

IT Project Proposal Report - Detail
Agency: 054 - STATE HISTORICAL SOCIETY
Budget Cycle: 2019-2021 Biennium **Version: AF - AGENCY FINAL REQUEST**

IT Project : Digital Preservation & Access Maintenance

General Section

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City : Lincoln		NITC Score :
State : Nebraska	Zip : 68508	

Expenditures

IT Project Costs	Total	Prior Exp	FY18 Appr/Reappr	FY20 Request	FY21 Request	Future Add
Contractual Services						
Design	0	0	0	0	0	0
Programming	0	0	0	0	0	0
Project Management	0	0	0	0	0	0
Data Conversion	0	0	0	0	0	0
Other	0	0	0	0	0	0
Subtotal Contractual Services	0	0	0	0	0	0
Telecommunications						
Data	0	0	0	0	0	0
Video	0	0	0	0	0	0
Voice	0	0	0	0	0	0
Wireless	0	0	0	0	0	0
Subtotal Telecommunications	0	0	0	0	0	0
Training						
Technical Staff	0	0	0	0	0	0
End-user Staff	0	0	0	0	0	0
Subtotal Training	0	0	0	0	0	0

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Expenditures

IT Project Costs	Total	Prior Exp	FY18 Appr/Reappr	FY20 Request	FY21 Request	Future Add
Other Project Costs						
Personnel Cost	0	0	0	0	0	0
Supplies & Materials	0	0	0	0	0	0
Travel	0	0	0	0	0	0
Other	0	0	0	0	0	0
Subtotal Other Project Costs	0	0	0	0	0	0
Capital Expenditures						
Hardware	0	0	0	0	0	0
Software	75,000	0	0	25,000	25,000	25,000
Network	0	0	0	0	0	0
Other	0	0	0	0	0	0
Subtotal Capital Expenditures	75,000	0	0	25,000	25,000	25,000
TOTAL PROJECT COST	75,000	0	0	25,000	25,000	25,000

Funding

Fund Type	Total	Prior Exp	FY18 Appr/Reappr	FY20 Request	FY21 Request	Future Add
General Fund	0	0	0	0	0	0
Cash Fund	0	0	0	0	0	0
Federal Fund	0	0	0	0	0	0
Revolving Fund	0	0	0	0	0	0
Other Fund	0	0	0	0	0	0
TOTAL FUNDING	0	0	0	0	0	0
VARIANCE	75,000	0	0	25,000	25,000	25,000

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IT Project: Digital Preservation & Access Maintenance

EXECUTIVE SUMMARY:

History Nebraska's ongoing statutory responsibilities to collect, preserve, and make accessible historical resources (including digital born government records as well as digitized analog photographs, manuscripts, and artifacts) require a cloud-based solution for preservation and access. As part of the agency's IT Plan, a preservation service acquired in the 2018-19 fiscal year requires funds for ongoing maintenance and support.

See attached History Nebraska Technology Strategy draft (HN Technology Strategy Draft 7-11-18.pdf) and History Nebraska Technology Plan draft (HN Technology Plan Draft 9-07-18).

Attachments:

HN Technology Strategy Draft 7-11-18.pdf

HN Technology Plan Draft 9-07-18.pdf

GOALS, OBJECTIVES, AND OUTCOMES (15 PTS):

Over the last two decades, historical records have experienced a disruptive shift to digital artifacts—born digital and digital copies of 2D and 3D items. With a substantial and growing backlog of digital items to accession, preserve, and make accessible (now at ~20TB of data), including mandated preservation of Nebraska government records, History Nebraska requires a cloud-based digital preservation service that includes hosted storage of true (verified) copies of the originals, as well as search, live playback facility, and migration, data protection, and business continuity capability.

Procurement of the system is underway for implementation in FY 18-19. Based on preliminary research and models employed by other state historical agencies, we anticipate pricing based on an organizational access/administration model and a price per terabyte per annum for online and near-line storage, as well as technical support.

Expected beneficiaries of the project:

- citizens, teachers, students, and audiences outside the state will be connected to historical resources they can use. The agency's strategic plan as mandated by the Board of Trustees calls for the agency to grow audiences and putting collections where digital natives will look for them.
- constituents using History Nebraska services, including other local governmental and state agencies, will be more efficiently served through enhanced search and retrieval capabilities that will replace outgrown cataloging platform and dozens of databases and thousands of "loose" digital data objects.
- taxpayers whose support will underwrite an improved service delivery system that uses state resources more effectively
- staff who will be able to more efficiently conduct research and respond to requests
- increased numbers of members who will more easily access History Nebraska resources and support the cause of preserving Nebraska's past with voluntary contributions.

Metrics will include numbers of historical resources preserved in cloud-based system, ease of accessibility of those materials, numbers of constituents accessing them, response time for research requests/record pull requests.

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History Nebraska's current technology utilization and infrastructure requires strategic technology investments in order to achieve the organization's strategic plan. Serving the public effectively with modern, enterprise applications depends on a solid Information Technology foundation. This project will maintain the second of the two highest priorities itemized in the current strategy and plan: 1) constituent relationship management and 2) digital preservation and access. Both are being implemented in FY 2018-19. This project requests funding of the Software-as-a-Service (SAAS) Maintenance support necessary to continue utilization of the digital preservation/access service.

PROJECT JUSTIFICATION / BUSINESS CASE (25 PTS):

Digital archiving is an evolving field, but one to which History Nebraska must respond. Once digital born materials have been safely analyzed and reviewed for accession, the ability to efficiently store and retrieve them, especially public records, will be key to fulfilling statutory obligations.

