



Washington Department of Health

Healthcare Enforcement and Licensing Modernization Solution (HELMS) Feasibility Study

N22432

April 17, 2017



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Revision History

<i>Revision</i>	<i>Revision Date</i>	<i>Name</i>	<i>Notes</i>
Initial Draft	March 17 th , 2017	Integrated Solutions Group	Draft for Review and Approval
Rev 2	March 17 th , 2017	Integrated Solutions Group	Incorporated edits from Stephanie Goebel
Rev 3	March 22, 2017	Stephanie Goebel edits	
Rev 4	March 24, 2017	HTS Edits	
Rev 5	March 27, 2017	Integrated Solutions Group	Incorporated all edits including Sponsor suggestions
Final Draft	April 10, 2017	Integrated Solutions Group	Final delivery includes edits from Project Liaisons, and Staffing Updates
Final Revised Draft	April 17, 2017	Integrated Solutions Group	Revised final draft includes edits from Steering Committee review

Notices:

This document was developed by Integrated Solutions Group on behalf of the Washington Department of Health per contract for services N22432.

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1 Executive Summary

The Washington Department of Health (the Department) has a unique public safety role that is focused on protecting and improving the health of families and communities. As part of this essential public health service, the Department regulates licensing and enforcement of healthcare providers and facilities.

The purpose of this Feasibility Study is to evaluate and recommend alternatives for a Health Enforcement, Licensing and Management Solution (HELMS) that through an integrated, modular tool meets the statutory requirements and business needs of the Department.

1.1 Methodology and Approach

The Feasibility Study was completed February through April 2017. The initial stage collected information to support alternative analyses, cost benefit analyses and recommendations. Information was collected through the following avenues:

- 1) **Review baseline documentation:** Background documents were provided for review including the Project Charter, Business Requirements, and Functional and Technical Requirements.
- 2) **Interview business participants:** Interviews were conducted with Project Liaisons representing ten (10) stakeholder business areas. These interviews, along with the DOH-provided documentation, form the basis for the Business Needs, Objectives, and Organizational Impacts sections of the Feasibility Study.
- 3) **Conduct industry research of similar projects:** Similar implementations were identified within other Washington agencies and by Departments of Health in other states. Similar projects were identified through on-line research, recommendations from the Washington Office of the Chief Information Officer (OCIO) and by speaking to industry experts including professional health associations. The findings from the industry research provide the basis for the Alternatives and Recommendations Sections as well as the Cost Benefit Analysis (CBA) forms of the Feasibility Study.

1.2 Recommendation and Alternatives Considered

To meet the Department's business needs for licensing, enforcement and regulatory requirements, this Feasibility Study recommends Alternative #3: Platform as a Service

(PaaS)/Software as a Service (SaaS) that is modular, configurable and provides best of breed shared services for reporting, security, interface and data exchanges, document management, rules engine, and work flow management. See below for a comparison of the recommended solution with the alternatives evaluated including Design, Development and Implementation (DDI) and Maintenance and Operations (M&O) costs.

Table 1: Comparison of Alternatives

Alternative	DDI Cost	M&O Cost per year	DDI Timeline	Comment
1 No Change (to current Licensing System)	N/A	\$0.8 M to \$1.5M	n/a	Doesn't meet business needs; nearing end of life and requires major upgrade
2 Upgrade or Expand (current Licensing System)	\$2 to 6 M	\$0.8 M to \$4M	36 months	Vendor is developing next generation solution
3 PaaS/SaaS Solution	\$4 to 15 M	\$1M to \$3M	30 months	Best fit with most maturity in marketplace
4 Custom Developed Software	\$3 to 8 M	\$3M to \$5M	36 months	Highest risk, highest cost over lifecycle option

Note: the wide range of DDI costs for alternative #3 is due to the variability of vendors in the marketplace, including small-, medium- and high-tier vendors. A competitive RFP is likely to result in a lower range of costs. Additionally, M&O costs for alternative #4 are driven by the need for a large development staff to maintain a custom-developed solution.

For a complete discussion of the recommendation and alternatives considered, refer to Sections 6 and 7. Detailed cost estimates are provided in Section 11 and Appendix A.

1.3 Industry Overview

There are several platforms and vendors in the marketplace that are modular, configurable and include best of breed shared services. Some have been or are currently being implemented by other Washington agencies as well as other state public health agencies. A recent procurement in the State of Ohio resulted in six (6) vendor responses. A Request for Information (RFI) and/or a Request for Proposal (RFP)

will further serve to inform the Department in terms of alignment with business needs, implementation and operations costs, and implementation timelines.

1.4 Implementation Considerations

The industry research revealed that the typical configuration, integration and implementation period for a PaaS/SaaS solution is approximately 30 months, depending on the scope and complexity of the implementation. As a risk mitigation strategy, the Department should approach implementation iteratively by implementing by modules in a phased strategy and on-boarding licensing and enforcement by profession or program area. Such a strategy can be further informed via the RFI/RFP process. Refer to Section 10 for a recommended implementation timeline and a discussion of implementation strategies.

1.5 Staffing Model

The recommended staffing model for the HELMS project addresses configuration, testing, and implementation during DDI. Also, as the recommendation is for a PaaS/SaaS solution, M&O activities will need to focus on managing configuration changes, data analysis, and contract/vendor management. A summary view of the recommended DDI staffing model is shown below. This reflects full-time, dedicated staff only and does not identify other business and technical staff that may participate. Refer to Section 9 for a detailed staffing model view including an organizational chart.

Table 2: DDI Staffing Model Summary

DOH FTE's Recommended Position	FTE Count
Project Manager	1
Technical Integration Manager	1
IT Business Requirements Manager	1
Data Conversion Manager	1
Interface Manager	1
Configuration Manager	1
Testing Lead	1
Technical Analyst	4

DOH FTE's Recommended Position	FTE Count
Business Analyst	3
Business SME Lead	3
Contracts Lead	1
Total Department FTEs:	18

1.6 Risk Management

Active risk management is imperative for project success. Section 12 of the Feasibility Study includes a high-level risk management and mitigation strategy. Additionally, the initial risk registry is found in Appendix C.

2 Background and Needs Assessment

Washington's governmental public health system has a critical and unique public safety role that is focused on the Department of Health's mission to protect and improve the health of people in Washington State.

The HELMS project's purpose is to procure and implement a modernized solution to support licensing and enforcement of healthcare providers, facilities and educational programs throughout Washington.

The Department's Division of Health Systems Quality Assurance (HSQA) and Chiropractic, Medical and Nursing Care Quality Assurance Commissions are responsible for the licensing and enforcement of over 400,000 healthcare professionals, approximately 7,000 facilities and 812 Nursing educational programs. Each year nearly 9,800 complaints are reviewed and thousands of facility inspections are conducted.

2.1 Proposed Major Areas of Functional Scope

Functional services within the scope of HELMS include:

1. Licensing/credentialing of providers, facilities, educational programs
 - a. Application
 - b. Renewal
 - c. Certificate of need for facilities
 - d. Construction review
2. Enforcement
 - a. Inspections
 - b. Complaints
 - c. Case management
 - d. Investigations
 - e. Legal actions
 - f. Adjudicative services
 - g. Compliance
3. Policy/Administration
 - a. Boards, Commissions, Committees
 - b. Business rule engine

- c. Certificate of Need
- d. Community Health Systems
- e. External portals

2.2 Current Solution

The Integrated Licensing and Regulatory System (ILRS) is the incumbent solution used for licensing and enforcement of healthcare providers and facilities. ILRS is comprised of eleven applications and eighteen databases. The prime component of ILRS, eLicense, is a highly-customized Commercial off the Shelf (COTS) product that was implemented in 2008.

While ILRS aligned with licensing requirements, the enforcement modules required significant modification by the vendor. Even with these customizations, ILRS does not effectively support enforcement needs. As the department's business needs have evolved, ILRS's gap to business requirements has widened.

The provider of eLicense has determined that the current version is nearing end of life and will require a major upgrade for the Department to continue service.

2.3 Business Environment

The commissions for Chiropractic, Medical and Nursing Care have established independent budgetary authority and autonomy in many of their business operations; meanwhile all disciplinary authorities share the responsibility for data integrity and accurate reporting to common and unique reporting audiences. As the landscape of healthcare disciplinary authority has evolved, demands for technology that enables autonomy in workflow configurations and issuance of more granular security permissions in a system with shared and commonly maintained data have elevated and surpassed the capabilities of technology currently in place.

2.4 Business Needs¹

The Washington State healthcare regulatory authorities include: The Secretary of Health, twelve governor-appointed boards, five governor-appointed commissions and eleven governor-appointed committees. These disciplinary authorities are responsible for licensing and enforcement of eighty-five professions and nineteen facility types. To effectively do so, it is critical that data be shared and commonly governed across the functions of licensing and enforcement. To enable this today, both licensing and

¹ Count of boards, commissions, committees and license types vary over time. Figures provided throughout this document are accurate as of 04/14/2017

enforcement functions are performed in a shared system. Technology in place supports licensing business requirements fairly effectively. It does not effectively support enforcement requirements:

- The exchange of secure data with disciplinary authority appointees is manual and in paper form. This is because the current technology does not provide a satisfactory user experience to appointees. User-friendly technology that complies with technology security requirements is needed in a modernized solution
- User-defined fields are used to manage the unique needs of enforcement (and the variable needs for the 348 license types administered). Ad hoc reporting is not feasible today. Because the current system does not have a data warehouse, reports must be run outside of core business hours and require significant manipulation to provide meaningful data analysis of the poorly indexed data.
- Enforcement staff must re-enter data, which presents unnecessary risk of human error and a slowed response rate.

2.5 Business Opportunities

The HELMS project presents many business opportunities for the Department, providers, business partners and staff, including:

Improved Customer Service

- Modern technology will automate workflows for licensing and enforcement, which will in turn, reduce response time to providers and facilities and reduce risk of human error during re-entry and manual processing.
- Modern technology will enable more granular security permissions; as a result, user roles can be extended to providers and facilities so that applications, renewals and contact updates can be captured at the source and status of licensing and enforcement activities can be viewed in real time by authorized providers and facilities.

Increased Efficiency

- Modernized data management will vastly improve reporting and analytical capabilities, enabling more rapid and continual improvement to operations and customer support.

- Modern, configurable software will decrease cost and time needed to implement improvements in operations and customer support to include reaction time to new legislative mandates.
- More granular security permissions will also reduce the potential for users to incorrectly change or delete data due to system access inappropriate to their user role.

More Meaningful Work

- A modern solution will reduce unnecessary re-work, data entry, and other system workarounds, allowing staff to spend more time performing tasks that directly contribute to patient safety and access to care, resulting in increased job satisfaction
- Customer Service staff manually enter paper application data into the system and perform an initial validation of application content before it is passed along for a secondary, more complex validation, for example an assessment of attached transcripts or resumes to validate satisfaction of educational criteria. Pushing initial validations to the user interface means that Customer Service staff will have an opportunity to perform more meaningful tasks.

