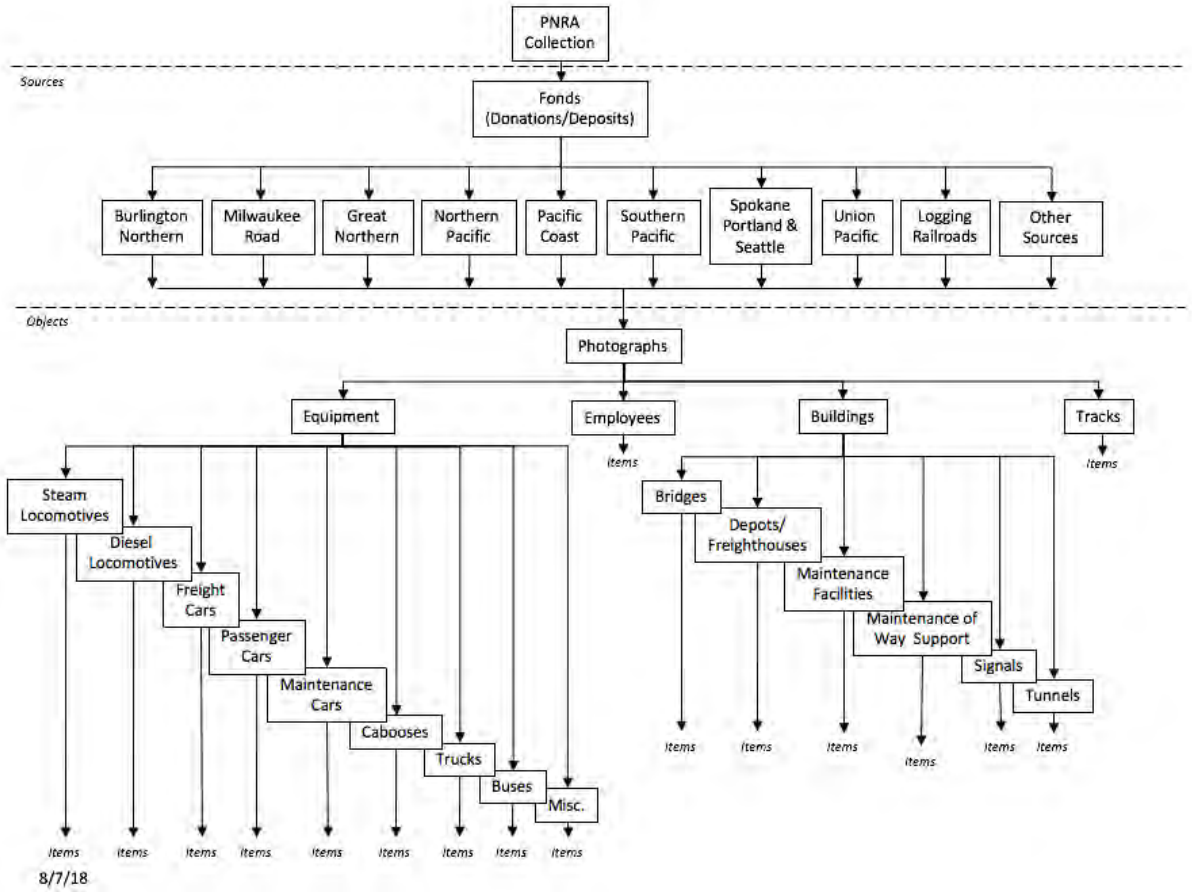


Figure 4: Photographs Subseries



Appendix G: Digitization Parameters

Source:
Digital Imaging for the Small Organization. 2012. Minnesota Historical Society
http://discussions.mnhs.org/mnlocalhistory/wp-content/uploads/2011/05/guidelines_digital_for_small_organizations.pdf

Photographs

- Digitize from the negative (or the earliest generation of the photograph) to yield a higher- quality image.
- In the case of photographs developed according to artist specifications, the photograph itself should be digitized rather than the negative.
- Digitize sepia-tone as color images to create a more accurate image.
- Digitize the backs of photographs as separate image files if there is significant information on the back of the photo (which may be of interest to users)

	Master	Web Access	Thumbnail
File format	TIFF	PNG or JPEG	JPEG
Bit depth	16 bit grayscale 24 bit color	8 bit grayscale 24 bit color	8 bit grayscale 24 bit color
Spatial resolution	400-800 ppi	72 ppi	72 ppi
Spatial dimensions	4000 to 8000 pixels across the long dimension, depending on size of original, excluding mounts and borders	600 pixels across the long dimension	150 to 200 pixels across the long dimension

Film negatives

Master scans of black and white camera originals may be captured and saved in RGB, particularly those negatives that contain color information as a result of staining, degradation or intentional color casts. Derivative files could later be reduced to grayscale in the scanning software or during post-processing editing.

