

State of Montana

Department of Environmental Quality

Remediation Information Management System Replacement

Technical Proposal

RFP Number: 14-2281P

March 19, 2014



WINDSOR
SOLUTIONS

Environmental +
Health Information
Systems

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March 19, 2014

Penny Moon
Montana Department of Administration
State Procurement Bureau
Room 165, Mitchell Building
125 North Roberts Street
Helena, MT 59601-4558

Subject: Remediation Information Management System Replacement, RFP 14-2281P

Dear Ms. Moon:

Windsor Solutions, Inc. (Windsor) is pleased to submit this proposal to the Montana DEQ for the Remediation Information Management System (RIMS) Replacement Project. We have formed a highly qualified team of experts who will develop a cost-effective, modern, state-of-the-art system to manage Montana DEQ's remediation-related data and information. Windsor is partnering with Environmental Resources Management (ERM), a global provider of environmental engineering, remediation, health, and safety consulting services worldwide, with local offices in Montana.

We are committed to the success of the project from this revised RFP, and we believe the new timing for this project will benefit DEQ for the following reasons:

Symbiosis: DEQ has included two additional systems to the project scope (for the Underground Storage Tank Program and the Petroleum Tank Release Compensation Board). Windsor has direct experience in building systems for these programs in other states, and is currently under contract to build a cutting-edge UST Data Management System for the State of Massachusetts, including integration between the state's environmental protection agency and its revenue department, and utilizing many of the same components that we are proposing for the RIMS project.

Improved Fit: In the ensuing months since the original RFP closed, technology has continued to march on, and Windsor has developed or enhanced its offerings in many of the key areas applicable to the RIMS project. These enhancements will allow Windsor to provide even greater functionality to Montana, in many cases at a reduced cost, because the products or systems have been improved over what was available even in the summer of 2013.

Agile Approach: When applied correctly, the adoption of an Agile project management methodology will result in greater efficiency and faster results, while greatly mitigating project risks by continuously assessing and correcting the course of the project as it evolves.

In summary, we believe that Montana DEQ's environmental regulatory management knowledge, Windsor's extensive environmental systems development skills and existing solutions, and the use of the Agile software development methodology are the ideal components for a highly successful collaborative project that will exceed the goals and expectations of Montana DEQ by delivering a more modern, robust and comprehensive solution for the state.

CONTACT

4386 SW Macadam Ave
Suite 101
Portland, OR 97239

TEL (503) 675-7833

FAX (503) 675-7804

MAIL info@windsorsolutions.com

www.windsorsolutions.com



The following individuals have the authority to bind the company to this proposal and to answer questions:

Guy Outred, President
Kevin Jeffery, Vice President
Simon Watson, Vice President
Craig Austin, Communications Manager
Windsor Solutions, Inc.
4386 SW Macadam Ave, Suite 101
Portland, OR 97239
503-675-7833 ext. 215 (Craig), ext. 202 (Kevin), ext. 205 (Guy), ext. 206 (Simon)
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simon_watson@windsorsolutions.com
craig_austin@windsorsolutions.com

This transmittal includes the following materials:

- Technical Proposal (the remainder of this binder)
- Cost Proposal (in a separate binder as directed in the RFP)
- Signed Addenda to the RFP
- Requested electronic copies of the Technical and Cost Proposal

In addition, the 11 items listed in the instructions for the cover letter are addressed below:

- 1) Legal Entity: Windsor Solutions, S-Corporation (FEIN 93-1245518)
Subcontractor: Environmental Resources Management (ERM, FEIN 52-1346967)
- 2) Windsor is registered with the Montana Secretary of State, holds a Certificate of Authority to do business in Montana, and has a resident agent.
- 3) Windsor is using ERM as a subcontractor on the project.
- 4) This proposal is a binding offer; the contents of this proposal, including persons specified to implement the project, will become contractual obligations if Windsor is selected.
- 5) Windsor does not discriminate on the basis of race, color, religion, age, sex, marital status, political affiliation, national origin, or handicap and complies with all applicable provisions of the Americans with Disabilities Act.
- 6) Windsor accepts the RFP requirements without exception.
- 7) A completed W-9 form follows this transmittal letter.
- 8) *Current contracts of similar size:*
Michigan Department of Environmental Quality, Waste Data System (\$1.7 million)
Michigan Department of Environmental Quality, MiWATERS (\$4 million)
Massachusetts Department of Environmental Protection UST Data Management System (\$800,000)
New York Department of Environmental Conservation, Exchange Network (\$2.4 million)
New York Department of Environmental Conservation, Pesticides Data Mgt (\$1.8 million)
New York Department of Environmental Conservation, eSMART Support (\$3.2 million)
Proposals Pending:
Ohio Environmental Protection Agency Surface Water Information Management System (\$2.2 million)
The RFP requests a list of all current or pending contracts with any state; this list is attached along with the W-9 form.

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- 9) Addenda 1-4 have been received and signed, and are included as directed.
- 10) No cost or pricing information is included in this Technical Proposal.
- 11) Windsor has identified no conflicts of interest or potential conflicts of interest related to the services described in this RFP.

Windsor and ERM appreciate the opportunity to present this proposal to Montana DEQ. We look forward to hearing from the agency on this important project.

Sincerely,

Craig Austin
Communications Manager

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Current State Agency Projects

As requested in the RFP, the table below highlights Windsor's contracts with other state agencies. In addition to state agencies, Windsor has successfully worked under contract to federal, county, local, regional, and tribal public sector clients.

State Agency	Project Name
Arkansas Dept. of Environmental Quality	nForm ePermitting Portal
Arkansas Dept. of Environmental Quality	Water Quality Analysis Reporter
Arkansas Dept. of Environmental Quality	Regulated Storage Tanks Data System
California Department of Water Resources	WQX Implementation Services
California Department of Water Resources	Discharge Monitoring Reporting (DMR)
California Environ. Protection Agency	Exchange Network Implementations
Connecticut Dept. of Energy & Env. Prot.	Site Information Management System
Environmental Council of States	Exchange Network General Support
Georgia Department of Natural Resources	Georgia Pollutant Discharge Elimination System (GAPDES)
Georgia Department of Natural Resources	Air/Water Node Support
Georgia Department of Natural Resources	Safe Dams Data System
Georgia Department of Natural Resources	Beach Data Flow
Hawaii Department of Health	Sample Collection Reporting System (SCRS)
Hawaii Department of Health	iHEER Remediation Information System
Hawaii Department of Health	Exchange Network Data Flow Implementation
Hawaii Department of Health	Clean Air Branch Contaminant Tracking and Reporting
Hawaii Department of Health	nForm e-Permitting Portal
Hawaii Department of Health	Clean Water Branch SEP Implementation
Hawaii Department of Health	Safe Drinking Water Branch NPDES System Support
Hawaii Department of Health	Office of Environmental Quality Control Content Management
Hawaii Department of Health	Drinking Water Contamination Map
Hawaii Department of Health	Water Pollution Control System
Hawaii Department of Health	nSpect Mobile Inspections
Illinois Department of Public Health	FY2014 Beach Act Reporting
Kansas Dept. of Health and Environment	nSpect RCRA Mobile Inspections
Kansas Dept. of Health and Environment	Bureau of Air nForm Implementation
Kansas Dept. of Health and Environment	Geocode Referencing and Geospatial Encoding (GeoRGE)
METRO	Solid Waste Information System
Michigan DEQ	Waste Data System
Michigan DEQ	Wellogic Well Driller Information System
Michigan DEQ	BeachGuard Project
Michigan DEQ	MIWaters Information Management System
Minnesota Pollution Control Agency	Node and Flow Support
Montana Dept. of Environmental Quality	Exchange Network Node (OpenNode2) Installation/Support

State Agency	Project Name
Montana Dept. of Environmental Quality	Water Quality Assessment Reporting and Documenting (WARD)/ATTAINS Data Exchange
Montana Dept. of Environmental Quality	Emissions Inventory System Data Exchange
Nebraska Dept. of Environmental Quality	Homeland Emergency Response Exchange
Nebraska Dept. of Environmental Quality	Toxics Reduction Inventory (TRI) Flow
Nevada Dept. of Cons. and Nat. Resources	Exchange Network Node and Data Exchange
Nevada Dept. of Cons. and Nat. Resources	NetDMR Maintenance and Support
Nevada Dept. of Cons. and Nat. Resources	Emissions Inventory System Support
Nevada Dept. of Cons. and Nat. Resources	WQX Project
Nevada Dept. of Cons. and Nat. Resources	Facility Profiler Upgrade (nSite)
New Hampshire Dept. of Environ. Services	Exchange Network Node and Data Flows
New Hampshire Dept. of Environ. Services	SLEIS Support
New Mexico Environment Department	Excess Emissions Reporting (EER) Project
New Mexico Environment Department	Drinking Water Sample Collector Project
New Mexico Environment Department	Air Quality Routine Repts-Analysis
New York Dept. of Env. Conservation	EIMS Remediation System
New York Dept. of Env. Conservation	Exchange Network Support
New York Dept. of Env. Conservation	eFind Development
New York Dept. of Env. Conservation	eSMART Project
New York Dept. of Env. Conservation	NYSPAD
New York Dept. of Env. Conservation	Pesticides Information System
North Dakota Dept. of Health	Site Profiler Migration and Implementation
Ohio Environmental Protection Agency	BeachGuard
Ohio Environmental Protection Agency	Institutional Controls Exchange Network Flow
Ohio Environmental Protection Agency	nSite Facility Profiler
Vermont Dept. of Env. Conservation	nForm eGovernance Portal
Vermont Dept. of Env. Conservation	ICIS-NPDES Flow Implementation
Washington Department of Ecology	PARIS and WQWebPortal Permitting System
Washington Department of Ecology	TurboWaste.NET Online Hazardous Waste Information System
Washington Department of Ecology	TurboPlan Pollution Prevention Planning
Wyoming Dept. of Environmental Quality	Site Profiler (nSite)
Wyoming Dept. of Environmental Quality	Wyoming Pollutant Discharge Elimination System (WYPDES)
Wyoming Dept. of Environmental Quality	OpenNode2 Server Migration to ETS
Wyoming Dept. of Environmental Quality	SHWD Information Management
Wyoming Dept. of Environmental Quality	Surface Water Management System

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Minimum Mandatory Requirements Checklist (Tab 2)

RFP Requirement	Agreement/ Acknowledgement
Proposal Submission Requirements Per Section 1.6	
One original, eight copies, and two electronic copies on separate CDs or USB drives in Microsoft Word 2007, 2010, or Adobe Portable Document Format (PDF) of the Technical Proposal (1.7.6 Error! Reference source not found.)	X
Proposals are sealed and labeled on the outside of the package to clearly indicate a response to RFP14-2281P. (1.7.6)	X
Proposals are sent in time to be received at the reception desk of the State Procurement Bureau by 2:00 p.m., Mountain Time on March 12, 2014 (1.7.6)	X
Signed Cover Sheet Per RFP Cover Page	
Cover Sheet for RFP14-2281P with offeror name/address, phone, email, signature, and date are included in the original proposal.	X
General Requirements	
Proposal is signed in ink by individual authorized to bind the business legally (1.6.5)	X
By submitting this proposal, offeror is agreeing that the offer is in effect for 180 days from the date of proposal submission. (1.6.6)	X
Offeror acknowledges all addenda. (1.4.3)	X
Complete Proposal	
Offeror acknowledges section 1 in its entirety.	X
Offeror acknowledges section 2 in its entirety.	X
Offeror acknowledges section 3 in its entirety, and understands that the offeror's response to sections 3.4 and 3.5 Error! Reference source not found. are included in the response to section 4.	X
Technical Proposal follows the format of the Proposal Submission Requirements detailed in Section 4, including tabs for each section as follows:	X
4.3 Transmittal Letter (Tab 1)	X
4.4. Minimum Mandatory Requirements Checklist (Tab 2)	X
4.5 Executive Summary (Tab 3)	X
4.6 Corporate Qualifications (Tab 4) 4.6.1-Corporate Capabilities and Commitment 4.6.2-Corporate Integrity	X
4.7 Staffing Requirements (Tab 5) 4.7.1-Personnel and Qualifications 4.7.2-State Approval 4.7.3-Staff Replacement Requirements	X
4.8 Resumes (Tab 6)	X
4.9 Client References (Tab 7)	X
4.10 Offeror Financial Stability (Tab 8)	X
4.11 Approach (Tab 9) 4.11.1-DDI Approach 4.11.2-Operations	X
4.12 Requirements Worksheets (Tab 10)	X
Offeror acknowledges Section 6 in its entirety.	X
Optional Affidavit Of Trade Secret Confidentiality	N/A

RFP Requirement	Agreement/ Acknowledgement
Proposal contains a correctly executed State of Montana "AFFIDAVIT FOR TRADE SECRET CONFIDENTIALITY" form if claiming information as confidential or proprietary.	
Transmittal Letter Per Section 4.3	
Transmittal letter (TAB 1) is submitted on official business letterhead and contains the firm's name and address.	X
Transmittal letter clearly indicates name, title, mailing address, telephone number, and facsimile number of offeror's representative with the authority to bind the company to the proposal.	X
Transmittal letter identifies all materials and enclosures being submitted as a response to this RFP.	X
The individual authorized to commit the offering company to the proposed scope of work has signed the transmittal letter.	X
Transmittal letter includes identification of the corporation or other legal entity submitting the proposal and all subcontractors.	X
Transmittal letter includes disclosure of the intended use of subcontractors, if any.	X
Transmittal letter includes a statement that the offeror's proposal is a binding offer.	X
Transmittal letter includes a statement of affirmative action that the offeror does not discriminate based on race, color, religion, age, sex, marital status, political affiliation, national origin, or handicap and complies with all applicable provisions of the Americans with Disabilities Act.	X
Transmittal letter includes a statement that by submitting a proposal, the offeror affirms its acceptance of the RFP requirements and its willingness to enter into a contract containing substantially similar terms to the contract published with this RFP.	X
Transmittal letter includes an attached completed W-9 form.	X
Transmittal letter includes disclosure of all current or pending contracts with any state.	X
Transmittal letter includes a statement identifying all amendments and addenda to this RFP that have been received. If no modifications have been received, a statement to that effect is included.	X
Transmittal letter includes a statement identifying all conflicts of interest or potential conflicts of interest related to the services described in this RFP.	X
Executive Summary Per Section 4.5	
The Executive Summary subsection (TAB 3) does not exceed five typewritten pages. Charts, tables or other explanatory graphics are included in the page limit.	X
Corporate Qualifications Per Section 4.6	
The Corporate Qualifications subsection (TAB 4) (including subsections 4.6.1 and 4.6.2) does not exceed ten typewritten pages. Charts, tables or other explanatory graphics are included in the page limit.	X
Corporate Capabilities And Commitment Per Section 4.6.1	
This section provides details of offeror experience in designing, building, implementing, and operating a similar successful environmental information system.	X
Corporate Integrity Per Section 4.6.2	
Offeror certifies that it, its principals and any proposed subcontractors meet the six numbered requirements in this subsection 4.6.2,	X
Staffing Requirements Per Section 4.7	
The Staffing Requirements subsection (TAB 5) (including subsections 4.7.1, 4.7.2, and 4.7.3) does not exceed ten typewritten pages. Charts, tables or other explanatory graphics are included in the page limit.	X
Resumes Per Section 4.8	
Resumes (Tab 6) are provided for all key personnel as identified in subsection 4.7.1. - Account Manager/Contract Manager - Project Manager - Technical Manager - Business Analyst There are no page limits for this section.	X
Client References Per Section 4.9	
The Client References (Tab 7) includes three sealed client reference envelopes.	X

Offeror Financial Stability Per Section 4.10

The Offeror Financial Stability subsection (TAB 8) does not exceed five typewritten pages. Charts, tables or other explanatory graphics are included in the page limit. Financial statements and notes may be attached as a separate addendum and are not included in the page limit.	Yes
This section provides offeror's affirmation that it can comply with the requirements for having enough financial resources available to carry out at least six months of services without reimbursement and to fund capital expenditures required under this contract.	Yes
If subcontractors are included in the proposal, this section includes a statement that the subcontractor(s) has the financial resources to carry out its duties under the contract.	Yes
This section acknowledges that the offeror uses methods of accounting that are consistent with generally accepted accounting principles.	Yes

Approach Per Section 4.11

The Approach subsection (TAB 9) (including subsections 4.11.1 and 4.11.2,) does not exceed 45 typewritten pages. Charts, tables or other explanatory graphics are included in the page limit.	Yes
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Requirements Worksheets Per Section 4.12

Offeror includes completed Acknowledgement of Functional Requirements Checklist contained in Appendix F of RFP, which addresses the requirements for detailed RIMS components including all requirements that will entail modifying the base system being proposed. There is no page limit for this section.	Yes
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Cost Proposal Submission Requirements Per Section 5

Cost Proposal contains point-by-point response to numbered sub-sections in Section 5 of the RFP, and uses the pricing schedules provided in Appendix H, including tabs for each section as follows: 5.2.1 Narrative Description and General Acknowledgement 5.2.2 Total Evaluated Proposal Price 5.2.3 Design, Development, Installation, and Implementation 5.2.4 Operations and Maintenance 5.2.5 Fixed All-Inclusive Hourly Rate 5.2.6 State Software and Hardware Costs	Yes
Cost Proposal consists of one original, eight paper copies, and two electronic copies. (1.7.6)	Yes

	3/17/14
Signature	Date

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Executive Summary (Tab 3)

Windsor Solutions is pleased to present this proposal to the Montana Department of Environmental Quality (DEQ) for the design, development, implementation, and support of the new Remediation Information Management System (RIMS).

As is the case with many other state environmental agencies, DEQ relies heavily on information systems to manage the data associated with regulating the environment. This is particularly true of the information systems used to support remediation-related activities, where large quantities of sample results and other related data are stored, managed, and analyzed.

The information systems that are currently in use for remediation data management at DEQ have evolved to their present state over a number of years. They consist of a variety of technologies and software tools that were adopted or developed at different times. The systems have been augmented over their lifespans to support additional functions and data points as time and resources have allowed. Typical challenges associated with these existing systems include:

- **A narrow, usually program-specific, focus** – When the existing systems were originally conceived, they were typically focused on a relatively small scope of work and did not take into consideration the broader needs of the division or the agency. This resulted in systems that were not designed to share data with each other (silos), and which were implemented using technologies that were often incompatible, further compounding data sharing issues.
- **No visibility to the complete data picture for a given site or location** – The program-specific nature of existing systems makes life difficult for DEQ staff when responding to a public records request, or simply when performing typical DEQ activities. An example of this is reviewing a permit application, where a project manager may wish to review all pertinent facts about a facility/site to be permitted. The silo-based structure of the existing systems results in a lack of visibility to data relevant to the permitting process.
- **Incomplete support for the current needs of the program** – As the mission and goals of an environmental program evolve, so too do the business process and workflows associated with meeting those goals. Many of the existing systems at DEQ no longer meet the needs of the programs they support either in terms of data or process needs. The program has simply outgrown the capabilities of the information system.
- **Technologies that are not suitable for agency-wide use** – A number of the existing systems were developed using technologies that are targeted at small working groups of staff, located in close proximity. An example of such a technology is Microsoft Access, which provides a useful platform for rapidly developing small, relatively simple solutions with low data volume. Organizations typically outgrow the capabilities of such solutions.
- **No Electronic Reporting Capability** – Most data currently reported to DEQ still comes in on paper. This can include sample results for remediation sites, applications for UST registrations/renewals, and inspection results. DEQ staff then have to transcribe this data into a system/database. Because much of the collected data remains in a paper format, it cannot be used for reporting, analysis and subsequent decision-making purposes. This also makes it hard for DEQ to respond to requests for information from legislators, other state agencies/divisions, and the general public.

To address these challenges, DEQ is embarking upon a comprehensive effort to replace these disparate existing systems with a single, integrated, Remediation Information Management System that will functionally align with the business processes performed at DEQ, and will provide a unified and consistent environment for DEQ staff and the regulated community. This effort offers the ideal

opportunity to embrace the technological advances that are revolutionizing the way environmental agencies manage and use data, and how they interact with their constituents and the regulated community.

By proceeding with the replacement of RIMS, DEQ will not only be able to solve the issues that have limited day-to-day operations, but will be able to surpass internal and external expectations. DEQ will be able to deploy a state-of-the-art, model solution to facilitate statewide remediation efforts, while also easing the burden on the regulated community.

The solution must be able to unify the core functional data management needs, while adapting to inevitable regulatory and programmatic changes. It must provide a comprehensive and intuitive picture of the state's remediation and storage tank-related activities, without constraining future advances in data analytics and manipulation.

Windsor's Vision for RIMS

DEQ's decision to replace existing systems represents a significant opportunity to move toward a fully integrated environment, where applications behave consistently, are easier to use, and provide complete sets of integrated data, giving DEQ staff the power to make more informed decisions about remediation projects and the environment in general. The choice of RIMS solution is a pivotal decision for DEQ – we believe that the right RIMS solution for DEQ will have the following key characteristics:

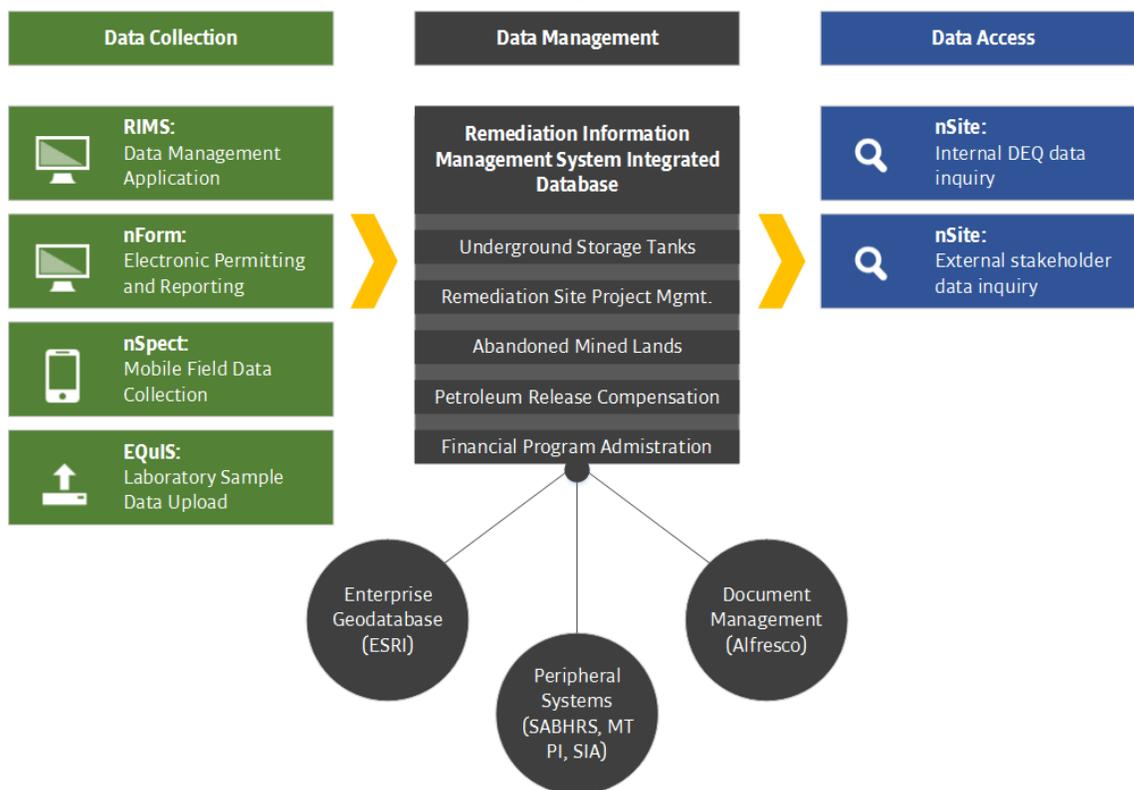
- **Adaptable** – As the DEQ programs' business processes change over time, business rules will also change. The RIMS system needs to be able to adapt easily to new business needs.
- **Modular** – Windsor will ensure modularity in our solution by developing a detailed understanding of DEQ business process, leading to identification of common data and functional items to be supported. This informs the application architecture, leading to a set of strongly cohesive, yet weakly coupled modules that combine to support the agency's business needs.
- **Easy to maintain** – The key to maintainability within systems is the creation of a properly designed, well documented system architecture, and the use of a consistent technology stack and development approach across all components of the solution. Windsor employs stable software development technologies that have been thoroughly researched and tested by our technical architects before being included in our suite of acceptable software development technologies. Many vendors will tout the use of new technologies without having thoroughly vetted their 'fit-for-purpose' – resulting in the early adoption of technologies that are quickly superseded by more stable alternatives, leaving the client with a solution that becomes obsolete far too early in its lifetime.
- **Easy to use** – Modern web interfaces have become much more powerful than they used to be. The advent of powerful new client-side scripting technologies for web applications has resulted in functionally rich user interfaces. Windsor will combine these technologies with talented graphic designers who understand the complexities and challenges of the human-machine interface, to ensure a RIMS solution that is easy to use, intuitive, and 'easy on the eye'. A key capability for the new solution will be the ability to easily find and report upon stored data. Windsor's proposed RIMS solution includes a spatially-driven querying tool that will allow users to find, research, and 'drill-down' on sites of interest, providing an intuitive, easy-to-use, ability to find information either through a map-based interface or through more conventional online search mechanisms. Data identified through this interface can then be extracted in various formats for further analysis.
- **Seamlessly Integrated** – A key aspect of the usability of the new RIMS solution is the extent to which the components of the solution can be combined to form a seamless experience for the

user. Windsor is proposing a combination of products and custom-developed components that we believe can be effectively combined to provide such an experience.

- **Secure** – The solution should have a comprehensive security framework, including the ability to control access to functionality at the form level, and at the field level for sensitive information such as SSNs or ITINs. The technical architecture of the new RIMS solution should limit direct database access to only those accounts/users with proper privileges, and an audit trail of system activity should be maintained for future reference.

Windsor’s proposed solution has all of the above characteristics, and is capable of meeting all of the mandatory requirements listed in the RFP. We believe it is an excellent fit for the State of Montana.

Our vision for the new system is illustrated in the following figure and can be characterized in terms of three main components: data collection, data management, and data access.



Data Collection

One of the more significant shortcomings of the existing legacy systems used by DEQ relates to the data collection mechanisms that are available. The new RIMS system will be Web enabled providing easy access to system users and will use the latest design patterns and technologies to provide the best possible user experience and the best possible electronic data collection capabilities.

Data will be captured by the RIMS system using a variety of inputs. DEQ staff will have a highly functional Web application that will include built in business rule validation to ensure data quality and which will integrate comprehensive workflow management support throughout, including dashboard, notifications, scheduling, and communication. The system will provide a single point of entry for common data such as project, site, and contact information that will support all programs. DEQ Staff will also have access to mobile tablet-based applications to facilitate field data collection.

Finally, laboratories contracted by DEQ to conduct sample analysis will be able to upload sample result data electronically to the RIMS system using the EarthSoft EQulS product.

Data Management

The core of the new RIMS system will be the integrated RIMS database, which will support all programs currently supported by individual legacy Access databases, including the Underground Storage Tank Section, the Hazardous Waste Site Cleanup Bureau, the Abandoned Mined Lands Bureau, the Petroleum Tank Release Compensation Board, and the Remediation Administration and Financial programs.

The new RIMS system and database will provide robust security controls along with rigorous audit capabilities so that data changes can be tracked as needed. The system will also be business rule driven with those business rules modifiable by authorized system users as necessary. The system interfaces and database will include automated data quality checks.

The core RIMS database will interface to several other DEQ information resources to provide functional support, including the agency geo-database for spatial data resources that will be used in the data collection and data access functions provided by the system. The system will also interface with Alfresco for document management and version control. Finally, the system will interface and share information with other agency systems such as SABHRS, MT Pi, SIA, and EQUIS.

Data Access

Another major shortcoming among the existing legacy systems is the lack of effective support for data analysis. Reporting and query capabilities are limited which dramatically affects the utility of the data.

The new RIMS system will include a highly flexible, Web-based inquiry application that will provide users with the ability to select from standard reports or to create their own queries as needed. The inquiry application will incorporate spatial information resources from DEQ's geo-database to support and enrich the query capabilities. Data export functions will be included to allow users to download data of interest for further analysis in desktop and other tools.

The system will also include a similar although more limited inquiry application that will be expressly designed to meet the needs of external stakeholders and partners. This system will include many of the same capabilities but some data will likely be restricted from the public access interface.

The RIMS Solution

To meet the vision and goals for a new RIMS solution, Windsor will leverage the nSuite solution architecture, developed by Windsor in response to the information systems needs of regulatory environmental agencies across the country. nSuite has evolved over a number of years, and is an integrated collection of 'best-of-breed' solutions for commonly occurring processes and activities within these agencies.

The architecture of nSuite is founded on the many years of experience that Windsor's staff have gathered working with state environmental agencies. This has allowed Windsor to develop a deep insight into the needs of these agencies, and to establish information systems that will best support their data and process needs. A core principle of nSuite is to identify the processes and data points that occur commonly across environmental programs and divisions, and build those just once. At the same time, the specific data needs of individual programs must also be catered to, so media- and program- specific modules have been developed to build on these common capabilities. Above all, the

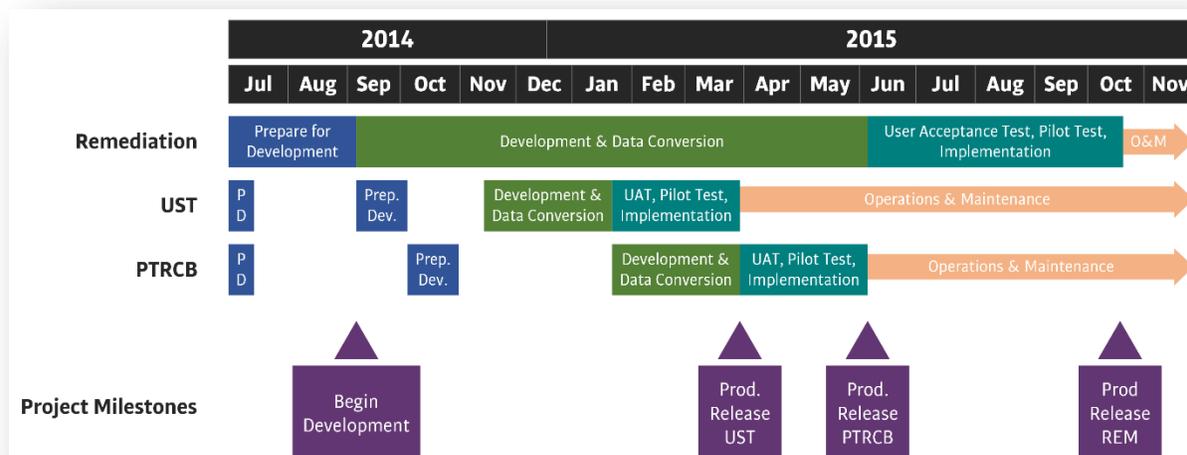


nSuite solution is highly configurable, to allow for the uniqueness of each state’s environmental regulations and the existing technical environment in place at the state.