3 Objectives

Modernization of the Department's licensing and enforcement solution will address the Department's business objectives including the ability to achieve the following outcomes:

Configurable Workflows

- Support the unique needs and preferences of each Administrative Unit and the various credentials they administer
- Limit the cost of software development to respond to new and changing Disciplinary Authority requirements
- Speed the time in which new workflows can be created or existing workflows can be modified
- Limit the extent to which the system must be customized from standard releases so that updated releases can be implemented with minimal impact

Indexing of Configurations by Business Rule Citation

- Enable systematic reference to configurations related to specific business rules such as RCW/WAC chapter, section, sub-section, paragraph, so that impact assessment of proposed legislation to technology is rapid and efficient
- Enable systematic reference to configurations related to specific business rules so that business rule changes can be implemented in a systematic way and updates can be made more rapid and efficient

Granular Security Permissions

- Based upon security permissions authorized for a user role; one or more user role may be assigned to an individual
- Enable users to perform authorized operations within a shared system, while not jeopardizing risk of access to unauthorized content or operations
- Enable users to read and/or update content specific to their administered programs without jeopardizing risk of read/update of unauthorized data

Integrated Licensing and Enforcement Solution

- Share authorized data across all functional areas supporting licensing and enforcement so that data is entered at the source and not re-entered

- Share data across all functional areas supporting licensing and enforcement so that changes made to a record by authorized users are viewable in real-time by all other appropriately authorized users

Electronic Exchange of Secure Data with Disciplinary Authority Appointees

- Provide appointees with electronic access to the data necessary for them to uphold their responsibilities of disciplinary authority

Clearly Defined Data Accessible via On-Demand Query and ad hoc Reports

- Create and maintain a data dictionary where commonly used data fields are governed for appropriate use consistent to their definition and, unique data fields are added as required by each Disciplinary Authority
- Provide a data dictionary and interface that enables authorized users to identify the data fields desired for their reporting and analysis needs
- Provide a database structure that allows users to run queries and reports in near real time, during core business hours without degradation to system performance

Automated Workflows and User Interface Validations

- Minimize the need for manual progress of actions from one step to the next throughout a business process
- Maximize the number of data input validations that are conducted at the time of entry so that to the extent feasible, only validated data is updated to the system, including validation of fee payment as a prerequisite of transaction update to the system
- Maximize the inter-agency data exchanges and resulting system updates that are completed automatically

System Dashboards Customized to the User Role(s) of an Individual

- Provide a user interface where all operations authorized for an individual based upon their role can be initiated
- Provide a user with transactional information, which can be sorted and filtered, as it relates to the operations for which they have responsibility based upon their user role
- Provide a single user interface to gain access to all the information and technology required by an individual user to perform their licensing and enforcement responsibilities

- Provide a user with the ability to identify their preferred medium and frequency for receipt of system, auto-generated notifications

Transactional Logging

- Maintain a transactional history as specified by the Department's security-auditing standards, including but not limited to date and time stamps of record transactions requested and completed by user

Mobile Device Support

- Enable users to access and transact with the system on mobile devices based upon their user role and as appropriate to the nature of the operations they are authorized to perform (including field inspections)

4 Impacts

Modernization of the Department's licensing and enforcement solution will impact both internal and external entities, including all Washington healthcare providers and facilities, other Washington state agencies, healthcare associations throughout the nation, 28 boards, commissions, and committees, Department staff, and the public.

4.1 Providers and Facilities

Providers and facilities will experience significantly improved interactions with the Department. A portal for initiating initial, renewed or updated licenses, as well as finding information regarding licensing status, will give these stakeholders a single access point to meet their business needs. The Department intends to make operations and outcomes more transparent to providers and facilities.

Custom workflows will guide users through the licensing and enforcement processes, supporting different requirements, data and processing steps for different application, enforcement and user categories.

The Department envisions that modernization of its licensing and enforcement solution will give providers and facilities a unified point of outreach to the public as a complete directory of Washington State providers and facilities.

4.2 Boards, Commissions, and Committees

Appointees of the 15 boards, commissions, and committees will benefit from a quick access portal to obtain the information they need to review agendas and documentation, make decisions regarding disciplinary actions and credential exceptions. The envisioned system will also support multiple configurable workflows and parameter-driven business rules, allowing the Administrative Units autonomy of workflow design, while meeting Department standards and policies.

4.3 Other Washington State Agencies

The Department manages approximately 50 data exchanges with other Washington State agencies, including the Department of Social and Health Services (DSHS), Health Care Authority (HCA), Washington State Patrol (WSP), Office of Financial Management (OFM), Labor and Industries (L&I), Department of Revenue (DOR), and Washington State Liquor and Cannabis Board (WSLCB). Most exchanges are managed through a data agreement, and may include specific data such as contact information, credential information, exam results, or disciplinary action status.

The Department expects that the HELMS framework will make it possible to automate many of these data exchanges, following business rules for confidentiality and security. Giving data partners access to the agreed-upon data will provide immediate results, save Department staff time, and improve coordination of data across organizations.

4.4 Department Staff

Internal business units will benefit from streamlined processes and greater efficiencies. A configurable solution that meets the unique needs of each business unit will take fewer steps, require fewer workarounds, be more understandable, result in fewer questions, and save staff time so they can focus on higher value added functions of managing the overall process. Automated notifications and alerts will improve staff workflow, along with improved accuracy and timeliness of data.

With the implementation of HELMS, Department staff will have more time to provide oversight, monitor high risk cases, provide technical assistance, and validate data.

4.5 Healthcare Associations

The Department manages approximately 20 data exchanges with healthcare associations throughout the nation, including the American Medical Association (AMA), and the National Council of State Boards of Nursing. Like the exchanges with other Washington State agencies, improving automation of data exchanges with healthcare associations is expected to give partners and the Department immediate access to results, save time and increase data accuracy.

4.6 General Public

Automated, online submission of complaints and report requests, and more user friendly, mobile-device accessible provider search will provide the public with superior support.

5 Organizational Effects

The Department intends to use this Feasibility Study to support a “Go/No-Go Decision” for determining if the Department will move forward with modernizing its licensing and enforcement system. Assuming the leadership team makes a “go” decision, the Department will then advance from the planning to procurement stage of the project. The following section discusses the organizational effects of moving through the various project stages and activities, as well as establishing a new operational staff model and processes.

5.1 Procurement Mangement

Prior to development of a Decision Package for authorization of implementation funding, the Department intends to complete a Request for Information (RFI). The RFI process will help the Department to validate requirements and learn which requirements might be considered high cost by the vendor marketplace, validate findings of the Feasibility Study, and prepare the vendor marketplace in anticipation of a procurement.

Following submission of a Decision Package and re-baselining of requirements (based upon the RFI responses and other external stakeholder outreach), the Department intends to complete a Request for Proposals (RFP). The RFP process will result in selection of an Apparently Successful Vendor (ASV) and solidify final cost information for implementation and operations.

The current project staffing model will manage the above procurement activities in conjunction with the Department's legal and contracting staff.

5.2 Implementation Management

Implementation of a modernized licensing and enforcement solution will require significant planning and strong project management and sponsorship. The current team will need to be further augmented with fully dedicated staff to perform critical roles during implementation and in preparation of operations. Refer to Section 9, Project Management and Staffing, for a view of the recommended organizational chart and roles and responsibilities for managing a successful implementation. The importance of adequately staffing the project cannot be over-emphasized. Experience with similar projects in Washington State, as well as information captured during interviews of other states reveals that lack of adequate resources with business and technical knowledge is one of the biggest challenges projects face.

As currently staffed, the Department has made significant progress towards planning activities. High level business requirements and scenarios have been documented. Business processes are being documented and streamlined, while meeting unique needs of different business units and groups. Lean principles are being applied.

Prior to the implementation phase, configuration activities will be defined as part of the HELMS Analysis project. Business rules and workflow steps will be documented, evaluated, and traced to requirements. During DDI, the defined configuration will be loaded in the system and tested. During this stage, refinements to the previous Lean analysis may occur to align business processes with additional efficiencies realized with a new system implementation.

Data will need to be inventoried and analyzed. A robust plan for requirements management, data management, and testing management will be critical to the overall success.

The staffing model during the Implementation Phase should consider the needs of the Operational Phase and strategies to retain key personnel. Wherever possible, project positions should be filled with staff who will assume permanent operational positions so they have direct knowledge and experience prior to operations.

5.3 Shared Service Governance

A modernized licensing and enforcement system will require a robust governance approach to identify, prioritize and manage system changes. Ideally, the new system will be configurable and Department staff will be trained to manage changes internally without the additional support of software developers. However, complex configuration requires a thoughtful decision making process to identify and manage changes identified by users or due to regulatory changes.

Required modifications beyond configuration changes should be analyzed and considered carefully. The governance process should endeavor to avoid too much customization through software programming to maintain the benefits of a SaaS product. The modernized solution will need to stay in synch with regular upgrades and releases from the vendor and not diverge into a Washington-specific instance of the solution. Customization should be limited to configurable items such as business rules, work flows and reports to maximize the benefits of the recommended solution. Decision making at the appropriate level of the organization will be critical to success.

5.4 Staffing Needs

No reductions in force are planned because of a newly modernized licensing and enforcement system. However, some job responsibilities may shift between roles to fit the new system functionality and workflow, and to manage a new operations model.

Licensing and enforcement configuration management will become a critical responsibility. Staff selected to set up customized workflows will need to understand platform details and best practices, as well as business unit requirements and priorities.

Configurable systems need a superior data management and governance plan to ensure data integrity is achieved and maintained over time.

Roles and responsibilities for all HELMS related tasks will need to be clearly defined and documented.

5.5 Training Needs

A well planned and executed training and communications effort will be critical to a successful rollout. There are two (2) types of training required:

- 1) **User Training:** Staff and providers who use the modernized system will need to be trained. Vendor requirements should include provision of user training, ideally via on-line modules or webinars to suit adult learning styles. Availability of on-line training also supports on-going training needs beyond a one-time training event at the time of implementation. The Department should also make provisions for keeping training material current as system functionality evolves. Training material maintenance and on-going delivery should be a defined responsibility in the on-going operational model.
- 2) **Knowledge Transfer:** The successful vendor should also be responsible for training IT and Business Staff responsible for configuration setup and management. As a potential Platform as a Service (PaaS) or Software as a Service (SaaS) solution, IT training will focus on configuration and report management rather than software and hardware maintenance. It will be important to structure the successful vendor agreement to support this degree of training and knowledge transfer and to ensure the vendor supports these functions until Department staff are fully prepared to assume configuration and reporting responsibilities in operations. To best utilize user-driven functions such as ad hoc reporting, staff need to be thoroughly trained in data definitions and relationships as well.

5.6 Organizational Change Management

A new organizational structure will be required within the Department's Health Technology Solutions (IT) Division to shift from a software and hardware focused organization to a model where the vendor potentially hosts the system. Department staff will need to support configuration management, data management, vendor management, reporting management and ensuring vendor system meets Washington State OCIO Standards and integrates with State Technologies. Overall management of the new licensing and enforcement system should be a collaboration of business representatives and IT staff to ensure the system is maintained in alignment with business needs.

