ORIGINAL

State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER	PAGE
EHS10018	1

ADDRESS CORRESPONDENCE TO ATTENTION OF:
ROBERTA WAGNER
304-558-0067

VENDOR
Windsor Solutions, Inc.
26 Center Street
Northampton, MA 01060

SHIP TO
HEALTH AND HUMAN RESOURCES
BPH ENVIRO HLTH SERVICES
CAPITOL AND WASHINGTON STREETS
1 DAVIS SQUARE, SUITE 200
CHARLESTON, WV
25301-1798 304-558-2981

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
08/28/2009				

BID OPENING DATE: 09/24/2009 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	LB		220-34		

TO DEVELOP & IMPLEMENT A CENTRALIZE DATA MODE EXCHAN

REQUEST FOR QUOTATON

TO DEVELOP AND IMPLEMENT A CENTRALIZED DATA NODE EXCHANGE PER THE ATTACHED SPECIFICATIONS.

CONTRACT WILL BEGIN UPON AWARD AND EXTEND FOR A ONE YEAR PERIOD.

EXHIBIT 3

LIFE OF CONTRACT: THIS CONTRACT BECOMES EFFECTIVE ON ..... AND EXTENDS FOR A PERIOD OF ONE (1 YEAR OR UNTIL SUCH "REASONABLE TIME" THEREAFTER AS IS NECESSARY TO OBTAIN A NEW CONTRACT OR RENEW THE ORIGINAL CONTRACT. THE "REASONABLE TIME" PERIOD SHALL NOT EXCEED TWELVE (12) MONTHS. DURING THIS "REASONABLE TIME" THE VENDOR MAY TERMINATE THIS CONTRACT FOR ANY REASON UPON GIVING THE DIRECTOR OF PURCHASING 30 DAYS WRITTEN NOTICE.

UNLESS SPECIFIC PROVISIONS ARE STIPULATED ELSEWHERE IN THIS CONTRACT DOCUMENT, THE TERMS, CONDITIONS AND PRICING SET HEREIN ARE FIRM FOR THE LIFE OF THE CONTRACT.

CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN NOTICE TO THE VENDOR IF THE COMMODITIES AND/OR SERVICES SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM TO THE SPECIFICATIONS OF THE BID AND CONTRACT HEREIN.

RECEIVED
2009 OCT -7 A 9:38
PURCHASING DIVISION
STATE OF WV

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE [signature] TELEPHONE 503-675-7833 DATE Oct. 6, 2009

TITLE Vice President FEIN 93-1245518 ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

GENERAL TERMS & CONDITIONS
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)

1. Awards will be made in the best interest of the State of West Virginia.

2. The State may accept or reject in part, or in whole, any bid.

3. All quotations are governed by the ***West Virginia Code*** and the ***Legislative Rules*** of the Purchasing Division.

4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required $125 fee.

5. All services performed or goods delivered under State Purchase Order/Contracts are to be continued for the term of the Purchase Order/Contracts, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30.

6. Payment may only be made after the delivery and acceptance of goods or services.

7. Interest may be paid for late payment in accordance with the ***West Virginia Code.***

8. Vendor preference will be granted upon written request in accordance with the ***West Virginia Code.***

9. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

10. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.

11. The laws of the State of West Virginia and the ***Legislative Rules*** of the Purchasing Division shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.

12. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.

13. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, the State may deem this contract null and void, and terminate such contract without further order.

14. **HIPAA BUSINESS ASSOCIATE ADDENDUM:** The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (**http://www.state.wv.us/admin/purchase/vrc/hipaa.htm**) is hereby made part of the agreement. Provided that, the Agency meets the definition of a Cover Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.

15. **WEST VIRGINIA ALCOHOL & DRUG-FREE WORKPLACE ACT:** If this Contract constitutes a public improvement construction contract as set forth in Article 1D, Chapter 21 of the West Virginia Code ("The West Virginia Alcohol and Drug-Free Workplace Act"), then the following language shall hereby become part of this Contract: "The contractor and its subcontractors shall implement and maintain a written drug-free workplace policy in compliance with the West Virginia Alcohol and Drug-Free Workplace Act, as set forth in Article 1D, Chapter 21 of the West Virginia Code. The contractor and its subcontractors shall provide a sworn statement in writing, under the penalties of perjury, that they maintain a valid drug-free work place policy in compliance with the West Virginia and Drug-Free Workplace Act. It is understood and agreed that this Contract shall be cancelled by the awarding authority if the Contractor: 1) Fails to implement its drug-free workplace policy; 2) Fails to provide information regarding implementation of the contractor's drug-free workplace policy at the request of the public authority; or 3) Provides to the public authority false information regarding the contractor's drug-free workplace policy."

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division.

2. **SPECIFICATIONS:** Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.

3. Complete all sections of the quotation form.

4. Unit prices shall prevail in case of discrepancy.

5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.

6. **BID SUBMISSION:** All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications: Department of Administration, Purchasing Division, 2019 Washington Street East, P.O. Box 50130, Charleston, WV 25305-0130

State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER	PAGE
EHS10018	2

ADDRESS CORRESPONDENCE TO ATTENTION OF:
ROBERTA WAGNER
304-558-0067

VENDOR
RFQ COPY
TYPE NAME/ADDRESS HERE

SHIP TO
HEALTH AND HUMAN RESOURCES
BPH ENVIRO HLTH SERVICES
CAPITOL AND WASHINGTON STREETS
1 DAVIS SQUARE, SUITE 200
CHARLESTON, WV
25301-1798 304-558-2981

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BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THE STATE MAY DEEM THE CONTRACT NULL AND VOID, AND TERMINATE SUCH CONTRACT WITHOUT FURTHER ORDER.

THE TERMS AND CONDITIONS CONTAINED IN THIS CONTRACT SHALL SUPERSEDE ANY AND ALL SUBSEQUENT TERMS AND CONDITIONS WHICH MAY APPEAR ON ANY ATTACHED PRINTED DOCUMENTS SUCH AS PRICE LISTS, ORDER FORMS, SALES AGREEMENTS OR MAINTENANCE AGREEMENTS, INCLUDING ANY ELECTRONIC MEDIUM SUCH AS CD-ROM.

