



## Trustworthy Repositories Audit & Certification: Criteria Checklist

<b>Organization:</b>	<b>H-Net (E-Mail Lists)</b>	<b>Auditor:</b>	<b>Lisa Schmidt</b>	<b>Page</b>	<b>1</b>	
<b>Section:</b>	<b>A. Organizational Infrastructure</b>	<b>Interviewee(s):</b>		<b>Date</b>	<b>07/06/09</b>	
<b>Aspect:</b>	<b>A1. Governance &amp; organizational viability</b>					
<b>Criterion</b>		<b>Evidence (Documents) Examined</b>		<b>Findings and Observations</b>		<b>Result</b>
A1.1. Repository has a mission statement that reflects a commitment to the long-term retention of, management of, and access to digital information.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 2. Administrative Responsibility  <a href="#">H-Net Strategic Plan</a> , Content Development section, Strategies		The digital preservation program for the H-Net e-mail lists supports H-Net's mission of enhancing scholarly communication by ensuring continued access to the academic discourse contained in H-Net messages.  Note that the statement about commitment to preservation is found in the Strategic Plan rather than the Mission Statement.		Good
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.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 4, Financial Sustainability, 4.1 Institutional Commitment		Acknowledgement that chosen succession partner must ensure ongoing preservation support. No formal succession plan. Directors at MATRIX and H-Net have committed to moving forward with this. Commitment to developing a succession plan included in NHPRC grant proposal.		Incomplete

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<b>Section:</b>	A. Organizational Infrastructure	<b>Interviewee(s)::</b>	Michael McCue (02/08)	<b>Date</b>	07/06/09
<b>Aspect:</b>	A2. Organizational structure & staffing				
<b>Criterion</b>	<b>Evidence (Documents) Examined</b>		<b>Findings and Observations</b>		<b>Result</b>
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.	<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 3, Organizational Viability, 3.3 Roles and Responsibilities  <a href="#">Roles and Responsibilities</a> for Digital Preservation of the H-Net E-Mail Lists  CVs of key preservation and system administration staff				Good
A2.2. Repository has the appropriate number of staff to support all functions and services.	<a href="#">Roles and Responsibilities</a> for Digital Preservation of the H-Net E-Mail Lists		Ongoing preservation function well covered by staff listed in document		Good
A2.3. Repository has an active professional development program in place that provides staff with skills and expertise development opportunities.	<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 3, Organizational Viability, 3.6 Challenges and Risks		Staff training and development is encouraged and supported, but there is no formal program in place.		Good; better if formalized

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<b>Section:</b>	<b>A. Organizational Infrastructure</b>	<b>Interviewee(s):</b>	<b>Dennis Boone Heather Hawley (02/08)</b>	<b>Date</b>	<b>07/06/09</b>
<b>Aspect:</b>	<b>A3. Procedural accountability &amp; policy framework</b>				
<b>Criterion</b>		<b>Evidence (Documents) Examined</b>	<b>Findings and Observations</b>		<b>Result</b>
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.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 2, Administrative Responsibility, 2.1 Purpose; <a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists; <a href="#">H-Net Ingest, Storage, and Retrieval Processes</a> ; <a href="#">Digital Preservation Strategies</a> for the H-Net E-Mail Lists  <a href="#">H-Net By-Laws</a> (Sections 2.03, 2.04) and <a href="#">Constitution</a> (Article VIII)	Policy Framework and supporting documents will not be publicly accessible until approved by H-Net Director and Council.		Good; but better when approved
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.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 7, Procedural Accountability, 7.2 Digital Preservation Policy Framework Administration	Digital Preservation Policy Framework will be reviewed every two years and updated as necessary.		Good
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.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 3, Organizational Viability, 3.5 Access and Use  <a href="#">H-Net's Policy on Copyright and Intellectual Property</a> ; <a href="#">H-Net Constitution</a> Article VIII, Section 7; <a href="#">H-Net By-Laws</a> Section 2.04	Authors of messages retain copyright, but sending a message to an H-Net list constitutes granting permission to H-Net for distribution and (implicitly) preservation.		Good