To transition to a new operational model, the Department should include Organizational Change Management (OCM) principles and practices into the overall implementation and staffing effort. Along with new business processes, new roles and responsibilities will need to be planned with a robust migration plan to transition to the new operational model.

5.7 Operations Management

Once implemented, the organization will need to shift to operations management as described below.

5.7.1 Configuration Management

Once a modernized solution is procured and implemented, configuration details need to be set up. This includes security roles and rules, data validations, the business rule engine, workflow steps, and reporting requirements. Staff responsible for these activities during implementation should transition to operational roles and continue to manage configuration as users identify changes or as regulatory changes occur.

5.7.2 Vendor Management

Vendor and contract management will be critical during operations. The Department should identify clearly who is responsible for this role and the vendor should be actively managed to ensure performance standards and Service Level Agreements (SLAs) are being met. Again, the ideal candidate for this role should participate in the implementation project to prepare them for the role.

The contract, developed as part of the procurement process, needs to be structured to include clear SLAs and significant remedies for lack of vendor performance. During the implementation phase, care should be taken to plan for appropriate operational reports to determine the vendor's performance.

6 Recommended Solution

Of the four (4) alternatives assessed to meet the Department's business needs for licensing, enforcement and policy responsibilities, this Feasibility Study recommends *Alternative #3*: an enterprise Platform as a Service (PaaS) solution with platform specific Software as a Service (SaaS) application(s). This PaaS/SaaS solution will be based on a platform that is modular, configurable and provides best-of-breed shared services for data management, reporting, security, interface/data exchanges, document management, business rules engine, and work flow management. The new solution constitutes the Healthcare Enforcement and Licensing Management Solution (HELMS). The recommended alternative is the best fit for the Department's business needs, offers the most flexibility to adapt to dynamic data and workflow needs, and security requirements while offering the shortest implementation schedule. The estimated costs and implementation schedule are as follows:

Table 3: Summary of Alternative #3

3
PaaS/SaaS
Solution

DDI Cost Est.*	M&O Cost Est.	Implementation Est.
\$4 – 15 M	\$1 – 3 M per year	30 months with opportunity for earlier phases/iterations

**Note: Refer to Section 11, Cost Benefit Analysis (CBA) for composition of elements included in the cost estimate. Also, the wide range of DDI costs is due to the variability of vendors in the marketplace, including small-, medium- and high-tier vendors. A competitive RFP is likely to result in a lower range of costs.*

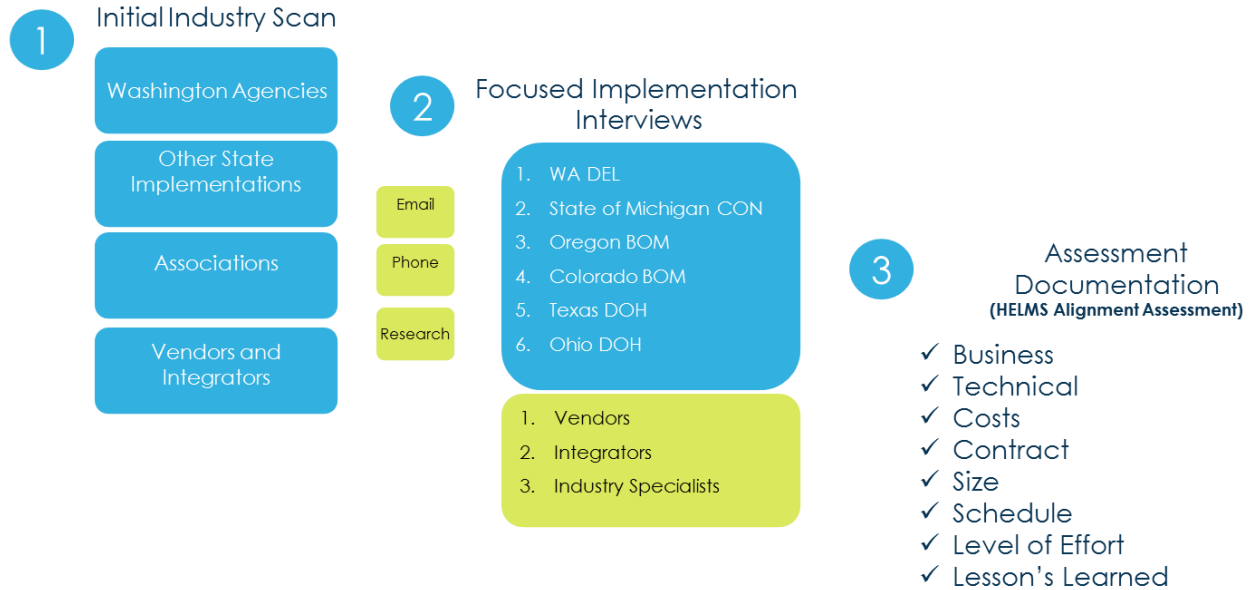
For a description of the four (4) alternatives, including estimated costs, implementation schedule, and level of effort (staffing) please refer to Section 7, Alternatives Considered.

6.1 Similar Implementations and Marketplace Analysis

To gather HELMS solutions feasibility data, an environmental scan of the industry was conducted by contacting other Washington State agencies with similar requirements, as well as several state Departments of Health and regulatory boards to identify comparable implemented solutions. Solutions were assessed initially for alignment to the HELMS from a business, technical and size comparison. A short-list of six (6) similar implementations was then identified for follow-on, in-depth interviews to gather information on costs, contract, size, schedule, level of effort (staffing), and lessons learned. Finally, in-depth interviews were completed to gather information from

marketplace vendors, integrators and industry specialist as well. This 3-step process is illustrated below:

Figure 1: Industry Analysis Process



The outcome of industry research is summarized below with detailed findings provided in Appendix B: Detailed Industry Research:

Table 4: Summary of Industry Research

Comparison	Washington Dept of Early Learning	Oregon Medical Board	Michigan Certificate of Need	Colorado Medical Board	Ohio All Boards	Texas Nursing
System	PaaS/SaaS – Solution Accelerators	COTS	Customer Dev. End to End	COTS	PaaS/SaaS – Solution Accelerators	Board Dev. End to end
Implementation Date	2018	2007	2007	2009	2018	2017
Number of Users	275	40	40	260	700	130
Implementation timeline	28 months	24 months	24 months	20 months	36 months	24 months
Design, Development and Implementation Costs	\$7.2 M	\$.06 M per year	\$.08 M per year	\$1.5 M	\$ 25 M	Board Provides

Comparison	Washington Dept of Early Learning	Oregon Medical Board	Michigan Certificate of Need	Colorado Medical Board	Ohio All Boards	Texas Nursing
Operational Costs	\$1.9 M per year	\$.02 M per year	\$.02 M per year	\$.015 M per year	\$4 M per year	Board Provides
Overall Satisfaction	Yes	No	Yes	Yes	Yes	TBD

6.2 Recommended Solution Industry Overview

Industry research and focused interviews indicate that marketplace solutions built on PaaS/SaaS are best aligned to meeting the needs of the HELMS initiative. Industry research found a marketplace with mid-market enterprise vendors and integrators that work together to offer service solutions in the marketplace. These solutions appear to meet the business and technical requirements of the Department by being easy-to-configure and rapidly deploy initially, easily customized through configuration changes as business needs change, and integrated with other platforms and enterprise applications.

The PaaS/SaaS segment of the industry marketplace offers a core set of technologies that enable secure reliable platforms, rapid/iterative development environments, and robust data integration/exchange points and data management capabilities.

Solutions in the marketplace offer the potential for the Department and successful vendor to deliver applications utilizing an agile/iterative methodology. This method of development increases the potential for development teams to build alignment with business goals and objectives.

The industry analysis reveals examples of government public health agencies (i.e., Ohio) have utilized PaaS/SaaS solutions to successfully design, develop and implement enterprise level systems comparable to HELMS. The Ohio implementation is on schedule and on budget for multiple iterations of deployment including a 13-week pilot, with the final iteration planned for mid-2018. The PaaS/SaaS enterprise level solution set is successfully being deployed by vendors and integrators for State Government functions including licensing, enforcement, permitting and inspections, case management, grants management, constituent communications and correspondence management, call/contact center management, outreach programs, learning management, volunteer management, project/program management, among others.

The PaaS/SaaS industry is reasonably new. Most industry implementations assessed were either developed in house or COTS solutions in the last decade. COTS vendors are currently migrating their solutions to conform to PaaS/SaaS technologies. A few short-list interview candidates, including Washington State's DEL implementation and Ohio, are currently implementing PaaS/SaaS solutions for similar licensing and enforcement business needs. It is expected that the PaaS/SaaS industry will mature in the next year so

that second and even third generation products will become available by mid-2018. This greater maturity may result in lower DDI costs as well, especially as even more vendors enter the marketplace. As mentioned previously, in a similar PaaS/SaaS procurement, the State of Ohio received six (6) bids.

6.3 Major Functions to be Provided

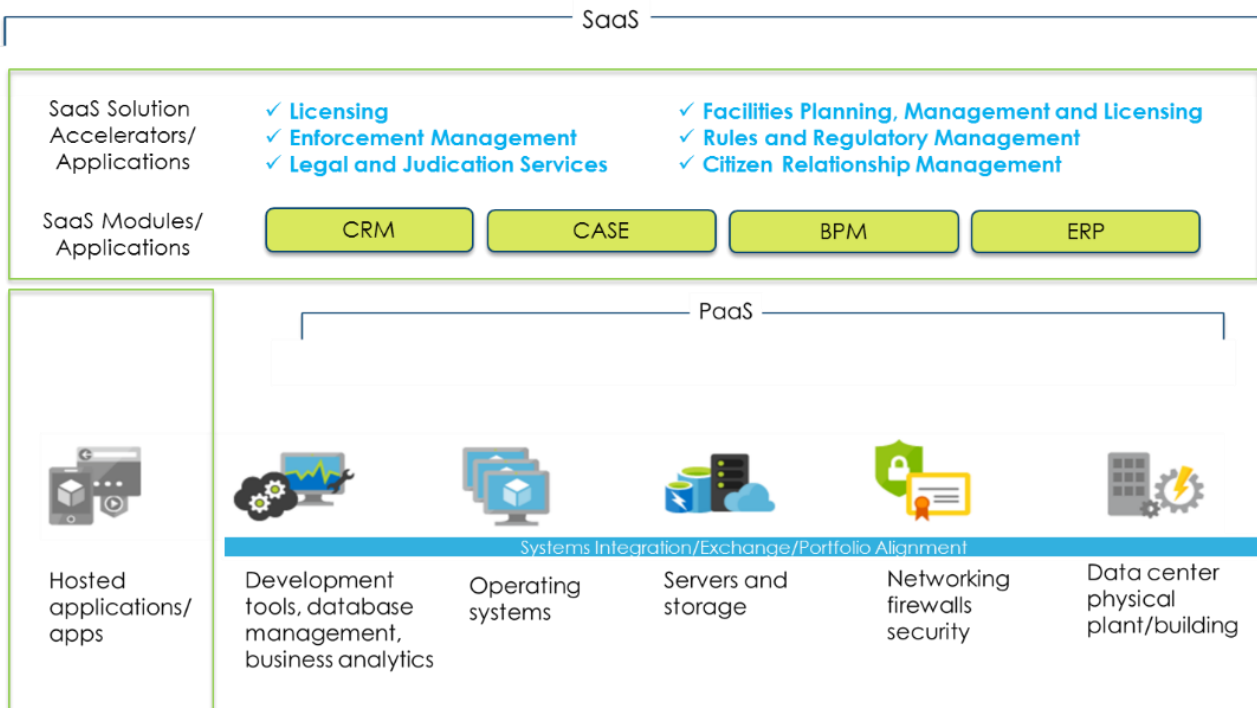
Industry research of enterprise class PaaS/SaaS solutions indicates that there are several vendors/integrators in the marketplace that potentially will respond to the full set of business and technical requirements of the HELMS initiative. Other PaaS/SaaS implementations have incorporated core SaaS modular offerings to meet a full set of functionality as envisioned by the Department, including:

- Licensing and credentialing
- Investigations and enforcement
- Policy and legislative impacts
- Imaging and correspondence
- Reporting and decision support
- Security administration
- Exchange management

6.4 PaaS/SaaS Technical Overview

The figure below provides a visual of the technical solution provided by the recommended PaaS/SaaS solution:

Figure 2: PaaS/SaaS Technical Overview



Platform as a Service (PaaS)

Vendor offerings of enterprise, cloud-based PaaS solutions provide a cohesive platform that includes comprehensive services for infrastructure, security, disaster recovery, core platform upgrades, maintenance and operations services. These mature (generation two or greater) government platforms offerings are designed to provide high levels of performance, reliability, and security in a government healthcare environment. These platforms also give the Department a service to scale reliably and cost-effectively. The PaaS solution enables a dynamic data management capacity as needed by the Department through the platform's ability to integrate with other systems and support advanced data management and master data management capabilities.

Software as a Service (SaaS) – Core Modules and Applications

SaaS applications offer *core modules*, including Customer Resource Management (CRM), Business Process Management (BPM), Case Management Systems (CASE), and Enterprise Resource Management (ERP), all of which are mature core applications. It was determined that these SaaS offerings, built on a PaaS platform, align with the core HELMS business requirements. Further, these solutions currently exist in the marketplace and have the capability to be implemented in a manner that will minimize short- and long-term risks typically associated with any moderately scaled government IT solution like HELMS. Specific risks mitigated by this type of solutions include adherence to project schedules and budgets, ease of maintenance through configuration, ease of integration of standard services on the platform, ease of scalability, modular components that can be replaced or upgraded, etc. These SaaS modules also support

the Department and Office of Chief Information Officer (OCIO) portfolio objectives of: 1) reusability; and 2) configurability.

Software as a Service (SaaS) – Solution Accelerators

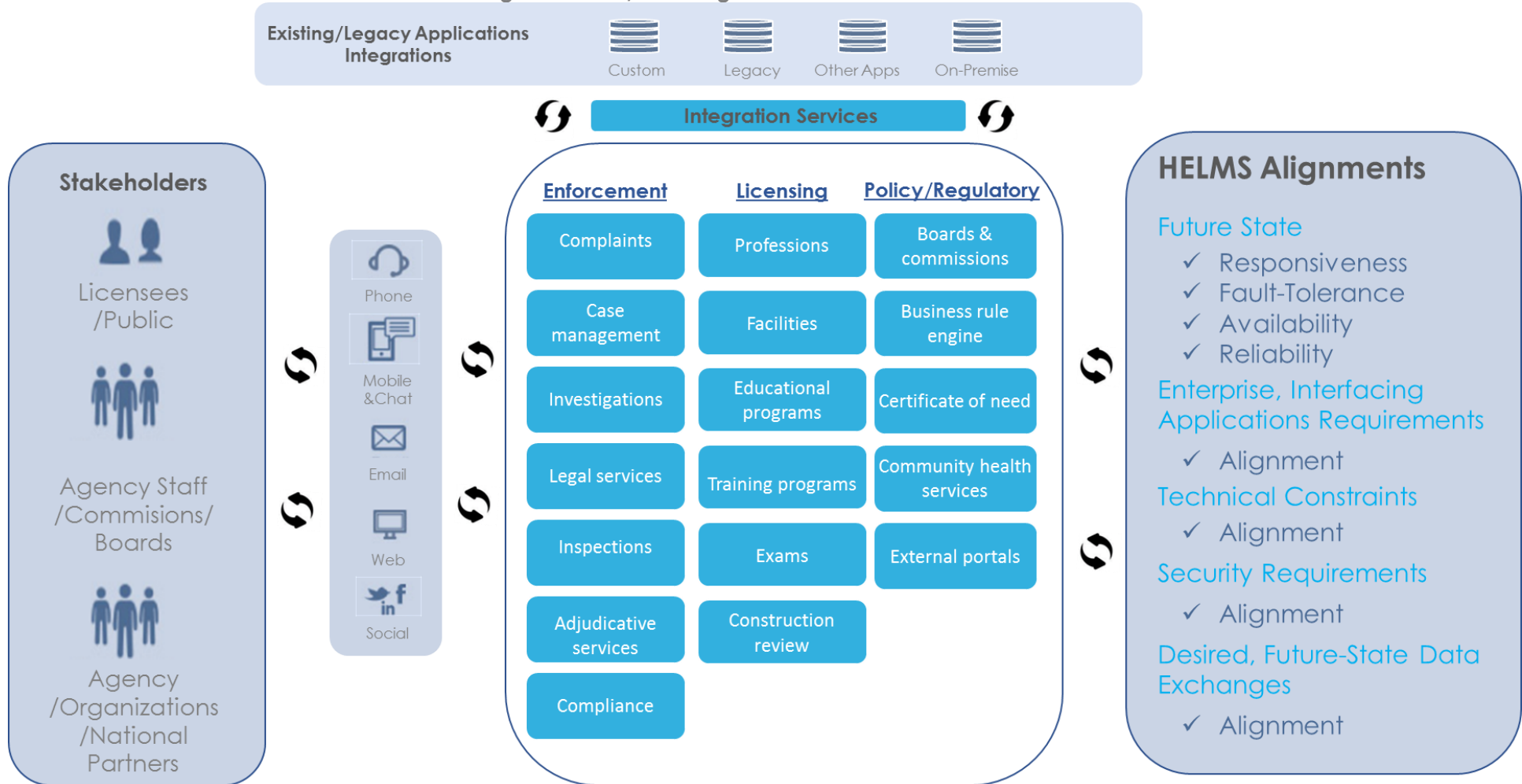
During the industry research, it was found that Integrator and vendor provided applications (i.e., Solution Accelerators or Custom off the Shelf (COTS) solutions) that reside within or on the SaaS core modules, are instrumental to a PaaS/SaaS solution aligning with the Department's business needs. These accelerators enable a rapid, iterative and agile project approach to design, development, pilot, testing and implementation processes.

As stated previously, it was found that the PaaS/SaaS industry is relatively new, but maturing. Second and third generation products are expected around the time the Department will be ready for DDI in mid-2018 following the Department's planned procurement. Additionally, COTS vendors are also moving this direction. These more mature solutions are likely to be even more suited to the Department's business needs and could result in more competitive pricing as more vendors enter the marketplace.

As indicated by the industry research data in Appendix A, there will be an implemented PaaS/SaaS solution in the State of Ohio in 2018 (with earlier phases in 2017) for an enterprise system of 27 separate boards, over 300 license types, and over 700 users of the Health Professions Enforcement and Licensing Systems. The State of Ohio licensing and enforcement system will be fully implemented by the time HELMS solution is prepared for its funding and procurement cycles. This implementation and the implementation in the Washington State Department of Early Learning will be important references for the HELMS initiative to base future planning and level of effort estimates and preparations. Both solutions are the basis for the Cost Benefit Analysis (CBA) forms included for recommended alternative #3.

The visual that follows provides an overview of other important HELMS initiatives requirements aligned with the recommended solutions. The diagram represents a recommended approach for the HELMS initiative's recommended solution to achieve legacy systems integration, agency internal/external systems integration, stakeholder management and systems external accessibility.

Figure 3: PaaS/SaaS Alignment with HELMS



6.5 Recommended Solution Benefits

The recommended PaaS/SaaS solution offers the following benefits:

- 1) **Competitive marketplace:** There are several platforms and vendors who have addressed similar business needs in other government organizations. A competitive Request for Information (RFI) will serve to further identify the specific solutions and alignment with Washington State business needs. Analysis indicates that the Department will discover an ample vendor and integrator pool resulting in a competitive procurement should the Department decide to release a Request for Proposal (RFP).
- 2) **Modular:** Vendors/integrators offer modules that can be configured or are already tailored to licensing, enforcement and policy activities. Other best of breed modules can be introduced through “plug and play” concepts and swapped out as technology changes or other options become available. Modularity also means that technology can support various implementation approaches, including phased or iterative.
- 3) **Configurable:** A PaaS/SaaS solution is configurable through configurable rules engines, workflow processes and parameter driven views. Enforcement and licensing work flows are configured to the function and the type, can be reconfigured as statutory requirements change, and do not require software developers to modify.
- 4) **Standard Services:** The various PaaS/SaaS platforms in the industry are interoperable and compatible with common services across the desired business modules of licensing, enforcement and policy. Standard services support everything from reporting and data exchanges to granular security and document management. Through the RFI/RFP process, the Department can include requirements for these services so that PaaS/SaaS vendors include them in a comprehensive solution.

6.6 PaaS/SaaS Additional Advantages

The recommended solution provides additional business benefits as follows:

- **Better Decision Support:** Tools provided as a service with PaaS will enable the Department to analyze and mine data, finding insights and patterns and predicting outcomes to improve healthcare analytics and support decision making.

- **Reduced Implementation Timeframe:** PaaS/SaaS configuration tools, known as solution accelerators, can reduce the time it takes to develop the modules of the platform, such as workflow, directory services, security features, and search.
- **Cross Platform Access:** PaaS platforms give the Department options for multiple development platforms, such as, mobile devices, and browsers making cross-platform apps quicker and easier to develop.
- **Phased Implementation and Features:** PaaS/SaaS are attainable in a “pay-as-you-go” model, making it possible for the Department to use software, business intelligence and analytics tools that may not be part of the initial phases of an implementation.
- **Supports Iterative Approach:** PaaS/SaaS provides all the capabilities that the Department needs to support an iterative development lifecycle: building, testing, deploying, managing, and updating.
- **Integrated Data Environment:** The toolsets include in the PaaS/SaaS platform provide for an environment that has integration capabilities as well as data management and data mining capabilities.

6.7 Organizational Structures and Processes for Implementation.

During the in-depth interviews, the assessment found that similar PaaS/SaaS implementations required significant organizational changes during implementation and preparing for operations. To be successful with this type of technical solution, the Department needs to consider different organizational support structures both in project Design, Development and Implementation (DDI) and operational phases of the system.

