NARRATIVE

STATEMENT OF NEED

It's a truism by now that the organizational and staffing challenges we face in digital preservation, or more broadly digital stewardship[1], are at least as great, if not greater, than the technical challenges. The central problem is that the number of staff within our organizations with digital preservation and curation expertise hasn't grown at the same pace as technological changes, leaving us without the workforce needed to meet our stewardship responsibilities (Hedstrom & Montgomery, 1998; Simpson, 2005; Pardo et al., 2006, Library of Congress, 2010). This problem extends beyond cultural heritage organizations, to diverse types of institutions with digital stewardship responsibilities. As evidence, the National Digital Stewardship Alliance (NDSA) members include commercial entities, nonprofits, law firms, professional associations, government agencies, consortia, universities and public media organizations, as well as libraries, archives and museums (Library of Congress, 2012). These organizations share the challenge of adequately staffing their organizations with new and retrained personnel having the new types of skills and knowledge needed to conduct digital preservation (Bahr et al., 2011).

To address the digital preservation training needs of library professionals, many workshops and online courses have been developed, including the Cornell/ICPSR Digital Preservation Management (DPM) Workshop series, the Library of Congress Digital Preservation Outreach & Education (DPOE) Train-the-Trainer workshops, and classes offered by LYRASIS, the American Library Association (ALA), and the Digital Curation Centre (DCC) among others. In addition, Bailey (2012) lists twelve certificate or degree programs in digital stewardship under various names[2] that are now offered by Library and Information Science (LIS) schools. These educational programs can provide much of the theoretical knowledge needed to begin careers in digital stewardship, but they need to be complemented with opportunities to gain real-world experience conducting hands-on projects. In the final report of the IMLS-funded DigCCurr 1 project, Hank et. al (2010) stress the importance of hands-on professional experience to complete an education:

> Digital curation education programs should integrate technical and professional knowledge and skills across the digital asset lifecycle. It should also blend theory and classroom learning with hands-on professional experience. (p. 9)

> Programs should emphasize practical experience, ranked as the most important attribute when considering job applicants for digital curation professional positions, followed by technical skills. (p. 9)

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[1] In this document, 'digital stewardship' is defined as the broad range of activities required to create, collect, organize, disseminate, preserve and oversee digital content long-term, including but not limited to digital preservation and curation activities. For a discussion of these terms see Lazorchak (2011).

[2] Various terms are used to title these programs, including digital curation, digital preservation, digital archiving, data curation, digital stewardship, digital information management, and preservation of information.

> Practical experience should involve hands-on work with digital objects with actual consequences, rather than just conceptual work. (p. 9)

Hands-on experience can be gained through post-graduate residency programs[3], but the only program found to focus specifically on digital stewardship is the now inactive Carolina Digital Curation Fellows program[4,5]. In addition, past residencies have limited the degree to which social learning can take place by typically supporting one resident at a time; and have limited the pool of residents by requiring that they be graduates of MLS/MLIS programs. A few of these residencies are notably different and can serve as models to emulate.

The Chesapeake Information Library Alliance (CIRLA) Fellows Program was run by a consortium of nine academic and research libraries instead of one institution. The program supported up to sixteen residents concurrently, distributed among the nine institutions. It included a core work curriculum, a structured mentoring component, an opportunity to attend a national conference, joint workshops, tours and open houses. Because this was a cohort model, the residents had a peer network to share their experience, which is considered by Alburo (2007) to be one of the most successful outcomes of the program, along with the heightened degree of collaboration experienced between and within the host institutions. The residents completed the program better prepared for professional careers. Tchangalova (2009) says that "as a former student from this program, I gained a valuable work experience through application of classroom learning to a hands-on practicum in a real library setting. Despite my chemical engineering background, it is this program that shaped my success as an engineering librarian." Two recent residency planning projects have concluded that a cohort model like the one used by CIRLA is vital to the success of a residency because it adds a peer support system, extends the learning experience, and enables the residents to learn from each other (Mediavilla and Brown, 2011; *Developing a Technology*, 2012).

The National Digital Stewardship Residency (NDSR)[6] pilot currently being conducted in Washington DC by the Library of Congress and IMLS also uses a cohort model. A group of residents will be placed at different Washington DC host institutions. Unlike the CIRLA Fellows Program, the NDSR DC[7] is available to recent graduates of any masters program who want to begin digital stewardship careers. And while the CIRLA host institutions were all libraries, the NDSR DC will include hosts from diverse sectors in recognition of the fact that the need for digital stewardship staff crosses sector boundaries. The NDSR DC will start with an immersion training workshop, followed by project-based residencies at the host institutions, and will conclude with a 'capstone' workshop in which the residents will present their completed projects at an open community meeting and receive practical job-seeking training in preparation for entering the professional workforce. Throughout the residency there will be opportunities for the residents to learn from each other, from staff at the host institutions and from experts in the field.

