# Independent Review

# Resource Sharing System and Integrated Library System (ILS)

For the
State of Vermont Department of Libraries and Department of Information & Innovation (DII)

Submitted to the
State of Vermont, Office of the CIO
By

Strategic Technology Services

8/19/2016

**Attachments:**

1. Project Costing Spreadsheet FINAL-REVIEW-SOV-LIBRARIES-ILS-STS_Cost_Detail_FINAL.xlsx)
2. Risk Register (FINAL-REVIEW-SOV-LIBRARIES-ILS-STS_Risk_Register_FINAL.pdf)
3. Sample Test Cases (Vermont_NCIP General Testing Scenarios.docx)
4. Client Software Compatibility Matrix (AG-SoftwareCompatibilityMatrix.xlsx)
5. Auto-Graphics Disaster Recovery/Business Continuity Plan (Business Continuity Plan_rev 08042016.pdf)
6. Smart Libraries Newsletter on Library Software Security (SmartLibrariesNewsletter_January-2015.pdf)

# Table of Contents

# 1. Executive Summary

*Provide an introduction that includes a brief overview of the technology project and selected vendor(s).*

## Project Summary

1. **Parties**:
    a. The contemplated contract is between State of Vermont Department of Libraries (VTLIB) and Auto-Graphics, Inc. (AG) of Ontario, California.

2. **Term**:
    a. The term of this project is expected to be 5 years (~10/1/2016 – 9/30/2021) as follows:
        i. Implementation:
            - **VERSO** Integrated Library System: 17 weeks to implement up to 33 Libraries
            - **SHAREit** Resource Sharing (aka Interlibrary Loan System): 4-6 months
        ii. Operations:
            - Remainder of term through the 5 year agreement.
    b. Contract terms have not yet been finalized at the time of the writing of this Independent Review.

3. **Solution and Cost**: While the contract is expected to cover a 5 year period, the costs analysis covers a 10 year period to support the minimum expected life-cycle.
    a. Software Licensing:
        i. Software as a Service (**$2.1M;** begins at approx. $184K annually plus 3% increase):
            - **VERSO** Integrated Library System: **$14K** annually thereafter increasing 3% annually
            - **SHAREit** Resource Sharing (aka Interlibrary Loan System): **$170K** annually thereafter increasing 3% annually
    b. Implementation Services: **$233K**
    c. Hosting: **$161K**
    d. Internal costs including staffing: **$446K**
    **e. Total Costs (10 years): $2.96M**
        **i. Implementation: $.4M**
        **ii. Operations: $2.56M**

4. **Approach**:
    a. Software as a Service installation of SHAREit and VERSO in Switch SuperNAP data center in Las Vegas, NV, managed by Synoptek.
    b. Implementation and training services from AG related to implementing SHAREit and VERSO.
    c. Data conversation from existing VALS system (VT Automated Library System).
    d. Data integration with other Library software applications using standard protocols (NCIP, SIP2, ISO and Z39.50).
    e. Internal Libraries staff supporting the project

| | **BEFORE** | **AFTER** |
|---|---|---|
| **Application(s)** | *VALS* | *SHAREit ILL, VERSO ILS* |
| **Hosting** | *Internal Mainframe* | *Switch SuperNAP in Las Vegas, NV managed by Synoptek* |
| **Sys Admin** | *Libraries* | *Auto-Graphics and Synoptek* |
| **Application Management** | *Libraries* | *Auto-Graphics* |

5. **Management:** Senior Business Leadership and Subject Matter Expertise are aligned to complete solution implementation.

## Vendor Profile

1. **Auto-Graphics, Inc.**
    a. **Auto-Graphics, Inc.** is a C corporation and was incorporated on August 15, 1960 in California. Auto-Graphics is a subsidiary of **Agent Information Software, Inc.**
        i. Auto-Graphics (A-G) was founded in 1950 working with more than 5,500 libraries throughout North America, including 12 state-wide Interlibrary-Loan (ILL) systems in the U.S. With roots in the publishing industry, Auto-Graphics began supplementing traditional publishing services in the early '60s by extending their expertise in database publishing to the conversion and maintenance of bibliographic data for libraries.
    b. **Agent Information Software, Inc.**, a Nevada corporation incorporated in 2010 (OTC: symbol AIFS), including its wholly owned subsidiaries Auto-Graphics, Inc., A-G Canada, Ltd. and AgentLegal Inc., provides software products and services used to create, manage, publish and access information content via the Internet/Web.
        i. Auto-Graphics, Inc., a corporation formed in 1960, provides software products and services to customers in the library community throughout the United States of America.
        ii. A-G Canada Ltd., a Canadian corporation formed in 1997, provides software products and services to customers in the library community in Canada.
        iii. AgentLegal Inc., a corporation formed in 2010, provided software products and services to customers in the legal community primarily in California. Effective December 31, 2012, the Company discontinued operations at AgentLegal and ceased operations. Effective October 17, 2013, AgentLegal filed a certificate of dissolution with the State of Nevada.
        iv. Net Income is $228K on revenue of $4.7M in 2015, $172K on revenue of $4.5M in 2014 and $21K on revenue of $4.7M in 2013.
    c. A-G holds quarterly ILL user group meetings through Webinar. A-G also participates in both American Library Association (ALA) and Public Library Association (PLA) Conferences.
    d. See http://www4.auto-graphics.com/ or more information.

## 1.1 Cost Summary

| | |
|---|---|
| IT Activity Lifecycle: | 10 Years |
| **Total Lifecycle Costs:** | **$ 2.96M** |
| ***PROJECT COSTS:*** | ***$406K*** |
| ***Software Costs:*** | ***$0*** |
| ***Implementation Services:*** | ***$233K*** |
| ***Internal Costs including staffing:*** | ***$163K*** |
| ***Other:*** | ***$10K*** |
| ***OPERATING COSTS:*** | ***$2.56M*** |
| ***Software Costs:*** | ***$2.1M*** |
| ***Maintain Current Software:*** | ***$72K*** |
| ***Internal Costs including staffing:*** | ***$284K*** |
| ***Hosting:*** | ***$161K*** |
| **CURRENT OPERATING COSTS:** | **$ 914K** |
| Difference Between Current and New Operating Costs: | **$654K increase over 10 years ($1.2M increase to State of VT funding sources, decrease of $564K to Federal funding sources)** |
| Funding Source(s) and Percentage Breakdown if Multiple Sources: | See table below |

**Funding Source(s) and Percentage Breakdown if Multiple Sources:**

| FUNDING SOURCE | % of TOTAL | FUNDING SOURCE DESCRIPTION | FUNDING APPLIED TO (Implementation or Operations) | FUNDING AMOUNT |
|---|---|---|---|---|
| STATE FUNDING: Implementation; General Fund Carryforward | 6.96% | State General Fund #10000; $450K carryforward, split over Impl and Ops | Implementation | $206,161 |
| STATE FUNDING: Implementation; General Fund Carryforward | 8.24% | State General Fund #10000; $450K carryforward, split over Impl and Ops | Operations | $243,839 |
| STATE FUNDING: Operations | 42.66% | State General Fund | Operations | $1,262,872 |
| FEDERAL FUNDING: Implementation; Library Services and Technology Act/LSTA), from the Institute of Museum and Library Services (IMLS); See https://www.imls.gov/grants/grants-states | 6.76% | CFDA: 45.310; Grant Number: LS-00-15-0046-15 (funding year FFY15 ends September 30, 2016: $912K); Grant Number: LS-00-16-0046-16 (funding year FFY16 ends September 30, 2017; $914K) | Implementation | $200,000 |
| FEDERAL FUNDING: Operations; LSTA; | 35.38% | LS-00-15-0046-15 ; LS-00-16-0046-16; Keep Sirsi/Dynix running Year 1, new system thereafter | Operations | $1,047,359 |
| **TOTAL:** | **100.00%** | | | **$2,960,231** |

## 1.2 Disposition of Independent Review Deliverables

| Deliverable | Highlights from the Review<br>*Include explanations of any significant concerns* |
|---|---|
| Acquisition Cost Assessment | Rates for stated hourly rates and derived hourly rates are not applicable. Comparisons to projects of similar scope point show comparable pricing. Comparison to other bids show comparable pricing. See Cost Comparison in **Section 5.2**. |
| Technology Architecture Review | The underlying Technology Architecture is sound. See *Technology Architecture* (**Section 6)** for details. |
| Implementation Plan Assessment | The approach to solution implementation appears sound. See *Assessment of Implementation Plan* (**Section 7)** for details. |
| Cost Analysis and Model for Benefit Analysis | Cost analysis provides accurate annual cost. No monetary benefits defined. See **Cost Benefit** (**Section 8)** for detail. |
| Impact Analysis on Net Operating Costs | Increase in Operating Costs per attached Project Cost spreadsheet. |

## 1.3 Identified High Impact &/or High Likelihood of Occurrence Risks

| Risk Description | State's Planned Risk Response | Reviewer's Assessment of Planned Response |
|---|---|---|
| **See Risk Register** | | |

## 1.4 Other Key Issues

*Recap any key issues or concerns identified in the body of the report.*

1. No other issues identified.

## 1.5 Recommendation

*Provide your independent review recommendation on whether or not to proceed with this technology project and vendor(s).*

The following recommendations are made relative to this pending project:

1. Initiate contract drafting and then proceed with project unless contract terms and conditions not favorable to Libraries.
2. Address remaining Risk Register items in parallel with drafting of contract.
3. Proceed with project initiation after above items completed.

## 1.6 Certification

I certify that this Independent Review Report is an independent and unbiased assessment of the proposed solution's acquisition costs, technical architecture, implementation plan, cost-benefit analysis, and impact on net operating costs, based on the information made available to me by the State.

e-Signed by David Gadway
on 2016-09-23 12:00:07 GMT

**Signature**

September 23, 2016

**Date**

## 1.7 Report Acceptance

The electronic signatures below represent the acceptance of this document as the final completed Independent Review Report.

e-Signed by Barbara Cormier
on 2016-09-23 14:41:21 GMT

**DII Oversight Project Manager**

September 23, 2016

**Date**

e-Signed by Richard Boes
on 2016-09-23 14:49:10 GMT

**State of Vermont Chief Information Officer**

September 23, 2016

**Date**

# 2. Scope of this Independent Review

*Add or change this section as applicable.*

## 2.1 In-Scope

The scope of this document is fulfilling the requirements of Vermont Statute, Title 3, Chapter 45, §2222(g):

*The Secretary of Administration shall obtain independent expert review of any recommendation for any information technology initiated after July 1, 1996, as information technology activity is defined by subdivision (a)(10), when its total cost is $1,000,000 or greater or when required by the State Chief Information Officer.*

The independent review report includes:

- An acquisition cost assessment
- A technology architecture review
- An implementation plan assessment
- A cost analysis and model for benefit analysis
- An impact analysis on net operating costs for the agency carrying out the activity
- A procurement negotiation advisory services contract (as needed)

## 2.2 Out-of-Scope

*If applicable, describe any limits of this review and any area of the project or proposal that you did not review.*

- Procurement Advisory Services.

# 3. Sources of Information

## 3.1 Independent Review Participants

*List the individuals that participated in this Independent Review.*

| Name | Employer and Title | Participation Topic(s) |
|---|---|---|
| Martha Reid | State Librarian, **Project Sponsor** | IR Project kickoff, project plan, budget, staffing and desired outcomes |
| Tom McMurdo | Collections & Digital Initiatives Librarian, **Project Manager**, Subject Matter Expert | Discussed project plan, budget, desired outcomes, project risks and risk mitigation |
| Mara Siegel | Head of Interlibrary Loan, Subject Matter Expert | Discussed project plan, budget, and desired outcomes |
| Jeremiah Kellogg | Statewide Library Consultant, Subject Matter Expert | Discussed project plan, budget, and desired outcomes |
| Barbara Cormier | SOV; DII Oversight Project Manager | Project Management Oversight |
| Seamus Loftus | SOV; DII Enterprise Architect | Discussed technology architecture |
| Glenn Schoonover | SOV Security Officer | Discussed application security |
| | | |
| Paul Cope | President, Auto-Graphics, Inc. | Discussed NFR Response and clarity on Virtual Machine configuration. |
| Albert Flores | Vice President, Sales and Marketing Auto-Graphics, Inc. | Discussed roles, responsibilities, pricing model, comparable projects, ability to meet security requirements, technical architecture, PM Approach, Implementation Approach, Risk Management Approach |
| Michele Harris | Senior Sales Administrator, Auto-Graphics, Inc. | Point person on detailed questions during IR process |

## 3.2 Independent Review Documentation

*Complete the chart below to list the documentation utilized to compile this independent review.*

*All document sources are the Project SharePoint site unless otherwise noted

| Document Name | Description | Source* |
|---|---|---|
| ResourceSharingRFP DRAFT11-23-2014.docx | RFP Draft | |
| ResourceSharingRFP-FINAL02-01-2016.pdf | RFP Final Version | |
| ADDENDUM 1 library.pdf | RFP Addendum 1 | |
| ADDENDUM 2 library.pdf | RFP Addendum 1 | |
| VTLIB_ResourceSharingSystem.xlsx | RFP Content: List of Libraries throughout the State of Vermont, by Library Type and System Used | |
| VTLIB_SharedILSLibraries.xlsx | Library circulation statistics | |
| LibrariesBidOpening20160318.pdf | Bid Opening statistics | |
| AG Vermont ResourceSharing RFP-FINAL COMBINED 03172016.pdf | Auto-Graphics proposal | |
| Auto-Graphics Vermont Pricing 03182016 FINAL.pdf | Auto-Graphics pricing | |
| Attachment I -DoLib_Non-Functional-Requirements__v10_1 ADDENDUM 1.pdf | Auto-Graphics response to requested addendum information | |
| AG Vermont BAFO FINAL 05192016.pdf | Auto-Graphics Best and Final Offer | |
| eSignedREVISED LibrariesABCform01-12-2016.pdf | IT ABC Form | |
| eSignedLibraries_resource_sharing_system_replacement_Charter_final20160629.pdf | Project Charter | |
| Several documents | Proposal content and pricing information from other bidders | |
| Cataloging_for_the_busy_librarian_2015_10_28_final.pptx | Course developed to help librarians catalog books/materials | Tom McMurdo |
| Koha_community_cataloging_class_mcmurdo_06_20-nhf.pptx | Course developed to help librarians who use Koha ILLS catalog books/materials | Tom McMurdo |
| Vermont ILL Handbook.pdf | Guide for supporting Interlibrary Loans | Mara Siegel |

# 4. Project Information

## 4.1 Historical Background

*Provide any relevant background that has resulted in this project.*

The Department of Libraries (VTLIB) has, as part of its statutory obligation, responsibility for promoting and supporting resource sharing between and among libraries of all kinds in Vermont. The ultimate goal of the VTLIB's Resource Sharing System is to provide Vermont citizens the greatest access to materials and resources owned by and housed in public, school, academic, and special library collections located in Vermont.

VTLIB issued an RFP seeking solutions that meet the needs of multi-type libraries, including mostly small and rural public libraries, and which support:

- Resource Sharing System that will provide cost-effective access to and interlibrary loan functions for all Vermont libraries.
- Library Management System for the Vermont Department of Libraries' collections.
- A multi-type library shared Library Management System with the capabilities to serve as a shared Integrated Library System (ILS) for the collections of multi-type libraries across the state, including the Department of Libraries collections, or any combination of a resource sharing system with shared library management software.

For definition purposes, "library management" software shall be a term inter-changeable with what is traditionally recognized as "integrated library" software; and "resource sharing" software shall be a term inter-changeable with "interlibrary loan management and delivery" software.

The current Resource Sharing System operated by the Vermont Department of Libraries (VTLIB) is known as the Vermont Automated Library System (VALS). The VALS resource sharing network is made up of more than 300 public, 150 K12 school, 25 academic and 6 special libraries that share access to their collections for interlibrary loan. Participating libraries send and process interlibrary loan requests via VALS, and though the name implies that VALS is a single library automation system, it is a single system only in the sense that VTLIB's own integrated library system (ILS) acts as the gateway for Z39.50 connections to individual library catalogs. The VALS system connects with libraries that are using some 30 different types of automation systems (ILS products), and also includes union databases of the holdings of non-automated and non-Z39.50-capable automation systems in the state's smallest libraries.

The VTLIB ILS currently consists of three separate instances of SirsiDynix Symphony. These instances of the ILS manage:

1. holdings of the VTLIB collections that circulate to state government, libraries, and the public;
2. a union catalog of school library holdings containing bibliographic data only;
3. a union catalog of public library holdings containing bibliographic data only.

The VALS resource sharing network currently includes the following types and numbers of libraries:

| | |
|---|---|
| Public libraries | 183 |
| School libraries | 168 |
| Academic libraries | 25 |
| Special libraries | 6 |
| **Total** | **382** |

The following table lists Integrated Library Systems currently used by Vermont public, school, and academic libraries. This list is not 100% complete and accurate, but does represent the range of systems currently in use.

| ILS | # of libraries | # of databases |
|---|---|---|
| VOKAL Koha consortium | 60 | 1 |
| Catamount Koha consortium | 12 | 1 |
| LibraryWorld standalone | 45 | 45 |
| Koha standalone | 8 | 8 |
| Destiny (district)* | 18 | 7 |
| Destiny standalone | 100 | 100 |
| Millennium | 1 | 1 |
| OCLC WMS | 2 | 2 |
| OPALS | 16 | 16 |
| SirsiDynix Symphony standalone | 2 | 2 |
| SirsiDynix Symphony shared system | 1 | 5 |
| TLC | 3 | 3 |
| Voyager | 2 | 2 |
| Misc. standalone* | 48 | 45 |
| Non-automated | 29 | 29 |
| **Total** | **347** | **268** |

*These miscellaneous stand-alone systems include one or more libraries using Alexandria, Athena, Mandarin, Resourcemate, Sagebrush Spectrum and Infocenter, or Surpass.

The current VALS Resource Sharing System connects and simultaneously searches 27 of these databases.

The current VALS system is time-consuming (i.e., costly) for VTLIB and local libraries and provides inferior access to library materials for Vermont citizens. The software architecture for the current resource sharing system is no longer supported by the current vendor (Sirsi/Dinyx), and has been unsupported for several years.

## 4.2 Project Goal

*Explain why the project is being undertaken.*

The goals of the project are:

1. Reduce time spent on interlibrary loan (ILL) at the Department of Libraries and at every one of the hundreds of VALS member libraries;
2. Enhance Vermonters' access to materials;
3. Provide real-time status, letting users know if an item is available or checked out;
4. Provide detailed item data, such as cover art, summaries, and other granular data;
5. Allow users to place "holds" on items in libraries across the state, eliminating the need for a librarian-mediated interlibrary loan transaction;
6. Replace the current single library solution (Sirsi/Dynix integrated library system (ILS) which supports the Department's library collections and operations) with a multi-library ILS, providing a state-of-the-art system to participating libraries that will replace their limited capability systems for roughly the same cost, integrating collections while maintaining the independence of each participant library;
7. A shared ILS will be a step toward a statewide public library ILS and a statewide library card. (*While this will not happen quickly, it mirrors what is happening in other states and will meet the demand of citizens for easy access to the library materials and informational resources they need for their educational, work, and recreational purposes.*)

The objectives and success criteria of the project are outlined in the table below:

| # | Objective | Success Criteria |
|---|---|---|
| 1 | Implement a new resource sharing solution to replace the antiquated VALS resource sharing system. | The new resource sharing system is implemented before 1/31/2017. |
| 2 | Implement a shared ILS system that replaces VTLIB's internal ILS and provides an excellent alternative for libraries running limited ILS systems. | Implement VTLIB internal ILS before 12/31/2016. Recruit at least 15 libraries to be part of the shared ILS by 12/31/2017. 15 more by 12/31/2018. |
| 3 | Improve resource sharing for Vermont libraries. | Add all public library VALS participants to the new resource sharing system before 6/30/2017. Add active school and academic libraries to the resource sharing system before 12/31/2017. |
| 4 | Make interlibrary loan of materials easy for Vermont citizens through their public libraries. | Make public library holdings visible across Vermont through the new resource sharing system, expanding available materials from thousands to over 2.9 million by 6/30/2017. |
| 5 | Increase interlibrary loan. | Increase visibility and ease of use through new resource sharing system, causing interlibrary loan to increase by 5% by 6/30/2017 and 10% by 12/31/2017. |

## 4.3 Project Scope

*Describe the project scope and list the major deliverables. Add or delete lines as needed.*

**Overall Scope:** The high level scope of this project includes the following items:

- Resource sharing system that will create better visibility and access to materials
- Resource sharing system that will reduce staff time spent on each ILL transaction
- Integrated ILS for the Department of Libraries
- Shared ILS that will provide access to participating libraries

**Out of Scope:**

- ILL delivery

**Key Stakeholders:**

| Stakeholder Group | Impact |
|---|---|
| Dept. of Libraries ILL staff | Will reduce time needed to perform ILL |
| Dept. of Libraries IT, cataloging staff | Will increase functionality in ILS to make tasks easier, reports more powerful, and will save time |
| Public Libraries ILL staff | Reduce time needed to process ILLs. Increase accessibility. |
| Citizens of Vermont | Visibility of ILL will increase and the number of available items will increase as much as 20 fold |

### 4.3.1 Major Deliverables

See **Section 4.4** below.

## 4.4 Project Phases, Milestones and Schedule

*Provide a list of the major project phases, milestones and high level schedule. You may elect to include it as an attachment to the report instead of within the body.*

The **original** milestones/deliverables of the project are outlined in the table below. **The actual dates are not yet finalized at the time of the writing of this IR report**

| Milestone/Deliverable | Target Delivery Date or Range |
|---|---|
| **Project Start Date** | October 17, 2016 |
| ILS installation for Dept. of Libraries | Feb.2, 2017 |
| Training for Dept. of Libraries personnel on the new system | Feb. 2, 2017 |
| Interlibrary loan system installation | Feb. 2, 2017 |
| Begin migration of participating VALS public libraries into interlibrary loan (ILL) system | Feb. 6, 2017 |
| Begin migration of public libraries into shared ILS | Mar. 6, 2017 |
| Training for participant libraries | Feb.-Dec. 2017 |
| Migrate VALS participant public, school, and academic libraries into ILL system | Mar.-Dec. 2017 |
| Complete migration of VALS libraries into ILL system | Dec. 31, 2017 |
| Migrate interested libraries into shared ILS | Mar. 6-Dec. 2017 |
| **Project End Date** | Dec. 31, 2017 |

A payment scheduled aligning payments to defined deliverables is not yet established. This is highlighted in the Risk Register.

# 5. Acquisition Cost Assessment

*List all acquisition costs in the table below (i.e. the comprehensive list of the one-time costs to acquire the proposed system/service). Do not include any costs that reoccur during the system/service lifecycle. Add or delete lines as appropriate. Based on your assessment of Acquisition Costs, please answer the questions listed below in this section.*

**The following chart represents the Acquisition Costs for the stated project period. Detailed composition of these numbers are found in the attached project cost spreadsheet.**

| | |
|---|---|
| IT Activity Lifecycle: | 10 Years |
| **Total Lifecycle Costs:** | **$ 2.96M** |
| ***PROJECT COSTS:*** | ***$406K*** |
| ***Software Costs:*** | ***$0*** |
| ***Implementation Services:*** | ***$233K*** |
| ***Internal Costs including staffing:*** | ***$163K*** |
| ***Other:*** | ***$10K*** |
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| Difference Between Current and New Operating Costs: | **$654K increase over 10 years ($1.2M increase to State of VT funding sources, decrease of $564K to Federal funding sources)** |
| Funding Source(s) and Percentage Breakdown if Multiple Sources: | See table below |

**Funding Source(s) and Percentage Breakdown if Multiple Sources:**

| FUNDING SOURCE | % of TOTAL | FUNDING SOURCE DESCRIPTION | FUNDING APPLIED TO (Implementation or Operations) | FUNDING AMOUNT |
|---|---|---|---|---|
| STATE FUNDING: Implementation; General Fund Carryforward | 6.96% | State General Fund #10000; $450K carryforward, split over Impl and Ops | Implementation | $206,161 |
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| STATE FUNDING: Operations | 42.66% | State General Fund | Operations | $1,262,872 |
| FEDERAL FUNDING: Implementation; Library Services and Technology Act/LSTA), from the Institute of Museum and Library Services (IMLS); See https://www.imls.gov/grants/grants-states | 6.76% | CFDA: 45.310; Grant Number: LS-00-15-0046-15 (funding year FFY15 ends September 30, 2016: $912K); Grant Number: LS-00-16-0046-16 (funding year FFY16 ends September 30, 2017; $914K) | Implementation | $200,000 |
| FEDERAL FUNDING: Operations; LSTA; | 35.38% | LS-00-15-0046-15 ; LS-00-16-0046-16; Keep Sirsi/Dynix running Year 1, new system thereafter | Operations | $1,047,359 |
| **TOTAL:** | **100.00%** | | | **$2,960,231** |

## 5.1 Cost Validation

*Describe how you validated the Acquisition Costs.*

The Acquisition Costs were validated through the following methods:

1. Comparison of Hourly Rates of Similar Services
2. Comparison with Projects of Similar Scope
3. Comparison with Other Bidders

**1. Comparison of Hourly Rates of Similar Services:**

Hourly rates are not considered a component of the bid nor of the service type requested, as all items are requested as fixed price. As such, the effective hourly rate is not assessed.

**2. Comparison with Projects of Similar Scope:**

Vendor provided the following projects that are stated to be similar in Scope.

**Tennessee State Library & Archives 403 Seventh Avenue North Nashville, TN 37243-0312**
Project Start Date: April 1, 1988
Project Description & Goals: To build a physical union database comprised of the state's 200 public libraries. The project involves working with small, medium and large Tennessee public libraries in the creation of a statewide ILL system for the state's public library community. ISO 10160/10161 is used for transfer to OCLC and ILLiad sites along with an existing in state ILL delivery system. The goals are to create a cohesive system and regardless of size the library would have an equal opportunity to use the state's public library resources.

**Wisconsin Department of Public Instruction 2109 S. Stoughton Road Madison, WI 53716**
Project Start Date: 2002
Project Description & Goals: To build a hybrid physical union and virtual statewide system for multi-type library system. The goals were to allow "equity to access" as the states has very small rural, mid-size publics and large publics along with a large school (K-12) community and academic community.

**Mississippi Library Commission 3881 Eastwood Drive Jackson, MS 39211**
Project Start Date: 2004
Project Description & Goals: To build a completely virtual system for the 48 county public library ILS systems throughout the state. This would include ISO 10160/10161 and extensive use of Z39.50 for the various systems participating in the environment.

**State Library of Louisiana 701 North 4th Street Baton Rouge, LA 70802**
Project Start Date: 2008
Project Description & Goals: To build a physical union database for the state's 60 parish libraries. The former vendor was no longer supporting their ILL system as was not able to reach contractual goals for the project. Auto- Graphics was able to re-build the system in less than 60 days along with training in order to keep the states libraries ILL LoanShark system available.