The modules that comprise nSuite (nForm, nSpect, and nSite) have already been successfully deployed at a number of state environmental agencies, and represent a stable, yet constantly evolving, software environment tailored specifically to agencies such as DEQ.

Schedule

Windsor proposes to use the “Agile” software development methodology to deliver the RIMS solutions. This methodology is focused on obtaining the maximum functional benefit from the RIMS system development effort for a fixed budget. A detailed discussion of Windsor’s agile approach is included in Tab 9 (Approach) of this response. A summary of the project work plan, illustrating the estimated timeline, and assuming a project start date of July 2014, is shown in the following figure:



Qualifications of Key Personnel

Windsor has established a project team that includes senior Windsor staff with proven project management track records and superior technical skill sets. Two of our senior staff members have achieved the Project Management Professional (PMP) certification from the Project Management Institute and our proposed Project Manager, Chet Amborn, has achieved both the PMP and Agile certified Practitioner (ACP) qualifications. In addition to Windsor resources, we will also contract with Environmental Resources Management (ERM), a leading global provider of environmental, health, safety, risk, and social consulting services, to bring to bear additional local resources with direct experience working with some of the DEQ programs that will be supported by the RIMS system as well as experience in remediation project management and information management system development.

Corporate Commitment

Our firm has a 15 year history of proven successful delivery of integrated environmental information management solutions similar to the RIMS system. We are excited to have this opportunity to assist DEQ with this important project and if we are selected to conduct the project, we can assure DEQ that our management team and all at our firm will be committed to fully realizing the vision for the project. We look forward to discussing our proposal further with DEQ.

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Corporate Qualifications (Tab 4)

Corporate Capabilities and Commitment

Established in 1998, Windsor continues to focus exclusively on the design and delivery of environmental information management systems across the US. A full service information systems consulting firm, Windsor is headquartered in Portland, Oregon, with offices also in Hawaii and Massachusetts. We are proud to have developed an exceptional national reputation for the delivery of high quality solutions, on time and within budget, that span most environmental program areas.

As a systems integrator specializing in environmental information management, Windsor is able to bring extensive and relevant experience to this initiative. Our business knowledge and technical expertise allow us to design and implement solutions that address an agency’s specific needs in regard to critical data collection, appropriate analysis, and timely information sharing.

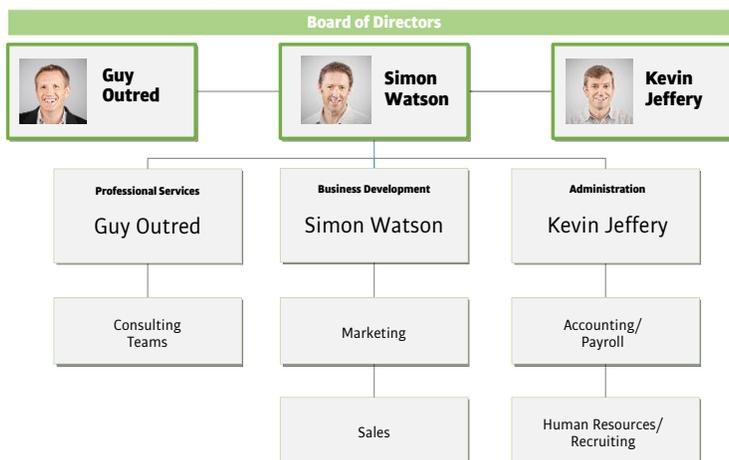
Corporate Overview

Windsor currently employs approximately 45 software engineers, developers, analysts, and project managers in our Northampton, Massachusetts, Portland, Oregon, and Honolulu, Hawaii offices. Windsor experiences very low staff turnover in comparison to the industry as a whole, and strives to maintain staff continuity throughout the life of a project.

Windsor Solutions is a privately held S-Corporation, incorporated May 20, 1998 in Oregon. Windsor is headquartered in Portland, Oregon and has branch offices in Northampton, Massachusetts and Honolulu, Hawaii. Since its inception, Windsor has enjoyed steady, sustained growth to its current level. Windsor’s organizational structure is shown in the accompanying chart.

Employee breakdown by division or function is as follows; in some cases, duties may overlap:

- Project Management: 13
- Technical Manager: 4
- Analyst: 10
- Developer: 16
- Data Analyst: 3
- Technical Writer: 1
- Graphic/UI Design: 2
- IT Infrastructure Specialist: 1
- Training: 6
- Administration: 1



Authorized Representatives

Four individuals are authorized to sign contractual documents on behalf of Windsor:

- Guy Outred, President, 503-675-7833 ext. 205
- Kevin Jeffery, Vice President, 503-675-7833 ext. 202
- Simon Watson, Vice President, 503-675-7833 ext. 206
- Craig Austin, Communications Manager, 503-675-7833 ext. 215

Corporate Structure and Ownership

Windsor is a privately held S-Corporation founded in Oregon in 1998. The first three individuals named above are the principal owners and executives.

ERM Corporate Capabilities and Commitment

Environmental Resources Management (ERM) is a leading global provider of environmental, health, safety, risk, social consulting services and sustainability related services. ERM has over 140 offices in 39 countries and territories employing more than 5,000 people. ERM is committed to providing a service that is consistent, professional and of the highest quality to create value for clients. Over the past five years, ERM has worked for more than 50 percent of the Global Fortune 500, delivering innovative solutions for business and selected government clients helping them understand and manage the sustainability challenges that the world is increasingly facing.

For over 40 years, ERM has been working with clients around the world and in diverse industry sectors to help them to understand and manage their environmental, health, safety, risk and social impacts. The key sectors served include Oil & Gas, Mining, Power, and Manufacturing, Chemical and Pharmaceutical. All face critical sustainability challenges and ERM’s clients in these and many other areas rely on ERM to help them operate more sustainably, which has a positive impact on our planet.

ERM focuses on six core service areas:

- Air quality and climate change
- Impact assessment and planning
- Performance and assurance
- Transaction services
- Contaminated site management
- Risk management

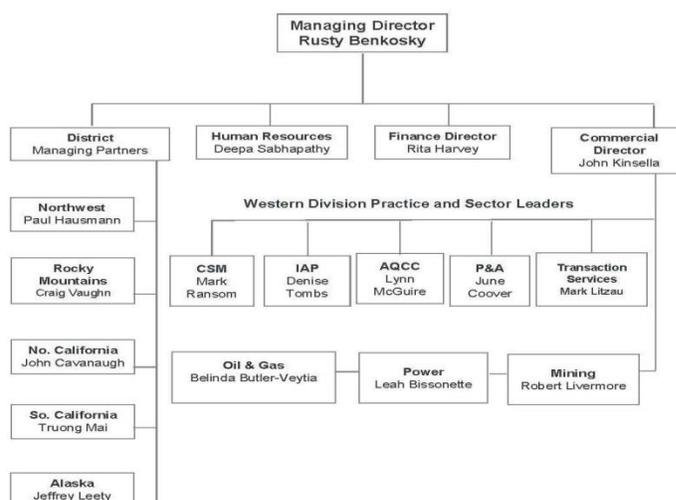
Specific to environmental remediation, ERM has managed large-scale projects for petroleum, mining, energy, and transportation industries. ERM brings extensive environmental engineering and remediation experience to the project team as well as an internationally recognized track record in environmental information management systems.

ERM’s Information Solutions group provides a unique blend of strategic consulting, solution evaluation and design, implementation support, customization and training to meet environmental data management and related organizational needs. ERM’s environmental and technology professionals specialize in the assessment, design and implementation of enterprise-wide environmental data management systems.

Relevant Project Experience

Windsor specializes in building environmental information systems for state, county, tribal, municipal, and federal agencies. Due to space limitations, we are unable to provide a complete list of successful environmental information system projects, but a few of the more relevant projects are detailed below.

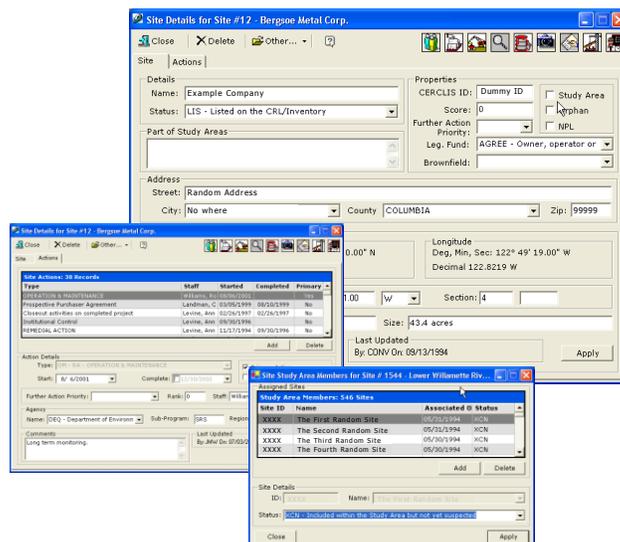
Western Division Leadership Team



Oregon DEQ – Environmental Cleanup Site Information (ECSI) and Cost Recovery Information System (CRIS) Database Migrations

DEQ selected Windsor Solutions to perform a series of system migrations from various legacy technologies to the Microsoft .NET/SQL Server platform. The first major migration effort was the Environmental Cleanup Site Information (ECSI) system, a character-based system used by DEQ to track sites in Oregon with known or potential contamination from hazardous substances. Information held by ECSI about suspected and confirmed cleanup sites included:

- Site location and parties affiliated to the site (owners, operators and other interested parties)
- Relevant features (wells, storage tanks, drains)
- Current and past uses for the site.
- Known and suspected releases of hazardous chemicals
- Current and past disposal and cleanup activities for the site.



Windsor's approach to the migration of the ECSI system centered on developing a thorough understanding of the data, functions and user processes supported by the current system. To develop this detailed understanding of the existing systems' environment, an extensive Current Systems Analysis effort was completed, involving in-depth reviews of data and logic, along with user confirmation workshops. The findings from the Current Systems Analysis effort were used extensively as source material for subsequent phases of the project.

The migrated ECSI application was implemented one week ahead of schedule and 5% under budget, a reflection of the high level of co-operation that was achieved throughout the project between Windsor and Oregon DEQ.

Windsor's migration of the ECSI system established a model for moving applications from legacy architectures to internet-based frameworks at DEQ, and formed the basis for the subsequent effort to migrate DEQ's cleanup Cost Recovery Information System (CRIS). The focus of the CRIS system is to manage the process of recovering all costs associated with the remediation of contaminated sites from responsible parties. This may be actual cleanup costs and/or costs resulting from enforcement actions taken against the responsible party. The CRIS system provides a comprehensive set of accounting tools for DEQ staff, including:

- Invoice and Statement Generation
- Payment Processing and Reconciliation
- Assessment of Penalties and Late Fees
- Integration with the State of Oregon's Statewide General Ledger system (SFMS)

In addition to the capabilities above, CRIS was tightly integrated with the ECSI system, providing state Remediation staff with online insight into the financial aspects of a remediation effort, as needed.

The CRIS system was delivered using the same rigorous software development approach as ECSI, and was also delivered on-time and under budget.

Together, the ECSI and CRIS migrations provided the following benefits to DEQ

- Reduced cost of maintenance and removal of dependence upon legacy tools and architectures.
- Improved performance, reliability and scalability.

- Greater consistency with DEQ's strategic direction in terms of architecture and standards.
- Provision of a modern user-friendly interface.
- Greater integration across business functions (e.g. Remediation and Financial Services)

Relevancy to RIMS:

Remediation site data management; Cleanup cost recovery management; integration with State financial systems; .NET/SQL Server development.

Massachusetts DEP - Underground Storage Tank Data System

The Massachusetts Department of Environmental Protection (DEP) is partnering with Windsor Solutions to design, develop and implement a comprehensive state-of-the-art Underground Storage Tank (UST) Data Management System.

By establishing the UST Data Management System, DEP aims to replace a collection of legacy information system resources including Microsoft Access databases, various file system resources such as spreadsheets, documents and other file types, and paper-based processing. The new system will provide an integrated source of data to support various program needs including online submissions of facility UST registrations by the regulated community, mobile inspections by DEP program staff and third-party inspectors, efficient data management capabilities and powerful data access tools.

The UST Data Management System will support the UST program by reducing paper-based facility/tank registrations, third-party inspection reports and third-party inspector qualification statements. A mobile inspection application will streamline the inspection process and allow DEP to receive real-time inspection/compliance data.

The proposed solution is made up of a combination of solutions/products that Windsor will be configured to specifically support the storage tank program. Additionally, custom software will be developed to accommodate the programs specific needs. Introducing already developed products provides a streamlined project that would otherwise take years to design and develop from the ground up. The following products will be included as part of the overall UST Data Management system:

- nForm online permit, license, and form submission processor
- nSpect device-independent mobile inspection application
- nSite browser-based spatial analysis and data inquiry tool

Relevancy to RIMS:

UST registration management; Compliance monitoring and enforcement management; Use of Windsor nSuite products (nForm, nSpect, nSite); .NET/SQL Server development.

Arkansas DEQ – Regulated Storage Tanks System

Windsor was engaged by the Arkansas Department of Environmental Quality (DEQ) to redesign and integrate the Regulated Storage Tanks (RST) application into the DEQ's Permit Data System (PDS). The project required Windsor to convert the existing application into a new architecture that integrates with the existing PDS. PDS provides users with an easy to navigate and use application that provides enhanced functionality with improved data validation and integrity checking.

As part of the project Windsor utilized its Facility Profiler data warehouse application (an earlier version of nSite) to perform address cleansing and to identify duplicate facilities within and between RST and PDS. This resulted in a significant number of duplicate facilities being merged into single facilities.

Windsor also created and implemented a Microsoft .NET based GPS Data Import application that uploads and validates geospatial information from files generated by handheld GPS units and allows for QA/QC to be performed before loading the data to the production database.

The Regulated Storage Tanks system supports a wide array of business workflows including:

- Management of facilities.
- Management of above ground storage and underground tank information.
- Separate management of leaking underground storage tank (LUST) information.
- Management of corrective actions for LUSTs.
- Management of eligibility certifications
- Records of tank removal and decommissioning.
- Managing compliance inspections (Substantial Operational Compliance (SOC)).
- Invoicing support
- Management of complaints
- Management of compliance including enforcement actions (CAO/NOV)
- Advanced reporting capabilities.

Arkansas DEQ now has its Tank data integrated with other program areas such as Air Quality, Mining, Tires, Solid Waste, Water and Hazardous Waste, as well as Inspections, Invoicing and Complaints and is planning to implement the FRS data flow to make this Facility data available as part of the Exchange Network.

Windsor has deployed nForm in ADEQ as the department's ePortal. ADEQ is in the process of implementing electronic permitting across the agency. This solution has the ability to integrate with PDS and the RST module.

Relevancy to RIMS:

UST registration management; LUST management; integrated information system; custom development; .Net/SQL Server development.

Connecticut DEEP – Site Information Management System (SIMS)

As a state environmental agency, the Connecticut Department of Energy and Environmental Protection (DEEP) collects and maintains an enormous amount of data about the environment and the businesses and activities that have an impact upon it. When they contracted Windsor Solutions, DEEP's information was being stored in many different forms and locations: databases, diskettes, logbooks, spreadsheets, documents, central file room, office file cabinets, and individual desk drawers. This made it extremely difficult for other business units and the public to be aware of the information or have a means to obtain it.

DEEP's information systems served program-specific, single-discipline, regulatory requirements. This not only restricted the agency's ability to complete effective analyses, but reduced data quality and functionality. It also required separate data entry, query and analysis because the different departments and disciplines were not connected and could not "talk" to one another. A further complication was that program staff had developed their own stand-alone information management systems when central systems became too difficult to access or navigate.

DEEP turned to Windsor Solutions for help in creating a complete picture of regulated activities across their programs that provides a greater understanding of these activities and how they relate to each other. Windsor worked in tandem with DEEP to develop a large-scale, browser-based system that manages information and activities of environmental interest in the state of Connecticut.

SIMS is centered on an integrated database containing data migrated from a number of DEEP systems that support program activities. Information in this integrated database includes site information and the physical characteristics of the site (known in SIMS as 'features'); client information (contact information, addresses, etc.); and information about 'Environmental Interests' (permits, licenses, registrations, enforcement actions, etc.)

Built on top of this integrated database is a core suite of application modules that provide agency-wide support in the following areas:

- *Reconciliation of site and client data* – identification and merging of duplicates.
- *Document management* – allowing documents to be scanned, stored, and associated with a site, client or environmental interest.
- *Geographic Information Systems (GIS)* – supporting the creation, maintenance, and analysis of spatial data associated with sites and their features.
- *Extensive querying and reporting* – data can be queried using a variety of site, client, and environmental interest criteria, including document and GIS-based querying.

Having established a centralized environment for client, site, and environmental interest querying and reporting, DEEP turned to Windsor for help in using this integrated environment as the basis for a number of replacement systems that would directly maintain client, site and environmental interest data in the SIMS database.

The first of these systems, known as P&E (permits and enforcements) was an agency-wide solution that supported the creation and processing of permits and enforcement actions. The solution allowed users to create environmental interests such as enforcement actions, associate them with existing sites and clients, and also define a schedule of events associated with the processing of the environmental interest. A large number of statistical reports were also developed to support CT DEEP management in their decision-making activities.

In parallel with the development of the P&E system, Windsor developed an agency-wide Accounts Receivable (AR) processing system that also integrated with the client, site, and environmental interest data, and provided a fully-fledged AR processing environment that included invoicing, statement production, receipt processing, aging/late fees, and bank deposit management. As a result, users were able to easily see a client's financial position across the entire agency, providing a powerful tool for decision-making regarding DEEP's provision of services to a client.

The SIMS suite of applications is now one of the core components of DEEP's systems environment and provides agency-wide support for a large number of agency functions. Windsor and CT DEEP continue to work together to enhance and improve the functionality and capabilities of the SIMS solution as new opportunities to exploit the possibilities of this integrated data environment arise.

Relevancy to RIMS:

Custom-developed, multi-program, integrated information system; UST registration management; Compliance Monitoring and Enforcement Management, Extensive GIS integration (ESRI ArcGIS); Extensive Document Management integration (IBM FileNet); .NET/SQL Server development.

Hawaii EHA – Integrated Hazard Evaluation and Emergency Response System (iHEER)

The Hawaii State Environmental Health Administration's Hazard Evaluation and Emergency Response (HEER) Office asked Windsor to develop, test and implement an integrated HEER Office remediation information management (iHEER) system. The HEER Office envisioned a system to keep accurate and current records of all environmental site data under office jurisdiction, with integrated project management tools using workflow steps to accurately capture the decision making process.

The iHEER System will provide the following capabilities:

- Log and manage complaints and inquiries received by the HEER Office
- Log and assign documents received by the HEER Office
- Enter and manage public record requests received by the HEER Office

- Create and manage emergency releases (incidents) reported to the HEER Office
- Create and manage facilities subject to the Hawai'i Emergency Planning and Community Right-to-Know Act (HEPCRA)
- Manage sites being assessed within the HEER Office Site Discovery Program
- Manage sites contaminated with hazardous substances that are under investigation and/or remediation by the HEER Office
- Create and manage special projects managed within the HEER Office

The iHEER System is currently in test, and is scheduled to be implemented in production in early 2014.

Relevancy to RIMS:

Spill reporting and tracking; Remediation site data management; Extensive GIS integration (ESRI ArcGIS); .NET/SQL Server development.

Oregon Metro – Solid Waste Information System

The Financial and Regulatory Services Department of Metro, the elected regional government for the Portland, Oregon metropolitan area, wished to develop and implement a single integrated software solution that supports the various tracking, financial, regulatory, and due-diligence related activities associated with the flow and disposal of solid waste generated throughout the Portland metropolitan area. These solid waste management activities are a critical component of the overall mission and revenue of Metro, and the unique system of governance of these activities that has been put in place by Metro presents some intriguing information systems challenges.

The information systems environment that previously supported these business processes, known as SWIS (Solid Waste Information System) was a collection of MS Access and Excel documents that had evolved over many years in an uncontrolled, organic fashion, and was considered by Metro to be an inefficient model from both a technical and business process perspective.

With this in mind, Metro embarked upon a series of process improvement exercises coupled with a structured analysis and end-user requirements gathering effort. Through the execution of these processes, Metro was able to determine the available options for improvement of the SWIS systems environment. The results of these efforts were the development of an ideal (or "To-Be") system environment for the SWIS. Metro envisioned a new SWIS solution that is underpinned by single database encompassing all of the data required to support the Solid Waste management processes performed by Metro staff. The new SWIS solution is both secure and web-based, allowing external users (regulated or reporting entities) to authenticate and report their activities and volumes. Internal Metro staff will use the system in a trusted manner to review, analyze, and report upon submitted data, and perform financial/due diligence activities.

Windsor utilized an agile development process to facilitate the development and implementation of Metro's business requirements as the new SWIS system. Although not an exhaustive list, some of the benefits of the new SWIS application are:

- Provide better support for cradle-to-grave tracking of municipal solid waste generated in the Portland, OR area.
- Reduce the time required to collect and consolidate the data from the regulated and/or reporting entities (e.g. garbage collectors and haulers, transfer stations, materials recycling facilities, and landfills).
- Improve data quality due to validation being performed when the regulated entities submit their data.

- Improve integration with other systems involved in the Municipal Solid Waste Management process such as payment processing, accounts receivable, and weigh-scale solutions..
- Provide more time for Metro to perform due diligence activities, such as analyzing the data and ensure that fees and taxes have been appropriately assessed, as well as more time for planning to ensure that yearly contractual obligations will be met.
- Provide for a single central location for data that will make analysis and reporting simpler (i.e., one version of the data, instead of it being propagated in many databases, and spreadsheets).

The system was developed in C#.NET utilizing technologies such as ASP.NET MVC v3 and JQuery with Business Intelligence provided through MS SQL Server Analysis Services. In addition, a RESTful design pattern was utilized to provide consistency in server-side access patterns. Integration with PeopleSoft and US Bank was also provided for processing the large EFT/Online payments. Following a two month parallel test, the SWIS system officially went live in the summer of 2012.

Relevancy to RIMS:

Agile software development approach; Custom-developed integrated information system; Document management integration (HP TRIM); .Net/SQL Server development; online payments.

Michigan DEQ – Waste Data System

The Michigan Department of Environmental Quality (MDEQ) Resource Management Division (RMD) contracted Windsor to perform a multi-phased project for the development of an integrated cross-program waste management system.

Prior to this project the Division maintained nine separate internal information systems in addition to staff having to hand-key data into EPA's Resource Conservation and Recovery Act Information (RCRAInfo) system for the management of hazardous waste information. The first version of the MDEQ's Waste Data System (WDS) was delivered by Windsor Solutions for production use in 2001.

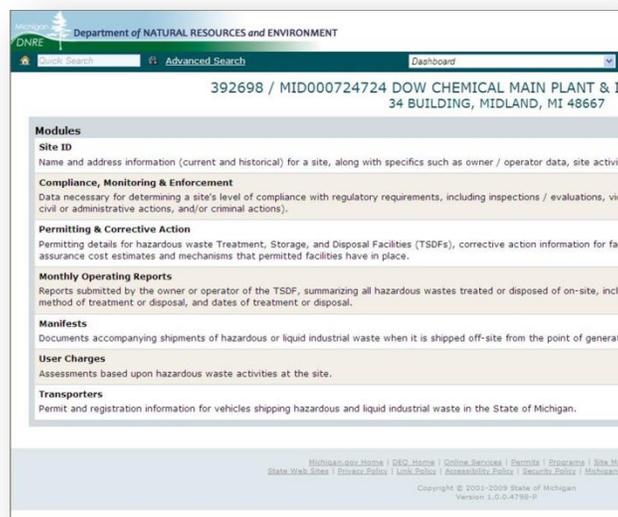
In 2009 the MDEQ contracted with Windsor Solutions to redevelop WDS in current technologies.

The current implementation of the WDS is a web based application based on the Microsoft .NET Framework with data being managed and reported upon using the Microsoft's SQL Server platform and its associated services (Reporting Services, Integration Services).

The application is available both internally and publicly (<http://www.deq.state.mi.us/wdsp/Home.aspx>) with sensitive data being removed from the publicly available version. The division has found that making the data publicly available has resulted in a significant decrease in the number of information requests submitted by the public, freeing up resource-limited staff to address other pressing matters.

Programmatically, WDS manages data for the following areas:

- RCRA Hazardous Waste Generation and Management
- Hazardous Waste and Liquid Industrial Waste Transporters
- Solid Waste Management



- Scrap Tires

Data for both the Site Identification and the Compliance Monitoring and Enforcement activities are managed in a cross-programmatic manner. This allows staff and the public to have an integrated view of the regulated activities and compliance history at a site.

WDS also has implemented a proven approach to submitting data through the Exchange Network to EPA's Central Data Exchange (CDX) for incorporation into RCRAInfo for the following RCRA subject areas:

- Handler
- Compliance Monitoring and Enforcement
- Permitting
- Corrective Action
- Financial Assurance

Each of the corresponding modules within WDS was designed with this objective in mind and the MDEQ has been successfully translating data to RCRAInfo since 2001 (originally flat files).

Relevancy to RIMS:

Custom-developed, multi-program, integrated information system; Permit/registration application management; Compliance monitoring and enforcement management; Cleanup grants management; Extensive GIS integration (ESRI ArcGIS); .Net/SQL Server development.

Current Contracts of Similar Size

- Michigan Department of Environmental Quality, Waste Data System (\$1.7 million) – Prime Contractor. Project type: Environmental Waste Data Management System. Status: Maintenance Phase
- Michigan Department of Environmental Quality, MiWaters (\$4 million) – Prime Contractor. Project Type: Integrated environmental data management system. Status: Development Phase. Approx. Hours: 30,000, 2-year project
- Massachusetts Department of Environmental Protection, UST Data Management System (\$800,000) – Prime Contractor. Project type: Underground Storage Tank database. Status: Project Kickoff March 2014.
- New York Department of Environmental Conservation, Exchange Network (\$2.4 million) - Prime Contractor. Project Type: Various EN projects. Duration 9/2007-8/2013.
- New York Department of Environmental Conservation, Pesticides Data Mgt (\$1.8 million) - Prime Contractor. Project Type: Integrated pesticides data management system. Duration 8/2011-7/2014.
- New York Department of Environmental Conservation, eSMART Support (\$3.2 million) – Prime Contractor. Project Type: Integrated waste management system. Duration 12/2012-11/2017.

*New York projects primarily staffed from East Coast office, no proposed RIMS staff utilized.

Potential Project Conflicts

Like any consulting firm, Windsor is challenged with managing a variety of ongoing projects and occasionally staffing conflicts arise, whether through changing client priorities, uncertain project startup, staff turnover, or other circumstances. To avoid project conflicts, Windsor employs a rigorous project management process wherein senior staff are given the responsibility, and corporate backing, to determine that necessary corporate resources are available during a given time period.

Windsor's staffing commitments are reviewed during the proposal phase as well. Windsor is aware that state agencies are wary of "bait and switch" tactics where a consultant proposes the same highly-qualified team for a large number of projects, with no intention of actually committing those staff to a given project, but rather substituting less qualified staff after contract award. Windsor is committed to avoiding this situation and endeavors at all times to realistically commit resources to a given project. On the rare occasion where staffing changes are required, Windsor alerts the client well in advance and works closely with the agency to utilize equally qualified staff.

Additional Staff Resources

As shown in the corporate organization section above, Windsor has a relatively deep "bench" of developers and software engineers who can be brought onto the project as needs change or arise. Our subcontractor, ERM, has a local Montana office and is a very large corporation with ample engineering and IT resources as well, if required. All of the proposed and potential Windsor staff are located in Oregon, a short flight away from Montana.

Technical Resources, Base, and Support Mechanisms

Windsor utilizes leading technologies and proven industry standards to provide robust custom and SaaS solutions. Our status as a Microsoft Certified Partner, ESRI Business Partner, and Amazon AWS Partner and extensive staff experience with Linux and Microsoft platforms in physical and virtualized environments provide a broad perspective and enable rapid adoption of the latest innovative technologies. Windsor has implemented VMWare and Amazon virtualization platforms and a wide variety of Java and .Net solutions targeting SQL Server, Oracle, and MySQL. GIS integration can be provided by ESRI, Google, or OpenLayer services depending on the needs of the client. We utilize a highly efficient support structure with 24/7 availability monitoring, web-based issue tracking, a service ticket approach to support, and a variety of warranty/maintenance structures from which our clients can choose.

Corporate Integrity

Windsor certifies to the best of its knowledge and belief that it, its principals, and proposed subcontractors:

- 1) Are not presently debarred, suspended, proposed for disbarment, declared ineligible, or voluntarily excluded from covered transactions.
- 2) Have not within a three-year period preceding the proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.
- 3) Are not presently under investigation for, indicted for, or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in Paragraph 2 above.
- 4) Have not within a three-year period preceding this RFP had one or more public transactions (Federal, State, or local) terminated for cause or default.
- 5) Are in compliance with the Sarbanes-Oxley Act, if a publicly traded company.
- 6) Are responsible corporate entities, possessing the capability in all respects to perform fully the contract requirements and the integrity and reliability that will ensure good faith performance.

Staffing Requirements (Tab 5)

Windsor's approach to staffing this project follows our philosophy of assigning only highly qualified and experienced staff. Windsor hires only experienced and qualified software developers, architects, and engineers with years of relevant business area expertise (an average of over 10 years relevant experience on the proposed RIMS project team, which is typical of a Windsor project). We offer excellent salaries, training, and benefits to our staff, resulting in an extremely low turnover and attrition rate compared to the IT industry as a whole.

Windsor does not utilize offshore development resources or non-US-based subcontractors for our projects. We also do not provide staff augmentation services. We are an information technology consulting company with a 15-year history of providing information management support exclusively to public sector US environmental agencies.

Windsor's projects are conducted from our own offices, with site visits to client locations when necessary for meetings, implementation, deployment, or training as necessary. We strive to establish and maintain staff consistency on a project, to reduce the need for knowledge transfer to new consultants and to ensure project "ownership" amongst our staff.

For these reasons, Windsor's clients enjoy long-term relationships with our team and a higher quality finished product. Our clients enjoy working with us and consistently compliment us on our professionalism, communication skills, and work products.

Windsor's Agile approach to developing the RIMS solution requires a high degree of collaboration and a clear understanding of the roles and responsibilities of each of the project participants. To ensure a successful project and a quality product, significant commitments will be required from both Windsor and certain MT DEQ staff members at key times in the project. This commitment should be understood and agreed upon at the beginning of the project as well as being confirmed as the project progresses. The specific times for involvement will be based upon the detailed project plan established during the initiation phase.

Client Testimonials

The following are actual testimonials from clients who have worked directly with Windsor staff at various technical and management levels. We are proud to have developed an outstanding rapport and reputation with our clients, and strive to maintain this relationship in every project.