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<b>Section:</b>	<b>A. Organizational Infrastructure</b>	<b>Interviewee(s):</b>	<b>Dennis Boone Heather Hawley (02/08)</b>	<b>Date</b>	<b>07/06/09</b>
<b>Aspect:</b>	<b>A3. Procedural accountability &amp; policy framework</b>				
<b>Criterion</b>		<b>Evidence (Documents) Examined</b>	<b>Findings and Observations</b>		<b>Result</b>
A3.4. Repository is committed to formal, periodic review and assessment to ensure responsiveness to technological developments and evolving requirements.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 7, Procedural Accountability, 7.1 Audit and Transparency	Assessment will be run every two years.		Good
A3.5. Repository has policies and procedures to ensure that feedback from producers and users is sought and addressed over time.		<a href="#">H-Net Constitution</a> , Article VIII: H-Net Networks, Section 5	“In managing their networks, editors shall consult regularly with their editorial boards and their subscribers.”		Adequate
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.		On MATRIX wiki; Technological Infrastructure for the H-Net E-Mail Lists (internal); backup logs; provenance metadata for archival copies on tape; systems info  Information Security for Digital Assets at MATRIX; <a href="#">Archival Copies of H-Net</a>  Some comments in source code	Information on technological infrastructure will be maintained internally, backup logs, and provenance metadata will be maintained internally. System admin has started to write documentation for internally developed log browse and log search applications.  Note that little tech history was documented before 2008.		Good
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.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, and supporting documents  Notification of availability of policy/procedures documents	Digital preservation policy and procedures documents, which include information on all operations of the H-Net archive, will be made publicly available on approval of the H-Net Director and Council.		Good, when policy docs approved for publication

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<b>Section:</b>	<b>A. Organizational Infrastructure</b>	<b>Interviewee(s):</b>	<b>Dennis Boone Heather Hawley (02/08)</b>	<b>Date</b>	<b>07/06/09</b>
<b>Aspect:</b>	<b>A3. Procedural accountability &amp; policy framework</b>				
<b>Criterion</b>	<b>Evidence (Documents) Examined</b>		<b>Findings and Observations</b>		<b>Result</b>
A3.8 Repository commits to defining, collecting, tracking, and providing, on demand, its information integrity measurements.	<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 5, Technological and Procedural Suitability; Section 6, System Security  <a href="#">Ensuring the Integrity of the H-Net E-Mail Lists; Information Security for Digital Assets at MATRIX; Archival Copies of H-Net; H-Net Message Ingest, Storage, and Retrieval Processes</a>		The H-Net e-mail list preservation system uses cryptographic hash functions to ensure message integrity. Comprehensive policy documentation describe integrity, security, and archival and workflow processes.		Good
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.	<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 7, Procedural Accountability, 7.1 Audit and Transparency		Assessment will be run every two years. Repository not seeking certification status, so no certifying bodies to notify. Internal self assessment.		Good

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<b>Section:</b>	<b>A. Organizational Infrastructure</b>	<b>Interviewee(s):</b>	<b>Heather Hawley (02/08)</b>	<b>Date</b>	<b>07/07/09</b>
<b>Aspect:</b>	<b>A4. Financial sustainability</b>				
<b>Criterion</b>	<b>Evidence (Documents) Examined</b>		<b>Findings and Observations</b>		<b>Result</b>
A4.1. Repository has short- and long-term business planning processes in place to sustain the repository over time.	<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 4, Financial Sustainability, 4.1 Institutional Commitment  <a href="#">H-Net Strategic Plan</a> , Administration, Funding & Structure; <a href="#">Executive Director's Annual Report</a> ; <a href="#">IRS Form 990</a>				Good
A4.2. Repository has in place processes to review and adjust business plans at least annually.	<a href="#">Executive Director's Annual Report</a>				Good
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.	<a href="#">IRS Form 990</a>  Budget spreadsheets (internal)				Good
A4.4. Repository has ongoing commitment to analyze and report on risk, benefit, investment, and expenditure (including assets, licenses, and liabilities).	<a href="#">H-Net Strategic Plan</a> , Administration, Funding & Structure; <a href="#">Executive Director's Annual Report</a>				Good
A4.5. Repository commits to monitoring for and bridging gaps in funding.	<a href="#">H-Net Strategic Plan</a> , Administration, Funding & Structure; <a href="#">Executive Director's Annual Report</a> ; <a href="#">IRS Form 990</a>				Good

