

PORTICO SELF-REPORT
TRUSTWORTHY REPOSITORIES AUDIT & CERTIFICATION: CRITERIA AND CHECKLIST

APRIL 1' 2009

PREPARED IN SUPPORT OF 2009 TRUSTED REPOSITORIES AUDIT BY CRL

Portico Facts and Figures (as of February 28, 2009)

<u>Libraries</u>	<u>Participation</u>	<u>Publishers</u>	
		<u>E-Journals</u>	<u>E-Books</u>
Total Participating Libraries 486	Total Participating Publishers	70	2
	Total Committed Titles	8,547	5,653
	Total Triggered Titles	2	0
	Total PCA Claims	0	0

The Archive

	<u>Content</u>					
	<u>2006</u>	<u>2007</u>	<u>% Change</u>	<u>2008</u>	<u>% Change</u>	<u>2009</u>
E-Journals	614	3,521	473%	5,939	69%	6,592
Archival Units ⁵	336,177	4,993,665	1385%	9,300,341	86%	10,993,157
Files	1,643,906	56,371,360	3329%	93,907,701	39%	125,062,159

File Formats

<u>File Category</u>	<u># of Files</u>	<u>% of Archive</u>
Images	56,472,677	45.16%
Portico Created Archival Files	33,198,742	26.55%
Publisher Supplied Text (e.g. XML or SGML)	22,181,871	17.74%
Application Specific Files (e.g., Word, Excel, etc.)	13,183,062	10.54%
Multi File Package (e.g., zip)	13,009	0.01%
Videos	12,535	0.01%
Audio Files	258	<0.01%
Executable Files (e.g., an application written by the author)	5	<0.01%

Archive Audit Activities

	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
Audit – Total Activities	-	-	2,437	906
Issues	-	-	999	335
Archival Unit Info Pages	-	-	627	211
Archival Unit Rendition	210	478	584	200
Files	0	154	110	46
Searches	24	75	117	114

Access Usage Statistics

	<u>2007 (Dec only)</u>	<u>2008</u>	<u>2009</u>
Access – Total Authenticated Usage	354	1,291	240
Articles	309	762	71
Searches	45	529	169

Trustworthy Repositories Audit & Certification: Criteria Checklist					
Organization:	Portico	Auditor:		Page	
Section:	A. Organization infrastructure	Interviewee(s):		Date	
Aspect:	A1. Governance & organizational viability				
Criterion	Evidence (Documents) Examined		Findings and Observations		Result
A1.1. Repository has a mission statement that reflects a commitment to the long-term retention of, management of, and access to digital information.	Yes <ul style="list-style-type: none"> Mission statement on website, brochures, and presentations 				
A1.2. 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.	In process <ul style="list-style-type: none"> License agreements with content providers Succession policy 				

Trustworthy Repositories Audit & Certification: Criteria Checklist					
Organization:	Portico	Auditor:		Page	
Section:	A. Organization infrastructure	Interviewee(s):		Date	
Aspect:	A2. Organizational structure & staffing				
Criterion	Evidence (Documents) Examined		Findings and Observations		Result
A2.1. Repository has identified and established the duties that it needs to perform and has appointed staff with adequate skills and experience to fulfill these duties.	Yes <ul style="list-style-type: none"> • Job descriptions • Presentations at and speaking invitations to conferences 				
A2.2. Repository has the appropriate number of staff to support all functions and services.	Yes <ul style="list-style-type: none"> • Organizational chart • Demonstrable content in the archive 				
A2.3. Repository has an active professional development program in place that provides staff with skills and expertise development opportunities.	Yes <ul style="list-style-type: none"> • Internal training classes with documentation • Conference attendance 				