At 20TB of data and constant growth, the digital assets of History Nebraska require cloud-based preservation and retrieval options that ensure redundancy, protection from deterioration, technological portability, and user-friendly access. The particular requirements of perpetual preservation and cost-effective random access essential to agencies like History Nebraska and other libraries, archives, and historical organizations in other states have prompted development of specialized services outside the typical IT management scheme. Maintenance costs for such a service will allow both preservation and broad access, a different model than lesser cost dark storage with only occasional retrieval. Far beyond storage, such services provide options for specialized searches, real-time conversion and playback, integration with global library indices, library management facilities, online catalog and finding aids and more.

Most important, services guarantee integrity of the digital artifacts, preventing deliberate changes or deterioration such as bit rot. What is deposited remains exactly the same from day of deposit to day of retrieval, regardless how far in the future. An established chain of custody, plus a system that stays current as technologies and standards evolve, is critical to preservation of digital materials held in trust for the people of Nebraska.

Note that digital collections management is the number one business driver outlined in the agency IT strategy, part of the agency IT plan:

Driver 1

History Nebraska's primary mission is "to collect, preserve, and open to all, the histories we share." This includes born-digital artifacts and metadata, as well as digital records, representations, and metadata associated with 2D and 3D artifacts and places. The agency is responsible for making this information available to current and future users indefinitely (forever, for planning purposes).

Driver 2

The volume of historical information will continue to grow exponentially. "Open to all" will mean a growing number of connections (means to access) to the information under History Nebraska stewardship. Expectations will continue to shift toward simple finding/identification of resources (search) and quick, independent access. However, History Nebraska staff and their resources cannot grow exponentially.

Driver 3

Pivot to cause-based engagement responds to strategic plan initiatives: grow audiences, increase engagement, involve external partners in all major projects. Effective networking expands the agency's ability to build new business relationships—a key to organizational sustainability.

Driver 4

Use data-informed decisions to enable operational efficiencies and best practices. "Instrument" internal processes and use collected data to inform priorities, budgets, and areas to cut back.

History Nebraska's Strategic Plan intends to expand public access to historical materials currently held in its collections, connecting citizens, teachers, students, and audiences outside the state to resources they can use. The systems in use are outdated or no longer suitable for the scale of the collections. The PastPerfect collections management system, for example, is targeted for much smaller organizations; the vendor has no plan to grow the system. Implementation of the preservation/access service in FY 18-19 will also assess possible overlap with OPAC (online public access cataloging), online/syndicated finding aids, etc.

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TECHNICAL IMPACT (20 PTS):

History Nebraska is in the information business (collecting, assessing, categorizing/classifying archiving, interpreting, publishing, etc.). Its products are information (visitors can't "check out" materials from the collections). Strategic information technology investments - those improvements to systems that will help the organization achieve its Strategic Plan focused on digital archiving/preservation and constituent relationship management (CRM) areas - are fundamental, new facilities to enable the enterprise. A new system replaces a wide variety of unlinked databases and cataloging applications that require an individual staff member to develop expertise in a particular area that can't be applied to other business functions. A comprehensive service will offer critical offsite redundancy of digital objects, synchronize data, allow more universal training, and significantly increase the capacity of constituents and staff to access data for their research, personal or business purposes. Ongoing subscription/maintenance costs to support this service will allow continued implementation and produce improved service to constituents and increased engagement and revenue. Digital preservation/access procurement through State Purchasing is ensuring compliance with NITC/OCIO standards. System reliability evidence comes from broad usage across academic and governmental libraries and archives and other state historical agencies.

PRELIMINARY PLAN FOR IMPLEMENTATION (10 PTS):

Core team members will train and consult with service specialists on data input and systems development in a phased approach, using discrete collections as models for further data input/conversion and refinements of user services. Technology-related competencies are essential to every business activity in our organization. While technology infrastructure requires specialists, the identification, adoption, and effective utilization of technology must permeate the work of every corner of History Nebraska. Once service is acquired, one capability at a time will be implemented. Utilize an agile project methodology in two-week stretches; successive approximation will help to keep the project on track. This will help the organization to learn the methodology on a contained portion of the project before spreading to other areas and workflows.

RISK ASSESSMENT (10 PTS):

Without additional funding for digital preservation/access service maintenance costs, cuts in other programs or activities will be needed in order to continue this critical function. Without cloud-based digital record preservation, digital born records of historical value and digital versions of analog materials will be in jeopardy. Without continuation of such service, we have no guarantee of integrity of the digital artifacts and limited protections from either deliberate changes or deterioration such as bit rot. Preservation of digital materials held in trust for the people of Nebraska will be impaired without participation in a service that ensures what is deposited remains exactly the same from day of deposit to day of retrieval, regardless how far in the future. An established chain of custody, plus a system that stays current as technologies and standards evolve are important features that will be unavailable without funding to support maintenance of such service.

FINANCIAL ANALYSIS AND BUDGET (20 PTS):

At 20TB of data and constant growth, the digital assets of History Nebraska require cloud-based preservation and retrieval options that ensure redundancy, protection from deterioration, technological portability, and user-friendly access. The particular requirements of perpetual preservation and cost-effective random access essential to agencies like History Nebraska and other libraries, archives, and historical organizations in other states have prompted development of specialized services outside the typical IT management scheme. Maintenance costs will allow both preservation and broad access, a different model than lesser cost dark storage with only occasional retrieval.



Nebraska State Historical Society



Technology Strategy

Draft 7.11.2018

Prepared by:

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- with -



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Context

“The Nebraska State Historical Society collects, preserves, and opens to all, the histories we share.”