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<b>Section:</b>	A. Organizational Infrastructure	<b>Interviewee(s):</b>		<b>Date</b>	07/07/09
<b>Aspect:</b>	A5. Contracts, Licenses and Liabilities				
<b>Criterion</b>	<b>Evidence (Documents) Examined</b>		<b>Findings and Observations</b>		<b>Result</b>
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.	<a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists  <a href="#">H-Net By-Laws</a> , Section 2.03		Terms of “deposit” are spelled out in by-laws, so no need for individual contracts with message posters.		Good
A5.2 Repository contracts or deposit agreements must specify and transfer all necessary preservation rights, and those rights transferred must be documented.	<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 3, Organizational Viability, 3.5 Access and Use; <a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists  <a href="#">H-Net’s Policy on Copyright and Intellectual Property</a> ; <a href="#">H-Net Constitution</a> , Article VIII, Section 7; <a href="#">H-Net By-Laws</a> , Section 2.04		Authors of messages retain copyright, but sending a message to an H-Net list constitutes granting permission to H-Net for distribution and (implicitly) preservation		Good
A5.3 Repository has specified all appropriate aspects of acquisition, maintenance, access, and withdrawal in written agreements with depositors and other relevant parties.	<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 3, Organizational Viability, 3.4 Selection and Acquisition, 3.5 Access and Use; <a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists  <a href="#">H-Net By-Laws</a> , Sections 2.02 and 2.03				Good

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<b>Section:</b>	A. Organizational Infrastructure	<b>Interviewee(s):</b>		<b>Date</b>	07/07/09
<b>Aspect:</b>	A5. Contracts, Licenses and Liabilities				
<b>Criterion</b>	<b>Evidence (Documents) Examined</b>		<b>Findings and Observations</b>		<b>Result</b>

<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><a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 3, Organizational Viability, 3.5 Access and Use; <a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists</p> <p><a href="#">H-Net's Policy on Copyright and Intellectual Property</a>; <a href="#">H-Net Constitution</a>, Article VIII, Section 7; <a href="#">H-Net By-Laws</a>, Section 2.04</p>		Good
<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><a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists</p> <p><a href="#">H-Net's Policy on Copyright and Intellectual Property</a>; <a href="#">H-Net Constitution</a>, Article VIII, Section 7; <a href="#">H-Net By-Laws</a>, Section 2.04</p>	<p>Copyright of messages belongs to original authors, so this shouldn't be a problem.</p>	Good

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<b>Section:</b>	<b>B. Digital Object Management</b>	<b>Interviewee(s):</b>	<b>Dennis Boone (02/08)</b>	<b>Date</b>	<b>07/07/09</b>
<b>Aspect:</b>	<b>B.1 Ingest: acquisition of content</b>				
Criterion		Evidence (Documents) Examined	Findings and Observations	Result	
B1.1. Repository identifies properties it will preserve for digital objects.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 5, Technological and Procedural Suitability; <a href="#">Digital Preservation Strategies</a> for the H-Net E-Mail Lists	Significant property is message content. Bit-level preservation Messages: Already in text formats (ASCII, UTF-8) Attachments: < 0.01% of all messages; not enough to merit more preservation attention at this time	Good	
B1.2. Repository clearly specifies the information that needs to be associated with digital material at the time of its deposit (i.e., SIP).		<a href="#">H-Net E-Mail List Conformance to OAIS: Information Packages</a>  <a href="#">H-Net By-Laws</a> , Section 2.03 (d) (iv)	Metadata in e-mail header	Good	
B1.3. Repository has mechanisms to authenticate the source of all materials.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 3, Organizational Viability, 3.4 Selection and Acquisition; <a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a> ; <a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists  <a href="#">H-Net By-Laws</a> , Section 2.03 (d) (i)	Messages go through list editors before being posted. Most lists require subscriptions before a user may post.	Good	
B1.4. Repository's ingest process verifies each submitted object (i.e., SIP) for completeness and correctness as specified in B1.2.		<a href="#">H-Net By-Laws</a> , Section 2.03	LISTSERV software validates message in terms of e-mail standards before it can be delivered. Once posted, a message is subject to vetting by both author and editor.	Good	
B1.5. Repository obtains sufficient physical control over the digital objects to preserve them (Ingest: content acquisition).		<a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a> ; <a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists  <a href="#">H-Net's Policy on Copyright and Intellectual Property</a> ; <a href="#">H-Net Constitution</a> , Article VIII, Section 7; <a href="#">H-Net By-Laws</a> , Sections 2.03 and 2.04	Repository has physical control over the messages.	Good	