Additional data elements considered include:

| LIBRARY | DATE LIVE | LIBRARIES REPRESENTED | HOLDINGS |
|---|---|---|---|
| Vermont State Library | | 152 | 2,637,182 |
| South Dakota State Library | | 151 | 3,154,542 |
| State Library of Kansas | 2/23/1992 | 648 | 3,957,912 |
| State Library of Arkansas | 12/14/2011 | 123 | 1,442,466 |
| State Library of Louisiana | 3/10/20008 | 127 | 6,760,913 |
| Wisconsin Department of Public Instruction | 1/3/2002 | 690 | 8,713,946 |
| Tennessee State Library & Archives | 10/1/1996 | 321 | 7,987,654 |
| New Jersey State Library | 7/1/2002 | 216 | 5,426,368 |
| British Columbia Library Association | 10/1/2007 | 104 | 7,700,596 |
| State of Indiana | | 273 | 262,455 |
| Access PA | | 2,600 | 41,773,000 |

The pricing model used by AG is a function of the following items:

- **ILL**: The ILLL pricing model uses the number of ILL (given or calculated), the number of member ILL libraries, the type of member libraries and the level of standards used (NCIP, SIP2, ISO and Z39.50) among these member libraries.
- **ILS**: The ILS pricing model uses type of library, bib, item, patron and circulations counts and what modules are required by each ILS member.

This fairly complex pricing matrix makes it difficult to get a completely accurate apples to apples comparison, but vendor has assured the Independent Reviewer that prices are comparable. In further asking the vendor to confirm this information, the following comparison chart was provided. The other customers are made anonymous for purposes of this report, but that detail is available if needed:

| State System | Annual SaaS | Number of Libraries | Estimated Number of ILL Request | Population | By Lib #'s | By ILL Request | By Population |
|---|---|---|---|---|---|---|---|
| **Vermont** | $ 174,480 | 382 | 85,000 | 625,317 | $ 457 | $ 2.05 | $ 0.28 |
| **W** | $ 278,819 | 273 | 285,000 | 6,596,855 | $ 1,021 | $ 0.98 | $ 0.04 |
| **X** | $ 267,910 | 100 | 100,000 | 863,634 | $ 2,679 | $ 2.68 | $ 0.31 |
| **Y** | $ 462,000 | 385 | 41,000 | 6,549,352 | $ 1,200 | $ 11.27 | $ 0.07 |
| **Z** | $ 112,000 | 75 | 101,822 | 4,649,676 | $ 1,493 | $ 1.10 | $ 0.02 |

Finally, there is other cost data available for comparison, such as Annual License Fee per Library of $640-$1,000 and Data Conversion per Library of $2-3K, and those costs for other projects are comparable to Vermont's costs.

In summary, the VT project costs are in line with comparably scoped projects.

**3. Comparison with Other Bidders:**

Three other bids were evaluated, two of which we are able to develop an apples-to-apples comparison with.

The key components evaluated among the other bids are listed in the left most column, and relative pricing totals on the last row:

| | Selected Bidder | Bidder 1 | Bidder 2 | Bidder 3 |
|---|---|---|---|---|
| **5 Year ILL and ILS Software Cost** | $906K | $375K | $1.15m | $83K |
| **ILL and ILS Implementation Services** | $90K | $7K | $75K | $25K plus custom coding @ $180/hour |
| **Circulation Record Add On Cost** | $63K | $97K | $0 | $0 |
| **Additional Library – Cost per Implementation (assume 20 libraries)** | $2.4K each<br>$48K total | $13K each<br>$260K total | $2K-$10K each<br>Avg of $5K; $100K total | Hourly @ $180/hour |
| **TOTAL 5 YEAR** | **$1.1M** | **$770K** | **$1.3M** | **Not able to create apples to apples comparison** |

In summary, the VT project costs are within a reasonable range with other bidders on this project.

## 5.2 Cost Comparison

*How do the above Acquisition Costs compare with others who have purchased similar solutions (i.e., is the State paying more, less or about the same)?*

| Point of Comparison | Measure |
|---|---|
| Hourly Rates: | Hourly rates are not measured, as they are not a component of this project. |
| Similarly Scoped Projects: | Costs are **comparable** to other similarly scoped projects. |
| Comparison with other bidders: | Costs are **comparable** to other bids. |

## 5.3 Cost Assessment

*Are the Acquisition Costs valid and appropriate in your professional opinion? List any concerns or issues with the costs.*

As outlined in the Cost Comparison **Section 5.2** above, in summary, this project costs are comparable to other project costs and appear to be reasonable costs given the expected value to be delivered.

**Additional Comments on Acquisition Costs:**

None.

# 6. Technology Architecture Review

*After performing an independent technology architecture review of the proposed solution, please respond to the following.*

**SUMMARY**:

1. Services to implement SHAREit (ILL) and VERSO (ILS) Software as a Service (SaaS) from Auto-Graphics, the software vendor.
2. Hosting environment provided by Switch managed by Synoptek.
3. Internal Project Management and Subject Matter staff supporting the project.

See **Appendix 4** for detailed technology specifications.

**1. State's IT Strategic Plan:** Describe how the proposed solution aligns with each of the State's IT Strategic Principles:

i. Leverage successes of others, learning best practices from outside Vermont.
ii. Leverage shared services and cloud-based IT, taking advantage of IT economies of scale.
iii. Adapt the Vermont workforce to the evolving needs of state government.
iv. Apply enterprise architecture principles to drive digital transformation based on business needs.
v. Couple IT with business process optimization, to improve overall productivity and customer service.
vi. Optimize IT investments via sound Project Management.
vii. Manage data commensurate with risk.
viii. Incorporate metrics to measure outcomes.

b. The following describes how this project exploits these principles:

i. Leverage successes of others, learning best practices from outside Vermont.
   1. *The proposed solution is proven and in use in many other states.*

ii. Leverage shared services and cloud-based IT, taking advantage of IT economies of scale.
   1. *The application will be hosted in a Switch data center in Las Vegas, managed by Synoptek.*

iii. Adapt the Vermont workforce to the evolving needs of state government.
   1. *The proposed solution is expected to leverage best practices to streamline business processes, and improve workflow/automate process, thus, saving time compared to some currently manual processes.*

iv. Apply enterprise architecture principles to drive digital transformation based on business needs.
   1. *If Enterprise Architecture is defined as "alignment between IT and business concerns: to guide the process of planning and design the IT/IS capabilities of an enterprise in order to meet desired organizational objectives", then this project does deploy such principles to drive digital transformation of business needs by utilizing current database and web-based technologies to facilitate more efficient business processes and more complete data management (more data tracked, more accurate data).*

v. Couple IT with business process optimization, to improve overall productivity and customer service.
    1. *This project is expected to improve productivity, as noted in iii and iv above. Additionally, the expected outcome of more accurate and timely data, and improved functionality is expected to improve customer service levels.*

vi. Optimize IT investments via sound Project Management.
    1. *Both the vendor and SOV are expecting to provide sound Project Management services on this initiative.*

vii. Manage data commensurate with risk.
    1. *The approach to data security is sound. See the SECURITY section below.*

viii. Incorporate metrics to measure outcomes.
    1. *This project has established metrics to target. See **Section 4.2** for details.*

2. **Service Level(s):** What is the desired service level for the proposed solution and is the technical architecture appropriate to meet it?

   **Desired Service Levels** were not defined in the RFP. See the ***Service Level Agreement*** section below for a description of the Service Levels the vendor is proposing.

3. **Sustainability:** Comment on the sustainability of the solution's technical architecture (i.e., is it sustainable?).

   A Windows Server/SQL Server based platform, built using the .NET development environment is expected to be sustainable.

4. **License Model:** What is the license model (e.g., perpetual license, etc.)?

   The proposed solution is a software as a service (SaaS) model, with pricing comprised of an annual software subscription.

   The software subscription pricing is a function of a calculation considering the following factors:
   - **ILL**: The ILLL pricing model uses the number of ILL (given or calculated), the number of member ILL libraries, the type of member libraries and the level of standards used (NCIP, SIP2, ISO and Z39.50) among these member libraries.
   - **ILS**: The ILS pricing model uses type of library, bib, item, patron and circulations counts and what modules are required by each ILS member.

   See the cost spreadsheet for the detailed components of what comprises the proposed solution.

5. **Security:** Does the proposed solution have the appropriate level of security for the proposed activity it will perform (including any applicable State or Federal standards)? Please describe.

   The overall Application and Data Security Model appears sound.

   **Security Architecture and Design:** Describe the Vendor's proposed approach to support technical controls and technology solutions that must be secured to ensure the overall security of the System:

   **Application Security Model:**

   1. Adheres to CIA triad of Confidentiality, Integrity and Availability throughout the logical and physical architecture of the system. The system applies the .Net application security model. The logical architecture focuses on separation of concerns by grouping the services into three layers, User Services, Business services and Data services. SSL provides a point-to-point secure communication channel. Data sent over the channel is completely encrypted.
   2. All security related requests are brought to the attention of the product managers and a change ticket is immediately logged for analysis and mitigation. Solutions are tested, security tested, penetration tested and released to Quality Assurance for acceptability testing and release to production.

   **Data Security Model:**

   1. AG builds and deploys highly complex and adaptive Enterprise Information Systems, with a "baked-in" Security Architecture. The solutions provide Identification, Authentication, Authorization, and Auditing (IAAA) capabilities compliant with security guidelines, using both Roles and Attribute-Based Access Controls (RBAC/ABAC), integrated to provide both the strength and agility needed to expertly manage the security of the software and data.
   2. AG uses a data centric approach to data access management answering four specific questions: 1) Where is the Data? 2) What is the Data? 3) Who has access to the Data? And 4) Why do they need access to the data? AG uses case diagrams, data-flow diagrams, workflow diagrams, security plan and user stories as part of the security plan.
   3. The following list a few guidelines documented for the development, design and deployment of the solution:
      - Conduct all data validation on a trusted system.
      - Specify proper character sets, such as UTF-8, for all sources of input.
      - All validation failures should result in input rejection.
      - Determine if the system supports UTF-8 extended character sets and if so, validate after UTF-8 decoding is completed
      - Validate all client provided data before processing, including all parameters, URLs and HTTP header content (e.g. Cookie names and values). Be sure to include automated post backs from JavaScript, Flash or other embedded code.
      - Validate for expected data types.
      - Validate data range.

   **Static Code Review Findings:**
   None conducted. No results from past tests provided.

   **Penetration Test Findings:**
   None conducted. No results from past tests provided.

Additionally, in the attached **Smart Libraries** newsletter (SmartLibrariesNewsletter_January-2015.pdf), you will see that the proposed solution scored favorably in the following areas:

1. Online Catalog or Discovery Patron Interactions
    a. Enforce encryption through SSL for all transactions involving patron activity
    b. Offer the library an option to enable SSL for all transactions involving patron activity
    c. Enforce encryption for specific pages or transactions involving patron details or login credentials: Yes. If the customer selects the option to enforce encryption, all pages are encrypted, all credentials and all transactions, using SSL. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
    d. Offer the library an option to enable SSL for specific pages or transactions involving patron details or login details: Yes. As noted, if the library enables SSL it is enabled on all pages, all transactions and on all credentials passing in the UI. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
2. Security of Transactions Conducted by Library Personnel
    a. Enforce encryption through SSL or other encryption mechanisms for all transactions.
    b. Offer the library an option to enable SSL or other encryption mechanisms for all transactions.
    c. Enforce encryption for specific pages or transactions involving patron details.
    d. Enforce Encryption for specific pages involving authentication of library personnel accounts: Yes. As noted, if the library enables SSL it is enabled on all pages, all transactions and on all credentials passing in the UI. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
    e. Offer the library an option to enable SSL for specific pages involving patron details. Yes. As noted, if the library enables SSL it is enabled on all pages, all transactions and on all credentials passing in the UI. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
    f. Enforce encryption for specific pages involving authentication of library personnel accounts: Yes. As noted, if the library enables SSL it is enabled on all pages, all transactions and on all credentials passing in the UI. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
    g. Offer the library an option to enable SSL for specific pages involving patron details: Yes. As noted, if the library enables SSL it is enabled on all pages, all transactions and on all credentials passing in the UI. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
    h. Offer the library an option to enable SSL or other encryption mechanisms for specific pages involving authentication of library personnel: Yes. As noted, if the library enables SSL it is enabled on all pages, all transactions and on all credentials passing in the UI. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
    i. Enforce encryption for transactions involving institutional financial data (acquisitions, patron fines, etc.).
    j. Offer the library an option to enable SSL or other encryption mechanisms for financial transactions: No (The proper answer is no, as all financial transactions must be secured using SSL, even if no other part of the system is.)
3. Internal Storage of Sensitive Data Elements
    a. Does your system store patron passwords or PINs as unencrypted text? No
    b. Does your system store patron passwords or PINs as salted hash or similar mechanisms? Yes
    c. Does your system encrypt patron details as they are recorded and stored? Yes
    d. Are logs or other system files that include patron search or reading behaviors encrypted? Search histories and reading behavior do not contain specific user information. User must

opt-in to save their search history as part of their user record, this data is not encrypted. Reading history is also a user specific opt-in option and is not encrypted.

4. Vulnerabilities Introduced via Third Party Integration: None
5. Vulnerabilities Through APIs
    a. What limitations to security impact your system, imposed by the APIs or protocols managed by external or third-part products? Auto-Graphics, uses protocols such as SIP2, Z39.30 and NCIP (1 & 2), some of these protocols do not use encryption, but they are typically not used to pass patron specific data, as outlined above. NCIP is offered both with and without SSL depending on the other vendor's implementation.

**Two additional items of note:**

The security-related items noted as "Optional" in the Smart Libraries newsletter article referenced above should be confirmed by VTLIB implementation staff to be "activated" during implementation at no additional cost. This is highlighted in the Risk Register.

The implementation should meet the security standards defined by Vermont Statute (Title 22, chapter 4, sec. 172-173). This is highlighted in the Risk Register.

**Vermont Statute (Title 22, chapter 4, sec. 172-173):**
**Title 22 : Libraries, History, And Information Technology**
**Chapter 004 : Library Patron Records**

§ 172. Library record confidentiality; exemptions

(a) A library's patron registration records and patron transaction records shall remain confidential.

(b) Unless authorized by other provisions of law, the library's officers, employees, and volunteers shall not disclose the records except:

(1) with the written permission of the library patron to whom the records pertain;

(2) to officers, employees, volunteers, and agents of the library to the extent necessary for library administration purposes;

(3) in response to an authorized judicial order or warrant directing disclosure;

(4) to custodial parents or guardians of patrons under age 16;

(5) to the custodial parents or guardians of a student, in accordance with the federal Family Education Rights and Privacy Act, by the library at the school the student attends.

(c) Statistical records pertaining to the patronage, circulation activities, and use of any service or consultation the library provides, provided that they do not contain the names of patrons or any other personally identifying information, shall be exempt from the provisions of this chapter. (Added 2007, No. 129 (Adj. Sess.), § 1.)

§ 173. Right of patron action

Any person whose confidential patron registration records or patron transaction records have been disclosed, except as provided in this chapter, is authorized to bring a civil action against the library that disclosed the records. (Added 2007, No. 129 (Adj. Sess.), § 1.)

## 6. Hosting Environment

a. See the **HOSTING** section in **Appendix 4** for details.
b. In summary, application is hosted by Synoptek at Switch's SuperNAP facility in Las Vegas, NV.

7. **Compliance with the Section 508 Amendment to the Rehabilitation Act of 1973, as amended in 1998:** Comment on the solution's compliance with accessibility standards as outlined in this amendment. Reference: http://www.section508.gov/content/learn

   Solution is compliant, and Auto-Graphics has an ongoing program to review the system as it pertains to 508 compliances.

8. **Disaster Recovery:** What is your assessment of the proposed solution's disaster recovery plan; do you think it is adequate? How might it be improved? Are there specific actions that you would recommend to improve the plan?

   Please see DR/BC section described in **Appendix 4**.

   In summary, the attached "*Business Continuity Plan_rev 08042016.pdf*", which describes AG's DR/BC plan, appears adequate in terms of ensuring the restoration of AG's Critical processing within 72 hours, and all essential production (Category II processing) within 2 week(s) of the outage.

   There is not yet a DR/BC Plan available from Synoptek, the IT Services vendor, Switch, the data center vendor, nor AWS or Peer 1 in Canada, DR/BC vendors, although both have been requested. This is noted in the Risk Register.

9. **Data Retention:** Describe the relevant data retention needs and how they will be satisfied for or by the proposed solution.

   Data is retained for 14 days as described in **Appendix 4**.

   There is a question as to whether 14 days is adequate when compared to up a 3 year minimum requirement by State of VT. 14 days is acceptable to Library, and Library is to seek an exception to State 3 year minimum. This is noted in the Risk Register.

10. **Service Level Agreement:** What is your assessment of the service level agreement provisions that the proposed vendor will provide? Are they appropriate and adequate in your judgment?

    The proposed Service Level Agreements appear reasonable. Some exceptions/questions are noted below.

    **Vendor proposed SLAs are described below:**

    **Service Level Guarantee (SLG)**: Contractor will make commercially reasonable efforts to provide the following SLGs where services are managed by the Contractor and specifically associated within a Service Order, Change Order or Scope of Work.

    1. **Network HA:** All managed Network Services that are categorized to be High Availability will be fully operational 99.72% average uptime per month (no more than 2 hours of downtime).
    2. **Servers & Storage HA:** All managed servers, physical or logical (VMs) that are categorized to be High Availability will be fully operational 99.72% average uptime per month (no more than 2 hours of downtime).
    3. **Network Non-HA:** All managed Network Services will be fully operational 99.72% average uptime per month (no more than 2 hours of downtime).

4. **Servers & Storage Non-HA:** All managed servers, physical or logical, will be fully operational 99.58% average uptime per month (no more than 3 hours of downtime).

**Service Level Objectives (SLO):**

1. SERVICE LEVEL OBJECTIVES: A-G will make commercially reasonable efforts to ensure that the Services are fully operational 99.72% average uptime per month (no more than two hours of downtime). Scheduled downtime for preventive maintenance, system upgrades, and other similar maintenance where notice is provided to the Customer shall not be used in calculating average uptime.

2. MAINTENANCE AND SYSTEM SUPPORT: A-G will provide the following maintenance in connection with the Services: a) trouble shooting of the Services for problems under A-G's control; b) provision of updates to the latest version of the A-G Services; c) provision of Services system back-ups including daily transactions and weekly full system back-ups; and d) monitoring of A-G server hardware and A-G internet connections. Telephone diagnostic service is available during the following hours: 8:00am – 8:00pm, Eastern Time, Monday through Friday, excluding standard A-G holidays. From 8:00 am -- 8:00pm Eastern Time customers will be able to call Customer Support and reach a Technical Support Specialist. At 8:00 pm Eastern Time the Help Desk phones will be transferred to the answering service. Emergency support is available 24 hours per day 7 days a week by sending an email to emergencysupport@Auto-Graphics.com with the subject line "System Down" and including the Library name, contact information, and services URL. This emergency email address above should only be used in the event Customer cannot access the Services and the subject line must include the words "System Down." If a message is received with a subject other than "System Down" it will not be responded to until the next available business day. This Email address should NOT be used for general support. General requests should be sent to: HelpDesk@Auto-Graphics.com. What type of issues are addressed in this #2 and what types of issues are addressed in #6 below? There is no difference; This is addressing new releases and questions;

3. CUSTOMER OBLIGATIONS: The Customer will assume responsibility for any updates or changes to the Customer's systems or workstations that may be required to use the Services. Customer shall provide all information, access, and full, good faith cooperation reasonably necessary for the delivery and provisioning of the Services.

4. SERVICES MODIFICATION: A-G reserves the right to adjust or modify the components or functionality of the Services as A-G sees fit in its sole discretion provided that the overall functionality of the Services as described in the documentation is not materially degraded.

5. EXCLUSIONS TO SERVICES – ASSUMPTIONS AND ADJUSTMENTS: The events listed below (the "Excluded Events") shall excuse A-G from meeting the Service Level Objectives set forth in this Schedule B:

i. Outages that occur during a regular maintenance window or emergency maintenance action or that are caused by conditions beyond A-G's control.
ii. Outages caused in full or in part by actions or omission on the part of the Customer, anyone acting by, through or under Customer.
iii. Outages caused in full or in part by equipment, business operations, software or facilities owned by or under the control of the Customer, including any third party equipment.
iv. Customer fails to provide A-G with accurate, up-to-date contact information and A-G support staff is unable to reach Customer's contacts on file when the event in question occurs.
v. The acts or omissions of Customer, its employees, customers, contractors or agents.
vi. The failure or malfunction of equipment, applications or Systems not owned or controlled by A-G.
vii. A publicly reported third party vendor-announced issue that affects A-G until a fix can be reasonably implemented.

6. RESPONSE TIMES: A-G will make commercially reasonable efforts to achieve the response times in the chart appearing below for conditions affecting the functionality of the Services:

| PRIORITY | INCIDENT TYPE | SLO MTRS TARGET | FIRST CONTACT WITHIN | DEFINITION |
|---|---|---|---|---|
| P0 | Critical Event | 1-4 Hours | 60 minutes via Mailing List | Multiple Customer; Critical Infrastructure Event – Service interruption of critical infrastructure, Incident is worked until service is restored. |
| P1 | Major Event | 1-4 Hours | 90 Minutes | Single Customer; Critical Infrastructure Event - Service interruption of critical infrastructure, Incident is worked until service is restored. |
| P2 | Impaired Event | 1-6 Hours | Within 90 minutes via Mailing List | Infrastructure Impairment Event – Significant degradation of service impacting daily operations of multiple users or business critical functions. Incident worked till degradation resolved. |
| P3 | Expedited | 1-6 Hours | 90 Minutes | Escalated Single end user with critical operations impacted or single critical function unavailable - Incident worked until resolved. |
| P4 | Moderate | 3 Business Days | 6 Business Hours | Single end user limited degradation of function/s affected - Business process can continue, or non- mission critical applications. |
| P5 | De-escalation | Driven by Need | N/A | Scheduled timeline or corrective action driven, dependent and led by customer. |
| P6 | General Question | Driven by Need | 3 Business Days | Request that are submitted to the Help Desk that are general how to questions. |

**Note 1**: Software, Network, Hardware, and all related systems are monitored 24/ 7/ 365. Spare hardware and redundancy of hardware provides for the ability to "repair" or return system to an operational status as noted above.

**Note 2**: Software issues are addressed 8am to 5pm Pacific Monday-Friday (except holidays), by A-G Engineering Team. If P0 or P1 software events occur in off hours, A-G Director of Engineering is informed and all efforts are made to resolve the problem until the P0 or P1 event can be functionally reduced to a P2 or lower event class.

**SUMMARY OF SLAs:**

**TECH SUPPORT - SERVICE LEVEL AGREEMENT:**

1. 8:00AM to 8:00PM ET M-F.
2. Discussed the Time Zone difference with Libraries for the section stating 8am-5pm PT, and given Library's scheduled opening of 7:45am ET, the 8am PT start time is not an issue.

**SYSTEM RESPONSE TIME - SERVICE LEVEL AGREEMENT:**

1. System response time for physical union database searching for keyword, author, title or subject will all be under 2 seconds. Searching of virtual targets cannot be guaranteed due to the Z39.50 target server no being under our control.
2. However, cannot find in the SLG or SLO above where the "under 2 seconds" is stated. This is noted in the Risk Register.

**SYSTEM AVAILABILITY - SERVICE LEVEL AGREEMENT (3 9s, 4 9s?):** 99.72% **-** See SLG and SLO above

1. 99.72% – See SLG and SLO above.
2. However, the 99.72% is for SERVER AVAILABILITY. APPLICATION AVAILABILITY is not specified. This is noted in the Risk Register.

**BUG FIX – SERVICE LEVEL AGREEMENT:**

1. 8:00AM to 5:00PM PT M-F.
2. Discussed the Time Zone difference with Libraries for the section stating 8am-5pm PT, and given Library's scheduled opening of 7:45am ET, the 8am PT start time is not an issue.
3. See SLO P0-P6 chart and Note 2 above for details.

**HOSTING SERVICE LEVEL AGREEMENT:**

1. 99.72% – See SLG and SLO above.

**DR/BC DESCRIPTION AND SERVICE LEVEL AGREEMENT:**

1. See SLO above.
2. The attached "*Business Continuity Plan_rev 08042016.pdf*", which describes AG's DR/BC plan, appears adequate in terms of ensuring the restoration of AG's Critical processing within 72 hours, and all essential production (Category II processing) within 2 week(s) of the outage.
3. No formal DR/BC plan provided for 3rd parties (Synoptek, Switch, AWS, Peer 1). This is noted in the Risk Register.
4. Question as to whether RTO of 24 hours is acceptable compared to NFR stated 4 hour resolution time. This is noted in the Risk Register.

**11. System Integration:** Is the data export/reporting capability of the proposed solution consumable by the State? What data is exchanged and what systems will the solution integrate/interface with? ***Please create a visual depiction*** and include as **Appendix 1A** of this report. Will the solution be able to integrate with the State's Vision and financial systems (if applicable)?

The proposed System Integration methodology is consumable by the State, given the industry standard data exchange standards to be used (NCIP, SIP2, etc.).

See **Appendix 1A** for details.

**Additional Comments on Architecture:**

None.

# 7. Assessment of Implementation Plan

## 7.1 Implementation Readiness

*After assessing the Implementation Plan, please comment on each of the following.*

*This section begins with a description of the proposed Implementation Approach submitted by Vendor. This implementation methodology has been proven to be effective with other similar implementations, as noted elsewhere in this report.*

There will be a Project Manager assigned to the **SHAREit** piece of the implementation and a separate Project Manager assigned to the **VERSO** piece of the implementation. All project communication will be directed/routed through these two managers. They will manage all aspects of the implementation with the help of internal team members.

We begin by discussing the project goals and timelines with the customer and identifying what inputs are needed from the customer in order to reach those goals.

One team begins by working with the incoming bibliographic data, analyzing the incoming data and determining how the union database will be built – specifically in terms of past cataloging practices and the effect that has on de-deduplication of the database. If bib record enhancement is needed, that team works with the customer to determine what and how that will be done.

Another implementer works with Vermont in translating current state resource sharing policies to SHAREit's framework - specifically dealing with loan and borrowing policies, configurations, local processing steps, routing lists, etc. Although each specific task is limited and well-defined, our experience is that working with over 100 libraries in a single installation places certain additional demands on both Auto-Graphics and the customer itself.
The project manager will meet with the Vermont team by telephone. Milestones and deadlines are established and assessed. As each step of the environment is built, Vermont will have access to it to view and critique the results.

At the same time, Auto-Graphics staff works with Vermont on ISO 10160 setup and testing, on NCIP setup and testing with other libraries, and on setting up and configuring linkages to the reference databases. This Project Manager will work with the library's staff to monitor and coordinate the details of the implementation of the proposed system. More importantly, the Project Manager will work with the library's staff to ensure the optimal use of the system.

It is this focus on how the system is implemented and not just on what system is implemented that differentiates our proposal from traditional methods. The Project Manager Approach ensures not only that the software is delivered in a timely manner and operates according to Vermont's specifications, but that it is using the software optimally and is achieving its goals and objectives. This, ultimately, is the definition of success.

We see the following teams that will be active during the implementation phases of the project:

1. Batch data processing: to build the physical union catalog. This group works with the incoming data; determines what, if any, record enhancements are desired; deals with deduplication rules; sets up algorithms for record merging; defines locations and holdings information.
2. Z39.50 setup and testing: configuring the virtual Z39.50 targets and ensuring that they bring back search results and location mapping and shelf statuses are accurate.
3. SHAREit setup and configuration: setting up ILL participant records and parameters for each participating library; includes routing lists, various loan parameters, and related setup. Includes both NCIP and ISO-ILL preparation.
4. Training and documentation.

While the vendor does not utilize PMI methodology, the vendor approach and track record indicate their Project Management methodology will yield a successful outcome. Libraries does not have a track record with PMI or PMBOK, so converting from PMI to vendor methodology is not expected to be an issue.

