Final Report

for the

Minnesota Administrative Rules Status System (MARSS) Pilot Project

Prepared for

Office of the Revisor of Statutes,

Minnesota Legislature

Prepared by

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1 Executive Summary

Rulemaking background
Rulemaking is the process that executive branch agencies use to adopt, amend, suspend, or repeal administrative rules. Adopted rules have the force and effect of law.

Rulemaking processes require the participation of multiple state offices in addition to the agency proposing the rule. At specific points in the rulemaking process, documents are created. Minnesota Statutes section 14.365 defines the 11 document types constituting the official rulemaking record. Each agency must make documents in the rulemaking record available for public inspection and preserve the documents permanently.

Minnesota Administrative Rules Status System (MARSS)
The Minnesota Administrative Rules Status System (MARSS) is a concept for a new software application. The application would be built and maintained by the Revisor's Office. Executive branch agencies, and others, would upload their documents to the system. The goal is to improve public access, security, preservation, and transparency of state agencies' official rulemaking records through the creation of a single online records system. The envisioned system would serve as a single Internet location for the public to track rulemaking progress and access the official rulemaking record. Agencies could fulfill their requirement to maintain and preserve the official rulemaking record by submitting required documents to the Revisor for inclusion in the online records system. In summary, the benefits of MARSS will be:

1) Centralized Public Access – Provide a single, web accessible repository for all rulemaking records created by the 70+ agencies with rulemaking authority.
2) Centralized Preservation – Preservation of rulemaking records will be accomplished by the single office maintaining the rulemaking repository. Agencies with rulemaking authority will be relieved of this responsibility.
3) Search and Reporting Capabilities – Reports, including reports on rulemaking activity by agency, dates, and type of proceeding will be created by querying the contents of a single rulemaking repository.

MARSS Pilot Project
Using funds provided by the legislature during the 2015 legislative session a pilot project was conducted between July 2016 and January 2017. The product of the pilot project is this final report containing recommendations on the resources necessary to create the MARSS system.

Recommendations
The recommendations of the pilot project are:

1. Build the MARSS system using a combination of commercially available software applications, and custom written software to perform MARSS specific features.

2. Develop the system in 2 phases.

   a. Phase 1 – Rulemaking record maintenance. System capabilities will be:
      (1) Import existing data from the Revisor's current rule status system
      (2) Authentication and authorization (i.e., logon and permissions) of users
      (3) Rulemaking record creation. Add/remove documents to/from the record.
      (4) Permanent preservation of rulemaking records
      (5) Legislative staff receive notifications as rulemaking records are updated
      (6) Public search of all rulemaking records
      (7) Retrieval of complete rulemaking records or individual documents

       b. Phase 2 – Rulemaking notifications and system enhancements. System capabilities will be:
- (1) Associate legislative committees with rulemaking proceedings, making committee-specific reporting possible.
- (2) Public subscription service. Subscribers receive notifications as rulemaking records are updated
- (3) Central repository for document templates maintained by the Inter-agency Rules Committee (IRC)
- (4) Search enhancements (e.g., ability to save complex searches)
- (5) System workflow enhancements and electronic routing
- (6) Digital signature enhancements (detects whether the signed document was altered or changed in any way).

3. Add 2 FTE positions to the Revisor's Office: a) Database Administrator; b) MARSS Administrator.

The estimated implementation costs for Phase 1 and Phase 2 are $3,000,000 and $2,000,000. Revisor IS staff, temporarily augmented by contractors, will build the system. Estimated annual maintenance cost for the resulting system is $510,000.

2 Background – Rulemaking and the rulemaking record

2.1 Rulemaking

Rulemaking is the process that executive branch agencies use to adopt, amend, suspend, or repeal rules. The legislature delegates rulemaking power to agencies by enacting law. Upon receiving statutory authority from the legislature, agencies use their specialized knowledge and resources to implement and maintain rules. Adopted rules have the force and effect of law. The complete set of Minnesota Rules is compiled and published by the Revisor's Office and are available online at https://www.revisor.mn.gov/rules/ .

The rulemaking process is a formal procedure defined in Minnesota Statutes, Chapter 14 and Minnesota Rules, Chapter 1400. A primary goal of these procedures is to keep the legislature and public informed of changes to rules, and provide opportunities for participation in the rulemaking process. Rulemaking follows several processes:

1) General rulemaking proceeding with public hearing.
2) General rulemaking proceeding without public hearing.
3) Good cause exempt rulemaking proceeding.
4) Obsolete rule repeal.
5) Exempt rulemaking.
6) Expedited rulemaking.
7) Special exempt rulemaking. Two examples are:
   - Department of Natural Resources (DNR) exempt emergency rulemaking.
   - Department of Labor and Industry (DOLI) OSHA rulemaking.

See Appendix D for flow chart diagrams of processes 1-4.

Each rulemaking process requires the participation of multiple state offices in addition to the agency proposing the rule. The following offices have a role in the rulemaking process or in the preservation of rulemaking records.