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<b>Section:</b>	<b>B. Digital Object Management</b>	<b>Interviewee(s):</b>	<b>Dennis Boone (02/08)</b>	<b>Date</b>	<b>07/07/09</b>
<b>Aspect:</b>	<b>B.1 Ingest: acquisition of content</b>				
Criterion		Evidence (Documents) Examined	Findings and Observations	Result	
B1.6. Repository provides producer/depositor with appropriate responses at predefined points during the ingest processes.		<a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a>	Editor receives acknowledgement message on submission. Acknowledgement option may be turned off, in which case no acknowledgement will be sent.	Good	
B1.7. Repository can demonstrate when preservation responsibility is formally accepted for the contents of the submitted data objects (i.e., SIPs).		<a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a>	Within 24 hours of submission, repository creates SHA-256 hash, extracts key metadata for metadata cache, and posts message to notebook file where it is available for discovery and access.	Good	
B1.8. Repository has contemporaneous records of actions and administration processes that are relevant to preservation.		<a href="#">H-Net E-Mail List Conformance to OAIS: Information Packages; H-Net Message Ingest, Storage, and Retrieval Processes</a>	Notebook file naming process and Preservation Description Information (PDI) for H-Net messages and notebooks are described in these documents.	Good	

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<b>Section:</b>	<b>B. Digital Object Management</b>	<b>Interviewee(s):</b>	<b>Dennis Boone (02/08)</b>	<b>Date</b>	<b>07/07/09</b>
<b>Aspect:</b>	<b>B.2 Ingest: creation of the archivable package</b>				
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.		<a href="#">H-Net E-Mail List Conformance to OAIS: Information Packages</a>	Includes definition of the AIC, a notebook file containing all messages posted in a seven-day period.	Good	
B2.2. Repository has a definition of each AIP (or class) that is adequate to fit long-term preservation needs.		<a href="#">H-Net E-Mail List Conformance to OAIS: Information Packages</a>	Includes definition of the AIC, a notebook file containing all messages posted in a seven-day period.	Good	
B2.3. Repository has a description of how AIPs are constructed from SIPs		<a href="#">H-Net E-Mail List Conformance to OAIS: Information Packages</a>	Includes description of how AICs are constructed with AIPs.	Good	
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.		<a href="#">H-Net E-Mail List Conformance to OAIS: Information Packages</a>	Not really applicable. Once a message becomes a SIP, it's accepted. All AIPs become part of an AIC.	Good	
B2.5. Repository has and uses a naming convention that generates visible, persistent, unique identifiers for all archived objects (i.e., AIPs).		<a href="#">H-Net Message Ingest, Storage, and Retrieval Processes; H-Net E-Mail List Conformance to OAIS: Information Packages</a>	AIP: Each message has a unique identifier: a combination of the name of the notebook file in which it is stored and its unique MD5 hash.  AIC: Notebooks are uniquely named by list, month, year, and 7-day time period.	Good	

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<b>Section:</b>	<b>B. Digital Object Management</b>	<b>Interviewee(s):</b>	<b>Dennis Boone (02/08)</b>	<b>Date</b>	<b>07/07/09</b>
<b>Aspect:</b>	<b>B.2 Ingest: creation of the archivable package</b>				
Criterion		Evidence (Documents) Examined	Findings and Observations	Result	
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).		NA	No unique identifiers associated with SIPs before ingest	NA	
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).		No use of international format registries at this time.	Messages and notebook files are created and preserved as text, a well-documented format. Most of the attachments are in currently available formats, such as PDF and Microsoft Office formats, and there are too few of them to merit more than bit-level preservation at this time.	Okay	
B2.8 Repository records/registers Representation Information (including formats) ingested.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 5, Technological and Procedural Suitability; <a href="#">Digital Preservation Strategies</a> for the H-Net E-Mail Lists	Representation Information (format information) recorded in documentation rather than repository itself. Messages and notebook files are created and preserved as text, a well-documented format. Most of the attachments are in currently available formats, such as PDF and Microsoft Office formats, and there are too few of them to merit more than bit-level preservation at this time.	Good	
B2.9 Repository acquires preservation metadata (i.e., PDI) for its associated Content Information.		<a href="#">H-Net E-Mail List Conformance to OAIS: Information Packages</a>	Document contains descriptions of PDI for the H-Net e-mail list archive.	Good	
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.		<a href="#">H-Net E-Mail List Conformance to OAIS: Information Packages</a>	Content Information and PDI appropriately understandable as is.	Good	