The vendor is expected to produce PMI-equivalent Project Management deliverables. This is noted in the Risk Register.

1. **The reality of the implementation timetable**
    a. Verso: 17 weeks – See detailed work plan below.
    b. SHAREit: Estimated to be 6 months. A function of bringing other Libraries on board
    c. See **Section 4.4** for Deliverables/Milestones.
    d. This is a reasonable schedule given the vendor experience with other similar projects.

**PROPOSED VERSO IMPLEMENTATION SCHEDULE:**

**Policy:** Customers and Auto-Graphics staff work together to implement a new AGent VERSO site. This is sample time line which will be adjusted to meet project goals.

Note:

- All weeks represent working days only, Monday – Friday. Standard delivery days are Wednesdays by 10:00 a.m. ET
- This timeline includes the conversion of circulation transactions, i.e., items on hold, patron current fine balances, items that are lost or claimed returned items that have gone overdue, current items checked out. Does not include fines history.

**Week 1**

| Responsibility | Action |
|---|---|
| Auto-Graphics Project Manager | 1. Reviews sales documentation |
| | 2. Obtains 3 job numbers for data evaluation and load, implementation, and training. Implementation is considered complete once training has taken place. |
| | 3. Checks All Library Files on Computer Operations intranet page to suggest unique lib code. |
| | 4. Sends request to OPS to set-up environment, using the unique lib code. |

**Week 2**

| Responsibility | Action |
|---|---|
| Auto-Graphics Project Manager | 1. Contacts the customer for introductions |
| | 2. For automated libraries,<br>a. Verifies number of bib records<br>b. Finds out which MARC tag their system uses to output local holdings.<br>c. Reviews the general contents of the patron records<br>d. Determines the circulation transactions required by the customer.<br>e. If customer currently uses Follett, requests barcode scan test |
| | 3. Discusses the Making Transition to AGent VERSO document with the customer and sends via email, requesting completed document be returned by the following Wednesday. |
| | 4. Discusses the barcode order forms and send to customer if necessary<br>a. If required, sends portal implementation schedule. |

| | |
|---|---|
| | 5. Explains the next steps, establishing a tentative training session with customer, based on implementation requirements. |

**Week 3**

| Responsibility | Action |
|---|---|
| Customer | 1. Fills out Making the Transition document |
| Auto-Graphics | 2. Answers questions and guides the process on Making the Transition |

**Week 4**

| Responsibility | Action |
|---|---|
| Customer | 1. Sends completed Making the Transition document via email to the Auto-Graphics Project Manager.* |
| | 2. If required, approves completed barcode order form and sends to Auto-Graphics Project Manager. |
| Auto-Graphics Project Manager | 3. Receives Making the Transition document. |
| | 4. Reviews with Customer. |
| | 5. If required, forwards completed barcode order form to Contracts Administrator. |
| | 6. Arranges receipt of bib, patron and transaction files for the following Wednesday. |

*If not received, the balance of the schedule will be impacted.

**Week 5**

| Responsibility | Action |
|---|---|
| Customer | 1. Sends complete current bib file to Auto-Graphics Project Manager.* |
| | 2. Sends complete current patron file to Auto-Graphics Project Manager.* |
| | 3. Sends transaction files to Auto- Graphics Project Manager.* |
| Auto-Graphics Project Manager | 4. Receives and evaluates bib file, working with the Data Conversion Group |
| | 5. Receives and evaluates patron file. |
| | 6. Receives and evaluates transaction files. |
| | 7.Upon confirmation of site set-up from Operations and receipt of completed Making the Transition document from Customer, configures the system including<br>a. Locations/collections<br>b. Item material types<br>c. User records |
| | 8. If site is a hosted license, sends copy of software to Customer, requesting confirmation of receipt via email |
| Customer (hosted license | 9. Confirms receipt of software via email. |

* If not received, the balance of the schedule will be impacted.

**Weeks 6-10**

| Responsibility | Action |
|---|---|
| Auto-Graphics Conversion Team | 1. Continues analyzing input files, making adjustments to conversion programs as needed. |
| | 2. Tests any custom bib data processing. |
| | 3. Tests loading of files |

**Week 11**

| Responsibility | Action |
|---|---|
| Auto-Graphics Project Manager | 1. Reviews the system |
| | 2. Completes Circulation Parameters with Customer. |

**Week 12**

| Responsibility | Action |
|---|---|
| Auto-Graphics Project Manager | 1. Discusses evaluation of bib file with Customer. |
| | 2. Discusses evaluation of patron file with Customer. |
| | 3. Discusses evaluation of transaction file with Customer. |
| | 4. Reviews testing procedures with customer.<br>a. Compare patron checkouts in current system with checkouts in AGent VERSO<br>b. Test barcode scanners with data in AGent VERSO<br>c. Test receipt printers and any other peripheral devices such as a PC |
| Customer | 5. Tests the AGent VERSO system and contacts Auto-Graphics Project Manager with any questions or comments. |
| Auto-Graphics Project Manager | 6. Informs Customer and Contracts Administrator that the system has been delivered. |

**Week 13**

| Responsibility | Action |
|---|---|
| Auto-Graphics Project Manager | 1. Reviews training session requirements with Customer.<br>a. Maximum number of people per session according to the contract.<br>b. The training lab should have an instructor's PC with the ability to project screens from that PC with a projector or LCD panel.<br>c. One workstation per participant is ideal but no more than two participants sharing a single workstation will also work.<br>d. Trainer assumes everyone has a basic knowledge of Windows, the Internet and a Web browser. |
| | 2. Confirms location for training session. |
| | 3. Enters dates for training sessions into corporate calendar. |
| Customer and Auto-Graphics | 4. Determine cutover date to AGent VERSO. |

**Week 14**

| Responsibility | Action |
|---|---|
| Auto-Graphics Project Manager | 1. Works with Customer as data is reviewed. |

**Week 15**

| Responsibility | Action |
|---|---|
| Auto-Graphics Project Manager | 1. Arrives one day before the training session. |
| | 2. Delivers training sessions |
| | 3. Returns the day after training is completed. |
| | 4. Upon return to the office, follows up on any issues that came up during the training session |

**Week 16**

| Responsibility | Action |
|---|---|
| Customer | 1. Closes library for two days. |
| | 2. Ceases all work on legacy system. |
| | 3. Sends final version of bib file to Auto-Graphics Project Manager* |
| | 4. Sends final version of patron file to Auto-Graphics Project Manager* |
| | 5. Sends final version of transactions* |
| Auto- Graphics Project Manager | 6. Upon receipt of bib file,loads into AGent VERSO. |
| | 7. Coordinates with Operations staff to load patron file and transactions. |
| | 8. Tests load process. |
| | 9. Releases system to Customer. |
| Customer | 10. Begins using AGent VERSO |

*All transaction files must be received on 1st day of this week

**Notes: Steps 1-10 occur within a 48 hour time period.**

**Week 17**

| Responsibility | Action |
|---|---|
| Auto-Graphics Project Manager | 1. Writes press release. |
| | 2. Provides contact information to AGent VERSO Product Manager for users' list |
| | 3. Updates contact database on Tech Supp intranet. |
| | 4. Sends Library Services Manager the names of the libraries to add to Elementool's drop down menu. |
| | 5. Adds the customer names and email addresses to the Elementool Help Desk system. |
| | 6. Informs Contracts Administrator that training has been delivered. |

**2. Training of users in preparation for the implementation**

The vendor approach to training, described below, appears sound, and has worked well with vendor's other clients. This training approach appears adequate.

The **system administrator** training occurs via webinar as the system is configured and resources are added. If the contract provides for it, this could also be accomplished via an on-site visit. Topics focus primarily on system default settings and customer super-user functionality for resource management and system-wide settings.

The **general library staff** training may be in-person or via webinar, or a combination of both. Online videos are also available on-demand for specific system modules/functions. A "train-the-trainer" approach is used for larger implementations where the trained personnel then go out and train remaining libraries, or actual training of all library staff can be used if preferred. Typically, one day of training allows library staff to begin using the SHAREit system. Topics include discovery layer (how to find items) and ILL request management (how to manage ILL requests).

**3. Do the milestones and deliverables proposed by the vendor provide enough detail to hold them accountable for meeting the Business needs in these areas:**

A. Project Management
B. Training
C. Testing
D. Design
E. Conversion (if applicable)
F. Implementation planning
G. Implementation

Please see Deliverables/Milestones Section (**Section 4.4**) for detail on Milestones and Deliverables as well as the VERSO Project Schedule listed in the beginning of this section.

The short answer is yes, there is sufficient detail where the vendor can be held accountable.

**4. Does the State have a resource lined up to be the Project Manager on the project? If so, does this person possess the skills and experience to be successful in this role in your judgement? Please explain.**

a. Libraries has allocated Tom McMurdo to this effort. Mr. McMurdo is expected to allocate up to 50% of his schedule to this effort.
b. Vendor has allocated two staff members to this effort for PM services, as described below.
c. In summary, Project Management approach, resources, time allocation and skill set, are adequate.

**5. Readiness of impacted divisions/departments to participate in this solution/project**

**a. Libraries has assembled the following team for this project:**

i. Martha Reid, State Librarian, **Project Sponsor**
ii. Tom McMurdo, Collections & Digital Initiatives Librarian, **Project Manager**
iii. Mara Siegel, Head of Interlibrary Loan, Subject Matter Expert
iv. Jeremiah Kellogg, Statewide Library Consultant, Subject Matter Expert

**b. The vendor team includes:**

i. Chuck Felten, Director of Customer Service
ii. Ruth Castillo, Project Manager, 30-year history with Auto-Graphics
iii. Paul Morrell, Customer Service Manager
iv. Mary Clark, SHAREit Product Manager, 30-year library industry history, 9 years with Auto-Graphics
v. Ted Koppel, VERSO Product Manager, 30+ years library industry history
vi. Oliver Weiler, Manager of Computer Operations, 20+ year systems and network experience, 19 years with Auto-Graphics
vii. Maureen Graham, Customer Service Manager

**Ruth Castillo (VERSO) and Paul Morrell (SHAREit) are expected to be assigned as Project Managers.**

Based on our experience conducting IRs, when comparing this project to other technology projects, both the vendor and department staff appear to be fully prepared to undertake a project of this scope.

**6. Adequacy of design, development, migration/conversion, and implementation plans**

This section describes vendor's approach to **design and development**.

Not applicable for this project, as this is a SaaS solution with a standardized version of code placed into production.

This section describes vendor's approach to **System Integration**.

In summary, the **System Integration** approach appears sound and adequate.

SHAREit uses NCIP, Z39.50, SIP2 and ISO to interact with other systems to acquire bibliographic, item and item status within each ILS. The first method uses AG's Z39.50 client which has been tested and in production with every Z39.50 target in the library automation space. The actual mechanism uses AG's federated virtual search module which has been in place for over 16 years. While the technology has been updated, the service has been uses by over 15 different statewide systems. NCIP uses a complex set of tables each configured for each ILS systems adaptation of NCIP. While this is a standard, each ILS vendor makes some unique assumptions as to how to interact with another system. Auto-Graphic has tested with all known NCIP ILS systems in North America including Open Source systems. ISO is an older protocol but is used by OCLC to transfer ILL request from one ILL system to another system.

This section describes vendor's approach to **Conversion/Migration**.

In summary, the **Conversion/Migration** approach appears sound and adequate.

Data migration is done by mapping each ILS system to VERSO. The areas of mapping include bib, item and patron and can also include with additional fees the circulation data which includes all current holds, checkouts and current fines and fees. The vendor approach involves reviewing each ILS DB structure for its unique characteristics.

The vendor typically completes two main rounds, but at times there may be as many as 5 to 7 in order to review all aspects of the conversion.

The data source(s) will actually be from the various ILS systems in use. It is not anticipated that there will be any legacy ILL data.

This section describes vendor's approach to **Implementation**.

In summary, the **Implementation** approach appears sound and adequate.

The one area that requires additional detail is deliverable acceptance criteria, as that has yet to be developed. This is noted in the Risk Register.

The implementation approach to be used for this project is summarized as follows:

The following teams that will be active during the implementation phases of the project:

- **Batch data processing**: to build the physical union catalog. This group works with the incoming data; determines what, if any, record enhancements are desired; deals with deduplication rules; sets up algorithms for record merging; defines locations and holdings information.

- **Z39.50 setup and testing**: configuring the virtual Z39.50 targets and ensuring that they bring back search results and location mapping and shelf statuses are accurate.

- **SHAREit setup and configuration**: setting up ILL participant records and parameters for each participating library; includes routing lists, various loan parameters, and related setup. Includes both NCIP and ISO-ILL preparation.

- **Training and documentation**: team to develop training and documentation materials and deliver training.

7. **Adequacy of support for design, development, conversion/migration, and implementation activities**

    a. **DESIGN/DEVELOPMENT:**
        i. Not applicable.

    b. **CONVERSION/MIGRATION:**
        i. Both Vendor and Libraries demonstrate adequate support in this area.

    c. **IMPLEMENTATION:**
        i. Both Vendor and Libraries demonstrate adequate support in this area.

8. **Adequacy of agency and partner staff resources to provide management of the project and related contracts (i.e. vendor management capabilities)**
    a. Both Vendor and Libraries demonstrate adequate support in this area. See section above regarding Project Management assignments from both Vendor and Libraries.

9. **Adequacy of testing plan/approach**

    Test plans and test cases will be developed as follows:

    - SHAREit test plans and cases are developed as AG defines the requirement of the Customer.
    - VERSO has pre-defined test plans and cases, which were reviewed by the Independent Reviewer and which appear adequate (see attached "*Vermont_NCIP General Testing Scenarios.docx*").
    - AG also uses Microsoft Team Foundation Server to support testing.

    In summary, the **Testing Plan/Approach** appears sound and adequate.

10. **General acceptance/readiness of staff**

    The overall Acceptance and Readiness of Libraries staff is strong. The team is comprised of qualified and interested members, who are highly interested and motivated to deploy this solution.

**Additional Comments on Implementation Plan:**

None.

## 7.2 Risk Assessment & Risk Register

*After performing a Risk assessment in conjunction with the Business, please create a **Risk Register** as an **Appendix 2** to this report that includes the following:*

1. ***Source of Risk**: Project, Proposed Solution, Vendor or Other*
2. ***Risk Description**: Provide a description of what the risk entails*
3. ***Risk ratings to indicate**: Likelihood and probability of risk occurrence; Impact should risk occur; and Overall risk rating (high, medium or low priority)*
4. ***State's Planned Risk Strategy**: Avoid, Mitigate, Transfer or Accept*
5. ***State's Planned Risk Response**: Describe what the State plans to do (if anything) to address the risk*
6. ***Timing of Risk Response**: Describe the planned timing for carrying out the risk response (e.g. prior to the start of the project, during the Planning Phase, prior to implementation, etc.)*
7. ***Reviewer's Assessment of State's Planned Response**: Indicate if the planned response is adequate/appropriate in your judgment and if not what would you recommend.*

See **Appendix 2.**

**Additional Comments on Risks:**

None.

# 8. Cost Benefit Analysis

*This section involves four tasks:*

***1)*** *Perform an independent Cost Benefit Analysis.*

***2)*** ***Create a Lifecycle Cost Benefit Analysis spreadsheet*** *as an* ***Appendix 3*** *to this report. A sample format is provided.*

*a) The cost component of the cost/benefit analysis will include all one-time acquisition costs, on-going operational costs (licensing, maintenance, refresh, etc.) plus internal costs of staffing and "other costs". "Other costs" include the cost of personnel or Vendors required for this solution, enhancements/upgrades planned for the lifecycle, consumables, costs associated with system interfaces, and any costs of upgrading the current environment to accept the proposed solution (new facilities, etc.).*

*b) The benefit side of the cost/benefit will include: 1. Intangible items for which an actual cost cannot be attributed. 2. Tangible savings/benefit such as actual savings in personnel, Vendors or operating expense associated with existing methods of accomplishing the work which will be performed by the proposed solution. Tangible benefits also include additional revenue which may result from the proposed solution*

*c) The cost benefit analysis will be for the IT activity's lifecycle.*

*d) The format will be a column spreadsheet with one column for each year in the lifecycle. The rows will contain the itemized costs with totals followed by the itemized benefits with totals.*

*e) Identify the source of funds (federal, state, one-time vs. ongoing). For example, implementation may be covered by federal dollars but operations will be paid by State funds.*

***3)*** *Perform an analysis of the IT ABC form (Business Case/Cost Analysis) completed by the Business.*

***4)*** *Respond to the questions/items listed below.*

1. **Analysis Description:** Provide a narrative summary of the cost benefit analysis conducted: The approach used was to gather all costs associated with project for a **10 year period**, identify revenue sources for the project, and identify tangible and intangible benefits that might also be used as revenue sources or expense reductions.

    a. COST COMPONENT: See the attached spreadsheet referenced in **Appendix 3** to gain an understanding of:
        i. Source of Funds
        ii. Use of Funds
        iii. Change in Operating Costs

    b. BENEFIT COMPONENT:
        i. See the Tangible and Intangible Benefits described below.

2. **Assumptions:** List any assumptions made in your analysis.
    a. Staff reductions are not expected or contemplated through the implementation of this solution.
    b. There is no revenue recovery anticipated.
    c. Costs are segmented into **Project Cost** and **Operational Costs**

3. **Funding:** Provide the funding source(s). If multiple sources, indicate the percentage of each source for both Acquisition Costs and on-going Operational costs over the duration of the system/service lifecycle.
    a. The primary source of funds include, the following, the detailed amount from which are specified in the attached Project Cost spreadsheet referenced in **Appendix 3**:

| FUNDING SOURCE | % of TOTAL | FUNDING SOURCE DESCRIPTION | FUNDING APPLIED TO (Implementation or Operations) | FUNDING AMOUNT |
|---|---|---|---|---|
| STATE FUNDING: Implementation; General Fund Carryforward | 17.76% | State General Fund #10000; $450K carryforward, split over Impl and Ops | Implementation | $306,161 |
| STATE FUNDING: Implementation; General Fund Carryforward | 8.35% | State General Fund #10000; $450K carryforward, split over Impl and Ops | Operations | $143,839 |
| STATE FUNDING: Operations | 40.71% | State General Fund | Operations | $701,516 |
| FEDERAL FUNDING: Implementation; Library Services and Technology Act/LSTA), from the Institute of Museum and Library Services (IMLS); See https://www.imls.gov/grants/grants-states | 5.80% | CFDA: 45.310; Grant Number: LS-00-15-0046-15 (funding year FFY15 ends September 30, 2016: $912K); Grant Number: LS-00-16-0046-16 (funding year FFY16 ends September 30, 2017; $914K) | Implementation | $100,000 |
| FEDERAL FUNDING: Operations; LSTA; | 27.38% | LS-00-15-0046-15 ; LS-00-16-0046-16; Keep Sirsi/Dynix running Year 1, new system thereafter | Operations | $471,896 |
| **TOTAL:** | **100.00%** | | | **$1,723,412** |

| | |
|---|---|
| **Implementation Costs and Funding:** | **$406,161** |
| **Operational Costs and Funding:** | **$1,317,251** |

4. **Tangible Benefits:** Provide a list and description of the tangible benefits of this project. Tangible benefits include specific dollar value that can be measured (examples include a reduction in expenses or reducing inventory, with supporting details).
    a. There are no tangible benefits that can be monetized through this project.

5. **Intangible Benefits:** Provide a list and description of the intangible benefits of this project. Intangible benefits include cost avoidance, the value of benefits provided to other programs, the value of improved decision making, public benefit, and other factors that become known during the process of analysis. Intangible benefits must include a statement of the methodology or justification used to determine the value of the intangible benefit.
    a. Improved Customer Service
    b. Modern software application that is easily maintainable by the vendor
    c. Increasing Employee Productivity through elimination of manual processes
    d. Strengthening Security (both application and data security)

6. **Costs vs. Benefits:** Do the benefits of this project (consider both tangible and intangible) outweigh the costs in your opinion? Please elaborate on your response.
    a. There are no tangible dollar benefits with this project.
    b. There is no monetary value assigned to the intangible benefits.
    c. Given current operating costs of $180K and the new expected operating costs of $260K, we expect an operating cost increase of roughly $80K annually, with a $406K implementation cost to achieve that.
    d. As such, the monetary benefits do not outweigh the costs. Monetary benefits should not be the reason to pursue this project.

7. **IT ABC Form Review:** Review the IT ABC form (Business Case/Cost Analysis) created by the Business for this project. Is the information consistent with your independent review and analysis? If not, please describe.
    a. Reviewed the IT ABC Form (*eSignedREVISED LibrariesABCform01-12-2016.pdf*) dated 1/12/2016 and related project cost spreadsheet.
    b. It is a comprehensive and fairly detailed cost analysis. Both the Implementation and Operational cost totals were compared to the IR Project Cost Spreadsheet, and numbers are comparable.

**Additional Comments on the Cost Benefit Analysis:**

No additional comments.

# 9. Impact Analysis on Net Operating Costs

*1.) Perform a lifecycle cost impact analysis on net operating costs for the agency carrying out the activity, minimally including the following:*
*a) Estimated future-state ongoing annual operating costs, and estimated lifecycle operating costs. Consider also if the project will yield additional revenue generation that may offset any increase in operating costs.*
*b) Current-state annual operating costs; assess total current costs over span of new IT activity lifecycle*
*c) Provide a breakdown of funding sources (federal, state, one-time vs. ongoing)*
*2.) Create a table to illustrate the net operating cost impact.*
*3.) Respond to the items below.*

As noted in **Section 1.1** above, the Cost Summary for this project is:

| | |
|---|---|
| IT Activity Lifecycle: | 10 Years |
| **Total Lifecycle Costs:** | **$ 2.96M** |
| ***PROJECT COSTS:*** | ***$406K*** |
| ***Software Costs:*** | ***$0*** |
| ***Implementation Services:*** | ***$233K*** |
| ***Internal Costs including staffing:*** | ***$163K*** |
| ***Other:*** | ***$10K*** |
| ***OPERATING COSTS:*** | ***$2.56M*** |
| ***Software Costs:*** | ***$2.1M*** |
| ***Maintain Current Software:*** | ***$72K*** |
| ***Internal Costs including staffing:*** | ***$284K*** |
| ***Hosting:*** | ***$161K*** |
| **CURRENT OPERATING COSTS:** | **$ 914K** |
| Difference Between Current and New Operating Costs: | **$654K increase over 10 years ($1.2M increase to State of VT funding sources, decrease of $564K to Federal funding sources)** |
| Funding Source(s) and Percentage Breakdown if Multiple Sources: | See table below |

**Funding Source(s) and Percentage Breakdown if Multiple Sources:**

| FUNDING SOURCE | % of TOTAL | FUNDING SOURCE DESCRIPTION | FUNDING APPLIED TO (Implementation or Operations) | FUNDING AMOUNT |
|---|---|---|---|---|
| STATE FUNDING: Implementation; General Fund Carryforward | 6.96% | State General Fund #10000; $450K carryforward, split over Impl and Ops | Implementation | $206,161 |
| STATE FUNDING: Implementation; General Fund Carryforward | 8.24% | State General Fund #10000; $450K carryforward, split over Impl and Ops | Operations | $243,839 |
| STATE FUNDING: Operations | 42.66% | State General Fund | Operations | $1,262,872 |
| FEDERAL FUNDING: Implementation; Library Services and Technology Act/LSTA), from the Institute of Museum and Library Services (IMLS); See https://www.imls.gov/grants/grants-states | 6.76% | CFDA: 45.310; Grant Number: LS-00-15-0046-15 (funding year FFY15 ends September 30, 2016: $912K); Grant Number: LS-00-16-0046-16 (funding year FFY16 ends September 30, 2017; $914K) | Implementation | $200,000 |
| FEDERAL FUNDING: Operations; LSTA; | 35.38% | LS-00-15-0046-15 ; LS-00-16-0046-16; Keep Sirsi/Dynix running Year 1, new system thereafter | Operations | $1,047,359 |
| **TOTAL:** | **100.00%** | | | **$2,960,231** |

1. See the spreadsheet attached in **Appendix 3** to review impact to Operating Costs.

2. Provide a narrative summary of the analysis conducted and include a list of any assumptions.
    a. The detailed spreadsheet provided with this analysis breaks out costs as follows:
        i. Implementation (Project) Costs: Costs tied specifically to the Vendor. In other words, those costs that are incurred because we are undertaking the project.
        ii. Operating Costs: Internal costs, consisting of staffing and telecommunication costs, and external costs consisting of contracted services and on-going use of the software and related hosting.
        iii. Total Costs: Project Costs plus Operating Costs.
    b. The TOTAL COSTS are broken out as **IMPLEMENTATION (Project) COSTS** and **OPERATING COSTS**.

3. Explain any net operating increases that will be covered by federal funding. Will this funding cover the entire lifecycle? If not, please provide the breakouts by year.
    a. As noted in the chart above, there is a total Operating Cost increase of $654K over 10 years, broken out as a $1.2M increase to State of VT funding sources and a decrease of $564K to Federal funding sources. See the attached Cost Detail spreadsheet for additional details.
4. What is the break-even point for this IT Activity (considering implementation and on-going operating costs)?
    a. There is no break-even point. This project is expected to cost more than current operational costs.

# Appendix 1A - System Integration

**SYSTEM INTEGRATION/INTERFACES**

The following describes the methods to exchange data between the proposed solution and other Library systems (ILS's):

1. *Highest level of integration: Libraries in a shared ILS. All transactions tracked by a single system.*

2. *Next level of integration: Libraries with NCIP-capable systems. Transactions exchanged in NCIP format in real-time.*

3. *Next level of integration: Z39.50 capable systems. Systems with Z39.50 can query other libraries catalogs, but it is an individual log on/log off process for each query. This can sometimes take a while.*

4. *Next level of integration: Libraries with non-Z39.50 capable systems (like LibraryWorld) have two options to transfer data. First, they can provide a full file replacement extracted from their ILS. This file would include both the bibliographic and item records. The second is a partial file (that includes only adds, changes or deletes – also bibliographic and item records. From a workflow perspective, the library would upload the file to a staging FTP server directly managed by Auto-Graphics staff. Libraries can upload the file 24X7 and the library will be updated via e-mail of when the file has been processed. Alternatively, Auto-Graphics can make arrangements to retrieve files loaded on a local sever managed by the ILS.*

5. *Lowest level of integration: Unautomated libraries or libraries with automation systems that cannot produce an extract. Libraries manually produce lists of added and deleted items that are not in MARC format and cannot be directly loaded into a shred system. Requires manual entry into the central system.*

VERSO supports several APIs (web services) that enable external consumers of data to make queries to VERSO and retrieve patron-based data. With appropriate credentials and usage agreements, these can be made available to customers. The preferred way for third party services and devices to access user data is through the use of either SIP2 or NCIP (both standard protocols in the library industry, and both supported by VERSO).

SIP2 is the simpler of the two to implement; most third party services in our industry already support SIP2 for authentication and other services. A relatively simple message structure is used – for example, a SIP 63 message asks for Patron Information, and a SIP 64 message is returned as the Patron Information response, in a defined data format.

NCIP works in a similar, but more sophisticated way than SIP2. NCIP supports a larger number of messages (not all having to do with authentication), a more data-rich set of responses, and a significantly more powerful set of messages that cause actions to be taken.