The Nebraska State Historical Society (History Nebraska), founded in 1878, is in the 21st century a state agency that sparks curiosity about the past and preserves historical resources to foster learning people can use to build their futures. History Nebraska:

- collects and preserves materials relating to Nebraska history
- uses information technology to share Nebraska’s stories
- seeks to be the gateway to Nebraska history for all researchers
- oversees the largest and most comprehensive documentary collections reflecting the history and culture of Nebraska and its peoples

History Nebraska employs 70+ individuals, administers a museum and seven sites (some with museum stores), the state archeology office, the state historic preservation office, the state archives (including government records), state history library, publications division, and a conservation laboratory.

History Nebraska has approximately 2000 members, who tend to remain members for life. The Society seeks to pivot from a benefit view of membership to cause-based engagement.

History Nebraska estimates its current data assets at 14TB and growing. Its IT staff, notably, is 1.5 FTE and not growing.

Viewed from one perspective, the Society is in the business of collecting, storing, categorizing, cataloging, interpreting, preserving, finding, and sharing information. It is in the information business.

The organization’s current strategic plan, adopted in January 2017, sets an “audacious” goal: “To be the most engaging & relevant state historical society in the nation”.

Introduction

This document shows how History Nebraska intends to utilize technology to achieve its business mission. For purposes of this Strategy, we divide the criteria into three groups:

1. the broad mission of the business, expressed as the *business drivers*

2. elements that would need to be present to ensure the development and maintenance of a robust infrastructure, which are expressed as the *business requirements*, and
3. the “philosophical” considerations of the infrastructure, expressed as the *technology philosophy*.

Our Organization’s Vision

To be the most engaging & relevant state historical society in the nation

Business Drivers

The following are key business drivers or aspects of our mission—how we hope to achieve our vision. To succeed, we will focus on key result areas (which reflect the performance and progress of our business, are measurable, can be compared to a standard or baseline, and can be acted upon).

In addition, History Nebraska’s strategic goals require metrics that are not currently available due to instrumentation that does not exist. While not stated as a strategic goal, it will be necessary to create and assess certain data (either manually or automatically) to enable data-driven decision making.

Driver 1

Our primary mission is to collect, preserve, and open to all, the histories we share. This includes born-digital artifacts and metadata, as well as digital records, representations, and metadata associated with 2D and 3D artifacts and places. We are responsible make this information available to current and future users indefinitely (forever, for planning purposes).

Driver 2

The volume of historical information will continue to grow exponentially. “Open to all” will mean a growing number of connections (means to access) to the information under our stewardship. Expectations will continue to shift toward simple finding/identification of resources (search) and quick, independent access. However, our staff and their resources cannot grow exponentially.

Technology Implemented: Past Perfect collections management, Mandarin OPAC, Microsoft Word-based finding aids, and a over one hundred single-user databases.

Technology Opportunities:

- Scalable collections management (2D, 3D, and digital) with search engine optimized metadata on catalog, finding aids, and assets. Grow audience by putting collections where digital natives will look for them

- Consolidate the myriad Access databases of varying historical significance under one database management system such as MySQL or SQL Server, giving careful consideration to a cloud hosted DBMS. This would enable more robust privileges, appropriate data protection, availability to web apps, storage of large objects (e.g., photographs), and focused stewardship. Depending on configuration, Access users could still connect to the data.
- Data protection/incident response capabilities geared to rapid restoration of business

Driver 3

Pivot to cause-based engagement. Grow our audiences. Increase engagement with our audiences. Involve external partners in all major projects. Effective networking—the ability to build new business relationships.

The Strategic Plan requires the ability to “measure increased reach and engagement”. The infrastructure to collect, measure, and report on constituent engagement falls within the realm of Constituent Relationship Management (CRM).

Technology Implemented: —

Technology Opportunities: All of these involve actively cultivating relationships with various constituencies. Constituent Relationship Management (CRM), represents a strategic, enterprise-wide investment. Beyond contact information, a robust CRM system provides the framework to track interactions and plans, measure engagement, and augment records with data from internal sources (e.g., gamifying engagement), and external sources (e.g., NCOA changes, propensity to give, giving capacity, etc.)

The Core Team addressed CRM at length, including (among others) applications to the following:

- Membership management
- Volunteer management
- Marketing communications (newsletters, special events, announcements, etc.)
- Class/program registration
- A common, unified store of contact information for History Nebraska
- Major gifts, in-kind donations, etc.

Taken collectively, these improvements could go a long way toward providing stellar customer experience.

Knowing how members are engaging is critically important to mobilizing them when the cause requires. History Nebraska currently has no means to know when

members or VIPs visit a site. Consider providing a way for members to “check in” at facilities, sites and events. Gamifying the engagement may yield the best engagement, especially for digital natives (a target for expanded audiences).

Driver 4

Use data-informed decisions to enable operational efficiencies and best practices.

Technology Implemented: —

Technology Opportunities: “Instrument” internal processes and use collected data to inform priorities, budgets, and areas to cut back.

The most robust CRM solutions provide infrastructure for at least simple workflows. These could be useful to facilitate and instrument the processes for:

- Research requests (Collections)
- Research Library “pull” requests
- Archeology project reviews
- Historic Preservation reviews
- And other similar tasks

There are other ways to accomplish some of these tasks. The recommendation would be to utilize the CRM investment where possible (implement the fewest number of systems).

Business Requirements

Business requirements define in business terms what must be accomplished to provide value. This section outlines our key business requirements. Where applicable we detail the technology choices we have made or are considering to help us achieve them. Since the purpose of this project align IT decision-making with the History Nebraska strategic plan, that is not listed separately here.