Trustworthy Repositories Audit & Certification: Criteria Checklist					
Organization:	Portico	Auditor:		Page	
Section:	A. Organization infrastructure	Interviewee(s):		Date	
Aspect:	A3. Procedural accountability & policy framework				
Criterion	Evidence (Documents) Examined		Findings and Observations		Result
A3.1. Repository has defined its designated community(ies) and associated knowledge base(s) and has publicly accessible definitions and policies in place to dictate how its preservation service requirements will be met.	Yes <ul style="list-style-type: none"> • Mission statement is available on the web and in brochures • Papers and presentations outlining policies 				
A3.2. Repository has procedures and policies in place, and mechanisms for their review, update, and development as the repository grows and as technology and community practice evolve.	Yes <ul style="list-style-type: none"> • Archival policies, operational procedures, and guidelines • Minutes from technology and operations meetings • Archive maintenance and management documentation 				
A3.3. Repository maintains written policies that specify the nature of any legal permissions required to preserve digital content over time, and repository can demonstrate that these permissions have been acquired when needed.	Yes - intrinsic to system design <ul style="list-style-type: none"> • License agreements with content providers • Preservation methodology policy 				

<p>A3.4. Repository is committed to formal, periodic review and assessment to ensure responsiveness to technological developments and evolving requirements.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Participation in CRL test audit • Preparation for CRL audit • Conference attendance • DRAMBORA scheduled for late 2009 		
<p>A3.5. Repository has policies and procedures to ensure that feedback from producers and users is sought and addressed over time.</p>	<p>Yes</p> <ul style="list-style-type: none"> • E-book and LCC survey documentation • Regular Portico Advisory Committee meetings (since 9/2005) • Archive holdings discussions and subsequent development of the Portico archive holdings comparison service and spreadsheet of full holdings • Contact us feedback forms • Annual and mid-year reports to publishers • Designated community feedback policy 		

<p>A3.6. Repository has a documented history of the changes to its operations, procedures, software, and hardware that, where appropriate, is linked to relevant preservation strategies and describes potential effects on preserving digital content.</p>	<p>Yes</p> <ul style="list-style-type: none"> • System development requirements documentation • Tool documentation • Systems modification documentation • Events metadata on the archival unit with tool information (audit trail present in each archival unit) • Bug and issue tracking in JIRA 		
<p>A3.7. Repository commits to transparency and accountability in all actions supporting the operation and management of the repository, especially those that affect the preservation of digital content over time.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Annual and mid-year reports to publishers • Annual letters to library participants • Archive holdings spreadsheets • Audit interface for participants • Documentation for upcoming audit interface revisions to provide even greater transparency 		
<p>A3.8 Repository commits to defining, collecting, tracking, and providing, on demand, its information integrity measurements.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Archive fixity and completeness policy • Fixity reports • Archive correction reports • Replication and backup policy 		

A3.9 Repository commits to a regular schedule of self-assessment and certification and, if certified, commits to notifying certifying bodies of operational changes that will change or nullify its certification status.	Yes <ul style="list-style-type: none">• Preparation for CRL audit• DRAMBORA scheduled for late 2009		
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Trustworthy Repositories Audit & Certification: Criteria Checklist					
Section:	A. Organization infrastructure	Interviewee(s):		Date	
Aspect:	A4. Financial sustainability				
Criterion	Evidence (Documents) Examined	Findings and Observations		Result	
A4.1. Repository has short- and long-term business planning processes in place to sustain the repository over time.	Yes <ul style="list-style-type: none"> • New business development documents • Annual goals • 2010 vision statement • Yearly budgets and financial projections • Regular financial reports to Portico Advisory Committee and Ithaka board 				
A4.2. Repository has in place processes to review and adjust business plans at least annually.	Yes <ul style="list-style-type: none"> • Annual organizational and unit goals and budgets • Portico Advisory Committee meetings • Portico Liaison Group strategic planning sessions 				
A4.3. Repository’s financial practices and procedures are transparent, compliant with relevant accounting standards and practices, and audited by third parties in accordance with territorial legal requirements.	Yes <ul style="list-style-type: none"> • Annual financial audit and report • OMB Circular A-133OMB audit • Ithaka Financial Services accounting manual 				

<p>A4.4. Repository has ongoing commitment to analyze and report on risk, benefit, investment, and expenditure (including assets, licenses, and liabilities).</p>	<p>Yes</p> <ul style="list-style-type: none"> • Monthly financial reconciliation documentation • DRAMBORA scheduled for late 2009 • Portico Liaison Group strategic planning sessions • Portico Advisory Committee meetings • Ithaka Board meetings 		
<p>A4.5. Repository commits to monitoring for and bridging gaps in funding.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Financial statements • Monthly financial reconciliation documentation 		

