Training Course on Advanced Digital Preservation Architectures

Professional Development Training Course Outline

Category	Library Institute	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In an increasingly **digital-first** world, the volume of born-digital and digitized information continues to explode. From critical organizational records and cultural heritage collections to scientific research data and personal archives, safeguarding these **digital assets** for future access and use is paramount. Training Course on Advanced Digital Preservation Architectures dives deep into the strategic and technical frameworks necessary to build resilient and **sustainable digital preservation programs**. We explore the latest **preservation strategies**, **data integrity** mechanisms, and **trusted digital repository** models, equipping participants with the knowledge and skills to combat **digital obsolescence** and ensure the long-term **accessibility** and **authenticity** of invaluable digital information.

The proper implementation of **advanced digital preservation architectures** is no longer a niche concern; it's a fundamental requirement for any organization generating or holding significant digital content. This training is designed to empower information professionals, IT specialists, and decision-makers to navigate the complexities of long-term **digital curation**. Through a blend of theoretical understanding and practical application, participants will gain expertise in **risk management**, **metadata management**, **file format preservation**, and the selection of appropriate **storage solutions**, preparing them to design and manage robust digital preservation systems that meet evolving technological landscapes and international **digital preservation standards**.

Programme Curriculum

Training Course on Advanced Digital Preservation Architectures

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Course Objectives

1. **Master** the principles of **sustainable digital preservation workflows** and lifecycles.
2. **Design** and implement robust **trusted digital repository (TDR) architectures** adhering to **OAIS model** standards.
3. **Evaluate** and select advanced **storage solutions** for long-term **data integrity** and **redundancy**, including **cloud preservation**.
4. **Develop** comprehensive **digital preservation policies** and **governance frameworks**.
5. **Apply** advanced **preservation metadata** standards (e.g., **PREMIS**) for enhanced discoverability and authenticity.
6. **Mitigate** risks associated with **digital obsolescence** and **file format vulnerability** through strategic planning.
7. **Implement digital forensics** techniques for **provenance** and **authenticity verification** in digital collections.
8. **Understand** and apply **legal and ethical considerations** in **digital archiving** and access.
9. **Explore** and integrate **AI and Machine Learning** applications in **digital preservation automation**.
10. **Assess** and enhance **organizational readiness** for sophisticated digital preservation initiatives.
11. **Formulate** effective **disaster recovery strategies** for digital assets.
12. **Leverage open-source digital preservation tools** and platforms for cost-effective solutions.
13. **Contribute** to **community building** and **collaborative digital preservation initiatives** globally.

Organizational Benefits

- Ensure the persistent availability and usability of critical digital assets, mitigating risks of data loss and corruption.
- Meet evolving legal and regulatory requirements for data retention and accessibility, reducing legal and reputational risks.
- Provide reliable access to historical data and institutional memory, supporting informed strategic planning.

- Implement efficient storage and preservation strategies, reducing long-term operational costs associated with managing digital information.
- Safeguard valuable cultural, historical, and scientific records, fostering public confidence and access to information.
- Streamline digital asset management workflows through standardized practices and automated processes.
- Position the organization as a leader in responsible data stewardship and long-term information management.
- Secure and manage digital intellectual property, protecting organizational innovations and creations.

Target Audience

1. Archivists and Records Managers
2. Librarians and Information Professionals
3. IT Managers and System Administrators
4. Museum Curators and Collections Managers.
5. Researchers and Data Scientists.
6. Government Agency Personnel
7. Compliance and Legal Officers
8. Business and Executive Leaders.

Course Outline

Module 1: Foundations of Digital Preservation

- Defining digital preservation: concepts, challenges, and importance.
- Understanding the digital lifecycle and the threats to digital longevity.
- Introduction to the OAIS Reference Model as a foundational framework.
- Key principles: authenticity, integrity, accessibility, and usability.
- Current trends and the evolving landscape of digital information.
- **Case Study:** The National Archives (UK) strategy for preserving government digital records.

Module 2: Building Trusted Digital Repositories (TDRs)

- Components and architecture of a TDR.
- Implementing OAIS functional entities: Ingest, Archival Storage, Data Management, Access, Administration, Preservation Planning.
- Certification standards for TDRs (e.g., ISO 16363).
- Planning for scalability and sustainability of repository systems.
- Open-source vs. commercial TDR solutions.
- **Case Study:** The Portico dark archive for e-journals and e-books.

Module 3: Advanced Digital Storage Architectures

- Hierarchical storage management (HSM) and multi-tier storage strategies.
- Cloud storage for digital preservation: benefits, risks, and vendor selection.
- Data replication, redundancy, and geographic diversity for disaster recovery.
- Emerging storage technologies (e.g., DNA storage, blockchain for provenance).
- Cost-benefit analysis of different storage solutions.
- **Case Study:** The Internet Archive's distributed storage architecture for web archives.

Module 4: Preservation Metadata and Packaging

- Deep dive into PREMIS (Preservation Metadata: Implementation Strategies) data dictionary.
- Creating and managing preservation metadata for ingest and ongoing management.
- Understanding METS (Metadata Encoding and Transmission Standard) for structural metadata.
- Developing Archival Information Packages (AIPs) for long-term preservation.
- Automating metadata extraction and validation.
- **Case Study:** The National Library of Australia's use of PREMIS for its PANDORA web archive.