REV. 05/26/2009

INQUIRIES:
WRITTEN QUESTIONS SHALL BE ACCEPTED THROUGH CLOSE OF BUSINESS ON 9/8/2009. QUESTIONS MAY BE SENT VIA USPS, FAX, COURIER OR E-MAIL. IN ORDER TO ASSURE NO VENDOR RECEIVES AN UNFAIR ADVANTAGE, NO SUBSTANTIVE QUESTIONS WILL BE ANSWERED ORALLY. IF POSSIBLE, E-MAIL QUESTIONS ARE PREFERRED. ADDRESS INQUIRIES TO:

ROBERTA WAGNER
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON STREET, EAST
CHARLESTON, WV 25311

FAX: 304-558-4115
E-MAIL: ROBERTA.A.WAGNER@WV.GOV

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
[signature]	503-675-7833	Oct. 6, 2009

TITLE	FEIN	ADDRESS CHANGES TO BE NOTED ABOVE
Vice President	93-1245518	

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

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NOTICE

A SIGNED BID MUST BE SUBMITTED TO:

DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
BUILDING 15
2019 WASHINGTON STREET, EAST
CHARLESTON, WV 25305-0130

PLEASE NOTE: A CONVENIENCE COPY WOULD BE APPRECIATED.

THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF THE ENVELOPE OR THE BID MAY NOT BE CONSIDERED:

SEALED BID

BUYER:----------RW/FILE 22----------

RFQ. NO.:----------EHS10018----------

BID OPENING DATE:----9/24/2009----------

BID OPENING TIME:----1:30 PM----------

PLEASE PROVIDE A FAX NUMBER IN CASE IT IS NECESSARY TO CONTACT YOU REGARDING YOUR BID:

503-675-7804

CONTACT PERSON (PLEASE PRINT CLEARLY): Kevin Jeffery

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE Kevin Jeffery | TELEPHONE 503-675-7833 | DATE Oct. 6, 2009

TITLE Vice President | FEIN 93-1245518 | ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

State of West Virginia
Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER	PAGE
EHS10018	4

ADDRESS CORRESPONDENCE TO ATTENTION OF:
ROBERTA WAGNER
304-558-0067

VENDOR
RFQ COPY
TYPE NAME/ADDRESS HERE

SHIP TO
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CAPITOL AND WASHINGTON STREETS
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LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT

****** THIS IS THE END OF RFQ EHS10018 ****** TOTAL: $395,805

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE [signature] TELEPHONE 503-675-7833 DATE Oct. 6, 2009

TITLE Vice President FEIN 93-1245518

ADDRESS CHANGES TO BE NOTED ABOVE

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Request for Quotation

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DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
09/21/2009				

BID OPENING DATE: 10/07/2009 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT

ADDENDUM NO. 1

1. QUESTIONS AND ANSWERS ARE ATTACHED.
2. TO MOVE BID OPENING DATE FROM 9/24/2009 TO 10/7/2009.
3. ADDENDUM ACKNOWLEDGEMENT IS ATTACHED. THIS DOCUMENT SHOULD BE SIGNED AND RETURNED WITH YOUR BID. FAILURE TO SIGN AND RETURN MAY RESULT IN DISQUALIFICATION OF YOUR BID.

EXHIBIT 10

REQUISITION NO.: EHS10018

ADDENDUM ACKNOWLEDGEMENT

I HEREBY ACKNOWLEDGE RECEIPT OF THE FOLLOWING CHECKED ADDENDUM(S) AND HAVE MADE THE NECESSARY REVISIONS TO MY PROPOSAL, PLANS AND/OR SPECIFICATION, ETC.

ADDENDUM NO.'S:

NO. 1 .....

NO. 2 .....

NO. 3 .....

NO. 4 .....

NO. 5 .....

I UNDERSTAND THAT FAILURE TO CONFIRM THE RECEIPT OF THE ADDENDUM(S) MAY BE CAUSE FOR REJECTION OF BIDS.

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE [signature] TELEPHONE 503-675-7833 DATE Oct. 6, 2009

TITLE Vice President FEIN 93-1245518 ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

State of West Virginia
Department of Administration
Purchasing Division
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Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER	PAGE
EHS10018	2

ADDRESS CORRESPONDENCE TO ATTENTION OF:
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304-558-0067

VENDOR:
RFQ COPY
TYPE NAME/ADDRESS HERE

SHIP TO:
HEALTH AND HUMAN RESOURCES
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CAPITOL AND WASHINGTON STREETS
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09/21/2009				

BID OPENING DATE: 10/07/2009 BID OPENING TIME 01:30PM

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT

VENDOR MUST CLEARLY UNDERSTAND THAT ANY VERBAL REPRESENTATION MADE OR ASSUMED TO BE MADE DURING ANY ORAL DISCUSSION HELD BETWEEN VENDOR'S REPRESENTATIVES AND ANY STATE PERSONNEL IS NOT BINDING. ONLY THE INFORMATION ISSUED IN WRITING AND ADDED TO THE SPECIFICATIONS BY AN OFFICIAL ADDENDUM IS BINDING.

[signature]
SIGNATURE

Windsor Solutions, INC
COMPANY

10/6/09
DATE

REV. 11/96

END OF ADDENDUM NO. 1

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE	TELEPHONE	DATE
[signature]	503-675-7833	Oct. 6, 2009

TITLE	FEIN	
Vice President	93-1245518	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

State of West Virginia
Department of Administration
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VENDOR
RFQ COPY
TYPE NAME/ADDRESS HERE

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LINE	QUANTITY	UOP	CAT NO	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	LB		220-34		$395,805
	TO DEVELOP & IMPLEMENT A CENTRALIZE DATA MODE EXCHAN					
	****** THIS IS THE END OF RFQ EHS10018 ****** TOTAL:					$395,805

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE [signature] TELEPHONE 503-675-7833 DATE Oct. 6, 2009

TITLE Vice President FEIN 93-1245518

ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

RFQ No. EHS10018

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

VENDOR OWING A DEBT TO THE STATE:
West Virginia Code §5A-3-10a provides that: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than one thousand dollars in the aggregate.