	Master	Web Access	Thumbnail
File format	TIFF	PNG or JPEG	JPEG

Bit depth	16 grayscale 24 bit color	8 grayscale 24 bit color	8 grayscale 24 bit color
Spatial resolution	Resolution to be calculated from actual image format and/or dimensions - approx. 2800 PPI for 35mm originals, ranging to approx. 600 PPI for 8x10 originals	72 ppi	72 ppi
Spatial dimensions	4000 to 8000 pixels across the long dimension, depending on size of original, excluding mounts and borders	600 pixels across the long dimension	150 to 200 pixels across the long dimension

Text

- Documents with smaller printed text may require higher resolutions and bit depthsthan documents that use large typefaces.
- Images that produce the best results for OCR may not be pleasing to the eye and may require separate scans for OCR and human display. Test pages at several resolutions to find the most satisfactory results.
- Projects with large amounts of textual materials, particularly hard-to-read materials such as manuscripts, should provide transcriptions of the materials in addition to the digital image.
- As rekeying text can be cost prohibitive, projects considering transcriptions should investigate including Optical Character Recognition (OCR) software in their toolkit as well as using WikiSource to crowd source transcribing public domain documents http://en.wikisource.org
- Access to textual material can be further enhanced through SGML/XML markup schemes such as the Text Encoding Initiative (TEI) http://www.tei-c.org.

	Master	Web Access	Thumbnail
File format	TIFF	PDF, PDF/A	JPEG
Bit depth	16 grayscale 24 bit color	8 grayscale 24 bit color	8 grayscale 24 bit color

Spatial resolution	Adjust scan resolution to produce a minimum pixel measurement across the long dimension of 6,000 lines for 1bit files and 4,000 lines for 8 to 16 bit files	72 to 200 ppi	72 ppi
Spatial dimensions	4000 to 6000 pixels across the long dimension, excluding mounts and borders	600 pixels across the long dimension	150 to 200 pixels across the long dimension