Trustworthy Repositories Audit & Certification: Criteria Checklist					
Section:	A. Organization infrastructure	Interviewee(s):		Date	
Aspect:	A5. Contracts, Licenses and Liabilities				
Criterion	Evidence (Documents) Examined	Findings and Observations		Result	
A5.1 If repository manages, preserves, and/or provides access to digital materials on behalf of another organization, it has and maintains appropriate contracts or deposit agreements.	Yes <ul style="list-style-type: none"> • License agreements with content providers • License agreements with libraries 				
A5.2 Repository contracts or deposit agreements must specify and transfer all necessary preservation rights, and those rights transferred must be documented.	Yes <ul style="list-style-type: none"> • License agreements with content providers 				
A5.3 Repository has specified all appropriate aspects of acquisition, maintenance, access, and withdrawal in written agreements with depositors and other relevant parties.	Yes <ul style="list-style-type: none"> • License agreements with content providers 				

<p>A5.4 Repository tracks and manages intellectual property rights and restrictions on use of repository content as required by deposit agreement, contract, or license.</p>	<p>Yes</p> <ul style="list-style-type: none"> • License agreements with content providers include an Annex detailing the content that is to be preserved • Machine readable instantiation of the Annex used to verify the content being preserved • Updates to Annex (made based upon information learned during the preservation process or changes in the publishing environment) 		
<p>A5.5 If repository ingests digital content with unclear ownership/rights, policies are in place to address liability and challenges to those rights.</p>	<p>Not Applicable</p> <ul style="list-style-type: none"> • Content may not be ingested without an agreement 		

Trustworthy Repositories Audit & Certification: Criteria Checklist					
Section:	B. Digital Object Management	Interviewee(s):		Date	
Aspect:	B.1 Ingest: acquisition of content				
Criterion	Evidence (Documents) Examined	Findings and Observations		Result	
B1.1. Repository identifies properties it will preserve for digital objects.	Yes <ul style="list-style-type: none"> • Mission statement • License agreements • Content type action plan • Transform • Profile • Turn over documentation • Preservation methodology policy 				
B1.2. Repository clearly specifies the information that needs to be associated with digital material at the time of its deposit (i.e., SIP).	Yes <ul style="list-style-type: none"> • License agreements with content providers • Content type action plan • Preservation methodology policy 				

<p>B1.3. Repository has mechanisms to authenticate the source of all materials.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Fetching mechanisms are both manual and automated • Fetcher documentation • License agreement with content providers includes an Annex specifying content that will be delivered • Publisher fact sheets and turn over documents specify the manner in which content will be delivered 		
<p>B1.4. Repository’s ingest process verifies each submitted object (i.e., SIP) for completeness and correctness as specified in B1.2.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Transforms • Profiles • Turn over documentation • Workflow documentation • Appraisal, accessioning and arrangement policy • Screen shots of errors in ConPrep interface • Preservation methodology policy 		

<p>B1.5. Repository obtains sufficient physical control over the digital objects to preserve them (Ingest: content acquisition).</p>	<p>Yes</p> <ul style="list-style-type: none"> • Transform • Profile • Turn over documentation • Workflow documentation • Screen shots of errors in ConPrep interface • Appraisal, accessioning and arrangement policy • Preservation methodology policy • Sample archival information package wrapper and metadata (PMETS) • License agreements with content providers 		
<p>B1.6. Repository provides producer/depositor with appropriate responses at predefined points during the ingest processes.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Publisher annual and mid-year reports • Audit site 		
<p>B1.7. Repository can demonstrate when preservation responsibility is formally accepted for the contents of the submitted data objects (i.e., SIPs).</p>	<p>Yes</p> <ul style="list-style-type: none"> • License agreements with content providers • “Content has been archived” publisher notice 		
<p>B1.8. Repository has contemporaneous records of actions and administration processes that are relevant to preservation.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Event metadata in AIPs • Content modification documents 		