Requirement 1: Recommend organizational structures and staffing to efficiently manage agency IT operations. (Establish a solid, core information technology function as a foundation on which to support current and future technology investments in the enterprise.)

Implemented: Currently 1.5 FTE (one full-time IT, plus one staff divided between IT tasks and premises security. Some core functions (network/Wi-Fi, email, Office) are provided by OCIO and/or third parties.

Opportunities: To ensure a stable IT foundation upon which the organization can invest in enterprise technologies, the IT team will need these core capabilities, some of which exist today:

- Technology planning (assessing current and future needs, identifying candidate solutions, budgeting for lifecycle, specifying requirements,

- procuring a solution, and agile project management for implementation, deployment, training, and operations)
- Cross-functional leadership to align information technologies, processes, and plans with organizational strategic plans and division needs/plans. Foster a productive relationship with external entities, such as OCIO.
 - Pursue plans and policies to facilitate data protection, business continuity, and incident response
 - Implement appropriate policies and procedures necessary to meet customer (internal and external) business needs. These will include: acceptable use, incident response, life cycle management, security, change management, data privacy, update/upgrades, onboarding/offboarding, training, service-level expectations, and process improvement
 - Change management: planning for, communicating, and controlling changes to hardware, applications, operating systems, and services. This includes updates, upgrades, configuration changes, physical relocation, etc.
 - IT coordination to triage requests, ensure satisfactory closure of requests, handling orders, communicate changes, etc.
 - Provide data architecture and reporting expertise to assist the divisions in storing, protecting, gaining appropriate access to, and reporting, to enable mission (content) and business processes (metrics)
 - Customer service/user support for workstations, data, services, and access. This will include identifying suitable training resources (internal or external) for general user needs.
 - Establish achievable and sustainable goals for the IT team; plan for appropriate capacity; and develop staff to acquire and maintain skills needed for efficient and effective operations

Requirement 2: Ensure long-term preservation of digital duplicates of analog historical resources and those digital-born, including public records and digital materials generated by Nebraska citizens

Technology Implemented: –

Technology Opportunities:

- Deploy one or more isolated intake workstations to assess incoming materials safely (check for integrity, malware payloads, inappropriate content, and then duplicate, etc., without affecting metadata).
- Implement digital archiving/preservation solution matched to History Nebraska's needs for capacity, metadata standards, access, etc.

Requirement 3: Expand public access to historical materials currently held in History Nebraska collections, connecting citizens, teachers, students, and audiences outside the state to resources they can use.

Technology Implemented: Mandarin OPAC, PastPerfect, and a selection of web pages hosted on history.nebraska.gov.

Technology Opportunities: More scalable collections management system to supersede PastPerfect. Consider solutions that might integrate two or more of: 2D/3D collections management, digital preservation/archiving, OPAC, online/syndicated finding aids, etc.

Requirement 4: Evaluate business models and identify digital tools to generate revenue through efficient online ordering and other potential products

Technology Implemented: History Nebraska uses Shopify POS for in-person retail purchases, licensed as a single shop.

Technology Opportunities: It may be feasible to extend Shopify POS to simplify membership-related transactions, such as membership purchases and renewals (self and gift), as well as entitling members to any discounts or other benefits.

With sufficient selection, History Nebraska may opt for an online retail presence for gifts, souvenirs, books, prints/reprints, photographs, etc., such as with a Shopify store. These would typically be items already sold at sites, but available online.

History Nebraska may also find value in other transactions, such as parking, conference room rental, or cross-marketing partner bundles (e.g., a lifelong learner program bundled with a theatrical performance, lodging, and/or meals). Depending on the offering, these could be too complex for HN digital tools, but might be booked through a partner with revenue and data sharing arrangements.

One amenity that will lubricate event rentals and generally improve engagement with outside constituents is public internet access (i.e., routed separately from internal traffic). This requires special purpose (but not expensive) access points to tolerate high client device density. Making it easy to tweet, snap, or otherwise share the moment of a great experience helps to enlist visitors as an extension of marketing.

Requirement 5: Connect NSHS digital strategies with statute-mandated partners in government records management

Technology Implemented: –

Technology Opportunities: History Nebraska and SoS have different charters, purposes for archiving records, and different audiences. The common element is

the records themselves. To avoid duplication of effort, establish common metadata and common digital archiving system(s) with SoS.

A clear and unambiguous set of data lifecycles/retention policies will be invaluable to enable automation.

Other Requirements: Beyond the stated Project Objectives, the Core Team identified technology needs to address—directly or indirectly—elements of History Nebraska’s Strategic Plan.

The most significant of these would be improved—and common—GIS tools for Historic Preservation and Archeology.

Technology Implemented: various incarnations of ArcGIS

Technology Opportunities:

- Bring all users up to current release of GIS systems
- Re-implement the macro toolbar that Archeology users depend on to expedite their tasks
- Consider a cloud-based service to facilitate activities off the State network (i.e., in the field)
- Develop in-house (or nearby) expertise in GIS systems to facilitate effective and efficient use of the available capabilities

Technology Philosophy

We have adopted a set of philosophical principles to help guide our technology decisions.