Maps

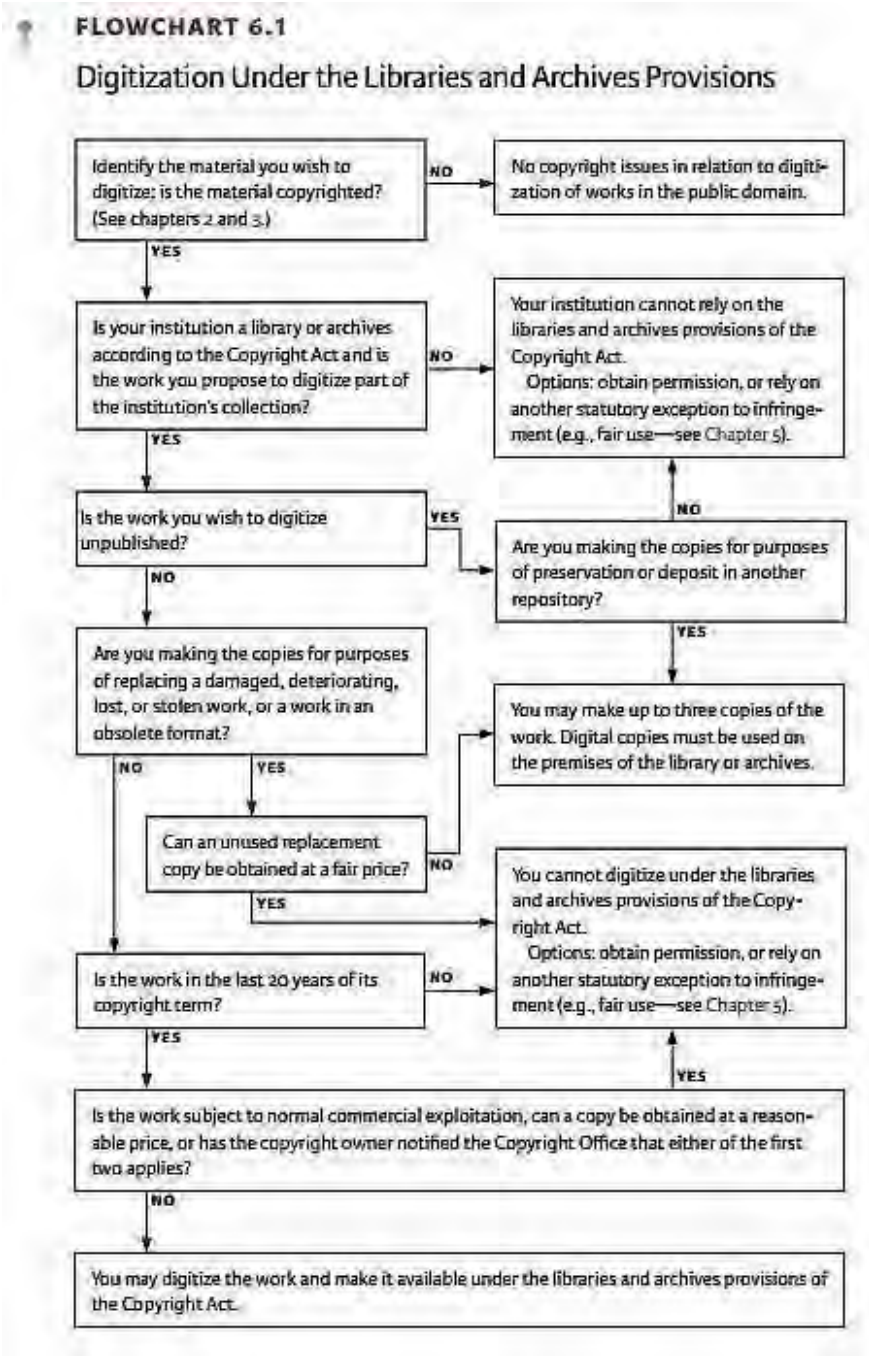
- Scanning maps may involve items that vary widely in size, condition and amount of detail.
- Small maps may fit easily onto a flatbed scanner, while large plat maps may need captured by a camera.
- Size of the image can become a problem for storage, but also for viewing, serving over the web or processing.
- Smaller maps (less than 36 inches on the longest dimension) should be digitized at 600 PPI, 24-bit color or 16-bit grayscale if possible.
- Larger maps, 300-400 PPI may be more practical.
- If it becomes necessary to digitize a map in sections and stitch the image together in Photoshop, keep both the original images of the sections as well as the combined image.

	Master	Web Access	Thumbnail
File format	TIFF	PNG or JPEG	JPEG
Bit depth	16 grayscale 24 bit color	8 grayscale 24 bit color	8 grayscale 24 bit color
Spatial resolution	400-800 ppi	72 ppi	72 ppi
Spatial dimensions	4000 to 8000 pixels across the long dimension, excluding mounts and borders	600 pixels across the long dimension	150 to 200 pixels across the long dimension