"While they are an IT company, Windsor Solutions understands the business needs better than most other companies of similar capability. This has made it relatively easy for our program staff to effectively communicate with their development staff and helps to ensure a well designed product that performs to our expectations."

Manager, Michigan DEQ

"Windsor is always my go-to resource for critical projects that have to succeed without help or much oversight."

Senior Manager, Oregon DEQ

"Windsor has been an outstanding partner."

Manager, Washington Department of Ecology

Roles and Responsibilities

The following table lists the Windsor roles and responsibilities for this project:

Role	Description of Responsibilities
Project Manager / ScrumMaster	Works with the MT DEQ project manager to ensure overall project success including management of contractor resources, schedule, and budget. Prepares the project plan and project status reports. Serves as ScrumMaster for Windsor's development team. Responsible for facilitating efficient execution of the Agile/Scrum process for the development team and clearing roadblocks that impact performance.
Business Analyst-- Business Process Analysis	Workflow process analysis and definition of user stories in the Product Backlog (task and requirements definition). Advises MT DEQ on best practices for workflow process improvement when moving from paper-based inspection forms to electronic forms.
Business Analyst— QA and Trainer	Revises and adds user stories in the Product Backlog (task and requirements definition). Writes the User Guide, prepares training materials, and conducts train-the-trainer training sessions. Designs acceptance test plans and facilitates user acceptance testing and pilot testing. Provides training and support for MT DEQ application administrators who perform functions like managing users and roles and creating forms in nSpect and nForm.
Technical Architect / System Administrator	Network, data, and security architecture for the application system. Leads installation and configuration of software applications on servers. Design data integration between applications. Leads troubleshooting and resolution of technical issues with installation.
Developer or UI Designer	Develops and tests custom software enhancements which are being added to the software product for MT DEQ. Also develops and tests code changes for issues identified during User Acceptance Testing.
Database Analyst	Designs and develops data migration scripts (ETL). Designs and configures data integration procedures. Leads installation and configuration of databases on database servers.

The following table lists the MT DEQ roles and responsibilities for this project, along with the typical time commitment to the project:

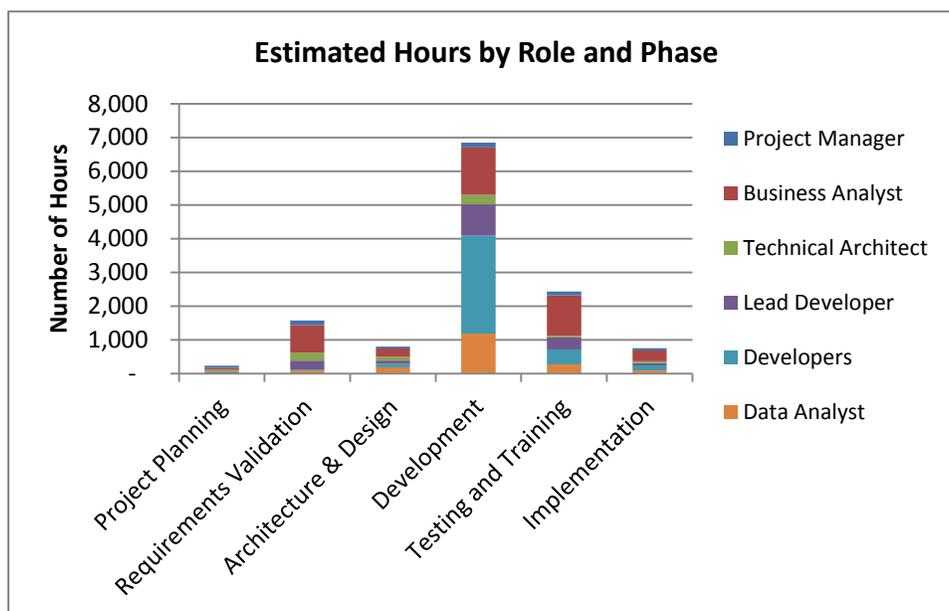
Role	Description of Responsibilities	% of Time in Key Phases
<p>MT DEQ Product Owner</p>	<p>Manager or supervisor responsible for the workflow process of a program / bureau of MT DEQ. Has authority to design and implement changes in the workflow process, based on the business process improvement recommendations of Windsor’s Business Analysts.</p> <p>Collaborates with Windsor’s Business Process Analyst to maintain the Product Backlog and prioritizes user stories when planning iterations.</p> <p>Participates in iteration planning meetings to set priorities for work to complete in a sprint. Participates in end-of-iteration demonstrations and provides feedback to approve or disapprove of the software and/or services delivered.</p> <p>Works with Windsor’s Business Analysts to plan and conduct training, user acceptance testing, and pilot testing efforts for MT DEQ.</p>	<p>40%</p>
<p>MT DEQ Staff (Subject Matter Experts)</p>	<p>Involved in business analysis and design activities and sessions in their area of subject-matter-expertise.</p> <p>Assists in designing the training and testing plan for specific functional areas their area of subject-matter-expertise.</p> <p>Participates in user acceptance testing in their area of subject-matter-expertise.</p> <p>Attends training in their area of subject-matter-expertise. Responsible for training other MT DEQ staff in these areas, based on a Train-the-Trainer model.</p>	<p>40%</p>
<p>Project Manager / ScrumMaster</p>	<p>Serves as ScrumMaster for MT DEQ’s implementation team. Responsible for facilitating efficient execution of the Agile/Scrum process for the implementation team and clearing roadblocks that impact performance.</p> <p>Works with Windsor’s project manager to create a plan that meets the project scope and is achievable within the time and budget specified.</p> <p>Facilitates MT DEQ’s responsibilities to:</p> <ul style="list-style-type: none"> • Manage project scope, schedule, budget, procurement, quality, risks, staff, and communications • Report progress to the project’s executive steering committee and other stakeholder groups on a regular basis. • Provide timely review of deliverables. Review will be completed within a time mutually agreed to by the Windsor and MT DEQ. • Provide responsive access to business area experts in order to gain necessary knowledge of business rules, resolve issues regarding the application and participate as required in project tasks. • Provide responsive access to IT Department analysts to participate as required in project tasks. • Validates that MT DEQ resources are available when needed for project work. Also, coordinates meeting times and space at MT DEQ offices. • Purchase, install and configure hardware and system software per the system design. • Assists Windsor’s Project Manager in defining and monitoring project risks. Proactively manages and resolves issues as they arise. Prevents conflict and facilitates conflict resolution. 	<p>80%</p>
<p>MT DEQ Technical Representatives</p>	<p>Provides consultation as need on networking, infrastructure, and/or application development technical issues with internally hosted systems.</p> <p>Reviews and approves technical architecture for system integration with internally hosted system.</p>	<p>10%</p>

Role	Description of Responsibilities	% of Time in Key Phases
	Provides services for production deployment of software for system integration with internally hosted system.	

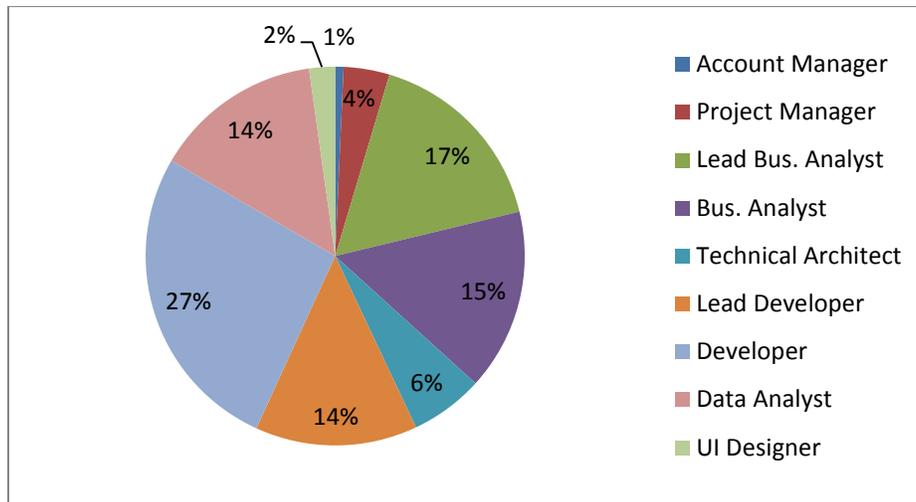
Staffing Plan

The following table and graph show the estimated number of hours for Windsor staff by role and project phase. Please note that testing, training, and documentation work is done by Business Analysts who have extensive experience in designing, developing, and implementing environmental systems. So, there is no separate role for quality assurance staff. Also, the UI Designer role is included under Developers.

Role	Project Planning	Requirements Validation	Architecture & Design	Development	Testing and Training	Implementation	Total
Project Manager	67	137	58	143	112	67	585
Business Analyst	62	819	244	1,408	1,204	323	4,060
Tech. Architect	55	237	119	277	47	55	791
Lead Developer	52	262	87	927	350	70	1,750
Developers	-	28	112	2,906	445	148	3,640
Data Analyst	-	91	182	1,183	273	91	1,820
Total Hours:	236	1,575	802	6,845	2,432	756	12,646



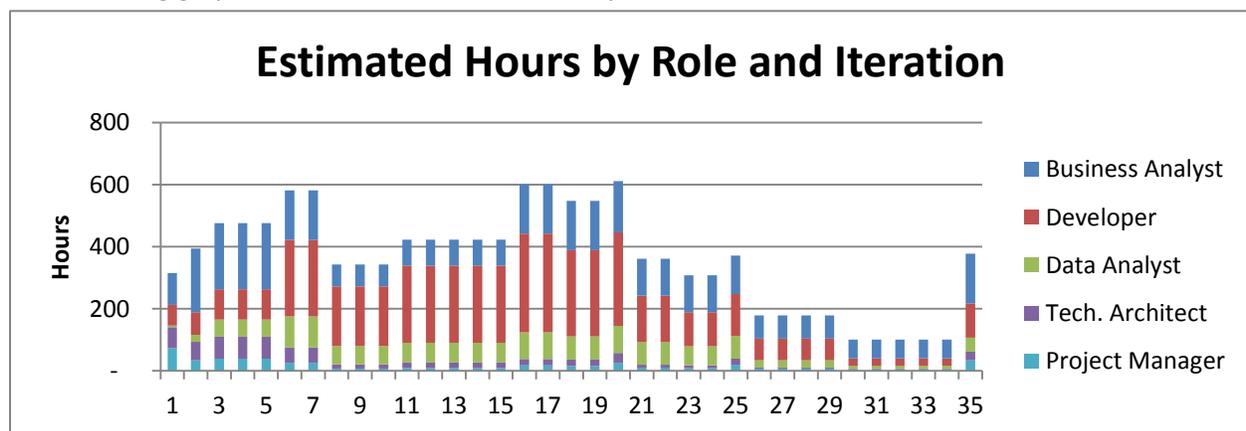
The following graph shows the percentage of hours by role for the entire development project:



As explained in the Project Schedule and Milestones section, this project will be organized as a series of 35 two-week iterations. There will be a series of seven phases or releases, with each phase or release lasting five iterations. The following table shows the estimated number of hours by role and each block of five iterations.

Role	1 - 5	6 - 10	11 - 15	16 - 20	21 - 25	26 - 30	31 - 35	Total
Business Analyst	945	531	419	800	601	361	402	4,060
Developer	434	1,067	1,238	1,491	654	303	204	5,390
Data Analyst	191	378	318	409	341	100	82	1,820
Tech. Architect	340	140	89	115	55	14	37	791
Project Manager	225	73	47	92	58	36	54	585
Total Hours:	2,135	2,190	2,110	2,907	1,710	815	779	12,646

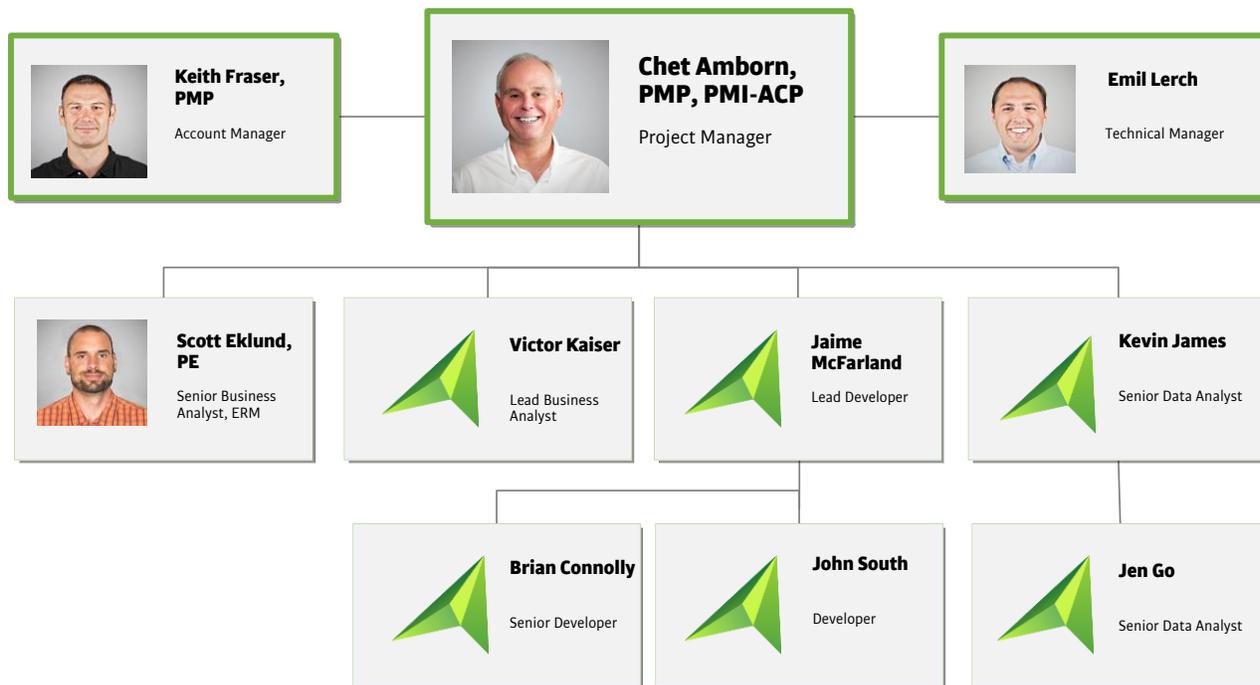
The following graphs shows the estimated hours by role for each iteration:



Personnel and Qualifications

The Windsor team proposed for the RIMS project has extensive relevant experience in the design and development of large-scale environmental information systems. The individuals shown in the project

organization chart below include Project Management Professionals (PMPs), Agile Certified Practitioners (ACPs), certified Microsoft programmers, Professional Engineers (PEs), and other staff with the necessary qualifications and experience to ensure successful completion of the project. Detailed resumes for key staff¹ are presented in Tab 7.



Key Staff

Account Manager/Contract Manager: Keith Fraser, PMP

Keith is a PMI certified Project Management Professional (PMP) and brings more than twenty years of information systems development experience, including all aspects of the information system project life cycle, and a variety of structured project management and execution methodologies.

Keith has extensive information systems analysis, design, and development experience in a variety of technologies and industries. Keith also brings exceptional facilitation, communication, organizational and management skills. He has managed very large, complex environmental and remediation information management systems involving the specific requirements of the RIMS system.

Project Manager: Chet Amborn, PMP, PMI-ACP

Chet is a Project Management Institute (PMI) certified Project Management Professional (PMP), a PMI Agile Certified Practitioner (PMI-ACP), and a Certified ScrumMaster (CSM) with more than 25 years of experience as a software analyst and project manager.

Chet is an expert in business process analysis and specializes in leading process improvement projects involving paperless submissions of forms and reports. He has delivered workflow applications with

¹ Key Staff as directed in the RFP include Account/Contract Manager, Project Manager, Technical Manager, and Business Analyst. Additional proposed staff resumes are available on request.

interfaces to enterprise document management systems like SharePoint, FileNet and HP TRIM. Chet is also the Technical Product Manager for Windsor's nSpect Mobile Inspections software product.

In his 25+ years in the industry, Chet has managed a wide range of projects with budgets ranging to over \$4 million. He has been responsible for all aspects of project management from setting initial budgets to managing communication sessions and meetings with the clients to overseeing large teams of software developers and engineers.

Technical Manager: Emil Lerch, MCPD/MCTS

Emil is a Technical Architect at Windsor Solutions and has over 19 years of experience in design and development of Internet, mobile, desktop and embedded software systems. As a senior and experienced development specialist, he is ideally suited to structure and organize sophisticated and multi-faceted technical solutions.

Emil also has extensive experience with data management systems development, including responsibilities for database design and administration involving index creation, writing stored procedures, triggers and views, and database optimization for large scale databases in SQL Server and Oracle.

Emil will ensure that the system is architected using progressive and best-of-breed techniques while also conforming to project budget, existing standards, infrastructure and IT capabilities, so that the resulting application will perform well, can be extended without loss of integrity, and requires minimal maintenance effort to support, reducing the total cost of ownership of the application over its lifetime.

Senior Business Analyst/Environmental Engineer: Scott Eklund, PE (ERM)

Scott is a Professional Engineer with ERM, located in Bigfork, Montana. Scott has 11 years of environmental engineering experience as both a consultant and a regulator with a focus on remediation, data management, and compliance. His remediation experience includes projects across the United States that involved soil and water sample collection, well installation, free product recovery, treatment system design and operation, and in-situ chemical oxidation. His groundwater sampling experience includes using bailers, peristaltic pumps, bladder pumps, and Grundfos pumps. Scott was a project manager for the Montana Department of Environmental Quality where he managed the remediation of 80-100 petroleum contaminated sites across western Montana.

In addition to remediation projects, Scott has focused on data management to support his remediation and compliance projects. While at Montana DEQ, Scott worked with other employees in the Remediation Division to identify data needs and study potential commercially available data management systems. When this program expanded to a custom data management solution to include current business data as well, Scott assisted with mapping the business flow for the Petroleum Technical Section. He has designed and managed databases in Access and SQL Server to track remediation sample data and chemical emission data. These databases were used to automate report preparation and permit applications. Scott has also worked as an analyst to identify data management needs for industrial and government entities. Most recently he has worked as an analyst for the redesign of a large Environmental and Health and Safety database application that included design, testing, data migration, and support.

Supporting Staff

Lead Business Analyst: Victor Kaiser

Victor brings extensive experience in both business analysis and development. He recently had responsibility for the data conversion, systems integration, and report development for the successful

implementation of the Michigan Department of Environmental Quality's (MDEQ) Waste Data System (WDS). Among his responsibilities were the analysis, design, and construction of complex reports for nearly every division within the MDEQ's Waste Department.

Victor has strong skills in Structured Query Language (SQL and T-SQL), database design, SQL Server, Visual Basic and Crystal Reports development.

Lead Developer: Jaime McFarland

Jaime has more than twelve years software design and development experience including both traditional and object-based methodologies. Jaime has a variety of technical skills and is exceptionally well-qualified in the use of Microsoft tools, including the .NET development platform and SQL Server.

Jaime has developed both thin and thick client applications using complex n-tier architectures and has worked in a variety of business areas.

Jaime recently played a key role on the Windsor development team charged with implementing the Connecticut DEEP SIMS database and application, and is intimately familiar with the DEEP and DOIT technical environment and standards. Jaime is currently a member of the team charged with the development of the DEEP enterprise Accounts Receivable application.

Jaime is a Microsoft Certified Application Developer in .NET and a Microsoft Certified Solutions Developer.

Senior Developer: Brian Connolly

Brian is a senior developer with over ten years of web application and database development experience. He is a highly capable system developer with a wide variety of language skills that include, but are not limited to, C#, ASP.Net, VB6, SQL, Perl, PHP, JQuery, and Javascript. He is highly knowledgeable of modern web standards and practiced in the application of modern frameworks such as Microsoft .Net, MVC and ORM. He has solid experience creating dynamic n-tier web applications with a focus on security and high availability.

Brian has experience in all phases of the software development lifecycle, including business analysis, requirements definition, system architecture, prototyping, development, implementation, quality assurance, and maintenance. As a previous contractor in service of the United States Navy and Marine Corps, he is accustomed to working with sensitive information and has held a Secret level DoD security clearance.

Developer: John South

John is a user experience expert and software engineer with 11 years of industry experience. He is adept at using Photoshop, Fireworks, Balsamiq and other graphics tools in conjunction with HTML, CSS and JavaScript to build attractive, user-friendly interfaces. He has spent years working with C#, ASP, VB6, SQL, and Java.

In addition to being particularly good at design work, John also has experience with gathering and developing requirements, creating mockups, prototyping, implementation, testing, maintenance and service-related work. He has led the complete implementation of numerous projects as well as providing design guidance for many others with a focus on environmental projects.

Senior Data Analyst: Kevin James

Kevin is one of Windsor's senior database analysts with considerable experience with a variety of database platforms. He has extensive experience in a variety of data engineering methodologies including logical entity relationship modeling and dimensional modeling.

Kevin is well versed in complex database programming and database administration for SQL Server, Oracle and DB2 platforms with his specialty being Oracle database. He is able to design, implement and administer large and complex database solutions and also regularly provides training in database design and programming to other staff.

Data Analyst: Geraldine (Jen) Go

Jen has more than 15 years of IT experience in database development for a variety of public and private sector industries. Projects have included database design, data migration and conversion. She has a strong background on database and data warehouse design and development, query, and performance optimization.

Jen has experience developing databases in Oracle, SQL Server, MySQL and Teradata, and the tools associated with them, including SQL*Plus, Oracle Forms and Reports, Oracle Portal, Oracle APEX, T-SQL and other tools like Talend Quality for Data Warehousing, Microstrategy and Hyperion.

State Approval

Windsor acknowledges this requirement.

Staff Replacement

Windsor will supply the state with an updated organization chart and staffing plan in the event a key person is replaced on the project.

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Resumes (Tab 6)

As directed in the RFP, resumes are provided for all key personnel identified in Section 4.7.1, Personnel and Qualifications. Resumes for the additional staff proposed for this project are available upon request.

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Keith Fraser

Account Manager



Employment History

Consultant, Windsor Solutions, Inc. 2000-present
 Consulting Partner, Deschutes Consulting, Ltd.
 1998-1999
 Senior Consultant, Emerald Solutions, Inc. 1996 - 1998
 Senior Consultant, Claremont Technology Group, Inc. 1993-1995
 Analyst Programmer, Rank Xerox PLC. 1991 - 1993

Education

B.Sc. (Honors) Computer Science – The Robert Gordon University, Aberdeen, Scotland
 1991

Achievements

Certified Project Management Professional (PMP)

About Keith

Keith is a PMI certified Project Management Professional (PMP) and brings more than twenty years of information systems development experience, including all aspects of the information system project life cycle, and a variety of structured project management and execution methodologies.

Keith brings extensive information systems analysis, design, and development experience in a variety of technologies and industries. Keith also brings exceptional facilitation, communication, organizational and project management skills.

In addition to his roles as Advisor and/or Project Manager on Windsor projects, Keith has account and contract management responsibilities for a number of Windsor clients, including California EPA, New Mexico Environment Department, Oregon DEQ, Connecticut DEEP, and Texas CEQ.

Key Projects

<i>Solid Waste Information System</i> Project Advisor	<i>Oregon Metro</i> 2011-2012
<i>Wellogic System Rewrite</i> Project Advisor	<i>Michigan DEQ</i> 2009-Present
<i>Site Information Management System</i> Project Advisor	<i>Connecticut DEEP</i> 2005-Present
<i>Cost Recovery Information System</i> Project Manager	<i>Oregon DEQ</i> 2004-2005
<i>Environmental Cleanup System</i> Project Manager	<i>Oregon DEQ</i> 2002-2003

Detailed Project Descriptions

Exchange Network Implementations

Oregon Department of Environmental Quality

Project Advisor : 2013-Present

Keith is currently advising a Windsor Team tasked with performing updates to the existing node infrastructure at Oregon Department of Environmental Quality (DEQ), and implementing additional data exchanges to support WQX, FacID, and RCRA Handler data. Responsibilities on this project include providing ongoing project management effort, including schedule, budget, and scope management, and liaising with the client project manager to ensure the project is proceeding as planned and business goals are being met.

NPDES Reporting Solution

California State Water Resources Control Board

Project Manager : 2011-2013

Keith managed a project to enhance an existing system at the California State Water Resources Control board (SWRCB) to support the online reporting requirements for NPDES permitted facilities within the state. The California Integrated Water Quality System (CIWQS) was extended to support the secure, online submission of Discharge Monitoring Reports (DMRs) for these facilities. Keith was responsible for all project management activities on this project, working closely with SWRCB management and staff to ensure that project goals were being achieved and functional requirements met.

Environmental Data Exchanges

California Environmental Protection Agency

Project Manager : 2011-Present

Keith is currently managing a Windsor team that is working with the Cal/EPA to define, develop and implement a series of data exchanges that support the transfer of environmental data between local agencies, state agencies, and the U.S. EPA. The project has two main focuses: 1) implement flows of Hazardous Waste-related data from local environmental agencies to a Cal/EPA centralized system known as CERS, allowing Cal/EPA to build a state-wide view of Hazardous Waste-related activities, and 2) implement a series of data exchanges between Cal/EPA and the U.S EPA, allowing the transfer of environmental data from the state to the Federal level, supporting EPA's goal of developing a national view of environmental data. The concepts and technology at the heart of this effort are supported by the Exchange Network (EN) – a U.S.EPA-sponsored initiative to promote the sharing of environmental data.

Exchanges implemented include FacID, RCRA Handler, RCRA CME, TRI, WQX, and TIER II.

Excess Emissions Reporting (EER)

New Mexico Environment Department

Project Advisor : 2010-present

Keith advised a team that worked with the Air Quality Bureau staff at the New Mexico Environment Department (NMED) to design and implement an automated solution for the submission and processing of Excess Emissions Reports (EER). The system allows regulated air facilities throughout the State to report events that result in an emission of air pollutants that exceed permitted amounts. The system also supports the subsequent internal processing of submitted reports by the Air Quality Bureau staff. The EER system is currently being extended to also support the submission and processing of Stack Test reports and Routine Compliance reports.

Solid Waste Information System - Development and Implementation

Oregon Metro

Project Advisor : 2011-2013

Keith is served in an advisory capacity on an effort to develop and implement a new solid waste reporting, tracking and planning system for Metro (a regional government and planning agency supporting the Portland, Oregon metropolitan area). This system allows over thirty reporting entities to submit all of their monthly transactions in order to confirm and assess fees and taxes for their activities. The system also provides Metro with the ability to review, confirm and assure accuracy and completeness of the provided data. Responsibilities on this project included providing supervisory and advisory input to the Windsor project team performing project tasks, and liaising with the client to ensure the project is proceeding as planned and business goals are being met.

Solid Waste Information System – Analysis and Design

Oregon Metro

Project Manager : 2009 - 2010

Keith managed a Windsor team tasked with the analysis and design of a system that will track the generation, transportation and disposal of all solid waste generated within the greater Portland, OR area. This system will be used to assess fees and excise taxes payable by Waste transporters to cover disposal costs. Working closely with Metro staff, the Windsor team developed extensive process and data modeling documentation for this project, which Metro used in an RFP to procure services to buy/build the eventual solution.

Wellogic System Re-write

Michigan Department of Natural Resources and Environment

Project Advisor : 2009 – Present

Keith advised a Windsor team in the re-development of an application that stores and manages information pertaining to drinking water wells in the State of Michigan. The current system no longer supports the business needs of the State Agency, and a new system was required. Windsor worked closely with the staff tasked with oversight of Well drilling activities to define a new design to better meet their needs, and a new application was constructed based on this design. The re-developed Wellogic application was placed in production in October of 2010. The State of Michigan is currently in discussions with Windsor over additional functionality they would like to see included in an enhanced version of the Wellogic application.

Drinking Water Sample Collector

New Mexico Environment Department

Project Manager : 2008 – 2009

Keith managed a Windsor team in the development and implementation of a web-based application to support the processing of samples from drinking water systems in the state of New Mexico. The application consisted of a web-based front-end to support the scheduling of sampling activities and the capture of identifying information about specific samples taken. Laboratories responsible for analysis of the samples were able to retrieve information about those samples via a web-service available over the internet. The Sample collector system was designed to integrate with the SDWIS/state system, in common use throughout the U.S. The Drinking Water Sample Collector system was built using Java with an Oracle 10g DBMS, and was deployed in February 2009.

Air Emissions Inventory Reporting

New Mexico Environment Department

Project Manager : 2008

Keith managed a Windsor team in the analysis and design of a web-based application to support the entry of annual Air Emissions from facilities in the state of New Mexico. The application consists of a web-based front-end to support entry of emissions, along with a second, administrative web-user interface used by New Mexico ED to validate entered emissions. Submitted and validated emissions are subsequently submitted to the USEPA via the Exchange Network. The system has been designed to support CROMERR compliance, based on the latest draft of the CROMERR rule.

Site Information Management System

Connecticut Department of Energy and Environmental Preservation

Project Advisor : 2005 - Present

Keith is currently advising a team that performed the development, testing, implementation, and now performs ongoing support activities for the Site Information Management System (SIMS) for Connecticut DEEP. The SIMS system is a suite of web-based applications designed to allow DEEP staff to harmonize Environmental Interest information from disparate systems in a single agency-wide data repository (known as CFI). SIMS provides tools for identifying and resolving duplicate data, querying data (using both tabular and geospatial methods), and viewing/maintaining documents associated to the data.

The SIMS system was initially deployed in production at DEP in December 2006, and was a foundation for the development of future integrated systems at DEEP. The first two of these integrated systems, the application and permit management application (PAMS) and the Accounts Receivable application (AR), were placed in production in 2008, and DEEP has retained Windsor to perform maintenance modifications and further enhancements as necessary.

Cost Recovery Invoicing System Migration

Oregon Department of Environmental Quality

Project Manager : 2004 - 2005

Keith led a team performing the re-engineering and migration of Oregon DEQ's Cost Recovery Invoicing System (CRIS). This system allows Oregon DEQ to manage and recover the cost of site remediation and spill response activities conducted throughout the state. Windsor completed an analysis of the capabilities of the existing system and any requested enhancements. A new system design was produced which supported the analysis findings, whilst migrating the system to a more modern .NET and SQL Server-based platform. The system was successfully implemented in production in November 2005.

Environmental Information Portal Analysis & Design

Washington Department of Ecology

Project Manager : 2004 - 2005

Keith led an analysis and design team that produced a design and functional prototype of an Environmental Information Portal (EIP) for the State of Washington, Department of Ecology. Current Ecology systems tend to present a program-specific view of information, and the EIP is intended to improve visibility to data by providing users with an integrated view of environmental information across programs. The initial requirements for the EIP were explored at stakeholder workshops and documented as use cases. These were subsequently refined and detailed to present a detailed design. A prototype was then developed based on

the detailed design, which shows key capabilities of the proposed EIP application.