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<b>Aspect:</b>	<b>B.2 Ingest: creation of the archivable package</b>				
<b>Criterion</b>	<b>Evidence (Documents) Examined</b>		<b>Findings and Observations</b>		<b>Result</b>
B2.11 Repository verifies each AIP for completeness and correctness at the point it is generated.	<a href="#">Ensuring the Integrity of the H-Net E-Mail Lists</a>		On submission, a SHA-256 hash is created for a message as it is posted to a notebook file and becomes an AIP. All hashes are validated before the notebook file closes and becomes an AIC. The AIC receives its own hash at that point, and those are checked on a weekly basis.		Good
B2.12 Repository provides an independent mechanism for audit of the integrity of the repository collection/content.	<a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a> ; <a href="#">H-Net E-Mail List Conformance to OAIS: Information Packages</a> ; <a href="#">Ensuring the Integrity of the H-Net E-Mail Lists</a>		Previous criteria satisfied, so this may not even be necessary.		Good
B2.13 Repository has contemporaneous records of actions and administration processes that are relevant to preservation (AIP creation).	<a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a> ; <a href="#">Ensuring the Integrity of the H-Net E-Mail Lists</a>		Metadata extracted and stored in cache at time of ingest; SHA-256 hashes created and stored in fixity database at time of ingest (messages) and notebook creation (notebook files).		Good

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<b>Aspect:</b>	<b>B.3 Preservation Planning</b>				
Criterion		Evidence (Documents) Examined	Findings and Observations		Result
B3.1. Repository has documented preservation strategies.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 5, Technological and Procedural Suitability; <a href="#">Digital Preservation Strategies</a> for the H-Net E-Mail Lists; <a href="#">Archival Copies of H-Net</a> ; <a href="#">Ensuring the Integrity of the H-Net E-Mail Lists</a>			Good
B3.2. Repository has mechanisms in place for monitoring and notification when Representation Information (including formats) approaches obsolescence or is no longer viable.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 5, Technological and Procedural Suitability; <a href="#">Digital Preservation Strategies</a> for the H-Net E-Mail Lists	Not applicable at this time, as the messages and notebook files are in text formats. There are too few attachments to merit more than a commitment to bit-level preservation at this time.		Good
B3.3 Repository has mechanisms to change its preservation plans as a result of its monitoring activities.		NA			NA
B3.4. Repository can provide evidence of the effectiveness of its preservation planning.		<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 5, Technological and Procedural Suitability; <a href="#">Digital Preservation Strategies</a> for the H-Net E-Mail Lists; <a href="#">Archival Copies of H-Net</a> ; <a href="#">Ensuring the Integrity of the H-Net E-Mail Lists</a>	Not included in documentation at this time. Messages have been accessible and usable for years, however. New preservation measures must be put into use for a period of time before their effectiveness can be truly measured.		Good enough for now.

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<b>Organization:</b>	<b>H-Net (E-Mail Lists)</b>	<b>Auditor:</b>	<b>Lisa Schmidt</b>	<b>Page</b>	15
<b>Section:</b>	<b>B. Digital Object Management</b>	<b>Interviewee(s):</b>		<b>Date</b>	<b>07/07/09</b>
<b>Aspect:</b>	<b>B.4 Archival storage &amp; preservation/ maintenance of AIPs</b>				
<b>Criterion</b>	<b>Evidence (Documents) Examined</b>		<b>Findings and Observations</b>		<b>Result</b>
B4.1. Repository employs documented preservation strategies.	<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 5, Technological and Procedural Suitability; <a href="#">Digital Preservation Strategies</a> for the H-Net E-Mail Lists; <a href="#">Archival Copies of H-Net</a> ; <a href="#">Ensuring the Integrity of the H-Net E-Mail Lists</a>				Good
B4.2. Repository implements/responds to strategies for archival object (i.e., AIP) storage and migration.	<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 5, Technological and Procedural Suitability; <a href="#">Digital Preservation Strategies</a> for the H-Net E-Mail Lists				Good
B4.3 Repository preserves the Content Information of archival objects (i.e., AIPs).	<a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists; <a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a> ; <a href="#">H-Net E-Mail List Conformance to OAIS: Information Packages</a>  <a href="#">H-Net By-Laws</a> , Section 2.02		Policy is not to remove messages once they are posted. Only on rare occasions is this allowed.		Good
B4.4 Repository actively monitors integrity of archival objects (i.e., AIPs).	<a href="#">Digital Preservation Policy Framework</a> for the H-Net Electronic Mailing Lists, Section 5, Technological and Procedural Suitability; <a href="#">Digital Preservation Strategies</a> for the H-Net E-Mail Lists; <a href="#">Ensuring the Integrity of the H-Net E-Mail Lists</a>  Logs of fixity checks		Fixity checks performed on messages before a notebook closes. Fixity checks performed on notebooks weekly.		Good