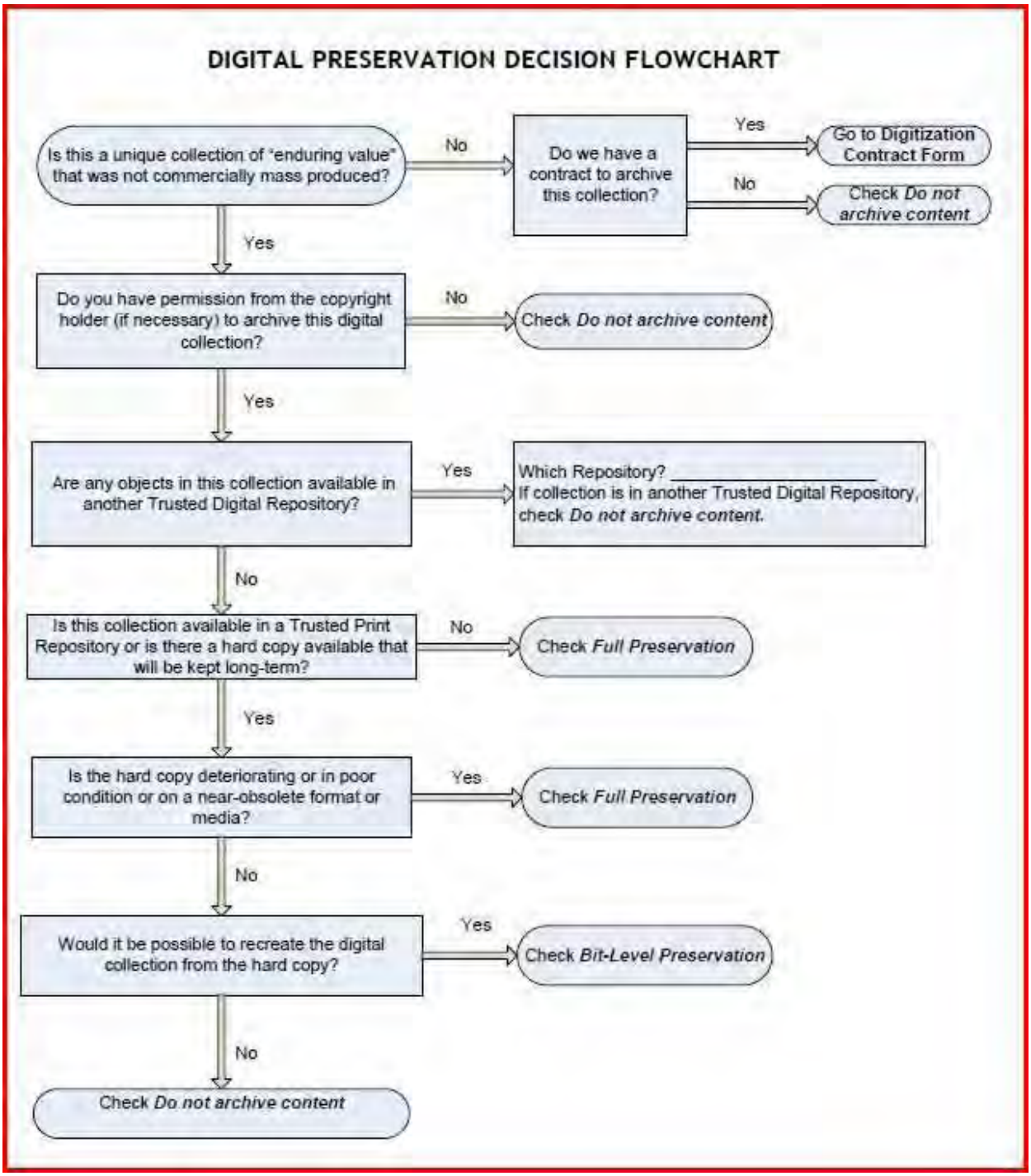
Appendix H: Copyright Considerations in Digitizing

Appendix H is no longer used by PNRA. Instead, reliance is placed on the "fair use" provisions of the Copyright Act of 1976. – As of August 2018.

Source: Hirtle, Peter B., E. Hudson and A.T. Kenyon. 2009. *Copyright & Cultural Institutions: Guidelines for Digitization.* Ithaca: Cornell University Press.



Appendix I: Sample Digital Preservation Decision Flowchart



_____DO NOT PRESERVE
_____FULL PRESERVATION
_____BIT-LEVEL PRESERVATION

Name:_____ Date: _____

Digital collection or content: _____

1. Preservation decision and priority (complete above flowchart)

The final preservation decision is:
_____Ingest content into the digital archive
_____Do not archive content

The final preservation priority is:
_____Full preservation
_____Bit-level preservation

2. Digital content: access options

a. Do these objects also have publicly accessible versions? _____
b. Where are the accessible versions located? _____
c. Are high resolution copies likely to be requested? _____

3. Additional considerations. Please add documentation as needed.

Source*: J. Willard Marriott Library Digital Preservation Application*. J. Willard Marriott Library, University of Utah. September 2012.

Appendix J: Access to Memory (AtoM) Platform information

From the AtoM website

- 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. It is an active, dynamic open-source project with a broad user base.
- All core AtoM functions take place via a web browser, with minimal assumptions about end-user requirements for access.
- Standards-compliance is built into the core of AtoM, and it offers easy-to-use, web- based edit templates that conform to a wide variety of international and national standards.
- Repository data will never be locked into AtoM – AtoM utilizes a number of metadata exchange standards to support easy import and export through the AtoM user interface.
- Built for use by a single institution for its own descriptions, or as a multi-repository platform which accepts descriptions from any number of contributing repositories, AtoM is flexible enough to accommodate your needs.