Trustworthy Repositories Audit & Certification: Criteria Checklist					
Section:	B. Digital Object Management	Interviewee(s):		Date	
Aspect:	B.2 Ingest: creation of the archivable package				
Criterion	Evidence (Documents) Examined	Findings and Observations			Result
B2.1. Repository has an identifiable, written definition for each AIP or class of information preserved by the repository.	Yes <ul style="list-style-type: none"> • Content model documentation • Content type action plans • PMETS overview • Sample archival information package wrapper and metadata (PMETS) • System documentation 				
B2.2. Repository has a definition of each AIP (or class) that is adequate to fit long-term preservation needs.	Yes <ul style="list-style-type: none"> • Content model documentation • Content type action plans • System documentation • Sample archival information package wrapper and metadata (PMETS) • PMETS overview 				
B2.3. Repository has a description of how AIPs are constructed from SIPs.	Yes <ul style="list-style-type: none"> • Archival unit event metadata • Source file metadata • Archival unit preservation metadata • Content modification policy • Content model documentation • PMETS overview • System documentation • Transform, profile and turn over document • Portico automated workflow poster 				

<p>B2.4. Repository can demonstrate that all submitted objects (i.e., SIPs) are either accepted as whole or part of an eventual archival object (i.e., AIP), or otherwise disposed of in a recorded fashion.</p>	<p>In progress</p> <ul style="list-style-type: none"> • Receipt and acquisitions policy • Content modification and deletion policy • Modification of original SIP or Portico archival unit documentation • Planned completeness checks for late 2009 • Automated end-to-end content handling in planning • Portico 1.1.7 system release documentation • Sample archival information package wrapper and metadata (PMETS) • License agreements with content providers 		
<p>B2.5. Repository has and uses a naming convention that generates visible, persistent, unique identifiers for all archived objects (i.e., AIPs).</p>	<p>Yes</p> <ul style="list-style-type: none"> • Identifier usage and naming policy • Archival Resource Key (ARK) creation and usage documentation 		
<p>B2.6. If unique identifiers are associated with SIPs before ingest, the repository preserves the identifiers in a way that maintains a persistent association with the resultant archived object (e.g., AIP).</p>	<p>Yes - intrinsic to system design</p> <ul style="list-style-type: none"> • Preservation methodology policy • Sample archival information package wrapper and metadata (PMETS) • Sample full-text transformed file • Identifier usage and naming policy 		

<p>B2.7. Repository demonstrates that it has access to necessary tools and resources to establish authoritative semantic or technical context of the digital objects it contains (i.e., access to appropriate international Representation Information and format registries).</p>	<p>Yes - intrinsic to system design</p> <ul style="list-style-type: none"> • Portico format registry (Portico’s version, as we await the Global Digital Format Registry) • JHOVE2 participation and documentation • Preservation methodology policy • JHOVE usage documentation 		
<p>B2.8 Repository records/registers Representation Information (including formats) ingested.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Portico format registry • Archived technical documentation • Sample archival information package wrapper with representation information (PMETS) 		
<p>B2.9 Repository acquires preservation metadata (i.e., PDI) for its associated Content Information.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Sample archival information package wrapper and metadata (PMETS) 		
<p>B2.10 Repository has a documented process for testing understandability of the information content and bringing the information content up to the agreed level of understandability.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Portico Advisory Committee meetings • Portico audit site • Portico delivery interface • Inspection training materials • Problem resolution training materials • Internal staff • Designated community feedback policy 		
<p>B2.11 Repository verifies each AIP for completeness and correctness at the point it is generated.</p>	<p>Yes - intrinsic to system design</p> <ul style="list-style-type: none"> • Portico automated workflow poster • ConPrep screen shots of file reference failure 		

<p>B2.12 Repository provides an independent mechanism for audit of the integrity of the repository collection/content.</p>	<p>In progress</p> <ul style="list-style-type: none"> • Archive holdings completeness policy • Portico audit website • 2009 annual goals regarding archive holdings 		
<p>B2.13 Repository has contemporaneous records of actions and administration processes that are relevant to preservation (AIP creation).</p>	<p>Yes – intrinsic to system design</p> <ul style="list-style-type: none"> • Event metadata in AIPs • Content modification documentation 		