1. Technology-related competencies are essential to every business activity in our organization. While technology infrastructure requires specialists, the identification, adoption, and effective utilization of technology must permeate the work of every corner of History Nebraska.
2. Keep technology assets within their support lifecycles. This will minimize unscheduled work, reduce time-to-service, and provide a “crystal ball” for anticipating future expenditures
3. Investments in strategic technologies—those applications and systems that facilitate line-of-business operations, scale to increase capacity, or enable cross-functional and inter-institutional collaboration—are long life-cycle investments. This implies that they must support open standards for interoperability and upward compatibility.
4. We will look at History Nebraska as a **business** from four perspectives:
 - o **Mission** – stated above
 - o **Vision** – as articulated in the Strategic Plan dated January, 2017
 - o **Awareness** – use data to inform the organizations decisions. Understand what happened, and anticipate what will happen. Drive action to support the cause (facilitate shift from benefit-based membership to cause-based engagement)
 - o **Execution** – enable scalability, repeatability, and resilience of operations as demand outpaces growth of resources. Establish, monitor, and act on metrics and other feedback to promote continuous improvement.

Conclusion

History Nebraska is in the information business (collecting, assessing, categorizing/classifying, archiving, interpreting, publishing, etc.). It's products are information (we don't send visitors home with artifacts from collections).

The Core Team focused on strategic information technology investments – those improvements to systems that will help the organization achieve its Strategic Plan. We also discussed mission and guiding principles that will shape the decisions to come.

The key focus areas were digital archiving/preservation and constituent relationship management (CRM). These are fundamental, new facilities to enable the enterprise. Though less strategic, the Core Team also addressed needed improvements to existing

History Nebraska Technology Strategy



capabilities (“analog” collections management, GIS tools, etc.). The consultant also met with IT staff to assess current facilities, capabilities, staffing, and opportunities.

History Nebraska now has enough information to take the first, concrete steps into digital archiving and preservation. This will require staff, equipment, professional services, online services, and training.

The Core Team, with input from other subject matter experts in the organization, identified several areas that will benefit from enterprise CRM. These uses can be addressed largely independently (they don’t need to be—and shouldn’t be—attacked at one time). This will require professional services, online services, and training. We have enough information to pursue price estimates.

The consultant assessed the current IT function. Given that History Nebraska is in the information business with strategic plans that require investments in information technology, the IT capabilities and capacity will need to be shored before building on that foundation. Recommended capabilities and approach are outlined here.

As with any strategic investment, each of these will stress organizational culture; change preparation and management will be key to the success.

Taken together, these strategic investments will help History Nebraska to achieve its vision.

Appendix A: Approach

This section, which arguably would materialize later in the project, sketches the consultant's approach to the Core Team's major recommendations. Because of the extraordinary breadth of this engagement, this section is intended to foreshadow the process of pursuing the strategy.

IT Function

To achieve the goals of the Strategic Plan will require investments in technology. The capabilities of the IT team are the foundation that will support those investments. At the risk of belaboring the obvious, building on top of an unfinished foundation never ends well.

Listed above are several capabilities that will be necessary for a high-functioning IT team. These are not people; one individual may bring a number of capabilities to the organization. The approach should be to ensure the capabilities exist before building-out capacity. (It is difficult to gauge additional capacity required until all of the capabilities are in place.)

History Nebraska will get the most out of a modest-size IT team by keeping technology products (software, hardware, services) within their respective life cycles, and by minimizing the number of variants (staying current in the life cycle will help with this).

CRM

A robust CRM system can serve many purposes within an organization, many of which are enumerated above. The approach must be to minimize the number of systems to keep the overhead costs—and expertise required—manageable.

An effective approach would be to enumerate the business requirements and use cases, engage with a vendor, and implement one capability at a time (a good first project might be volunteer management). Utilize an agile project methodology in two-week stretches; successive approximation will help to keep the project on track. This will help the organization to learn the methodology on a contained portion of the project before spreading to other areas, such as membership management, and ultimately to the workflows.

Digital Archiving/Preservation

History Nebraska staff and administration indicate that digital archiving lies outside of the of the organization's expertise. Due to the strategic importance, bringing in a digital archivist is the highest priority. This individual can help to solidify policies (priorities for what to archive, in what forms, for how long, etc.), and the appropriate metadata standards that will be needed.

The organization has already narrowed its focus to a system vendor—Preservica. This is consistent with experience from Minnesota’s State Archivist. History Nebraska worked with Lyasis on archiving recommendations. With all of that in hand, the process would be similar to acquisition of CRM capabilities, above, with the digital archivist playing a major role.

The approach recommended by Minnesota’s State Archivist is to provision an isolated intake workstation with tools to browse, assess, and duplicate incoming media. She recommended starting with test project, such as email from a political office holder. This will highlight many issues that can be resolved on a small case before scaling up.

Appendix B: State and Federal Statutory Drivers

In discussions, core team members mentioned statutes/mandates on a number of occasions. A few pertinent excerpts follow:

The society shall hold, in trust for the people of the State of Nebraska, all of the society's present and future collections of property.¹ ... In addition to all other objects and purposes provided by law, the object of the society shall be to promote historical knowledge and research, awaken public interest, and popularize historical study throughout the state in a nonpolitical manner. The society's headquarters and museum in Lincoln shall be used by the society for the preservation, care, research, and exhibition of and research into documents, books, newspapers, weapons, tools, pictures, relics, scientific specimens, farm and factory products, and all other collections pertaining to the history of the world, particularly to that of Nebraska and the West. The society shall have the power to accept gifts and to own, control, and dispose of property, real and personal. It shall, either alone or in cooperation with other agencies, operate historical sites and museums

- shall be the custodian of all public records, documents, relics, and other material which the society may consider to be of historic value or interest
- The secretary or curator of the Nebraska State Historical Society shall prepare certified copies of any record, document or other material, of which the society is the custodian, whenever application shall be made to the society. Such certified copies shall be received in courts and elsewhere as being of the same legal validity as similar copies prepared by the original custodian of the record, document or other material. The secretary or curator of the society shall be entitled to the same fees for making certified copies as the original custodian would be.