Executive Branch
1. Governor
2. State Agencies (approximately 70 agencies have rulemaking authority)
3. Office of Administrative Hearings
4. Department of Administration
5. State Register
6. Records Disposition Panel (Minnesota Statutes 138.17)

Legislative Branch
7. Standing committees of the House of Representatives with jurisdiction over agency rulemaking
8. Standing committees of the Senate with jurisdiction over agency rulemaking
9. Legislative Coordinating Commission
10. Office of the Revisor of Statutes (ROS)
11. Legislative Reference Library (LRL)

Attorney General
12. Attorney General

Secretary of State
13. Secretary of State

Judicial Branch
     14. State Court Administrator

2.2 Rulemaking record

At specific points in the rulemaking process, documents are created. Minnesota Statutes, section 14.365 defines the 11 document types constituting the official rulemaking record. Each agency must make the documents in the rulemaking record available for public inspection and permanently preserve the documents.

Table 1 shows the documents that constitute a rulemaking record and the office creating each document. 70 agencies currently have rulemaking authority. A total of 117 agencies have had rulemaking authority since 1980.

TABLE 1. RULEMAKING RECORD

Document in rulemaking record	Document creator
(1) copies of all publications in the State Register pertaining to the rule (further explained in Administrative Rules Chapter 1400)	• Agency
(2) all written petitions, and all requests, submissions, or comments received by the agency or the administrative law judge after publication of the notice of intent to adopt or the notice of hearing in the State Register pertaining to the rule;	• Agency • Office of Administrative Hearings
(3) the statement of need and reasonableness for the rule;	• Agency
(4) the official transcript of the hearing if one was held, or the tape recording of the hearing if a transcript was not prepared;	• Agency
(5) the report of the administrative law judge, if any;	• Office of Administrative Hearings
(6) the rule in the form last submitted to the administrative law judge under sections 14.14 to 14.20 or first submitted to the administrative law judge under sections 14.22 to 14.28;	• Agency • Office of the Revisor of Statutes
(7) the administrative law judge's written statement of required modifications and of approval or disapproval by the chief administrative law judge, if any;	• Office of Administrative Hearings
(8) any documents required by applicable rules of the Office of Administrative Hearings;	• Agency
(9) the agency's order adopting the rule;	• Agency
(10) the revisor's certificate approving the form of the rule; and	• Office of the Revisor of Statutes
(11) a copy of the adopted rule as filed with the secretary of state.	• Office of the Revisor of Statutes • Secretary of State

2.3 Rulemaking record preservation and public access

Each agency with past or present rulemaking authority is responsible for preserving and providing public access to the record. Methods for preservation and public access vary by agency. Preservation methods are paper, digital off-line media (e.g. DVDs), and digital on-line media (e.g. disk drives). Materials must be preserved permanently. To provide public access some agencies only offer paper copies while others offer digital documents available on the internet. Multiple preservation methods are

an inefficient duplication of effort. Agency-specific public access procedures and varying digital formats cause confusion for the public.

2.4   2012 Rule Status System (also known as the Revisor's "Beta" System)

Since 1980 the Revisor's Office has been collecting rulemaking data to aid in historical research of rulemakings. The data was collected from a variety of sources including paper files, digital versions of the State Register, SONARS obtained from the Minnesota State Archives and the Legislative Reference Library, digital documents from the Office of Administrative Hearings and information submitted to the office from an agency.

In 2012 the Revisor's Office released a system that allows public access and searching of the collected rulemaking data. (At the time, a caveat on the web page indicated that the system was being beta tested. To this day the system is sometimes called the Beta System.) Centralizing the data in a single database makes it possible to easily access information, and search for historical and in-progress rulemaking. The system has proven valuable to the agencies, public and the legislature.

However, the current system has limitations.

1) In some cases, the system does not contain complete rulemaking records.
2) The system does not store all documents. The system stores URLs to documents at OAH and the State Register. Installation of new software at both offices have changed document URLs resulting in broken links on the current system's web pages.
3) Public search pages are not user friendly or intuitive.
4) Documents and rule status information are entered into the system by a single Revisor employee when other duties permit.
5) Notification of document additions does not exist.
6) Document authentication does not exist.
7) Support for sensitive (unredacted) documents does not exist.
8) Support for audio files of hearings does not exist.
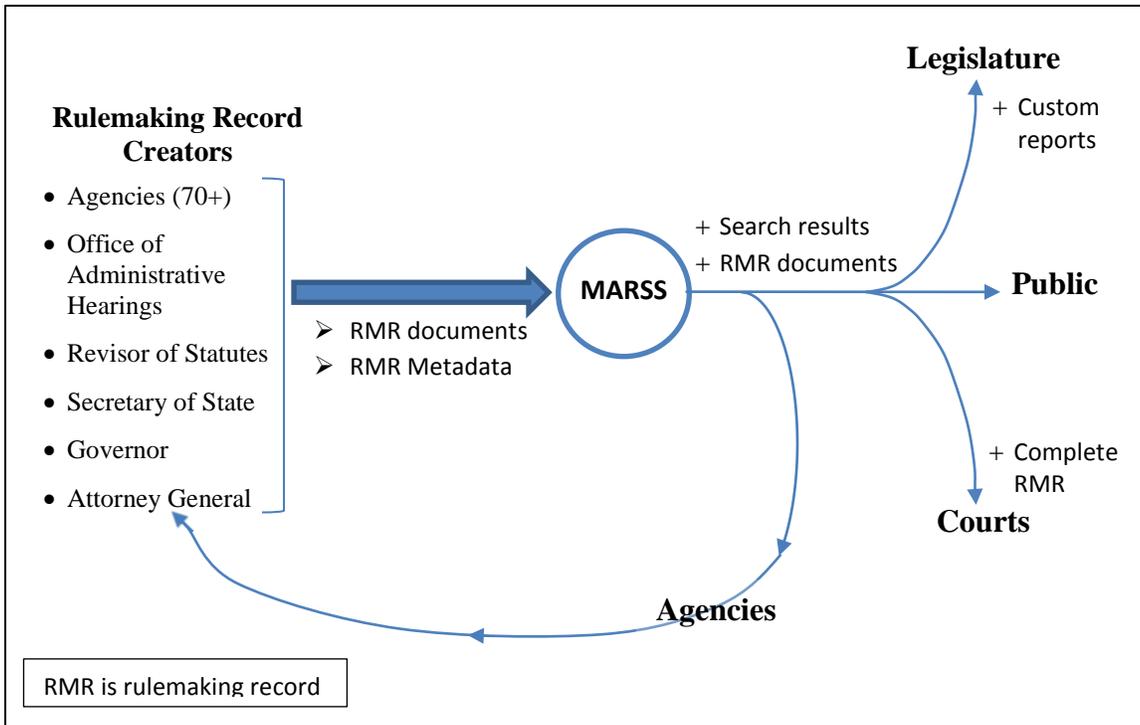
3 MARSS Pilot Project