Treasury Portal Build Project

Clark County Treasurer, State of Washington

Project Advisor : 2004 - 2006

Utilizing his experience on the initial Treasury Portal Design project, Keith provided guidance to a Windsor team that built and implemented a Treasury Portal for Clark County, Washington. The portal provides the tax districts within Clark County with a number of key financial information views, including the ability to see daily account balances and detailed transaction information, view check statuses and images, review outstanding tax revenues, and download financial reports produced by the County. Deployment of the Treasury Portal has placed Clark County's Treasury department in the enviable position of being the only Treasury in the State of Washington currently able to provide this type of service to its customers, increasing the level of service offered, and decreasing the load on Treasury staff. The system has been extremely well received by the Treasurer's office, and by its customers.

Treasury Portal Design Project

Clark County Treasurer, State of Washington

Project Manager : 2004

Keith led a team which performed the Planning, Analysis and Design of a Web Portal for the Treasury Department of Clark County, WA. The primary goal of the Treasurer's Web Portal is to provide a means for junior taxation districts within the County (School Districts, Fire Districts, Ports, etc.) to view key financial information such as daily fund balances and statements via a secure web portal on the Clark County Web site. This will provide improved customer service to existing Treasurer's office customers, reduce the workload on Treasury staff, and improve overall satisfaction with the services of the Treasurer's Office.

Web Site Redesign Project

Clark County, State of Washington

Project Manager : 2002 - 2004

Keith provided project management support to a Windsor team providing project guidance and oversight to Clark County, Washington as they implemented their new Web site re-design. Having previously established a blueprint for the County including Site Architecture, Technical Architecture and Graphic Design, Windsor supported the County in its decision-making and in educating its internal staff as they implemented their new site. Windsor also provided hands on technical expertise where appropriate. The new Clark County Web site was implemented in January, 2004.

Oracle Forms Migration Project

Oregon Department of Environmental Quality

Project Manager : 2003-2004

Keith managed the Windsor team of consultants charged with the conversion of several existing systems to the Microsoft .NET technology platform for the State of Oregon, Department of Environmental Quality (DEQ). Oregon DEQ has a large number of systems developed using technologies which are either obsolete, or cost-prohibitive in terms of maintenance and licensing. Windsor was tasked with converting a number of systems from an Oracle forms-based implementation to a VB.NET and SQL Server-based implementation:

- Spill Program Information Network (SPIN) application, which was migrated and became the Emergency Response Information System (ERIS).
- Asbestos Air Quality Management System (ASB)
- Solid Waste Management System (SWMS)

Keith was responsible for the coordination and oversight of the overall migration effort for these Oracle systems. This included detailed planning of project activities, regular status meetings and communication of status to DEQ management, oversight of the activities of Windsor team members, resolution of Project issues with DEQ Project Manager, and the management of the change control effort for each project. As projects were often occurring simultaneously, this required a significant amount of planning and personal organization to be successful. The final system migrated under this contract was deployed in the DEQ production environment in May, 2004.

Data Catalog

Washington Department of Transportation

Project Manager: 2002 - 2005

Keith combined the roles of Project Manager and Business Analyst on a project to implement an Enterprise Data Catalog for the Washington State Department of Transportation (WSDOT). This application catalogs all of the data in the various WSDOT physical databases, matching each gathered meta-data item to a common, enterprise-wide understanding of the information that the data represents. With this Catalog the Department gained the capability to maintain an accurate data inventory, be able to recognize duplicate or disparate data, and provide a means to reuse rather than recreate existing data.

The data catalog application used Microsoft's .NET development environment and was developed for web-based execution, utilizing C#.NET with a SQL Server 2000 database. The data catalog was successfully deployed in June of 2003, and Keith has been managing a follow-up contract awarded by WSDOT for the ongoing maintenance of the Data Catalog.

Environmental Cleanup System Project

Oregon Department of Environmental Quality

Project Manager : 2002 - 2003

Keith managed the Windsor project team to redevelop DEQ's Environmental Cleanup Site Information (ECSI) system using Microsoft's .NET framework and SQL Server 2000. In addition to his overall management responsibilities, Keith participated actively in the Analysis and Design phases of this project. The project involved a detailed analysis of current systems support for Environmental Cleanup information within the agency, followed by a GUI system redesign and redevelopment. The project included the migration of data from the COOL:Gen ECSI application and Oracle database, and integration of the new ECSI application within the existing systems infrastructure at DEQ. The new system is built using Microsoft's .NET development and implementation environment, a technology that offers multi-platform support for a multitude of development approaches. Keith was responsible for all aspects of Windsor's involvement with the DEQ including task planning and assignment, personnel management, risk and issue management and status reporting to the client project manager. In addition, he was responsible for the execution of the Current Systems Analysis and New Systems Design phases of the project.

Shipment Track & Trace System

Menlo Worldwide

Project Manager: 2001 - 2002

Keith led an effort to analyze, redesign and redevelop Menlo Worldwide's Shipment Tracking & Tracing Systems environment. Used over multiple channels (internet, intranet, custom clients), Shipment Tracking information was previously derived from a variety of data sources, resulting in the possibility of inconsistent results through duplicated data and code. A common back-end component was designed to meet the needs of all channels, presenting a consistent, single view of Shipment Tracking Information.

Internet Strategy

Clark County, State of Washington

Team Lead/Architect : 2000 - 2001

Keith was team lead and architect on this project to develop an Internet strategy and Web site re-design for Clark County. Working with all departments within the County, Keith evaluated the current technical architecture and determined the requirements for future use of technology. Based on the identified needs of the County, Keith recommended a technical architecture including hardware and software to address the County's ongoing need for advanced solutions in a fiscally responsible manner.

Pickup & Delivery System

Menlo Worldwide

Project Manager : 2000

Keith led a team responsible for the analysis, design, development and implementation of a Pickup & Delivery System, and integration of this system with Wireless handheld Clients that will enhance the capabilities of the client's freight Pickup and Delivery operations. The deliverables from this effort are being developed to be fully compliant with Menlo Worldwide's internal architectural standards – client-server applications consuming distributed data, using a component-based development approach with the potential for web-enablement at a later date.

Keith was personally responsible for the scheduling and ongoing management of the various software design, development, integration and implementation efforts that comprise the new Pickup & Delivery systems environment at Menlo Worldwide.

Enterprise-wide Modeling Project

The Royal Bank of Scotland

Application Architect : 1998 - 1999

Keith worked on a client engagement at the Royal Bank of Scotland, a major European Retail Bank, participating in the establishment of an enterprise-wide logical process and data model for the bank, which subsequent development efforts were to be based upon.

Sales and Account Opening Systems Project

The Royal Bank of Scotland

Application Architect : 1999

Keith performed the analysis and design of a set of components which will support the Bank's sales and account opening systems across the various sales channels used (branches, telephone, internet, etc.).

Model-Driven Development Environment Project

The Royal Bank of Scotland

Application Architect : 1998

Keith provided support for the Bank's Model-Driven Development Environment (MDDE) - a set of rigorously documented methods and toolsets identified by the Bank as strategic. Support duties include assisting and mentoring project teams in all aspects of MDDE.

Shipment Data Entry System

Menlo Worldwide

Project Manager : 1997 - 1998

Keith completed a client engagement at Menlo Worldwide Inc., Portland, Oregon, leading a team in the development of a Shipment Data Entry system, planned for use at Menlo Service Centers throughout the world. The system was a client/server, GUI application targeting a Windows NT client with both NT/Oracle and MVS/DB2 server portions. The development methodology used for this effort was Component-Based Development (CBD), which requires that any business data object which has a potential for re-use must be implemented as a component, in order to leverage that potential, and also to provide consistent application of business rules across consuming applications. The system was acceptance tested in Los Angeles and Amsterdam. Keith's role throughout this engagement was extremely diverse, and included project management/administration, mentorship of less experienced team members, user training and support, ongoing analysis, and general system development.

Cargo Operations

Menlo Worldwide

Business Analyst : 1996

Keith completed a client engagement at Menlo Worldwide, participating in a team performing the re-engineering, analysis and design of Menlo's Cargo Operations systems (Cargo Operations covers all freight movement and tracking, from point-of-pickup to point-of-delivery). The re-engineering effort was conducted in unison with large teams of people representing the various global Operational divisions of Menlo Worldwide. This effort led into an analysis and design phase, where individual information systems were identified, their requirements gathered and an application prototype produced. This approach is known as Rapid Application Prototyping (RAP). His role throughout this project included data gathering, requirements analysis, JAD facilitation, and the construction of data and activity models of the business, and subsequent information system prototypes.

Chemical Management System

Pacificorp

Software Developer : 1995

Keith developed an application that inventories all potentially hazardous substances stored at the various company locations. This system was called Chemical Management System (CMS), and was built in order to ensure compliance with the various State and Federal regulations that govern the storage and use of potentially hazardous substances. CMS responded to those regulations by:

- Providing the ability to accurately provide location and quantity information on currently held hazardous materials. This allowed for more effective management of these materials, resulting in a general reduction in quantities held in storage.

- Producing regular reports for Federal and State Agencies regarding the storage of any of the 360 Emergency Planning and Community Right-to-Know Act (EPCRA) hazardous substances that equals or exceeds a reportable quantity (RQ). This was required in order to comply with government regulation, which requires that such quantities of known hazardous substances must be reported to the EPA National Response Center (NRC) and local emergency planning agencies.
- Providing up-to-date information on characteristics, handling advice, spill cleanup advice, treatment advice for all locations within the organization. This was achieved through the provision of a globally accessible Materials Safety Data Sheet (MSDS) database, supporting lookup by CAS Registry number, Common Name, and other aliases for the product.

CMS was integrated with Pacificorp's larger and more complete database of company inventory, allowing day-to-day inventory management transactions to result in the update of chemical inventories.

Policies & Procedures System

Pacificorp

Software Developer: 1993 - 1995

Keith completed a client engagement at PacifiCorp, Portland, Oregon, developing, implementing and maintaining an application that controls and displays all PacifiCorp corporate documentation. The system, PPS (Policies & Procedures System), manages the release and distribution of company reference materials, and is available for use to any member of staff throughout the organization. It was developed to run in CICS/DB2.

Core Logistics System

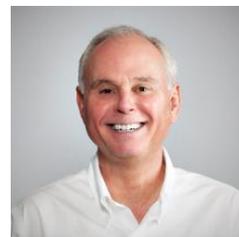
Rank Xerox

Analyst Programmer : 1991 - 1993

Keith was a member of a large project team that developed a Pan-European Logistics System. This system (about 450 entity types) held Xerox Core business data pertaining to company assets, their storage, shipping, pricing, manufacturing and ordering. The on-line portion of the system was developed using the IEF CASE tool, targeting an IMS-DC/DB2 production environment. The batch portion was developed using COBOL II, also running under IMS-DC. His role within the project was initially analytical, participating in data and activity analysis. When Development began, he was heavily involved in both the on-line and batch portions of the system. Keith was also responsible for the production of a set of guidelines on how to use the COOL:Gen PC construction toolset (considered leading-edge technology at the time), and performed some research into the feasibility of using COOL:Gen batch programs for the system instead of COBOL II batch. After implementation, Keith became part of a team responsible for performance tuning the system. This work was of a highly technical nature, and involved, among other things, the tweaking of COOL:Gen Procedural logic to improve database accesses, adding/maintaining indexes, and a large amount of native DB2 work.

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Chet Amborn, PMP, PMI-ACP



Project Manager

Employment History

Consultant, Windsor Solutions, Inc. 2011-present
 Consultant, Genesis Consulting, Inc. 2010
 Business Process Analyst/Project Manager (Independent Contractor) 2007-2010
 Business Process Modeler, Greenpoint Mortgage 2006-2007
 Senior Analyst, Trilogy Integrated Res. 2006
 Consultant, Infomark Software 1991-2005

Education

B.A. Management, St. Mary's College 1993
 M.A. Educational Technologies, San Francisco State University 1995

Achievements

PMI Project Management Professional (PMP); PMI Agile Certified Practitioner (PMI-ACP); Certified ScrumMaster (CSM)

About Chet

Chet is a PMI certified Project Management Professional (PMP), a PMI Agile Certified Practitioner (PMI-ACP), and a Certified ScrumMaster (CSM) with more than 25 years of experience as an analyst and project manager.

Chet is an expert in business process analysis and specializes in leading process improvement projects involving paperless submissions of forms and reports. He has delivered workflow applications with interfaces to enterprise document management systems like SharePoint, FileNet and HP Trim. Chet is also the Technical Product Manager for Windsor's nSpect Mobile Inspections software product.

In his 25+ years in the industry, Chet has managed a wide range of projects with budgets ranging to over \$4 million. He has been responsible for all aspects of project management from setting initial budgets to managing communication sessions and meetings with the clients to overseeing large teams of software developers and engineers.

Key Projects

<i>nSpect Mobile Inspections Technical Product Manager</i>	<i>Windsor product - Multiple state environmental agencies 2012-Present</i>
<i>RCRA Inspections, C&E Project Manager</i>	<i>Kansas Department of Health and Environment 2013</i>
<i>Excess Emissions Reporting Project Manager</i>	<i>New Mexico Environment Department 2011-2013</i>

Detailed Project Descriptions

nSpect Mobile Inspections product

Windsor Solutions

Technical Product Manager : 2012-Present

Chet is the technical product manager for development and implementation of nSpect— a mobile inspections product for Windsor Solutions. This is a second generation system that is based on the Mobile Inspections application developed for KDHE in 2011. A mobile device such as an iPad or Android tablet records inspection data in the field—even when no Internet connectivity is available. This application uses HTML5 technology to implement WebSQL data storage and interface with the GPS and camera capabilities on the tablet computer. nSpect integrates with various back-end compliance, monitoring and enforcement applications, including Windsor’s nForce product and Water Permitting and Compliance (WPC) systems Windsor has developed for multiple states. nSpect can be internally hosted by an Agency, or Windsor can host the application in the Windsor Cloud.

Chet’s responsibilities include project planning, management of project activities based on the Agile/Scrum methodology, and serving as the product ScrumMaster. He works with the Product Owner to create the Product Backlog, facilitated design of the user interface, author example forms, plan and conduct testing of the application, and writes the user guide for nSpect. Chet is also responsible for software maintenance for the nSpect product and on-going production support for a growing list of clients using nSpect.

RCRAInfo Mobile Inspections, Compliance & Enforcement

Kansas Dept. of Health and Environment

Project Manager : 2013

Chet was the project manager for implementing Windsor’s nSpect and nForce products for the Bureau of Waste Management at KDHE. This includes a 3-year support and cloud hosting agreement with KDHE. Data integration between nSpect and nForce was customized so that inspection form data from nSpect flows to nForce for compliance, monitoring, and enforcement (CME) work. Then, CME data from nForce flows to EPA’s RCRAInfo system via the Exchange Network.

Chet’s responsibilities on this project included project planning, management of project activities based on the Agile/Scrum methodology, and serving as the project ScrumMaster. He created the Product Backlog for the implementation, wrote the data migration scripts for loading all of the inspection data and mobile inspection forms from the existing RCRA Mobile Inspections system into nSpect, wrote a customized nSpect User Guide for BWM, and conducted User Acceptance Testing and training (on-site). He also provides technical support to the BWM Unit Chief (who creates new mobile forms) and the KDHE IT Help Desk for more than 20 field inspectors using 35 inspection forms on Apple iPads with nSpect running in the Windsor Cloud.

TRIDex 5.0 Upgrade and Enhancements

California EPA & Other States

Project Manager : 2012

Chet was the project manager for this project upgrading the Toxics Release Inventory (TRI) product from the EPA version 4.0 data format to version 5.0. The enhancements to the TRIDex viewer included requests from environmental departments concerned with toxic air emissions in California, Washington, Ohio, Colorado, and Nevada.

Chet's responsibilities on this project included software development, QA, and implementation of the software product in multiple states. He led QA of the software product enhancements, wrote the Installation & Configuration guide, and provided technical support services to IT groups in the four states that initially installed the new 5.0 software release. TRIDex is a .NET application that runs on both SQL Server and Oracle databases.

Excess Emissions Reporting Phase II Development & Maintenance Contract

New Mexico Dept. of Environment

Project Manager/Lead Analyst : 2012-2013

Chet was the project manager and lead analyst on this project where the team developed a web-based application for the paperless submission of excess air emissions reports from facilities regulated by the Air Quality Bureau. AQB forms for an Excess Emission Report and Affirmative Defense were implemented as web-based forms. The application is integrated with NMED's Secure Extranet Portal (SEP) for user/facility registration and login authorization. There will be a phased roll-out to the regulated community—over 1,000 facilities across the state—in the second half of 2012 and early 2013. This development project follows a successful pilot project which was completed in Fall 2011.

Chet's responsibilities on this project included project planning, management of project activities based on the Agile/Scrum methodology, and serving as the project ScrumMaster. He designed the EER database, designed the user interface and produced UI mock-ups for "paperless" emission reporting forms, produced reports using iReport / Jasper reports, created the Product Backlog, tested the developed system, and ensured a successful project result. Chet also works with the EER Product Manager and AQB IT Help Desk in providing technical support services for the EER application.

RCRA Mobile Inspections

Kansas Dept. of Health and Environment

Project Manager/Lead Analyst : 2011

Chet held the project manager and lead analyst roles on this project where the team designed, developed and implemented a mobile inspections application for hazardous waste and solid waste facility inspections. iPad tablet computers were used to record inspection data in the field even if no Internet connectivity was available (using the HTML5 Local Storage capability). This also included enabling the GIS Data Submission flow through NEIEN to EPA.

Chet's responsibilities on this project included project planning, management of project

activities based on the Agile/Scrum methodology, and serving as the project ScrumMaster. He designed workflow process improvements to enable a “paperless” inspections process, created the Product Backlog, designed the user interface and produced UI mock-ups, tested the developed system, and ensured a successful project result. A train-the-trainer approach was used for implementation. This included writing a full detailed User Guide for end-users and an Implementation Guide for IT staff.

Agile Lifecycle Management Tool Implementation

Windsor Solutions

Project Manager/Lead Analyst : 2011

Chet led the selection and implementation of a COTS solution for Agile project and requirements management at Windsor. From an initial review of ten packages, two finalists (TeamPulse and VersionOne) were selected for a 4-month pilot test with actual projects. TeamPulse was selected due to the high value delivered for a reasonable cost. He performed all of the software customization work and wrote an implementation guide for using TeamPulse at Windsor. Training and coaching were provided to project managers leading Agile teams to ensure the quickest possible software adoption.

Excess Emissions Reporting Pilot Development Project

New Mexico Dept. of Environment

Project Manager/Lead Analyst : 2011

Chet was the project manager and lead analyst on this project where the team designed and developed a pilot application for paperless submissions of excess air emissions reports from facilities regulated by the Air Quality Bureau. Based on the success of this pilot project, additional development and release of a production application will occur in the first half of 2012.

Chet’s responsibilities on this project included project planning, management of project activities based on the Agile/Scrum methodology, and serving as the project ScrumMaster. He designed the user interface and produced UI mock-ups to enable a “paperless” emission reporting process, created the Product Backlog, tested the developed system, and ensured a successful project result.

Pollution Prevention Planning (P3) Software Project

State of Washington, Department of Ecology

Project Manager/ Lead Analyst : 2011

Chet held the project manager and lead analyst roles on this project where the team was responsible for designing, developing, testing and implementing a pollution prevention planning application for use by external facility/site planners and internal Ecology staff and supervisors. This included enabling the P2RX data flow through NEIEN to the National P2 Results Data System.

Chet’s responsibilities on this project included project planning, management of project activities based on the Agile/Scrum methodology, and serving as the project ScrumMaster. He was also responsible for workflow process analysis and design for the P2 plan submission and

approval process, creation of the Product Backlog, application design to support the business requirements, testing, providing train-the-trainer training to the client, and ensuring a successful project result.

LBS Method Design Project

Nike, Inc.

Project Manager/Business Process Analyst : 2010

Chet designed process improvements for the IT SDLC process to reduce time to benefit, reduce total cost of ownership, and improve quality using Lean A3 problem-solving techniques. Modeled the As-Is process for current waterfall projects using Metastorm ProVision. Assisted in designing a standard To-Be process for any software development teams following Agile/Scrum or Kanban. Contributed to design of a metrics plan for a performance measurement system in IT. Also, contributed to design of a training software application to support a Lean culture transformation in IT.

Chet's responsibilities on this project included business process analysis and design of change management training. He also served as a subject matter expert in Agile/Scrum methodology.

EPM Live System Implementation

Knowledge Learning Corp.

Business Process Designer : 2010

Chet assisted in redesigning the process for submitting, assessing, and approving capital projects. This included defining a new governance process to align project priorities with the enterprise balanced scorecard for six lines of business. Chet's responsibilities on this project included workflow and process report design for IT's new program/project portfolio management package.

IBS Service Connection Project

Bonneville Power Administration

Project Manager/Business Process Analyst : 2009 - 2010

Chet led development of a service catalog for Internal Business Services to support the agency goal of operational excellence. Defined cross-functional processes for a set of 29 services in HCM, IT, Workplace Services, and Security. Also, worked with the IBS leadership team to define a new governance process based on cross-functional process ownership. Installed the BPMS technology and delivered the first two services to the business for user acceptance testing (UAT) within six months after purchasing the Metastorm BPM Suite product.

Chet's responsibilities on this project included all aspects of project management. He was responsible for a project budget over \$4 million. Microsoft Project Server was used in creating the project plan, budget, WBS, schedule, release plan, and resource staff plan for a 13-month project. Produced monthly status reports tracking project health for the PMO and executive sponsor team. Responsible for communications with the IBS leadership team, stakeholders in four business departments, IT infrastructure services, and IT application development groups. Managed a \$1 million contract with the BPMS software vendor for software, training, and 800 hours of consulting services to accelerate installation of the software and the start of

application software development work. Built a core development team of ten BAs, developers, and QA analysts. Implemented Agile/Scrum practices with 3-week iterations and served as the team ScrumMaster

New Jersey Family Care System Enhancement and Production Support

Affiliated Computer Services (ACS)

Project Manager : 2008

Chet was responsible for enhancing and supporting the software application for a call center providing enrollment broker services for the state of New Jersey's Family Care health insurance program.

Chet's responsibilities on this project included leading a software development and production support team of eleven. Planned and executed new development projects with monthly project health status reports to the PMO and internal client. Also, designed and implemented performance improvement changes for the software development process to increase quality and accelerate delivery schedules by moving from a Waterfall to Agile/Scrum methodology.

Document Management System

Con-way Enterprise Services

Process Analyst : 2007 - 2008

Chet led projects for paperless business process improvement initiatives in freight transportation and supply chain logistics. Analyzed document-centric workflow processes, designed solutions, and coordinated IT development work involving Con-way's Document Management System. Also, on the RFP team for selecting a BPM suite vendor and document management system for improving cargo claims operations. Chet's responsibilities on this project included business process analysis, document analysis, and project coordination.

Process Owner Training Program

GreenPoint Mortgage

Business Process Modeler/Senior Business Analyst : 2007

Chet designed and delivered a blended learning training course on business process improvement methods for process owners (branch managers and regional VPs) and IT Business Analysts across the company. Training content was developed using Articulate—PPT slides with voice narration. Training was delivered to process owners around the country using WebEx. Class scheduling and registration was handled through SumTotal LMS.

Paperless Mortgage Process Redesign Project

GreenPoint Mortgage

Business Process Modeler/Senior Business Analyst : 2006 - 2007

Chet led business process modeling for wholesale mortgage loan originations as part of a paperless loan processing initiative. Defined requirements for the pre-funding closing process developed under an Agile/Scrum methodology. Analyzed workflow processes to identify non-value-added activities to perform at offshore units. Analyzed data on patterns of document submission and processing to inform process improvement decisions. Created business

intelligence dashboards using AquaLogic business activity monitoring (BAM). Application was delivered on a J2EE platform: BEA Aqualogic BPM, FileNET, Empower Loan Origination System (LOS), and Oracle DBMS. Results from a pilot project with eight branches and two offshore units showed a 13% reduction in turnaround time for same-day closing documents and a 1% increase in pull-through (loan applications funded). He was also a member of the BPM Team in National Operations that served as a center of expertise in business process management across five lines of business.

Learning Management System (LMS) Vendor Selection

Trilogy Integrated Resources

Senior Analyst/Developer : 2005

Chet led the software selection for a Learning Management System (LMS) to provide continuing education for licensed health care and social service professionals. Defined functional and technical requirements for the LMS based on a series of case scenarios. Facilitated the evaluation of seven LMS products, including setting up scenario-based demos for each product. Isoph Blue was chosen for its superior functionality in hosting e-learning for a large client base.

Chet's responsibilities on this project included project management and software package evaluation. Chet also served as a subject matter expert in defining the requirements for a Learning Management System for the client.

Infomark Content Management System Product

Infomark Software Corporation

Project Manager: 2002 - 2005

Chet defined and managed consulting services to implement Infomark's CMS with multiple clients. Services included: Information architecture, visual design, setting up newsletter publication workflow process, converting content from a legacy web site, and setting up hosted services (DNS, FTP, E-mail, ListServ, and chat). As needed by the client, set up affiliate sales programs (Amazon.com), sponsored advertising (Google Ad-Sense), and e-commerce payment gateway (Authorize.net). Created custom database-driven applications like credit card processing for donations and on-line surveys for participants in marketing research studies. Application platform: Cold Fusion MX and Microsoft SQL Server.

Chet's responsibilities in creating this product included project management, software product design, software development, and implementation with clients. Chet also advised non-profit organizations on how to use on-line newsletters and web-based content management system technology to improve communications with stakeholders and increase sponsorship or donations.

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Emil Lerch

Technical Manager



Employment History

Consultant, Windsor Solutions, Inc. 2008-present
 Technical Project Lead, Intel Corporation 2000-2008
 Consultant, Controlware 1998-2000
 Sr. Software Engineer, EDS 1994-1998

Education

MBA, Entrepreneurship, Babson College, Wellesley, MA 2005
 BS Computer Science, Lehigh University 1995

Achievements

Microsoft Certified Professional Developer (MCPD), Technical Specialist (MCTS) 2010
 Member, International Association for Software Architects 2008-Present
 Member, Software Association of Oregon) 2000-Present

About Emil

Emil is a Technical Architect at Windsor Solutions and has over 19 years of experience in design and development of Internet, mobile, desktop and embedded software systems. As a senior and experienced development specialist, he is ideally suited to structure and organize sophisticated and multi-faceted technical solutions.

Emil will ensure that the system is architected using progressive and best of breed techniques while also conforming to project budget, existing standards, infrastructure and IT capabilities, so that the resulting application will perform well, can be extended without loss of integrity, and requires minimal maintenance effort to support, reducing the total cost of ownership of the application over its lifetime.

Key Projects

<i>ePermitting Portal (nForm)</i> <i>Technical Architect</i>	<i>Arkansas DEQ</i> <i>2011-Present</i>
<i>ePermitting Portal (nForm)</i> <i>Technical Architect</i>	<i>Hawaii DOH</i> <i>2011-Present</i>
<i>Mobile Inspections (nSpect)</i> <i>Technical Architect</i>	<i>Kansas DHE</i> <i>2011-Present</i>
<i>Waste Data System</i> <i>Technical Architect</i>	<i>Michigan DEQ</i> <i>2010-Present</i>

Detailed Project Descriptions

nForm

Windsor Solutions

Technical Architect : 2011-Present

Responsible for system design of one of Windsor's flagship products dealing with form design and delivery, enabling permits and other forms to be electronically submitted and managed through either on-premises deployment or cloud-based deployment. Developed with C# 4.0, ASP.NET MVC3 and the Razor view engine, including semantic markup and unobtrusive Javascript techniques. SQL Server is used along with Fluent NHibernate used for ORM functions.

ePermitting

Arkansas Department of Environmental Quality

Technical Architect : 2011-Present

Responsible for implementation of Windsor's nForm product in Arkansas Department of Environmental Quality. The implementation involved significant enhancement to the product to support additional needs of the client. Implemented continuous integration and deployment procedures for automatic client deployment of developed and tested code.

Solid Waste Information System

Metro Oregon

Technical Architect : 2011-Present

Responsible for design and technical leadership for the solid waste information system for Metro Oregon. The system was implemented with C# 4, ASP.NET MVC3 with Razor and jQuery. A RESTful design was used to provide API consistency. Trained staff on RESTful design techniques and guided development throughout the project. Implemented distributed continuous integration and delivery using Git and Mercurial DVCS systems.

nSite

Windsor Solutions

Technical Architect : 2011-Present

Responsible for design of one of Windsor's original products dealing with site location, management, and reconciliation. Developed with C# 2.0, ASP.NET, it uses custom data access code to work with SQL Server and Oracle.

Mobile Inspections

Kansas Dept. of Health and Environment

Technical Architect : 2011

Emil designed a mobile inspections application for hazardous waste and solid waste facility inspections. utilizing HTML5 offline pages and local storage, iPad tablets are used to record inspection data in the field even if no Internet connectivity is available. Developed with C# 4.0, ASP.NET MVC3 and the Razor view engine, including semantic markup and unobtrusive Javascript techniques. Oracle 11i is used along with Fluent NHibernate used for ORM functions.

Georgia Pollutant Discharge Elimination System (GAPDES)

Georgia Department of Natural Resources

Technical Architect : 2011

Emil was technical architect for re-design and implementation of a wastewater pollutant discharge system for Georgia DNR. This system was based on an earlier project and modified to work with MySQL from the original SQL Server. It was also redesigned to operate in the cloud.

Content Management System

Hawaii Hazard Evaluation and Emergency Response

Technical Architect : 2011

Emil was responsible for design and development of a content management and content delivery system for Hawaii's HEER (Hazard Evaluation and Emergency Response) office. This system provides the public with quick access to information in the event of an emergency. Developed with C# 4.0, ASP.NET MVC3 and the Razor view engine, the content delivered will be aligned with the upcoming HTML5 specification including semantic markup and unobtrusive Javascript. SQL Server 2008 is used along with Fluent NHibernate used for ORM functions.

Adopt-A-Beach

Alliance of the Great Lakes

Technical Architect : 2011

Emil was technical architect for a system allowing the public in the Great Lakes region to view and participate in adopt-a-beach events. Through the program the Alliance, a non-profit organization dedicated to preserving and protecting the ecosystem of the region through policy, education, and local efforts, has organized thousands of volunteers for beach assessment and cleanup events throughout the year. The application was designed for C# 4.0, ASP.NET MVC3 with the Razor view engine. SQL Server 2008 and Fluent NHibernate provide data access. Responsible for oversight and training of the development team on these new technologies.

ePermitting

Hawaii Department of Health

Technical Architect : 2011-Present

Responsible for development of a system to provide individuals and organizations the ability to submit applications for permits electronically over the Internet. The system was built for Hawaii Department of Health but was designed to be easily used in different organizations with different infrastructures or in a hosted manner through any one of a number of cloud hosting providers. EPA CROMERR support is also provided by the system for secure permit applications. The system was developed in C# using ASP.NET 3.5 SP1 and will operate on IIS6 or higher and on any RDBMS platform, with SQL Server and SqlLite explicitly tested during development.