Pacific Northwest Railroad Archive
Digital Archive Platform Review
By: Elizabeth Knight, PNRA Consulting Archivist

Platform: AtoM
Documentation: https://www.accesstomemory.org/en/docs/2.2/
Date: January 20, 2016
Demo: January 14, 2016 by Sarah Romkey (sromkey@artefactual.com), Artefactual.
Notes: Demo included Archivematica.
Attendees: Elizabeth, Gary, Chuck, Bill, Gregg

Overview

- Free download. Standards-based, OAIS-compliant, open source
- Offers backend and frontend collection information management including accession log, generation of descriptive records, filtered searching,
- customizable public interface. https://www.artefactual.com/services/atom-theming/
- Permission levels
- Hierarchical data management (RHO, collection, series, item)
- Metadata templates. Uses Dublin Core and recognizes DACS (both descriptive metadata standards to be used at PNRA)

- Filtered searching categories: subject, language, repository, creator, name, genra (photos, maps, etc) Some customization available, based on Dublin Core fields
- Can upload taxonomies, thesauri
- generates thumbnails and reference images
- Integrates with Archivematica for full digital archive repository functionality and long-term preservation.
- Artefactual data migration service: https://www.artefactual.com/services/data-migration/
- Artefactual hosting $1700-$3000 annually https://www.artefactual.com/services/site- hosting/

Requirements (from AtoM website)

Hardware and Software Requirements

Please note that it is difficult to provide an authoritative baseline or recommended system specification for running AtoM because what is considered an "acceptable" performance level is subjective, and the performance of the application depends greatly on factors such as the how much data is in the database, and how many users are accessing the site simultaneously.

Furthermore, AtoM makes use of different components and services that could be deployed in a distributed manner (across multiple machines in a network) in order to accept an escalating number of users. The main goal of this documentation is to describe the configuration of AtoM and its dependencies on a single machine, but some aspects of a Multi-node deployment will also be described.

Software Dependencies (required)

These are the minimum requirements, but please remember that in most of the cases you'll experience better results working with the latest stable releases of each component.

- A webserver like Apache or Nginx; Artefactual prefers the latter in development
- Elasticsearch 1.3.0 or newer
- Oracle Java 8 or newer (required for Elasticsearch)
- MySQL 5.1 or newer
- PHP 5.3.10 or newer (PHP 5.4 and PHP 5.5 work too)
- Memcached
- Gearman job server

Additionally, the following PHP extensions are mandatory:

- cURL (php5-curl)
- JSON (php5-json)
- APC (php-apc, or php5-apcu in PHP 5.5)

- PDO and PDO-MySQL (php5-mysql)
- XSL (php5-xsl)

Optionally:

- Readline (php5-readline, required in 14.04 only, not available in Windows).

Recommended Minimum Requirements for production processing

Archivematica can be installed one or more machines. It is recommended that each machines have these minimum requirements:

- Processor: dual core i5 3rd generation CPU or better
- Memory: 8GB+
- Disk space: 20GB plus the disk space required for the collection.

Firewall requirements

When installing Archivematica on multiple machines, all the machines must be able to reach each other on the following ports:

- http, mysqld, gearman, nfs, ssh

POWRR Review -- Not reviewed by POWRR

Appendix K: AtoM Metadata Crosswalks

Source: AtoM Metadata Crosswalks
https://wiki.accesstomemory.org/Resources/Metadata_crosswalk

3.1 Identity Statement Area

ISAD(G)	RAD	DACS	DC	MODS	EAD
3.1 Reference code	1.8B11. Alpha-numeric designations	2.1.3 Local identifier	identifier	<identifier>	<unitid>
3.1.2 Title	1.1B. Title proper	2.3 Title	title	<titleInfo><title>	<unittitle>
3.1.3 Date(s)	1.4B. Date(s) of creation	2.4 Date	coverage (temporal) date (created)	<originInfo><dateCreated>	<unitdate>
3.1.4 Level of description					<archdesc level="_____">
3.1.5 Extent and medium	1.5B. Extent of descriptive unit (including specific material designation)	2.5 Extent	format (extent) format (medium)	<physicalDescription><extent> <genre>	<physdesc><extent>