VERSO supports Z39.50 both as a server (incoming sessions) and as a client (searching other databases and displaying results). This is a core function in a multi-library environment. On the server side, VERSO supports both Bath and USNP Levels 0 and 1. VERSO further supports Z39.50 SCAN capabilities for browse-like retrieval. VERSO servers further support Z39.50 holdings retrieval for clients that are capable of querying the item availability and status of bibliographic records retrieved.

Auto-Graphics is committed to all library and industry resource sharing standards in order to ensure interoperability for our SHAREit system. Auto-Graphics has been at the forefront as an early adopter of technology and standards and using them in our statewide frameworks well ahead of the industry. A-G has supported and used NCIP 1 and 2 since the inception of the standard in 2003; A-G has supported and used ISO 10160/10161 since 2000. SHAREit enhances the virtual/hybrid resource sharing environment by using NCIP for basic lookup of patron data. If SIP2/NCIP are used, the patron's local status can be used as part of the authentication so that if the patron is blocked from ILS privileges those same blocks can extend to ILL privileges. SHAREit supports the required messages in the Circulation-Interlibrary Loan Borrowing and Lending Profiles, which means the system acts as an initiator and a responder; that is, the system sends NCIP messages to and receives messages from compliant local circulation systems.

VERSO uses XML internally for significant amounts of data storage and transmission; in addition VERSO uses XML in external protocols such as NCIP (and various third party APIs) for providing and consuming their data.

The AGent Search API application is a Web Services-based product developed by Auto-Graphics, Inc. for the purpose of providing users an interface to authentication, searching and statistics from a wide variety of information resources.

Other integration points include Payment processors. The proposed solution works with PayPal and Comprise's SmartPay.

# Appendix 1B – Data Migration

The Data Migration approach used by A-G is described below:

During the migration, Auto-Graphics' Project Manager will work closely with the library's assigned project team to create a profile for the data migration project that accurately reflects the library's desired data mapping instructions. Issues such as local holdings mapping and conversion of existing item and customer codes to corresponding Auto-Graphics values will be discussed to ensure the accuracy of the process.

The Auto-Graphics Project Manager will then work with the library to obtain a copy of the database files to be converted. Auto-Graphics will test and analyze copies of library-provided data to determine adjustments to the data for proper loading into the VERSO systems. The Auto-Graphics Project Manager will work closely with the library to make sure that proper data mapping is done for item locations, material types and patron records. If our review reveals significant issues with the data or if the library already has a list of cleanup procedures it wishes to address, the library's assigned project lead and Auto-Graphics-assigned migration specialist can discuss available options. If the library has contracted with Auto-Graphics for custom data conversion or Library of Congress authority control processing services, a profile and planning for these processes will be established during the discovery phase. Depending on the library's capability to customize the output mappings for item and customer records, A-G can provide a layout of preferred record structures to assist in streamlining mappings from the legacy file structures to those used by VERSO. Auto-Graphics will develop a code mapping profile with the library's assistance to change the codes from the current ILS to those that will be used in VERSO. Additionally, the layout of some fields, such as call numbers or notes in the items and demographic data (names, addresses, phone numbers, etc.) or notes in the patron records, will most likely need to be altered to reflect their corresponding structures within VERSO. Assuming the exported data is uniform, these field changes are quite simple and are discussed during the time that the code mappings take place. The culmination of the review period will be the creation of a migration profile that will consist of data normalization instructions and code mappings. This document will be sent to the library for review and signature.

The following data sets can be migrated:

- Bibliographic data
- Item data such as barcodes, locations, material types, item creation date, item comments/notes
- Current Checkouts linked to patrons and including existing checkout and due dates. If items are overdue VERSO will calculate and accrued fines based on the converted polices established in VERSO.
- Current Holds (Item and title level).
- Current unpaid fines

# Appendix 2 - Risk Register

**See attached document:** FINAL-REVIEW-SOV-LIBRARIES-ILS-STS_Risk_Register_FINAL.pdf

# Appendix 3 – Lifecycle Costs and Change in Operating Costs

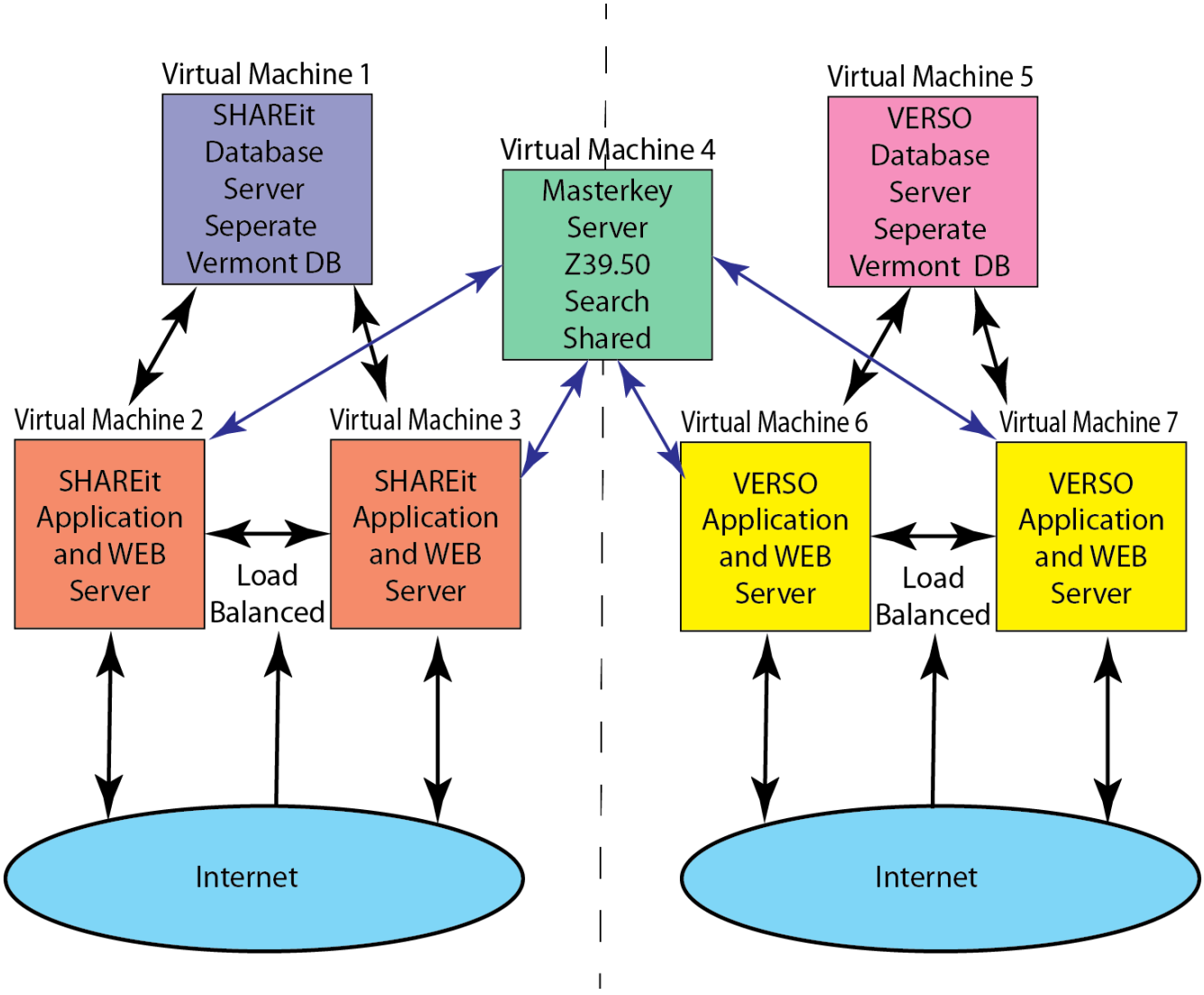
**See attached document:** FINAL-REVIEW-SOV-LIBRARIES-ILS-STS_Cost_Detail_FINAL.xlsx

# Appendix 4 – Technology Infrastructure

The diagram below is an overview of the proposed solution:

3 Virtual Machines for each application, and one Virtual Machine master key database:

- SHAREit: 2 web and 1 database
- VERSO: 2 web and 1 database




**SERVER ARCHITECTURE**

Summary:

- VMWare ESXi (current version)
- Windows Server
- .NET application architecture

Physical Configuration:

- 6 physical hosts running VMWare DRS (Distributed Resource Scheduler) Cluster
- 2 front end load balanced web servers running Auto-Graphics' AGent application talking to a back end SQL Database Server for each the SHAREit and VERSO applications

- Each customer has their own database server

Application Server Standard Configuration:

- The application server is the web server

Web Server Standard Configuration:

- Microsoft Windows Server 2008r2 (Windows Server 2012 supported)
- IIS V7.5 on 2008, IIS Version 8.0 is on 2012

Database Server Standard Configuration:

- Microsoft Windows Server 2008r2 (Windows Server 2012 supported)
- Microsoft SQL Server 2008r2 Standard (SQL Server 2012 standard supported)

**PRODUCTION ENVIRONMENT**

- 2 load balanced Web Servers front ending the application and database server for each the SHAREit and VERSO applications

**TEST ENVIRONMENT**

- A test environment (AG calls it a DEMO server) with the next pending release is available for Library to use prior to that release going into production

**RELEASE TO PRODUCTION**

- Auto-Graphics will generally perform all planned system updates after 7pm (Pacific Time). The customer will always receive ample notice of planned updates including release notes and documentation addendums via the SHAREit User Group listserv. If an emergency update is required, A-G will use its best judgment for deciding when that update can best be applied.

- When major software updates or version changes are released, Auto-Graphics schedules as much lead-time as possible, for customers to learn about the new features and get used to any new changes to the user interface. When possible, A-G sets up a test environment for users to “play” with the new environment prior to going live. Once a major new platform is released to production, it is fully supported as the official SHAREit release.

**CLIENT**

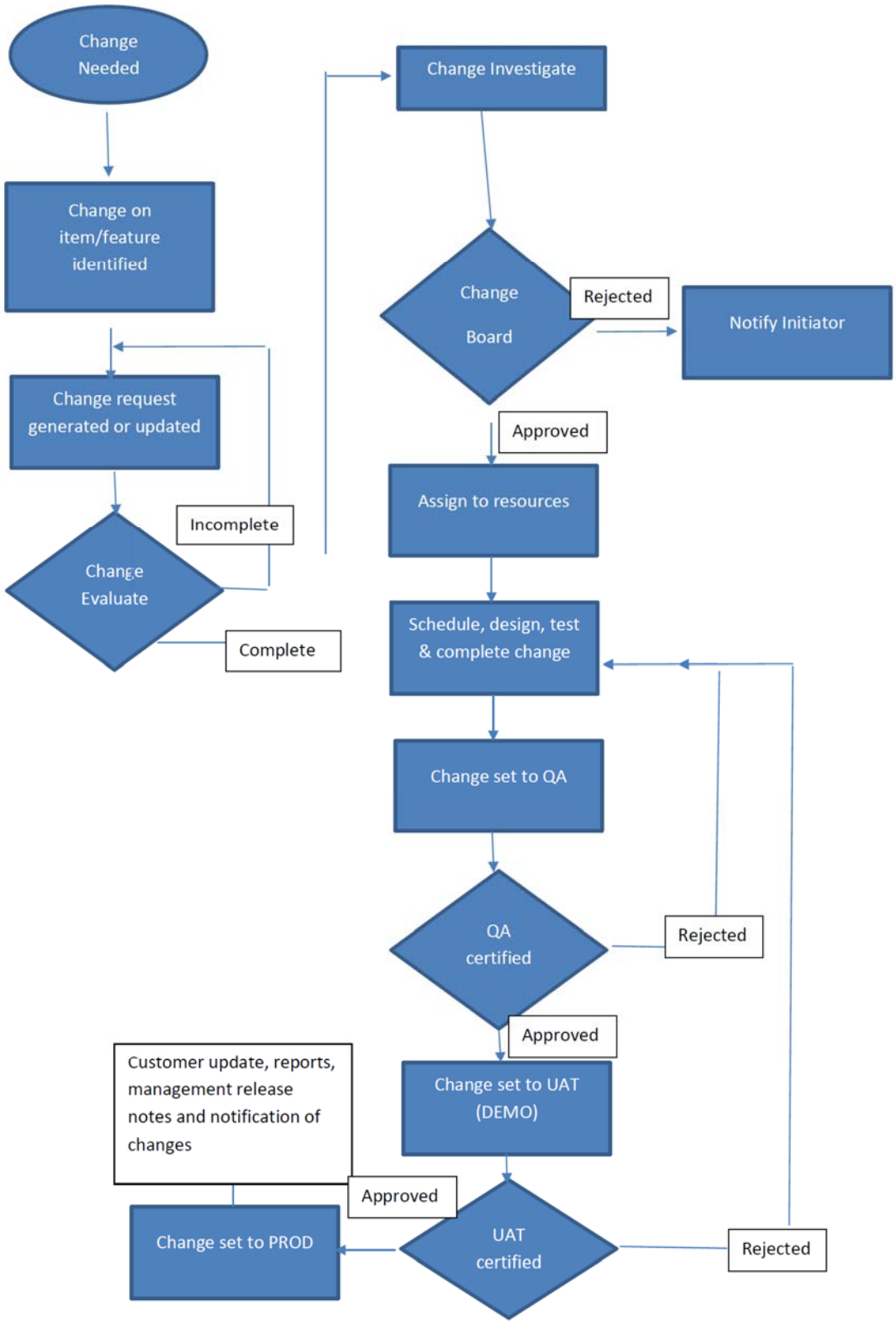
- Client workstation running any of the following browsers:
  - Internet Explorer, 11.0 and above
  - Firefox, current production release
  - Safari, current production release
  - Google Chrome, current production release
- Additionally, VERSO makes use of two Windows applications: AGCat (cataloging) and Offline Circulation, which makes a Windows environment optimal for most efficient operation
- See attached "*AG-SoftwareCompatibilityMatrix.xlsx*" for additional detail

**SOFTWARE DEVELOPMENT**

- The current development environment/toolset is as follows:
  - Framework: C# .NET (Framework 3.5, 4.0)
  - Language libraries: JavaScript/JQuery, HTML 4/5, CSS3, Knockout, AJAX, Single Page Application (Framework - Durandal).
  - Services: WCF
  - Development IDE : Visual Studio 2010/2012, Team Foundation Server 2010/2012
- The development methodology is Agile (rapid development):
  - Auto-Graphics uses Rapid application development software development methodology (agile), which favors iterative development and the rapid construction of prototypes instead of large amounts of up-front planning. The "planning" of software developed using RAD is interleaved with writing the software itself. The lack of extensive pre-planning generally allows software to be written much faster, and makes it easier to change requirements. Tools may include Graphical User Interface (GUI) builders, Database Management Systems (DBMS), code generators, and object-oriented techniques.
  - System Developers split a product into several builds, or partial products, that can be integrated individually. These builds may be chunked into "vertical" increments, covering subsystems, or increments may cross subsystem boundaries to produce a partial end-to-end product.

**CHANGE MANAGEMENT**

- Described in chart below:



**HOSTING**

The application is expected to be hosted at Switch's SuperNAP data center in Las Vegas through a contract between Synoptek, a global data services provider, and Switch. AG has a 3 year hosting contract with Synoptek, with an end date of June 30th, 2018. Switch, Synoptek and Auto-Graphics staff have access to the data.

**SYSTEM MONITORING**

All systems are monitored on a 24/7/365 basis and use Monitoring tools from Nagios with proprietary scripts.

**DISASTER RECOVERY/BUSINESS CONTINUITY**

Failover to AWS in the US. Peer 1 in Toronto, Canada is another hosting site mentioned in the proposal. Risk Register suggests getting clarity in the Contract defining which site is the DR/BC site.

In summary, the attached "*Business Continuity Plan_rev 08042016.pdf*", which describes AG's DR/BC plan, appears adequate in terms of ensuring the restoration of AG's Critical processing within 72 hours, and all essential production (Category II processing) within 2 week(s) of the outage.

No DR/BC Plans were provided by Synoptek, the IT Services vendor, Switch, the data center vendor, nor from AWS or Peer 1, the DR/BC site providers. This is noted in the Risk Register.

**DATA BACKUP/RESTORE**

Backup Plan:

1. Backups: Daily; VM snapshot method for non-database servers. SQL Server backup method for databases
2. Retention: 14 days (There is a question as to whether 14 days is adequate when compared to up a 3 year minimum requirement by State of VT. 14 days is acceptable to Library, and Library is to seek an exception to State 3 year minimum. This is noted in the Risk Register.)
3. Recovery Point Objective (RPO): 24 hours
4. Recovery Time Objective (RTO): 48 hours

Restore Plan:

1. Depends on what needs to be restored: If individual elements, a restoration of affected databases with alternate database names are performed, then necessary elements are copied. For disaster recovery, VM snapshots are restored.
2. Tested quarterly.

## LIBRARIES: Resource Sharing and Integrated Library System Project
## RISK REGISTER DESCRIPTION:

1. Risk Description: Provide a description of what the risk entails
2. Source of Risk: Project, Proposed Solution, Vendor or Other
3. Risk Rating: Risk ratings to indicate: Likelihood and probability of risk occurrence; Impact should risk occur; and Overall risk rating (high, medium or low priority)
4. Risk Strategy: State's Planned Risk Strategy: **Avoid, Mitigate, Transfer or Accept**
    a. Avoid: Avoid the activity; activities with a high likelihood of loss and large impact.
    b. Mitigate: Develop a plan to reduce risk to reduce the risk of potential loss; activities with a high likelihood of occurring, but impact is small.
    c. Transfer: Outsource risk (or a portion of the risk - Share risk) to third party or parties that can manage the outcome; activities with low probability of occurring, but with a large impact. Often times this is transferred back to vendor.
    d. Accept: Take the chance of negative impact, eventually budget the cost (i.e. a contingency budget line); activities where cost-benefit analysis determines the cost to mitigate risk is higher than cost to bear the risk, then the best response is to accept and continually monitor the risk.
5. Timing of Risk Response: Describes the suggested timing for carrying out the risk response (e.g. prior to the start of the project, during the Planning Phase, prior to implementation, etc.)
6. State's Planned Risk Response: Describe what the State plans to do (if anything) to address the risk (See Risk Response table)
7. Reviewer's Assessment of State's Planned Response: Indicate if the planned response is adequate/appropriate in your judgment and if not what would you recommend.

***Department Action Step: Respond to the sections highlighted in yellow (Risk Strategy, State's Planned Risk Response) and send copy back to David Gadway for review***

*NOTE: Hyperlinks are used on the Risk ID. From the Risk Register, CTL-CLICK on a link to see the Risk Response, or from the Risk Response, CTL-CLICK on a link to go back to the Risk Register.*

## RISK REGISTER:

| Risk #: | Risk Description | Source of Risk | Risk Rating: Impact | Risk Rating: Probability | Risk Rating: Overall Risk | **State Risk Strategy Summary** (Avoid, Mitigate, Transfer, Accept) | Timing of Response | Reviewer Assessment of Response |
|---|---|---|---|---|---|---|---|---|
| 1a | Budget/Funding:<br>No risk noted.<br>Adequate funding identified for project. | | | | | | | |

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| 2a | Contract Item:<br>The contract is a major component of the Procurement Advisory Services, and although Procurement Advisory Services has not been included in the Scope of the IR, there are a few contract-related items that warrant noting.<br><br>1. Vendor suggests payment starts early in the process for ILL, yet ILL functionality is said to be a 6 month implementation. Ensure payment is aligned to milestones for both ILL and ILS implementation.<br><br>2. Vendor suggests a System Response Time Service Level Agreement (SLA) of 2 seconds or less, but that is not in their "Service Level Guarantee (SLG)" nor "Service Level Objectives (SLO)" Terms and Conditions. Suggest this be defined in SLG and/or SLO.<br><br>3. Vendor suggests a 99.72% availability, but the SLG and SLO seems to indicate that this percentage applies to SERVER AVAILABILITY. Suggest SLG/SLO specifies this ALSO applies to APPLICATION (software) AVAILABILITY.<br><br>4. Suggest having hosting site failover location clearly defined. Peer 1 in Canada has been used by AG in the past. During the IR, Vendor suggests new and recent use of AWS, but that was only mentioned after asking several times about DR/BC.<br><br>5. Define Deliverables Acceptance criteria. One example is the proposed milestone chart, which sees no specific deliverables between February and December. Consider defining a minimum number of Libraries using the system within that time period, or an average number of Libraries per month during that time period.<br><br>6. The security-related items noted as "Optional" in the Smart Libraries newsletter article attached to the IR report should be confirmed by VTLIB implementation staff to be "activated" during implementation at no additional cost.<br><br>7. The implementation should meet the security standards defined by Vermont Statute (Title 22, chapter 4, sec. 172-173). | Project | High | Low | Medium | Avoid | Prior to contract execution | Risk management plan acceptable if the items mentioned are addressed contractually. Also, suggest defining specific usage of AWS as DR/BC site. |

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| | 8. Receipt of DR/BC plan from Synoptek and AWS. See #7c below. | | | | | | | |
| 3a | Vendor Risk:<br>AG does not follow PMI Project Management methodology, instead, using their own PM Methodology.<br><br>This risk impacts State of VT standards. | Project | Medium | Medium | Medium | Accept | During Project | Risk management plan acceptable, provided vendor produces PMI-equivalent Project Management deliverables. |
| 4a | SOV Service Level/Staffing:<br>No risk noted.<br>Adequate staffing identified for project. | | | | | | | |
| 5a | Project Management Staffing:<br>No risk noted.<br>Adequate Project Management staffing identified for project from both Libraries and AG. | | | | | | | |
| 6a | Project Schedule:<br>VERSO is a 17 week schedule.<br>Getting conflicting information on SHAREit implementation schedule. Initial indications were a 9/1 implementation assuming an 8/15 contract signing. Follow up questions indicate a 6 month SHAREit implementation.<br><br>This risk impacts schedule. | Project | High | Low | Medium | Avoid | Prior to contract | Risk management plan acceptable should contract terms reflect payment for deliverables. |
| 7a | Infrastructure: Hardware Platform:<br>Discuss with Security Group and EA Group whether server infrastructure as designed poses concerns in light of State of VT standards:<br>1. ESXi 6 host DRS cluster<br>2. 2 front end load balanced Windows 2008 or 2012 web servers running IIS pointed to one back end Microsoft SQL Database Server, where each AG Customer has their own database file set<br><br>This risk impacts service delivery. | Project | High | Low | Low | Mitigate | Prior to contract | No longer a risk, given vendor clarity on configuration. |

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| 7b | Infrastructure: Hardware Platform:<br>Discuss with Library whether infrastructure adequately support Library needs:<br>1. 14 days of data retention: *State of VT requires 3 year minimum, per "Attachment C, 13. Records Available for Audit", unless case can be made by Library to the contrary.*<br>2. 24 hour Recovery Point Objective: Is this adequate?<br>3. 48 hour Recovery Time Objective: Is this adequate?<br><br>This risk impacts service delivery. | Project | Low | Low | Low | Mitigate | Prior to contract | Risk management plan is acceptable as long as Libraries makes case that 14 days of data retention is adequate. |
| 7c | Infrastructure: Business Continuity/Disaster Recovery:<br>Suggest gaining DR/BC plans of Synoptek, Switch, and AWS. These were requested as part of the IR, but not produced during the IR Project Duration.<br><br>This risk impacts service delivery. | Project | High | Medium | Medium | Mitigate | Prior to contract | Vendor has been asked for DR/BC information from Synoptek. |
| 8a | Scope/Functional Requirements:<br>No risk noted.<br>Adequate Scope Definition completed prior to issuing RFP. | | | | | | | |
| 8b | Scope/Non-Functional Requirements:<br>See **Appendix A**, which contains questions submitted to Vendor regarding a "NO" answer to key Non-Functional Requirements.<br><br>This risk impacts service delivery. | Project | High | Low | Low | Mitigate | Prior to contract | Security, EA, and VTLIB teams all accept Vendor explanation of "No" NFR responses. This risk has been mitigated. |
| 9a | Interoperability:<br>No risk noted. | | | | | | | |
| 10a | Compliance/Regulatory:<br>No risk noted. | | | | | | | |
| 11a | Security:<br>Possible risk, pending review of Database Server architecture noted in Risk 7a. | Project | High | Low | Low | Mitigate | Prior to contract | No longer a risk, given vendor clarity on configuration. |
| 12a | Other:<br>No Risk Noted. | | | | | | | |

## RISK RESPONSE:

| Risk #: | State's Planned Risk Response and Reviewer's Assessment of State's Risk Response |
|---|---|
| 1a | **STATE'S RISK RESPONSE:**<br>N/A. No risk noted. |
| 2a | **STATE'S RISK RESPONSE:** 1. Payment should be aligned with milestones for both ILL and ILS implementation. Because of the independent review process and variables in the execution of the contract, this will cause inexact timing for the commencement of the project schedule. This will cause a shift in the start date. It is our understanding that there is a degree of flexibility within the project schedule that will allow at least two to three weeks' cushion for delays in startup. It is our expectation that we will not encounter problems with the implementation schedule that significantly impact the project. We will link payment to the completion of milestones in the contract.<br><br>2. The vendor's "Service Level Guarantee (SLG)" and "Service Level Objectives (SLO)" should have a clear, consistent system response time. 2 seconds can be a long time if it is a consistent delay. Of course, we would expect typical performance of the system to be the "or less" of the "2 seconds or less" response time. We will ask the vendor to codify the response time consistently across all terms and conditions.<br>3. We will ask that the vendor define availability (currently quoted at 99.72% availability for servers) across both server and software availability.<br>4. The primary server site for vendor is in the US, but we would request that a backup site be defined. As mentioned, AG's backup site is in Canada. If this is acceptable to DII that the data be stored outside the US, we will ask that AG define the backup as their site in Canada. Alternately, Amazon Web Services (AWS) could be a possible backup. With either of these backup solutions, privacy and integrity of data will be a primary concern. Patron data is protected by law and is a fundamental part of librarianship.<br>5. Deliverables acceptance criteria:<br>a. Implement shared ILS system: the ILS must be installed and fully functional for VTLIB use. It must also be ready for migration of other systems into the shared ILS. The system functions should pass tests and must show successful migration of VTLIB catalog data to the satisfaction of the state.<br>b. Implement resource sharing solution: the resource sharing system is installed and capable of integration with library systems. The system must be integrated and fully operation with VTLIB's installed ILS. The system must demonstrably show that resource sharing is possible through tests and/or demonstrations.<br><br>**REVIEWER'S ASSESSMENT:**<br>Risk management plan acceptable if the items mentioned are addressed contractually. Also, suggest defining specific usage of AWS as DR/BC site. |
| 3a | **STATE'S RISK RESPONSE:**<br>AutoGraphics has a proven track record of successful projects with other clients. While the vendor does not utilize PMI methodology, we are confident AG's Project Management methodology will yield a successful outcome. Because the Department of Libraries does not have a track record with PMI or PMBOK, converting from PMI to AG's methodology is not expected to be an issue.<br><br>**REVIEWER'S ASSESSMENT:**<br>Risk management plan acceptable, provided vendor produces PMI-equivalent Project Management deliverables. |
| 4a | **STATE'S RISK RESPONSE:**<br>N/A. No risk noted. |