Waste Data System

Michigan Department of Natural Resources

Technical Architect : 2010 - 2011

Responsible for system design and development of a hazardous waste tracking system consisting of 12 modules that manage waste permitting corrective action, monitoring and enforcement functionality across multiple domains. Leading development team during implementation of the system. The system is a C# ASP.NET 3.5 SP1 application using SQL Server 2005 for data storage. Significant use of jQuery-based Ajax was incorporated into the application to improve the user experience. Reporting is accomplished through SQL Server Reporting Services (SSRS) 2005. ASP.NET Forms authentication with a custom membership provider is used for authentication and authorization to application functions in test environments, while active directory authentication is used for production deployment. A significant public-facing portion of the application is also available in an unauthenticated manner.

Wellogig Well Driller Information System

Michigan Department of Natural Resources

Technical Architect : 2010 - 2012

Responsible for system design and development of a Well data tracking system. Leading development team during implementation of the system. The system collects data from well drillers and other contractors managing wells and reports this data to local health departments as well as the central department of natural resources and the environment. The system is a C# ASP.NET 3.5 SP1 application using SQL Server 2005 for data storage. Significant use of jQuery-based Ajax was incorporated into the application to improve the user experience. Reporting is accomplished through SQL Server Reporting Services (SSRS) 2005. ASP.NET Forms authentication with a custom membership provider is used for authentication and authorization to application functions.

Facility Explorer

Iowa Department of Natural Resources

Technical Architect : 2008 - 2010

Responsible for system design and development of a Facility Explorer Application for Iowa DNR. Lead development team during implementation of the system. The Facility Explorer application is a Web-based GIS system used for searching and displaying information for environmental facilities in Iowa. Users of the application can determine if the Iowa DNR have or have had any current or past dealings with a facility, what permits are held and whether there have been any environmental violations at a facility. Authorized users have the ability to add and edit facility locations using the map-based interface. Unique aspects of this system include the display and management of data contained within multiple program databases contained within SQL Server and Oracle as well as the extensive use of WebADF ESRI web controls.

Water Discharge Permitting System

Wyoming Department of Environmental Quality (DEQ)

Consultant : 2008

Responsible for system design and development of Wyoming Pollutant Discharge Elimination System (WYPDES) redesign for Wyoming DEQ. The system creates and maintains water permitting applications and related data such as discharge monitoring reports. Unique aspects of the application include integration with SharePoint, integration with an enterprise-wide data management system, and a Word 2007 templating ability that vastly reduces the amount of time to produce physical permit documentation and notices.

Customer Master Data

Intel

Product Manager : 2007 - 2008

Owned user interface and system integration for intel.com login and registration as well as intel.com/reseller membership applications and profile center. Designed, developed and architected method for single sign-on and self-service web profile updates for channel marketing customers utilizing TIBCO and Web Services to enable real-time integration between custom solutions and multiple ERP systems. Team included 50 FTE in US and India. Served as direct project manager and architect for the 12-person India-based team on the core integration portion of the project.

Customer-Facing Returns

Intel

Product Manager : 2005 - 2007

Implemented web-based return capability via custom application reducing warranty-related

support calls worldwide by 19% in the first 3 months of implementation. The project was developed in both VB and PeopleCode (PeopleSoft language). Tool forced a competitive response from AMD 6 months later. Later redesigned the online user experience, uplifting the style and increasing functionality through integration of support tickets and returns into a single portal-style interface.

Warranty Reporting

Intel

Product Manager : 2004-2005

Developed Microstrategy reporting system introducing performance indicators, reducing operating costs by \$8M over 5 years. Development team working on the projects included 5 India-based resources. Developed interim solution for reporting utilizing SQL Server 2005 SSIS and Reporting Services. Responsible for reporting data model.

Platform Vision Program

Intel

Lead Developer : 2002 - 2003

Implemented strategic changes in the Platform Vision Program through the second and third phases of the program, enabling partnerships with ODMs (Original Design Manufacturers). Architected the recommended material list capability, and rearchitected the system and refactored the data model, resulting in a 52% reduction in lines of code and solving significant performance problems.

Customer Information Platform

Intel

Project Manager/Development Lead : 2000 - 2002

Implemented .NET-based engine for consumer and channel customer profile management at Intel. This involved the design and development of front-end, middle tier components/web services and back-end components to manage customer data. The developer team was based in US and India and numbered as high as 12 people at its peak. Implementation was the largest .NET deployment in the world at the time.

Mylanta Line Automation

Johnson & Johnson/Merck

Lead Developer : 1999 - 2000

Developed automation of factory line producing Mylanta. All aspects of plant floor automation levels 0, 1, and 2 were included in the project. Level 2 automation included VB front ends in an

embedded environment and ActiveX control development to communicate with field devices.

Cheese Line Automation (Level 2)

Kraft Foods

Lead Developer : 1999

Implemented automated data collection from field devices on the pre-processed American cheese line for Kraft foods. A combination of FactoryLink and VB6 in a non-embedded Windows environment was employed to collect data from hardware employing level 1 (ladder logic) code.

Mobile Data Collection

Bristol-Meyers Squibb

Lead Developer : 1998 - 1999

Developed a prototype system utilizing OCC (Occasionally Connected Computing) techniques to gather pharmaceutical information from operators on a plant floor and transmit the information from Oracle on Windows CE into a master Oracle database upon successful connection to the intranet. Project was implemented using a VB front end on Windows CE, although an additional need to write a C-based Oracle driver for use on the mobile device was necessary to complete the project.

Merger Transition

EDS/Bethlehem Steel Account

Manager : 1998

Led 5-person desktop support team. Responsibilities of team included hardware/software procurement, hardware repair, software installation on PCs and servers; email and LAN administration; database support; etc. Responsibilities included client relations, personnel reviews, and software/hardware recommendations for the division. Transitioned personnel from direct employment by Lukens Steel to employment by EDS as part of the acquisition. Team performance increased during the transition.

Heat Treat Automation

EDS/Diesel Technology Account

Software Engineer : 1997

Converted three OS/2-based FactoryLink systems using a DBASE database to Windows NT-based systems referencing an Oracle database. Performed Oracle DBA, system administration, and

FactoryLink development duties.

Mill Modernization Program

EDS/Bethlehem Steel Account

Software Engineer : 1996

Developed a multi-user HP/UX Unix-based application to track steel movement through a combination mill. Created a Visual Basic application and maintained an Oracle database to match steel in inventory with current customer orders.

Scott Eklund, P.E.

Environmental Engineer



Scott is an Environmental Engineer with 11 years of experience in data management and database development, remediation, and compliance and permitting. His specific experience in data management includes business analyst for custom enterprise data management information systems including design, testing, and data migration as well as design and management of Access and SQL Server databases. His experience in contaminated site management includes remedial site assessments, groundwater and soil sampling, monitoring well installation, in-situ chemical oxidation injections, and maintaining remediation systems. Scott also has experience evaluating chemical plant emissions, SARA Title III reporting including Tier II and TRI reports, Title V air permit applications, and power plant non-contact cooling water analysis of intake structure and thermal loading.

Professional Affiliations & Registrations

Montana Professional Engineer # 20023

Fields of Competence

Environmental Data Management

Data Information Systems

Permitting and Regulatory Compliance

Contaminated Site Investigation and Remediation

Education

B.S. Chemical Engineering, Tulane University, 1998

40 hr HAZWOPER Certification

Key Industry Sectors

Mining

Oil and Gas

Power

Chemical

Key Projects

Information Management System Development

North America, 2002-Current

Business Analyst/Database Management

- Acted as business analyst and technical support for the design and implementation of a custom enterprise Environmental, Health & Safety (EHS) management information system for a large mining client. Assisted with the design, testing, and data analysis and migration for the implementation of the application. Acted as technical support following the implementation of the system at 12 different mine locations. System was written in ASP.Net with a SQL Server database backend.
- Managed Access databases to compile, analyze and present data for remediation projects including soil, groundwater, and air sample laboratory results.

- Managed Access databases for compliance projects including tracking permit requirements and emissions reporting for EPA, state, and local agencies across the United States.

Remediation

USA, 2002-Current

Project Manager/Remediation Consultant

- Consulted on remediation projects for a variety of petroleum, chemical, and mine contaminated sites across the United States. Activities included groundwater monitoring, design of groundwater and acid mine drainage treatment systems, site assessments, and treatment system O&M. Conducted efficiency analysis on treatment systems including groundwater pump and treat and SVE systems to determine system modifications.
- Field manager for several contaminated sites in Montana including sites managed by DEQ SRS. Activities include monitoring well installation, soil sampling, groundwater monitoring, and chemical injection for in-situ chemical oxidation.

Petroleum Technical Section

Montana Department of Environmental Quality, 2009-2011

Project Manager

- Managed the investigation and remediation of 80-100 petroleum contaminated sites including directing monitoring well installation, soil excavation oversight, groundwater and soil sampling, monitored natural attenuation monitoring, and participating in developing technical guidance documents for the state including guidelines for conducting vapor intrusion investigations.

Environmental Permitting and Compliance

USA, 2002-Current

Project Lead

- Acted as compliance specialist for several clients in the chemical, power, and mine industries. Compiled facility requirements for permits and federal, state, and local regulations to ensure that facilities remain in compliance with all requirements. Assisted facilities with setup and population of environmental management information systems.
- Evaluated chemical plant emissions including air, water, and land emissions across facilities. Prepared permit modifications and Title V air permits including calculating air emissions and performing air dispersion modeling. Calculated water emissions and compiled discharge monitoring reports (DMRs). Performed surface water sampling and discharge sampling for the preparation of National Pollutant Discharge Elimination System (NPDES) permits. Prepared a variety of compliance documents including Spill Prevention, Control, and Countermeasure (SPCC) plans, Stormwater Pollution Prevention Plans (SWPPP), Sara 312 and 313 (Tier II and TRI) reports, various state and local compliance reports, and numerous environmental audits and analysis reports.

Power Plant Non-Contact Cooling Water Analysis

USA, 2005-2006

Project Engineer

Conducted analysis on the intake structures for non-contact cooling water systems for power plants throughout the United States. Performed initial designs for intake modifications including traveling screens, wash systems, and fish return systems to meet the requirements of Section 316(b) of the Clean Water Act. Conducted thermal loading analysis and temperature impacts on receiving water bodies for cooling water discharges to analyze possible operating modifications.



Client References (Tab 7)

As required by the RFP, client references are in the accompanying sealed envelopes.

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Offeror Financial Stability (Tab 8)

Windsor is a privately held company, has been in business since 1998 and has satisfied the financial stability requirements of local, county, and state agencies throughout the US on projects ranging from a few thousand to several million dollars. Windsor affirms that it can comply with the four requirements in section 4.10 of the RFP.

Completed financial statements for the past three full years are presented below, along with our recent Dun & Bradstreet report from February 2014.

Windsor Solutions, Inc. Financial Statements

Income Statement

	2010	2011	2012
Revenues	\$4,630,103.64	\$6,188,695.23	\$5,626,425.41
Expense	\$4,356,012.66	\$5,012,433.43	\$5,770,120.20
Gross Income	\$274,090.98	\$1,176,261.80	-\$143,694.79
Taxes	\$104,528.46	\$448,584.01	\$0.00
Net Income	\$169,562.52	\$727,677.79	-\$143,694.79

Balance Sheet

Cash	\$148,972.39	\$633,080.90	\$604,659.37
Accounts Receivable	\$631,249.92	\$926,590.55	\$766,931.95
Fixed/Other Assets	\$24,397.17	\$5,221.90	\$18,880.14
Assets	\$804,619.48	\$1,564,893.35	\$1,390,471.46
Liabilities	-\$172,662.27	-\$208,770.20	-\$214,495.30
Net Assets	\$977,281.75	\$1,773,663.55	\$1,604,966.76

Open Ratings

Past Performance Evaluation

1. COMPANY OVERVIEW	
Primary Name : WINDSOR SOLUTIONS, INC. Alternate Name : (none) D-U-N-S® : 08-333-2044 Address : 4388 SW Macadam Ave., Suite 101 Portland,OR 97239 Telephone Number : +1 (503) 675-7833	Past Performance Evaluation Report Date : 02-11-2014 Order Number : 1870031 Company Information Year Started: 1998 Year of Current Control: 1998 Annual Sales: \$ 5,826,425 Total Employees: 41 SIC/Line of Business: 7373/Computer integrated systems design

2. SUPPLIER PERFORMANCE RATINGS	
The supplier's overall performance rating is an assessment of predicted performance. Ratings are on a scale from 0 to 100, where 100 represents the highest level of customer satisfaction. The SIC-level benchmark indicates how the supplier's overall performance rating ranks in comparison against peers.	
Overall Performance Rating 96	Bottom Top
Overall, how satisfied do you feel about the performance of this company during this transaction?	SIC: 7373/Computer integrated systems design

Detailed Performance Ratings		0	25	50	75	100
RELIABILITY:						
How reliably do you think this company follows through on its commitments?	97					
COST:						
How closely did your final total costs correspond to your expectations at the beginning of the transaction?	94					
ORDER ACCURACY:						
How well do you think the product/service delivered matched your order specifications and quantity?	95					
DELIVERY/TIMELINESS:						
How satisfied do you feel about the timeliness of the product/service delivery?	95					
QUALITY:						
How satisfied do you feel about the quality of the product/service provided by this company?	96					
BUSINESS RELATIONS:						
How easy do you think this company is to do business with?	97					
PERSONNEL:						
How satisfied do you feel about the attitude, courtesy, and professionalism of this company's staff?	96					
CUSTOMER SUPPORT:						
How satisfied do you feel about the customer support you received from this company?	97					
RESPONSIVENESS:						
How responsive do you think this company was to information requests, issues, or problems that arose in the course of the transaction?	96					

Open Ratings

Past Performance Evaluation

Business Name : WINDSOR SOLUTIONS, INC.

D-U-N-S® : 08-333-2044

Report Date : 02-11-2014

3. DISTRIBUTION OF FEEDBACK

This supplier's ratings were based in part on survey feedback from past customers. This chart provides a breakdown of the survey responses received from customers in the last 12 months. For each of the survey questions, the responses, which were provided on a 0 to 10 scale, are categorized as "positive" (9 to 10), "neutral" (5 to 8), or "negative" (0 to 4). All Customer feedback is provided confidentially; individual reference responses are not disclosed.

The percentages of responses falling into each category are shown below.



4. CUSTOMER REFERENCES SURVEYED

The most recent feedback obtained on this supplier came from companies in the following industries.

SIC/Line of Business:

- | | |
|---|--|
| 8748/Environmental consultant | 9111/Executive offices, County government |
| 1629/Land reclamation | 5932/Used merchandise stores |
| 9511/Environmental protection agency, government | 4789/Transportation services, nec |
| 9821/Regulation, administration of transportation | 9511/Air, water, and solid waste management, State government |
| 9431/Administration of public health programs, State government | 9511/Environmental agencies |
| 9512/Land, mineral, and wildlife conservation, State government | 9511/Air, water, and solid waste management, County government |
| 9199/General government, State government | |

Total number of surveys completed : 55.

Note: The supplier ratings set forth above incorporate the responses and performance opinions of the surveyed customer references and not those of Dun & Bradstreet. Some references may not have provided ratings for all performance aspects.

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Supplier Qualifier Report



Decide with Confidence

WINDSOR SOLUTIONS, INC.

D-U-N-S® Number 08-333-2044

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ATTN: **Name1**

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Payments
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WINDSOR SOLUTIONS, INC.
4386 Sw Macadam Ave., Suite 101
Portland, OR 97239

This is a **single** location.

Telephone: 503 675-7833

Chief executive: GUY OUTRED, PRES

Year started: 1998

Employs: 41

All amounts are displayed in local currency.

Financial statement date: DEC 31 2012

Sales F: 5,626,425

Net worth F: 1,604,966

History: INCOMPLETE

Financing: SECURED

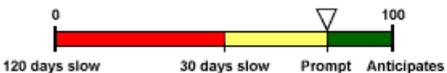
Financial condition: STRONG

[Jump to: Finance Section](#)

D&B PAYDEX® [About D&B PAYDEX®](#)

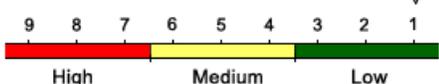
D&B PAYDEX: 79

When weighted by dollar amount, payments to suppliers average 2 days beyond terms.



Based on up to 24 months of trade.

SUPPLIER EVALUATION RISK (SER) RATING FOR THIS FIRM : 1



D&B PAYDEX Key

- High risk of late payment (average 30 to 120 days beyond terms)
- Medium risk of late payment (average 30 days or less beyond terms)
- Low risk of late payment (average prompt to 30+ days sooner)

Approach (Tab 9)

This section of the response discusses Windsor's approach to the scope of work included in the RFP for the RIMS project, and is broken down into the following sections:

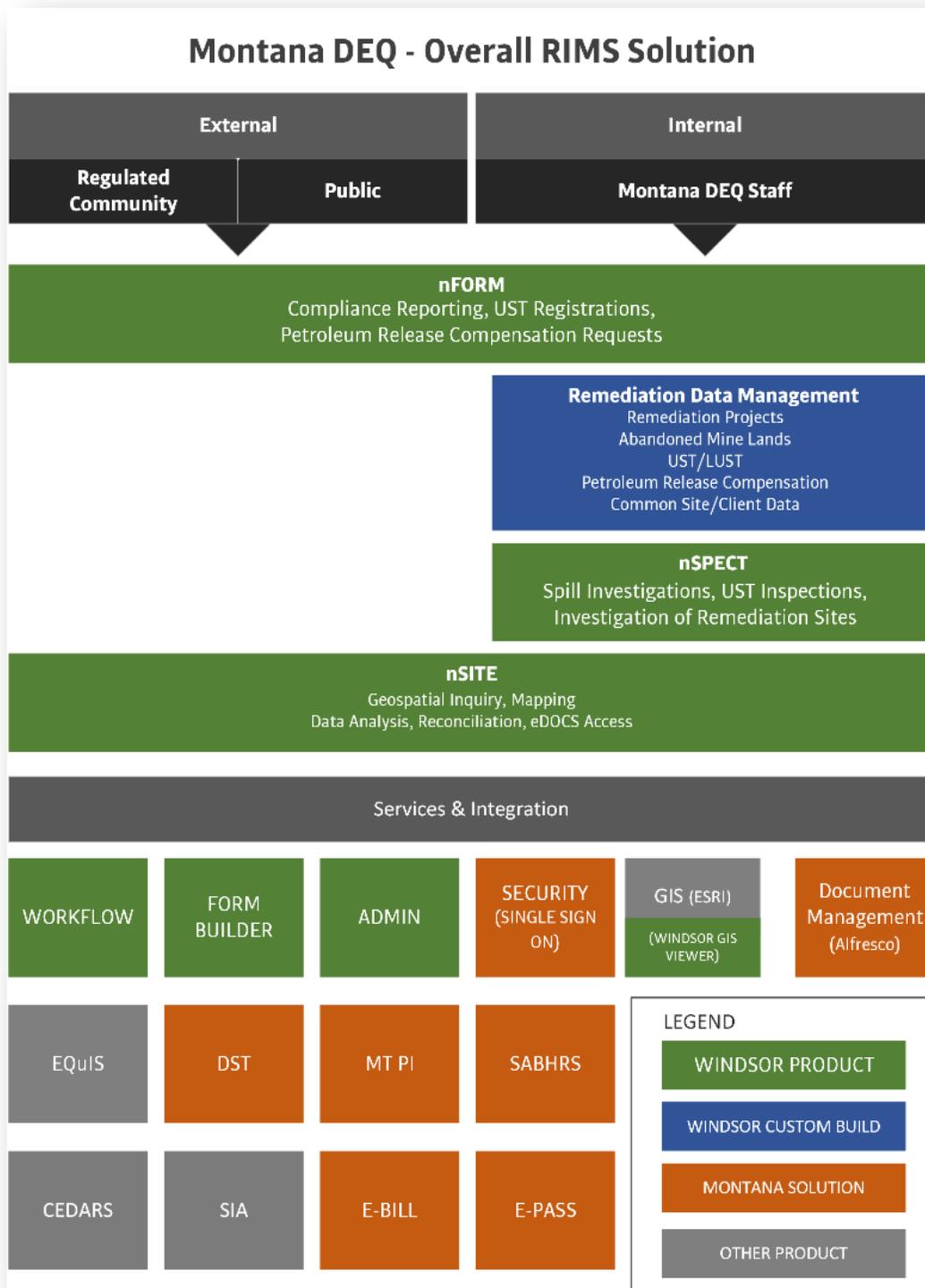
- **The RIMS Solution Architecture** – defines Windsor's proposed RIMS solution in terms of the component modules, how they interact, and how they satisfy DEQ's broad requirements for a replacement RIMS solution.
- **The Agile/Scrum Process** – describes Windsor's proposed approach for the execution of project tasks and the delivery of the RIMS solution.
- **Project Schedule** – Outlines the proposed phases and milestones for delivery of the RIMS solution, based on the Agile/Scrum approach.
- **Design, Development and Implementation Work Plan** - describes Windsor's approach to meeting DEQ's requirements for execution of the RIMS DDI project activities.
- **Operations and Maintenance Work Plan** - describes Windsor's approach to meeting DEQ's requirements for the ongoing operation, maintenance, and support of the RIMS solution.
- **Project Management Practices** – describes the PMI-sanctioned Project Execution and Control Mechanisms that will be put in place for the duration of the RIMS project.
- **Acknowledgment of General Requirements** - contains affirmations that Windsor understands and will comply with the general project requirements expressed in RFP section 3.4.

The RIMS Solution Architecture

Windsor's approach is to provide a software solution that fully supports the following divisions, bureaus and sections:

- Remediation Division:
 - Abandoned Mines Bureau (AMB)
 - Federal Superfund Bureau (FSB)
 - Hazardous Waste Site Clean-up Bureau (HWSCB)
 - Site Response Section
 - Petroleum Technical Section
 - Leaking Underground Storage Tanks Trust / Brownfields Section (LBS)
- Permitting and Compliance Division:
 - Underground Storage Tanks (UST)
- Petroleum Tank Release Compensation Board (PTRCB).

To meet DEQ's vision and goals for a new RIMS solution, the solution architecture will combine proven software products developed by Windsor, custom-developed software modules, and third-party software tools. Windsor's nSuite products (developed in response to the information systems needs of regulatory environmental agencies across the country) will integrate with a custom-developed Remediation, UST, and PTRCB data management module that is focused on supporting the workflow process needs of all of the above divisions, bureaus, and sections. Document management and sample data management capabilities will be provided by third party tools provided by Alfresco/IGC and EarthSoft. The diagram below outlines Windsor's proposed application architecture for the RIMS solution:



The primary components of the RIMS solution are described in more detail below:

- Remediation Data Management** – the heart of the new RIMS solution will be a new remediation data management module, built in close cooperation with DEQ, and featuring common management of site and client data to provide an ‘across the board’ harmonized view of the

environmental activities at a specific site, or for a specific client. The remediation data management module will be developed with a heavy focus on the 'to-be' business processes that have already been identified by DEQ, and which will be implemented at the various RIMS-participant programs. A 'process' focus will ensure that the programs will receive a solution that complements their way of working, and does not obstruct it. Functionality supported by the remediation data management module includes:

- Common management of site and client data – across all participating DEQ programs.
- Full support for remediation project data and activities – including project management, contaminant lists, control mechanisms, remedial actions, and cost recovery.
- Full support for UST program data activities – including UST registration, compliance, and enforcement functionality to be supported in an integrated fashion.
- Full support for petroleum release compensation activities – including registration, release data management, and claims management.
- Integrated workflow management –to guide the program activities and processes; dashboard-style forms will be provided to advise DEQ staff of current workload and new or upcoming tasks which will require attention.
- Integrated document management – the creation, indexing, storage, retrieval and viewing of documents associated to a site, client, or environmental interest, supported across all programs in a seamless fashion by the Alfresco One Document Management solution and the IGC Brava Document viewing and annotation tool.
- Integrated sample data management – the upload, management and analysis of sample data, to be supported by the EarthSoft EQuiS solution.
- Integrated mapping capability –the ability to map remediation project and tank locations (points, lines, and polygons) and combine this with layers providing important geographic context, such as impaired water bodies.

The Windsor-developed software components provided as part of this solution are the following:

- **nForm** (<http://windsorsolutions.com/Products/nForm/>) – a complete package for electronic submission of permit applications, reports, complaints, and other submissions from the regulated community or the public. By switching to electronic submission of data, DEQ will no longer have to dedicate resources to transcription of this data into an analysis-ready format. Electronic reporting of data will improve quality (no transcription errors), efficiency (less duplicate data entry) and internal decision making (a more complete, readily accessible data set to analyze and base subsequent decisions upon). Functionality supported by nForm includes:
 - Custom form development: Programs design their own forms and do not have to choose from a limited list of pre-developed application forms. Administrators can develop new forms, such as permit applications or periodic reports, without the help of technical resources using 'drag and drop' nForm data controls.
 - Robust data quality management/validation – The user interface for nForm clearly prompts the user to enter missed content, ensuring quality of data at the point of entry.
 - Document upload and management - Documentation/images that support an application, complaint, or report can be uploaded and attached as part of the form data entry task.
 - Multi-program support- Forms associated with multiple programs within a department or division can be supported (Remediation, AML, UST registrations, petroleum release compensation requests).

- Payment integration – Easy integration with the third-party payment processing provider of your choice.
- Data integration with back-end systems – nForm can be easily integrated with existing DEQ back-end systems.
- **nSpect** (<http://windsorsolutions.com/Products/nSpect/>) – a comprehensive mobile inspection application, commonly used for performing field inspections of environmental sites such as underground/above-ground storage tanks, spill locations, and cleanup sites. Functionality supported by nSpect includes:
 - Device independence (Android, Apple, Microsoft) – nSpect is a browser-based application employing the latest technologies (HTML5 and offline data storage).
 - Collect data in both online and offline/disconnected mode - Data automatically synchronizes with the nSpect server when a secure connection is reestablished.
 - Custom inspection form design and creation - Choose from a variety of nSpect data control types such as custom data entry tables, freehand drawings/sketches, e-Signature entry, and GPS location identification. Automatically create violations based on question responses.
 - Support for photo documentation - Inspectors can take multiple photos for each question/inspection. Photos are then automatically synchronized to the nSpect server.
 - Data Integration with back-end systems – nSpect can be easily integrated with existing DEQ back-end systems.
- **nSite** (<http://windsorsolutions.com/Products/nSite/>) – An integrated store of relevant site data that can be accessed by both internal users (DEQ staff) and external users (the regulated community and public). nSite employs a geographically-driven user interface and can be used to create a division- or agency-wide view of environmental activities at a given location. Functionality supported by nSite includes:
 - Multi-program support – nSite retrieves data from existing data sources on an as-needed basis. This will include the new RIMS solution, and can include other existing DEQ systems as necessary, to provide a holistic picture of the state of the environment at a given location.
 - Identification and display of points of interest – For example, spill and remediation sites and features, tank locations, petroleum spill locations.
 - Geospatial analysis capabilities – Remediation site and feature data can be overlaid on multiple mapping layers, which can be toggled on/off, creating a rich visual tool for the analysis and identification of possible environmental issues.
 - Drill-down capabilities – nSite can be configured to provide detailed information on a chosen site, directly from a source system, using a service-oriented architecture.
 - Access to documents – nSite can be configured to provide access to DEQ's document management system for accessing all documentation for a site.
 - Full GIS platform independence – nSite can be configured to use any available mapping platform, including ESRI ArcGIS, Bing Maps, and Google Maps.

In addition to the Windsor-developed software components above, two key modules will be provided by software products from other vendors:

- **Document Management** – Windsor will deploy and configure the Alfresco One document management platform for use as part of the RIMS solution. Alfresco One is a globally-

implemented, fully functional, open-source document management solution in use in many private- and public-sector agencies, and is also U.S. Department of Defense 5015.2-STD certified (for more information on Alfresco One, please refer to <http://www.alfresco.com>). For document viewing and annotation/redaction, Windsor will deploy and configure the IGC Brava product, which has extensive support for document types and works seamlessly with Alfresco (for more information on Brava, please refer to <http://www.infograph.com>).

- **Sample Data Management** – Windsor will upgrade and integrate with the EQuIS sample data management platform, provided by EarthSoft. Windsor has worked with EarthSoft on prior projects, and has extensive experience with EQuIS, having performed a similar integration project for the state of New York. Windsor has also worked with DEQ’s existing EQuIS implementation, on a prior project to exchange Water Quality data with U.S.E.P.A. using the Exchange Network (for more information on EQuIS, please refer to <http://www.earthsoft.com>).

The Agile/Scrum Process

Windsor follows the Agile / Scrum process for software design, development and implementation. Windsor’s process adheres to all of the practices outlined in the *Scrum Guide*, by Ken Schwaber and Jeff Sutherland, the originators of Scrum.

<https://www.scrum.org/Portals/0/Documents/Scrum%20Guides/2013/Scrum-Guide.pdf>

The Agile/Scrum approach provides a number of advantages to MT DEQ, including:

- **Early and frequent visibility:** Agile/Scrum provides for many opportunities to see working software as it is being developed. This is a more collaborative way to produce software that allows for more participation by Product Owners, SMEs, and end-users, with a deeper level of feedback.
- **Increased business value:** Agile/Scrum focuses on developing the software with the highest business value first. As work is completed, the remaining work is regularly reprioritized. This ensures that developers finish the most important functionality first, and lower priority items are left until later in the project.
- **Fixed budget and schedule:** With Agile/Scrum, work is time boxed and must always fit within a fixed budget and schedule. The scope of requirements which are met is adjusted as needed to fit within the schedule. This effectively eliminates cost over-runs.
- **Improved progress tracking:** The iterative development process inherent in the Agile/Scrum approach results in greater visibility to the status of the development effort overall. It is much more evident when deliverables are incomplete and deadlines are missed, because progress is reported based on working software that has been reviewed by the client.
- **Greater adaptability:** The combination of early visibility and improved progress tracking allows for greater visibility to problems and for corrective actions to take place at the earliest possible opportunity. Identification and remediation of project issues at the earliest possible opportunity will result in an efficiently run project that minimizes wasted effort and resources.

Windsor has executed numerous design, development, and implementation efforts using the Agile/Scrum methodology, and as a result has developed significant expertise in utilizing this approach.

No Hybrid SDLC Process

It is important to note that Windsor does NOT follow a hybrid Waterfall/Agile process. An approach like “WaterScrumFall” or “ScrummerFall” does not yield the benefits of Agile software development. A hybrid approach may be touted as offering the best of both worlds. In practice, a hybrid of Waterfall and

Agile typically results in slow delivery, weak coverage of the requirements, and poor risk management. This is the worst of both worlds. As an example, a hybrid Waterfall/Agile process is cited as a root cause of problems with development of health insurance web sites to support the Affordable Care Act.

Iterative Design and Development

The design and development work is done iteratively with a true Agile/Scrum approach. The advantage is smarter design. Product Owners and SMEs design functions and features as they see working software delivered. The team gets smarter and smarter as the project progresses. Lessons learned from prior iterations are incorporated into the design of new functions and features. This increases the quality of design work. Developers can produce software that delivers higher value to end-users.