3.1 Future vision for rulemaking

The Minnesota Administrative Rules Status System (MARSS) is a concept for a new software application. The goal is to improve public access, security, preservation, and transparency of official state agency rulemaking records through the creation of a single online records system. The envisioned Minnesota Administrative Rules Status System would serve as a single Internet location for the public to track rulemaking progress and access the official rulemaking record. Agencies could fulfill their requirement to maintain and preserve the official rulemaking record by submitting required documents to the Revisor for inclusion in the online records system. In summary, the benefits of MARSS will be:

1) Centralized Public Access – Provide a single, web accessible repository for all rulemaking records created by the 70+ agencies with rulemaking authority.
2) Centralized Preservation – Preservation of rulemaking records will be accomplished by the single office maintaining the rulemaking repository. Agencies with rulemaking authority will be relieved of this responsibility.
3) Search and Reporting Capabilities – Reports, including reports on rulemaking activity by agency, dates, and type of proceeding will be created by querying the contents of a single rulemaking repository.

The MARSS system is envisioned to become a permanent system and the documents and data it contains will be permanently preserved and available. The system will consist of Revisor staff, computer hardware and software, and rulemaking record data. Figure 1 shows the flow of data into MARSS and the services it will provide to the legislature, public, courts, and agencies.

*FIGURE 1. **MARSS** DATA FLOW AND FEATURES*

3.2   Pilot Project

Using funds provided by the legislature during the 2015 legislative session a pilot project was conducted between July 2016 and January 2017.

The project team first learned about the current rulemaking process, then researched applicable technologies. Short-term licenses were obtained for three of the most promising commercial software products. Due to time constraints a prototype was built using only two of the commercial products. The resulting knowledge was used to develop the recommendations, schedule, and budget in this report.

3.3   Pilot Project activities

Pilot project activities had the common goal of collecting relevant information useful in preparing the recommendations in this report. The activities were:

1. Form the project team.

2. Learn the current rulemaking processes and items in the rulemaking record

    a. Use business process modeling (BPM) techniques to document the rulemaking workflow

    b. Capture current requirements, and potential future requirements

3. Contact states with similar systems

4. Technology research, vendor evaluation and risk mitigation

    a. Meet with MN.IT to discuss experience with relevant technologies

    b. Research vendors able to deliver a complete system

    c. Research commercial software applications with which to assemble a solution

    d. Analyze a complete system designed, developed, and delivered by Revisor staff

5. Prototypes

    a. Prototype #1 (Granicus) – Attempted to repurpose a complete commercial off the shelf (COTS) software solution. The product is designed for managing public meeting documents. Creation of MARSS functions was accomplished by changing configuration settings.

    b. Prototype #2 (Laserfiche) – Built MARSS features by integrating a COTS software product and custom written software. Used the application programming interface (API) that comes with the product to make the product and custom code function as a single system.

    c. Prototype #3 (Nuxeo) – A prototype with this product is planned for February 2017. The same approach will be used as in prototype #2 (Laserfiche).

6. Write final report

3.3.1   Project team

The project team included Revisor's staff and two external contractors:

- Paul Marinac   Revisor's Office
- Timothy Orr   Revisor's Office
- Melissa Patsch   Revisor's Office

- Jason Duffing   Revisor's Office
- Isaac Holmlund   Revisor's Office

- Janice Kuschner   Project Consulting Group   Software System Architect
  Minneapolis, MN

- LeAnn Simonson   Zinncorp, Inc.   Business Process Analyst
  Coon Rapids MN

The project team was supplemented but not limited to the following personnel with experience in the rulemaking process and/or applicable technologies.