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<b>Organization:</b>	<b>H-Net (E-Mail Lists)</b>	<b>Auditor:</b>	<b>Lisa Schmidt</b>	<b>Page</b>	16
<b>Section:</b>	<b>B. Digital Object Management</b>	<b>Interviewee(s):</b>		<b>Date</b>	<b>07/07/09</b>
<b>Aspect:</b>	<b>B.4 Archival storage &amp; preservation/ maintenance of AIPs</b>				
<b>Criterion</b>	<b>Evidence (Documents) Examined</b>		<b>Findings and Observations</b>		<b>Result</b>
B4.5 Repository has contemporaneous records of actions and administration processes that are relevant to preservation (Archival Storage).	<a href="#">H-Net Message Ingest, Storage, and Retrieval Processes; Ensuring the Integrity of the H-Net E-Mail Lists</a>  Logs of fixity checks		Logs kept of most recent hash validations.		Good

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<b>Organization:</b>	<b>H-Net (E-Mail Lists)</b>	<b>Auditor:</b>	<b>Lisa Schmidt</b>	<b>Page</b>	17	
<b>Section:</b>	<b>B. Digital Object Management</b>	<b>Interviewee(s):</b>		<b>Date</b>	<b>07/07/09</b>	
<b>Aspect:</b>	<b>B.5 Information Management</b>					
<b>Criterion</b>		<b>Evidence (Documents) Examined</b>		<b>Findings and Observations</b>		<b>Result</b>
B5.1 Repository articulates minimum metadata requirements to enable the designated community to discover and identify material of interest.		<a href="#">H-Net Message Ingest, Storage, and Retrieval Processes; H-Net E-Mail List Conformance to OAIS: Information Packages</a>		Descriptive metadata found in browser view of list archive		Good
B5.2 Repository captures or creates minimum descriptive metadata and ensures that it is associated with the archived object (i.e., AIP).		<a href="#">H-Net Message Ingest, Storage, and Retrieval Processes; H-Net E-Mail List Conformance to OAIS: Information Packages</a>		Metadata captured from SIP; metadata extracted from SIP, stored in metadata cache, and associated with message for more efficient discovery; MD5 hash created for message		Good
B5.3 Repository can demonstrate that referential integrity is created between all archived objects (i.e., AIPs) and associated descriptive information.		<a href="#">H-Net Message Ingest, Storage, and Retrieval Processes; H-Net E-Mail List Conformance to OAIS: Information Packages</a>		Referential integrity between unique instance of a message (notebook file name + MD5 hash) and descriptive metadata stored in cache		Good
B5.4 Repository can demonstrate that referential integrity is maintained between all archived objects (i.e., AIPs) and associated descriptive information.		<a href="#">H-Net Message Ingest, Storage, and Retrieval Processes; H-Net E-Mail List Conformance to OAIS: Information Packages</a>		Referential integrity between unique instance of a message (notebook file name + MD5 hash) and descriptive metadata stored in cache. Message could not be retrieved if this integrity was lost.		Good

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<b>Organization:</b>	<b>H-Net (E-Mail Lists)</b>	<b>Auditor:</b>	<b>Lisa Schmidt</b>	<b>Page</b>	18
<b>Section:</b>	<b>B. Digital Object Management</b>	<b>Interviewee(s):</b>	<b>Dennis Boone (02/08) Heather Hawley (02/08)</b>	<b>Date</b>	<b>07/07/09</b>
<b>Aspect:</b>	<b>B.6 Access Management</b>				
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.		<a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists; <a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a>	Documents not available to the public pending approval from H-Net Director and Council.  H-Net website needs a “how to use” page.	Incomplete	
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.		<a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists; <a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a>	Access requests are kept in a log file on the Apache web server for approximately one year.	Good	
B6.3 Repository ensures that agreements applicable to access conditions are adhered to.		<a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists	Anyone can access messages on most of of the public lists. Two public lists (H-Bahai and H-Grad) require subscription to access. Private lists require subscriptions to view messages.	Good	
B6.4 Repository has documented and implemented access policies (authorization rules, authentication requirements) consistent with deposit agreements for stored objects.		<a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists	Most public lists are available to all online, whether or not they are subscribers. Private lists are only available to subscribers. They must log in to access archived messages online, and the list would have to recognize them as subscribers for them to access messages via commands. System administrators have access privileges.	Good	
B6.5 Repository access management system fully implements access policy.		Authentication information (IDs and passwords) for private lists stored in protected directories on the webs server.	Private lists are only available to subscribers. They must log in to access archived messages online, and the list would have to recognize them as subscribers for them to access messages via commands.	Good	