Another advantage of iterative design is that development starts much earlier in the project. There is not a protracted, big up-front design (BUFD) effort. Instead, there is a sufficient level of design and architecture work to get ready for development. Then, the detailed design work is done iteratively during development.

The Design Specification document is produced iteratively, too. At the start of development the Design Specification is minimal. Designs are documented as the software is developed. The Design Specification document is considered complete at the end of Development, not prior to the start of Development.

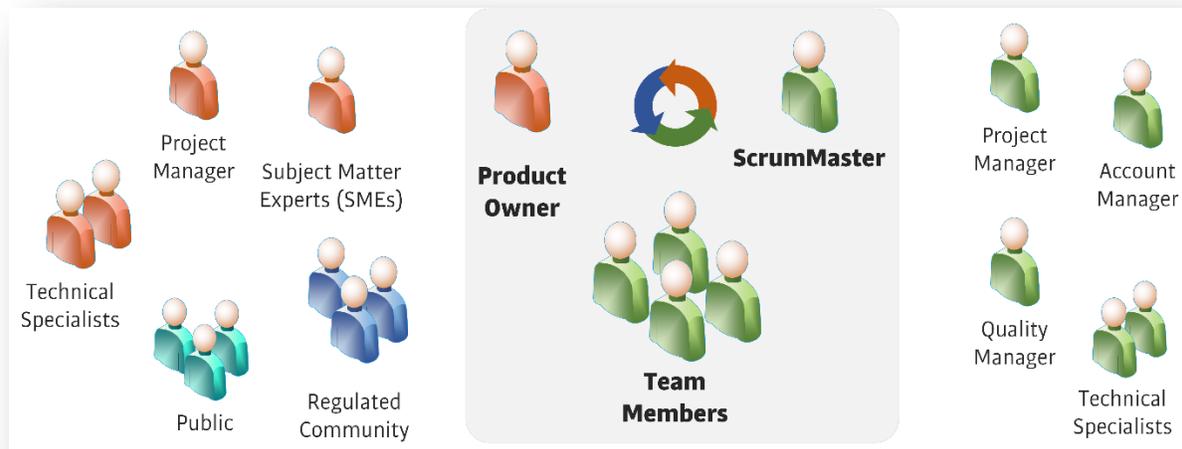
In Lean terms, two types of wastes are reduced—excessive inventory and over processing. There is no business value in compiling an exhaustive inventory of detailed design specifications that may become obsolete or need significant rework as regulatory or policy changes occur during the project. Detailed design specifications can also become obsolete because the team is designing when smarter. As teams get smarter they find better ways to solve problems. Iterative design allows teams to apply their best and most current ideas when designing solutions. This significantly reduces the level of rework required when a more clever solution to a problem arises during the development phase of the project.

Project Roles and Responsibilities

There are three principle roles in an Agile/Scrum project:

- **Product Owner:** Defines workflow process, defines business value, defines priorities for development of software functions and features and decides when work is “done”.
- **Team Members:** Collaborate in design, development, testing and implementation of the software application.
- **ScrumMaster:** Facilitates the Agile/Scrum process, clears roadblocks on a daily basis.

The following diagram shows the various stakeholders in an Agile/Scrum project.



Given the size of this project, there will be multiple product owners and ScrumMasters on the team.

- **Product Owners:** At a minimum there will be different product owners for Remediation, UST, and PTRCB. There may be multiple product owners within Remediation. For example, there could be separate product owners for Abandoned Mines Bureau (AMB), Federal Superfund Bureau (FSB), and Hazardous Waste Site Clean-up Bureau (HWSCB). The optimal set of product owners will be determined during project planning.
- **ScrumMasters:** There will be two sets of team members. The development team will be based on Portland, Oregon. The implementation team will be based in Helena, Montana. This will require two ScrumMasters—one for each team.

A critical success factor for an Agile/Scrum project is correctly filling the role of Product Owner. The best practice is to fill this role with a manager or supervisor who is responsible for an end-to-end workflow process. It is not considered a good practice to try filling this role with a committee of SMEs, a project manager or a business analyst from IT. Typically, these people do not have the authority to change the workflow process or lack knowledge of the entire workflow process and cannot fill this role properly.

If necessary, Windsor will provide the following Agile/Scrum training to MT DEQ during the beginning of the project:

- Advanced product owner training is provided for Product Owners and ScrumMasters. This is a two-day class that focuses on the decisions a product owner must make during a project. This is designed as a follow-up to a Certified Scrum Product Owner (CSPO) training class. If some product owners do not have CSPO training, an extra day of training is added before this advanced training to cover the planning and review activities of a product owner.
- Agile orientation training for team members or stakeholders who are unfamiliar with the Agile/Scrum process. This is a one-day training class that is roughly equivalent to half of a Certified ScrumMaster course.

It is expected that MT DEQ’s ScrumMaster is a Certified ScrumMaster (CSM). As needed, Windsor can provide coaching for MT DEQ’s ScrumMaster during the project. Windsor’s ScrumMaster has a PMI Agile Certified Practitioner (PMI-ACP) certification, is a Certified ScrumMaster, and has successfully led more than ten Agile/Scrum projects over the past five years.

One other key role that must be filled for larger Agile/Scrum projects with multiple ScrumMasters and Product Owners is the Quality Manager. A Quality Manager is needed to facilitate coordination of quality practices across all of the workflow processes and project teams. The Quality Manager must have a strong technical understanding of data management systems and extensive, hands-on experience with the work in the Remediation and Permitting and Compliance Divisions.

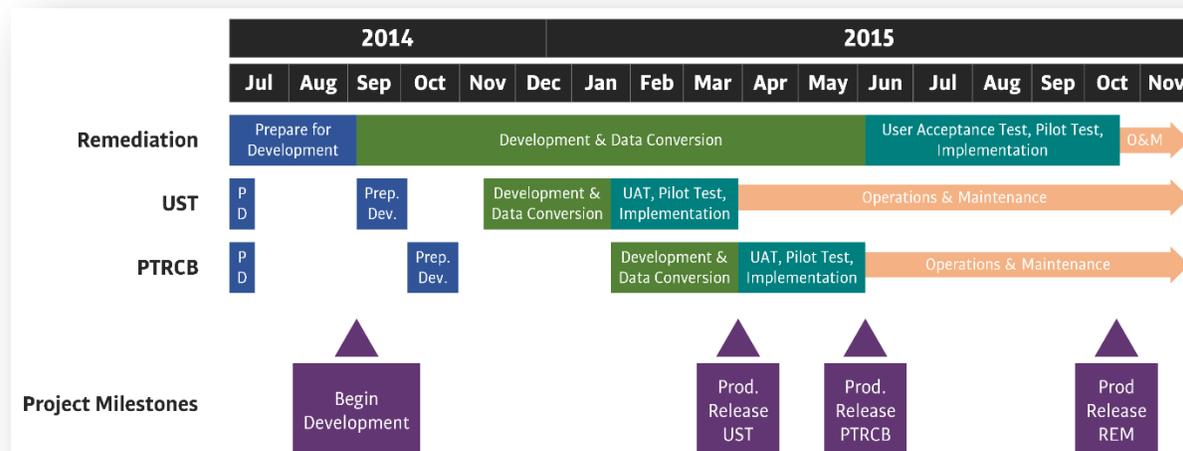
During the first iteration of the project a “Core Team” is assigned. The members of this team will serve as the leaders for this project. It is expected that the Core Team will be staffed as follows:

- ScrumMaster - Development: Chet Amborn (Windsor)
- ScrumMaster - Testing and Implementation: Staci Stolp (MT DEQ)
- Quality Manager: Scott Eklund (ERM)
- Product Owners: To be determined during project planning.

Please refer to the “Detailed Design and Development” section for details of the tasks performed by each role during the development phase of the project.

Project Schedule

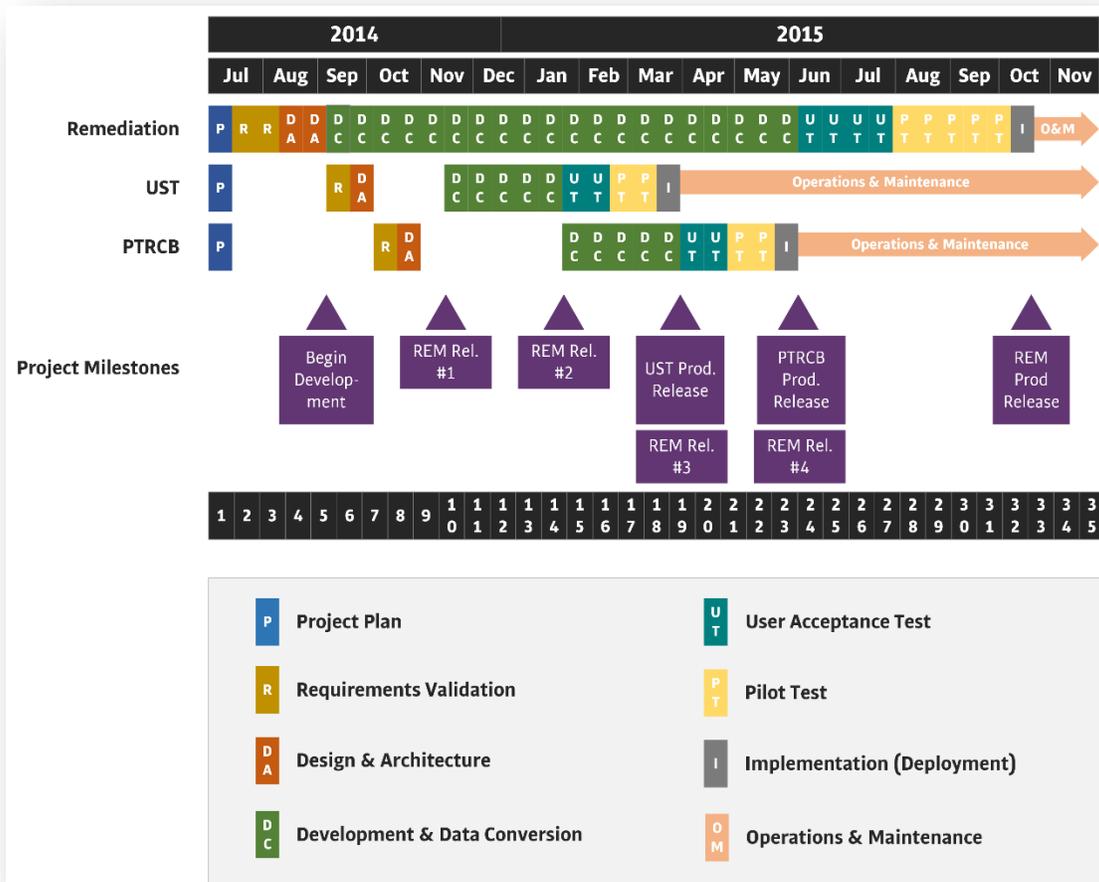
The following diagram shows the high-level organization of the project. Development work will proceed in parallel for Remediation, UST, and PTRCB. Assuming the project starts in July 2014, the entire system will be fully operational by early November 2015. UST and PETRO will be put into production operation earlier, in April 2015 and June 2015, while development work is being completed for Remediation.



Project Schedule and Milestones by Sub-Phase

The following diagram illustrates the sub-phases of work by iteration for all three major areas of the project. The project is organized as a series of 35 two-week iterations. The diagram indicates which phase of work is being done for each iteration.

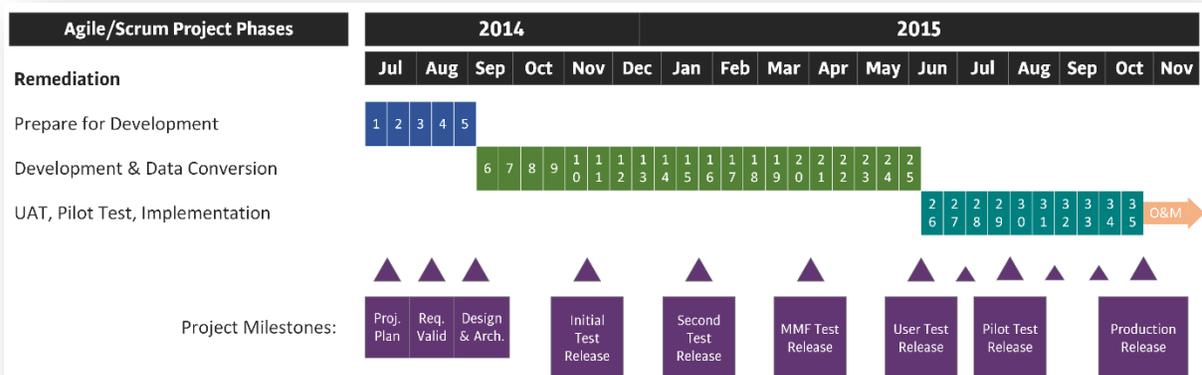
Preparation for development work will be done in sequence—Remediation, then UST, and then PTRCB. This allows the design team to focus on one area at a time. The development work for UST and PTRCB will be done in parallel with development work for Remediation. Implementation work will be done in sequence—UST, then PTRCB and then Remediation. Again, this allows the implementation team to focus on one area at a time.



The following sub-sections explain the schedule and milestones for each of the major application areas—Remediation, UST, and PTRCB.

Remediation Schedule and Milestones

The following diagram illustrates the major phases and milestones for Remediation’s portion of the project.



The development and implementation work for Remediation is structured as 35 two-week iterations. This is 70 weeks, or just over 16 months. This occurs from July 2014 through early November 2015.

1. Prepare for Development: 5 iterations, 10 weeks
2. Development: 20 iterations, 40 weeks
3. Implementation—Testing, Training, and Production Deployment: 10 iterations, 20 weeks.

There are four major releases. Each major release will be installed in a MT DEQ environment for QA:

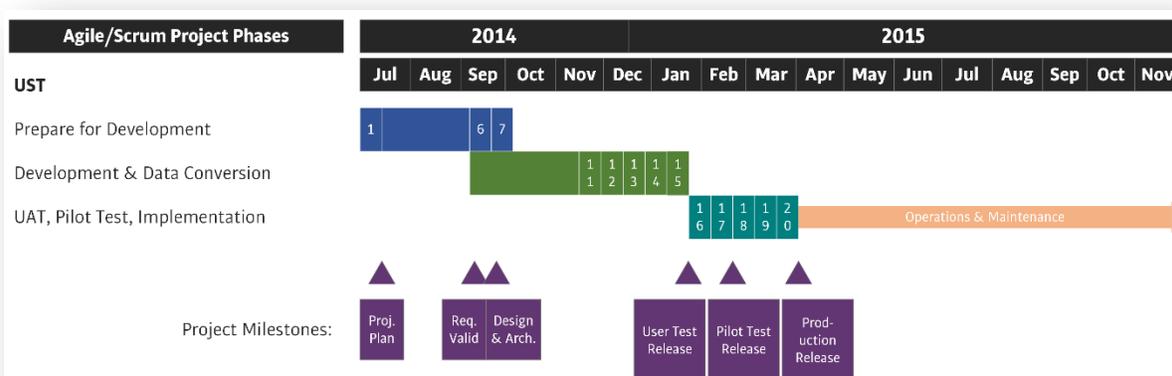
- Initial Test Release: A limited set of functionality for Remediation. This includes much of the common functionality that will also be used by UST and PTRCB.
- Second Test Release: Supports most of the Remediation workflow process, with some gaps for lower priority workflow activities.
- MMF Test Release: The “Minimum Marketable Feature” set covers the entire end-to-end Remediation workflow process.
- User Test Release: All of the functionality for Remediation.

Please note that it is possible to accommodate more frequent intermediate releases if desired. This plan calls for releases every 5 iterations, or 10 weeks. Releases could occur as often as every iteration—every two weeks. It is Windsor’s goal to produce a ‘release candidate’ every iteration. That is to say, any functions or features started in an iteration are expected to be ready for user acceptance testing by the end of the iteration.

During the Implementation phase there will be releases at least every other iteration—every 4 weeks. If necessary to facilitate end-user testing, software changes can be released to MT DEQ after each iteration.

UST Schedule and Milestones

The following diagram illustrates the major phases and milestones for UST’s portion of the project.



Preparation for development is done immediately after preparation for Remediation is completed. The development and implementation work is scheduled over 10 two-week iterations—20 weeks. This occurs from November 2014 through April 2015. This area will be released for use in production operations in April 2015.

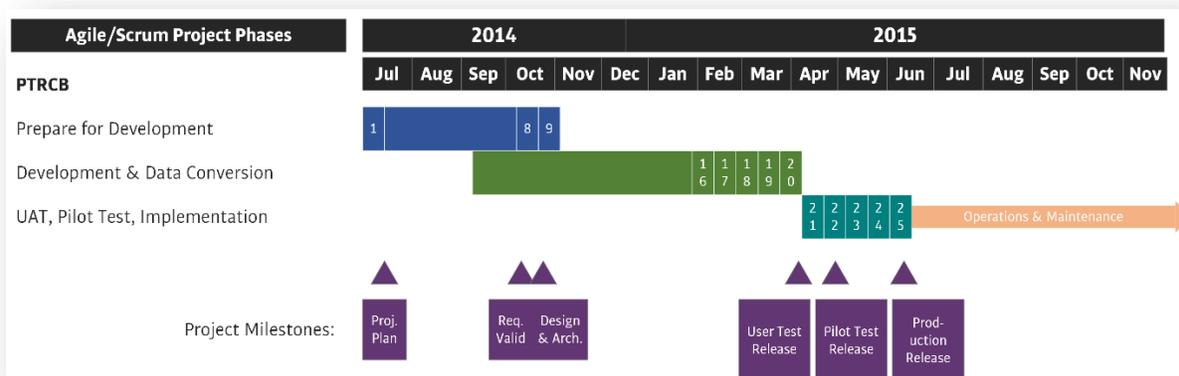
1. Prepare for Development: 3 iterations over 10 weeks
2. Development: 5 iterations, 10 weeks

- Implementation—Testing, Training, and Production Deployment: 5 iterations, 10 weeks.

There are no intermediate releases needed, as all the functionality for UST can be developed in a single release cycle.

Ptrcb Schedule and Milestones

The following diagram illustrates the major phases and milestones for PTRCB’s portion of the project.



Preparation for development is done immediately after preparation for UST is completed. The development and implementation work is scheduled over 10 two-week iterations—20 weeks. This occurs from late January 2015 through June 2015. This area will be released for use in production operations in June 2015.

- Prepare for Development: 3 iterations over 10 weeks
- Development: 5 iterations, 10 weeks
- Implementation—Testing, Training, and Production Deployment: 5 iterations, 10 weeks.

There are no intermediate releases needed, as all the functionality for PETRO can be developed in a single release cycle.

Design, Development, and Implementation Work Plan

This section explains the sub-phases of work and the deliverables for producing and delivering the RIMS software solution. As mentioned in the ‘Project Schedule’ section of this tab, design, development, and implementation work will proceed in parallel for Remediation, UST, and PTRCB. In line with the Agile/Scrum approach to software development, each of these three DDI efforts is organized into four major phases of work:

- Prepare for Development.
- Development.
- Implementation—Testing, Training, and Production Deployment.
- Operations and Maintenance—On-going Production Support and Maintenance.

The following table lists the sub-phases within each phase, along with the analogous phase outlined in the RIMS project RFP (in section 3.5):

Windsor Agile/Scrum Project Phase		RIMS RFP Waterfall Project Phase
1. Prepare for Development		
a. Project Plan		1. Start-up
b. Requirements Validation and Workflow Process Analysis		2. Requirements Analysis and Validation
c. Design and Architecture		3. Design
2. Development (sub-phases in parallel)		
a. Detailed Design and Development	b. Data Conversion	3. Design, 4. Construction 5. Conversion
3. Implementation		
a. User Acceptance Test and Training		6. Testing
b. Pilot Operations		7. Pilot Operations
c. Production Deployment		8. Implementation
4. Operations and Maintenance		
a. Operations and Software Maintenance		9. Operations and Maintenance
b. Turnover		10. Turnover

The Agile/Scrum set of sub-phases covers the same deliverables and scope of effort as the ten phases of the Waterfall approach that are listed in the RFP under section 3.5. However, work is performed in an iterative manner. All of the work across the phases is organized into a series of two-week iterations, or “sprints”. In addition, the detailed design, development, and data conversion work is done in parallel rather than sequentially.

1. Prepare for Development Phase

The goal of Agile/Scrum development is to deliver working software to end-users. In order to be fully prepared for development, there is project planning, workflow process analysis, and solution architecture and design work that must be completed first.

This phase of work is much shorter with an Agile/Scrum approach than is typical of a Waterfall or hybrid Waterfall/Agile approach. This allows development to start much earlier in the project. It also allows the team to work smarter. Business users will be contributing to the detailed design effort by reviewing working software rather than reading through voluminous and abstract design specification documents.

1a. Project Plan

Windsor believes that successful software projects are based on a firm, mutual understanding of the deliverables to be provided, the tasks to be performed, the business requirements to be supported, and the approach to be taken to deliver them. The first phase of the RIMS project is intended to confirm and clarify the deliverables, tasks, business requirements, and project approach. The result of this phase will be a plan for the remainder of the project

The Windsor Project Manager will prepare a draft version of the Project Management Plan for review at the project kick-off meeting. The draft Project Management Plan will include a definition of:

- Statement of work - the agreed scope of work for the project.
- Assumptions - any known assumptions, limitations, or constraints that apply to the scope of work.

- Project work plan - a proposed schedule for completion of the scope of work, and the staffing levels required (both DEQ and Windsor resources).
- Project control mechanisms - the various tools and techniques that will be used to manage project progress, quality, budget and scope, and to ensure a successful project outcome:
 - Risk Assessment
 - Change Control
 - Issue Management
 - Quality Management
 - Communication Mechanisms (including formats for status reporting).

The project kickoff meeting will be held on-site at DEQ offices with DEQ agency staff and stakeholders, and will focus on a review of the Project Management Plan. The purpose of this meeting is to ensure that all project participants start the project with a shared understanding of project scope, timeline and control mechanisms. Any feedback received from DEQ staff will be documented and a revised Project Management Plan will be produced, covering the agreed project controls and statement of scope. Windsor's Project Manager and DEQ's Project Manager will also create the initial Risk Register for the project.

During the same on-site period, Windsor's Technical Architect will participate in a review of the State's hosting environment with DEQ technical staff. The purpose of this review is to establish whether the existing hosting environment will be suitable for hosting the redeveloped RIMS solution, and if not, what hardware and software upgrades will be required. Other topics of discussion during this technical meeting will include options for establishing remote access to the DEQ hosting environment and remote connectivity to DEQ project automation resources, such as SharePoint (if necessary).

Deliverables:

- Project Plan—including schedule, staffing, quality, and communication plans
- Risk Register.

Milestones:

- 1. Delivery and State approval of project initiation and detailed project plan.

1b. Requirements Validation and Workflow Process Analysis

This phase of the project is focused on validation of the requirements and creation of a Product Backlog for developing the RIMS solution. The Windsor team will work collaboratively with DEQ staff members in a series of Windsor-facilitated workshops.

For each area of the solution (Remediation, UST, PTRCB), workshop sessions will be conducted through a combination of on-site meetings and web conference meetings. The initial meetings to define the future workflow process and discuss process improvement opportunities are held on-site. The follow-up meetings to discuss how requirements align with the workflow process are typically conducted via a combination of on-site and web conference meetings.

Before the workshop sessions begin, Windsor will conduct training on the Agile/Scrum process on-site at the MT DEQ headquarters office. Please refer to the section "Project Roles and Responsibilities" for more information about these training classes. These sessions will include:

- Advanced product owner training for Product Owners and ScrumMasters.
- Agile orientation training for team members or stakeholders who are unfamiliar with the Agile/Scrum process.

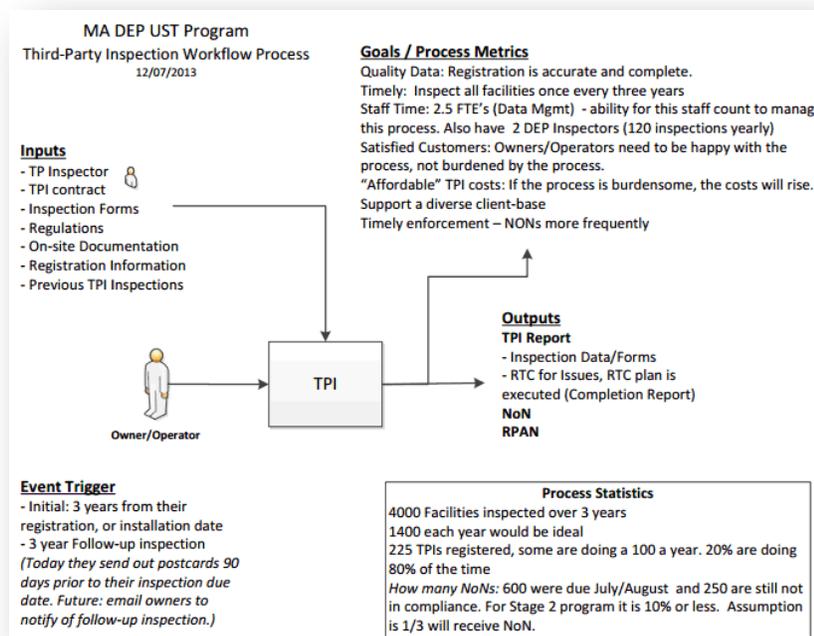
Requirements analysis will be organized by workflow process area within the solution (Remediation, UST, PTRCB). Focusing on the workflow process accomplishes the following:

- Ensures there is a shared understanding of the pain points and limitations of the existing workflow process and the software tool(s) used to support the process
- Ensures that all stakeholders in the process are identified so that they can contribute to definition of the “To-Be” workflow process
- Allows for planning to begin for change management in business areas involved in the workflow process.

The existing workflow process diagrams and gap analysis documents are used as a starting point for discussing how the requirements relate to activities in the workflow process. Having this existing documentation will significantly reduce the effort involved in creating the Product Backlog.

For each functional area of the solution, the following analysis will occur during the workshop sessions:

- **Define the current (“as-is”) workflow process.** The Eriksson-Penker Business Process Modeling technique is used to identify the major attributes of a workflow process. This is much more efficient than creating workflow diagrams for “as-is”. The focus of this effort is on gap analysis—what’s missing from the current process? A diagram like the following is created:



- **Define the future (“to-be”) workflow process.** A workflow process model like the following will be created for the future version of the workflow process that will be implemented in the solution. Existing “to-be” workflow process diagrams will provide background information. However, these are usually too detailed—more like workflow procedures than process models. A less granular model of the workflow process activities is needed for building a Product Backlog that is aligned with the workflow process.

DEQ Subject Matter Experts will collaborate with business users to identify and define these opportunities.

- **Create the Product Backlog.** Workflow process activities are used to create user stories. Stories are grouped into themes so that release and sprint planning can be completed. For example, in the follow screen snapshot the three workflow activities in yellow in the workflow diagram appear in the product backlog under Sprint 17 as stories 3442, 3440, and 3439.

The screenshot displays a Jira 'Stories' view. The top navigation bar includes 'Stories', 'View: Custom', and a search bar. Below the navigation, there are options for 'Grouped by: Iteration' and buttons for 'Export To' and 'Edit Columns'. The main area is divided into a list of stories on the left and a workflow diagram on the right. The stories list includes items like 'Enhance formatting of tables on PDF of Inspection Forms' (ID 3695) and 'Request review of the forms for an inspection' (ID 3442). The workflow diagram shows a process flow involving 'Enforcement Officer', 'Inspection Manager', and 'Inspector' roles, with activities such as 'Generate Initial Inspection Report Document', 'Request EO Review', 'Assign EO Reviewer', 'Review Initial Inspection Report', and 'Mark Inspection Completed'.

- **Requirements Validation.** Requirements for each functional area are reviewed and assigned to a specific user story. In some cases a requirement may be very broad and may relate to many user stories. On the other hand, for requirements that represent specific business rules there can be many requirements associated with a single user story.

This requirements validation process provides a cross-check that the requirements are complete and cover all the activities that must be automated in a workflow process. It also identifies requirements that have become obsolete or do not provide value to DEQ operations. In summary, the list of requirements will change as follows:

- Add requirements for workflow process activities that were overlooked or are new activities in the process
- Add requirements for process improvement opportunities recommended by Windsor.
- Revise requirements which are related to the technical limitations of the current database and/or software in use. In some cases requirements will be removed, because the technical limitation will no longer exist in Windsor's solution.
- Remove requirements that do not apply to any activity in the workflow process—functions and features to automate obsolete workflow activities.
- Remove requirements that provide no efficiency or value to staff operations.

- Remove requirements for exception conditions that cannot be handled efficiently through automation. This includes exceptions that occur infrequently (less than once a month) or are actually easier and more efficient to handle without automated support.
- **Requirements Traceability Matrix Update:** The RTM is updated to show the disposition of each requirement in the RFP, as well as any new requirements identified in the workshop sessions. Requirements are classified into one of the following categories:
 - In scope for the project: Verified and validated as a requirement for which a solution will be designed and implemented.
 - Potentially in scope, but without an important impact to business operations and thus NOT an immediate requirement. These requirements will be prioritized for possible design and development during the maintenance and support portion of the contract. Given that there are a limited number of hours for software maintenance work, some of these requirements will not be high enough in priority to be in scope for the software solution.
 - Out of scope for the project: For requirements which no longer apply and will not be implemented in the solution. Change management requests will be made to formally remove these requirements from the scope of the project.

The MT DEQ Change Management process is used to formally request changes to the scope of the project based on the changes to requirements requested by MT DEQ staff during this phase.

Deliverables:

- Training for product owners and other stakeholders on the Agile/Scrum process
- Requirements validation and workflow process analysis workshop sessions
- Product Backlog—a prioritized list of user stories that are aligned with the workflow processes
- “To-Be” workflow process diagrams for each application area (Remediation, UST, PTRCB)
- Requirements Traceability Matrix—Updated based on workflow analysis and validation
- Change Management request for changes to requirements requested by MT DEQ.

Milestones:

- 2. Completion of requirements analysis and validation sessions
- 3. Delivery and State approval of complete detailed requirements specification document.

1c. Design and Architecture

During this phase, the user stories in the Product Backlog are used as a basis for discovery and definition of a technical system design for the RIMS solution. There are several major areas of work:

- **Technical Architecture:** Describe the technical requirements for the system including the elements of the hardware and software infrastructure, deployment requirements, components, application tiers model, security (authentication and role-based access), data sources, and reporting. This also describes the system integration points and how data will flow between systems. Diagrams like the following are created to facilitate discussion and review:

- User Interface Style Guide—Visual design (colors, fonts, etc.) and user interactions
- Information Model for each application area (Remediation, UST, PTRCB)
- Entity Relationship Model and Data Dictionary for each application area (Remediation, UST, PTRCB)—Initial skeleton sufficient for starting development.
- Design Specification Document—Initial skeleton sufficient for starting development
- Product Backlog—Updated
- Requirements Traceability Matrix—Updated
- Change Management requests for changes to requirements requested by MT DEQ.