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| 5a | **STATE'S RISK RESPONSE:**<br>N/A. No risk noted. |
| 6a | **STATE'S RISK RESPONSE:**<br>Vendor has since provided clarity that SHAREit ILL could be available in as few as two weeks, but typically takes up to 6 months to bring target libraries into the fold.<br><br>**REVIEWER'S ASSESSMENT:**<br>As noted in Risk #2a, getting clarity on deliverables and associated payment is an important contract term. In this case, perhaps x% payment after SHAREit is available and another x% after 5 libraries on the system is a way to address this.<br><br>Risk management plan acceptable should contract terms reflect payment for deliverables. |
| 7a | **STATE'S RISK RESPONSE:**<br>Vendor has since provided clarity on server configuration, namely 3 Virtual Machines for SHAREit (2 web and 1 database) and 3 Virtual Machines for VERSO (2 web and 1 database), and one Virtual Machine master key database.<br><br>**REVIEWER'S ASSESSMENT:**<br>No longer a risk, given vendor clarity on configuration. |
| 7b | **STATE'S RISK RESPONSE:**<br><br>1. 14-day retention of library data is consistent with other vendors in the industry. This short data retention period is integral to the protection of library patron data. Besides the risk of breach by unknown third parties, the risk of extra-legal access by government agencies in violation of the law and professional librarian ethics is a concern. The Department of Libraries strongly supports an "opt-in" stance for patrons to access their history, with the default that the history data not be retained. Consistent with this stance is the practice of deleting data at fourteen days.<br><br>It is rare to encounter a situation where the need for recovery is greater than two weeks, and it is a small risk compared to the risk of retaining patron data against the wishes of citizens and in potential violation of Vermont statute.<br><br>2.RPO – Ideally, want a shorter period, but 24 hours is what we have now, so acceptable.<br>3.RTO – 48 hours is a long time, but if that is worst case scenario, we can live with that.<br><br>**REVIEWER'S ASSESSMENT:**<br>Risk management plan is acceptable as long as Libraries makes case that 14 days of data retention is adequate. RPO and RTO acceptable. |
| 7c | **STATE'S RISK RESPONSE:**<br>A request has been submitted to Synoptek by AutoGraphics for the Synoptek and Switch DR/BC plan as of 8/12/2016.<br><br>**REVIEWER'S ASSESSMENT:**<br>Vendor has been asked for DR/BC information from Synoptek. This information has not yet been received at the point of the IR report submission. |
| 8a | **STATE'S RISK RESPONSE:**<br>N/A. No risk noted. |

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| 8b | **STATE'S RISK RESPONSE:**<br>The items highlighted in yellow are under review by DII's Security team and DII's EA team for confirmation that the vendor supplied responses are acceptable.<br><br>**REVIEWER'S ASSESSMENT:**<br>Independent Reviewer accepts AutoGraphics' responses unless Libraries, Security or EA teams indicate otherwise. Recommend the vendor responses be incorporated into the Contract Terms and Conditions.<br><br>Assessment #2: Security, EA, and VTLIB teams all accept Vendor explanation of "No" NFR responses. This risk has been mitigated. |
| 9a | **STATE'S RISK RESPONSE:**<br>N/A. No risk noted. |
| 10a | **STATE'S RISK RESPONSE:**<br>N/A. No risk noted. |
| 11a | **STATE'S RISK RESPONSE:**<br>Vendor has since provided clarity on server configuration, namely 3 Virtual Machines for SHAREit (2 web and 1 database) and 3 Virtual Machines for VERSO (2 web and 1 database), and one Virtual Machine master key database.<br><br>**REVIEWER'S ASSESSMENT:**<br>No longer a risk, given vendor clarity on configuration. |
| 12a | **STATE'S RISK RESPONSE:**<br>N/A. No risk noted. |

# APPENDIX A – Non-Functional Requirements Not Met By Vendor, with Vendor Response

Items highlighted in yellow: Pending review and acceptance by Libraries, DII EA, and DII Security.

| Tab | Requirement # | Requirement | Question | Auto-Graphics Response |
|---|---|---|---|---|
| H1 Data Center | H1.1.2 | Hosting Service Provider will provide a data center design and operations in compliance with ANSI/TIA-942-A standards | Does the hosting solution not meet ANSI/TIA-942-A standards? | Switch's SUPERNAP facilities meet and exceed the standards of IEEE, ANSI, ASHRAE, 24/7, ISO 9001, SAS 70/SSAE-16, BICSI, the Green Grid Association and more |
| H4 Capacity and Performance | H4.1.47 | The server(s) CPU utilization will not exceed 85%. | What level can be committed to? | Under the virtual cluster environment our target is not to exceed 75% usage, additional servers will be added as needed to meet all long term usage that exceeds our targets |
| H4 Capacity and Performance | H4.1.48 | The server(s) memory utilization will not exceed 90%. | What level can be committed to? | Our target again would be to add memory if memory utilization exceeds our targets for extended periods of time. |
| H4 Capacity and Performance | H4.1.49 | The server(s) disk space utilization will not exceed 80%. | What level can be committed to? | In a sense there is no limit on disk within the environment of the disk array. Disk space is allocated to the environment as needed. As stated our goal is not to exceed 80% of current allocated space. |
| H4 Capacity and Performance | H4.1.53 | Solutions will return a Dashboard report within 5 seconds from all user locations with a high speed network connection (greater than 768KB), 95% of the time (for an average webpage response). | What level can be committed to? | Our system target is to display any staff screen within 5 seconds as noted. Any basic search of the union database or VERSO database (database under our control) will be within 5 seconds. |
| H4 Capacity and Performance | H4.1.54 | Solutions will return a parameter-based report within 20 seconds or less (on average). | What level can be committed to? | Again, the use of the term report does apply to various administrative functions however, most statistical reports are run on a batch or background basis and the time parameter does not apply. The most common “report” of the system is to show the active status of all lending and borrowing for the system and that “report” screen or result should be displayed in 5 seconds or less. The target of any staff or OPAC (online Public Access Catalog) screen(s) in less than 5 seconds is our target |
| H4 Capacity and Performance | H4.1.62 | Query through the UI layer will show results in 15 seconds (on average). | What level can be committed to? | Query via the UI to search for title in the system of the union database will return results in 5 seconds. Searches of Z39.50 targets (outside systems) are outside of our control however the state can set parameters to limit such searches times on outside targets. Our recommendation is a default timeout on such targets of 15 seconds |

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| H9 Security General | H9.1.65 | Hosting Service Provider(s) will regularly undergo third party auditor reviews of production deployments using the standards in the SSAE 16 and ISAE 3402. | Are you saying there are no audits done? Can you provide Audit results? | None of our current library customers have done an audit, nor do we provide such audits. We have had such an audit performed by a one of our "commercial" customers. Under the terms of our contract we cannot share the name of the customer or the results of said audit. The only items that were addressed in prior audits was to change the encryption for passwords and to move the site from an HTTP environment to a HTTPS environment. These changes have been applied to all systems and will be part of the configuration for Vermont's implementations<br>Given the type of data in the two systems (SHAREit and VERSO) as well as the lack of financial and very limited personal data stored in the system, you may wish to evaluate the value, cost, benefit of such an audit.<br>If the state wishes to have such an audit done the costs for said audit will be quoted as a change order |
| H9 Security General | H9.1.80 | Data breaches will be reported to the State within three business days unless otherwise required by law. | What can be committed to? | We will report to the state within three business days unless otherwise required by law.<br>Please note the system does NOT store or contain any financial information on any staff member or patron. In fact, lending libraries do not even know the identity of the borrower, only of his or her library. Patrons are not required to supply any information for lending and borrow and all work can be done by the staff. If a patron should decide to do the borrowing request he or she is only required to supply an email to notification of when the item has arrived at his or her home library. The VERSO system does not store any personal or financial data nor does it require any such data to operate. Third party payment programs as may be required by the customer to collect fines and fees are handled outside the VERSO system with no data saved by VERSO related to said transaction |
| H9 Security General | H9.1.81 | In the event of a security incident, the Hosting Service Provider will complete an incident report to be reviewed with the State. | What can be committed to? | We will provide such an incident report within 7 days |
| H9 Security General | H9.1.84 | Hosting Service Provider will possess an ISO 27002 Certificate of Conformance. (or equivalent certifications) | What can be provided? | The company has done a basic review of the NIST 880-53 and ISO 27002 guidelines and given the lack of personal data and no financial data or |

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| | | | | information required for the system to operate, we feel we have and do provide a level of service that is as good or better than is required. Including redundancy in our hardware, communication, and related environment, and system backups including remote backups. Additional services can be provided if the state would specify such requirements |
| H10 Federal Security | H10.1.3 | Hosting Service Provider will conduct assessments based on security controls described in NIST 800-53. | What can be committed to? | The company has done a basic review of the NIST 880-53 and ISO 27002 guidelines and given the lack of personal data and no financial data or information required for the system to operate, we feel we have and do provide a level of service that is as good or better than is required. Including redundancy in our hardware, communication, and related environment, and system backups including remote backups. Additional services can be provided if the state would specify such requirements |
| SLN4 Monitoring | SLN4.1.9 | Network intrusion alerts are forwarded to the Hosting Service Provider's IT security and Service Desk immediately for review and response. | What can be committed to? | Yes, all network intrusions are monitored and any such intrusion is immediately forwarded to our IT department who then takes corrective action and informs our Customer Service Desk and depending on the severity or effect of such intrusions notifications are made to the effected customers as needed. |
| SLN5 M&O | SLN5.1.12 | Solutions will have critical security patches applied within 24 hours of the patch release. | What can be committed to? | Yes. Critical patches of any kind are released to all customers within 24 hours of the patch being released from our own QA or from vendors such as Microsoft |
| SLN6 SLA | SLN6.1.1 | The availability required for non-production applications will be 99.5%. | Why is this a NO answer, when elsewhere you noted 99.72% availability? | Non-production systems such as test environments are normally operational M-F 8am to 8pm Pacific time. The company tries to make these test systems available 24/7 but will bring them down for updates and for specific testing from time to time. We have said no to 99.5% uptime only because we need the flexibility to update these test systems as needed. |
| SLN6 SLA | SLN6.1.6 | Hosting Service Provider's performance will be measured against three Service Levels: Application Availability, Service Request Resolution Time, and Performance Against the Statement of Work. | What is the measure? | We feel that all three items must be measured for us to meet or exceed your expectations. |
| SLN6 SLA | SLN6.1.21 | If Hosting Service Provider's performance in a given month does not meet an applicable Service Level, the State will be eligible to receive a Service Level Credit as per contract terms and conditions. | Are there no service credits? | Yes. Service credits will be provided based on the severity and level of service or lack therein and the number of libraries that are down and dependent on the root cause of the failure being the responsibility of A-G or items under control |

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|---|---|---|---|---|
| | | | | of A-G, I.e. internet connectivity failure at a library is not the responsibility of A-G. |
| SLN7 ITSM | SLN7.1.1 | Hosting Service Provider will provide the Availability Plan for approval by the State including:… | Why was this answered as NO? What can be provided here? | The answer below may not cover your needs<br><br>We will have a base system up and ready for configuration within 2 weeks of contract signing this is the system availability date. Based on a current estimate of contract signing of early September, we would estimate a system availability of September 20th or so for both SHAREit and VERSO. Again depending on contract signing date. for both systems. Subscription services billing will begin on the 1st of the month following said system availability. Following the building of the instance of the SHAREit system a base database and one or more Z39.50 targets will be configured. Additional configuration will take place as the data is supplied to the company's project manager and as target information is supplied by the member libraries or the designated state contact. The schedule for building the SHAREit system is going to be done in as little as 45 days, but the schedule will be completely dependent on the state and the member libraries ability to deliver data or connection information. The system go live date will be set by the state and your internal implementation goals which we will meet in all cases.<br>VERSO system will also be made available within 2 weeks of contract signing. Upon contract signing the state may deliver to us a set of test data for us to load for initial testing and configuration. Also because some libraries may be bought into the system that do not have an existing ILS system if said libraries can provide lists of ISBN's in their collection the company will extract those records which are in the LC MARC database and add them to the VERSO system. Further details of the implementation will be worked out with the individual libraries or the state as the scope of the VERSO implementation is determined. Actual "go live" date(s) for the VERSO system and the libraries that opt to use it do not have to be the same and will be tailored to meet the needs of the state and/or the libraries involved. In the past some state or |

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|---|---|---|---|---|
| | | | | consortial projects as proposed to Vermont have opted for a single go live strategy while others have opted for a multiple phases approach. A-G will work with either approach based on the states goals or possibly the state/libraries would like to have a variant that is better for their needs, again we can be flexible and will work with the state to be meet your needs |
| SLN9 Audit | SLN9.1.1 | Solutions will maintain a record of all additions, changes and deletions made to data in the system. | What can be committed to? | Transaction reporting is provided for all borrow requests as they "moved" through the system with appropriate transaction reporting as required for the system.<br>Transaction files are created, kept of all actions as would be expected to track the movement of the books within a library.<br>This is NOT necessary, for the main bibliographic database (Union or VERSO Database) changes are made in batch and interactively to add holdings and add records, remove records etc. These changes are coming from third parties and as their data changes we our system must change to match theirs.<br>Various system logs and transaction files exist. Backups are kept and rotated through a backup cycle. |
| SLN9 Audit | SLN9.1.9 | Hosting Service Provider will support an audit of data center operations by a third-party Service Provider, including SSAE-16 and Penetration Test. | What can be committed to? Have any Vulnerability Assessments been completed? If so, can you share results of any, in particular Static Code Review Tests and past Penetration Tests? | We have not done an external audit, nor have we been requested to so by any of our 12 other state contracts.<br>We will be happy to have such an audit performed, the costs for said audit will be provided to the state for approve in the form of a change order |
| SLN19 SaaS | SLN19.1.1 | The State owns and has access to all data at all times. | What can be committed to? | The answer is yes.<br>We will provide any data as may be requested from the SHAREit system.<br>For the VERSO system all data and transactions may be extract by the library staff using the tools provided in the system via the staff interface 24/7 |
| SLN19 SaaS | SLN19.1.3 | SaaS Service Providers will provide evidence of attestation meeting Federal and State compliance regulations. | What can be committed to? | We regularly review federal and state compliance regulations and make adjustments to the system that are required or requested by the user group as needed |
| SLN19 SaaS | SLN19.1.4 | Role-based user access (RBA) and hours of operation will be defined. This includes the Service Provider's resources, the State approved | What can be committed to? | The system availability is the same for all classes of user of the system. The company does not limit access by roles of the user. All users will |

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| | | Service Provider's subcontractor resources, State resources, and State citizen/users. | | have access within the guidelines of our level of service |
| SLN19 SaaS | SLN19.1.5 | Subcontractors of SaaS Service Providers will be bound by the same legal agreements as Service Providers and all requirements will be 'passed down' to them. The State reserves the right to approve all subcontractors prior to commencement of any work. | What can be committed to? | We agree and this is the same condition in most of our state contracts. |
| SLN19 SaaS | SLN19.1.6 | The State will be informed of any change of subcontractors by written notice to the State identified contact as per the Service Provider's contract. | What can be committed to? | We agree and this is the same condition in most of our state contracts. |
| SLN19 SaaS | SLN19.1.7 | SaaS Service Providers will comply with all NFRs, as if the SaaS solution was developed, tested, implemented, and operated on the State's hosted platform. | What can be committed to? | Agreed |
| SLN19 SaaS | SLN19.1.8 | SaaS Service Provider will comply with Service Level Agreements (SLA) as specified in the SLA section of these NFRs including root cause analysis and reporting specified. | What can be committed to? | Agreed |
| SLN19 SaaS | SLN19.1.10 | SaaS Service Providers will submit for State approval a transition out plan including transfer of all State assets and data prior to production commencement. This will include a timeline. SaaS Service Providers will assist the State in a timely transference to new SaaS Service Providers, or to the State directly at the State's direction. | What can be committed to? | We will have a base system up and ready for configuration within 2 weeks of contract signing. Following the building of the instance of the system a basic database and one or more Z39.50 targets will be configured. Additional configuration will take place as the data is supplied to the company's project manager and as target information is supplied by the member libraries. The schedule for building the SHAREit system is going to be done in as little as 45 days, but the schedule will be completely dependent on the state and the member libraries ability to deliver data or connection information. The system go live date will be set by the state and your internal implementation goals which we will meet in all cases<br>VERSO system will also be made available within 2 weeks of contract signing. Upon contract signing the state may deliver to us a set of test data for us to load for initial testing and configuration. Also because some libraries may be bought into the system that do not have an |

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| | | | | existing ILS system, if said libraries can provide a list of ISBN's in their collection the company will extract those records which are in the LC MARC database and add them to the VERSO system. Further details of the implementation will be worked out with the individual libraries or the state as the scope of the VERSO implementation is determined. Actual "go live" date(s) for the VERSO system or libraries do not have to be the same and will be tailored to meet the needs of the state and/or the libraries involved. In the past some state or consortial projects as proposed to Vermont have opted for a single go live strategy while others have opted for a multiple phases approach. A-G will work with either approach or possibly the state/libraries would like to have a variant that is better for their needs. |
| SLN20 Security General | SLN20.1.12 | Database data will be encrypted at the file system layer. | What if any encryption is done? | The bibliographic database is not encrypted.<br>The user passwords are encrypted<br>The system will be set up and run via HTTPS |
| Other | | Server Operating System End of Life | Need detail on exact server Operating Systems in that are in play. Windows Server 2008 R2 Standard was stated as the OS in play. No Service Pack was mentioned. Windows Server 2008 R2 Standard is considered End of Life. | The system is currently running Windows Server 2008 R2 Service Pack 1 with an end of life of 1/14/2020. Alternately we are running Windows Server 2012 R2. The company will be upgrading all systems to Windows Server 2016 during the 1st QTR of 2017 assuming a release by Microsoft of WS 2016 in 4th QTR of 2016 as currently planned |
| | | Server Configuration | How do you isolate the tenants on the App and Database servers? What access controls are in place to ensure separation? | Each customer is run with their own databases and instance of the software.<br>The separate database and instance, URL are used to ensure separation. We think there was a misunderstanding that there was a "shared" database, this is not the case. If there are additional questions, please let us know.<br>See diagram in Appendix 4 of IR report. |

**LIBRARIES: Resource Sharing and Integrated Library System Project**

**STATEMENT OF: Use of Funds (Expenses), Source of Funds (Revenue), Cash Flow, and Net Change in Operating Cost**

Click on the links to the left to go to that data

**CASH FLOW ANALYSIS:** Click Here

| SUMMARY: | |
|---|---|
| **Total Cost:** | $2,960,231 |
| **Total Funding:** | $2,960,231 |
| ***State Funding:*** | $1,712,872 |
| ***Federal Funding:*** | $1,247,359 |
| **Potential Revenue Recovery:** | $0 |
| **Funding Excess/(Shortage):** | ($0) |

| IMPLEMENTATION and OPERATING COSTS: | |
|---|---|
| **Implementation Costs:** | $406,161 |
| **New Operating Costs:** | $2,554,070 |
| **Current Operating Costs:** | $1,900,137 |
| | $ |
| **NET CHANGE IN OPERATING COSTS-Decr./(Incr.):** | ($653,933) |
| State Decrease/(Increase): | ($1,218,301) |
| Federal Decrease/(Increase): | $564,368 |

## USE OF FUNDS - START

| Description | Note | Unit Price | Impl/Ops | Total | | Prior Costs | IMP Year 1 (FY17) | IMP Year 2 (FY18) | IMP Year 3 (FY19) | M&O Year 4 (FY20) | M&O Year 5 (FY21) | M&O Year 6 (FY22) | M&O Year 7 (FY23) | M&O Year 8 (FY24) | M&O Year 9 (FY25) | M&O Year 10 (FY26) | Software Total | Source |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **EXTERNAL-RELATED COSTS** | | | | | | | | | | | | | | | | | | |
| **VENDOR COSTS** | | | | | | | | | | | | | | | | | | |
| **SOFTWARE AND SERVICES** | | | | | | | | | | | | | | | | | | |
| **SOFTWARE** ❶ | | | | | | | | | | | | | | | | | | |
| **Software Being Licensed:** | | | | | | | | | | | | | | | | | | |
| **SHAREit Consortial** | | | | | | | | | | | | | | | | | | |
| SHAREit subscription | | | O | | | | $129,000 | $132,870 | $136,856 | $140,962 | $145,191 | $149,546 | $154,033 | $158,654 | $163,413 | $168,316 | $1,478,840 | Vendor BAFO |
| Union Database sub-system | | | O | | | | $8,000 | $8,240 | $8,487 | $8,742 | $9,004 | $9,274 | $9,552 | $9,839 | $10,134 | $10,438 | $91,711 | Vendor BAFO |
| Virtual Database - Z39.50 sub-system | | | O | | | | $20,000 | $20,600 | $21,218 | $21,855 | $22,510 | $23,185 | $23,881 | $24,597 | $25,335 | $26,095 | $229,278 | Vendor BAFO |
| Additional Software (Kid's Cat, Overdrive, 3M, Syndetics) | | | O | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | Vendor BAFO |
| Optional Software (SIP2, NCIP) | | | O | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | Vendor BAFO |
| **VERSO Consortial (Shared Catalog)** | | | | | | | | | | | | | | | | | | |
| Base system subscription | | | O | | | | $3,305 | $3,404 | $3,506 | $3,611 | $3,720 | $3,831 | $3,946 | $4,065 | $4,187 | $4,312 | $37,888 | Vendor BAFO |
| Inventory | | | O | | | | $50 | $52 | $53 | $55 | $56 | $58 | $60 | $61 | $63 | $65 | $573 | Vendor BAFO |
| Smart Reports | | | O | | | | $520 | $536 | $552 | $568 | $585 | $603 | $621 | $640 | $659 | $678 | $5,961 | Vendor BAFO |
| Kid's Catalog | | | O | | | | $55 | $57 | $58 | $60 | $62 | $64 | $66 | $68 | $70 | $72 | $631 | Vendor BAFO |
| Z39.50 (Client and Target) | | | O | | | | $1,492 | $1,537 | $1,583 | $1,630 | $1,679 | $1,730 | $1,782 | $1,835 | $1,890 | $1,947 | $17,104 | Vendor BAFO |
| Authentication (SIP2) | | | O | | | | $1,174 | $1,209 | $1,245 | $1,283 | $1,321 | $1,361 | $1,402 | $1,444 | $1,487 | $1,532 | $13,459 | Vendor BAFO |
| Outreach | | | O | | | | $789 | $813 | $837 | $862 | $888 | $915 | $942 | $970 | $999 | $1,029 | $9,045 | Vendor BAFO |
| Circ Based ILL | | | O | | | | $5,261 | $5,419 | $5,581 | $5,749 | $5,921 | $6,099 | $6,282 | $6,470 | $6,664 | $6,864 | $60,311 | Vendor BAFO |
| Syndetics Jacket Art | | | O | | | | $1,080 | $1,112 | $1,146 | $1,180 | $1,216 | $1,252 | $1,290 | $1,328 | $1,368 | $1,409 | $12,381 | Vendor BAFO |
| Acquisitions | $329/annually | Not expected to be needed | O | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | Vendor BAFO |
| Serials | $102/annually | Not expected to be needed | O | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | Vendor BAFO |
| **Variable Costs:** | Assumption: 20 in Year 1, plus 10 per year thereafter | | | | | | | | | | | | | | | | | |
| Annual Fee per Library | $650 up to 15 libraries; $800 16-30 libraries | Libraries expected to pay this fee | O | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | Vendor BAFO |
| Added Fee to support additional circulation records as libraries are added | Up to 15 libraries: Circulation of 200K-300K: $10K annually ; > 300K: $20K annually ; 16-30 libraries: Circulation of 600K-800K: $10K annually ; > 800K: $17.5K annually ; Beyond 30 libraries, Circulation of 1M-1.2M; $12K annually ; > 1M: $15K annually | Max of 4M circ, $15K annually; starting in Year 2 | O | | | | $0 | $15,000 | $15,450 | $15,914 | $16,391 | $16,883 | $17,389 | $17,911 | $18,448 | $19,002 | $152,387 | Vendor BAFO |
| | | | | | | | | | | | | | | | | | $0 | |
| **SOFTWARE TOTAL** | | | | | | | **$170,726** | **$190,848** | **$196,573** | **$202,470** | **$208,545** | **$214,801** | **$221,245** | **$227,882** | **$234,719** | **$241,760** | **$2,109,569** | |
| **SERVICES** | | | | | | | | | | | | | | | | | | |
| | | | **Impl/Ops** | | | **Prior Costs** | | | | | | | | | | | | |
| **SHAREit Consortial** | | | | | | | | | | | | | | | | | | |
| Training (two sessions of 3 days each - train the trainers) | | | I | | | | $9,600 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $9,600 | Vendor BAFO |
| SHAREit Implementation | | | I | | | | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $12,000 | Vendor BAFO |
| Union Database Creation | | | I | | | | $16,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $16,000 | Vendor BAFO |
| Z Target Configuration and Mapping | | | I | | | | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $12,000 | Vendor BAFO |
| Build OCLC WMS connectors | | | I | | | | $1,500 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $1,500 | Vendor BAFO |
| **VERSO Consortial (Shared Catalog)** | | | | | | | | | | | | | | | | | | |
| Migration | | | I | | | | $17,500 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $17,500 | Vendor BAFO |
| System Configuration | | | I | | | | $12,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $12,000 | Vendor BAFO |
| Training | | | I | | | | $8,600 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $8,600 | Vendor BAFO |
| **Variable Costs:** | Assumption: 20 in Year 1, plus 10 per year thereafter | | | | | | | | | | | | | | | | | |
| Migration: $2,400 per library | | | I | | | | $48,000 | $24,000 | $24,000 | $24,000 | $24,000 | $0 | $0 | $0 | $0 | $0 | $144,000 | Vendor BAFO |
| Transactions: $7800 per library | Transactions: Reading history, fine history, items lost; etc. Assuming libraries would not do this. | Assuming libraries would not do this. | I | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | Vendor BAFO |
| Training: $4,800 per training (3 days up to 10 libraries per training) | | | I | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | Vendor BAFO |