Name	Organization
• Patricia Winget	Department of Health
• Kerstin Forsythe Hahn	Department of Education
• Mary H. Lynn	Pollution Control Agency
• Beth Richter Scheffer	Department of Transportation
• Denise Collins • Katie Lin	Office of Administrative Hearings
• Bert Black • Nancy Breems • Tom Abel	Secretary of State
• Corrine Staeheli • Jessica Kidd • Ian Lewenstein	Revisor's Office
• Elizabeth Lincoln	Legislative Reference Library
• Jon Eichten	Minnesota IT Services (MNIT)
• Shawn Rounds • Sarah Barsness	Minnesota Historical Society

3.3.2 Current rulemaking processes and record

During August and September 2016, analysis work was led by the Business Process Analyst contractor. Several meetings were held with agency personnel to learn:

- their rulemaking processes
- points in the process at which documents in the rulemaking record are created
- agency-specific procedures for preservation and public access of past and active records

The information from these meetings was captured in four rulemaking process workflows found in Appendix D. These workflows cover:

1) General rulemaking proceeding with public hearing.
2) General rulemaking proceeding without public hearing.
3) Good cause exempt rulemaking.
4) Repeal of obsolete rule.

These meetings were also used to draft functional (what the system must do) and non-functional (what the system must be) requirements for MARSS. The full set of draft requirements is provided in Appendix B. At a high level the functional requirements fall into these categories:

- Security – user account authentication (logins) and authorization (permissions).

- Rulemaking Record – transmission of digital files and metadata from the creating office to the MARSS system. Reception and storage of the data.

- Reporting/Searching – immediate public access to public data, the ability to search the system using various criteria (text phrase, dates, agency, proceeding type, etc.), and retrieval of a single document or the entire rulemaking record. The ability to create custom reports for the legislature.

- Preservation – ensure the integrity and continuing usability of the documents and data in the rulemaking record

- Administration – maintenance of user accounts and data

The analysis work produced the following documents:

- Process models emphasizing the flow of information, and process models emphasizing roles and process sequence.

- Entity relationship model documenting the data created during the rulemaking process. An initial database design for storing the data.

- Event models representing the lifecycles of rule revisions in the context of rulemaking proceeding types.

- Use cases representing possible interactions with the MARSS system.

- Requirements for each use case detailing expectations for system functionality, collected in statements and business rule matrixes.

3.3.3   Contact states with similar systems

Early in the pilot project, the Software System Architect contractor sought to learn from the experiences of other states that have already built features envisioned for MARSS. Telephone interviews were conducted with five state offices performing similar work:

- California
    - Office of Administrative Rules, Riverside County
    - Software development experience with Granicus
    - Legislative project sizing

- Connecticut,
    - Office of the Secretary of the State,
    - eRegulations System at https://eregulations.ct.gov/eRegsPortal/

- Iowa
    - Office of the Chief Information Officer
    - Software development experience

- New York
    - Office of Administrative Rules, Upper East Side
    - Software development experience with Granicus

- Utah
    - Office of Administrative Rules
    - Rules system design experience

In addition to these contacts, customers of the vendors we evaluated were contacted in Texas, Florida, Colorado, North Carolina and Tennessee. They were asked about their project structure, requirements, how the vendor performed and about their own research that lead to vendor selection.

One thing became clear during these discussions; the State of Minnesota allows agencies the most autonomy in the rulemaking process. Some states have mandatory workflows that dictate the sequence agencies must follow in order to create a rule. Other states also include a rule drafting system for agencies to use whereas the Revisor's Office maintains control of rule drafting in Minnesota.

3.3.4   Technology research. Vendor evaluation and Risk mitigation.

Technology research for the MARSS project was performed by first evaluating software components used by MN.IT and other states. Personnel from MN.IT attended several meetings. The purpose of these meetings was to identify any relevant software applications that may already be in use at all state agencies. The applications of interest are:

- Digital signature (embeds a hash value in the document for perpetual document authentication)
- Workflow
- Optical character recognition (OCR)
- Audio or video storage applications

We learned that at present, there is no state-wide deployment of these software applications. Individual agencies may be using a vendor's product to solve an agency-specific need, but no products are currently deployed state-wide.

After querying MN.IT, the team sought to identify relevant, commercial software applications. Three sources were used to create a list of companies and products. First, the conversations with other states, as described in section 3.3.3 above. Second, conference materials and contacts from the 2016 National Association of Legislative Technology (NALIT) conference. Third, prior work experience of the Software System Architect contractor with other reputable Content Management System (CMS) and Enterprise Document Management (EDM) vendors. Figure 2 shows Gartner's 2016 rating of ECM vendors.

FIG 2: MAGIC QUADRANT FOR ENTERPRISE CONTENT MANAGEMENT
SOURCE: GARTNER GROUP

To satisfy risk mitigation concerns, companies were first researched for company stability, reputation, and their ability to meet all MARSS requirements. Clients using the company's product were contacted to get an opinion regarding their products and services. This list of companies was shared with the Administrative Codes and Registers (ACR) online community to talk to customers who had personally worked with these vendors. A corporate legal proceedings search was performed as well for each vendor.

Companies that passed the selection criteria above were sent the functional, non-functional system requirements for MARSS and asked to say if they could meet each requirement. Of the requirements they said they could meet, companies were asked to identify their product that could meet the requirement. Vendors that could meet 50% of the requirements and all mandatory workflows were then invited to demonstrate how their product could meet the requirements.

The vendors that passed the demo were then invited to provide a cost quote for each COTS module as well as any custom development effort. See the list of vendor's and contact information provided in Appendix C.

Additional risk mitigation criteria used throughout the selection process include:

1. Setting the expectation that our vendor evaluation is based on the product's ability to meet MARSS project requirements – not the product's price alone.

2. Contacting mature companies that have been in business at least five years with no security breach or other lawsuits (Note: code patent violation allegations are common in the software industry and were therefore allowed).