The functionality provided by a PaaS/SaaS solution will be dependent on a structured, well defined business processes requirements and definitions phase. This suggested planning phase of the project will ensure desired business state outcomes are built into the system’s iterative and agile design and business process reengineering phases.

6.7.1 Business Process Redesign

In preparation for the procurement processes of the new HELMS initiative, the Department has documented the current “as-is” business state and has applied Lean strategies to the desired future state. This analysis has increased understanding of the business processes and functions needed in the new HELMS system. Future iterations of the Business Process Redesign (BPR) effort will require dedicated and broad Department resources as well as the involvement of the many boards and commissions and stakeholder groups critical to the success of the HELMS initiative.

6.7.2 Job Duties, Roles, and Responsibilities

Roles and duties aligned with both the DDI and M&O of the system will need to be carefully considered in the funding decision package process. The Department will need to consider systems development and operational support structures that align with the requirements of a PaaS/SaaS solution and are different than the traditional systems development project. Recommended staffing models are presented in Section 9.

6.7.3 Organizational Change Management (OCM)

A sustained, durable Department-wide OCM effort will be critical for successful implementation of the HELMS system. Training efforts will need to focus on the needs of each group: providers, staff, managers, and executives. Training materials will need to be a combination of materials created and delivered by the vendor in collaboration with Department trainers and subject matter experts. It is recommended that the Department develops on-line training so that the training program is sustainable over time and is not dependent on a “one-time” training event or program.

7 Major Alternatives Considered

The analysis process considered four (4) alternatives for meeting the Department's licensing, enforcement and policy business needs. The alternatives are summarized below, followed by a description of each including pros/cons and costs.

Figure 4: Summary of Four (4) Alternatives

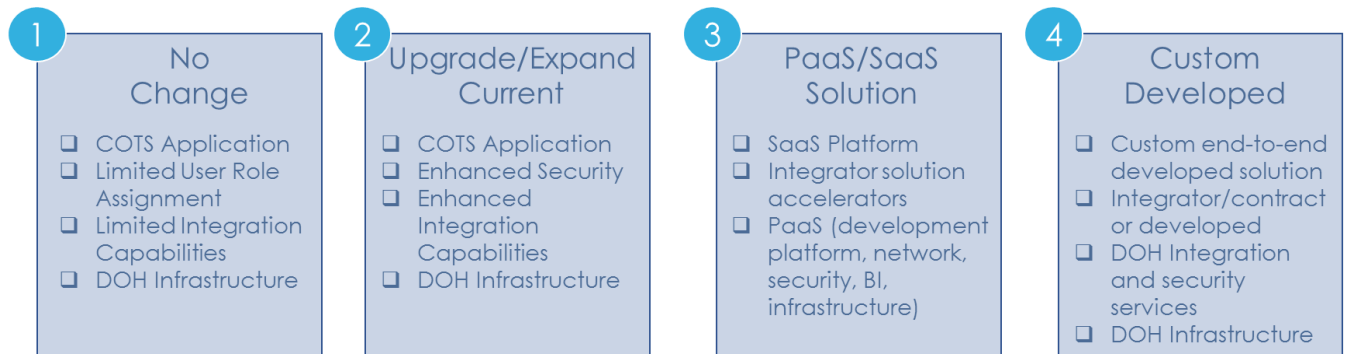


Table 5: Four (4) Alternatives Overview

1

No Change
(to current
Licensing
System)

As described above in Section 2, the current licensing system does not meet the Department's business needs and objectives. The system is nearing its end of life and the vendor is in the process of re-platforming.	
Pros	Cons
<ul style="list-style-type: none"> ✓ Lowest cost alternative 	<ul style="list-style-type: none"> ⊗ Does not meet business needs, especially for policy, enforcement, granular security and reporting ⊗ Takes too long to modify – simple modifications take at least a year
Planning, Design, Development and Implementation Costs	Maintenance and Operations Cost
N/A	\$800k to \$1.5M per year

2

Upgrade or Expand (current Licensing System)

<p>Upgrade of current system has limited immediate impact on the current systems issues. Upgrade of the current system would not immediately align to the Department's IT Portfolio and Roadmap or with the roadmap of WaTech and OCIO. Industry research reveals a marketplace that is rapidly modernizing existing COTS solutions into to a PaaS/SaaS solution. Upgrades within the next 12 to 18 months of the current system would have to focus on integration of current system re-engineering and potentially integration of other COTS products to meet the business needs of the HELMS project.</p>	
Pros	Cons
<ul style="list-style-type: none"> ✓ Existing knowledge of the environment ✓ Speed to full solution may be accelerated 	<ul style="list-style-type: none"> ⊗ Marketplace roadmap is several years out from PaaS/SaaS based solution offering ⊗ Current platform is a proprietary developed COTS solution that presents integration and development challenges ⊗ Current solution upgrade and maintenance is a significant risk to required user role assignment and resulting systems data access
Planning, Design, Development and Implementation Costs	Maintenance and Operations Cost
\$2 to 6 M	\$800k to \$4 M per year

3

PaaS/SaaS Solution

There is a marketplace of PaaS/SaaS solutions that have proven functionality and similar implementations. Although there is no single state with the exact same business needs as Washington, the modular, configurable nature of the SaaS marketplace indicates there is a high likelihood that a solution that meets the Department's needs can be procured through a competitive RFI/RFP process. Analysis also indicates that the timing of the HELMS initiative may line up well to utilizing another State's implementation in the procurement process.

Pros	Cons
<ul style="list-style-type: none"> ✓ Meets comprehensive business needs ✓ Proven, best of breed business systems reengineering approach ✓ Platforms that aligns to agile and iterative systems development lifecycle ✓ 18 to 36 month, agile/ iterative implementation potential ✓ PaaS/SaaS platform scalable, integration rich and robust data security and management capabilities ✓ Supports policy changes through modular/ configurable design 	<ul style="list-style-type: none"> ⊗ Significant change to DOH IT Business Systems DDI and Operations models, requiring Department to embrace process reengineering and reorganization ⊗ Rapid configuration and agile development lifecycles require significant organizational alignment and commitment to staffing, training and business process reengineering
Planning and Implementation Costs	Maintenance and Operations Cost
\$4 to 15 M	\$1 M to \$3 M per year

4

Custom Developed Software

The highest cost, highest risk alternative, custom development is not recommended.

Pros	Cons
<ul style="list-style-type: none"> ✓ Customized meet to business needs 	<ul style="list-style-type: none"> ⊗ Highest cost ⊗ Highest risk ⊗ Longest implementation schedule
Planning and Implementation Costs	Maintenance and Operations Cost
\$3 to 8 M	\$3 M to 5 M per year

The DDI cost estimates for Alternative #3 are highly variable due to the potential for low, medium- and high-tier vendors to respond to the RFP with a wide range of costs. Additionally, the M&O costs for Alternative #4 are driven by the need for a large development staff to maintain a custom-developed solution.

For a complete overview of the cost estimates and breakdown refer to Section 11 and Appendix A for the Cost Benefit Analysis (CBA).

7.1 Alignment with Goals and Objectives

The assessment process measured the alignment of the Department's requirements to the systems being assessed. The table that follows is an overview of that assessment. Further detail on solutions assessment can be found in Appendix B.




Table 6: Alignment of Alternatives with Goals and Objectives





	1 No Change to current Licensing System	2 Upgrade to current Licensing System	3 PaaS/SaaS Solution	4 Custom Developed Software
High Alignment Low Alignment Not enough Information				
Business Case Goal 4, Objective 2: Ensure performance management systems are used throughout the agency to measure progress toward agency and program goals.				
Business Case Goal 5, Objective 5: Enhance our technological capabilities to meet current and future business needs.				
Business Case Goal 5, 1.3: The new system should provide accurate information that allows delivery of services to be timely and reliable.				
Business Case Objective: Ability to collect sufficient statewide data to develop and maintain electronic information systems to guide public health planning and decision making at the state and local level.				
Business Case Objective: Ability to prioritize and respond to data requests and to translate data into information and reports that are valid, statistically accurate, and readable to the intended audiences.				
Business Case Objective: Access/Linkage with Clinical Health Care				
HELMS IT Future State: Configurable, modularized application platform				

- High Alignment
- Low Alignment
- Not enough Information

1 No Change to current Licensing System	2 Upgrade to current Licensing System	3 PaaS/SaaS Solution	4 Custom Developed Software
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HELMS IT Future State: Aligns to OCIO/DOH IT Portfolio and Strategic Plans				
HELMS IT Future State: Data Management, Data Warehousing				
HELMS IT Future State: System Integration, Document Management Integration, eForm, eSignature capabilities and Integration				
HELMS IT Future State: NIST FedRAMP compliant The WATech Security Requirements, policy 141.10 contains all Agency IT Security Program Standards and Standards for IT security functional areas. Security requirements as they pertain to COTS Vendor requirements can be found in the Appendix B. Vendor Security Requirements Spreadsheet				
HELMS IT Future State: Desired, Future-State Data Exchanges, Current State – Data Exchanges				
HELMS IT Future State: Enterprise, Interfacing Applications DOH- and WA-enterprise solution components that will be required interfacing applications for HELMS include: <ul style="list-style-type: none"> • OpenText ECM Suite, DOH enterprise solution for all record storage • Office of Financial Management Payment Services approved software, currently in use: <ul style="list-style-type: none"> • First Data, • Paypoint, • Consumer Payments Solution • Secure Access Washington, WA authentication solutions • Tableau, DOH enterprise solution for data visualization 				
HELMS IT Future State: Solution must support OCIO Open Data Policy 187				
HELMS IT Future State: Solution must include a secondary data store that is refreshed from the transactional database				
HELMS IT Future State: Solution must provide large-volume, un-manipulated, raw data in a machine-readable, scheduled data export capabilities				
HELMS IT Future State: Solution must provide ability to reconcile service payments to Remit Plus, ACH Payment Returns and Paypoint payment data				

-  High Alignment
-  Low Alignment
-  Not enough Information

	1 No Change to current Licensing System	2 Upgrade to current Licensing System	3 PaaS/SaaS Solution	4 Custom Developed Software
HELMS IT Future State: Solution might utilize the current DOH deployment of eForms Adobe Experience Manager in support of online form submissions for applications and renewals.				

8 Conformity with Agency IT Portfolio

The recommendation for Alternative #3 (PaaS/SaaS) considered alignment with the Department's Information Technology (IT) Portfolio strategic and technology principles along with WaTech/OCIO business and technology strategy and goals. The following tables provide an analysis of those principles for the recommended alternative.

8.1 Strategic Focus (Business and IT Goals)

Portfolio Principal	PaaS/SaaS Enterprise Platform
Strategic	Enables a single, federated enterprise-wide architecture that is aligned with the Department's mission, vision, and business systems objectives. The solution promotes a data rich platform that enhances the Department's and stakeholder's ability to utilize data in critical healthcare decisions.
Service-Oriented	Delivers business functionality as modular, reusable, loosely-coupled services with well-defined interfaces and data models. Services are the building blocks of systems.