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Authority Processing | Validate content - $1500 optional item | Not expected to be needed | I | | | $0 | | | | | | | | | | | | |
| Go Live On Site Support | $1850 Optional Item | Not expected to be needed | I | | | $0 | | | | | | | | | | | | |
| Expenses and Travel for Temp Staff | State fleet car at $75. Expect each temp employee may make up to 10 trips per month over six months; 10 X $75 X 6 X 2 = $9,000 plus $1K buffer | | I | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | |
| **Other** | | | | | | | | | | | | | | | | | | |
| Contingency | Nothing allocated at present | | I | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | |
| **TOTAL: IMPLEMENTATION SERVICES** | | | | | **$0** | **$137,200** | **$24,000** | **$24,000** | **$24,000** | **$24,000** | **$0** | **$0** | **$0** | **$0** | **$0** | **$233,200** | | |
| **Other Services:** | | | | | | | | | | | | | | | | | | |
| | | | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | |
| **Other Services Total:** | | | | | | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | | |
| **SERVICES TOTAL** | | | | | **$0** | **$137,200** | **$24,000** | **$24,000** | **$24,000** | **$24,000** | **$0** | **$0** | **$0** | **$0** | **$0** | **$233,200** | | |
| **SOFTWARE AND SERVICES TOTAL** | | | | | **$0** | **$307,926** | **$214,848** | **$220,573** | **$226,470** | **$232,545** | **$214,801** | **$221,245** | **$227,882** | **$234,719** | **$241,760** | **$2,342,769** | | |
| **MAINTENANCE AND OPERATIONS SUPPORT** | | | | | | | | | | | | | | | | | | |
| *Maintenance fees included in SaaS pricing above* | | | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | |
| | | | | | | | | | | | | | | | | **$0** | | |
| **MAINTENANCE AND OPERATIONS SUPPORT TOTAL** | | | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | | |
| **HARDWARE** | | | | | | | | | | | | | | | | | | |
| Hardware for Implementation | None needed | I | $0 | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | |
| Hardware for Operations | None needed | O | $0 | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | |
| **HARDWARE TOTAL** | | | | | | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | | |
| | | | $0 | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | |
| **HOSTING FEES** | **Impl/Ops** | | | | | | | | | | | | | | | | | |
| SHAREit Hosting | | O | | | | $13,000 | $13,390 | $13,792 | $14,205 | $14,632 | $15,071 | $15,523 | $15,988 | $16,468 | $16,962 | $149,030 | Vendor BAFO | |
| VERSO Hosting | | O | | | | $1,040 | $1,071 | $1,103 | $1,136 | $1,171 | $1,206 | $1,242 | $1,279 | $1,317 | $1,357 | $11,922 | Vendor BAFO | |
| **HOSTING TOTAL** | | | | | | **$14,040** | **$14,461** | **$14,895** | **$15,342** | **$15,802** | **$16,276** | **$16,764** | **$17,267** | **$17,785** | **$18,319** | **$160,953** | | |
| **OTHER FEES** | | | | | | | | | | | | | | | | | | |
| *No other fees anticipated* | | | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | |
| | | | | | | | | | | | | | | | | $0 | | |
| **OTHER TOTAL** | | | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | | |
| **TOTAL VENDOR COSTS** | | | **$0** | | **$0** | **$321,966** | **$229,309** | **$235,468** | **$241,812** | **$248,347** | **$231,077** | **$238,009** | **$245,150** | **$252,504** | **$260,079** | **$2,503,722** | | |
| **DII FEES** | | | | | | | | | | | | | | | | | | |
| 3% Charge for DII PMO/EA Services based on total Project and Operations Costs: | | I | $0 | | | **$9,659** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$9,659** | | |
| **DII FEES TOTAL** | | | | | | **$9,659** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$0** | **$9,659** | | |
| **TOTAL EXTERNAL-RELATED COSTS** | | | | | **$0** | **$331,625** | **$229,309** | **$235,468** | **$241,812** | **$248,347** | **$231,077** | **$238,009** | **$245,150** | **$252,504** | **$260,079** | **$2,513,381** | | |
| **INTERNAL COSTS** | | | | | | | | | | | | | | | | | | |
| **DEPARTMENTAL INTERNAL COSTS** | | **Impl/Ops** | | | | | | | | | | | | | | | | |
| Staff Development/Training Auto-Graphics Conference | | O | | | | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $20,000 | | |
| Travel and Expenses | | I | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | |
| WAN Costs | | O | | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | | |
| Sirsi/Dynix | | O | | | | $71,896 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $71,896 | | |
| BaseCamp Project Management | $30/month for up to 100 people | I | | | | $360 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $360 | | |
| Marketing/PR | | I | | | | $20,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $20,000 | | |
| Other 3rd Party Software | | I | | | | $50,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $50,000 | | |
| **Staffing Costs:** ❷ | | | | | | | | | | | | | | | | | | |
| State Staff: Implementation | Per IT ABC Form; | I | | | | $52,414 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $52,414 | ABC #4 | |
| State Staff: Operations | Per IT ABC Form; | O | | | | $0 | $47,913 | $47,913 | $47,913 | $47,913 | $0 | $0 | $0 | $0 | $0 | $191,652 | ABC #4 | |
| Helpdesk Analyst (Job Code 019800): Pay Grade 18 | November 1, 2016 – June 30, 2017 (35 weeks x 40 hours = 1400 hours) | I | | | | $23,254 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $23,254 | Discussion with team | |
| Librarian A (Job Code 220500): Pay Grade 18 | January 1, 2017 – June 30, 2017 (26 weeks x 40 hours = 1040 hours ) | I | | | | $17,274 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $17,274 | Discussion with team | |
| **DEPARTMENTAL INTERNAL COSTS TOTAL** | | | | | | **$237,198** | **$49,913** | **$49,913** | **$49,913** | **$49,913** | **$2,000** | **$2,000** | **$2,000** | **$2,000** | **$2,000** | **$446,850** | | |
| **TOTAL INTERNAL COSTS** | | | | | | $237,198 | $49,913 | $49,913 | $49,913 | $49,913 | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $446,850 | | |
| **TOTAL COSTS (IMPLEMENTATION and OPERATIONS)** | | | | | **$0** | **$568,823** | **$279,222** | **$285,381** | **$291,725** | **$298,260** | **$233,077** | **$240,009** | **$247,150** | **$254,504** | **$262,079** | **$2,960,231** | | |
| **COST BREAKOUT (IMPLEMENTATION and OPERATIONS)** | | | | | | | | | | | | | | | | | | |
| **Implementation** | | | | | | **$0** | **$310,161** | **$24,000** | **$24,000** | **$24,000** | **$24,000** | **$0** | **$0** | **$0** | **$0** | **$0** | **$406,161** | | |
| **Operations** | | | | | | **$0** | **$258,662** | **$255,222** | **$261,381** | **$267,725** | **$274,260** | **$233,077** | **$240,009** | **$247,150** | **$254,504** | **$262,079** | **$2,554,070** | | |
| **COST BREAKOUT TOTALS (IMPLEMENTATION and OPERATIONS)** | | | | | **$0** | **$568,823** | **$279,222** | **$285,381** | **$291,725** | **$298,260** | **$233,077** | **$240,009** | **$247,150** | **$254,504** | **$262,079** | **$2,960,231** | | **$0** |
| **USE OF FUNDS - END** | | | | | | | | | | | | | | | | | | |

## SOURCE OF FUNDS - START

| Revenue Source: | | | | Prior | Year 1 (FY17) | Year 2 (FY18) | Year 3 (FY19) | Year 4 (FY20) | Year 5 (FY21) | Year 6 (FY22) | Year 7 (FY23) | Year 8 (FY24) | Year 9 (FY25) | Year 10 (FY26) | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | $0 |
| **Assume Year 1 and 2 are Implementation related, Years 3-x are Operations related** | | | | | | | | | | | | | | | |
| ❸ | | | | | | | | | | | | | | | |
| STATE FUNDING: Implementation; General Fund Carryforward | 6.96% | State General Fund #10000; $450K carryforward, split over Impl and Ops | I | $0 | $206,161 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $206,161 |
| STATE FUNDING: Implementation; General Fund Carryforward | 8.24% | State General Fund #10000; $450K carryforward, split over Impl and Ops | O | $0 | $243,839 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $243,839 |
| STATE FUNDING: Operations | 42.66% | State General Fund | O | $0 | $80,000 | $80,000 | $100,000 | $100,000 | $125,000 | $125,000 | $150,000 | $150,000 | $175,000 | $177,872 | $1,262,872 |
| FEDERAL FUNDING: Implementation; Library Services and Technology Act/LSTA), from the Institute of Museum and Library Services (IMLS); See https://www.imls.gov/grants/grants-states | 6.76% | CFDA: 45.310; Grant Number: LS-00-16-0046-16 (funding year FFY16 ends September 30, 2017; $914K) | I | $0 | $100,000 | $100,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $200,000 |
| FEDERAL FUNDING: Operations; LSTA; | 35.38% | LS-00-15-0046-15 ; LS-00-16-0046-16; Keep Sirsi/Dynix running Year 1, new system thereafter | O | $0 | $71,896 | $100,000 | $102,000 | $104,040 | $106,121 | $108,243 | $110,408 | $112,616 | $114,869 | $117,166 | $1,047,359 |
| **TOTAL:** | **100.00%** | | | **$0** | **$701,896** | **$280,000** | **$202,000** | **$204,040** | **$231,121** | **$233,243** | **$260,408** | **$262,616** | **$289,869** | **$295,038** | **$2,960,231** |

### Summary by State and Federal:

| | |
|---|---|
| **State Funding:** | **$1,712,872** |
| **Federal Funding:** | **$1,247,359** |

| | | |
|---|---|---|
| **Implementation Funds:** | **$406,161** | **Funding Overage/(Shortage):** |
| **Implementation Costs:** | **$406,161** | **($0)** |
| **Operational Funds:** | **$2,554,070** | |
| **Operational Costs:** | **$2,554,070** | **$0** |

| | Prior | Year 1 (FY17) | Year 2 (FY18) | Year 3 (FY19) | Year 4 (FY20) | Year 5 (FY21) | Year 6 (FY22) | Year 7 (FY23) | Year 8 (FY24) | Year 9 (FY25) | Year 10 (FY26) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | $530,000 | $80,000 | $100,000 | $100,000 | $125,000 | $125,000 | $150,000 | $150,000 | $175,000 | $177,872 |
| | $0 | $171,896 | $200,000 | $102,000 | $104,040 | $106,121 | $108,243 | $110,408 | $112,616 | $114,869 | $117,166 |

## SOURCE OF FUNDS - END

## PROJECT CASH FLOW - START

| **IMPLEMENTATION** | Prior | Year 1 (FY17) | Year 2 (FY18) | Year 3 (FY19) | Year 4 (FY20) | Year 5 (FY21) | Year 6 (FY22) | Year 7 (FY23) | Year 8 (FY24) | Year 9 (FY25) | Year 10 (FY26) | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Use | $0 | $310,161 | $24,000 | $24,000 | $24,000 | $24,000 | $0 | $0 | $0 | $0 | $0 | $406,161 |
| Source | $0 | $306,161 | $100,000 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $406,161 |
| Net Cash by Fiscal Year: | $0 | ($4,000) | $76,000 | ($24,000) | ($24,000) | ($24,000) | $0 | $0 | $0 | $0 | $0 | ($0) |
| **Cash Flow:** | **$0** | **($4,000)** | **$72,000** | **$48,000** | **$24,000** | **($0)** | **($0)** | **($0)** | **($0)** | **($0)** | **($0)** | **($0)** |

| **OPERATIONS** | Prior | Year 1 (FY17) | Year 2 (FY18) | Year 3 (FY19) | Year 4 (FY20) | Year 5 (FY21) | Year 6 (FY22) | Year 7 (FY23) | Year 8 (FY24) | Year 9 (FY25) | Year 10 (FY26) | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Use | $0 | $258,662 | $255,222 | $261,381 | $267,725 | $274,260 | $233,077 | $240,009 | $247,150 | $254,504 | $262,079 | $2,554,070 |
| Source | $0 | $395,735 | $180,000 | $202,000 | $204,040 | $231,121 | $233,243 | $260,408 | $262,616 | $289,869 | $295,038 | $2,554,070 |
| Net Cash by Fiscal Year: | $0 | $137,073 | ($75,222) | ($59,381) | ($63,685) | ($43,139) | $166 | $20,399 | $15,467 | $35,364 | $32,959 | $0 |
| **Cash Flow:** | **$0** | **$137,073** | **$61,851** | **$2,470** | **($61,216)** | **($104,354)** | **($104,188)** | **($83,790)** | **($68,323)** | **($32,959)** | **$0** | **$0** |

## CASH FLOW - END

## NET CHANGE IN OPERATING COSTS - START

| | Year 1 (FY17) | Year 2 (FY18) | Year 3 (FY19) | Year 4 (FY20) | Year 5 (FY21) | Year 6 (FY22) | Year 7 (FY23) | Year 8 (FY24) | Year 9 (FY25) | Year 10 (FY26) | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Proposed Operating Costs:*** | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Operating Costs | *Per Row 137* | | $258,662 | $255,222 | $261,381 | $267,725 | $274,260 | $233,077 | $240,009 | $247,150 | $254,504 | $262,079 | $2,554,070 | |
| ***Total: Proposed Operating Costs:*** | | | **$258,662** | **$255,222** | **$261,381** | **$267,725** | **$274,260** | **$233,077** | **$240,009** | **$247,150** | **$254,504** | **$262,079** | **$2,554,070** | |
| ***Current Operating Costs:*** | | | | | | | | | | | | | | |
| **Staffing:** | | | | | | | | | | | | | | |
| State Labor Hours to maintain current solution | | | $24,000 | $24,000 | $24,000 | $24,000 | $24,000 | $24,000 | $24,000 | $24,000 | $24,000 | $24,000 | $240,000 | ABC #5 |
| State Labor Hours to be automated by new solution | Cost don't go away, but can repurpose people to other tasks; If people assigned to other budgets, this number goes away | | $74,593 | $74,593 | $74,593 | $74,593 | $74,593 | $74,593 | $74,593 | $74,593 | $74,593 | $74,593 | $745,930 | ABC #5 |
| **Annual Maintenance of Current Solution:** | | | | | | | | | | | | | | |
| Current Software/Hardware/Hosting-SirsiDynix | 30-95000-000 Sirsi/Dynix Symphony Software: $43,895.00<br>30-95006-000 Third-Party Software Maintenance: $ 6,464.64<br>30-95008-000 Hardware: $12,640.48<br>30-95021-000 Subscription for Recurring Data Services: $6,314.37<br>TOTAL: $69,314.49 with 3% increase, now at $71,896 | | $71,896 | $74,053 | $76,274 | $78,563 | $80,920 | $83,347 | $85,848 | $88,423 | $91,076 | $93,808 | $824,207 | ABC #5 |
| Custom programming for data reporting | | | $9,000 | $9,000 | $9,000 | $9,000 | $9,000 | $9,000 | $9,000 | $9,000 | $9,000 | $9,000 | $90,000 | ABC #5 |
| | | | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | $0 | |
| ***Total: Current Operating Costs:*** | | | ***$179,489*** | ***$181,646*** | ***$183,867*** | ***$186,156*** | ***$188,513*** | ***$190,940*** | ***$193,441*** | ***$196,016*** | ***$198,669*** | ***$201,401*** | ***$1,900,137*** | |
| **Net Operating Cost Decrease/(Increase)** | | | **($79,173)** | **($73,576)** | **($77,514)** | **($81,570)** | **($85,747)** | **($42,137)** | **($46,569)** | **($51,134)** | **($55,835)** | **($60,678)** | **($653,933)** | # |
| **New Operating Costs funded by SOV Sources** | | | $323,839 | $80,000 | $100,000 | $100,000 | $125,000 | $125,000 | $150,000 | $150,000 | $175,000 | $177,872 | $1,506,711 | |
| **Current Operating Costs funded by SOV Sources** | Current operating costs/solution paid with state general funds (GF); Sirsi (FY2016 actual GF): $12,082; [Note: ABC form estimated $6,942 GF for this cost]; 10% state labor for system maintenance (per ABC form): $2,400 ; 10% state labor for manual processing (per ABC form): $7,459; Other costs GF (per ABC form): $900; Total state GF for current solution: $28,841 | The SOV obligation varies from year to year, based on Federal Funding Sources; The numbers used are the most recent amounts | $28,841 | $28,841 | $28,841 | $28,841 | $28,841 | $28,841 | $28,841 | $28,841 | $28,841 | $28,841 | $288,410 | |
| ❹ **Net SOV Operating Cost Decrease/(Increase)** | | | **($294,998)** | **($51,159)** | **($71,159)** | **($71,159)** | **($96,159)** | **($96,159)** | **($121,159)** | **($121,159)** | **($146,159)** | **($149,031)** | **($1,218,301)** | |

NET CHANGE IN OPERATING COSTS - END

**NOTES / ASSUMPTIONS:**

❶ Software as a Service Model (SaaS)
❷ Staffing levels anticipated through this project
❸ Funding Sources
❹ Net Operating Costs ARE expected to increase

#

## NCIP Address Information

NCIP System Vendor (ILS): _____
NCIP Version: __ 1 __2
Communication Method: __ TCP/IP __ HTTP __ HTTPS
Computer Address: _____
IF TCPIP Computer Port: _____
*NCIP To Agency: _____
*NCIP From Agency: _____
*NCIP To Agency Schema
**NCIP Application Profile

*If not supplied A-G will use default settings
**May not be applicable to your system, please check with your system vendor

## NCIP Testing Scenarios

**Borrowing Role**

LookUpUser ← will need a test patron, barcode and pin
AcceptItem
CheckInItem

Prior to starting any of the detail messages we will use the test patron to insure we can communicate with the local ILS.
The test patron should include:

- Last Name
- First Name
- City, State, Zip
- Phone Number
- Email address

**Lending Role**

LookUpUser
CreateUser
RequestItem

Will need the following test cases

- Title that is owned by multiple libraries and is available at the requested lending library. This will test to insure the hold request is assigned to the correct library

- Title that is owned by multiple libraries but is checked out at the requested lending library. This will test the availability checking and to insure we skip the requested lending library

- Title that is only owned by the requested lending library and is available. This will test to insure the hold is placed if the requested lending library is the only one that has the item

- Title that is only owned by requesting library and is checked out. This will test to insure that the requested lending library is skipped

- Title that is owned by multiple libraries and it has patron holds on it to be filled by the requested lending library. This will test to see where in the hold queue the borrowing library lands

Note: The requested lending library will be determined by the ILL request that is generated. Prior to sending an ILL I will identify who the requested lending library is so if we need to create a condition to check functionality we can, as an example check out the item before the ILL request is sent.

CheckOutItem

CheckInItem

CancelRequestItem

**Other test cases**

- LookUpUser – request by a non-approved library, what happens when there is no library patron record
- CancelRequestItem – Patron changes pickup location (only applicable if the libraries allow this)
- RequestItem – multiple request for one item, how does the lending library handle this
- RequestItem – request made on a non-lendable item, does the request move to a lendable item
- Block a borrowing library to see what happens to the ILL request.
- Block the test patron to validate that they cannot access the ILL system.
- Check what locations are assigned to items that are created via AcceptItem and make sure those locations are not in ILL lendable locations.

In addition, aside from the NCIP message being successful, here are there things we should look for in each message. ie, patron email address, barcodes being returned, what fields are being passed and used in the CreateItem, is the due date being passed when the item is created, etc.

# Auto-Graphics Inc

## Software Compatibility Matrix

***Last Modified:*** ***5/2/2016***

***Summary:*** ***Learn about the different operating systems, devices and browsers supported in Verso and Agent version 5.0***

| Product | Minimum Requirememts | Comments | Microsoft (Support End Dates) | Auto-Graphics Inc Staff | Patron | Guest |
|---|---|---|---|---|---|---|
| **Operating Systems** | | | | | | |
| **Windows XP Home edition Professional** | Service pack 2 or higher | Microsoft has ended support. AG supports its products on recommended browsers. (See supported browsers) | 8-Apr-14 | ✓ | ✓ | ✓ |
| **Windows XP Professional x64 Edition** | Service pack 2 or higher | Microsoft has ended support. AG supports its products on recommended browsers. (See supported browsers) | 8-Apr-14 | ✓ | ✓ | ✓ |
| **Windows Vista Home basic Home Premium Ultimate Business Enterprise** | Service pack 2 or higher | AG supports its products on recommended browsers. (See supported browsers) | 11-Apr-17 | ✓ | ✓ | ✓ |
| **Windows 7 Home Premium Ultimate Professional Enterprise** | | Windows 7 Starter Edition is not supported. | 14-Jan-20 | ✓ | ✓ | ✓ |
| **Windows 8 +** | | | | ✓ | ✓ | ✓ |
| **Windows 10 Pro** | | | | ✓ | ✓ | ✓ |
| **Processor** | | | | | | |
| **1.0 GHz processor** | Intel Pentium 4 or later | While most features will work without issue, customers may experience problems relating to system performance,general functionality and sluggish system response. Auto-Graphics recommends and fully supports customers using 2.8 GHz and faster processor families. In order to receive support, customers must be able to demonstrate the problem in a fully supported processor speed. | | Limited Support upgrade 2.8 GHz &up | Limited Support upgrade 2.8 GHz &up | Limited Support upgrade 2.8 GHz &up |
| **2.8GHz (or faster) processor** | Intel Pentium 4 or later | | | ✓ | ✓ | ✓ |
| **Memory (Ram)** | | | | | | |
| **At least 512 MB** | | While most features will work without issue, customers may experience problems relating to system performance,general functionality and sluggish system response. Auto-Graphics recommends and fully supports customers using 1 GB and up memory systems. In order to receive support, customers must be able to demonstrate the problem in a fully supported processor speed. | | Limited Support upgrade 1 GB &up | Limited Support upgrade 1 GB &up | Limited Support upgrade 1 GB &up |
| **1 GB & UP** | | | | ✓ | ✓ | ✓ |
| **Download/Upload** | | | | | | |
| **At least 6 Mbps** | | While most features will work without issue for 5-6 workstations used simultaneously, customers may experience problems relating to system performance,general functionality and sluggish response times. Auto-Graphics recommends and fully supports customers using 10 Mbps and up speeds. In order to receive support, customers must be able to demonstrate the problem in a fully supported processor speed. | | Limited Support upgrade 10 Mbps &up | Limited Support upgrade 10 Mbps &up | Limited Support upgrade 10 Mbps &up |
| **10 Mbps & Up** | | | | ✓ | ✓ | ✓ |
| **Supported Browsers** | | | | | | |
| **IE 7** | | | | × | × | × |
| **IE 8** | | | | × | × | × |
| **IE 9** | | | | × | × | × |
| **IE 10** | | While most features will work without issue, customers may experience problems relating to browser performance, layout, and general functionality. Auto-Graphics recommends and fully supports customers using Microsoft Edge 25+ . In order to receive support, customers must be able to demonstrate the problem in a fully supported browser version. | Beginning January 12, 2016, only the most current version of Internet Explorer available for a supported operating system will receive technical support and security updates. Please visit the Internet Explorer Support Lifecycle Policy FAQ here **http://support.microsoft.com/gp/Microsoft-Internet-Explorer** for list of supported operating systems and browser combinations. | Limited Support upgrade Microsoft Edge 25+ &up | Limited Support upgrade Microsoft Edge 25+ &up | Limited Support upgrade Microsoft Edge 25+ &up |
| **IE 11** | | While most features will work without issue, customers may experience problems relating to browser performance, layout, and general functionality. Auto-Graphics recommends and fully supports customers using Microsoft Edge 25+. In order to receive support, customers must be able to demonstrate the problem in a fully supported browser version. | Beginning January 12, 2016, only the most current version of Internet Explorer available for a supported operating system will receive technical support and security updates. Please visit the Internet Explorer Support Lifecycle Policy FAQ here **http://support.microsoft.com/gp/Microsoft-Internet-Explorer** for list of supported operating systems and browser combinations. | ✓ | ✓ | ✓ |
| **Microsoft Edge 25+** | | | | ✓ | ✓ | ✓ |
| **Chrome 50 +** | | | | ✓ | ✓ | ✓ |
| **FF 45 +** | | | | ✓ | ✓ | ✓ |

## Mobile device browsers supported in Verso and Agent version 5.0

**Notes:**

--- All Staff functions on Staff Dashboard are supported on tablets only. **See** Mobile device Browsers and operating systems supported below.
--- All OPAC functions for staff and patrons are supported on Cell phones and Tablets both. **See** Mobile device Browsers and operating systems supported below.
--- * For devices not listed below please contact the Auto-Graphics HelpDesk for more information and support update.
--- For iOS versions and support refer to http://www.apple.com/ios/

| Product | Minimum Requirememts | Comments | Browser | Auto-Graphics Inc Staff | Patron | Guest |
|---|---|---|---|---|---|---|
| | | | | | | |
| iOS | Version 7.1.2 + | Verso 5.0 and Agent 5.0 tested on iPHONE 4, iPHONE 5, IPHONE 6, iPAD (4th generation) and IPAD Mini 4. | Safari, Chrome | ✓ | ✓ | ✓ |
| Android | Version 4.4 + | Verso 5.0 and Agent 5.0 tested on SAMSUNG S4, SAMSUNG NOTE 5, SAMSUNG Galaxy Tab 4, NEXUS 5 | Android Browser, Chrome | ✓ | ✓ | ✓ |

# Business Continuity Plan

*This is an external release of the Auto-Graphics, Inc. Business Continuity Plan*

**To Page the A-G Information Technology Personnel:**

1. **Oliver Weiler, Information Technology Manager**

   **Cell: (909) 753-9277**

   **Text Message: 9097539277@txt.att.net**

2. **Chuck Felten, Director of Customer Service**

   **Cell: (714) 458-6568**

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**For recorded disaster recovery status reports and announcements during the emergency call:**

**(909) 595-7004, Select 2 and then Select 2**

## How To Use This Document

Use this document to learn about the issues involved in planning for the continuity of the critical and essential business functions at A-G, as a checklist of preparation tasks, for training personnel, and for recovering from a disaster. This document is divided into four parts, described below.

## Part Contents

**I.** Information about the document itself.

**II.** Design of the Plan that this document records, including information about the overall structure of business continuity planning at A-G.

**III.** General responsibilities of the individual A-G Support Teams that together form the Business Continuity Management Team, emphasizing the function of each team and its preparation responsibilities.

**IV.** Recovery actions for the A-G Support Teams and important checklists, such as the notification list for a disaster and an inventory of resources required for the environment. **[*Note: If a "disaster" situation arises, Section IV of the Plan is the only section that needs to be referenced. It contains all of the procedures and support information for recovery*.]**

## Part I. – Introduction

Part I contains information about this document, which provides the written record of the Auto-Graphics, Inc. Business Continuity Plan.

### Introduction to This Document

Planning for the business continuity of A-G in the aftermath of a disaster is a complex task. Preparation for, response to, and recovery from a disaster affecting the customer applications requires the cooperative efforts of many support organizations in partnership with the functional areas supporting the "business" of A-G. This document records the Plan that outlines and coordinates these efforts.

### Audience

This document addresses several groups within A-G with differing levels and types of responsibilities for business continuity, as follows:

- Administrative Computing Steering Committee
- Business Continuity Management Team (BCMT)
- Functional Recovery Teams

It should be emphasized that this document is addressed particularly to the members of the Business Continuity Management Team, since they have the responsibility of preparing for, responding to, and recovering from any disaster that impacts A-G. Part III of this document describes the composition of the Business Continuity Management Team in detail.

### Distribution

As the written record of A-G's Business Continuity Plan, this document is distributed to each member of the Business Continuity Management Team. It is also distributed to members of

the Administrative Computing Steering Committee, Functional Recovery Team Coordinators and others not primarily involved with the direct recover effort.

**Part II. -- Design of the Plan**

Part II describes the philosophy of business continuity planning at A-G generally, and the kind of analysis that produced this Plan. It also provides an overview of the functions of the Business Continuity Management Team in implementing this Plan.

## Overview of the Business Continuity Plan

### Purpose

A-G increasingly depends on computer-supported information processing and telecommunications. This dependency will continue to grow with the increase of A-G's customer base.

The increasing dependency on computers and telecommunications for operational support poses the risk that a lengthy loss of these capabilities could seriously affect the overall performance of A-G. A risk analysis identified several systems as belonging to risk Category I, comprising those functions whose loss could cause a major impact to A-G within 72 hours. It also categorized a majority of A-G functions as Essential, or Category II - requiring processing support within 2 week(s) of an outage. This risk assessment process will be repeated on a regular basis to ensure that changes to our processing and environment are reflected in recovery planning.

A-G's management recognizes the low probability of severe damage to data processing telecommunications or support services capabilities at A-G. Nevertheless, because of the potential impact to A-G, a plan for reducing the risk of damage from a disaster however unlikely is vital. A-G's Business Continuity Plan is designed to reduce the risk to an acceptable level by ensuring the restoration of Critical processing within 72 hours, and all essential production (Category II processing) within 2 week(s) of the outage.

The Plan identifies the critical functions of A-G and the resources required to support them. The Plan provides guidelines for ensuring that needed personnel and resources are available for both disaster preparation and response and that the proper steps will be carried out to permit the timely restoration of services.