Module 5: File Format Preservation Strategies

- Identifying file format risks and obsolescence: proprietary vs. open formats.
- Strategies: migration, emulation, normalization, and encapsulation.
- Tools for file format identification, validation, and characterization (e.g., DROID, FITS).
- Developing file format policies and registries.
- Managing complex digital objects and dependencies.
- **Case Study:** The British Library's approach to preserving diverse digital newspaper formats.

Module 6: Digital Preservation Policies and Governance

- Developing a comprehensive digital preservation policy framework.
- Roles, responsibilities, and organizational structures for digital preservation.
- Legal and ethical considerations: copyright, intellectual property, privacy, access.
- Funding models and sustainability planning for digital preservation programs.
- Advocacy and communication strategies for securing institutional buy-in.
- **Case Study:** Cornell University Library's digital preservation policy and implementation.

Module 7: Risk Management and Assessment

- Identifying and assessing threats to digital assets (technical, organizational, environmental).
- Developing risk mitigation and contingency plans.
- Implementing active monitoring and health checks for digital collections.
- Disaster recovery planning for digital preservation.
- Business continuity for digital repositories.
- **Case Study:** The National Archives and Records Administration (NARA) risk assessment for its Electronic Records Archives (ERA).

Module 8: Digital Forensics in Preservation

- Principles of digital forensics for verifying authenticity and integrity.
- Forensic tools and techniques for bit-level analysis and data recovery.
- Chain of custody for digital evidence in preservation contexts.
- Detecting manipulation and ensuring non-repudiation of digital objects.
- Integrating forensic practices into preservation workflows.
- **Case Study:** Using digital forensics to ensure the integrity of born-digital legal records.

Module 9: Digital Preservation Systems and Tools

- Overview of leading digital preservation software and platforms (e.g., Preservica, Archivematica, Rosetta).
- Implementing ingest, storage, and access workflows in preservation systems.
- Workflow automation and orchestration for efficiency.
- Integration with existing institutional systems (e.g., DAMs, CMSs).
- Evaluating system capabilities and vendor support.

- **Case Study:** University of Michigan's experience with Archivematica for digital ingest.

Module 10: AI and Machine Learning in Digital Preservation

- Applications of AI for automating metadata generation and enrichment.
- Machine learning for file format identification and characterization at scale.
- AI-powered content analysis for discovery and access.
- Challenges and ethical considerations of AI in preservation.
- Future trends and research in AI for digital archiving.
- **Case Study:** Exploring AI for automated quality control of digitized images in a large archive.

Module 11: Web Archiving and Social Media Preservation

- Strategies for capturing and preserving dynamic web content.
- Tools and services for web archiving (e.g., Archive-It, Heritrix).
- Challenges of preserving social media content and interactive digital objects.
- Legal and ethical considerations in web and social media archiving.
- Providing access to archived web content.
- **Case Study:** The Library of Congress's Twitter archive project.

Module 12: Preservation of Complex Digital Objects

- Strategies for preserving databases, software, and interactive media.
- Challenges of dynamic content, linked data, and virtual reality.
- Emulation and virtualization for access to obsolete environments.
- Techniques for preserving research data and scientific workflows.
- Long-term access to born-digital art and multimedia installations.
- **Case Study:** The emulation work of the National Videogame Museum (UK) for preserving game history.

Module 13: Audit and Certification of Digital Repositories

- Understanding the importance of trustworthy digital repositories.
- Preparing for and undergoing repository audit and certification.
- Key criteria for trust: organizational infrastructure, digital object management, technology.
- Benefits of certification for external stakeholders and internal confidence.
- Continuous improvement and maintenance of certified status.
- **Case Study:** The CLOCKSS Archive's success in achieving TRAC certification.

Module 14: Digital Preservation Advocacy and Collaboration

- Building a business case for digital preservation within organizations.
- Engaging stakeholders and securing funding for initiatives.
- Participating in national and international digital preservation networks.
- Sharing knowledge, best practices, and open-source solutions.
- Contributing to the broader digital preservation community.
- **Case Study:** The Digital Preservation Coalition (DPC) and its role in fostering community.

Module 15: Future Trends and Emerging Technologies

- Quantum computing's potential impact on digital preservation.
- Blockchain for provenance and integrity of digital records.
- Personal digital archiving and citizen science in preservation.
- The role of metadata in a semantic web environment.

- Adapting to rapid technological change and unforeseen challenges.
- **Case Study:** Research initiatives exploring blockchain for secure digital object registration.

Training Methodology

This course employs a blended learning approach, combining:

- **Interactive Lectures:** Engaging presentations with visual aids and real-world examples.
- **Hands-on Workshops:** Practical exercises using open-source tools and simulated digital preservation environments.
- **Case Study Analysis:** In-depth examination of successful digital preservation projects and challenges.
- **Group Discussions:** Fostering peer-to-peer learning and problem-solving.
- **Expert Q&A Sessions:**Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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