3. Contacting companies ranked in the upper, right-hand quadrant of figure 2.

4. Dealing directly with the software vendor versus a reseller whenever possible.

5. Selecting vendors with good references in Minnesota state or local government.

6. Networking nationwide with other states that have done similar projects.

7. Networking with professional organizations like NALIT distribution list members.

8. Asking vendors to prove they can do what they say they can do via a demo or proof of concept.

9. Getting vendors to provide itemized quotes for off the shelf software, module by module wherever possible

10. Getting vendors to detail what an implementation of their product may look like in terms of time, staffing and cost.

11. Running a West Law, Better Business Bureau and client reference check on all qualified vendors.

The following vendors satisfied the above criteria and received additional consideration:

- Granicus
- Propylon
- eSignLive
- Drupal
- Django CMS
- Laserfiche
- Nuxeo

3.3.5   Prototypes

The vendor evaluation identified three viable products. Temporary licenses were acquired from the following vendors for the purpose of building a prototype to further evaluate their product:

- Granicus – Legistar product
- Laserfiche (obtained through MCCi, the top Laserfiche reseller in the world)
- Nuxeo

The temporary licenses allowed us to prototype two different types of systems. The first was a COTS system configured for MARSS using a trial license for Legistar by Granicus.   Over a four week period Granicus engineers and executives answered all technical questions, provided product demonstrations, and made available a Legistar "sandbox" with which to build a prototype. Although their domain knowledge of legislative processes was excellent, the flexibility of the product to accommodate the current rulemaking processes did not exist. Legistar by Granicus is more focused on building agenda's and legislative document workflows. There was actually quite a bit of custom work to strip down the off the shelf software to make it applicable to Minnesota rulemaking. After considerable effort the prototype's objectives were partially satisfied. However, more effort was expended disabling out-of-the-box meeting agenda functions than building MARSS functions.

The second prototype system was built by Revisor staff using a trial license for Laserfiche. We evaluated the off-the-shelf capabilities including use of Forms and the web client. The prototype also

evaluated capabilities of the Laserfiche SDK – a software library that was accessed using .NET code written by Revisor staff. The prototype was developed over a three-week period. The product was able to accomplish an important, but limited, set of operations.

As of this report's date, Revisor staff did not have sufficient time to build a prototype using the Nuxeo trial license. Nuxeo provides the same components as Laserfiche and the trial license will be used to create a prototype similar to that of the one achieved with the Laserfiche license. The importance of also evaluating the Nuxeo product is that unlike Laserfiche, which would require Revisor staff to take on a new technology stack including .NET and MSSQL, Nuxeo fits into the office's current architecture and provides scalability in the skillsets already in use by the Revisor IS-unit.

Our search of over thirty-five vendors and resellers yielded two viable COTS options who most closely match all MARSS requirements: Laserfiche and Nuxeo. Of the two vendors, Nuxeo is the most scalable and able to work with existing Revisor's Office architecture. It lets staff build on their existing skill sets and expand their knowledge as they take on building new services to the public on a flexible open system architecture.

3.3.6   Final report
The final report consists of this document and its appendices.

3.4   Observations and analysis
The operation of the MARSS system will present challenges not faced by most states. Similar systems we looked at in other states were implemented by the executive branch and did not need to account for collaboration of the legislative and executive branches. The State of Iowa and Connecticut were close in their requirements and implementation strategy for rules. However, "close" meant that their projects and requirements were similar only about half of the time. The MARSS project and their projects differed in that MARSS spans autonomous agencies. The fact that Minnesota agencies are able to define their own process to meet statutory requirements where the rest of the country has significantly more standardized rulemaking processes built into their software is an important deviation in practice that drives every part of MARSS software development. Compared to other states, Minnesota has significantly more exceptions/non-standard rulemaking processes that do not fit with commercial off the shelf (COTS) software being used by other states.   That being said, it was surprising to find not one but two vendors that had products that met about seventy percent of the MARSS requirements.

The Revisor's Office has valuable, relevant experience that can be used to implement the MARSS system. The office has experience in preserving, reporting on and presenting legal materials to the public. The office is involved in the rulemaking process and has been responsible for final publication of the Administrative Rules volumes since the 1981.

The best technology solution for MARSS is a COTS product containing a programming interface that the Revisor's Office can understand, improve upon, and maintain. Such a system will be responsive to future customer demands.

3.5   Build vs. Buy recommendation
It is recommended that MARSS not be built entirely in-house. Building an entire application without the assistance of vendor is not recommended for several reasons:

1) The money saved from not using a vendor is often spent on staff augmentation and time taken away from other critical tasks.

2) An in-house build would need to be limited to Phase 1 of MARSS as our staff cannot build workflow and notification capability required in Phase 2. There are several vendors on the market that can meet this need for a reasonable cost.
3) If we build Phase 1 in-house and want to proceed with Phase 2 functionality at some point, we would have a more severe software integration issue than had we started using a vendor product at Phase 1. Integration issues cost time and money. It is often easier to migrate from one vendor to another vs. migrating from in-house built to a vendor assisted build typical of the recommended hybrid approach.

The pilot project found no complete, out-of-the-box commercial solution that covers all MARSS requirements. Additionally, it was determined that having an entire system built by a vendor is not an option. A vendor working alone will not have the Minnesota rulemaking experience necessary to build the customized features of MARSS.