...

The purposes of the SHPO include surveying and recognizing historic properties, reviewing nominations for properties to be included in the National Register of Historic Places, reviewing undertakings for the impact on the properties as well as supporting federal organizations, state and local governments, and private sector.²

...

¹ Nebraska Revised Statute 82-101, 1994

² Wikipedia contributors. "State historic preservation office." Wikipedia, The Free Encyclopedia. Wikipedia, The Free Encyclopedia, 23 Jan. 2018. Web. 1 May. 2018.

The purpose of the State Archaeology Office³ shall be to coordinate and encourage appropriate archaeological undertakings and to preserve archaeological resources. It may:

- Maintain the master archaeological site file
- Maintain a list of archaeologists qualified to conduct research projects required by the act;
- Maintain a permanent repository and electronic database of published and unpublished sources on the archaeological resources of the state;
- Prepare, publish, and distribute for professional use and public education reports, bulletins, pamphlets, maps, and other products necessary to achieve the purposes of the act;
- Administer and manage grants, bequests, devises, tax incentives, and easements of property to the state for the purposes of preserving archaeological sites and resources;
- Ensure the long-term curation and management of collections and records resulting from undertakings within the state;
- Identify properties included in the National Register of Historic Places that are endangered, and coordinate or facilitate the purchase and maintenance of such properties by other public or private agencies in order to preserve archeological sites or resources located on the properties

³ Laws 2005, LB 211, § 4.



Nebraska State Historical Society



Technology Plan

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Overview

During CY2018, we assessed History Nebraska's current technology utilization and infrastructure, and recommended strategic technology investments needed to achieve the organization's strategic plan. This document adds more detail to those recommendations for planning purposes.

Any initiative to enable the organization with modern, enterprise applications depends on a solid Information Technology foundation. The current capabilities and capacity of History Nebraska's IT function require further investment to provide that necessary foundation.

This document is divided between Planned or Capital Projects, and Sustainability or Operating Projects. It seeks to identify the issues to be addressed and their proposed solutions.

Priorities in this draft are used only as an indication of impact to the organization. Many of the activities can be carried out in parallel.

Planned or Capital Projects

This section provides a brief description of projects identified that the organization needs to complete in order of strategic priority. The projects in this section are early in their life cycles (definition, needs assessment, specification, proposal evaluation, planning, implementation, testing, deployment, etc.). Each project describes the issue or problem and a proposed solution.

Priority 1 – Constituent Relationship Management (CRM)

Many of History Nebraska's ongoing tasks are handled by keeping lists in spreadsheets and emailing or sharing them to collaborate with others. While somewhat useful, this practice results in duplication, unsynchronized data, and is not sustainable as the organization grows and operations increase in complexity.

Further, the Strategic Plan requires capabilities that fall outside the organization's current tool set, such as: target communications for cause-based engagement; grow our audiences; increase engagement with audiences; measure increased reach and engagement; involve external partners in all major projects; and network effectively to build new business relationships.

History Nebraska, like most mission-based organizations, has rich and often multiple relationships with its constituents.

The most robust CRM platforms also enable organizations to facilitate simple workflows. Doing so provides **instrumentation and data to inform decision-making**. History Nebraska plans initially to implement: research requests (Collections); Research Library "pull" requests; Archeology project reviews; Historic Preservation reviews; membership and volunteer program management and similar processes.

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The infrastructure to collect, manage, measure, and report on constituent engagement falls within the realm of Constituent Relationship Management (CRM). To minimize investments and staff expertise requirements, the Technology Strategy recognizes the need to address as many processes as possible with a single, business-enabling platform.

- Cloud-based CRM service/licenses and technical support [recurring]: Depending on the system selected, pricing is based on either hosting and capacity or per-user licensing. History Nebraska's implementation will require add-ons (non-standard or third party capabilities such as web forms) licensed separately.
- Professional services [non-recurring]: Needed for business analysis, configuration, testing, and training for History Nebraska staff.
- Data/Application Specialist [FT ongoing]: Assist staff with application expertise (use, troubleshooting, and tailoring), and data migration. Administer enterprise application users, privileges, and security. Reporting and analysis to inform management decision-making. This capability would serve not just the CRM initiative, but the whole organization. See "*Staffing*", below.
- On-call support [incremental; nights, weekends, events]: Support outside "normal" working hour (e.g., 8–5, M–F) is critical to the acceptance and adoption of any new system. Staff at the museum, historic sites, working in the field, or during special events need to be confident that support is available when they are working. This does not need to be IT staff—an effective strategy is to develop a group of power users for peer support.
- Increased internet capacity [forever]: Adoption of cloud-based CRM should result in only marginal increases of internet traffic at Lincoln sites. Utilization will be monitored for future capacity increases. For historic sites, new or improved connectivity may be required. See also "*Internet Service: Cloud Platform and Public Access*".

Priority 2 – Digital Preservation/Archiving

Over the last two decades, the field experienced a disruptive shift to digital artifacts—born digital and digital copies of 2D and 3D items. With a substantial and growing backlog of digital items to assess and preserve, including mandated preservation of Nebraska government records, History Nebraska requires new capabilities.

The strategy calls for using a cloud-based solution. This may come at a higher price, but eliminates the need for substantial infrastructure and additional internal staff.