Trustworthy Repositories Audit & Certification: Criteria Checklist					
Section:	B. Digital Object Management	Interviewee(s):		Date	
Aspect:	B.3 Preservation Planning				
Criterion	Evidence (Documents) Examined	Findings and Observations		Result	
B3.1. Repository has documented preservation strategies.	Yes <ul style="list-style-type: none"> • Content modification and deletion policy • Replication and backup policy • Receipt and acquisitions policy • Identifier usage and naming policy • Portico preservation methodology policy • Content type action plans • Archive fixity and completeness policy • Archive holdings completeness policy • Appraisal, accessioning, and arrangement policy • Format monitoring policy • Content update policy 				
B3.2. Repository has mechanisms in place for monitoring and notification when Representation Information (including formats) approaches obsolescence or is no longer viable.	In progress <ul style="list-style-type: none"> • Format action plans • Documentation and policy review cycle • Format monitoring policy • Portico preservation methodology policy 				

<p>B3.3 Repository has mechanisms to change its preservation plans as a result of its monitoring activities.</p>	<p>In progress</p> <ul style="list-style-type: none"> • Format monitoring policy • Portico systems code release 2.0 (2009Q3) – events and technical information evolution 		
<p>B3.4. Repository can provide evidence of the effectiveness of its preservation planning.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Sample archival information package wrapper and metadata (PMETS) • Audit interface • Delivery interface • Delivery interface usage reports 		

Trustworthy Repositories Audit & Certification: Criteria Checklist					
Section:	B. Digital Object Management	Interviewee(s):		Date	
Aspect:	B.4 Archival storage & preservation/ maintenance of AIPs				
Criterion	Evidence (Documents) Examined	Findings and Observations		Result	
B4.1. Repository employs documented preservation strategies.	Yes <ul style="list-style-type: none"> • Portico preservation methodology policy • Sample archival information package wrapper and metadata (PMETS) 				
B4.2. Repository implements/responds to strategies for archival object (i.e., AIP) storage and migration.	Yes – intrinsic to system design <ul style="list-style-type: none"> • Sample archival information package wrapper and metadata (PMETS) • Format monitoring policy • Sample full-text transformed file • Sample archival unit 				
B4.3 Repository preserves the Content Information of archival objects (i.e., AIPs).	In progress <ul style="list-style-type: none"> • Content update policy • Content modification and deletion policy • Sample archival information package wrapper and metadata (PMETS) 				

<p>B4.4 Repository actively monitors integrity of archival objects (i.e., AIPs).</p>	<p>Yes</p> <ul style="list-style-type: none"> • Archive fixity and completeness policy • Fixity check log files and reports • National Library of the Netherlands (KB) archive replica holdings list 		
<p>B4.5 Repository has contemporaneous records of actions and administration processes that are relevant to preservation (Archival Storage).</p>	<p>Yes – intrinsic to system design</p> <ul style="list-style-type: none"> • Event metadata in AIPs • Content modification documentation 		

Trustworthy Repositories Audit & Certification: Criteria Checklist					
Section:	B. Digital Object Management	Interviewee(s):		Date	
Aspect:	B.5 Information Management				
Criterion	Evidence (Documents) Examined	Findings and Observations		Result	
B5.1 Repository articulates minimum metadata requirements to enable the designated community to discover and identify material of interest.	Yes <ul style="list-style-type: none"> • Content type action plans • Sample archival information package wrapper and metadata (PMETS) 				
B5.2 Repository captures or creates minimum descriptive metadata and ensures that it is associated with the archived object (i.e., AIP).	Yes <ul style="list-style-type: none"> • Appraisal, accessioning, and arrangement policy • Transform • Sample archival information package wrapper and metadata (PMETS) • Identifier usage and naming policy 				
B5.3 Repository can demonstrate that referential integrity is created between all archived objects (i.e., AIPs) and associated descriptive information.	Yes – intrinsic in nature of the metadata structure <ul style="list-style-type: none"> • Sample archival information package wrapper and metadata (PMETS) • Preservation methodology policy • System documentation and information architecture 				