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[3] See Appendix H for a listing of past and current library-related post-graduate residency programs

[4] See http://ils.unc.edu/digccurr/fellows.html

[5] The CLIR/DLF Postdoctoral Fellows in Data Curation program has a similar focus but is only for PhDs.

[6] See http://www.digitalpreservation.gov/ndsr/

[7] Throughout this document the phrase NDSR DC will be used to mean the NDSR pilot project currently being conducted in Washington DC.

The NDSR DC has the potential to serve as a model that could be replicated nationwide, creating a new wave of well-trained, experienced, and networked professionals in digital stewardship. To achieve that national scale, the model needs to be tested in other geographic regions by programs trying to replicate it. **This project will test the NDSR DC model in the Boston, Massachusetts area and transform the documents created by the NDSR DC pilot into model documents useful for replicating residency programs across the country. In addition, the curriculum used by the NDSR DC pilot will be transformed into digital stewardship training materials that can be used to retrain existing staff within our institutions.**

Boston is a particularly good environment for testing the NDSR DC model. Like Washington DC, it has an extensive public transportation system composed of subway, bus and train lines enabling the residents to easily commute between host institutions without requiring that they have cars. Boston proper is only a little over 48 square miles, but it is flanked by Cambridge and other cities that are rich with potential host institutions (see Appendix B) and potential guest lecturers (see Appendix C). It has a variety of cultural, academic, medical, corporate and historic institutions responsible for digital stewardship including universities, museums, archives, hospitals, historical societies, biomedical corporations, libraries and government agencies. There is a history of collaboration between universities in the area which could serve as the basis for a broader collaboration between organizations of different sectors with digital stewardship responsibility.

One way NDSR Boston will differ from NDSR DC is that it will be coordinated by an academic institution - Harvard Library. This is a compelling test of the model because there are many similarly-sized academic institutions across the country that could coordinate future NDSR programs in their geographic regions so it is critical to learn how well the model works in this configuration. Another difference is that it will recruit trainers for the residency workshops through a Train-the-Trainer workshop that will be modeled after the Library of Congress' DPOE Train-the-Trainer workshops[8].

As a result of NDSR Boston, participating **residents** will gain the theoretical foundation, real world experience and professional network needed for successful digital stewardship careers. Participating **host institutions** will gain experience hosting and mentoring residents, an infusion of new staff to complete projects of their design, exposure to the program training material, an opportunity to use the modern tools and technologies available to the residents, and new relationships with the other host institutions. The **trainers** recruited for the project will have learned, and gained experience teaching, the core digital stewardship curriculum. This curriculum will be used within the **Harvard Library and other institutions** to build new skills and competencies within the existing workforce. **IMLS** will have created a stronger NDSR model that can be replicated across the country in a variety of settings, particularly those coordinated by an academic institution; and a larger base of stakeholder institutions to work with on future initiatives. At the largest scale, the **digital stewardship community** will have a more well-trained

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[8] See http://digitalpreservation.gov/education/ttt.html

and networked professionals and future leaders to staff our organizations, and new relationships with diverse types of institutions that share our digital stewardship challenges.

IMPACT

The residents of the NDSR Boston program will gain the skills, experience and network needed to begin successful careers in digital stewardship. As they enter the workforce, the number of skilled digital stewardship professionals will increase.

The improved NDSR model and supporting documents will facilitate replication of the residency program across the country. The model and supporting documents will be publicized and made freely available to other institutions on the project web site. Ultimately, as this program is replicated across the country, the digital stewardship field will be transformed as:

- a nationwide networked system of digital stewardship residencies are established
- post-graduate residencies become a standard part of the educational path to digital stewardship careers
- the number of qualified digital stewardship professionals increase
- institutions from very different sectors become active participants in digital stewardship projects and collaborations, increasing the pool of resources and expertise available to tackle digital stewardship challenges

The impact of this project goes beyond training new staff - it will also have a profound positive impact on existing staff within our institutions. This project will produce curriculum that will be used by Harvard Library, and that will be freely available for use by other institutions, to teach existing staff new skills and competencies. Through a combination of well-trained new staff and retrained existing staff, our institutions will have sufficient staff with the ability to perform digital stewardship functions.