8.2 Effect on Technology Infrastructure

Portfolio Principal	PaaS/SaaS Enterprise Platform
Secure	Accounts for the security classification of the system's information and design; secures the boundaries between architectural components; and manages security risk.
Governed Data	Aligns data as a critical agency asset that can be governed per agency policies. Data has a single source of truth enriched by robust metadata.
Standard	Provides a standard, open architected systems. Has potential, if utilized at an enterprise level, to reduce costly diversity and complexity.
Measurable	Supports effective system administration with system performance, systems and components for monitoring, logging, and run-time tuning and diagnostics.
Maintainable	Provides maintainability of full system lifecycle and design components. System is well documented, testable and maintainable.

Portfolio Principal	PaaS/SaaS Enterprise Platform
Reliable	Offers robust PaaS platform and mature SaaS platform with best of breed infrastructure for redundancy/disaster recovery, data management, systems security and application maturity capabilities.
Scalable	Provides ability to design components to support elasticity, and to adapt cost-effectively to changes in load, up or down.
Simple	Includes systems and components that are simple following well-defined patterns and blueprints. The platform provides the Department with the potential to limit systems duplication.

9 Project Management and Organization

The Department's current HELMS project organization provides a solid foundation for augmenting with additional roles and responsibilities to support the procurement as well as DDI phases. The recommended staffing and management plan and organization are described below.

9.1 Roles and Responsibilities

Successful implementation of the HELMS project will require all participants to understand a clear definition of their role and responsibilities and to fulfill them well. The table below describes the roles and responsibilities for the project. The table includes full-time project participants, business area participants or Subject Matter Experts (SMEs), stakeholder roles, management roles and decision making committees.

Table 7: Project Roles and Responsibilities

Project Role	Project Responsibility
Steering Committee	<ul style="list-style-type: none"> • Approve charter by consensus. • Approve project deliverables, or delegate approval as appropriate. • Identify, secure, and assign project resources. • Assist the project sponsor in shaping the project vision and objectives. • Advise the project sponsor on matters pertaining to scope and schedule. • Attend regular meetings to address policy questions, issues, risks, and concerns identified by the project. • Determine appropriate changes to organizational policy as identified by the project. • Set priorities and resolve issues as suggested by the project sponsor. • Represent the interests and concerns of stakeholders and their organizations or constituents. • Track issues that may affect stakeholders and their organizations. • Approve changes that affect project scope, schedule, budget, or quality. • Communicate project status and outcomes to internal and external stakeholder groups.
Project Liaison Team	<ul style="list-style-type: none"> • Represent internal stakeholder program areas. • Represent respective steering committee members. • Make decisions regarding issues, risks and change requests within their scope/limit of authority.

Project Role	Project Responsibility
	<ul style="list-style-type: none"> • As a group, bring forward project recommendations to Executive Sponsor and Steering Committee. • Identify issues and risks, and assist with resolution or mitigation. • Coordinate SMEs and other contributing resources for their respective program areas. • Ensure timely response from appropriate program area resources. • Ensure transparency of project activity and direction with/from their respective program areas. • Ensure that program area project team members understand their roles and responsibilities and are fulfilling those duties satisfactorily. • Promote project collaboration and transparency.
Executive Sponsor	<ul style="list-style-type: none"> • Ensure funds and resources are available when the project needs them. • Generate support from internal and external stakeholders. • Approve changes that are beyond the project team's decision boundaries for political support, scope, schedule, budget, or quality. • Lead cross Department, division, and program problem resolution. • Ensure the decision-making process for escalated issues is quick and effective. • Direct project manager and steering committee as needed. • Communicate project status and importance to internal and external stakeholders. • Ensure alignment of project outcomes to strategic and business operation requirements. • Ensure the project achieves stated benefits. • Remove political barriers that may arise throughout project. • Provide resources necessary for project success. • Resolve high-level issues related to project scope, budget, resources, or policy decisions as appropriate. • Identify issues and risks, and assist with resolution or mitigation. • Recommend changes that affect project scope, schedule, budget, or quality. • Drive project policy decisions.
Project Manager	<ul style="list-style-type: none"> • Manage and direct the day-to-day tasks of the project. • Ensure that all project team members understand their roles and responsibilities and are fulfilling those duties satisfactorily. • Coordinate activities between business and technical groups. • Support development of the project charter, management plan, and work plans. • Manage project's scope and schedule.

Project Role	Project Responsibility
	<ul style="list-style-type: none"> • Manage issue documentation and resolution. • Manage risk and risk mitigation strategies. • Manage the deliverable review process to ensure that deliverables meet organizational goals and objectives. • Report project status to executive sponsor. • Monitor and report the overall project status per the communication plan. • Determine project resource requirements and enlist stakeholder support to obtain these resources. • Manage project artifacts. • Ensure project compliance with state and agency policies and guidance. • Manage vendors and related contracts process and budgets. • Plan and lead team meetings. • Identify issues and risks, and assist with resolution or mitigation. • Identify changes that affect project scope, schedule, budget, or quality. • Promote project collaboration and transparency. • Facilitate the escalation of high-level issues to the executive sponsor as appropriate. • Manage the project budget and spending plan.
Technical Integration Manager	<ul style="list-style-type: none"> • Utilize good project management skills and practices to manage all technical aspects of the project. • Oversee development and implementation of system design to ensure integration and interoperability with other State enterprise systems as well as HELMS components. • Oversee performance monitoring and related contractual agreements. • Oversee data model design and approve similar from the vendors • Oversee the work of the Interface Manager to ensure compliance with best practices and integration/interoperability with other State enterprise systems. • Oversee the work of the Data Conversion Manager to ensure comprehensive data definitions and data usage are implemented. • Oversee the work of the Configuration Manager and ensure that configuration deliverables are consistent with system functional architecture and application accelerators. • Plan system interactions with foreign systems. • Work with vendor system architect to ensure system security meets industry standards and DOH requirements. • Assign and coordinate the work of the Technical Analysts to complete the work of the technical implementation of the

Project Role	Project Responsibility
	system in the areas described above.
Data Conversion Manager	<ul style="list-style-type: none"> • Work with vendor to identify and document all data requirements of the new system. • Identify all source systems for data to be converted. • Perform gap analysis for data requirements. • Work with vendor to develop all Extract, Transform, Load (ETL) logic for required data conversions. • Develop schedule of initial conversions and subsequent updates for each source system to develop the phased implementation. • Oversee development of all data conversion test plans. • Lead and participate in all data conversion testing. • Assign and oversee the work of the Technical Analysts when they are assigned to data conversion activities. • Coordinate with Business Analysts and Business SME Leads as they participate in and contribute to data conversion activities.
Interface Manager	<ul style="list-style-type: none"> • Manage relationship with interface partners • Define interface data standards and interface security mechanisms. • Identify all source systems for interfaced data. • Perform gap analysis of available source data and target system requirements. • Develop interface implementation schedule to support phased implementation. • Oversee development of all interface test plans. • Lead and participate in all interface testing. • Develop maintenance and operations requirements for ongoing interfaces. • Assign and oversee the work of the Technical Analysts when they are assigned to interface activities. • Coordinate with Business Analysts and Business SME Leads as they participate in and contribute to interface activities.
IT Business Requirements Manager	<ul style="list-style-type: none"> • Utilize good project management skills and practices to manage all technical aspects of the project. • Manage, oversee and assign the work of the Business Analysts as they work in the areas of requirements, configuration, testing and other project activities. • Manage, oversee and assign the work of the Business SME Leads as they work in the areas of requirements, configuration, testing and other project activities. • Manage, oversee and assign the work of the Testing Lead. • Manage and direct activities and tasks associated with all business aspects of the project ensuring effectiveness and efficiency of all system functionality.

Project Role	Project Responsibility
	<ul style="list-style-type: none"> • Ensure quality of requirements deliverables. • Manage requirements traceability activities. • Determine requirements project resource requirements and work with project manager to secure these resources. • Ensure project compliance with state and agency policies and guidance. • Identify issues and risks, and assist with resolution or mitigation. • Promote project collaboration and transparency.
Configuration Manager	<ul style="list-style-type: none"> • Work with Business SME Leads and vendor functional leads to develop accurate business process and definitions. • Lead development of configuration activities for each license type variation. • Work with Technical Manager to ensure consistency of processes and work flow across all license types where applicable. • Develop standards for configuration approach, work flow implementation and business process definition and documentation. • Assign and oversee the work of the Technical Analysts when they are assigned to configuration activities. • Coordinate with Business Analysts and Business SME Leads as they participate in and contribute to configuration activities.
Testing Lead	<ul style="list-style-type: none"> • Develop general testing approach and details of standardized testing processes, roles and responsibilities. • Work with Business Analysts, Technical Analysts and Business SME Leads in developing test cases and to execute testing of all base functionality and all DOH specific configurations. • Coordinate testing triage and defect reporting processes. • Develop and implement standardized acceptance criteria of test results.
Business SME Lead (3)	<ul style="list-style-type: none"> • Represent and apply business area expertise in accurate configuration of the new system. • Ensure business needs are met and critical success factors accomplished. • Champion organizational change management into the business organizations • Manage tasks associated with updating future state process mapping completed during the HELMS Analysis project. Updates may be needed to keep future processes in alignment with the implemented configuration and workflow capabilities of the new system. • Facilitate transition of business units for adopting new processes and practices, i.e., Transition Planning. • Ensure on-going quality of current state process mapping deliverable, if updated.

Project Role	Project Responsibility
	<ul style="list-style-type: none"> • Identify issues and risks, and assist with resolution or mitigation. • Promote project collaboration and transparency.
Business Analyst (3)	<ul style="list-style-type: none"> • Organize and perform tasks in the work areas of requirements, configuration, testing and other project activities • Support technical activities with business perspective and needs related to data conversions, interface development, data definitions, data analysis, reporting and performance testing • Elicit input from appropriate SMEs and represent their input to project deliverables. • Ensure principles and recommendations from the lean assessment project are implemented in the project to full benefit. • Identify issues and risks, and assist with resolution or mitigation. • Promote project collaboration and transparency.
Technical Analyst (4)	<ul style="list-style-type: none"> • Participate and perform the work of the technical implementation of the new system particularly in the areas of data conversion, interface development, configuration, security and testing. • Elicit input from appropriate Business Analysts and Business Lead SMEs to represent their input to technical project deliverables. • Ensure quality of technical and quality of service requirements deliverables. • Identify issues and risks, and assist with resolution or mitigation. • Promote project collaboration and transparency.
Contracts Lead	<ul style="list-style-type: none"> • Manage tasks associated with contracts, procurements and RFI. • Elicit input from appropriate SMEs and represent their input to project deliverables. • Ensure quality of procurement, contract and RFI deliverables. • Identify issues and risks, and assist with resolution or mitigation. • Promote project collaboration and transparency.

9.2 Decision-Making Process

Making timely and enduring project decisions will set the pace and the effectiveness of the HELMS project. Each decision-making group needs to be well trained on their role, level of authority and the importance of making and sustaining enterprise-based decisions. The governance framework consists of three (3) key groups as follows:

1. **Project Management Office (PMO):** The central point of identification of decision making needs and the information to support good decision making processes.