The Revisor's Office IS-unit is a group of seasoned technologists who want to take ownership of the software and services they provide. They want to own the solution and the code that builds it. In this situation, it makes more sense to hire a vendor that will partner with the Revisor's Office to create software built to MARSS requirements.

In summary, the entire system solution should be assembled from COTS software and custom-written software; making implementation a joint vendor/Revisor effort no matter what vendor we choose.

Components/types of technology needed and recommended are:

1) CMS – A Content Management System. CMS gives agencies a permanent place to put rulemaking data and retrieve it.
2) Digital Signature – Digital signature will certify that documents are genuine and that no unauthorized party has altered them. They will help the end user determine that the right version of the document is being used.
3) Single Sign-on – A user name and password system that allows people to view and manipulate rulemaking records according to predetermined permissions.
4) Case Management capability – Case Management capability takes the database concept of records retention a few steps further by helping us manage upload and editing of the rulemaking record. It helps us enforce version control on each record so end users that draft records are always certain to work with the most recent changes. This technology will also help researchers identify the status of a rule in the process during a specific period of time.
5) Scalable components – In general, we need to purchase components for the MARSS system where base functionality either matches what MARSS needs or can be customized to meet MARSS requirements. We will not use software designed for another purpose and strip it down to meet our needs. We will start with base code and build up.
6) Open API – All vendors must have an API that works with our existing Java, PHP, Django, Oracle and/or MS SQL technology. All components must work well with one another to allow optimal design flexibility.
7) Correct approach to software development – Internal staff needs to be able to learn and own solution. We need a vendor who understands this and will support us.

4 MARSS Project Plan

4.1 System architecture

Figure 3 is the proposed system architecture. MARSS will be an independent stand-alone system assembled from COTS software and custom-written software. The Revisor's Office will use existing IT resources and buy new software products as needed.   Existing Revisor IT resources include a network firewall, hardware and software for building virtual servers, a tape backup system, and a long-term preservation system (called KEEPS).

FIGURE 3. MARSS SYSTEM ARCHITECTURE
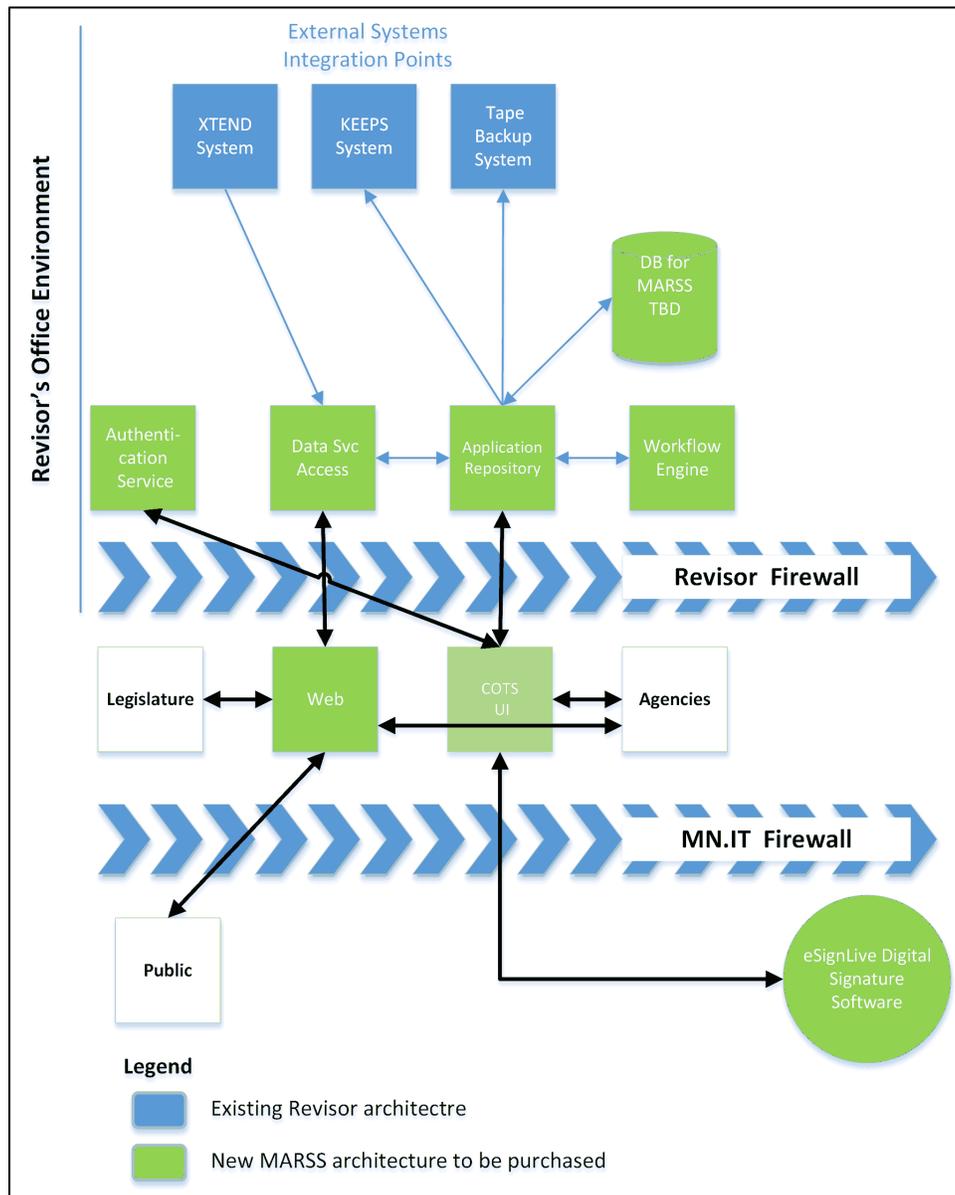
The new software products that will need to be purchased are:

- Content Management System (CMS)
- Relational database
- Digital Signature
- WebEx collaboration software

4.2 Schedule estimate

The following is a high-level time line for building and deploying the MARSS system:

TASK NAME	DURATION	START	FINISH
Form State-Wide Team	66days	Mon 5/1/17	Mon 7/31/17
Begin RFP Process	46 days	Mon 7/31/17	Mon 10/2/17

Publish RFP
  – Evaluate proposals
  – Evaluate demos
  – Evaluate prototypes
	80 days	Fri 10/3/17	Thurs 1/22/18

Award MARSS Contract	1 day	Fri 1/23/18	Fri 1/23/18
MARSS Project Kickoff	1 day	Fri 1/30/18	Fri 1/30/18
Phase 1 Implementation	267 days	Tue 1/31/18	Wed 2/7/19
Phase 2 Implementation	267 days	Tue 2/8/19	Wed 2/17/20
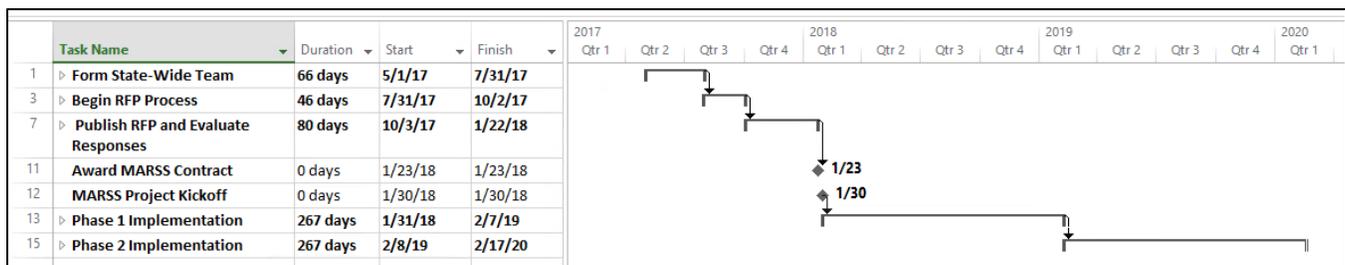
4.3 Implementation phases

Specific MARSS goals by implementation phase:

<u>Phase 1 Implementation</u>
(1) Import Revisor's current rule status system
    a. Populate data related to a rulemaking from the XTEND system. The current rule status system is populated with rule parts that were affected by a rule draft.
    b. Ability for an Admin/IS-staff to handle agencies merging and/or being renamed.
(2) Use authentication and authorization (i.e., logon and permissions)
    a. Ability to create user accounts and assign specific permissions.
      – Done by a MARSS Administrator
      – Allows for account suspension.
(3) Rulemaking record creation. Add/remove documents to/from the record.
    a. Agencies control when the data is added to the system. Anything added to the system is immediately available to the public and legislators. The ability to mark items as non-public will be available to all documents.
    b. Topic and keyword classification of rulemaking proceedings.
    c. Access to sensitive documents only by authorized users. Phase 1 does not include performing the redaction. Agency staff will be able to upload a sensitive version and a redacted version of a file. Only the redacted version is shown to the public.
    d. Audio support for hearings. Also allow for transcripts of audio files.
(4) Permanent preservation of rulemaking records
(5) Legislative staff receive notifications as rulemaking records are updated

   a. Predefined notification content. Manually maintained list of recipients.
(6) Public search of all rulemaking records
   a. Searching/reporting on all public data will be provided. This includes the ability to run multi-faceted searches on various data fields.
    – Predefined searches will produce reports of interest to legislative committees
    – Text searching.
    – All searching capabilities of the current rule status system will be supported. Work on making the searches easier to use.
    – PDF documents uploaded without the necessary text content needed for keyword searching will be OCRed on input.
    – Searches and reports will be downloadable in a printer friendly format.
    – Search result sets will allow for easy navigation to the full rulemaking record as well as the specific document. Results should indicate if there are specific rulemaking record items that match a specific search term if one was used.
   b. Public facing web pages will be written using the same accessibility standards as the Revisor's website. Conforming to the states accessibility standards for rulemaking record items will be a responsibility of the agency.
(7) Retrieval of complete rulemaking records or individual documents
   a. Export rulemaking data from the system.
    – Export the entire rulemaking database for archival purposes.
   b. Reports on rulemakings. These reports could be helpful to agencies in generating the Rulemaking Docket
   c. Entire rulemaking records. This can be used to transmit to OAH, to the courts, for the agency or possibly the public/legislature.