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<b>Organization:</b>	<b>H-Net (E-Mail Lists)</b>	<b>Auditor:</b>	<b>Lisa Schmidt</b>	<b>Page</b>	19
<b>Section:</b>	<b>B. Digital Object Management</b>	<b>Interviewee(s):</b>	<b>Dennis Boone (02/08) Heather Hawley (02/08)</b>	<b>Date</b>	<b>07/07/09</b>
<b>Aspect:</b>	<b>B.6 Access Management</b>				
Criterion		Evidence (Documents) Examined	Findings and Observations	Result	
B6.6 Repository logs all access management failures, and staff review inappropriate “access denial” incidents.		Error log on web server	Any access attempt failures would be logged as errors.	Good	
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.		<a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists; <a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a>	If message requested appears in browser, the process is a success.	Good	
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.		<a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists; <a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a>	If message requested appears in browser, the process is a success. Very, very occasionally, an error message is encountered, indicating that the request was not a success.	Good	
B6.9 Repository demonstrates that all access requests result in a response of acceptance or rejection.		<a href="#">Digital Asset Policies</a> for the H-Net E-Mail Lists; <a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a>	All access requests result in some response: either the requested message or an error message.	Good	
B6.10 Repository enables the dissemination of authentic copies of the original or objects traceable to originals.		<a href="#">H-Net Message Ingest, Storage, and Retrieval Processes</a> ; <a href="#">H-Net E-Mail List Conformance to OAIS: Information Packages</a>	On selection of a message through the H-Net browser interface, a URL is constructed that includes the name of the notebook file containing the message and it’s MD5 hash—a unique identifier that ties the message to the metadata that was extracted and stored in the cache at time of ingest.	Good	

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<b>Organization:</b>	H-Net (E-Mail Lists)	<b>Auditor:</b>	Lisa Schmidt	<b>Page</b>	20
<b>Section:</b>	C. Technologies, Technical Infrastructure & Security	<b>Interviewee(s):</b>	Dennis Boone Joe Deming	<b>Date</b>	07/08/09
<b>Aspect:</b>	C1. System Infrastructure				
<b>Criterion</b>	<b>Evidence (Documents) Examined</b>		<b>Findings and Observations</b>	<b>Result</b>	

<p>C1.1 Repository functions on well-supported operating systems and other core infrastructural software.</p>	<p>Technological Infrastructure for the H-Net E-Mail Lists (internal); <a href="#">Information Security for Digital Assets at MATRIX</a></p>	<p>MATRIX servers run on Debian, a popular and well-established distribution of Linux. Also well-supported open source software: Apache webserver, Postfix mail transfer agent, MySQL database. Proprietary, but well supported: L-Soft LISTSERV e-mail list software. System admin has relationship with developers at L-Soft.</p>	<p>Good</p>
<p>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.</p>	<p>Technological Infrastructure for the H-Net E-Mail Lists (internal); <a href="#">Information Security for Digital Assets at MATRIX</a></p>	<p>Dual-core server for backup, runs NetVault software tape backup software to Quantum tape library. Daily incremental backups, weekly full backups to tape stored in building across campus. Additional offsite backups: full tape backups every four months, offsite storage; reciprocal server backup to ICPSR in Ann Arbor daily.</p>	<p>Good</p>
<p>C1.3 Repository manages the number and location of copies of all digital objects.</p>	<p><a href="#">Information Security for Digital Assets at MATRIX</a>; <a href="#">Archival Copies of H-Net</a></p> <p>Backup and archival copy logs on wiki</p>	<p>Four backup copies: incremental, weekly full, long-term, reciprocal storage</p> <p>Two archival copies to tape (annual)</p>	<p>Good</p>
<p>C1.4 Repository has mechanisms in place to ensure any/multiple copies of digital objects are synchronized.</p>	<p><a href="#">Information Security for Digital Assets at MATRIX</a></p>	<p>Backups are regularly scheduled. Enough redundant systems are in place to ensure security of data.</p>	<p>Good</p>
<p>C1.5 Repository has effective mechanisms to detect bit corruption or loss.</p>	<p><a href="#">Information Security for Digital Assets at MATRIX</a>; <a href="#">Archival Copies of H-Net</a>; <a href="#">Ensuring the Integrity of the H-Net E-Mail Lists</a></p>	<p>SHA-256 hashes created and checked regularly.</p>	<p>Good</p>