This Business Continuity Plan specifies the responsibilities of the Business Continuity Management Team, whose mission is to establish A-G level procedures to ensure the continuity of A-G's business functions. In the event of a disaster affecting any of the functional areas, the Business Continuity Management Team serves as liaison between the functional area(s) affected and A-G's vendors providing major services. These services include the support provided by SBWH and Verizon Business.

### Assumptions

The Plan is predicated on the validity of the following assumption:

- The situation that causes the disaster is localized to the data processing facility of A-G in Las Vegas, NV, the building or space housing the computer operations center, or to the communication systems and networks that support the computer operations center. It is not a general disaster, such as an earthquake, flood, riot, or acts of terrorism.

It should be noted, however, that the Plan would still be functional and effective even in an area-wide disaster. Even though the basic priorities for restoration of essential services to the community will normally take precedence over the recovery of an individual organization, A-G's Business Continuity Plan can still provide for a more expeditious restoration of our resources for supporting key functions.

- The Plan is based on the availability of back-up resources, as described in Part IV. The accessibility of these, or equivalent back-up resources, is a critical requirement.
- The Plan is a document that reflects the changing environment and requirements of A-G. Therefore, the Plan requires the continued allocation of resources to maintain it and to keep it in a constant state of readiness.

**Development**

A-G's Vice President of Customer Service, with assistance from key A-G support areas, is responsible for developing A-G's Business Continuity Plan. Development and support of individual team plans are the responsibility of the functional area planning for recovery.

**Maintenance**

Ensuring that the Plan reflects ongoing changes to resources is crucial. This task includes updating the Plan and revising this document to reflect updates; testing the updated Plan; and training personnel. The Business Continuity Management Team Coordinators are responsible for this comprehensive maintenance task.

Periodically, the Business Continuity Management Team Coordinators ensure that the Plan undergoes a more formal review to confirm the incorporation of all changes since the prior quarter. Annually, the Business Continuity Management Team Coordinators initiate a complete review of the Plan, which could result in major revisions to this document. These revisions will be distributed to all authorized personnel, who exchange their old plans for the newly revised plans.

**Testing**

Testing the Business Continuity Plan is an essential element of preparedness. Partial tests of individual components and recovery plans will be carried out on a regular basis. A comprehensive exercise of our continuity capabilities and support by our designated recovery facilities will be performed on an annual basis.

**Organization of Disaster Response and Recovery**

The organizational backbone of business continuity planning at A-G is the Business Continuity Management Team. In the event of a disaster affecting A-G or its resources, the Business Continuity Management Team will respond in accordance with this Plan and will initiate specific actions for recovery. The Business Continuity Management Team is called into action under the authority of the Administrative Computing Steering Committee that has the responsibility for approving actions regarding Business Continuity Planning at A-G.

**Administrative Computing Steering Committee**

- **VP of Customer Service, Chairman of the Committee.** Manages and directs the recovery effort. Provides liaison with senior A-G management for reporting the status of the recovery operation.
- **Information Technology Manager.** Coordinates all data processing and telecommunications systems recovery.
- **Controller.** Provides liaison with the Committee for support of critical business functions affected by the disaster.

**Business Continuity Management Team**

For the business continuity of A-G systems, several organizations are primary: the Business Continuity Management Team and the area affected. In the event of a disaster, the BCMT provides general support, while the area affected is concerned with resources and tasks integral to running the specific functional area.

This section provides general information about the organization of recovery efforts and the role of the Business Continuity Management Team. Part III of this document describes the Business Continuity Management Team and the responsibilities of each Institute Support Team in detail.

**Business Continuity Management Team.**

The Business Continuity Management Team is composed of upper-level managers at A-G. The following is a list of each position on the Business Continuity Management Team, and a brief overview of each member's responsibilities:

- **VP of Customer Service**. As Co-Coordinator of the Business Continuity Management Team, provides liaison between A-G's operational and management teams in affected areas. Also responsible for ongoing maintenance, training and testing of A-G's Business Continuity Plan. Coordinates A-G's Support Teams under the auspices of the Business Continuity Management Team.
- **Information Technology Manager**. Coordinates support for data processing resources at the main data center and the designated recovery sites. Provides alternate voice and data communications capability in the event normal telecommunication lines and equipment are disrupted by the disaster. Evaluates the requirements and selects appropriate means of backing up A-G's telecommunications network.

- **Building Manager**. Coordinates all services for the restoration of plumbing, electrical, and other support systems as well as structural integrity. Assesses damage and makes a prognosis for occupancy of the structure affected by the disaster.
- **Controller**. Provides liaison to insurance carriers and claims adjusters. Coordinates insurance program with continuity planning programs. Provides support for human resources elements of recovery and employee notification through the emergency contact services.
- **VP of Sales**. Communicates with the news media, customers, and employees who are not involved in the recovery operation.

**A-G Support Teams:**

Under the overall direction of the Business Continuity Management Team, support is provided to assist a functional area's recovery by A-G's Support Teams. These teams, described below, work in conjunction with the members of the area affected by the problem condition to restore services and provide assistance at the corporate level. In many cases, the organizations comprising these support teams have as their normal responsibility the provision of these support services.

- **Damage Assessment/Salvage Team.** Headed by Information Technology Manager and activated during the initial stage of an emergency, the team reports directly to the Business Continuity Management Team, evaluates the initial status of the damaged functional area, and estimates both the time to reoccupy the facility and the status of the remaining equipment. This team draws members from the Building Manager, from Operations and from the FARM team of the affected area as well as appropriate vendors supporting our environment. Following the assessment of damage, the team is responsible for salvaging equipment, data and supplies following a disaster; identifying which resources remain; and determining their future utilization in rebuilding the data center and recovery from the disaster. The members of the Damage Assessment Team become the Salvage Team
- **Transportation Team.** A temporary A-G Support Team headed jointly by the Information Technology Manager and the Building Manager are responsible for transporting resources, personnel, equipment, and materials to back-up sites as necessary. This team draws members from A-G employees.
- **Public Information.** The VP of Sales, working closely with the Personnel Department, handles the interface with the media, the customers, and employees who are not participating in the recovery process.
- **Telecommunications Team.** Headed by the Information Technology Manager; is responsible for establishing voice and data.

**Disaster Response**

This section describes six required responses to a disaster, or to a problem that could evolve into a disaster:

1. Detect and determine a disaster condition
2. Notify persons responsible for recovery
3. Initiate A-G's Business Continuity Plan
4. Activate back-up resources
5. Disseminate Public Information
6. Provide support services to aid recovery

Each subsection below identifies the organization(s) and/or position(s) responsible for each of these six responses.

**Disaster Detection and Determination**

The detection of an event which could result in a disaster affecting information processing systems at A-G is the responsibility of VP of Customer Service and the Information Technology Manager, or whoever first discovers or receives information about an emergency situation developing in one of the functional areas housing major information processing systems or about the communications lines between A-G and its Customers.

**Disaster Notification**

When a situation occurs that could result in interruption of processing of major information processing systems of networks at A-G, the following people must be notified:

- Normally, the Information Technology Manager and /or the Building Manager receive the initial notice through their alarm monitoring capabilities, which include hardware performance, power, telecommunications and Police and Fire notification services provided by our security system provider 24X7.
- VP of Customer Service

**Initiation of A-G's Business Continuity Plan**

Initiation of this Plan is the responsibility of the Business Continuity Management Team Coordinator or any member of the Business Continuity Management Team or the Administrative Computing Steering Committee.

**Activation of Back-up Resources**

The responsibility for activating any of the designated back-up resources is delegated to the VP of Customer Service. In the absence of the VP of Customer Service, responsibility reverts to the Information Technology Manager. Within four hours of the occurrence, the VP of Customer Service, or alternate, determines the prognosis for recovery of the damaged functional area through consultation with the Information Technology Manager and the Building Manager.

If the estimated occupancy or recovery of the damaged functional area cannot be accomplished within 72 hours, a back-up site is located for occupancy.

**Dissemination of Public Information**

The VP of Sales and Marketing is responsible for directing all meetings and discussions with the news media, customers, and in conjunction with the Personnel Department with employees not actively participating in the recovery. In the absence of the VP of Sales and Marketing, the responsibility reverts to the senior official present at the scene or the Marketing Manager.

**Recovery Status Information Number** ***(909) 595-7004 select 2 and then select 2 again*** has been established as a voice mail information number for posting recovery status and information notices.

**Provision of Support Services to Aid Recovery**

During and following a disaster, A-G Support Teams are responsible for aiding the area affected. They operate under the direction of the Business Continuity Management Team through the Information Technology Manager.

**Disaster Recovery Strategy**

The disaster recovery strategy explained below pertains specifically to a disaster disabling the main data center. This functional area provides mainframe computer and major server support to A-G's applications. Especially at risk are the critical applications; those designated as Category I (see below) systems. The plan provides for recovering the capacity to support these critical applications within 72 hours. Summarizing the provisions of the plan, subsections below explain the context in which A-G's Business Continuity Plan operates. The Business Continuity Plan complements the strategies for restoring the data processing capabilities normally provided by Operations.

This section addresses three phases of disaster recovery:

- Emergency
- Backup
- Recovery

Strategies for accomplishing each of these phases are described below.

**Emergency Phase**

The emergency phase begins with the initial response to a disaster. During this phase, the existing emergency plans and procedures of A-G's Building Manager direct efforts to protect life and property, the primary goal of initial response. Security over the area is established as local support services such as the Police and Fire Departments are enlisted through existing mechanisms. The VP of Customer Service is alerted by cell phone and begins to monitor the situation.

If the emergency situation appears to affect the main data center (or other critical facility or service), either through damage to data processing or support facilities, or if access to the facility is prohibited, the VP of Customer Service will closely monitor the event, notifying BCMT personnel as required assisting in damage assessment. Once access to the facility is permitted, an assessment of the damage is made to determine the estimated length of the outage. If access to the facility is precluded, then the estimate includes the time until the effect of the disaster on the facility can be evaluated.

If the estimated outage is less than 24 hours, recovery will be initiated under normal Information Systems operational recovery procedures. If the outage is estimated to be longer than 24 hours, then the VP of Customer Service activates the BCMT, which in turn notifies the Administrative Computing Steering Committee and the Information Technology Manager and the Business Continuity Plan is activated. The recovery process then moves into the back-up phase.

The Business Continuity Management Team remains active until recovery is complete to ensure that A-G will be ready in the event the situation changes.

**Back-up Phase**

The back-up phase begins with the initiation of the plan(s) for outages enduring longer than 24 hours. In the initial stage of the back-up phase, the goal is to resume processing critical

applications. Processing will resume either at the main data center or at the designated back-up site, depending on the results of the assessment of damage to equipment and the physical structure of the building.

In the back-up phase, the initial back-up site must support critical (Category I) applications for up to three weeks and as many Category II applications as resources and time permit. During this period, processing of these systems resumes, possibly in a degraded mode, up to the capacity of the back-up site. Within this three-week period, the main data center will be returned to full operational status if possible.

However, if the damaged area requires a longer period of reconstruction, then the second stage of back-up commences. During the second stage, a shell facility is assembled in a secondary facility and equipment installed to provide for processing all applications until a permanent site is ready.

**Recovery Phase**

The time required for recovery of the functional area and the eventual restoration of normal processing depends on the damage caused by the disaster. The time frame for recovery can vary from several days to several months. In either case, the recovery process begins immediately after the disaster and takes place in parallel with back-up operations at the designated back-up site. The primary goal is to restore normal operations as soon as possible.

**Scope of the Business Continuity Plan**

The object of this Plan is to restore critical (Category I) systems within 72 hours, and Essential (Category II) systems within two week(s) of a disaster that disables any functional area and/or essential equipment supporting the systems or functions in that area.

The initial Risk Assessment of the computer applications that support A-G's assigned application systems to Category I Critical. This risk category identifies applications that have the highest priority and must be restored within 72 hours of a disaster disabling a functional area. Specifically, each function of these systems was evaluated and allocated a place in one of four risk categories, as described below.

**Category I - Critical Functions**

- All computing and communication resources that support access by customers to A-G applications.

**Category II - Essential Functions**

- All computing resources that provide critical application code storage

**Category III - Necessary Functions**

- All computing resources that support financial and email operations.

**Category IV - Desirable Functions**

- All computing services that provide batch processing services.

Note: Category IV functions are important to A-G's administrative processing, but due to their nature, the frequency they are run and other factors, they can be suspended for the duration of the emergency.

The systems in Categories I - IV are those that provide A-G wide services. There are many departmental systems as well as non-information processing systems (such as A-G's web site) that are also either essential for A-G or the local area(s) they support. Recovery for these systems too must be based upon an assessment of the impact of their loss and the cost of their recovery.

**Part III. – Team Descriptions**

Part III describes the organization and responsibilities of the Business Continuity Management Team. Composed of sub-teams (A-G Support Teams), the Business Continuity Management Team as a whole plans and implements the responses and recovery actions in the event of a disaster disabling either a functional area or the main data center. Its primary role is to provide A-G level support services to any functional area affected by the problem.

- **VP of Customer Service.** As Business Continuity Management Team Co-coordinator, provides liaison between A-G's operational and management teams and the affected areas. Is also responsible for ongoing maintenance, training and testing of the Business Continuity Plan. Coordinates A-G's Support Teams under the auspices of the Business Continuity Management Team.
- **Information Technology Manager**. Provides for support for data processing resources with primary responsibility for restoration for operations and systems processing. Recovery plans for the computing facilities are the responsibility of the Information Technology Manager. Provides alternate voice and data communications capability in the event normal telecommunication lines and equipment are disrupted by the disaster. Evaluates the requirements and selects appropriate means of backing up the A-G telecommunications network.
- **Building Manager**. Provides for physical security and emergency support to affected areas and for notification mechanisms for problems that are or could be disasters. Extends a security perimeter around the functional area affected by the disaster. Provides coordination with public emergency services as required. Coordinates all services for the restoration of plumbing and electrical systems and structural integrity. Assesses damage and makes a prognosis for occupancy of the structure affected by the disaster. Coordinates safety and hazardous materials related issues with other organizations involved in recovery planning and response as well as governmental and other emergency services.
- **Personnel Department.** Coordinates all activities of the recovery process with key attention to the personnel aspects of the situation. This includes releasing staff from areas affected, initiating emergency notification systems and working with the VP of Sales and Marketing on dissemination of information about the recovery effort
- **VP of Sales .** Communicates with the news media, customers, and employees who are not involved in the recovery operation.
- **Controller.** Represents the Financial Operations.

## A-G Support Teams

### Business Continuity Management Team

1. **Function**

   To oversee the development, maintenance and testing of recovery plans addressing all Categories I and II business functions. In the event of a "disaster" to manage the backup and recovery efforts and facilitate the support for key business functions and restoration of normal activities.

2. **Organization**

   The BCMT is co-chaired by the Information Technology Manager who serves in the absence of the VP of Customer Service. The team is composed of key management personnel from each of the areas involved in the recovery process.

3. **Interfaces**

   The team interfaces with and is responsible for all business continuity plans and planning personnel at A-G.

4. **Preparation Requirements**

   Periodically the team will meet to review plans that have been completed in the last quarter.

   On an annual basis, the team will review the overall status of the recovery plan, and report on this status through the VP of Customer Service, to the Administrative Computing Steering Committee.

   Individual team members will prepare recovery procedures for their assigned areas of responsibility at A-G. They will ensure that changes to their procedures are reflected in any interfacing procedures.

   The BCMT will ensure that continuing levels of support are available for the teams that require it.

   The BCMT will also review and approve team plans as they are submitted, re-evaluate the criticality of A-G operating functions at regular intervals and provide for awareness and training in recovery planning.

## Damage Assessment/Salvage

### 1. Function

To report to the Business Continuity Management Team (BCMT), within four hours after access to the facility is permitted, on the extent of the damage to the affected site, and to make recommendations to the BCMT regarding possible reactivation and/or relocation of data center or user operations. Following assessment of the damage, the team is then responsible for salvage operations in the area affected.

### 2. Organization

Headed by the Information Technology Manager and activated during the initial stage of an emergency, the team reports directly to the Business Continuity Management Team, evaluates the initial status of the damaged functional area, and estimates the time to reoccupy the facility and the use of the remaining equipment. Following assessment, the team is responsible for salvaging equipment, data, and supplies following a disaster; identifying which resources remain; and determining their future utilization in rebuilding the data center and recovery from the disaster.

### 3. Interface

The Damage Assessment/Salvage Team will interface with other A-G operations groups including vendor and insurance representatives, to keep abreast of new equipment, physical structures, and other factors relating to recovery.

### 4. Preparation Requirements

The identification of all equipment is to be kept current. The listing will show all current information, such as engineering change levels, book value, etc. Configuration diagrams will also be available.

A listing of all vendor sales personnel, customer engineers and regional sales and engineering offices is to be kept. Names, addresses and phone numbers (normal, home, and emergency) are also to be kept.

## Public Information

### 1. Function

The most difficult time to maintain good public relations is when there is an accident or emergency. Public relations planning is required so that when an emergency arises, inquiries from the news media, customers, friends and relatives of employees can be handled effectively. While we cannot expect to turn a bad situation into a good one, we can assist in making sure facts presented to the public are accurate and as positive as possible given the situation.

It is in our best interest to cooperate with the media as much as possible, so that they will not be forced to resort to unreliable sources to get information that could be untrue and more damaging to A-G than the facts.

Therefore, it is the policy of A-G in time of emergency, to:

- Have the VP of Sales serve as the authorized spokesperson for A-G. All public information must be coordinated and disseminated by the VP of Sales.
- Refrain from releasing information on personnel casualties until families have been notified. Once families have been notified, names of those personnel should be released quickly to alleviate the fears of relatives of others.
- Provide factual information to the press and authorities as quickly as facts have been verified, and use every means of communications available to offset rumors and misstatements.
- Avoid speculating on anything that is not positively verified, including cause of accident, damage estimates, losses, etc. (Fire Officials normally release their own damage estimates.)
- Emphasize positive steps taken by A-G to handle the emergency and its effects.

Situations calling for implementation of the Emergency Public Information Plan may include, but are not limited to:

- Systems malfunction disrupting the normal course of operations.
- Accidents, particularly when personal injury results.
- Natural disasters, such as fires, floods, tornadoes and explosions.
- Civil disorders, such as riots and sabotage.
- Executive death.
- Scandal, including embezzlement and misuse of funds.
- Major litigation initiated by or against A-G.

## 2. Organization

The VP of Sales, a member of the Business Continuity Management Team, will act as the Public Information Officer for A-G. In the absence of the VP of Sales the responsibility will revert to the Senior Manager on the scene.

### 3. Interfaces

The VP of Sales will be the interface between A-G and its customers or news media. Copies of all status reports to the Business Continuity Management Team or Administrative Computing Steering Committee will be forwarded to the VP of Sales for potential value in information distribution for good public relations. They will work with the Personnel Department in dissemination of information to employees.

### 4. Preparation Requirements

Existing relationships with local media will be utilized to notify the public of emergency and recovery status. The VP of Sales will maintain up-to-date contact information for the media and other required parties.

A facility will be identified as a pressroom. Arrangements will be made to provide the necessary equipment and support services for the press. Coordination with the Building Manager for additional voice communication, if required, will also be made.

## Insurance

### 1. Function

To provide for all facets of insurance coverage before and after a disaster and to ensure that the recovery action is taken in such a way as to assure a prompt and fair recovery from our insurance carriers.

### 2. Organization

The team will consist of the Controller and required staff and insurance carrier personnel. The team reports through the Business Continuity Management Team, of which it is a member.

### 3. Interfaces

The Insurance Team will interface with the following teams, relative to insurance matters:

- VP of Sales
- Damage Assessment/Salvage
- Information Systems Operations
- Appropriate FARM Teams

This team will be activated upon the initial notification of a disaster.

### 4. Preparation Requirements

Determine needs for insurance coverage. Identify the coverage required for hardware, media, media recovery, liability and extra expense.

Prepare procedure outlining recommended steps to be followed by Damage Assessment/Salvage Team during initial stage of a disaster.

Provide a list of appropriate contacts.

Arrange for availability of both still and video recording equipment to record the damage.

Ensure that an equipment inventory is available, to include model and serial number of all devices.

Evaluate all new products and services offered by A-G for potential liability in the event of a disaster.

## Telecommunications

### 1. Function

Provide voice and data communications to support critical functions. Restore damaged lines and equipment.

### 2. Organization

The team will consist of appropriate IT staff. IT will also coordinate with and supervise outside contractors as necessary. The team will report through the VP of Customer Service who is a member of the Business Continuity Management Team.

### 3. Interfaces

The IT team will interface with the following teams or organizational units, relative to telecommunications requirements:

- Building Manager
- Other A-G departments requiring emergency telecommunications
- Outside contractors and service providers as necessary

### 4. Preparation Requirements

Provide critical voice and data communications services in the event that normal telecommunications lines and equipment are disrupted or relocation of personnel is necessary.

Consult with outside contractors and service providers to ensure that replacement equipment and materials are available for timely delivery and installation.

Utilize available resources to broadcast information relevant to the disaster.

**Part IV. – Recovery Procedures**

**Notification List**

The list below contains the names and telephone numbers of managers and personnel who must be notified in the event of a disaster. The Business Continuity Management Team Coordinator is responsible for keeping this notification list up-to-date.

- Eric Jung, VP of Customer Service – (909) 374-4044
- Albert Flores, VP of Sales – (909) 263-8272
- Paul Cope, President – (909) 568-4040
- Oliver Weiler, Information Technology Manager – (909) 753-9277

**Notification – Player Action**

- Coordinator. Ensure entire BCMT has been notified, then notify Information Technology Manager.
- Coordinator. Activate an Emergency Operations Center and notify staff to meet there.
- Coordinator. Meet with Damage Assessment Team to review their findings and present results to BCMT.
- Coordinator. Present recommendations to BCMT for next steps in recovery effort.
- Begin notification of all recovery teams. Check to ensure all recovery participants have been notified.
- Coordinator. Monitor the activities of the recovery teams. Assist them as required in their recovery efforts.
- Coordinator. Report to BCMT on a regular basis on the status of recovery activities.
- Customer Support Manager. Update the Support Recovery Status information message on (909) 595-7004.

**Damage Assessment/Salvage – Player Action**

- Building Manager. Notify team members, and vendors to report to the site for initial damage assessment and clean up.
- Controller. Notify insurance representative
- Building Manager. Requests permission from the Fire and/or Police Department (if required) to enter the site.
- Controller. Take a service representative from each of the appropriate vendors, the insurance claims representative and appropriate A-G personnel into the site.
- Information Technology Manager. Review and assess the damage to the facility. List all equipment and the extent of damage. List damage to all support systems (power, A/C, fire suppression, communications, etc.).
- Information Technology Manager. Notify the BCMT as to the severity of the damage and what can potentially be salvaged.
- Information Technology Manager and Building Manager. Notify the BCMT if the area can be restored to the required level of operational capability in the required time frame.

**Salvage Operations – Player Action**

- Information Technology Manager. Initiate the Emergency Notification List and have all members report to the Staging Area.
- Controller. Have the Building Manager and Information Technology Manager determine which equipment and furniture can be salvaged. Photograph all damaged areas as soon as possible for potential insurance claims.
- Salvage Team **Important** ** *Prior to performing any salvage operation, contact Insurance Team to coordinate with possible insurance claims requirements and appraisals.*
- Have the Physical Plant Supervisor and staffs start salvaging any furniture and equipment.
- Based upon advice from Insurance Team and customer engineering, contact computer hardware repair centers regarding reconditioning of damaged equipment
- Team Leader. Meet with the Business Continuity Management Team Coordinator to provide status on salvage operations.

### Configuration List

A sample of the configuration and full equipment inventory report from the Fixed Asset Control Systems or other automated equipment inventories should be inserted here. The Continuity Plan Masters in off-site storage will contain the full listing.

### Blueprints

Complete sets of blueprints of the buildings housing critical processing and the data center are maintained.

## Public Information – Player Action

- VP of Sales. Notify Marketing Manager when an emergency occurs.
- Marketing Manager. Assess the public relations scope of the emergency, in consultation with senior management if necessary, and determine the appropriate public relations course of action.
- In instances where media are notified immediately, due to fire department or police involvement, the VP of Sales will proceed to the scene at once to gather initial facts. Emphasis must be placed upon getting pertinent information to the news media as quickly as possible.
- Administrative Assistant. Maintain a log of all incoming calls to ensure a quick response to media and other requests.
- VP of Sales. Maintain a log of all information that has been released to the media.
- VP of Sales. When appropriate, prepare news releases on a periodic basis for distribution to the local media list and customers.
- VP of Sales. If employee injuries or fatalities are involved, notify Personnel to send appropriate management personnel to the homes of the involved families.
- Personnel. Notify Public Information Officer as soon as families have been informed. This will permit the release of names and addresses of victims so that families of those not involved can be relieved of anxiety.
- VP of Sales. Contact the public relations director(s) at the hospitals where injured have been taken to coordinate the release of information.
- VP of Sales. In cases where long-term media coverage is anticipated, establish a Press Room in the location to be selected. Provide for telephone requirements of the press.
- VP of Sales. Schedule periodic press conferences, taking into consideration Management personnel who will be participating.
- VP of Sales. If media wants to photograph physical damage, clear request with President prior to approving request, then accompany all photographers.

- VP of Sales. Coordinate follow-up news releases after the immediate emergency has passed to present A-G in as positive light as possible. Possible topics could include:

  1. What has been done to prevent recurrence of this type of emergency?
  2. What are plans for reconstruction?
  3. What has been done to express gratitude to the community for its help?
  4. What has been done to help employees, students and faculty?

**Insurance Team – Player Action**

- Controller. Contact appropriate Insurance people upon first advice of disaster.
- Controller. Meet with Damage Assessment/Salvage team at site.
- Controller. Go through disaster scene with Damage Assessment/Salvage team and advise on matters relating to insurance and claims. Ensure that nothing is done to compromise recovery from insurance carrier. Photograph all applicable areas.
- Controller. File all appropriate claims forms with all involved insurance carriers.
- Controller. Report status of claims activity to the Business Continuity Management Team.

**Telecommunications -- Player Action**

- Information Technology Manager. Oversees assessment of damage to telecommunications facilities. Directs contingency and recovery efforts. Provides updates to Business Continuity Management Team and A-G administration.
- Operations and Customer Service. Arranges for voice and dial-up data communications services to support critical functions. Procures stock to repair or replace damaged equipment. Restores full services in a timely manner.

**Recovery Facilities**

The following facilities have been identified as designated recovery sites for restoration of processing under the A-G Business Continuity Planning strategy.

**Emergency Operations Centers**

The Emergency Operations Center is the location to be used by the Business Continuity Management Team and their support staff as a location from which to manage the recovery process. As such, the Coordinator will select the specific location at the time of the occurrence.

**Guide to BCMT Activation**

1. The first indication of a problem will probably be a page alert from Security Services or alarms from system performance monitors. Unless it's obvious that the problem is long term and severe, wait 30 minutes to get the latest status about the problem reported by the page.
2. Does the problem prevent normal access, occupation or usage of any part of the A-G facility or does the disaster disrupt service provided by telephones, the network, or the mainframe computers?

If yes, continue.

3. Will expected recovery of the affected area last into normal business hours?

If yes, continue.

4. Does the Information Technology Manager indicate that the disaster will affect that service?

If yes, continue.

5. Call the BCMT members directly. The numbers are on the list attached. The BCMT has following assembly points:

    - If the problem is fire related, meet in the A-G parking lot.
    - If problem is theft related, meet in the A-G Conference Room.
    - If the problem is related to a natural disaster, meet in the A-G parking lot for further instructions.