<p>B5.4 Repository can demonstrate that referential integrity is maintained between all archived objects (i.e., AIPs) and associated descriptive information.</p>	<p>Yes – intrinsic in nature of the metadata structure</p> <ul style="list-style-type: none">• Sample archival information package wrapper and metadata (PMETS)• Preservation methodology policy• System documentation and information architecture		
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Trustworthy Repositories Audit & Certification: Criteria Checklist					
Section:	B. Digital Object Management	Interviewee(s):		Date	
Aspect:	B.6 Access Management				
Criterion	Evidence (Documents) Examined	Findings and Observations		Result	
B6.1 Repository documents and communicates to its designated community what access and delivery options are available.	Yes <ul style="list-style-type: none"> • License agreements with content providers and library participants • Library and publisher brochures • Website 				
B6.2 Repository has implemented a policy for recording all access actions (includes requests, orders etc.) that meet the requirements of the repository and information producers/depositors.	Yes <ul style="list-style-type: none"> • Audit and access usage monitoring policy • Post-cancellation access request policy 				
B6.3 Repository ensures that agreements applicable to access conditions are adhered to.	Yes <ul style="list-style-type: none"> • Audit and access usage monitoring policy • Audit and delivery access and tracking log files • Audit and delivery authentication & authorization system screenshots • Portico terms and conditions of use 				

<p>B6.4 Repository has documented and implemented access policies (authorization rules, authentication requirements) consistent with deposit agreements for stored objects.</p>	<p>Yes</p> <ul style="list-style-type: none"> • License agreements with content providers and library participants • Audit and delivery authentication & authorization system screenshots • Metadata database, archive server, and ConPrep logon screenshots 		
<p>B6.5 Repository access management system fully implements access policy.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Audit and delivery access and tracking log files 		
<p>B6.6 Repository logs all access management failures, and staff review inappropriate “access denial” incidents.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Audit and access usage monitoring policy • Usage summary reports • Email follow-up on abnormal use • Audit and delivery access and tracking log files 		
<p>B6.7 Repository can demonstrate that the process that generates the requested digital object(s) (i.e., DIP) is completed in relation to the request.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Portico audit interface • Portico delivery interface 		
<p>B6.8 Repository can demonstrate that the process that generates the requested digital object(s) (i.e., DIP) is correct in relation to the request.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Portico audit interface • Portico delivery interface 		
<p>B6.9 Repository demonstrates that all access requests result in a response of acceptance or rejection.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Audit and delivery access and tracking log files 		

B6.10 Repository enables the dissemination of authentic copies of the original or objects traceable to originals.	Yes <ul style="list-style-type: none">• Portico audit interface• Portico delivery interface		
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Trustworthy Repositories Audit & Certification: Criteria Checklist					
Section:	C. Technologies, Technical Infrastructure & Security	Interviewee(s):		Date	
Aspect:	C1. System Infrastructure				
Criterion	Evidence (Documents) Examined	Findings and Observations		Result	
C1.1 Repository functions on well supported operating systems and other core infrastructural software.	Yes <ul style="list-style-type: none"> • Technical operating environment (TOE) quick view • Support contracts with hardware and software vendors • System architecture documentation 				
C1.2 Repository ensures that it has adequate hardware and software support for backup functionality sufficient for the repository’s services and for the data held, e.g., metadata associated with access controls, repository main content.	Yes <ul style="list-style-type: none"> • Disaster recovery plan • Replication and backup policy • Backup plan in TOE Quick View 				

<p>C1.3 Repository manages the number and location of copies of all digital objects.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Results of random backup retrieval tests • Results of random replica retrieval tests • The National Library of the Netherlands (KB) replica holdings list • Cloud storage replica problem statement • Content distribution problem statement • Content distribution system log files 		
<p>C1.4 Repository has mechanisms in place to ensure any/multiple copies of digital objects are synchronized.</p>	<p>In progress</p> <ul style="list-style-type: none"> • Backup plan in TOE Quick View • Content update policy • Replication and backup policy 		
<p>C1.5 Repository has effective mechanisms to detect bit corruption or loss.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Archive fixity and completeness policy • Fixity reports • Fixity check procedures 		