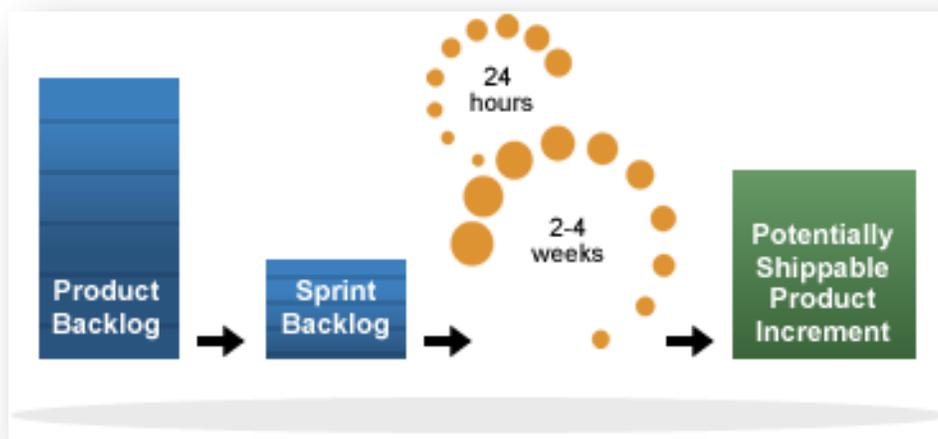
Milestones:

- *None.*

2. Development Phase

During this phase, software is developed for the user stories in the Product Backlog. The architecture, database, and user interface design work completed in the previous phase provide the foundation for a disciplined, iterative development effort that results in delivery of a high quality software application.

Development work for an Agile/Scrum project is divided into a series of “sprints” (also called “iterations”). At the start of each sprint, the highest priority stories on the Product Backlog are selected for inclusion in the Sprint Backlog—the users stories to complete in the next sprint.



The output of each sprint is a “release candidate”, also referred to as a “potentially shippable product increment”. This is an incremental release of all the software produced to date that is suitable for user testing. Each release candidate is deployed in Windsor’s Test environment so MT DEQ may conduct testing and demonstrations prior to a formal release to an MT DEQ test environment.

Detailed design, development, and system/integration testing work are done together in each sprint. There are significant advantages to MT DEQ with this approach:

- **Innovative solutions:** Windsor and MT DEQ teams work together on the same stories in each sprint. This is a highly collaborative way to work that produces innovative solutions to business problems.

- **Design when smarter:** Detailed design decisions are made each sprint, when the team is smarter about the requirements for an application. This provides flexibility when creative solutions to problems are discovered during development. It also provides a level of adaptability if improvements to the workflow process necessitate changes to user stories.
- **Reduce requirements-related defects:** Avoids software development rework due to misunderstandings or gaps in the review of monolithic design documents. Working software is reviewed very soon after detailed design work is completed. Users provide much higher quality feedback when they review working software rather than documentation. Less time spent on rework for defects is more time spent adding features and improving usability of the software.
- **Reduce integration-related defects:** Avoids software development rework due to misunderstandings or problems in the integration between different application systems. In addition, completed software is available for testing by MT DEQ staff much earlier in the project.
- **Better usability:** User experience testing is done each sprint, so usability problems are discovered very early in development. These problems can be corrected inexpensively, because problems are discovered before they have been propagated through many functions and features in the application.

2a. Detailed Design and Development

The diagram below illustrates how work typically proceeds during a sprint. This is not a rigid schedule, but more of a suggestion. The level of effort involved for each activity will be adjusted dynamically on a day-to-day basis in order to meet the goals of the sprint:

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
Sprint Planning	Scrum	Scrum	Scrum	Scrum	Scrum	Scrum	Scrum	Scrum	Scrum
Detailed Design -- User Stories with Acceptance Criteria			Design, Build and Execute Test Cases, Validate Results			User Experience (UX) Review		Regression Testing	Product Owner Demo
Refactor Code	Code Development and Unit Testing						Final Changes & Fixes		Team Retrospective

The tasks in orange are led by Windsor’s ScrumMaster. Business Analysts and the Quality Manager are responsible for the tasks in green. Technical Architects, System Administrators and Developers perform the tasks in blue.

Detailed design, development, unit testing, and system or integration testing of a user story are all done in the same sprint. Regression testing for existing functionality that may be impacted by new functions or features is also done during each sprint. Thus, the definition of “done” for a user story is that the software is ready for User Acceptance Testing.

The work involved for each task is as follows:

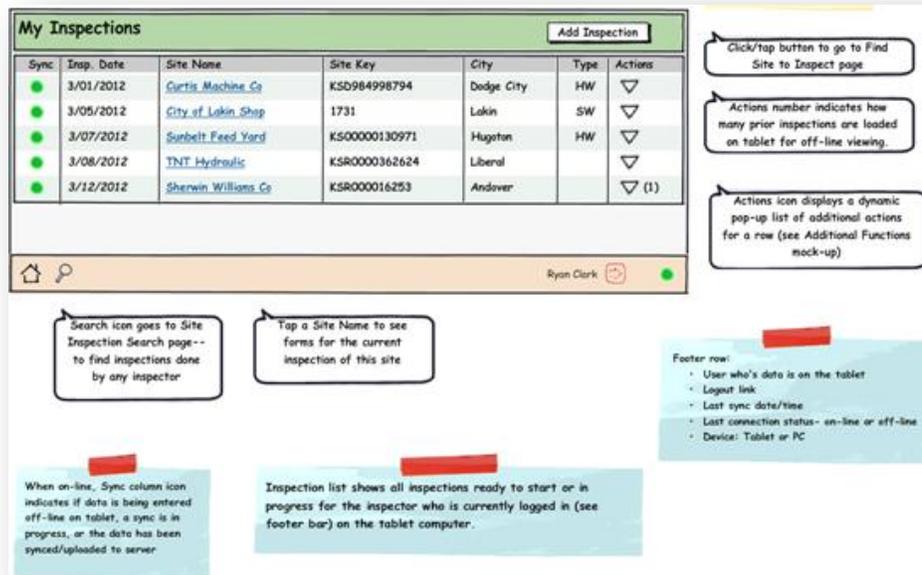
- **Sprint Planning:** The ScrumMaster and Product Owner plan for development of the current top priorities on the Product Backlog. The priorities may be adjusted slightly so that all of the selected items can be completed in the sprint. The sprint backlog is managed in the Agile Project Management tool as discussed below.
- **Daily Scrum:** Every day there is a brief (5 – 10 minute) meeting of team members to identify roadblocks that a ScrumMaster must clear and coordinate work efforts among the team members. The Product Owner is involved, as there may be a need to adjust priorities based on technical issues discovered during a sprint.
 - There will be two scrum meetings each day, as there will be two teams—a development team at Windsor’s main office and an implementation team based in MT DEQ’s office in Helena. The “Core” team for the project (the two ScrumMasters and the Quality Manager) will attend both daily scrum meetings. Please refer to the section “Project Roles and Responsibilities” for more information.
 - Please note that these are NOT project status meetings so project managers do not participate—unless they are serving as a ScrumMaster. Progress is reported based on the story board (virtual task board) available in the Agile Project Management tool for the current sprint.
- **Detail Design -- User Stories with Acceptance Criteria:** Windsor’s Business Analyst works the Product Owner and SMEs to complete the detailed design for all the user stories in the sprint. Any additional UI prototypes and business rule decision tables are completed. Most importantly, all of the acceptance criteria are identified. These become the testable requirements for the completed application.
- **Refactor Code:** At the beginning of a sprint Developers have time to redesign and rewrite code to optimize future development efforts. This is referred to as paying off “technical debt” that was incurred in previous sprints.
- **Code Development and Unit Testing:** Developers write code for user stories and acceptance criteria and complete user testing.
- **User Experience (UX) Review:** Windsor demonstrates selected areas of the functionality being developed in a sprint to get feedback from end-users on different user interface design options.
- **Design, Build and Execute Test Cases, Validate Results:** The project Quality Manager works with Business Analysts to design and build test cases based on the acceptance criteria for the user stories. Tests are executed and results reviewed with Developers to immediately fix bugs.
- **Final Changes & Bug Fixes:** Developers make final changes based on the User Experience feedback. Bugs found during regression testing are fixed, too.
- **Product Owner Demo:** The Windsor team demos all of the completed functions and features for the client’s Product Owner. The Product Owner accepts (or does not accept) stories as being complete. The product backlog is updated based on what has been completed in the sprint.
- **Team Retrospective:** A retrospective meeting is conducted by the team to identify areas for improvement in the software development process for the project.

User-Centered Design

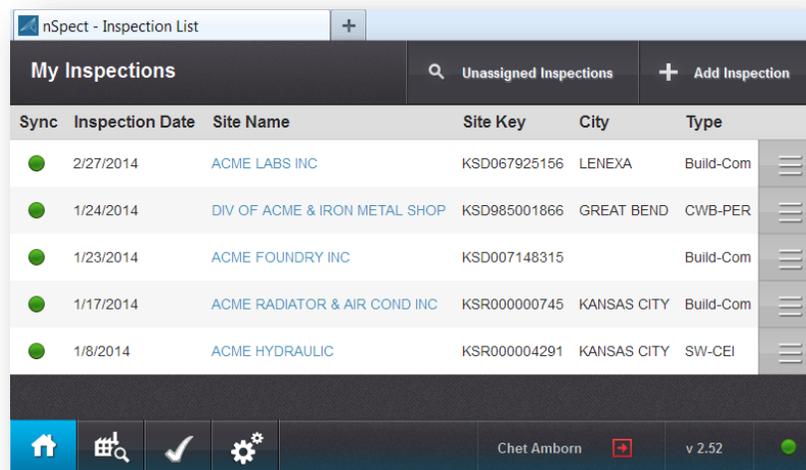
Windsor follows a user-centered design approach in producing software applications. Stakeholders and users will participate in the design and testing of the software throughout the life of the project.

During the planning and design phases of the project, Windsor works with stakeholders to define the end-to-end workflow process for the application. Process owners from all functional areas, front-line users, and upper management are the primary sources of information for defining the workflow process.

During the development phase of the project, the focus turns to defining the details needed to develop the software. This typically requires more involvement from subject matter experts within each functional area of the process. This work includes the definition of details like data validation rules for data entry forms, data mapping rules between user interfaces and the database, user interaction requirements on data entry web pages, and business rules for processing documents. In addition to this design work, subject matter experts and end-users will participate in user experience sessions and usability testing during each sprint. This is an opportunity for users to interact with the software and provide feedback that is immediately incorporated into the software development process. Typically, a simple mock-up like example (below) is created to start a design discussion with the Product Owner and SMEs:



Within a matter of days working software is produced. Review and revision efforts proceed by working with actual running software as in the example below:



This is significantly different from the Waterfall approach of reviewing extensive detailed design documents before software development begins. End-users provide much higher quality feedback when reviewing actual working software. This approach supports a collaborative process that provides a level of flexibility in user interface design and meeting usability requirements.

Stakeholder Participation

Client staff and supervisors will be active participants throughout the project. During each sprint MT DEQ participates in sprint planning, definition of user stories with acceptance criteria, user experience and usability testing, an end of sprint demonstration of software that was developed, updating of the product backlog, and end-of-sprint retrospectives. With this approach to software development, MT DEQ and Windsor collaborate together in designing and developing the software application.

Agile Requirements Management

Requirements are defined in a progressive, iterative manner. There are three levels of elaboration during the project, with each level providing a greater level of detail, as shown in the following table:

Phase	Analysis Level	Analysis is used by and for...	Detail Level
Project Plan	Scope	Project Manager and Lead Business Analyst define a project plan and schedule based on the requirements outlined in the customer’s RFP.	High
Requirements Validation	Concept	Client’s Product Owner and Business SMEs understand how the workflow process is enabled by the proposed solution. Requirements are refined and elaborated as user stories in a Product Backlog.	Medium
Development	Detail	Business Analyst and SMEs define details for when a user story is “done”. This is specific enough for analysts and technical staff to do configuration or development work and unit testing. This is also the basis for designing test plans.	Low

Based on “Workflow Modeling: Tools for Process Improvement and Application Development” by Alec Sharp.

Requirements are expressed as “user stories”. For functional requirements, this is a task or activity performed by a role to achieve an outcome. The collection of user stories for the project is called a Product Backlog. The Product Backlog includes user stories for functional requirements, non-functional requirements, technical work (set up computer environments, etc.), user acceptance testing, preparation of training materials, and delivery of training. Thus, the Product Backlog defines the complete scope of work for the project.

User stories are typically expressed in the format:

As a <user role> I want to <perform an action> in order to <accomplish a goal>.

As an Inspector I want fill out a requirements checklist form in order to record inspection data.

User stories include details called “acceptance criteria” that define how a function or feature should operate. Acceptance criteria define user interactions, business rules, data mapping rules, and non-functional requirements that must be met before the user story can be considered complete and acceptable by the Product Owner. A user story typically has 5 to 10 acceptance criteria.

Acceptance criteria are typically expressed in the format:

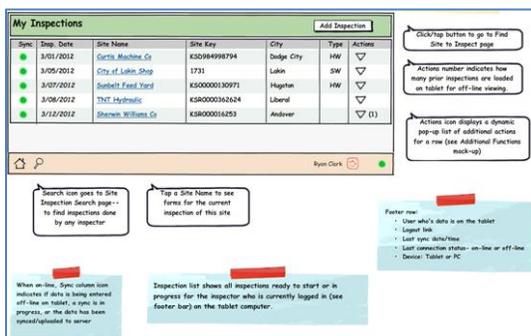
Given <a context>, when <an event occurs> then <an outcome should occur>.

Given that a potential new release is being investigated, when the release has been confirmed then send out a 30-day release form.

All the functional requirements for a project are expressed in terms of user stories and acceptance criteria. Typically, multiple user stories are needed to satisfy a requirement. Acceptance criteria represent the testable requirements for a system. Test cases are written to cover all acceptance criteria for all user stories in the system.

Acceptance criteria define when a story is “done”. When all the acceptance criteria are met, then the story is considered ready for user acceptance testing. The Product Owner is responsible for deciding whether acceptance criteria have been met. So, a Product Owner decides when a story is done.

Acceptance criteria are supplemented, as needed, with mock-ups and decisions tables that define specific business rules to implement in the software, such as in the following examples.



EER - Facility Registration Role Business Rules
06/07/2013

Activity Step	FA Role Value-- View	FA Role Value--After Update	SC Role Value-- View	SC Role Value--After Update	Table Operation	Send E-mail Notification
User Registration Request						
Enter FA Role Request	No row yet	-1			Insert EUAI row	To AQB Admin
View FA Role Request Entered	-1				Select EUAI row	
Enter FA Role Unrequest	-1	n/a			Delete EUAI row	To AQB Admin
Enter SC Role Request			No row yet	-2	Insert EUAI row	To Facility Admin
View SC Role Request Entered			-2		Select EUAI row	
Enter SC Role Unrequest			-2	n/a	Delete EUAI row	To Facility Admin
FA Registration Approval						
View SC Role Request			-2		Select EUAI row	To AQB Admin
Approve/Disapprove Role			-2	-1 or 0	Update EUAI row	To AQB Admin
AQB Registration Approval						
View FA Role Request Entered	-1				Select EUAI row	
Approve/Disapprove Role	-1	1 or 0			Update EUAI row	To User
View SC Role Request			-1 or -2		Select EUAI row	
Approve/Disapprove Role			-1	1 or 0	Update EUAI row	To User

- EUAI = EER_User_Agency_Interest table
- FA Role: EER_User_Agency_Interest.Facility_Admin_Role column
- SC Role: EER_User_Agency_Interest.Submitter_Certifier_Role column
- "Unrequest" = Remove a previous role request (uncheck a role radio button)

Detailed design information is added to the Design Specification document each sprint. Typically, a mock-up is created and then the software is developed in the same sprint. So, as a practical matter, the Design Specification document contains screen snapshots of actual software rather than mock-ups.

Agile Project Management Tool

Windsor uses Telerik’s TeamPulse product for Agile project management and requirements management. TeamPulse is specifically designed to support distributed development teams following Agile/Scrum through the full development lifecycle. TeamPulse supports web access so the client’s Product Owner(s) will be able to view the product backlog and sprint progress in real time.

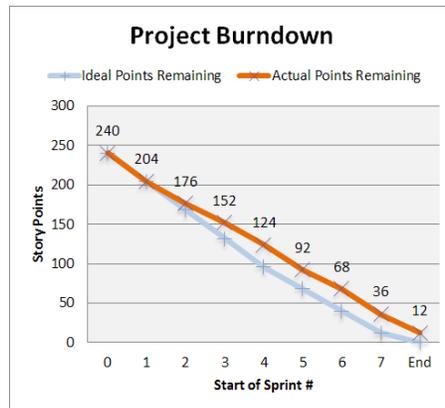
TeamPulse supports the four levels of planning for an Agile project: Project, release, sprint, and daily planning.

The stories on the product backlog are organized into Areas and assigned to Iterations. For larger projects with many software modules there will be multiple levels under Areas. If there are multiple releases in a project, then under Iterations there will multiple levels of releases and sprints.

The product backlog can be sorted by any of the columns in the story list. In the example below, stories are sorted and grouped by Iteration. This view allows you to see the sprint backlogs for one or more sprints at the same time.

ID	Name	Area	Iteration	Estimate	Assigned To	Status	Priority
MI2 / Sprint 0 / 9 Stories							
MI2 / Sprint 1 / 7 Stories							
MI2 / Sprint 2 / 7 Stories							
MI2 / Sprint 3 / 8 Stories							
MI2 / Sprint 4 / 9 Stories							
1109	Refactoring at start of sprint #4	WMI / Technical Task	MI2 / Sprint 4		Ryan Clark	8 - Done	1 - Mini
1305	Delete a form from an Inspection for a Site (more options for a form)	WMI / Pre-Inspection	MI2 / Sprint 4	4	Cory Lewallen	8 - Done	1 - Mini
1306	Complete (or Cancel/Delete) an Inspection (additional action for an inspection)	WMI / Pre-Inspection	MI2 / Sprint 4	4	Cory Lewallen	8 - Done	1 - Mini
1309	Keyboard/touch screen data entry-- Yes/ No / N/A answer	WMI / Inspection Form	MI2 / Sprint 4	4	Ryan Clark	8 - Done	1 - Mini
1310	Keyboard/touch screen data entry-- Text value (single line without formatting)	WMI / Inspection Form	MI2 / Sprint 4	4	Ryan Clark	8 - Done	1 - Mini
1311	Keyboard/touch screen data entry-- Date, Time, Number, Text value with formatting	WMI / Inspection Form	MI2 / Sprint 4	4	Ryan Clark	8 - Done	1 - Mini
1312	Keyboard/touch screen data entry-- Multi-value list, single select	WMI / Inspection Form	MI2 / Sprint 4	4	Ryan Clark	8 - Done	1 - Mini
1313	Keyboard/touch screen data entry-- Multi-value list, multiple select (checkboxes)	WMI / Inspection Form	MI2 / Sprint 4	4	Ryan Clark	8 - Done	1 - Mini
2042	Map the address for a site (additional action for an inspection)	WMI / Pre-Inspection	MI2 / Sprint 4	4	Cory Lewallen	8 - Done	1 - Mini
MI2 / Sprint 5 / 7 Stories							
MI2 / Sprint 6 / 7 Stories							
MI2 / Sprint 7 / 6 Stories							

Project progress is reported with a project burndown chart that shows ideal or planned progress vs. actual progress by sprint. Progress is measured in terms of stories that are fully completed—ready for user acceptance testing. The project burndown chart is included in the project status report provided at the end of every sprint.



Requirements Traceability

The Requirements Traceability Matrices (RTMs) containing the consolidated set of requirements for the project are updated each iteration to reflect how the requirements are supported by the constructed RIMS solution. Any new, modified, or removed requirements will also be incorporated. The RTMs are updated as follows:

- Clarifications to individual requirement descriptions where necessary.
- Addition of new requirements, where those were identified during construction activities.
- Marking of requirements as ‘deleted’ (‘soft-delete’ only), where requirements were considered to be no longer applicable after further discussion.
- Cross-referencing of requirements to the user stories in the actual RIMS solution, to ensure traceability and completeness of coverage.

In all cases where requirements are added, removed, or substantially modified from their original intent, Windsor's Project Manager will work collaboratively with DEQ's Project Manager to submit change management requests for the requirements changes requested by MT DEQ.

Deliverables:

- Application software release candidate installed and running a Test environment in the Windsor Cloud—each iteration
- Detailed Design Workshop sessions—for user stories in a sprint
- Product Backlog—Updated each iteration for user stories and acceptance criteria in a sprint.
- Design Specification Document—Updated each iteration based on completed stories. This includes user interface mock-ups, business rule decision tables, and other information needed to support the user acceptance criteria for user stories.
- Information Model for each application area (Remediation, UST, PTRCB)—Updated
- Entity Relationship Model and Data Dictionary for each application area (Remediation, UST, PTRCB)—Updated each iteration.
- Test Plan—Updated each iteration based on completed stories.
- Requirements Traceability Matrix—Updated each iteration based on completed stories.
- Change Management requests for changes to requirements requested by MT DEQ.

Milestones:

- 4. Completion of detailed system design sessions
- 5. Completion and Department approval of detailed system design specifications
- 6. Completion and State approval of detailed system design document
- 7. Completion of construction/unit test
- 8. Unit test completion attestation and unit test checklists delivered and approved by the State
- 13. Delivery and approval of test strategy
- 14. Delivery and approval of integration/system test plan and sample test case templates
- 15. Delivery and approval of integration/system test cases
- 16. Move to integration/system test environment
- 17. State validation of integration/system test results and RTM
- 19. Integration/system test completion, including delivery of updated RTM and system test results.

2b. Data Conversion

Data Conversion work is done in parallel with detailed design and development. The advantages of this approach over doing data conversion after development is completed are:

- **Reduce requirements-related defects:** Missing business rules are discovered during the data analysis of the legacy database. This avoids development rework if the new application database must change in order to accommodate aspects of the legacy data that were undocumented or forgotten.
- **More automated data conversion:** Data quality issues are discovered very early in the project, so MT DEQ has more time for data clean up. This allows for more data to be converted using

automated scripts and reduces the time for MT DEQ staff to manually re-enter data into the new application.

- **Review new software functionality using legacy data:** Data conversion scripts are written iteratively as needed for new user stories. Users review working software using the existing data in their legacy database with which they are already familiar. This ensures the software application correctly supports the existing data for sites and cases as well as new data.

Windsor's Data Analysts define the strategy, requirements, and the eventual solution for the conversion of data from each of DEQ's existing remediation data sources. Emphasis is placed on creating conversion logic that is both robust and repeatable. It is expected that the data conversion scripts will be executed regularly during the development and implementation phases of the RIMS project.

The early stages of this phase focus on developing a mapping of legacy data to the new RIMS solution database, and any transformations to the data that must occur during conversion. Due to the age of the existing data and the type of solutions that have been used to store and maintain the data, it is expected that some manual cleanup of data may be required. Windsor will strive to minimize this manual cleanup effort wherever possible.

Data Conversion Strategy

Windsor starts preparing the Data Conversion Design specification by outlining how data from the various source systems will be converted to the RIMS solution database. Topics such as conversion team organization, a proposed schedule for completion of conversion tasks, and procedures for dealing with manual data cleanup will be included in the design document.

This will also include a definition of the tools and methods to be used to migrate and convert data from the various type of data source (MS Access, MS Excel, MS Word). For relational data sources such as MS Access, tools such as Oracle heterogeneous services can be used to develop repeatable scripts to migrate and convert legacy system data. For flat file data sources, such as MS Excel, the use of Oracle External Tables will be an option. The specific tools and approaches will be defined once the type and structure of the individual data sources is better understood.

Data Conversion Requirements

Windsor's Data Analyst review each legacy data source and work with DEQ team members to establish an understanding of the requirements for the data conversion. For each data source, the following information is gathered:

- **Scope of Conversion** – identifying which data items from the existing database are to be migrated.
- **Historical Scope** – understanding how far back in time the data conversion effort should go with regard to source system data.
- **Known Data Quality Issues** – such as referential integrity problems (duplicate or orphaned child data), duplicate primary key values in a table, single data fields used to store multiple data values, or date fields with invalid values. These are the problems when a database does not meeting the standards of "third normal form". These issues are a particular problem with MS Access databases.

Data conversion requirements are captured as user stories with acceptance criteria in the Product Backlog. This will be done in the same manner as user stories for functions and features in the RIMS

application. These stories will be submitted to the DEQ team for review and feedback. User stories and acceptance criteria for data conversion will be revised as needed based on this feedback.

Windsor may discover data quality issues that require data clean-up before automated scripts can be written to convert the data. Windsor will provide MT DEQ staff with instructions for the manual clean-up of the legacy data. MT DEQ staff will be responsible for performing this manual data clean-up work. In some cases, Windsor may discover that there are severe data quality issues with the legacy data. It may not be possible to write automated data conversion scripts to migrate this data. Windsor will provide MT DEQ staff with instructions for manually re-entering this data in to the new RIMS application.

Data Conversion Design

Before data migration scripts can be written, business rules for data mapping and data transformation are defined. Each data map shows source data items, their mapping to corresponding data fields in the new RIMS Solution database, and any data validation or transformation rules that need to be applied to the source data during conversion.

Automated conversion scripts are written based on the data mapping business rules. Windsor's goal is to use automated scripts to migrate as much of the data as possible. This includes removing duplicate data between systems where possible (data de-duplication) so that each type of data has a single source within the RIMS solution database.

Data Conversion Test Plan

Windsor is responsible for fully testing the data conversion logic that is developed to convert the legacy data into the new RIMS solution database. Windsor's Data Analyst develops a data conversion test plan that outlines the approach to be used to complete testing activities. This approach includes:

- The scope of the testing effort.
- The tests that will be performed post conversion to ensure that the migration was successful.
- The process for documenting and resolving data conversion issues as they arise. This could include modification of data migration scripts or additional manual data cleanup.

A data conversion test plan is compiled and submitted to the DEQ team for feedback, and a web conference will be held to walk through the document. Comments and feedback will be incorporated into the test plan as needed.

Code and Test Data Conversion Logic

Windsor's Data Analyst will develop and test data conversion scripts for each of the legacy data sources with data that must be migrated to the new RIMS solution database. These scripts are developed iteratively, in the same manner as user stories for functions and features in the RIMS application.

It is expected that the data conversion logic will be executed repeatedly throughout the development and implementation phases of the project. A strong emphasis is placed on creating a repeatable migration process that can be re-executed at short notice. The majority of the data conversion logic is expected to be developed as PL-SQL scripts utilizing mechanisms such as external tables, DB Links, and heterogeneous services/ODBC to enable communication with the various legacy data sources.

As the conversion logic for each legacy data source is developed, Windsor's Data analysis will perform extensive testing to ensure that the data conversion logic is operating as designed. The results of the

testing effort will be compiled into a Test Results Report document and submitted to the DEQ team for review.

Deliverables:

- Data converted from the legacy data sources into the new RIMS database
- Data conversion scripts installed and ready to run in the User Acceptance Test (UAT) environment (in the Windsor Cloud or hosted internally by MT DEQ)
- Data Conversion Design Specification: Covers the strategy, requirements, data mapping details, and test plan for data conversion work.
- Data Conversion Test Results Report
- Entity Relationship Model and Data Dictionary for each application area (Remediation, UST, PTRCB)—Updated each iteration.
- Product Backlog—Updated each iteration based on completed stories.
- Requirements Traceability Matrix—Updated each iteration based on completed stories.
- Change Management requests for changes to requirements requested by MT DEQ.

Milestones:

- 9. Completion and approval of conversion strategy and plan
- 10. Completion and approval of coding of conversion programs
- 11. Completion and approval of testing of conversion programs
- 12. Completion and approval of conversion testing.

3. Implementation Phase

Windsor follows the Lean software development approach of “Quality at the Source” when developing and testing software applications. Quality issues are identified as early as possible in the development cycle. Quality is an integral part of the development process, not something added on after development. There are significant advantages to MT DEQ with this approach to testing and quality:

- **Ready for testing faster:** Early releases of software maybe not have all the functionality developed yet, but there is no lack of quality. This gives MT DEQ staff much more time to test usable software than would occur in a typical Waterfall or Waterfall/Agile hybrid project.
- **Reduce implementation schedule delays due to quality issues:** Testing of the RIMS application software begins during the Development phase. Test plans are written as user stories are developed each sprint. Unit testing and system / integration testing are also done each sprint. This avoids delays in starting the user acceptance testing phase, and ensures that user acceptance and pilot testing can be completed on schedule with a minimum of software development rework to fix defects.
- **Collaborative testing:** User training is conducted at the start of the User Acceptance Testing phase. This allows MT DEQ Product Owners and SMEs to work collaboratively with Windsor’s Quality Manager in planning and conducting user acceptance tests.

3a. User Acceptance Test and Training

User Acceptance Tests will be conducted separately for each major application area: Remediation, UST, and PTRCB. Windsor’s Quality Manager works with MT DEQ Product Owners and SMEs MT DEQ staff to develop a User Acceptance Test (UAT) test plan and conduct testing according to the plan. The Windsor

team supports DEQ staff in their planning and test execution efforts, providing guidance where necessary. User training is planned, developed, and conducted before test planning begins. This ensures that MT DEQ staff are fully prepared for user acceptance test planning, execution, and confirmation of test results.

Training Plan and Training Materials

Windsor's Quality Manager collaborates with MT DEQ Product Owners and SMEs to prepare a plan for training DEQ and external staff in the use of the new RIMS solution, as well as training of OIT staff in the support of the application architecture and maintenance. The plan describes the training approach, the materials and documentation required, and the schedule and curriculum for training sessions.

Windsor's Quality Manager collaborates with MT DEQ Product Owners and SMEs to develop training materials for use in training sessions with both users and technical staff. User training materials provide a hands-on, tutorial-style walkthrough of activities in each workflow process of the new RIMS solution. Technical training materials focus on a technical overview of the RIMS solution, and a discussion of the on-going activities that must be performed in order to maintain the operation of the system.

Training classes are conducted as a collaborative effort by MT DEQ Product Owners and SMEs and Windsor's Quality Manager. Classes follow a hands-on workshop format, so that users learn how the software supports a workflow process by performing activities in the process using the software.

User Acceptance Test Plan

Windsor's Quality Manager works with MT DEQ Product Owners and SMEs in developing the UAT Plan for each application area. This plan describes how each workflow process area will be tested to verify the software application properly enables the end-to-end workflow process. This includes designing test scenarios and test cases in order to cover all the different paths through a workflow process.

User Acceptance Test Environment

Windsor's Technical Architect works in close collaboration with DEQ's OIT Technical staff to deploy and configure the software components that comprise the new RIMS solution in the DEQ testing environment. Once the system is deployed, Windsor's Data Analyst works with OIT database administration staff to execute the data conversion routines that populate the test RIMS database with data from the legacy data sources for testing purposes. Windsor and DEQ technical staff then jointly verify the successful deployment and data conversion, prior to releasing the solution for subsequent testing rounds.