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# Smarter Libraries through Technology: Protecting the Privacy of Library Patrons

By Marshall Breeding

Libraries hold the confidentiality of patron information as a fundamental value. Library automation systems are generally configured not to retain records that reveal the specific materials that a patron has borrowed, at least beyond the operational need. In the consumer arena, to the contrary, details regarding behavior have become a major currency of the economy.

One of the realities of the Internet lies in the ability for any third party to intercept the transmissions of information as it travels among devices and servers. Wireless networks are an especially easy target. Assume today that any information transmitted as clear text across a local network or the Internet will be intercepted and used, whether for targeted advertising or illegal intrusion into servers and systems.

Encryption provides the main line of defense against the unwanted capture of data. The absolute and most basic transaction that demands encryption is the sequence used to authenticate staff and users into a system. Any exposure of username and passwords without strong encryption is an invitation for unwanted access into that system. A further line of defense lies in encrypting sensitive data files, including data stores that hold the personal details such as search and reading behavior or financial transactions.

This issue of *Smart Libraries Newsletter* presents a brief study of the privacy and security characteristics of a sampling of the major automation and discovery products. While results offer a glimpse of the current state of privacy and security in our industry, I present them primarily to increase awareness and to open a broad-based conversation to effect needed improvements.

## Conclusions: From Awareness to Action

The results of the survey follow inside, and here I'll present my observations. For many of the providers and products, the level of privacy and security is left to the discretion of their library customers. I would encourage opting for the highest level of security offered. All of the products targeted in this study indicated that they follow standard practices related to the security of passwords and sign-on sequences.

I commend Biblionix for its early move to delivering all transactions for its Apollo ILS via pages encrypted via HTTPS. BiblioCommons states that it will be following that approach beginning in 2015. Full encryption has seen increasing adoption on major destinations with both Google and Facebook moving to that level of security in 2013.

I believe that libraries should work toward comprehensive encryption as the minimal level of security performance expected from these products. No longer is it enough to secure only the transmission of sensitive details, but systems need to protect the general stream of transactions, such as patron searches, selections made, and materials read or downloaded.

Encryption addresses only one layer of the overall environment that relates to privacy and security. Even when patron and staff sessions are fully encrypted, they may expose patron details and reading behavior via cookies or other tokens that may be enabled. When libraries blend services from external social and e-commerce networks into their own environment, there is the strong possibility of the transmission of data elements to those external networks.

I'm not necessarily advocating that libraries follow a flat and sterile approach in their service delivery. As libraries enable these social features, they should be aware of what might be exposed and then carefully manage the process. Some libraries might choose to allow patrons to opt-in after warning them that some details may be provided to the partner site. While individual patrons have their own preferences on privacy, libraries have an additional set of concerns related to the profession's ethics regarding how systems that they provide manage privacy and security.

## IN THIS ISSUE



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# Privacy and Security of Automation and Discovery Products

This study is an introductory effort to probe at the general characteristics of some of the major integrated library systems, library services platform, and discovery services related to their security and how well they defend patron privacy. A questionnaire of questions on this topic was developed and sent to Auto-Graphics, Biblionix, BiblioCommons, Ex Libris, Innovative Interfaces, OCLC, SirsiDynix, and to the development communities for Koha and Evergreen. These organizations were selected to represent a mix of systems that find wide use in the United States, with the following characteristics:

- **Auto-Graphics** develops and supports the VERSO ILS used primarily by public libraries.
- **BiblioCommons** offers a variety of patron-facing products through a large-scale web-based platform that interoperates with most of the major ILS products.
- **Biblionix** offers Apollo, a purely web-based ILS for small public libraries delivered through a multi-tenant platform.
- **Innovative** now supports an expanded slate of library management products including Millennium, Sierra, Polaris, and Virtua, as well as discovery services such as Encore and Chamo.
- **SirsiDynix** products include Symphony and Horizon as its major ILS offerings, as well as the web-based BLUEcloud suite.
- **OCLC** has developed its WorldShare Management Services and the WorldCat Discovery Service as global multi-tenant platforms used by libraries of all types.
- **Ex Libris**, oriented primarily to academic and research libraries, has developed Alma and Primo as its current set of strategic products for resource management and discovery.
- **Koha** is an open source ILS developed by a global community of developers and used by thousands of libraries of all types around the world.
- **Evergreen**, used primarily by consortia of mostly public libraries in the United States and Canada, is an open source ILS with Equinox Software serving as the dominant development and support firm, supplemented by a global community of developers.

These organizations are to be commended for their prompt response to the questionnaire.

## Online Catalog or Discovery Patron Interactions

The initial set of questions focused on how the various products handled transactions conducted by library patrons. Key areas of concern include how well the authentication credentials of patrons are protected and whether all or parts of the session that the patron conducts on the system is protected from detection by a third party as it passes through local networks and the Internet.

### *Encryption of General Patron Activity*

The gold standard for products used by patrons would be to encrypt all traffic conducted by patrons. This level of security would provide private communications for the patron, with very little possibility for leakage and meaningful detection of content by any third party. In the absence of the encryption of the full patron session, third parties can fairly easily intercept data that reveals the search terms entered by a patron, referral data that shows previous sites visited, results presented, and items selected or downloaded for viewing. Full enforcement of encryption requires that the library or its vendor obtain valid digital certificates, perform needed server configurations, and provide the additional processing resources required. Traditionally, library systems have used encryption selectively. Some providers may not enforce encryption by default, but may enable libraries to select encryption for specific transaction types as an option. The questions in this section walk through these possibilities.

1. Enforce encryption through SSL for **all transactions involving patron activity**:

- **Auto-Graphics:** Yes
- **BiblioCommons:** BiblioCommons enforces SSL encryption for all patron activity that is within BiblioCommons environments and involves personally identifiable information. SSL encryption will be extended to all web pages involving patron activity in 2015.
- **Biblionix:** Our online catalog enforces SSL encryption for all patron activity. (*Response extends to all questions in the section.*)
- **Innovative:** Regarding Polaris, Virtua, and Sierra, including their respective OPACs, and Encore and Chamo discovery, the answers are essentially identical. Public searching and discovery all systems support and default to plaintext (HTTP) for searching, and automatically enforce SSL (HTTPS) for all pages involving patron details or login credentials. (*Response carries through all questions in this section.*)
- **SirsiDynix:** All SirsiDynix Software as a Service (SaaS) systems are now deployed with SSL/TLS for HTTPS traffic encryption, and the option is available for existing SaaS customers and for customers which host SirsiDynix products locally to implement the same with SirsiDynix support.
- **OCLC:** Yes. All pages or transactions which contain patron identity data are encrypted for transmission. In the near future, all WorldShare Discovery transactions will be encrypted with HTTPS.
- **Ex Libris:** (*Response applies to all questions in this section.*) All of the patron requesting process is done in Alma mashups embed-

ded in the Primo interface. Like all Alma screens, these are triggered by HTTPS calls only.

Primo uses APIs that communicate with Alma for populating My Account in Primo based on Alma stored information. These APIs respond only to configured and trusted IPs. Primo support for HTTPs for the entire transactions will be implemented next year.

In addition, patron authentication transactions in Primo are encrypted via SSL.

- **Koha:** Out of the box, Koha does not enforce use of SSL. However, every Koha installation can readily be required to use SSL for public catalog and staff interface access.
- **Evergreen:** The Evergreen public catalog requires the use of SSL when logging into the catalog and when accessing all pages that display patron account information or allow the patron to place requests.

2. Offer the library an option to enable SSL for all transactions involving patron activity

- **Auto-Graphics:** Yes
- **BiblioCommons:** No
- **SirsiDynix:** The use of transmission encryption described above is optional for customers, though SirsiDynix informs customers of the risk of unencrypted transmissions and the company's position that no highly sensitive personally identifiable information (i.e., Social Security Numbers, financial account numbers, etc.) be processed or stored with its products.
- **OCLC:** SSL is set by default. No need for institution level management.
- **Koha:** At present, standard configurations of Koha would either require SSL for the entire public catalog or none of it; likewise for the staff interface. (*Response covers multiple questions in this section.*)
- **Evergreen:** The standard configuration of Evergreen mandates the use of SSL for all pages in the public catalog that display patron account information.

3. Enforce encryption for specific pages or transactions involving patron details or login credentials

- **Auto-Graphics:** Yes. If the customer selects the option to enforce encryption, all pages are encrypted, all credentials and all transactions, using SSL. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
- **BiblioCommons:** Yes
- **SirsiDynix:** If the library enables encryption, as described in above answers, pages processing sensitive information such as patron details and credentials are encrypted.
- **OCLC:** Yes. All pages and transactions that contain patron identity data are encrypted for transmission.
- **Evergreen:** The standard configuration of Evergreen mandates the use of SSL for all pages in the public catalog that display patron account information.

4. Offer the library an option to enable SSL for specific pages or transactions involving patron details or login details

- **Auto-Graphics:** Yes. As noted, if the library enables SSL it is enabled on all pages, all transactions and on all credentials passing in the UI. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
- **BiblioCommons:** No
- **SirsiDynix:** In line with responses to questions 1-3, typical SSL/TLS deployment encompasses the entire product, which is the recommendation in the security industry.
- **OCLC:** SSL is set by default. There is no need for institution level management.
- **Evergreen:** The standard configuration of Evergreen mandates the use of SSL for all pages in the public catalog that display patron account information

## Security of Transactions Conducted by Library Personnel

Another set of questions focuses on the security of the tasks conducted by library personnel on these systems. The accounts used by these individuals may have access to sensitive data related to patron details as well as financial or other institutional data. In addition to whether such data is transmitted securely, it is also of interest to understand whether files are encrypted to prevent viewing by intruders that might gain access. Systems following the highest level of security would encrypt all traffic for staff-related transactions. Few business systems encrypt the storage of all categories of data, but we probe at selected types of data with more sensitive library data, including authentication credentials, patron details, search logs, and financial information. Depending on the system, staff functionality may be provided through software installed on local computers or accessed through web-based interfaces. The mechanisms for security may vary depending on the architecture of these staff clients.

Does your client or interface for delivering functionality to library personnel:

1. Enforce encryption through SSL or other encryption mechanisms for all transactions.

- **Auto-Graphics:** Yes
- **BiblioCommons:** No
- **Biblionix:** The staff interface enforces SSL encryption for all transactions. (*Applies to all questions in this section.*)
- **Innovative:** Regarding Virtua, Polaris, and Sierra, all systems handle communication uniformly for all pages in the staff-facing systems rather than toggling between plaintext and encrypted communications by function or by page. Two systems support SSL for staff client communications; one uses a proprietary non-plaintext communication, not SSL. *(Applies to other questions in this section.)*
- **SirsiDynix:** Virtual Private Network (VPN) is available and recommended for encryption of staff traffic for SirsiDynix

products, both for SaaS- and client-hosted implementations. (*Applies to multiple questions in this section.*)

- **OCLC:** OCLC uses a hybrid model; transactions that provide access to accounts or transactions attributable to an individual patron are encrypted.
- **Ex Libris:** Alma is SSL only. All browser pages are activated only via HTTPS calls. *(Applies to all questions in this section.)*
- **Koha:** The Koha staff interface can be configured to require SSL for all pages, although this is not the default configuration. Most Koha vendors do this as default. (*Covers multiple questions in this section.*)
- **Evergreen:** The Evergreen staff client uses SSL to encrypt all communications with the Evergreen application server. (*Applies to all questions in this section.*)

2. Offer the library an option to enable SSL or other encryption mechanisms for all transactions.
- **Auto-Graphics:** Yes
- **BiblioCommons:** No
- **OCLC:** OCLC configurations are global and SSL/TLS is the default for all patron data.

3. Enforce encryption for specific pages or transactions involving patron details.
- **Auto-Graphics:** Yes. If the customer selects the option to enforce encryption we encrypt all pages, all credentials and all transactions using SSL. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
- **BiblioCommons:** Yes
- **OCLC:** Yes

4. Enforce Encryption for specific pages involving authentication of library personnel accounts.
- **Auto-Graphics:** Yes. As noted, if the library enables SSL it is enabled on all pages, all transactions and on all credentials passing in the UI. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
- **BiblioCommons:** Yes
- **OCLC:** Yes

5. Offer the library an option to enable SSL for specific pages involving patron details.
- **Auto-Graphics:** Yes. As noted, if the library enables SSL it is enabled on all pages, all transactions and on all credentials passing in the UI. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
- **BiblioCommons:** No
- **Biblionix:** Our staff interface enforces SSL encryption for all transactions
- **OCLC:** OCLC configurations are global and SSL/TLS is the default for all patron data. If patron data is presented, it is encrypted.

6. Enforce encryption for specific pages involving authentication of library personnel accounts.
- **Auto-Graphics:** Yes. As noted, if the library enables SSL it is enabled on all pages, all transactions and on all credentials passing in the UI.
- **BiblioCommons:** Yes
- **Biblionix:** The staff interface enforces SSL encryption for all transactions.

7. Offer the library an option to enable SSL for specific pages involving patron details.
- **Auto-Graphics:** Yes. As noted, if the library enables SSL, it is enabled on all pages, all transactions, and on all credentials passing in the UI. Login and other credentials of the user are encrypted for all systems, with or without SSL enabled.
- **BiblioCommons:** No

8. Offer the library an option to enable SSL or other encryption mechanisms for specific pages involving authentication of library personnel.
- **Auto-Graphics:** Yes. As noted, if the library enables SSL, it is enabled on all pages, all transactions, and on all credentials passing in the UI. Login and other credentials of the user are encrypted for all systems with or without SSL enabled.
- **BiblioCommons:** No
- **OCLC:** OCLC configurations are global and SSL/TLS is the default for all patron data. If patron data is presented, it is encrypted.

9. Enforce encryption for transactions involving institutional financial data (acquisitions, patron fines, etc.).
- **Auto-Graphics:** Yes
- **BiblioCommons:** Yes
- **OCLC:** Yes. Account data is encrypted via SSL transactions.

10. Offer the library an option to enable SSL or other encryption mechanisms for financial transactions.
- **Auto-Graphics:** The proper answer is no, as all financial transactions must be secured using SSL, even if no other part of the system is.
- **BiblioCommons:** No
- **SirsiDynix:** SirsiDynix products are designed such that any processing of financial transactions is performed via secure handoff to a PCI DSS-compliant third party; the third party then processes the payment and returns a transaction completion code to the SirsiDynix product as confirmation.
- **OCLC:** OCLC configurations are global and SSL/TLS is the default for all patron and financial data.

## Internal Storage of Sensitive Data Elements

How does your platform or system deal with the security of the storage of specific types of data?

1. Does your system store patron passwords or PINs as unencrypted text?
- **Auto-Graphics:** No
- **BiblioCommons:** No
- **Biblionix:** No
- **Innovative:** No
- **SirsiDynix:** SirsiDynix products implement one-way, salted hashing of PINs upon PIN creation, after which the hash is used throughout system functions.

- **OCLC:** No. Identity Information in OCLC's Identity Management System is encrypted using AES-256 encryption.
- **Koha:** No
- **Evergreen:** No

2. Does your system store patron passwords or PINs as salted hash or similar mechanisms?

- **Auto-Graphics:** Yes
- **BiblioCommons:** Yes
- **Biblionix:** Libraries can choose what authentication method they wish to use. Many libraries choose to use a phone number on the patron's account as the patron "password". Other times, they choose straight-up password authentication. Regardless of what the library chooses, any patron may set a password for their own account, which overrides the default authentication and which is stored as a salted bcrypt hash.
- **SirsiDynix:** SirsiDynix products implement one-way, salted hashing of PINs upon PIN creation, after which the hash is used throughout system functions.
- **OCLC:** No. Identity Information in OCLC's Identity Management System is encrypted using AES-256 encryption.
- **Koha:** Koha stores patron passwords using a salted hash (bcrypt).
- **Evergreen:** Evergreen currently stores patron passwords using unsalted hashes.

3. Does your system encrypt patron details as they are recorded and stored?

- **Auto-Graphics:** Yes
- **BiblioCommons:** Yes
- **Biblionix:** Patron details are not encrypted when stored internally.
- **SirsiDynix:** Yes, as described above
- **OCLC:** Yes. For transmission over the open Internet and on disk.
- **Ex Libris:** Personal patron data, such as patron IDs, emails, addresses and phone number are all encrypted in Alma's and Primo databases. The encryption is 2 way using a fixed key.
- **Koha:** Patron information is not encrypted within the MySQL database.
- **Evergreen:** Evergreen does not encrypt patron details in the database.

4. Are logs or other system files that include patron search or reading behaviors encrypted?

- **Auto-Graphics:** Search histories and reading behavior do not contain specific user information. User must opt-in to save their search history as part of their user record, this data is not encrypted. Reading history is also a user specific opt-in option and is not encrypted.
- **BiblioCommons:** Log files are not encrypted, searches are logged at the session level and sessions are not permanently stored.
- **Biblionix:** No, but catalog searches are not stored attached to patrons, and libraries can choose how much patron reading history they want to keep. We plan in the future to allow patrons to override the librarian's settings to keep less history.
- **Innovative:** Regarding Polaris, Virtua and Sierra including their respective OPACs, and Encore and Chamo discovery, none currently encrypt patron details or logs at rest, and all systems but one store PINs as salted hash or similar mechanisms. All systems' technology stacks are capable of encryption at various levels (e.g. at the database table, file, filesystem or storage subsystem level), so differences in current data at rest representation between systems are not constrained architecturally, and enablement of encryption at the filesystem or storage subsystem level would change the at rest stance of all data (logs, PINs, patron details) simultaneously for the system in question.
- **SirsiDynix:** SirsiDynix makes available to SaaS customers the feature of encrypting full sections of the system, protecting the data at rest; log and critical system files are included when this encryption is implemented.
- **OCLC:** Searches that result in holds or requests that are attributable to an individual patron are encrypted. OCLC's Librarian Interface encrypts all transactions including financial transactions and patron identity data.
- **Ex Libris:** Logs are not encrypted, however due to privacy reasons, we don't have any personal information within the logs
- **Koha:** Such logs are not encrypted.

## Other Security Measures

Describe any other security measures in place that protect patron privacy as it is transmitted over local networks or the Internet from interception by any third party. One specific scenario that has been a topic of concern involves the presentation of e-book discovery and lending transactions via library catalogs or discovery interfaces.

- **Auto-Graphics:** Overdrive, Recorded Books and similar services are integrated with vendors using SSL. VERSO does encrypt (using SFTP) files being submitted to collection agencies.
- **BiblioCommons:** Communication to ILS systems are over SSL.
- **Biblionix:** We make no distinction between local networks and the Internet, so our HTTPS-only policy protects against attackers and MitM everywhere.

  We have never and will never allow any patron data to be sent unencrypted over the wire. NCIP is all over HTTPS. SIP is done via SSH tunnels or via SSL, and we require client-side certificates for both. We've encountered resistance on this from some ebook vendors, but the libraries always back us up when the issue is explained to them.

  We've helped many of them configure their systems to work with us, and we've developed a tunnel installer that makes it easy for librarians to use PC management software (and similar) from within the library.

  In some cases, third-party services expect library patrons to visit their sites and log in with their card number and password, which they then validate via SIP with Apollo (over a secure connection, of course).

If the library directs the patrons to go through Apollo to access these services, as we recommend, then we can submit the login information to the third-party service. When we do so, we use a randomly-generated, temporary password. This way, the patron's real password is never submitted to the third party.

- **Innovative:** Regarding Polaris, Virtua and Sierra, APIs handling patron data support SSL (HTTPS) and are password and/or key protected.
- **SirsiDynix:** In addition to the protection offered through the use of data transmission encryption as described in the first section above, SirsiDynix recognizes the need for security to be "baked in" from the foundation of a web application upward. As a great volume of security breaches occur due to improperly or ineffectively programmed software—opening up the web applications to a host of established and ever-evolving attack types—SirsiDynix has adopted Open Web Application Security Project (OWASP) security standards for its development. This includes incorporation of security efficacy checks throughout the Software Development Life Cycle (SDLC), including peer and objective code reviews; Security Vulnerability Assessments (SVAs)—both automated and manual—performed by developers throughout the development cycle and again by testers as part of the release gate analysis; specific testing of each release against the most common system environment permutations (i.e., operating system, web server, and database software); and testing against the latest security patches for environment software. In this way, the latest releases will address the current security issues from a software perspective, providing customers with confidence that the privacy of staff and end user information is protected. This level of security integration is also in line with the National Institute of Standards and Technology (NIST) Special Publication (SP) 800-53/Federal Risk and Authorization Management Program (FedRAMP) and International Organization for Standardization (ISO) 27001 security standards to which SirsiDynix has been or will be certified by external audit, as described at the end of this questionnaire.
- **OCLC:** All patron data is encrypted via SSL/TLS 2048. Open discovery searches are non-attributable to an individual patron. Searches that result in holds or requests that are attributable to an individual patron are encrypted. Librarian interfaces are encrypted for all transactions. OCLC understands that the confidentiality, integrity and availability of our members' information are vital to their business operations and their success. OCLC uses a multi-layered approach to protect key information by constantly monitoring and improving applications, systems, and processes to meet the growing demands and challenges of dynamic security threats. In recognition of security efforts, OCLC has met ISO 27001 security standards and has received registrations. OCLC has adopted the OWASP security standards for application security and has integrated security and privacy in our Product Management Life Cycle.
- **Ex Libris:** Primo and Alma's data in transit communication is being encrypted. Whether this is a browser communication via SSL or secured FTP. The encryption is made using industry standard encryptions such as SHA. As related to the specific scenario, all of the patron requesting transactions are done in Alma mashups embedded in the Primo interface. Like all Alma screens, these are triggered by https calls only.
- **Koha:** Koha can be configured to use an LDAP directory to authenticate staff users and patrons. If configured this way, LDAP-over-SSL can be used to encrypt communications between the Koha and LDAP servers.
- **Evergreen:** Evergreen can be configured to use an LDAP directory to authenticate staff users and patrons. If configured this way, LDAP-over-SSL can be used to encrypt communications between the Evergreen and LDAP servers.

## Vulnerabilities Introduced via Third Party Integration

Describe any integration with third party organizations that could potential expose patron details, search, or reading patterns and measures that you have provided to strengthen privacy and security.

- **Auto-Graphics:** None
- **BiblioCommons:** Many third-party integrations have been implemented on the BiblioCommons service at the request of partner libraries, who have contracted both fees and privacy and security standards directly with the suppliers. These include OverDrive, 3M Cloud Library, Axis 360, Content Cafe, Syndetics, and Zola Books.

  BiblioCommons has also entered into contracts directly with integration partners, which has allowed BiblioCommons to implement privacy security standards by agreement. Examples include LibraryThing, Zola Books, Google Analytics, FoxyCart (e-commerce payment gateway) and iDream Books.

  BiblioCommons recently cancelled a commercial Share-This service, used for posting content from the catalog to various social media channels, because our agreement did not provide prevent patron IP addresses from being shared with ad networks. The service has been replaced with a new native sharing service that interacts with 3rd-party sites only upon a patron's request.
- **Biblionix:** Patron details: A hole in SIP is that there isn't a way in the specification to pick and choose which data is shared with the third party. We're working with the NISO SIP working group to address this in the next version. In the meantime, we're

working on (but have not yet released) a way for the library to select which SIP client is allowed to see what information about patrons.

Search: Search history is not exposed in any way.

Reading patterns: It's possible for an (authenticated and encrypted) SIP client to look up patrons and see their list of items currently out. If this is done frequently enough, it could become a way for third parties to compile a checkout history. As stated above, Biblionix is looking into options to allow libraries to share only what is needed with SIP clients.

- **Innovative:** Regarding Polaris, Virtua and Sierra, for the purpose of such integrations, encrypted, password protected methods may be used as described above.
- **SirsiDynix:** SirsiDynix now includes provisions in all contracts with such third parties (i.e., those providing integrated service enhancements, payment processors, etc.) legally requiring these parties to comply with, at a minimum, the NIST SP 800-53 Low baseline security standard, as this baseline is sufficient for private sector and most government operations. See the SirsiDynix Controlled Access Plan (CAP) item AC-SD-a. for policies and procedures related to these activities. Additionally, as seen in the SirsiDynix Privacy Policy (http://www.sirsidynix.com/privacy), the company commits to protection of user privacy—including search and reading patterns—and never discloses or facilitates disclosure of individual user Personally Identifiable Information (PII) or behavior. The actions SirsiDynix has taken to ensure user privacy have been verified via audit performed by TRUSTe and the company has been issued the TRUSTed Cloud certificate of privacy protection.
- **OCLC:** OCLC does not share patron information with third parties unless explicitly authorized in the contract or in written authorization with the library. OCLC conducts third-party service provider risk assessments and ensures that any contracts with TSPs include the appropriate controls to protect data from unauthorized disclosure. In the United States, OCLC has mapped its controls to NIST 800-53 to demonstrate compliance with the U.S. Federal Information Security Management Act. Additionally, OCLC ensures security and privacy controls meet the requirements of various international bodies such as the European Network and Security Agency and German Federal Office for Security of Information Technology (BSI).
- **Koha:** SIP2

## Vulnerabilities Through APIs

1. Do the APIs allow or require encryption in requests or responses that include patron-related data?

- **BiblioCommons:** Our APIs support SSL.
- **Biblionix:** We don't have custom APIs, only some XML feeds (which contain no patron data), SIP (encryption requirements discussed above), and NCIP (which is over HTTPS and so is exclusively encrypted).
- **SirsiDynix:** Encryption support is provided via the mechanisms described in the first section of the questionnaire.
- **OCLC:** Yes. OCLC encrypts all connections sharing privacy data via an encrypted connection specific to the library.
- Ex Libris The APIs security is based on protocol security. There is no encryption of payloads.
- **Koha:** Various Koha web services can be set up to require use of SSL.

2. What limitations to security impact your system, imposed by the APIs or protocols managed by external or third-part products?

- **Auto-Graphics:** Auto-Graphics, uses protocols such as SIP2, Z39.30 and NCIP (1 & 2), some of these protocols do not use encryption, but they are typically not used to pass patron specific data, as outlined above. NCIP is offered both with and without SSL depending on the other vendor's implementation.
- **BiblioCommons:** Some 3rd party APIs are provided via a mixture of HTTPS and HTTP. We use HTTPS when available and consideration is given to any API using HTTP.
- **Biblionix:** No external or third party products. SIP limitations discussed above.
- **Innovative:** Regarding Polaris, Virtua and Sierra, APIs handling patron data support SSL (HTTPS) and are password and/or key protected.
- **OCLC:** Third party business partners and vendor risk assessment is completed and controls are implemented based on the risk or as specified at higher levels by the provider. OCLC does not share patron information with third parties unless explicitly authorized in the contract or in written authorization with the library. APIs are managed through the API specifications.
- **Ex Libris:** The APIs security is based on protocol security. There is no encryption of payloads.
- **Koha:** A variety of service providers communicate with Koha systems using SIP2. SIP2 is inherently an insecure protocol, and with very few exceptions, typically is not operated in a secure fashion. However, these services can be secured with the addition of a VPN or SSH tunnel to the service endpoints.
- **Evergreen:** Information about library purchases can be transmitted to materials vendors via EDIFACT EDI; not all vendors, however, require the use of an encrypted protocol such as SFTP or FTPS.

  A variety of service providers communicate with Evergreen systems using SIP2. SIP2 is inherently an insecure protocol, and with very few exceptions, typically is not operated over an encrypted transport such as a VPN or an SSH tunnel.

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