Phase 2 Implementation
(1) Associate legislative committees with agency rulemaking proceedings.
(2) Public subscription service. Subscribers receive notifications as rulemaking records are updated.
   a. "MyRules" features allowing individuals to start, stop, and customize their notifications.
   b. Self-provisioning accounts
    – The public will be able to create their own account for MyRules
    – Password resets and expirations will be supported for all users in an automated manner. MARSS Admin will not need to be involved.
(3) Central repository for document templates maintained by the Inter-agency Rules Committee (IRC).
   a. Host the IRC templates within the MARSS system. Agencies would be able to download the templates from MARSS to complete the documents necessary for a rulemaking. The system could show the "recommended" templates for the specific rulemaking proceeding type so that it is easy for the agency to find. The system may pre-populate some data in the templates.
(4) Search enhancements
   a. Ability to save custom searches and reports.
   b. Highlighting found search terms in results.
(5) System workflow enhancements
   a. System calculates required dates for rulemaking events, such as the 30-day comment period.

       b. Support for a rulemaking timeline. For example, if a rulemaking is using the "with a hearing' process, the system could provide a list of the standard events associated with that type of rulemaking and keep the legislature/public informed about what is left to be done on a rulemaking.

       c. Workflows – these can automate sending record items to the correct offices for approvals and automatically change the "status" of the rulemaking based on events. There are several different workflow automations to consider.

       d. Automatically transmit data to external systems such as OAH or the courts.

(6) Digital signature enhancements (detects whether the signed document was altered or changed in any way).

4.4 People

Recommend hiring five contractors.

1. Project Manager. Manages the work for phases 1 & 2. Schedules the COTS vendor's personnel dedicated to the project.   Leads the development team using agile software development techniques. Uses agile techniques to engage users and stakeholders throughout the project.
2. Business Process Analyst.   Documents rulemaking processes and aids in requirements finalization and vendor selection.
3. Senior Software Developer. Has existing skills and experience to be quickly productive in the selected COTS product. Will work on team of developers to program the custom features of MARSS.   Will teach these skills to the team as needed.
4. Senior Web Developer.   Has existing skills and experience to be quickly productive. Will develop custom search screens used by the public. Will utilize the COTS product's programming interfaces, as needed, to make web pages interact with the COTS product.
5. Senior Java Developer. Legislative experience is preferable. The developer will backfill for the Revisor IS staff person reassigned as the MARSS Software Architect. The Java Developer works on existing Revisor applications, not MARSS.

Recommend limited use of existing Revisor IS-staff. The expertise of the Revisor's IS staff will be necessary during the MARSS project. Correctly integrating new technologies into the existing IT architecture will result in reliable operation of MARSS and lower, long-term maintenance costs. At the same time, existing IS staff will have limited time to work on MARSS because they are fully utilized maintaining existing essential applications. Recommendations for existing IS-staff are:

1. Software Architect. Re-assign one person to the MARSS project for its duration. The person will ensure that the project adheres to IT best practices, Revisor conventions and standards, and will work towards seamless integration of MARSS with the Revisor's existing architecture.
2. Database Administrator (DBA). The staff DBA will consult on MARSS database and data structure issues. He will also train the new DBA (see next paragraph) on Revisor conventions and standards.
3. Web programmer. A staff web programmer will consult on MARSS web site and web page issues. He will also train the Senior Web Developer contractor on Revisor conventions and standards.

Recommend adding two FTE positions.

1. Senior database administrator (DBA). This person will install, configure, and maintain the commercial database holding rulemaking records and associated metadata. This person will design the database tables for storing data, connect the database to the selected commercial content management system (CMS), develop database queries for use in the custom written software.
2. MARSS Administrator. This person will monitor rulemaking records for completeness, serve as a resource to authorized users (e.g., agency users) on system usage, and facilitate communication between authorized users and IS staff.

4.5   IT purchases

The following expenses will be incurred to build and maintain the MARSS system.

Hardware

    Desktop hardware for contractors and new FTEs

COTS CMS Software

    License(s) for the selected COTS Content Management System (CMS) software. The first year cost includes the license(s) and product support. Only product support need be purchased in the second year and beyond.

    This item also includes project management and software engineering hours for the vendor's staff.

Other COTS Software

    These are software products needed for software development, project management, and communication with project participants.

Local Contractors

    Five, contractors working on-site in Revisor office space.

New FTEs

    Two, new, permanent, Revisor FTEs.

4.6 Estimated implementation costs

Item	Phase 1	Phase 2	Annually	Note
Hardware				
Laptops (7)	$10,500	-		[1]
Phone (7)	$1,750	-		[1]
Virtual servers	$0	$0		
COTS CMS Software				
Product & support	$1,200,000	$280,000	$280,000	
Other COTS Software				
Oracle DB Standard ed.	$23,485	$2,117	$2,117	
eSignLive	$6,000	$6,000	$6,000	
WebEx teleconference	$4,000	$4,000		
MS Office (7)	$1,400	$1,000	$400	[1]
MS Project (3)	$1,187	-		[2]
MS Visio (3)	$1,014	-		[2]
Tivoli Service Manager	$2,700	$350	$350	
Local Contractors				
Contractors (5)	$1,560,000	$1,560,000		
5 x 40 x 52 x $150/hr =				
New FTEs (with benefits)				
Senior DBA	$125,000	$125,000	$125,000	
MARSS Administrator	$96,046	$96,046	$96,046	
TOTAL	$3,033,082	$2,074,513	$509,913	

Notes:
   [1] Count of 7 = 5 contractors + 2 new FTEs
   [2] Count of 3 = Project Manager + Business Process Analyst + Software Architect