PROJECT DESIGN

This project will replicate the NDSR DC model in Boston; inventory, review and improve documents needed to replicate the model; evaluate the model from the perspective of all the key stakeholders; and recommend improvements to the model and next steps. The central tenets behind the design of the NDSR Boston project are:

- Use as a base the materials produced by the NDSR DC pilot, the curricular materials produced for the Library of Congress' DPOE Program, and other seminal digital preservation training materials. Broaden the scope of these curricular materials to go beyond digital preservation to cover the larger scope of digital stewardship. Transform these documents into a model documents that can be used to replicate the NDSR model and inform training programs.
- Leverage local and regional expertise, technology, and a Train-the-Trainer model to implement the NDSR model in an economical way.
- Contribute to building a national NDSR Program by coordinating closely with the Library of Congress and representatives of any other NDSR residency programs that exist during this

project timeframe. For example a group is proposing to test the NDSR model in New York in the same timeframe as the NDSR Boston project. If NDSR NY is funded, the NDSR Boston project team will coordinate with them to share efficiencies, for example to jointly develop workshop curricula. In addition, the NDSR Boston project team would coordinate with the NDSR NY team to provide opportunities and mechanisms for the residents and host institutions from the two programs to share experiences with each other during the residency.

ACTIVITIES (DESCRIBED IN MORE DETAIL IN APPENDIX A)

Activities running throughout the project:

- Communicate and coordinate with the Library of Congress and representatives of any other NDSR programs to align this NDSR program with any other NDSR Programs
- Inform and seek feedback from the Project Advisory Board
- Share project information, status and deliverables on the project web site
- Produce ongoing reports as required by IMLS

Initial project activities:

- Set up the project website
- Establish a centralized electronic portfolio system for all NDSR residents
- Inventory and review the documents produced by the NDSR DC pilot
- Inventory and review additional material and tools that can be used in the immersion and capstone workshops and throughout the residencies
- Convene a small group of Curriculum Reviewers at Harvard to review the curriculum.
- Identify gaps in the documents needed to conduct the workshops and program
- Hire a Project Manager
- Produce additional documents needed to conduct the project and replicate the model
- Hold a Train-the-Trainer workshop in the Boston area in preparation for hiring trainers for the residency workshops
- Identify and select trainers
- Identify and select facilities for workshops

Activities repeated for each of the two 9 month residency rounds:

- Hold a meeting for potential host institutions
- Formal call for host institutions
- Select host institutions and projects
- Formal call for resident applicants
- Select residents
- Match candidates to projects
- Plan and make final arrangements for the immersion workshop
- Conduct the immersion workshop
- Identify opportunities for educational opportunities in the community

- Coordinate residency activities and travel, and host institution activities
- Manage and mentor residents (this task that will be done by the host institutions)
- Plan and make final arrangements for the capstone workshop
- Conduct the capstone workshop
- Use the pre- and post-residency data to evaluate the residency
- Revise curriculum resources and project operations based on the evaluation

Activities occurring after both residencies have completed:

- Evaluate the overall project
- Write a final report to IMLS

EVALUATION METHOD

The project evaluation will be conducted by the Project Manager with guidance from the Project Director and Curriculum Coordinator. Two evaluative strategies will be used - a formative evaluation (to gain feedback on the project activities during the project) and a summative evaluation (to measure that the project objectives have been met).

Formative Evaluation - The formative evaluation will be primarily qualitative in nature using interviews and questionnaires. After each workshop, students will be asked for their feedback on the material, presentations, activities and workshop format to improve future workshops. Periodically during the residency, the Project Manager will interview the residents and host institutions to get feedback on the mentoring process, project activity, supplementary activities (tours, open houses, presentations, etc.), and to identify any problems. The Project Manager will meet regularly with the project team to share findings to improve the project operation.

Summative Evaluation - The model will be assessed from the perspective of the residents, the host institutions and the trainers.

- Residents: During the residency application process, baseline data will be collected including competencies, perceived readiness to begin a digital stewardship career, and the nature of their professional network in this domain. At the end of the capstone workshop, additional data will be collected using interviews and questionnaires. The pre- and post-residency data will be compared to measure how well the program prepared the student for their new careers and their opinion of the residency structure and experience. A year after the residency, additional data will be collected from the resident to augment the evaluation.
- Host institutions: Shortly after host institutions are selected for the program, baseline data will be collected using interviews and questionnaires. The data will include prior experience with residencies and mentoring, the degree to which they already collaborate with the other host institutions, and a description of the resident's project. Follow-up data will be collected after the capstone workshop and compared to the baseline data to measure that the program objectives have been met and to find out the host institution's opinion on the residency structure, experience and value.