3.2 Context area

ISAD(G)	RAD	DACS	DC	MODS	EAD
3.2.1 Name of creator(s)	21.1 Provenance access points	2.6 Name of creator(s)	<name type="_"><namePart> <name><role><roleTerm type="text">creator		

3.2.2 Administrative / biographical history	1.7B Administrative history / biographical sketch	2.7 Administrative / biographical history		
3.2.3 Archival history	1.7C Custodial history	5.1 Custodial history		
3.2.4 Immediate source of acquisition or transfer	3.2.4 Immediate source of acquisition or transfer	3.2.4 Immediate source of acquisition or transfer	3.2.4 Immediate source of acquisition or transfer	1.8B12 Immediate source of acquisition

3.3 Content and structure area

ISAD(G)	RAD	DACS	DC	MODS	EAD
3.3.1 Scope and content	1.7D Scope and content				
3.3.2 Appraisal, destruction and scheduling information					
3.3.3 Accruals	1.8B19 Accruals				
3.3.4 System of arrangement	1.8B13 Arrangement				

3.4 Conditions of access and use area

ISAD(G)	RAD	DACS	DC	MODS	EAD
3.4.1 Conditions governing access	1.8B16a Restrictions on access				
3.4.2 Conditions governing reproduction	1.8B16c Terms governing use and reproduction 1.8B16d Terms governing publication				
3.4.3 Language / scripts of material	1.8B14 Language				

3.4.4 Physical characteristics and technical requirements	1.8B9a Physical condition	
3.4.5 Finding aids	1.8B17 Finding aids	

3.5Allied materials area

ISAD(G)	RAD	DACS	DC	MODS	EAD
3.5.1 Existence and location of originals	1.8B15a Location of originals				
3.5.2 Existence and location of copies	1.8B15b Availability of other formats				
3.5.3 Related units of description	1.8B18 Associated material 1.8B20 Related groups of records external to the unit being described 1.8B20a Related groups of records within the same fonds, series or collection				
3.5.4 Publication note					

3.6 Notes area

ISAD(G)	RAD	DACS	DC	MODS	EAD
3.6.1 Notes					

3.7 Description control area

ISAD(G)	RAD	DACS	DC	MODS	EAD
3.7.1 Archivist's note					
3.7.2 Rules or conventions					
3.7.3 Date(s) of description					

Appendix L: Levels of Preservation

Source: National Digital Stewardship Alliance, Library of Congress.
http://www.digitalpreservation.gov/ndsa/NDSAtoDLF.html

Table 1: Version 1 of the Levels of Digital Preservation

	Level 1 (Protect your data)	Level 2 (Know your data)	Level 3 (Monitor your data)	Level 4 (Repair your data)
Storage and Geographic Location	- Two complete copies that are not collocated - For data on heterogeneous media (optical discs, hard drives, etc.) get the content off the medium and into your storage system	- At least three complete copies - At least one copy in a different geographic location - Document your storage system(s) and storage media and what you need to use them	- At least one copy in a geographic location with a different disaster threat - Obsolescence monitoring process for your storage system(s) and media	- At least three copies in geographic locations with different disaster threats - Have a comprehensive plan in place that will keep files and metadata on currently accessible media or systems
File Fixity and Data Integrity	- Check file fixity on ingest if it has been provided with the content - Create fixity info if it wasn't provided with the content	- Check fixity on all ingests - Use write-blockers when working with original media - Virus-check high risk content	- Check fixity of content at fixed intervals - Maintain logs of fixity info; supply audit on demand - Ability to detect corrupt data - Virus-check all content	- Check fixity of all content in response to specific events or activities - Ability to replace/repair corrupted data - Ensure no one person has write access to all copies
Information Security	- Identify who has read, write, move and delete authorization to individual files - Restrict who has those authorizations to individual files	- Document access restrictions for content	- Maintain logs of who performed what actions on files, including deletions and preservation actions	- Perform audit of logs
Metadata	- Inventory of content and its storage location - Ensure backup and non-collocation of inventory	- Store administrative metadata - Store transformative metadata and log events	- Store standard technical and descriptive metadata	- Store standard preservation metadata
File Formats	- When you can give input into the creation of digital files encourage use of a limited set of known open formats and codecs	- Inventory of file formats in use	- Monitor file format obsolescence issues	- Perform format migrations, emulation and similar activities as needed