PUBLIC IMPROVEMENT CONTRACTS & DRUG-FREE WORKPLACE ACT:
If this is a solicitation for a public improvement construction contract, the vendor, by its signature below, affirms that it has a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the ***West Virginia Code.*** The vendor **must** make said affirmation with its bid submission. Further, public improvement construction contract may not be awarded to a vendor who does not have a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the ***West Virginia Code*** and who has not submitted that plan to the appropriate contracting authority in timely fashion. For a vendor who is a subcontractor, compliance with Section 5, Article 1D, Chapter 21 of the ***West Virginia Code*** may take place before their work on the public improvement is begun.

ANTITRUST:
In submitting a bid to any agency for the state of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the state of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the state of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the state of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership or person or entity submitting a bid for the same materials, supplies, equipment or services and is in all respects fair and without collusion or fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

LICENSING:
Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

CONFIDENTIALITY:
The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in http://www.state.wv.us/admin/purchase/privacy/noticeConfidentiality.pdf.

Under penalty of law for false swearing (***West Virginia Code*** §61-5-3), it is hereby certified that the vendor affirms and acknowledges the information in this affidavit and is in compliance with the requirements as stated.

Vendor's Name: WINDSOR SOLUTIONS, INC

Authorized Signature: [signature] Date: 10/6/09

WINDSOR
SOLUTIONS, INC.

October 6, 2009

Roberta Wagner
State of West Virginia Department of Administration
Purchasing Division
Building 15
2019 Washington Street, East
Charleston, WV 25305-0130

Subject: RFQ No. EHS10018

Dear Ms. Wagner:

Windsor Solutions, Inc. (Windsor) is pleased to submit the enclosed proposal to the West Virginia Department of Health and Human Resources for an Environmental Exchange Node 2.0 and related services. Windsor is uniquely qualified to perform these services for the State of West Virginia and looks forward to discussing this opportunity in more detail.

Please feel free to call if you have questions or need additional information. Again, Windsor appreciates the opportunity to present our qualifications and estimated costs to DHHR.

Yours Sincerely,

Craig Austin

Attachments: Original Proposal, Courtesy Copy

4000 Kruse Way Place • Building 2, Suite 285 • Lake Oswego, Oregon 97035
t 503.675.7833 f 503.675.7804 i www.windsorsolutions.com

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Version Control

Version	Author	Date
1.0	Windsor Solutions	October 7, 2009

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Introduction

Windsor Solutions, Inc. (Windsor) is pleased to submit this proposal to the West Virginia Department of Health and Human Services (DHHR) in response to Request for Quotation #EHS10018. Windsor has read the requirements outlined in the RFQ and amendments, and agrees to the technical and contractual requirements therein. Software proposed in this response adheres to the West Virginia Software Development Requirements.

Windsor understands that the DHHR has been awarded one or more grants with the specific objective of establishing a presence on the Exchange Network and to improve the accuracy, efficiency and real time access to critical data used in the drinking water program. Windsor is uniquely qualified to provide a response to the DHHR; in addition to being a nationally recognized leader in the Exchange Network, Windsor has also worked with state health agencies to address the additional components of DHHR's objectives.

Windsor is a full service information systems consulting firm headquartered in Lake Oswego, Oregon, with offices also in Northampton, Massachusetts. Windsor was founded in 1998 to specialize in the provision of environmental information systems to federal, state, local, and tribal government organizations. Since that time, we are proud to have developed an exceptional national reputation for the delivery of high quality solutions on time and within budget.

As a recognized leader in Exchange Network Node and data flow deployments, Windsor is able to deliver the necessary experience and skills to successfully provide the services required by the RFQ. From its inception, Windsor has been closely involved with the design and implementation of the Exchange Network through design, development and implementation of many Exchange Network based solutions. Some of Windsor's Exchange-Network-specific achievements have been:

- The first engineers to successfully implement a fully functional production Node and the company with the most experience with production Node operation. The majority of the Exchange Network is now powered by Windsor-developed tools and applications.
- Recently selected from among all leading Network Node providers to support the open-source Exchange Network Node. Windsor's Node, already powering the majority of state Exchange Network partners, is now freely available as an open-source product.
- Implementation of many regulatory environmental program data flows including SDWIS, FRS, NEI, AQS, RCRAInfo, PCS-IDEF, UIC, WQX, and TRI.
- Implementation of many innovative new data exchanges between partners that have served to illustrate the potential and potential of the Exchange Network, including the Pacific Northwest Water Quality Data Exchange, Public Water System and Facility Spatial Exchange, eManifest, and the Homeland Emergency Response Exchange (HERE).
- Leaders in the advanced technologies and practical application of Web services, XML data exchange, data warehousing, and automated data cleansing.

Windsor has been developing and implementing Network Nodes for partners since 2003, for both .NET and Java environments. During that time, Windsor's Node has evolved through multiple iterations to accommodate the advances in the underlying technologies, as well as Windsor's ever expanding experience with challenging and new and innovative data exchanges. The following figure illustrates this version evolution.

Windsor's latest Node, OpenNode2, offers significant functional and architectural improvements over earlier versions of Windsor's Node, which have been deployed by an estimated[1] 40 Exchange Network partners. OpenNode2 is able to simultaneously support data exchanges with Exchange Network partners operating either 1.1 or 2.0 Nodes.

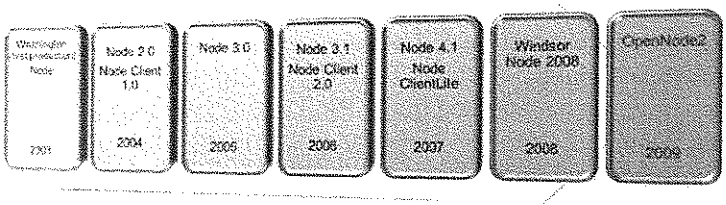

Figure 1 - Node Evolution

The list of Exchange Network partners using the Windsor Node continues to grow. As of this writing, current (known) Network partners who have migrated to the **Node 2.0** specifications with a Windsor Node include:

Arizona Department of Environmental Quality	Montana Department of Environmental Quality
Arkansas Department of Environmental Quality	Nebraska Department of Environmental Quality
California Climate Action Registry	Nevada Division of Environmental Protection
Colorado Department of Public Health and Environment	New York Department of Environmental Conservation
Hawaii State Department of Health	New York Department of Health
Idaho Department of Environmental Quality	North Dakota Department of Health
Idaho Department of Water Resources	Pollution Prevention Resource Council
Iowa Department of Natural Resources	United States Geological Survey
Kansas Department of Health and Environment	Washington Department of Ecology
Minnesota Pollution Control Agency	Wyoming Department of Environmental Quality
Missouri Department of Natural Resources	

DHHR is at a critical juncture as a participant in the Exchange Network. With this project DHHR will be setting a course by investing in a single Node technology and architecture. This decision will not only determine the level of success in achieving the goals of this project, but may dramatically affect the agency's ability to flourish over the next decade of Network expansion. DHHR needs to commit to a Node solution that is high quality but also has an assured future. OpenNode2 is the predominant Node on the Network, and since becoming community owned by the Network, is on track to become the sole assured Node alternative for the Network.

In addition to our demonstrated leadership with the Exchange Network, Windsor also has extensive experience with drinking water quality information systems. Windsor has installed and configured the

[1] Windsor has embraced the principles of open source sharing of Nodes with all prior releases of the Windsor Node, and made them easily available for download and installation. There are believed to be some installations of these Nodes that occurred without any direct involvement from Windsor of which we have not been made aware. This estimate of Node implementations is conservative.

SDWIS data exchange for many Exchange Network participants, including Colorado DPHE, Iowa DNR, Kansas DHE, Montana DEQ, and Nevada DEP to name a few.

Outside of the Exchange Network, Windsor designed a secure web-based portal for the entry and submittal of drinking water lab data to the New Mexico Environment Department (NMED). NMED's internal staff, working closely with Windsor staff, built the portal, and Windsor built the first application hosted by this portal, the Sample Collector data entry application. Additionally, Windsor has completed a project between New York's Department of Environmental Conservation and Department of Health to provide two-way synchronization of groundwater data between both departments. Windsor is also working with the State of Hawaii to develop and implement a visually appealing and easy to use web-based map viewer to display drinking water facilities and related details. More detail on these projects and others can be found in the *Previous Work Experience* section later in this proposal.

As the leading consultancy for the Exchange Network, authors of OpenNode2, and with expertise directly relevant to this project, Windsor feels confident that by partnering in this endeavor, DHHR will be assured success in achieving the immediate goals of this project, while also being ideally positioned to sustain and expand its Network presence in the coming decade.

To assist the DHHR with the evaluation of Windsor's response it has been organized as follows:

Vision	Describes how Windsor currently envisions a potential solution for the DHHR.
Previous Work Experience	Describes relevant experience that Windsor brings to this project and demonstrates our ability to completely fulfill the requirements of the RFQ. References are also included for each project discussed.
Approach	Provides a breakdown of the approach that is proposed to satisfy the needs of each of the four main deliverables of the project.
Project Management	Shows Windsor's approach to project management and how Windsor will conduct the project to complete on time, within budget and to a high degree of quality.
Organization	Describes how Windsor will be organized to complete the project including roles and responsibilities of Windsor and the DHHR.
Maintenance and Support	Discusses Windsor's approach to maintenance and support for the life of the contract and any renewals that may occur.
Warranties	Describes Windsor's policy and procedures concerning warranties as applicable to this work.
Policy Compliance	Indicates Windsor's willingness to comply with WV Office of Technology and DHHR policies.
Bid Sheet	Presents Windsor's estimated costs in the format required by the RFQ.

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Vision

Windsor has developed the following vision for the DHHR SDWIS/Node solution:

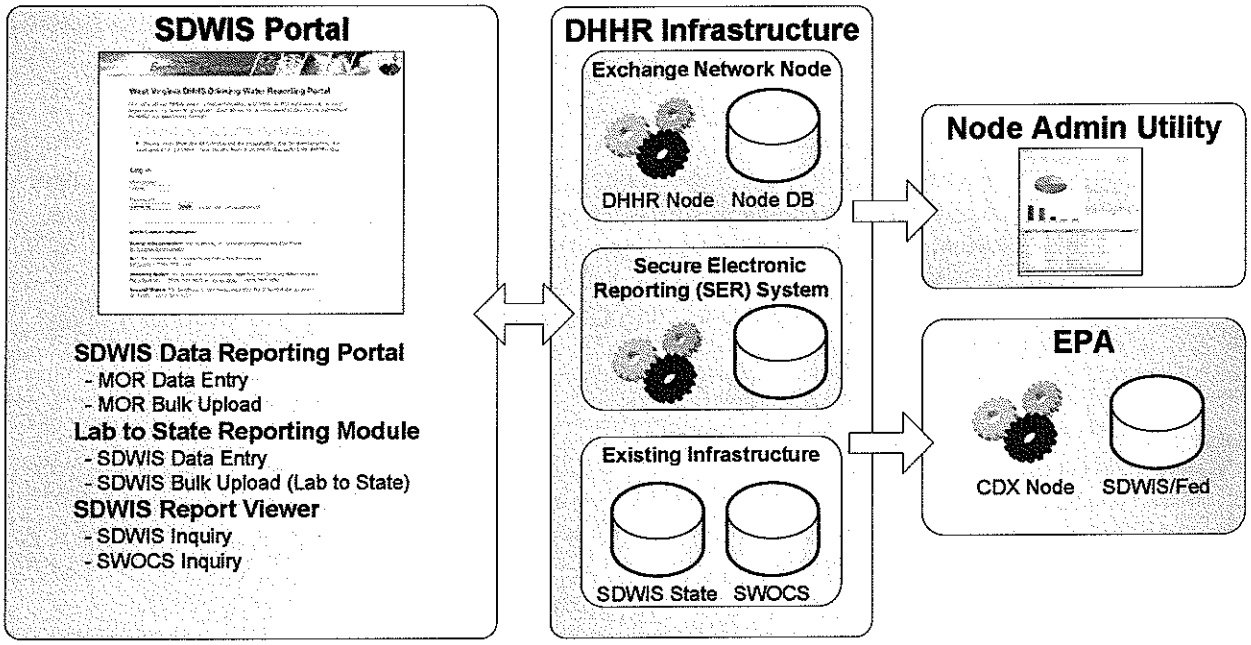


Figure 2 - DHHR Node and EDI Overview

The following major components comprise the solution we envision will meet the needs of the DHHR:

- **Exchange Network Node and Node Admin Utility**
  The Exchange Network Node brokers interactions between the SDWIS Portal, the SER System, designated DHHR internal systems, and data exchange to EPA. The Node Admin Utility is a web-based tool for managing, securing and auditing the Node.