- Digital Archivist [ongoing]: Guide the development of policies; establish procedures for accession, maintenance, and deaccession; ensure appropriate metadata standards; coordinate with the Office of the Secretary of State on standards, etc.
- Cloud-based digital preservation service [recurring]: hosted storage of true (verified) copies of the originals, search, live playback facility, ability to migrate to future digital formats, with high availability and geographic distribution (for data protection and business continuity). Also technical support. Based on input from a variety of similar entities facing analogous challenges, History Nebraska has focused on Preservica as a model for this solution. Pricing is based on

organizational access/administration model, and price per terabyte per annum for online and near-line storage.

- Professional services [non-recurring]: Needed for business analysis, configuration, testing and training for History Nebraska staff.
- Accession workstation(s): Safely analyze and review digital media for accession in an isolated environment. These workstations do not need to be special hardware, but the configuration, software, operations, and maintenance will be unique, thus requiring expertise and procedures not needed elsewhere in the organization.
- Professional development: Digital archiving is an evolving field. The digital archivist(s) will require ongoing engagement and development with other professionals.
- Increased internet capacity: Using a cloud-based solution will cause some bandwidth contention within the organization. The upload traffic is less critical. Download performance will affect end-user experience. Observations during the first several months will inform adjustments for subsequent years.

Priority 3 – Collections Management, Catalog, and Finding Aids

History Nebraska's Strategic Plan intends to expand public access to historical materials currently held in History Nebraska collections, connecting citizens, teachers, students, and audiences outside the state to resources they can use. We will grow our audience by putting collections where digital natives will look for them.

The systems in use are outdated or no longer suitable for our scale of collections. The PastPerfect collections management system, for example, is targeted for much smaller organizations; the vendor has no plan to change that.

The Collections Division assessment is necessary in conjunction with Digital Preservation and Archiving.

- Professional services [non-recurring]: Assess possible overlap or integrations with digital preservation/archiving, OPAC, online/syndicated finding aids, etc.

Priority 4 – Geographic Information System (GIS)

History Nebraska uses ArcGIS ArcMap as its Geographic Information System of choice, but has different variants and versions installed, most of which are out of date. The organization purchased programming services to customize a toolbar to assist users in the Archeology division. Because that work was not upward compatible between versions, those users are stuck on an old version. Finally, the organization licensed desktop applications, which staff can only access when in the facilities and on the state network.

- Professional services [non-recurring]: Business analysis for the organization's current workflows and security requirements; determine cost/benefit tradeoffs for cloud-licensed tools; and re-implement work aids such as the toolbar in an upward compatible way. Assess suitability of current workstations for GIS use.
- ArcGIS licenses and technical support [recurring]: For cloud or desktop.

Priority 5 – Multi-user Online Database Management System (DBMS)

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Among History Nebraska's digital assets include over 125 databases, some hosted on a shared file system using a single-user tool (Microsoft Access), others on individual workstations. There are also thousands of "loose" digital data objects—primarily jpeg images—that would best be stored in a database or cloud storage (S3, GCS, Azure, etc.); this would allow association with metadata and enable effective searches, as well as minimize time to restore after an incident.

We plan to host these databases in a multi-user database, preferably-cloud based. The currently unstructured objects could be hosted in a cloud database, or in less-structured cloud storage. Although a recurring expense, a cloud based solution is inexpensive and would facilitate use in public-facing systems, such as on the website. A multi-user system will have more robust security capabilities, and will dramatically reduce the risk to data integrity. It will also encourage more intentional stewardship of the assets.

- Professional services [non-recurring]: Initial needs assessment, setup, and data migration to cloud based DBMS. Establish "connectors" for WWW and staff systems (including Access).
- Cloud DBMS and technical support [recurring]: Typically billed by query and by egress network use after exceeding a threshold.
- Staff [non-recurring]: assess value of existing assets; weed out duplicates; select those to be carried forward, and eliminate others

Sustainability or Operating Projects

This section describes changes to staffing, and changes planned for technologies later in their life cycles (operations, maintenance, replacement, etc.).

Staffing

History Nebraska is squarely in the information business, though its Information Technology team is staffed at only 1.5 FTE. Enterprise applications are needed to achieve the organization's strategic plan. The team lacks capacity and capabilities to support the plan.

To ensure a stable IT foundation upon which the organization can invest in enterprise technologies, the IT team will need the following core capabilities, some of which exist today. These ongoing capabilities could eventually be provided by 4–5 FTE, adding more only as necessary to scale up capacity.

- Infrastructure maintenance and support
- Technology planning: Assessing current and future needs, identifying candidate solutions, budgeting for lifecycle, specifying requirements, procuring a solution, and agile project management for implementation, deployment, training, and operations
- Cross-functional leadership: Align information technologies, processes, and plans with organizational strategic plans and division needs/plans. Continue to foster productive relationships with external entities, such as OCIO.
- Planning and policy establishment to facilitate data protection, business continuity, and incident response
- Governance: Collaboratively implement appropriate policies and procedures necessary to meet customer (internal and external) business needs. These will include: acceptable use, life cycle

management, security, change management, data privacy, update/upgrades, onboarding/offboarding, training, customer service and service-level expectations, and process improvement.

- Configuration change management: planning for, communicating, and controlling changes to hardware, applications, operating systems, and services. This includes updates, upgrades, configuration changes, physical relocation, etc.
- IT coordination to triage requests, ensure satisfactory closure of requests, handle routine purchases, communicate changes, etc.
- Application support, data architecture, and reporting [ongoing; covered under CRM, above] to assist the divisions in storing, protecting, gaining appropriate access to, and reporting, to enable mission (content) and business processes (metrics/performance indicators).
- Customer service/user support for workstations, data, services, and access. This will include identifying suitable training resources (internal or external) for general user needs.
- Establish achievable and sustainable goals for the IT team; plan for appropriate capacity; and develop staff to acquire and maintain skills needed for efficient and effective operations

Properly staffed, the team’s unscheduled tasks should not exceed 25–30% of capacity.