<p>C1.6 Repository reports to its administration all incidents of data corruption or loss, and steps taken to repair/replace corrupt or lost data.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Archive recovery incident documentation • Archive fixity and completeness policy • Content modification and deletion policy 		
<p>C1.7 Repository has defined processes for storage media and/or hardware change (e.g., refreshing, migration).</p>	<p>Yes</p> <ul style="list-style-type: none"> • Archive fixity and completeness policy • Hardware policy statement 		
<p>C1.8 Repository has a documented change management process that identifies changes to critical processes that potentially affect the repository’s ability to comply with its mandatory responsibilities.</p>	<p>Yes</p> <ul style="list-style-type: none"> • Deployment procedures • Deployment of tools and systems documentation • Bug and issue tracking in JIRA 		
<p>C1.9 Repository has a process for testing the effect of critical changes to the system.</p>	<p>Yes – intrinsic to system design</p> <ul style="list-style-type: none"> • Development environment • QA/Setup testing environment • Regression testing guidelines • Bug and issue tracking in JIRA with testing results documentation • Job description for full time tester • System architecture documentation 		

C1.10 Repository has a process to react to the availability of new software security updates based on a risk-benefit assessment.	Yes – intrinsic to system design <ul style="list-style-type: none">• Development environment (tested before live install)• QA/Setup testing environment (tested before live install)		
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Trustworthy Repositories Audit & Certification: Criteria Checklist					
Section:	C. Technologies, Technical Infrastructure & Security	Interviewee(s):		Date	
Aspect:	C.2 Appropriate technologies				
Criterion	Evidence (Documents) Examined	Findings and Observations		Result	
C2.1 Repository has hardware technologies appropriate to the [access] services it provides to its designated communities and has procedures in place to receive and monitor notifications, and evaluate when hardware technology changes are needed.	Yes – intrinsic to system design and partnerships <ul style="list-style-type: none"> • Portico audit interface • Portico delivery interface • Archival hardware research documentation and conference attendance • Organizational chart 				
C2.2 Repository has software technologies appropriate to the [access] services it provides to its designated community(ies) and has procedures in place to receive and monitor notifications, and evaluate when software technology changes are needed.	Yes – intrinsic to system design and partnerships <ul style="list-style-type: none"> • Portico audit interface • Portico delivery interface • Archival software research documentation and conference attendance • Organizational chart 				

Trustworthy Repositories Audit & Certification: Criteria Checklist					
Section:	C. Technologies, Technical Infrastructure & Security	Interviewee(s):		Date	
Aspect:	C.3 Security				
Criterion	Evidence (Documents) Examined	Findings and Observations		Result	
C3.1 Repository maintains a systematic analysis of such factors as data, systems, personnel, physical plant, and security needs.	Yes <ul style="list-style-type: none"> External penetration test in 2008 plus changes made in response DRAMBORA scheduled for late 2009 to perform risk assessment Ithaka/Portico/JSTOR network topology being addressed 				
C3.2 Repository has implemented controls to adequately address each of the defined security needs.	Yes <ul style="list-style-type: none"> External penetration test in 2008 plus changes made in response DRAMBORA scheduled for late 2009 to perform risk assessment Ithaka/Portico/JSTOR network topology being addressed 				
C3.3 Repository staff have delineated roles, responsibilities, and authorizations related to implementing changes within the system.	In progress <ul style="list-style-type: none"> Roles and responsibilities documentation (plus authorization list) Organizational chart System authorization documentation 				

<p>C3.4 Repository has suitable written disaster preparedness and recovery plan(s), including at least one off-site backup of all preserved information together with an offsite copy of the recovery plan(s).</p>	<p>Yes</p> <ul style="list-style-type: none"> • Disaster and recovery plan • The National Library of the Netherlands (KB) agreement for off-site replica • Cloud storage bills and reports • Replica in Ann Arbor 		
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