- **SDWIS Portal**
  The primary user interface for business users, the SDWIS Portal will be composed of three major components: the "Lab-to-State" Module, the Monthly Operating Report (MOR) Module, and the SDWIS/SWOCS Inquiry Module. The SDWIS Portal will support single sign-on, requiring only one set of credentials to log in, regardless of the task being performed.

- **Secure Electronic Reporting (SER) System**
  To support CROMERR requirements, the SER System a will meet copy of record, e-signature, non-repudiation, and other CROMERR-related needs.

In addition, the proposed solution will be integrated with DHHR's existing Lab-to-State and SDWIS/State infrastructure. The following sections describe each component in more detail.

Exchange Network Node

Windsor proposes the use of the Java implementation of OpenNode2 to satisfy the technical requirements of the RFQ. OpenNode2 is a freely downloadable and distributable package of open source software components developed by Windsor under contract to the Environmental Council of States (ECOS).

OpenNode2 Components

OpenNode2 deployment supports both v1.1 and v2.0 specifications of the Exchange Network and utilizes a common data store to manage the normalized metadata for both implementations. This approach, unique to OpenNode2, ensures the flexibility to smoothly transition current flows to the new 2.0 implementation.

The following table describes the main components of the OpenNode2 solution.

	**Node Web Service (v. 1.1)** Responsible for exposing Exchange Network 1.1-specific services. This interface intercepts external requests conveyed over SOAP 1.1 protocol, transforms the requests into a Node Common Message Format (CMF) and relays these messages to the Node Orchestration Service (NOS) for further processing. Similarly, this interface is also responsible for transforming any results of previous NOS invocation into EN 1.1 specific message format. This bi-directional transformation occurs regardless of whether the orchestration service returns a successful response or CMF-specific invocation exception.
	**Node Web Service (v. 2.0)** Responsible for exposing Exchange Network 2.0-specific services. This interface intercepts external requests conveyed over SOAP 1.2 protocol, transforms these requests into a Node CMF and relays these messages to the NOS for further processing. Similarly, this interface is also responsible for transforming any results of previous NOS invocation into EN 2.0 specific message format. This bi-directional transformation occurs regardless of whether the orchestration service returns a successful response or CMF-specific invocation exception.
	**Node Administrative Application** Allows for management of the NOS. This web-based application provides a user interface (UI) to the otherwise transparent Exchange Network operations. Its sole purpose is to manage the Node configuration, activity, and security, as well as to provide an easy interface to monitoring the Node solution's overall health.
	**Node Orchestration Service** The NOS is a GUI-less application responsible for processing all of the CMF requests from the Node Web Service interfaces (regardless of their versions) as well as supporting all Node Administrative Application (NAA) functionality. The NOS itself consists of many smaller logical components: • Metadata manager • Schedule manager • Document manager • Request processor • EN client • Security manager • Plugin manager The NOS also consists of countless providers. These are NOS extensions responsible for providing specific types of functionality. These extensions can be easily replaced and further customized to satisfy the specific requirements of a particular deployment.
	**Node Metadata Repository** All aspects of the NOS run-time configuration, as well as its activity and, depending on the deployment, binary content, is stored in a relational database. This metadata repository is accessed only by the NOS.

	The OpenNode2 metadata database schema is distributed as part of the OpenNode2 open source solution and has been successfully reviewed and utilized by the numerous organizations where it has been implemented. The OpenNode2 metadata database schema is designed to be both simple and portable across several popular database providers, and, in that context, contains only database tables; it actively avoids the use of stored procedures, views, triggers, and more complex database structures and features.

In addition, OpenNode2 does not require any software to be installed on client machines that access the Node Administration application since the application can be accessed from any computer or device using a standard Internet browser (IE, Firefox, Chrome, etc.).

Security

Because of its intrinsic deployment flexibility, the existing DHHR infrastructure should not require any modifications to deploy OpenNode2 at full capacities. Once installed and configured at DHHR, OpenNode2 will fully comply with the security policies defined by DHHR and the State of West Virginia.

OpenNode2 has been developed from the ground up with security and robustness in mind. Its metadata and documents are stored in a secure data stores to assure ease of backups and clustering support. The security model utilized by OpenNode2 is based on the Exchange Network-sanctioned National Authentication and Authorization Services (NAAS). All its external communication is being performed over secure-socket layers (SSL).

Lastly, OpenNode2 has been designed and developed from its inception to avoid common security threats such as denial-of-service and SQL injection attacks.

OpenNode2, in addition to its standard authentication protocols, also fully supports flow-level authorization based on security policies all the way down to operation-level (e.g., Submit, Solicit but not Download, etc.).

User access to Node flows and operations is easily managed via the OpenNode2 Web Administration interface. The security section of that interface is available only to OpenNode2 administrators, and will allow DHHR IT staff to restrict DHHR program users from accessing flows outside their business scope and restrict users to only operations within that flow for which permissions have been specifically granted. These user-based security policies are applied universally to both users that access the Node through the web administration interface and users that access the Node through either Node web service endpoint (v1.1 and v2.0). These security policies ensure that Node users are unable to impact flows other than those for which they have been granted specific permissions.

Deployment

The flexibility of the OpenNode2 allows for a wide array of deployment options. In its simplest of implementations, the OpenNode2 can be deployed on a single physical machine including its built-in data store. On the other end of the deployment spectrum is the distributed and clustered implementation wherein the main components of the OpenNode2 architecture are distributed across multiple physical machines and environments.

As a testimony to the flexibility of the OpenNode2 architecture, the aforementioned single-server implementation can be migrated to the distributed model with configuration changes alone and require no programmatic changes or code recompiling.