Windsor's technical staff anticipates the need for ongoing remote access to the state testing environment during the testing phases of the project, and possibly beyond. Remote access to application and database servers during testing allows the Windsor team to more effectively troubleshoot system issues raised during testing by giving them the ability to replicate issues, inspect problematic data sets, and view system and database logs for diagnostic information. Windsor will request remote access to the DEQ test environment at this time.

User Acceptance Testing – Execution and Test Results Report

Windsor's Quality Manager works with MT DEQ Product Owners and SMEs in executing the UAT Plan. While Windsor facilitates the acceptance testing work, responsibility for executing acceptance tests, confirming test results, and documenting issues resides with the MT DEQ Product Owners and SMEs.

User acceptance testing also confirms that the data conversion was successful and meets the agreed-upon conversion approach, specifications, and plan. While Windsor staff can evaluate the conversion for its accuracy (e.g., record counts, data source/destination review), DEQ staff are the best suited to confirm that the data was successfully converted within the context of the business. Therefore, responsibility for this dimension of testing also resides with the DEQ team members.

Issues discovered during testing are documented by MT DEQ staff using TeamPulse, Windsor's issue and bug tracking tool. Windsor's Quality Manager works with MT DEQ Product Owners and SMEs to classify and prioritize issues for resolution. Please refer to the section "Issue Management" (below, under "Project Management Practices"), for an explanation of how issues are classified.

As with development work, user acceptance testing is conducted in two-week sprints. Troubleshooting and fixing software defects occurs in parallel with testing efforts. New software releases can be made after every sprint or every other sprint. Emergency software releases are made as needed to resolve critical and high priority issues which might interfere with completion of acceptance tests on schedule.

Windsor's Quality Manager will prepare a summary report from data in the issue tracking tool. This report will summarize testing efforts, issues logged, and how issues were resolved.

Deliverables:

- User Acceptance Test (UAT) Plan
- Training Plan and Training Materials
- Training Classes Conducted
- User Acceptance Test Environment—RIMS application software installed and running in a MT DEQ testing environment
- Data converted from the legacy data sources into the new RIMS database
- UAT Test Results recorded (in Windsor's Issue and Bug Tracking software)
- Test Results Report
- Product Backlog—Updated each iteration based on completed stories.
- Requirements Traceability Matrix—Updated each iteration based on completed stories.
- Change Management requests for changes to requirements requested by MT DEQ.

Milestones:

- 18. Delivery and approval of UAT training plan
- 20. Move to UAT environment
- 21. Start user acceptance testing
- 22. User acceptance test completion, including delivery of updated RTM and UAT test results
- 23. State validation of user acceptance test results and RTM

3b. Pilot Operations

Pilot test operations will be conducted separately for each major application area: Remediation, UST, and PTRCB. Windsor anticipates a small subset of regular users will participate in data entry, management and reporting activities for a pilot test in each area. This provides good insight into the suitability of the new RIMS solution for a full production rollout, while minimizing inconvenience to users as they conduct their daily business activities. MT DEQ users participating in the pilot test will most likely be required to perform dual data management activities in both the old and new RIMS solutions, and efforts should be made to keep this additional burden to a sensible minimum.

Pilot Operations Environment

Windsor's Technical Architect will work in close collaboration with DEQ's OIT Technical staff to deploy and configure the software components that comprise the new RIMS solution in the DEQ pilot operations environment. Once the system is deployed, Windsor's Data Analyst will work with OIT database administration staff to execute the data conversion routines that will populate the pilot operations RIMS database with data from the legacy data sources for testing purposes.

System Documentation

Windsor's Technical Architect will prepare a System Administration Guide for use by future technical administrators of the RIMS solution. This guide will cover the hardware and software architecture of the system, a comprehensive coverage of the configuration options that are available to administrators and Windsor recommendations for optimum configuration, and descriptions of both regular and ad-hoc administrative processes that must be performed in order to maintain the ongoing operation of the RIMS solution. One guide will be written for the entire RIMS solution.

Windsor's Business Analysts and Quality Analysts will collaborate with MT DEQ Product Owners and SMEs to develop a User Guide (also known as an "Operations Manual") for users of the new RIMS solution. This manual explains how the application supports each step of an end-to-end workflow process. Separate User Guides will be written for each application area: Remediation, UST, and PTRCB.

Pilot Operations – Execution and Test Results Report

A key focus of pilot operations is ensuring that new RIMS system is capable of meeting the data management and processing capabilities of the existing legacy system. MT DEQ users will compare the same data in both the old and new systems, and look for explanations for any discrepancies. In some cases, the discrepancy will be a result of different processing in the new system, or simply different presentation of the same data. However, in other cases, these discrepancies will be indications of a system or data conversion issue that must be resolved.

Windsor will begin operation of a Help Desk to support MT DEQ users. Issues will be logged and resolved in the same manner as during User Acceptance Testing. Windsor staff will be available to support the pilot operation of the new RIMS system from 8am – 5pm Mountain Time, Monday through Friday (except State non-working days). With prior notice, Windsor support staff can also be made available outside these hours.

Pilot testing is conducted in two-week sprints. Troubleshooting and fixing software defects occurs in parallel with testing efforts. New software releases are made at the end of every sprint to correct issues discovered during a sprint. Emergency software releases are made as needed to resolve critical and high priority issues which might interfere with completion of acceptance tests on schedule.

Windsor's Quality Manager will prepare a summary report from data in the issue tracking tool. This report will summarize pilot operations and test results, including issues logged, and how issues were resolved.

Deliverables:

- Pilot Operations Environment—RIMS application software installed and running in a MT DEQ testing environment
- Data converted from the legacy data sources into the new RIMS database
- Help Desk support services
- Pilot Operations issues recorded (in Windsor's Issue and Bug Tracking software)

- Pilot Operations Results Report
- System Administration Guide
- User Guide (Operations Manual) for each application area: Remediation, UST, and PTRCB.
- Product Backlog—Updated each iteration based on completed stories.
- Requirements Traceability Matrix—Updated each iteration based on completed stories.
- Change Management requests for changes to requirements requested by MT DEQ.

Milestones:

- 24. Completion of scheduled pilot training sessions
- 25. Completion and State approval of pilot results where all deficiencies/problems are addressed based on performance expectation regarding the acceptable level of problems
- 26. Approval attestation of RIMS by pilot participants/users.

3c. Production Deployment

Production deployment will occur separately for each major application area: Remediation, UST, and PTRCB. So, all of the following tasks will occur three times, in April, June, and November of 2015.

Implementation Plan

In preparation for the deployment of the fully tested RIMS solution in the DEQ production environment, the Windsor team will prepare an Implementation Plan. This will cover the tasks, dependencies, and schedule for putting the RIMS application in a production environment. A rollback plan will also be developed, in case of an unforeseen deployment issue, allowing DEQ to revert to usage of the legacy solution until the unforeseen issue has been resolved.

Operational Readiness Assessment

Windsor's Project Manager will prepare an Operational Readiness Assessment document, detailing how the RIMS solution has met or exceeded the quality and performance benchmarks that were set earlier in the project. The Operational Readiness Report will also describe the organization and capabilities of the Windsor team and facilities that will be used to support the RIMS solution on an ongoing basis.

Post-implementation Operational Monitoring Plan

Windsor's Project Manager and Technical Architect will provide a plan describing the quality and performance benchmarks that must continue to be met or exceeded in order for the new RIMS solutions to be considered 'fully operational'. This plan will also describe techniques for measuring quality and performance of the new RIMS solution. Quality is usually measured quantitatively through ongoing monitoring of the volume of system issues and bugs, and the timeliness of their resolutions. Performance can be measured through the use of a number of performance monitoring tools, which DEQ OIT staff may already use. If that is not the case, Windsor will be happy to make a recommendation in this area, based on our experience with other state clients.

Operations Plan

Windsor's Project Manager will develop an Operations Plan. This document will describe all tasks to be performed by the Windsor Operations and Maintenance team in order to ensure the continued proper operation of the new RIMS solution. All ongoing support activities will be documented, such as:

- Database Backup schedules
- Database optimization schedules
- Batch Processing schedules
- Bulk tasks, such as issuance of emails
- Ad-hoc data maintenance, such as addition of system users.

In addition to ongoing operational tasks, the Operational Procedures plan will contain a definition of the release management process for the RIMS solution. This involves scoping, estimation (if necessary) execution/testing, and deployment of a group of system changes and is performed on a periodic basis.

Obtain State Approval for Production Deployment

The Windsor Project Manager and DEQ Project Manager will co-facilitate a 'Go/No-Go' meeting, to determine if the new RIMS solution can be considered ready for production implementation. All project stakeholders will be expected to participate in this meeting, including MT DEQ Product Owners and SMEs who have participated in the project, OIT technical project participants, and DEQ executive steering committee members.

The meeting will cover a discussion of the Implementation Plan, Operational Readiness Assessment, the Post-Implementation Operational Monitoring Plan. The purpose of the meeting is to provide attendees with insight into:

- The readiness of the new RIMS solution for production deployment.
- The readiness of the support team and facilities to provide ongoing post-implementation support.
- The readiness of the implementation team to perform a smooth, successful transition for the legacy solution to the new RIMS solution.

At the end of the meeting, participants will be expected to either approve the production deployment of the new RIMS solution, or reject the deployment, stating reasons why the solution is not ready for production. If the consensus is to reject the deployment the Windsor and DEQ project Managers will work together to develop a plan for bringing the new RIMS solution and implementation plan into compliance with the necessary standards to allow the production deployment to proceed.

Production Operations Environment

Windsor's Technical Architect will work in close collaboration with DEQ's OIT Technical staff to deploy and configure the software components that comprise the new RIMS solution in the DEQ production operations environment. Once the system is deployed, Windsor's Data Analyst will work with OIT database administration staff to execute the data conversion routines that will populate the pilot operations RIMS database with data from the legacy data sources for testing purposes.

It will be important to disable user access to the legacy data sources prior to performing the data conversion, so that data cannot continue to be added in the legacy systems during and after the data conversion. Windsor and DEQ technical staff will then jointly verify the successful deployment and data conversion, prior to releasing the solution for production usage. All work will be performed strictly in compliance with the Implementation Plan developed earlier in this phase.

Source Code

All application source code that is custom-developed for MT DEQ as part of the RIMS solution will be packaged and provided to DEQ OIT technical staff in a soft copy format. Artifacts provided will include:

- Application source code

- Application configuration files, style sheets and other style content.
- Database creation scripts
- Database conversion scripts.
- Application Deployment scripts.

Windsor's Technical Architect will conduct a Source Code Package Review via Web conference, to ensure that DEQ OIT team members understand the contents of the source code package. OIT staff will then place all provided source code in the source control library solution of their choice, for safekeeping.

Deliverables:

- Implementation Plan
- Operational Readiness Assessment
- Post-implementation Operational Monitoring Plan
- Operations Plan
- Obtain State Approval for Production Deployment
- Application software installed and running in a Production environment at a MT DEQ hosted site
- Data converted from the legacy data sources into the new RIMS database
- Source Code
- System Administration Guide—Updated based on Production deployment
- Product Backlog—Updated each iteration based on completed stories.
- Requirements Traceability Matrix—Updated each iteration based on completed stories.
- Change Management requests for changes to requirements requested by MT DEQ.

Milestones:

- 27. Completion of scheduled implementation training sessions
- 28. State approval of operational readiness assessment
- 29. Cutover to RIMS from legacy system for full operations (e.g., implementation).

Operations and Maintenance Work Plan

This section explains the sub-phases of work and the deliverables for operating and maintaining the software solution in a production environment.

4. Operations and Maintenance Phase

4a. Operations and Maintenance

Tasks under this phase are split into two distinct categories:

- Operations and Maintenance Effort – all activities required to ensure that the RIMS solution remains operational in the DEQ production environment. Examples of these activities include:
 - Coordination of server and database backups
 - Administration of user security data
 - Deployment of software upgrades and patches, as necessary
 - Operation of a Help Desk to support users
 - Provision of monthly status meetings and reports.

- Warranty Effort – focused on investigating and resolving system bugs or issues where the system is not compliant with agreed in-scope requirements.

Windsor will also provide modifications or enhancements to the RIMS solution to introduce additional scope, on an as-needed basis, using the same formal Change Control process that was utilized throughout the development and testing phases of the project.

Operations

Starting at the same time as the warranty period, Windsor will provide operations and maintenance services for the RIMS solution for a period of up to ten years. This includes the following services:

- **Help Desk Operations:** Windsor will provide Help Desk support to DEQ OIT staff on technical issues and REM staff on functional / operations issues for the new RIMS solution. The Help Desk will be available Monday through Friday between 8:00am and 5:00pm Mountain Time, excluding holiday days.
- **Software Maintenance:** Software maintenance activities will be managed on a release basis. RIMS users will continue to track errors and defects in the system using Windsor's issue tracking tool. Issues will be classified as Critical, High, Medium, or Low priority as discussed below under the "Issue Management" section. On an agreed-upon schedule, most likely on a quarterly basis, Windsor will conduct a meeting with the DEQ Team to review outstanding items and to prioritize these for inclusion in a maintenance release.
- **Training:** Windsor will provide technical and user training using materials developed during the Implementation phase of the project on an as-needed basis.

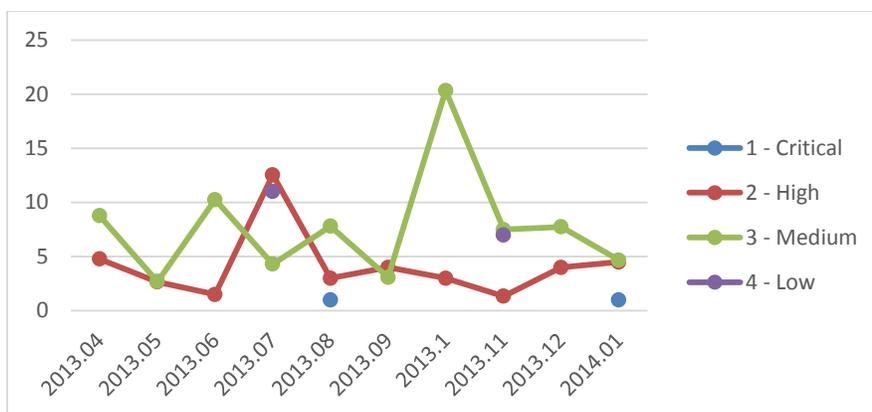
In order to estimate a fixed cost for annual maintenance, we have assumed a typical level of effort that we believe is appropriate given the scope and size of the RIMS solution and the likely maintenance needs. This includes the following types of maintenance work:

- System and Remedial Maintenance—Bug fixes. There will be no unmet requirements which were not satisfied during the development project.
- Preventive Maintenance—Based on monitoring of the Production environment, fixes to issues that are suggested by negative trends in system performance. This also includes fixes needed in response to security issues.

As noted in the RFP, these operations and maintenance tasks will not include professional services to design, modify, customize or enhance software functionality to meet new DEQ business requirements or requests. Support for enhancements will be provided through the formal Change Control process.

Monthly Operations Report

On a monthly basis, Windsor's Project Manager will prepare a report of issues, software changes, and system availability. The report will show metrics like the number of new issues reported by severity, average time to resolve issues by severity, and source of issues by application area. This will include both tabular data and graphs like the following.



Warranty

Windsor will warranty the new RIMS solution from the date of acceptance, for a period of 1 calendar year. Warranty support will include the documentation, investigation, and resolution of all system issues that are not in compliance with the requirements of the system, as documented in the Requirements Traceability Matrices.

During the course of the warranty period, Windsor will work to resolve problems encountered in the production environment in a timely fashion. Errors will be prioritized and organized into logical groups for implementation. Once fixes have been applied, they will be tested in Windsor's unit test environment and then in DEQ's test environment before being deployed to the DEQ production environment.

Deliverables:

- Help Desk support services
- Software maintenance services
- Change management request for training, configuration changes or software enhancements
- Monthly Operations Report.

Milestones:

- 30. State acceptance and approval of the completion of the warranty period
- 31. Completion of all warranty period system defects
- 32. State acceptance and approval of completed system changes, as demonstrated through testing and post-implementation monitoring.

4b. Turnover

Windsor understands that DEQ may choose to employ the services of a different support organization at the end of the RIMS Operations and Maintenance period. DEQ also may choose to bring support of the RIMS solution 'in-house' so that OIT staff may support it on an ongoing basis. To this end, Windsor will prepare materials that will allow the transition of operations and maintenance responsibilities to occur in as seamless a manner as possible. Windsor will prepare planning materials that will outline the approach to be used for the turnover process, the resources, skills, and knowledge that must be provided by any supporting organizations, and the knowledge transfer tasks that must take place in order to effect the transition. Once a decision is made to transition operations and maintenance responsibilities, Windsor will work closely with DEQ and the chosen supporting agency to execute the turnover process.

One year prior to the end of the agreed contract between Windsor and DEQ for ongoing operations and maintenance support of the RIMS solutions, Windsor will prepare a Turnover Plan. This plan will detail the schedule of steps to be performed when responsibility for operations and maintenance transitions from Windsor to another party.

Windsor also will prepare a Knowledge Transfer Strategy document. This will explain the detail approach to conduct an effective and complete transition of operations and maintenance support to the new provider. As a companion document, Windsor will develop a statement of operational resources for the organization that will assume operations and maintenance responsibilities. This document will identify all resources associated with the RIMS solution that could be of use to the supporting organization.

Approximately six months prior to the effective date for transition of operations and maintenance support responsibilities, Windsor will begin the process of executing the Knowledge Transfer Strategy for the RIMS solution.

Deliverables:

- Turnover Plan
- Knowledge Transfer Strategy
- Operational Resources
- Knowledge Transfer services.

Milestones:

- 33. State acceptance and approval of operational readiness assessment
- 34. State acceptance of turnover/transfer of operations role to State/new contractor
- 35. Training complete for State/new contractor staff.

Project Management Practices

This section explains Windsor's approach to project status reporting, issue management and risk management for an Agile/Scrum project.

Project Status Reporting

Windsor's project management approach focuses on communication and interaction as a means of minimizing project risk. By making all team members aware of project plans, project control mechanisms, deadlines, status, and standards, we increase overall project ownership. The goal is to deliver a high quality software solution with minimal risk.

At the end of each iteration—every two weeks—a written status report is submitted to the MT DEQ Project Manager and MT DEQ Product Owners for review. Each report includes the following information:

- Summary of status for scope, budget, and schedule
- Summary of issues and risks impacting the scope, budget, or schedule, including project staffing
- Work accomplished during the current iteration
- Work planned for the next iteration
- Status of delivery for each major deliverable in the project
- Product Burndown chart which shows the trend in completing project tasks
- Updated Deliverables and Milestone chart showing the current status of the project.

A project status meeting is conducted with the MT DEQ Project Manager and MT DEQ Product Owners at the end of each iteration to coincide with the release of each project status report. Typically, the project status meeting is held immediately after the end-of-sprint demonstration to MT DEQ Product Owners.

Software development progress is reported in two ways. The Requirements Traceability Matrix shows coverage of the requirements list in the RIMS project RFP. The Product Backlog shows coverage based on the workflow processes of each bureau or section.

Issue Management

Suspected software bugs, data migration changes, and software configuration changes are logged as issues. This will ensure all-around visibility of the issues, as well as providing a source for documentation of issues. Issuing logging is done during User Acceptance Testing, Pilot Operations testing, and Operations and Maintenance.

The process for receiving, troubleshooting, and resolving a support issues is as follows:

1. MT DEQ RIMS User experiences an issue and reports to MT DEQ RIMS User Manager
2. MT DEQ RIMS User Manager troubleshoots problem and attempts to resolve
 - If an issue cannot be resolved by MT DEQ RIMS...*
3. MT DEQ RIMS User Manager reports an issue to Windsor via phone call, support web site or e-mail to mt_rims_support@windsorsolutions.com.
 - Every issue is logged as a Support Ticket.
4. Windsor responds and collects minimum information required to diagnose a problem.
 - Every Support Ticket is updated with the minimum information for troubleshooting a problem.
5. Windsor routes a case to the appropriate person for further diagnosis and resolution:
 - Route to Business Analyst for a specific area: RIMS, nForm, nSpect, or nSite, or DMS.
 - Support Tickets are automatically escalated to a back-up contact if no response is made to MT DEQ RIMS by one hour before the Typical Response time deadline.
6. Windsor diagnoses the problem and devises a workaround
 - a. Windsor duplicates the problem
 - Windsor collaborates with MT DEQ RIMS IT Help Desk as needed to troubleshoot issues with desktop/laptop PCs or internet access in MT DEQ RIMS offices.
 - Windsor works with MT DEQ RIMS IT Project Manager to coordinate work with the MT DEQ RIMS IT Staff
 - b. Windsor determines the root cause
 - c. Windsor devises a workaround
7. Windsor advises MT DEQ RIMS User Manager of the workaround
8. Windsor implements the solution:

- a. Makes the software configuration change or provides training as needed
- b. Confirms with the MT DEQ RIMS User Manager that the issue has been resolved

If there is a need to change the application software...

9. Windsor makes the necessary software change to resolve the problem

10. Windsor publishes the software change to the MT DEQ RIMS—Test Environment

11. Windsor advises MT DEQ RIMS User Manager of the software change and assists in confirming resolution of the problem in a Test environment. This includes assistance in correcting problems with data if necessary.

When the software change is approved for the Production environment...

12. Windsor publishes the software change to the MT DEQ RIMS Windsor Cloud—Production Environment

13. Windsor advises MT DEQ RIMS User Manager of the software change and assists in confirming resolution of the problem in Production. This includes assistance in correcting problems with data if necessary.

Reporting to MT DEQ RIMS on a monthly basis...

14. Windsor reports a summary of production support issues to MT DEQ RIMS User Manager.

To better facilitate project discussions and issue tracking, Windsor tracks and resolves issues using TeamPulse. The TeamPulse tool is a secure web-based application which can be accessed from any location by the MT DEQ Product Owners or other MT DEQ staff users with the proper authorization.

Each issue is classified at one of the following levels of severity. Windsor’s goal is to address and resolve all critical and high level issues before the system is made available for User Acceptance Testing.

Severity Level	Explanation
Critical	Application does not function, often due to hardware or security issues. This level typically affects many or all users of an application.
High	Does not meet the software requirements very well and a procedural workaround is needed in order to perform work using the software
Medium	Meets the software requirements but some user training may be needed to avoid usability problems
Low	Meets the software requirements but some user training may be needed to avoid usability problems
Enhancement	Request for a feature or function not currently implemented in the software application

Risk Management

This section describes how project risks are identified, addressed and managed by the project team. Properly identifying and managing risks will enhance the probability for a successful project outcome by eliminating problems before they become unmanageable or affect the outcome or duration of the project. An effective risk management plan is crucial for handling unforeseen events which may threaten to slow or stall a project.

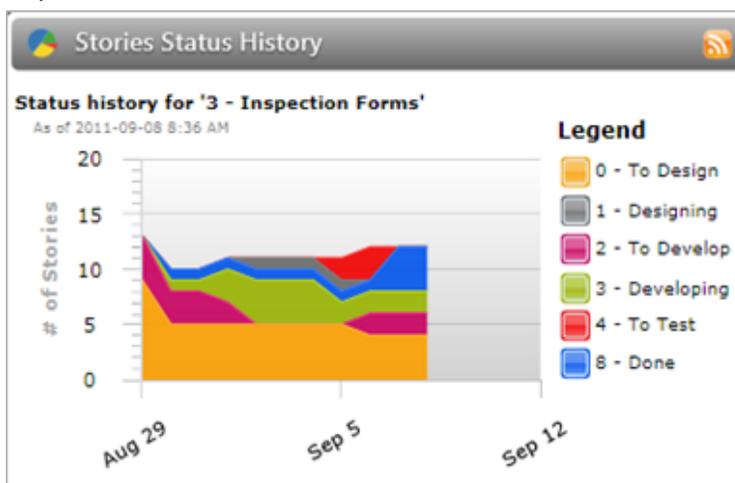
Windsor places a great emphasis upon risk management, believing it to be a highly valuable, yet often under-utilized management tool. Frequent review of risks enables the management team to stay on top of potential “show-stoppers”. This process is performed in partnership with the MT DEQ Project Manager, as every risk to the project poses a joint threat of failure. Identifying and planning for potential risks allows for much greater assurances that the project will succeed on time and on budget. For an Agile/Scrum project, risk management begins with implementation of a system known as “empirical process control”. Empirical process control is a three stage process involving visibility, inspection, and adaptation.

- **Visibility** of project activities and issues is provided through communications to the team and stakeholders.
- **Inspection** allows the team and stakeholders to assess the status of what has been made visible and determine options for addressing problems.
- **Adaptation** is how the project team makes decisions to resolve issues and optimize project performance.

ScrumMasters are responsible for making project activities visible. ScrumMasters facilitate a brief Daily Scrum meeting every day. Team members identify roadblocks to progress, and it becomes the responsibility of a ScrumMaster to clear roadblocks as quickly as possible. Typically, roadblocks not cleared within two business days are escalated to the Windsor Account Manager.

End of sprint retrospective meetings provide team members with an opportunity to reflect on the development process and suggest ways the continuously improve the efficiency and effectiveness of the team’s Scrum process.

A cumulative flow diagram (CFD) is the primary tool for diagnosing bottlenecks in the software development process. This diagram shows the progress of stories in a sprint through detailed design, development, and testing. This is a standard tool in Lean manufacturing for diagnosing and resolving problems with work in queues.



Another aspect of risk management concerns the practice of prioritizing user stories based on business value. The most high-value—and potentially high risk—user stories are prioritized at the top of the Product Backlog. These are the stories that are picked when a Sprint Backlog is created for a new sprint. The team always works on the remaining stories of highest priority. So, near the end of a project, all of the high-value and medium-value stories have been completed. All that remains are low value stories.

Finally, special attention is paid to the risk of software adoption. Even if an application meets all the functional and technical requirements, end-users may reject the software because it fails to meet their expectations for ease of use. Measures taken to address this risk include:

- Development of user interface prototypes and validation of user interface design standards during the Design and Architecture phase.
- User experience (UX) review sessions are conducted every sprint during the Development phase. The development team engages directly with end-users to get immediate feedback on software usability for new functions and features just developed.
- Frequent software releases allow end-users to interact with the software all during the Development phase. There should be no major surprises when User Acceptance Testing begins.

The goal is to deliver a software application that meets all of the requirements and meets user expectations for usability.

Risk Register

Risks will be logged and tracked through a Risk Register. Windsor and MT DEQ will jointly develop a risk register at the start of the project. The risk register will contain the following:

- A description of a risk events that can occur on the project
- A categorization for the risk event (Technology, Requirements, Funding, Estimating, etc.)
- The probability of the risk events occurrence (e.g., High, Med, Low, or TBD)
- The impact of the risk event on the project (e.g., High, Med, Low, or TBD)
- The conditions or events that can cause the risk
- A proposal to respond to the more serious project risk events.

It is worth noting that in order to reduce the probability and impact of a negative risk or threat, commonly accepted strategies include acceptance, avoidance, mitigation or transference. Alternatively, commonly accepted strategies for increasing the probability and impact of a positive risk or opportunity include acceptance, enhancement, exploitation or sharing. All strategies can be valid and effective, depending on the specific risk in question.

The risk register and risk response plan will be revisited on a periodic basis and any necessary revisions will be made based on new information.

Acknowledgment of General Requirements

Contractor Relationships with State and Other Contractors (RFP Section 3.4.2)

Windsor confirms that it will comply with the requirements for Contractor Relationships with State and Other Contractors, as described in RFP section 3.4.2.

As a systems integrator specializing in environmental information systems for State agencies, Windsor is accustomed to participating in projects that require a high degree of confidentiality resulting from access to sensitive information. Windsor's staff members pride themselves on their professionalism and integrity, and Windsor staff can be expected to adopt a collaborative approach to the project at hand at all times.

Project Management and Reporting (RFP Section 3.4.3)

Windsor confirms that it will comply with the requirements for Project Management and Reporting, as described in RFP section 3.4.3.

Windsor understands and appreciates that DEQ OIT has invested a significant amount of effort in developing and implementing internal standards for Project Management based on the best practices advocated by the Project Management Institute (PMI). Since Windsor also employs the principles advocated by PMI, our approach to project management aligns very well with that of DEQ. Windsor's Project Management staff has extensive experience conducting project efforts according to the principles and best practices embodied by the Project Management Body of Knowledge (PMBOK), and a majority of Windsor's Project Managers have obtained PMP certification.

Contractor Transparency, Accountability, and Responsibility (RFP Section 3.4.4)

Windsor confirms that it will comply with the requirements for Contractor Transparency, Accountability, and Responsibility, as described in RFP section 3.4.4.

Windsor views collaboration as a key vendor behavior on systems integrations project such as this, and will be focused on providing DEQ with maximum transparency to project tasks and deliverables throughout the RIMS project. Windsor understands that some groups within DEQ use Microsoft SharePoint as a tool for fostering collaboration and providing transparency on projects. In addition to the usage of SharePoint, Windsor is also able to offer a number of web-based tools that also support similar goals and can be made available as part of this project. Examples include:

- **Project Website** – Windsor typically hosts and configures a project website for each executed project. The project website supports a directory of participants, a catalog of project deliverables and associated documents (all downloadable at any time), and a repository for status information such as status reports and project work plans.
- **Issue/Bug Tracking** – Windsor uses TeamPulse for comprehensive issue/bug tracking tool. TeamPulse supports logging of issues and the tracking of comments, with support for attached documents as the issue progresses through the issue lifecycle to a resolution. TeamPulse also provides comprehensive searching and reporting capabilities.
- **Help Desk Support** - Windsor has implemented the open source OTRS (<http://www.otrs.com>) Help Desk system to provide a public customer support portal for our products. This is a web-based ticket system that provides users with issue submission and tracking facilities as well as a knowledge base with product documentation and frequently asked questions. This also provides

facilities for email and phone-based ticket submission as required. Tickets can be filed online 24 hours a day, 7 days a week.

Communication Requirements (RFP Section 3.4.5)

Windsor confirms that it will comply with the requirements for Communication, as described in RFP section 3.4.5.

In order to ensure the maximum compatibility with DEQ, Windsor will utilize Microsoft Office products as listed in RFP section 3.4.5 for the creation and maintenance of all documentation deliverables, and Adobe Acrobat for the creation of read-only versions of those deliverables. Windsor is also happy to use the DEQ Microsoft SharePoint instance for team-based collaboration on deliverables, and the State's email system for email-based communication.

Compliance with Federal Standards and Requirements (RFP Section 3.4.6)

Windsor confirms that it will comply with applicable Federal Standards and Requirements, as described in RFP section 3.4.6.

Windsor understands that the one of the goals of the RIMS solution is to increase compliance with State and Federal regulations under various environmental programs. Windsor also understands that the resulting RIMS solution will be considered a "Works Made for Hire" under U.S. Copyright Law.

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Requirements Worksheet (Tab 10)

The Requirements Traceability Matrix (RTM) tables are presented in this section; as directed on page 9 of the RFP, the original and one paper copy are included; the remainder of the copies contain the worksheets on CD.

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