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<b>Section:</b>	C. Technologies, Technical Infrastructure & Security	<b>Interviewee(s):</b>	Dennis Boone Joe Deming	<b>Date</b>	07/08/09
<b>Aspect:</b>	C1. System Infrastructure				

Criterion	Evidence (Documents) Examined	Findings and Observations	Result
C1.6 Repository reports to its administration all incidents of data corruption or loss, and steps taken to repair/replace corrupt or lost data.	<a href="#">Information Security for Digital Assets at MATRIX</a> ; <a href="#">Archival Copies of H-Net</a> ; <a href="#">Ensuring the Integrity of the H-Net E-Mail Lists</a>	System reports validation errors, which must be manually investigated and corrected.	Good
C1.7 Repository has defined processes for storage media and/or hardware change (e.g., refreshing, migration).	<a href="#">Information Security for Digital Assets at MATRIX</a> ; <a href="#">Archival Copies of H-Net</a>	Incremental/weekly backup tapes replaced as needed. Long-term backups are on a three-year retention schedule. Archival copies are refreshed to new tapes every five years.  No documented process for hardware system refreshment/migration. Hardware updated every 3-4 years, per agreed upon principles of technology lifecycles and service contracts.	Adequate
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..		No documented change management system.	Incomplete
C1.9 Repository has a process for testing the effect of critical changes to the system.		Informal testing of changes. Not documented.	Incomplete
C1.10 Repository has a process to react to the availability of new software security updates based on a risk-benefit assessment.	Updates recorded in file on net monitor server.	Automated security patches and updates applied monthly and as needed. Debian updates very reliable.	Good

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<b>Section:</b>	<b>C. Technologies, Technical Infrastructure &amp; Security</b>	<b>Interviewee(s):</b>	<b>Dennis Boone (02/08)</b>	<b>Date</b>	<b>07/08/09</b>
<b>Aspect:</b>	<b>C.2 Appropriate technologies</b>				

Criterion	Evidence (Documents) Examined	Findings and Observations	Result
C2.1 Repository has hardware technologies appropriate to the 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.	Technological Infrastructure for the H-Net E-Mail Lists (internal)  MATRIX wiki	Hardware used to support the H-Net e-mail lists is described in "Technological Infrastructure" document. New systems are installed with current hardware and software, and older systems get software updates when convenient or if new features are needed. Monitoring process for technology changes is informal, with information gathered from reading online and print sources, discussions with peers, etc. Changes made only with consensus of MATRIX/H-Net technical staff.	Good
C2.2 Repository has software technologies appropriate to the 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.	Technological Infrastructure for the H-Net E-Mail Lists (internal)	Software used to support the H-Net e-mail lists is described in "Technological Infrastructure" document. New systems are installed with current hardware and software, and older systems get software updates when convenient or if new features are needed. Monitoring process for technology changes is informal, with information gathered from reading online and print sources, discussions with peers, etc. Changes made only with consensus of technical staff.	Good

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<b>Section:</b>	C. Technologies, Technical Infrastructure & Security	<b>Interviewee(s):</b>	Dennis Boone Joe Deming	<b>Date</b>	07/08/09
<b>Aspect:</b>	C.3 Security				
<b>Criterion</b>	<b>Evidence (Documents) Examined</b>	<b>Findings and Observations</b>			<b>Result</b>
C3.1 Repository maintains a systematic analysis of such factors as data, systems, personnel, physical plant, and security needs.	MATRIX wiki	Decisions made per consensus among technical staff.			Adequate
C3.2 Repository has implemented controls to adequately address each of the defined security needs.	<a href="#">Information Security for Digital Assets at MATRIX</a>	The system's biggest security threat is loss of data. Redundant backup systems guard against that threat.			Good
C3.3 Repository staff have delineated roles, responsibilities, and authorizations related to implementing changes within the system.	Authorizations documented in system code				Good
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 off-site copy of the recovery plan(s).	<a href="#">Information Security for Digital Assets at MATRIX</a>	<p>Redundant backup plans take disaster recovery into account. Two offsite backups.</p> <p>Restore plans currently in heads of system administration staff, who plan to document disaster recovery procedures in the MATRIX wikii. The wiki will be backed up along with everything else, and will also be regularly saved to flash drives or another USB-based removable media for easy access in case of disaster.</p>			Incomplete