The following diagram illustrates the distributed model:

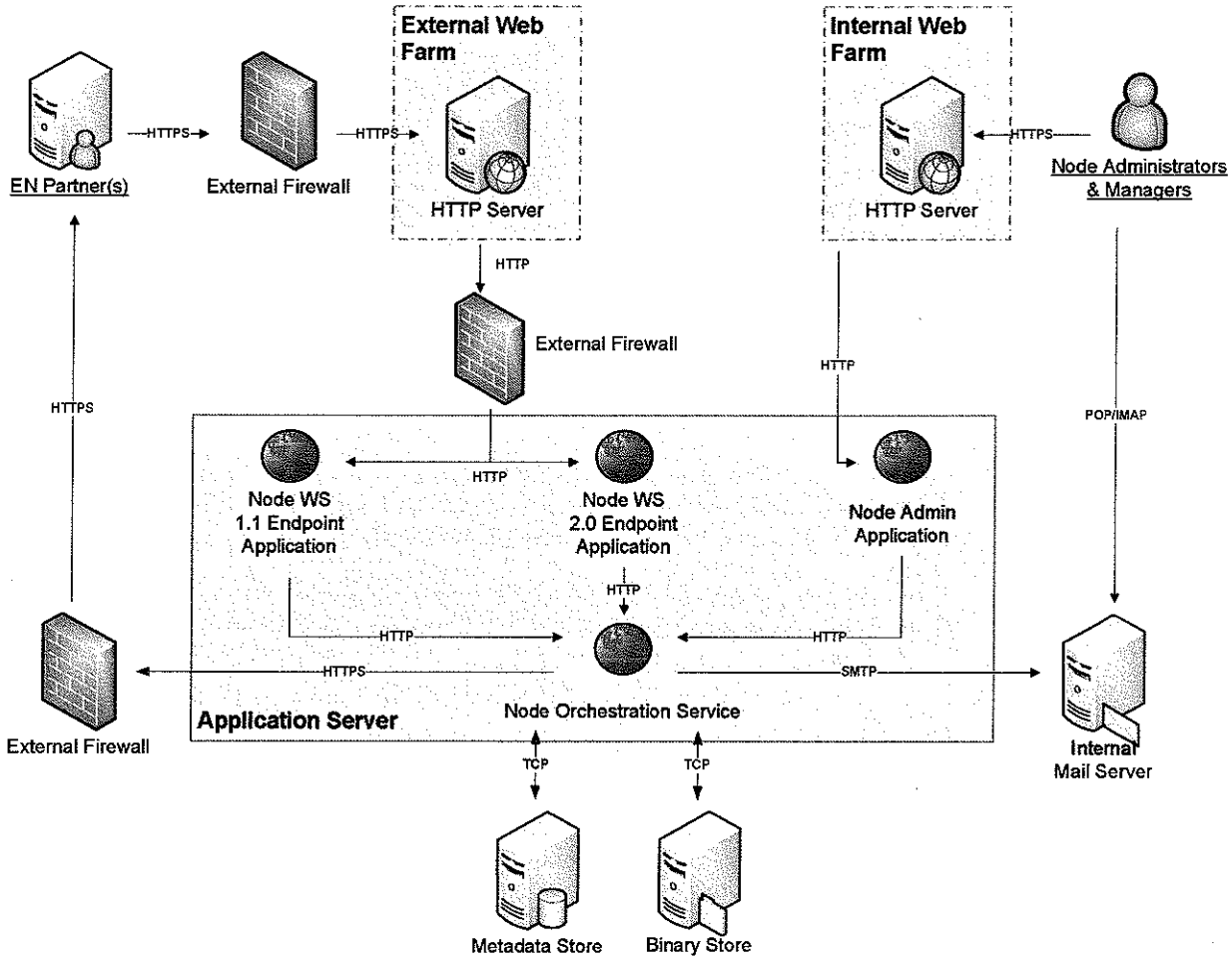


Figure 3 - OpenNode2 Distributed Deployment

While Windsor does not have an intimate understanding of the DHHR network topology at this point, based on the requirements in the RFQ, Windsor assumes that the NOS will be hosted from inside the DHHR intranet, while the Node Web Services are hosted from the DHHR DMZ behind one or more firewalls.

Furthermore, depending on the DHHR's preferences, the OpenNode2 Administrative Interface can be hosted either along with the Web Services to ensure ease of remote access or from the Intranet to further limit the physical access.

Windsor is well versed in preparing and deploying OpenNode2 solutions quickly and efficiently in a variety of complex business environments and network topologies with minimal disruption of existing organizational workflows and processes. The OpenNode2 features and flows have been fully stress-tested and proven in production environments in approximately 20 unique state and tribal organizations to-date.

SDWIS Portal

The SDWIS Portal is envisioned to be the primary user interface for SDWIS data reporting and inquiry. It is composed of three modules; the Lab-to-State (L2S) Module, the Monthly Operating Report (MOR) Module, and the SDWIS/SWOCS Viewer. Each module is described in the following sub-sections.

Lab-to-State (L2S) Module

The L2S Module will support the Drinking Water sampling lifecycle by allowing Web-based entry of sample data, Web-based entry of lab analysis results, and XML-based services for submitting lab data using 'Lab-to-State' – an extension of SDWIS. The module will allow users to submit their SDWIS data to SDWIS/State whether via a bulk load capability or via a manual data entry task.

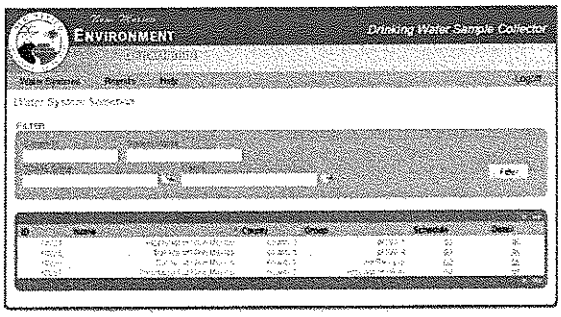


Figure 4 - Example Water System Selection Form

Users will first of all visit the DHHR SDWIS Portal, where they will be authenticated through a CROMERR compliant security module (see Security – below). Once within the Portal, the authorized users will have the ability to perform bulk uploads or to manually enter sample-related data.