Lifecycle Management & Proactive Replacement

We plan to keep technology assets within their support lifecycles. This will minimize unscheduled work, reduce time-to-service, and provide a “crystal ball” for anticipating future expenditures.

Life expectancy varies from item to item; however, we plan for an average lifespan in years for each class of technology employed (server, workstation, laptop, consumer application, enterprise application, etc.). Because of this, we can anticipate a replacement/upgrade schedule, and fund that ongoing in our budget.

Before any item is actually replaced, we will review its condition, maintenance, and progression in the support lifecycle to ensure it meets the requirements for replacement. If the system (considering hardware, software, and services) is still serviceable and within the support lifecycle, its replacement may be delayed to a *specified*, future date.

Examples of typical lifecycles are shown below. History Nebraska must define, by policy, what is reasonable.

Item	Lifecycle
Servers	5 years
Workstations	5 years
Laptops	4 years

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Software (non-SaaS ¹)	3 years
Website	6 years
Custom programming	7 years
Structured cabling	10 years

The life cycles above are based on input from current IT analyst Jay Shaeffer . For reference:

- 50% of servers are operating at or beyond a five-year life cycle.
- 17% of workstations are operating beyond even a five-year life cycle.
- 45% of laptops are operating beyond even a four-year life cycle
- 58% of applications are known to be “in life cycle”

A key to efficient operations is to operate within support lifecycles. This requires tracking inventory within the organization, which may require tools and will require ongoing effort. (Jay Shaeffer uses Spiceworks Inventory, so we did not budget for inventory tools.) For purposes of this assessment, Technology Core Team members crowd-sourced the inventory we used, collecting the data into Smartsheets.

Numerous studies also associate out-of-date technology with poor employee engagement or satisfaction. While perhaps outside of this project’s scope, it further underscores the business case of operating within lifecycles.

Training

Technology-related competencies are essential to every business activity in our organization. While technology infrastructure requires specialists, the identification, acquisition, adoption, and effective utilization of technology must permeate the work of every corner of History Nebraska.

In short, technology skills are fundamental in the 21st century workplace.

Two types of technology training are necessary for all staff in our environment: new hire training, and ongoing training. We plan to budget for each separately, and have estimated below our turnover and costs associated with that training. Because we plan to utilize our own staff to serve in the trainer role, the time we budgeted includes the trainer.

Budget for existing staff training: 4 hours per employee, mm hours total

Budget for new hire training: 8 hours per employee, nn hours total

Note that we budget non-recurring training for new initiatives (e.g., CRM membership management) as part of those initiatives.

Internet Service: Cloud Platform and Public Access

¹ For budgeting, we consider all Software-as-a-Service products (e.g., Office 365) to be always within their support lifecycles. For non-SaaS, use each product’s stated support lifecycle for upgrade timing.

History Nebraska Technology Plan

History Nebraska’s continuing, strategic shift to cloud-based platforms will drive down requirements for staff, facilities improvements, etc. However, effective adoption of cloud platforms demands reliable, low-latency internet service at the organization’s sites.

Some sites will require only public internet (no requirement to access State networks). In cases where landline (ADSL, cable, or fiber) broadband service is not available, fixed wireless (WISP) or LTE Advanced with Carrier Aggregation may provide suitable and cost-effective alternatives.

Beyond utilization for cloud platforms (website, email/collaboration, CRM, collections management, online finding aids, digital artifact access, ...), internet connectivity is a requirement to support earned income for from facility rental and special events.

Good internet access also enables, stimulates, and encourages crowd-sourced marketing. When a visitor has that “*Aha!*” moment, discovers a bit of history, or is awed by the stunning quilt in the exhibit, make sure (s)he can share the excitement *immediately* on social media. There are at least 100 killer ideas for your social media content; prompt visitors with placards, signage, and hashtags, and aggregate posted content as part of a larger campaign. Free promotion and engagement depends on good *public* internet connectivity.

Internet service at sites is currently considered a luxury, largely because of the rural nature of most locations and the lack of vendor options. Reliable internet service at all sites and events will be critical to History Nebraska’s strategy.

Infrastructure Services

Our organization will budget for services on an ongoing basis that we utilize to conduct business. These services do not include support and maintenance already budgeted. Rates are largely determined by OCIO or Nebraska Interactive.

Item	Cost
Internet and State network	\$ --
Website	\$ --
Telephones	\$ --
Email and collaboration	\$ --
Total	\$ --

Technology Budget Templates

As plan becomes finalized, History Nebraska staff will create a budget for each of the next three to five years, including planned replacement consistent with the lifecycle policies above. Example below

Year	Item	Description	Cost	Staff Cost	
2019	Sustainability or operating projects	<u>Project</u>			
		Add'l IT staff capabilities		2 FTE	
		Preventative Maintenance	\$60,000		
		Support	\$10,000		
		Recycling	\$500	20 hrs	
		Training	\$0	200 hrs	
		Replacement/Upgrade	\$10,000		
		Infrastructure Services	\$20,000		
		Consumables (Ink, paper)	\$1,500		
		Total		220 hrs + 2 FTE	
	Planned or capital projects	<u>Project</u>			
		CRM Maintenance	\$50,000	xxx hrs	
		Digital Preservation/Archiving	\$25,000	xxx hrs	
		Collections Management, ...	\$x,000	xxx hrs	
GIS		\$x,000	xxx hrs		
Multi-user Cloud DBMS		\$x,000	xxx hrs		
Total	\$-,000	xxx hrs			