The Project Manager is authorized to make many day-to-day decisions while executing the project plan. The PMO supports the Project Manager in preparing decisions to be made by governance groups that work at the levels above the project manager's level of authority.

2. **Project Liaison Team:** Represents all affected business areas and stakeholder groups. The Steering Committee appoints members to the Project Liaison Team and determines the level of authority and spending threshold limits delegated to this group. This group is generally seen as the working group for preventing delays to the project by minimizing the "wait" time for executive decisions. This group always has the option of escalating any decision to the Steering Committee when they foresee high business impact or political sensitivity.
3. **Steering Committee:** In conjunction with the Executive Sponsor, has ultimate decision making authority for the project; but usually relies on the other groups to perform day-to-day tasks and work closely with the project issues, risks and change request processes.

In a phased implementation process, such as the one recommended for HELMS, the constituents of the decision-making process described above may change to best serve the needs of the specific phase, but should not lose the enterprise-wide project objectives.

These decision-making groups are defined to support and lead the DDI processes throughout implementation. However, once the groups have become effective in their roles, they can easily transition to support decision making processes during the maintenance and operations phase of the implemented system.

The following diagram provides a graphical depiction of the overall governance framework for the HELMS project consisting of the three (3) levels of decision making groups as described above:

Figure 5: HELMS Governance Framework



The HELMS project is supported by an established and authorized governance framework as shown above. This framework is aligned and integrated with the overall enterprise objectives. All project decisions and control mechanisms are managed through this framework. This consolidation provides a single point of analysis, alternatives consideration, authorized decision making, escalation and documentation for the effective management of the project.

9.3 Management Qualifications

The HELMS project is currently being managed by an experienced Department Project Manager and Executive Sponsor. The Department's vision is to continue with the same level of management and sponsorship throughout the procurement and DDI phases. Additional managers and leads are recommended to support the Project Manager as the project enters these next phases. To be successful, the Department will need to appoint strong managers/leads responsible for leading the following critical project areas:

- Lean Business Process Improvements
- Business Requirements Management
- Configuration Management
- Testing Management
- System Architecture
- Data Conversion Management
- Interface Management

9.4 Project Team Organization

The project team is organized into two major components:

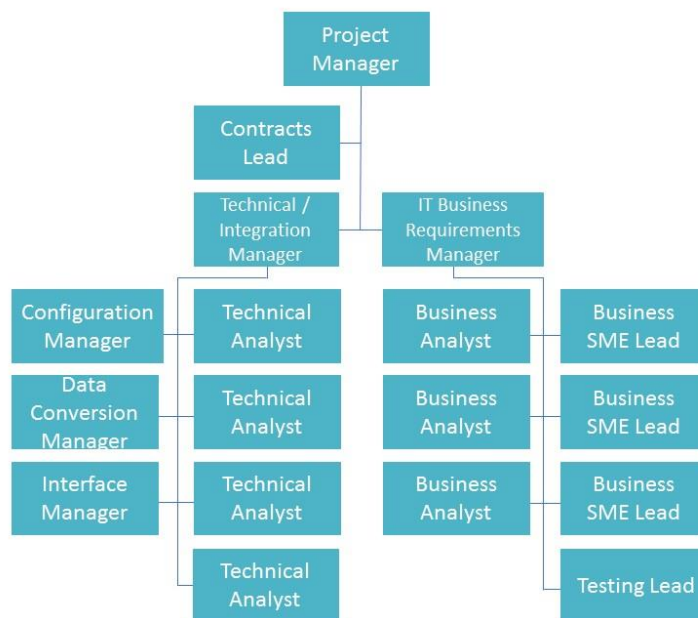
1. **System Component:** technical architecture, data, interfaces and configuration are grouped together under the Technical Manager.
2. **Business Component:** Business analysis, subject matter expertise and testing are combined under the Business Manager.

These two areas report to the Project Manager and are supported by the Contracts Manager. These roles are expected to have counterparts on the vendor's team and work closely to ensure all project goals are accomplished.

The DDI staffing model recommended in this study is presented as typical for a project of this size, complexity and breadth. The staffing model is also presented as a point-in-time recommendation. The Project Manager, Steering Committee, team and organization as whole will gain a great deal more insight to the project staffing requirements as they progress through the RFI and RFP process than is currently available. As the details begin to emerge, the Project Manager will be able to adjust and mature this staffing model in to a complete and effective Resource Management Plan specific to the execution and the objectives of the project. The Resource Management plan will adjust align with the DOH environment and organization, incorporate existing staffing resources, and determine the approach for acquiring skills and abilities not currently on staff.

The recommended HELMS project organization for DDI is depicted below. This organizational chart reflects full-time, dedicated staff only and is not intended to identify all business and technical resources that may participate throughout the life of the project.

Figure 6: HELMS Project Organization



9.5 Quality Assurance Strategies

The Project Sponsor and management team have selected the proven and best practice approach to contract with an outside vendor for Quality Assurance Services.

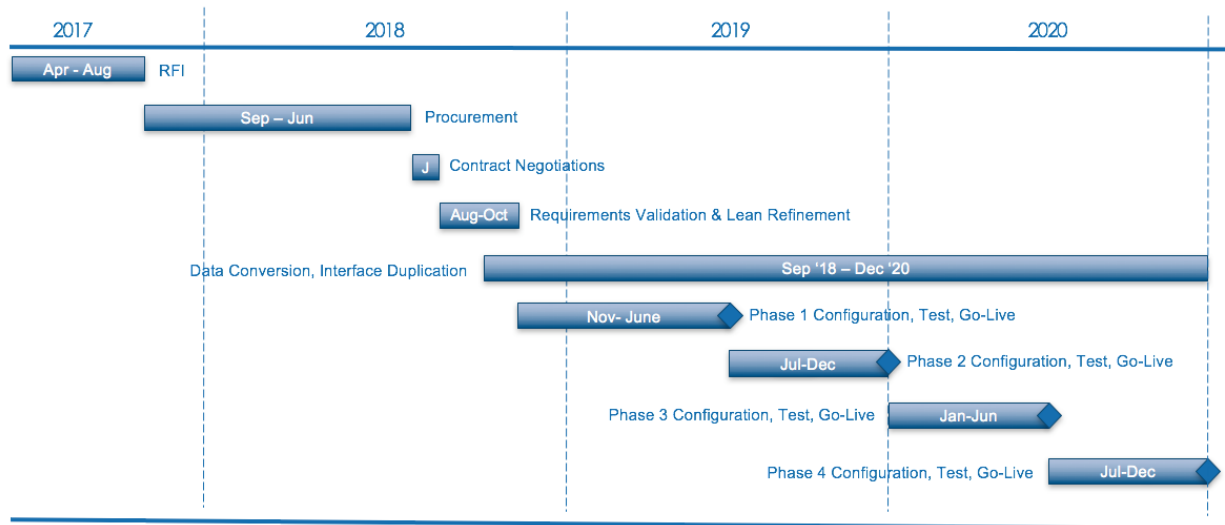
This practice forms an independent oversight group that works very closely with the project management team. The QA team manager reports directly and independently to the Project Sponsor.

The Project Manager and Quality Assurance Manager work cooperatively and transparently to ensure the Project Sponsor and Steering Committee always have a full and accurate view of the project's progress, success and needs.

10 Estimated Timeframe and Work Plan

The estimated timeline for design, development implementation is approximately 30 months. A phased or iterative implementation strategy is recommended as illustrated below.

Figure 7: Implementation Timeline



A high-level activity and task list is provided below:

Table 8: High-Level Activity and Task List

	Activity/Task	Start	End	Resources
1.0	Request for Information	05/17	08/17	PM, Contract Mgr
	Work Request for QA	06/17	09/17	
	OCIO Investment Plan	09/17	11/17	
2.0	Procurement (RFP, Evaluation, Selection)	09/17	06/18	PM, Contract Mgr
3.0	Contract Negotiations	07/18	07/18	PM, Contract Mgr
4.0	Requirements Validation and Lean Refinement	08/18	10/18	Requirements Lead, Lean Mgr
4.0	Data Conversion, Interface Duplication	09/18	12/20	System Architect, Data Conversion Mgr, Interface Mgr
5.0	Phase 1 Configuration, Test, Go-Live	11/18	06/19	PM, Config Lead, Test Lead
6.0	Phase 2 Configuration, Test, Go-Live	07/19	12/19	PM, Config Lead, Test Lead
7.0	Phase 3 Configuration, Test, Go-Live Plan	01/20	06/20	PM, Config Lead, Test Lead

	Activity/Task	Start	End	Resources
8.0	Phase 4 Configuration, Test, Go-Live	07/20	12/20	PM, Config Lead, Test Lead

10.1 Resources

The above referenced resources are primary roles only. Refer to Section 9 for a detailed discussion of resource needs.

The above resources are representative of the Department effort only. The selected PaaS/SaaS vendor will also bring to bear resources to support each activity. It is recommended that the RFP and resulting contract identify vendor Key Staff and require Department approval of any replacement candidates, impose liquidated damages for any vacant Key Staff positions, etc.

10.2 Implementation Phases

A description of each phase, purpose and impacted business areas is included in the table below.

Table 9: Implementation Phases

	Purpose	Length	Go-Live	Business Areas and License Types
1	Proving the Platform <ul style="list-style-type: none"> Licensing and Renewal Enforcement Rules Engine Process Standardization Self-Service Portal Data Conversion Interface Implementation 	8 mos	06/19	Chiropractic Board Chiropractic License Types 10 Non-Board License Types 20 Internal Users
2	Expand User Base Configure Additional License Types	6 mos	12/19	Nursing Board All Nursing License Types 40 Users
3	Expand User Base Configure Additional License Types	6 mos	06/20	Medical Board All Medical License Types 50 Users
4	Expand User Base Configure Additional License Types Add Facilities Licensing Add Facilities Enforcement Add Certificate of Need	6 mos	12/20	Remaining License Types Remaining Users CON Program

10.3 Next Steps

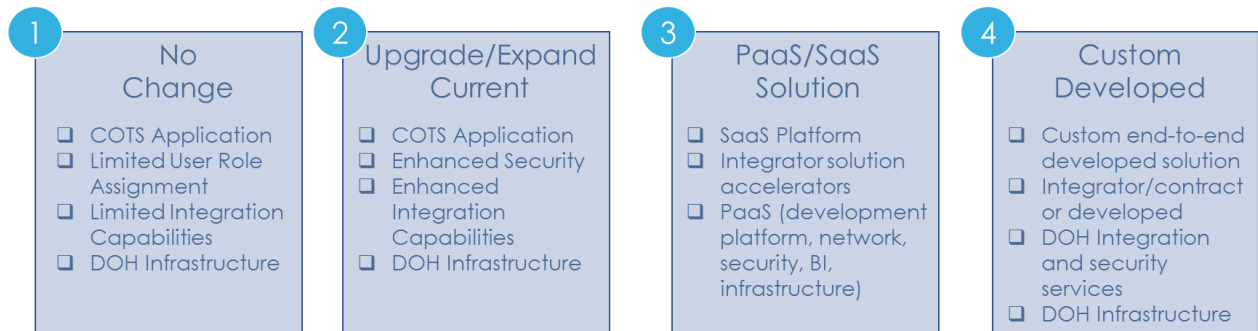
There are several next steps the Department should take to ensure readiness for the Implementation stage starting mid-2018. These recommended activities include:

1. Make a Go/No-Go decision by the Steering Committee
2. Establish on-going communications with the Washington Department of Early Learning and the State of Ohio to obtain additional and evolving lessons learned
3. Develop the Investment Plan in accordance with OCIO requirements
4. Develop the Decision Package for securing funding from the Legislature
5. Draft and publish the RFI to inform the RFP and alert the vendor community of the upcoming procurement
6. Initiate data analysis and clean-up activities to support data conversion within the project timeline
7. Draft and publish the RFP including any revisions learned through the RFI process and a sample contract tailored to PaaS/SaaS engagements
8. Finalize staffing model and acquire resources
9. Develop Project Management Plan (PMP) components per the Project Management Body of Knowledge (PMBOK) Recommendations
10. Procure a Quality Assurance (QA) vendor and complete the initial assessment as well as on-going assessments per OCIO requirements

11 Cost Benefit Analysis (CBA)

CBA forms were completed for the four (4) identified alternatives evaluated as part of the HELMS Feasibility Study as shown below.