Users preferring to use the bulk upload capabilities already supported by Lab-to-State (typically larger organizations or state run laboratories with their own systems environment) will be able to submit and CROMERR-certify bulk uploads via Lab-to-State utilizing the capabilities already known to be available within the Lab-to-State product.

Users requiring the ability to perform manual entry of lab results will have the opportunity to utilize a user interface designed specifically for that purpose, allowing them to select the water system, sampling point within that system, and the results of the chemical and/or bacteriological analyses that were performed. Alternatively, if required by DHHR, the sample can be looked up using a unique tracking number, and its results entered (an approach utilized by many states). Windsor expects that the user interface to support manual entry of sample results will utilize the SDWIS/Lab-to-State data upload mechanism and CROMERR compliance functionality in order to load the entered data into SDWIS and certify the entry. This ensures a consistent approach to validation end certification of sample results data, while also capitalizing on the existing capabilities of Lab-to-State.

Additionally, SDWIS/Lab-to-State natively supports several data upload formats and is capable of supporting additional data formats through the inclusion of custom developed data source plugins. The "stock" data formats that are supported are:

- XML document formatted according to the SDWIS_eDWR_v2.0 schema.
- XML document formatted according to the SDWIS_Summary_v2.0 schema.
- XML document formatted according to the SDWIS_SummaryResult_v2.0 schema.
- XML document formatted according to the SDWIS_MDBPSummary_v2.0 schema.
- Comma separated value (CSV) file formatted as defined by the system configuration.
- Direct query access to relational database tables.

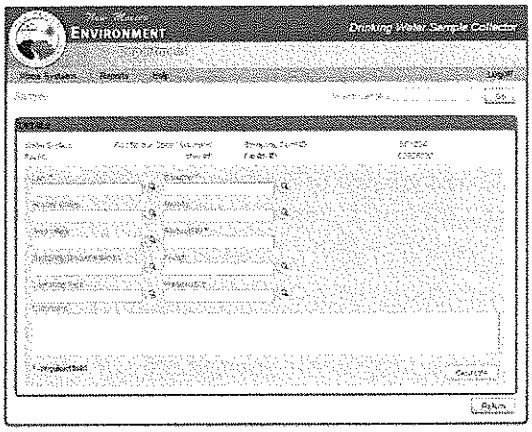


Figure 5 - Example Sample Collection Form

Windsor has significant experience working with other states to define how best to integrate SDWIS/Lab-to-State with state-owned software. Most notably, Windsor worked with New Mexico Environment Department (NMED) to define how SDWIS/Lab-to-State would integrate with the NMED Secure Portal. The findings of this effort, along with practical experience utilizing and integrating with the SDWIS suite of products,

places Windsor in a unique position of having both the knowledge and experience required to fully integrate SDWIS/Lab-to-State with DHHR resources.

Monthly Operational Reports (MOR) Module

The MOR module will reside within the SDWIS Portal and will be supported by the same CROMERR services as the other modules. A new XML schema will be designed in collaboration with DHHR staff to support the needs of the reporting process. Users will then be given the option within the Portal to submit electronic versions of MORs in bulk to SDWIS/State or to manually enter one or more MORs.

Data entry will be available to support submission of the following four monthly reports:

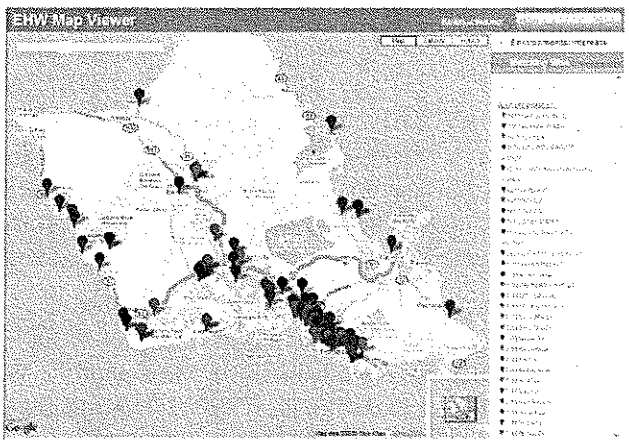
1. Groundwater Systems Form (3 pages)
   - EW 103
   - Well Pumping Log
   - EW 103A
2. Purchase Systems Form (2 pages)
   - EW 210
3. Surface Water Series Form (7 pages)
   - EW 90
   - EW 90A
   - EW 90B
   - EW 90C
4. Fluoride Form (1 page)
   - EW 80

The CROMERR module will allow for the retention of a copy of record while the XML file will allow for transportation of the necessary information into SDWIS/State.

SDWIS/SWOCS Viewer

Windsor proposes a SDWIS/SWOCS viewer designed to satisfy the RFQ's identified needs while positioning DHHR to incorporate more advanced capabilities in the future. A SDWIS viewer is a valuable tool to individuals within DHHR as well as to water and wastewater operators, well drillers, and pump installers. Therefore, an interface that will cater to the internal needs in the future as well as other stakeholders will become valuable.

Initially the information to be provided would be limited to certifications held, the date of issue, date of expiration, and continued education hours credited for an individual. However, the structure of the interface would ensure that additional search capabilities could be included as well as the potential for the provision of both tabular and spatial datasets in response.



The ability to view environmental interest information in a spatial manner allows users to view relevant information in context with other available and relevant information. While this map viewer (an example of which is shown to the right) is not part of the initial scope, it demonstrates how such a tool might be useful and how the provision of an appropriately secure map viewer for SDWIS information could spark interest from other groups in the state to be able to inquire on other relevant areas of interest.

CROMERR Compliance

The RFQ involves designing, developing, and implementing a reusable Cross-Media Electronic Reporting Regulation (CROMERR) compliant architecture for deliverables 2, 3, and 4 that includes electronic signature and copy of record components.

Windsor proposes a CROMERR solution based upon the recently designed Secure Electronic Reporting (SER) system that is designed to be CROMERR compliant. This Java based solution was designed for the State of New York to be a flexible and configurable component-based, service-oriented framework that allows for use in varying applications, while encapsulating the details of signatures, the signing process, and the management of signed documents. A clear separation of components allows for tight control at the agency level while also allowing for the accommodation of application- specific needs.