- **Trainers**: Before and after the Train-the-Trainer workshop, the participants will be asked to fill out questionnaires to measure the degree to which they learned the curriculum and feel prepared to present it to another audience. After each residency workshop, the Project Manager will follow-up with each trainer to collect data on their experience.

All evaluation forms and workflows will be documented and made accessible on the project web site so that they can be used by other institutions in the future to evaluate the NDSR model.

PROJECT RESOURCES: PERSONNEL, TIME, BUDGET

PROJECT TEAM
Andrea Goethals, **Project Director** (.15 FTE for 3 years)
Manager of Digital Preservation and Repository Services, Harvard Library
Duties: Provide overall direction and guidance; hire project manager, student assistant and trainers; participate in Project Advisory Board meetings; determine key project dates; help inventory and review the NDSR DC material and curriculum resources; supervise the project manager and student assistant; assist with the residency and project evaluation; and serve as liaison should Harvard host a resident.
Qualifications: Andrea Goethals oversees Harvard Library's digital preservation program and its preservation repository, the Digital Repository Service (DRS). She is involved in many initiatives at the university to preserve research data, digitized special collections and born-digital material. She is a member of the Curriculum Development Panel of the NDSR DC program, co-chairs the National Digital Stewardship Alliance (NDSA) Standards and Practices Working Group, and participates in national and international digital preservation initiatives and collaborations, including the Unified Digital Formats Registry (UDFR) project, and the International Internet Preservation Consortium (IIPC) Preservation Working Group.

Dr. Nancy McGovern, **Curriculum Coordinator** (.05 FTE for 3 years)
Head, Curation and Preservation Services at MIT Libraries, MIT University
Duties: Facilitate the inventory and review of NDSR and related documents; improve and extend the curriculum resources and NDSR model documents; participate as an instructor and facilitator in the training sessions for trainers and for residents; and serve as liaison if MIT is selected as a host institution for a resident.
Qualifications: Nancy McGovern has been responsible for preserving digital content since the mid-1980s at the Center for Electronic Records at the National Archives and Records Administration, the Open Society Archives, Cornell University, the Inter-University Consortium for Political and Social Research (ICPSR), and now MIT Libraries. Her responsibilities at each of these institutions have included training and supervising undergraduate and graduate students. In addition, she has developed and contributed to digital curation and preservation continuing education programs, including the Digital Preservation Management (DPM) Workshop series that she co-developed and launched in 2003, the Digital Curation Curriculum Institute that has been offered for the past four years, and the Library of Congress' Digital Preservation Outreach and Education (DPOE) initiative for which she developed and tested both train-the-trainer and digital preservation modules in

2011. These programs have been taken by hundreds of participants from a range of institutions worldwide. The online introduction to digital preservation management that supports the DPM workshop has been available since 2003 to anyone who is getting started in the field.

Project Manager (0.5 FTE for 2 years, 4 months) - Will be hired for the project
Duties: Manage the overall project; maintain the project web site; select and schedule the workshop venues; coordinate with IT about technical equipment needed for workshops; publicize the residencies and program; coordinate the communications with the trainer, host institutions and applicants; prepare model documents; maintain a schedule of tours, lectures and other supporting activities; check in regularly with residents and host institution staff; publish updates and documents to the project web site; conduct and analyze evaluations and write reports.

Student Assistant (8 hrs/week for 2 6-month periods) - Will be hired for the project
Duties: Assist with background research, curriculum resources management, project web site editing, and provide additional support for events.

Trainer (4, 2 per residency round) - Will be hired for the project out of the pool of participants in the Train-the-Trainer workshop that will be held in the first year of the project
Duties: Facilitate and present material at the immersion and capstone workshops.

ADDITIONAL STAFF RESOURCES
- Micher Kaze (**Grants & Contracts Associate**, Office of Vice President for Finance, Harvard University) will administrate the grant.
- Kira Poplowski (**Director of Communications**, Harvard Library) will help with the project communication and promotion and the project web site design.
- Lisa Schwallie (**Chief Financial Officer**, Harvard Library) will manage the project finances.
- Jennifer Goldstein (**Senior Human Resource Consultant**, Office of Human Resources, Harvard University) will help recruit and hire the Project Manager and Student Assistant.
- Jim Borron (**Senior Program Manager**, Harvard Library) will provide project management guidance, templates, workflows and consultation services to the project manager.

ADVISORS
Project Advisory Board
Duties: Advise the project team and help review project designs and documents.
Qualifications: Members were chosen for their expertise in the practice and/or training of digital stewardship and their knowledge of and connections to Boston area institutions.