Figure 8: HELMS Feasibility Study Alternatives



11.1 CBA Summary

The CBA provides detailed costs for each of the four (4) above referenced solution alternatives in compliance with state guidelines. For each alternative, costs are provided for hardware, software, personal services, purchased services, state staff and other estimated expenditures (see Appendix B for detailed CBA forms).

A summary of estimated costs is provided for each of the four (4) alternatives below. The provided summary addresses costs for the Design, Development and Implementation (DDI) phase, followed by annual cost estimates for Maintenance and Operations (M&O). Note that in the CBA forms in Appendix B, M&O costs are described over six (6) years.

Table 10: Summary of DDI Costs

CBA Categories	No Change	Upgrade/Expand Current	PaaS/SaaS Solution	Custom Developed
Design, Development and Implementation (DDI)				
Estimated Timeline		36 month	30 months	36 month
State Staff		\$2,485,161	\$5,029,493	\$7,810,506
		7 FTE's	18 FTE's	22 FTE's
Personal Services		\$600,000	\$500,000	\$120,000
Purchased Services		\$3,050,000	\$8,750,000	\$300,000
Hardware/Software/Platform Software Subscription services		-	\$750,000	-
Other (training, communication, rent)		\$300,000	\$250,000	\$300,000
Totals	\$0	\$6,435,161	\$15,279,493	\$8,530,506

Table 11: Summary of M&O Costs

Maintenance and Operations (annual costs)				
State Staff	\$1,207,236	\$1,656,774	\$591,705	\$2,958,525
	12 FTE's	14 FTE's	5 FTE's	24 FTE's
Personal Services	-	\$400,000	-	\$100,000
Purchased Services	\$34,857	-	\$300,000	\$100,000
Hardware Software Subscription PaaS/SaaS	\$159,453	\$1,500,000	\$2,500,000	-
Other (training, communication, rent)	\$104,737	\$50,000	\$50,000	50,000
Totals	\$1,511,282	\$3,606,774	\$3,441,705	\$3,208,525

11.2 Recommended Solution Tangible/Intangible Benefits

The quantitative tangible and intangible benefits associated with the recommended Alternative #3 are identified below.

Table 12: Benefits of Alternative #3

3

PaaS/SaaS Solution

Tangible	Intangible
<p>✓ Creates capacity for Information Technology State Staff to support the solution (reduces M&O staffing level from 12 to 5 FTEs)</p>	<p>Improved Customer Service</p> <ul style="list-style-type: none"> ⊗ Modern technology will automate workflows for licensing and enforcement, which will in turn, reduce response times. ⊗ Modern technology can extend services to providers and facilities for direct self-services and information. <p>Increased Efficiency</p> <ul style="list-style-type: none"> ⊗ Modernized data management will vastly improve reporting and analytical capabilities to support decision making. ⊗ Modern, configurable software will decrease cost and time needed to configure the system thereby responding more quickly to policy and/or regulatory changes. ⊗ Agency Technology Services support for Infrastructure Platform <p>More Meaningful Work</p> <ul style="list-style-type: none"> ⊗ Modern technology alleviates unnecessary re-work and data entry thereby increasing staff time available to perform more meaningful tasks.

11.1 Cost Mitigation Strategies

The Department should consider mitigation strategies to endeavor to reduce overall costs, including the following:

- 1) Use the RFI process to inform as many vendors as possible regarding the upcoming procurement to encourage broad participation and competition
- 2) Solicit feedback from the RFI community regarding potential requirements that drive costs higher
- 3) Include potential high priced requirements as “optional” and price separately in the RFP process
- 4) Within the RFP process, consider retaining enterprise system RFP experts to include legal counsel to support development of a contract that results in a balanced vendor agency relationship
- 5) Publish the maximum budget amount in the RFP so that vendors are aware and size the offering accordingly
- 6) Limit historical data conversion to a minimal data set and for the fewest years possible
- 7) Use web services to publish and subscribe to data rather than multiple “one off” point-to-point interfaces
- 8) Limit the number of reports developed by the vendor
- 9) Leverage existing COTS solutions as much as possible (e.g., imaging, document management, etc.)

12 Risk Management

12.1 Overview of Risk Management

It is important that every member of the HELMS project team and supporting staff understand that risk control activities are an expected part of the project and not an additional set of responsibilities to be performed on a voluntary basis. All risk activities will be accounted for within the project scheduling and status reporting process.

The Project Management team members are key participants in helping to identify risks within their respective activities and supporting or conducting mitigation and contingency planning activities as approved by the Sponsor. The Project Manager is functionally responsible for monitoring all risks and risk response activities which include directing staff in the execution of risk response plans. The Project Manager also reports the status of risks and respective contingency and mitigation plans to the Project Sponsor.

All risks are assigned a risk owner. In many cases, the party that identified the risk will be the assigned risk owner. Upon request by the Project Manager, risk owners may provide additional information to enable the PM to verify risk rating and priority. In other instances, the Project Manager may assign risk owners the task of developing a Contingency Plan or a Mitigation Plan for an identified risk.

12.2 Risk Management Process Steps

Step	Process Step	Description	Lead
1	Identify Risks	The goal of risk identification is to create a list of potential risks the project faces. The risks should encompass global project challenges as well as risks that may be unique or specific to the scope and/or environment. Identification should include the initial analysis and rating.	All project participants
2	Complete Risk Registry	The PM will update the Risk Register with each risk identified initially and throughout the lifecycle of the project. The registry will include a description, initial analysis, risk rating and several other data elements to categorize and quantify the risk.	Project Manager
3	Review Identified Risks	The project team will meet every month to review the overall project status including any changes or additions to the Risk Registry. The meeting will serve to review the validity of risks, ensure that the information conforms to the guidelines for identifying risks, obtain consensus	Project Team

Step	Process Step	Description	Lead
		on accuracy, assign a risk owner, review previously identified risks, and authorize updates as appropriate.	
4	Provide Requested Information	The risk owner is responsible for assembling documentation supporting the risk identification and the validity of the risk.	Risk Owner
5	Assign Risk Rating & Priority	The PM will rate new risks and update ratings of existing risks at the monthly status meeting. The group will use a predefined Risk Rating process for guidance in establishing priorities.	Project Manager
6	Develop Risk Response	Risk responses take the information obtained from the risk analysis and prioritization steps and use it to formulate responses to the identified risks. The responses and mitigation plans control the risks and integrate them with standard project management processes. Appropriate risk responses included; Avoid, Transfer, Mitigate, Exploit, Enhance, Share and Accept.	Project Manager
7	Develop Mitigation Plan	The Project Manager determines if mitigation is the most appropriate response. It assigns a risk owner to develop the Mitigation Plan. A Risk Mitigation Plan is appropriate when the expected benefit of implementing the plan is greater than the expected cost.	Project Manager Risk Owner
8	Approve Mitigation Plan	The PM reviews and approves the mitigation plan developed by the Risk Owner. Mitigation strategies that change the scope, schedule or resources usually require sponsor approval.	Project Manager
9	Develop Contingency Plan	Risk contingencies include one or more fallback plans to be activated when efforts to prevent the adverse event fail. Contingency plans are triggered by a defined point in time or a defined threshold of a specific measure(s). The risk owner develops the contingency plan.	Risk Owner
10	Approve Contingency Plan	The risk owner will then submit the Contingency Plan for Project Manager approval. Any contingency plan that results in a change in scope, schedule or resources requires sponsor approval.	Project Manager Risk Owner
11	Update Risk Registry	The Risk Registry will be updated whenever risk attributes change. This often occurs when new risks are identified, Mitigation and Contingency Plans are created or updated.	Project Manager Risk Owners

Step	Process Step	Description	Lead
12	Monitor Risks	Review the status of identified risks, residual risks, and the progress in their respective action plans. It also reviews the probability, consequence, and other aspects of the identified risk for changes that could alter risk priority or plans.	Project Manager
13	Close	Once the risk event has occurred or the time interval in which this risk can have an impact on the project has passed, the Project Manager will determine that the risk can be closed and the Risk Registry updated including the reason for closure (risk realized, risk avoided, etc.)	Project Manager

Appendix A: Cost Benefit Analysis

Appendix B: Detailed Industry Research

Appendix C: Initial Risk Registry

#	Risk Title	Category	Risk Description	Owner	Prob	Cons	Rating	Trend	Consequence Description	Status	Risk Response	Response Description
1	Scope of work exceeds prioritized processes	Scope	Scope of work includes specific business processes, yet additional high priority processes may be identified						Could result in gaps of critical future processes	Open	Mitigate	Implement scope management plan.
2	Degree of change is too great for staff to absorb	Change Mgt	Significant changes in workload, staffing model, multiple retirements of long-term staff, leadership changes and multiple physical moves could prove too much for staff to adapt to newly developed processes						Could result in inefficiencies, growth in backlog and morale issues	Open	Mitigate	Observe best practices of change management by incorporating staff in process and keeping open lines of communication; sponsor track risk with re-alignment project
3	Data conversion creates more data cleanup work than expected		The data from the existing systems will be migrated to the new system. We expect that there will need									

#	Risk Title	Category	Risk Description	Owner	Prob	Cons	Rating	Trend	Consequence Description	Status	Risk Response	Response Description
			to be some data clean-up. If there is more data clean-up needed than anticipated, it will require more business resources. Data conversion can be a significant sub-project.									
4	Unavailability of Staff		DOH has several projects going at the same time. Executive oversight and staff resources needed for this project may be working on other projects.									
5	Scope Creep	Scope	If the users are not involved in planning the project, they may add requirements or change requirements									

#	Risk Title	Category	Risk Description	Owner	Prob	Cons	Rating	Trend	Consequence Description	Status	Risk Response	Response Description
			later in the project when it could cause schedule delays and cost increases.									