- Karen Cariani, Director, WGBH Media Library and Archives at WBGH Educational Foundation
- Michele V. Cloonan, Dean and Professor, Graduate School of Library & Information Science, Simmons College
- Michele Kimpton, CEO, DuraSpace
- Dr. Elaine Martin, Director and Research Assistant Professor, The Lamar Soutter Library, University of Massachusetts Medical School
- Megan Sniffin-Marinoff, University Archivist, Harvard University Archives

FACILITIES - SEE APPENDIX E

SCHEDULE

The project will run for three years, from June 1, 2013 through May 31, 2016. It will consist of an initial planning year, followed by two 9-month rounds of residencies.

- 6/1/2013 - 5/31/2014: planning year. (After the NDSR DC pilot ends in March 2014, lessons learned from it will be incorporated into the planning for NDSR Boston.)
- 6/1/2014 - 2/28/2014: First round of residents
- 3/1/2015 - 5/31/2015: Evaluate results, revise model, plan for next round of residents
- 6/1/2015 - 2/28/2015: Second round of residents
- 3/1/2016 - 5/31/2016: Evaluate model and project, write final report

BUDGET (SEE THE SEPARATE BUDGET DOCUMENTS FOR ALL FIGURES AND JUSTIFICATIONS)

Cost-sharing: The salaries and fringe benefits for all existing Harvard staff, and a portion of MIT staff, were contributed. Also the Project Director's travels to iPRES and NDSA/NDIIPP conferences in years 2 and 3 to publicize and share results of the project, use of a training room for the workshops, and an office to host a resident at Harvard were also contributed.

Project revenues: This project will not generate any revenues.

DIVERSITY PLAN

The NDSR Boston residency opportunity will be available to students with diverse educational backgrounds. Like NDSR DC, the NDSR Boston residency program will not be limited to students of MLS/MLIS programs - it will be open to recent graduates of any masters-level program. In addition, an effort will be made to identify, make the opportunity known to, and select diverse organizations for hosts. See Appendix B for potential host institutions in the Boston area.

COMMUNICATION PLAN

The project team will communicate with several different audiences throughout the project: the Project Advisory Board, potential host institutions, potential residents, participating host institutions, participating residents, IMLS, the local community and the larger digital stewardship community.

The **Project Advisory Board** and the project team will meet quarterly via in-person meetings, phone and WebEx conferencing software. Documents will be shared on the project web site.

The project team, with the help of the Project Advisory Board, will identify individuals to contact at **potential host institutions**. The project team will contact these individuals directly, by phone or email, to describe the residency program and to gauge interest in participating as a host. Letters will be sent to these individuals describing the program, project timeline, host responsibilities, example projects and an invitation to a briefing meeting for potential hosts.

The project team will publish a call for **potential residents** to multiple web sites, mailing lists and groups - see Appendix F.

The project team will communicate regularly with point persons at **participating host institutions**, and separately, **participating residents,** via on-site visits, email, skype and phone; and will use the project web site to share documents. The residents will share the status of their projects on a blog on the project web site and will publish their works to an online electronic portfolio system. The residents will communicate with each other via social media (to be selected by the residents during the immersion workshop). During the capstone workshop there will be an opportunity for the residents to share their projects at a meeting open to the public.

The project team will communicate with **IMLS** through regular reports, updates on the project web site, and in-person at IMLS-designated meetings and national conferences.

The project team will communicate the project status, results and findings to the **local community** through periodic brown bag discussions and presentations; and to the **digital stewardship community** via the project website, presentations and/or posters at national conferences, and blog posts to the project web site and to the Library of Congress' Signal blog.

SUSTAINABILITY PLAN

The curriculum resources and model documents produced by this project will be documented and saved to preservation-friendly formats. They will continue to be freely available on the project website, which will be maintained by Harvard Library. The curriculum will continue to be used by Harvard Library and other institutions after the project for use in workforce development programs.

As a result of the residencies, there will be more people who have the theoretical understanding, experience and professional connections needed to begin successful digital stewardship careers. The residents' work will continue to be publicly accessible on the online electronic portfolio system, which will help them track the progress of their learning and showcase their work over the span of their careers.

The number of people who can teach digital stewardship concepts will continue to expand after this project. Each of the trainers taught by the Train-the-Trainers workshop will go on to teach the material to other audiences, as required by the Train-the-Trainer model.

The NDSR model and model documents will be improved as a result of this project making it easier to replicate the residency model. As a result, a nationwide networked system of digital stewardship residencies will likely be established, greatly increasing the number of qualified digital stewardship professionals and future leaders working in our institutions and tackling our preservation and curation challenges.