The solution as described above contains several components.

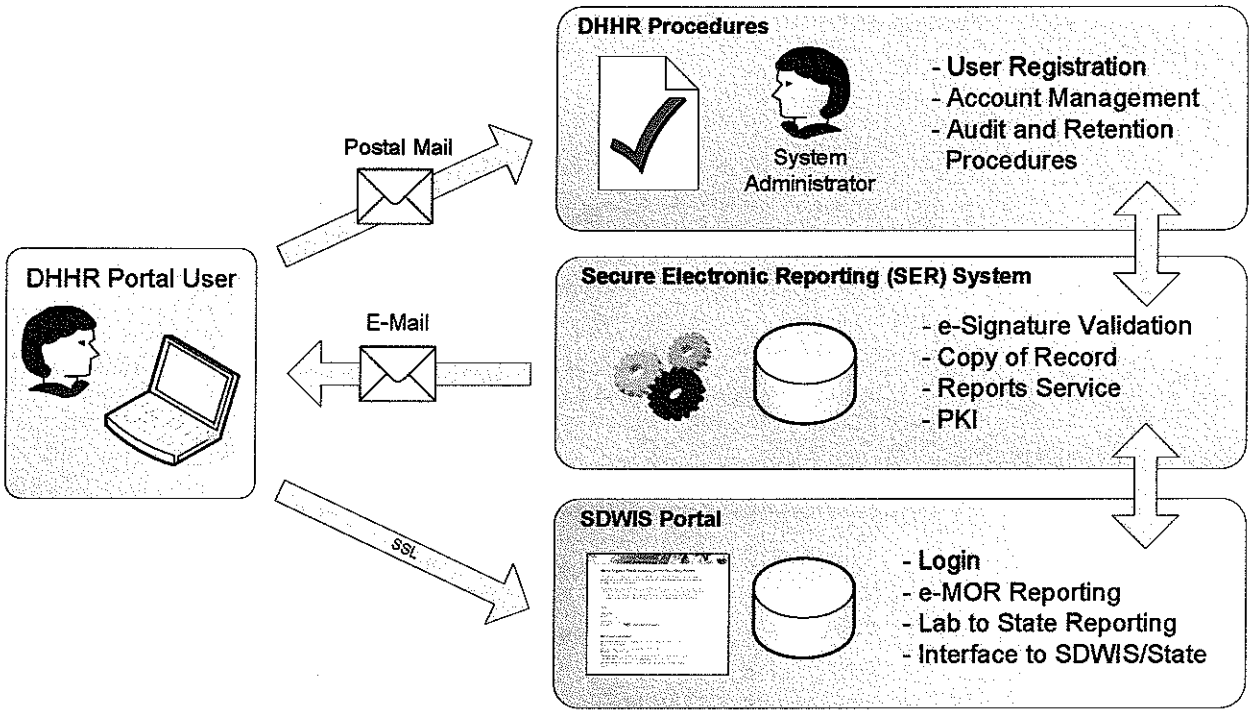


Figure 6 - CROMERR Overview

The Signatory Registration component defines how a subscriber becomes a signatory for electronic reporting purposes. A signatory must be registered and have authorized signing privileges. To become a signatory an individual must follow a specific work flow:

- Registration Application
- Identity Proofing
- Form Storage
- Access Configuration
- Establish Signatory Permissions
- Confirm Signatory
- Issue Credentials

The Secure Electronic Reporting (SER) system will support DHHR and the needs of this project by:

- Ensuring identity upon document signing
- Ensuring integrity of the document upon submittal and future retrieval

- Providing document retrieval, history, and chain of custody for all signed documents
- Activity monitoring, including notification to subscriber and administrator of all activity
- Checking for intrusion detection, including notifications to appropriate signatories and registration authorities if compromise is suspected
- Providing a public key infrastructure (PKI) that acts as the sub-system for managing digital signatures
- Notifying a signatory of all submission activity

The SDWIS Portal refers to the modules necessary to support deliverables 2, 3, and 4. These modules are described in earlier sections of the proposed vision.

Previous Work Experience

Windsor has extensive experience working with the Exchange Network and with the SDWIS data flow. Additionally Windsor is involved with the State of New Mexico for whom a design was recently established to perform almost exactly the same project envisioned by the State of West Virginia. The following section describes Windsor's experience and how it relates to the deliverables defined in the RFQ.

Environmental Council of States – OpenNode2

Relevance

- Vendor of OpenNode2, the open source Node that provides support for both the Node 2.0 and Node 1.1 Protocol and Specification
- Provision of a Java Node
- Selected in open competition against all leading Node vendors
- Predominant Node available on the Exchange Network
- Experience deploying Exchange Network Nodes to Java, Oracle sites.

Details

In 2009, several state environmental agencies received a 2008 Exchange Network grant from U.S EPA to procure an open source 2.0 Node that is freely available for any Exchange Network partner.

Windsor was chosen to support the Open Source Sharable Exchange Network Node project. Windsor's latest Network Node solution was selected by a broad consortium of leading Network agencies during an open, thorough and competitive bid process that included proposals from all the leading Network Node solutions available. Windsor's recently released open source node, coined "OpenNode2," is being funded through this 2008 multi-state Challenge Grant and is allowing states, counties, and tribal groups to exchange data with EPA and other Exchange Network partners at a substantially reduced cost.

The project stakeholders set out to make available Exchange Network Nodes that will: comply with the Node 2.0 technical specification; provide robust administrative functionality; and be made freely available to other Exchange Network partners. Windsor has produced both a .NET and a Java version of OpenNode2 to maximize opportunities for reuse. The Nodes include features such as:

- Support for both the Node 2.0 and Node 1.1 Protocol and Specification
- A Node installation package
- Full documentation on the Node, including system requirements, user's guide, and installation instructions
- The ability to configure Exchange Network and other data flows for use on either the .NET or Java version
- Support for SQL and Oracle backend staging databases
- A web-based Node Administration application
- Tools to allow users to easily configure and implement Exchange Network and other data flows.

Since the inception of the Network, Windsor has been on the forefront of Node development and Exchange Network innovation, having developed several of the most successful data exchanges on the Network. Many of these exchanges are available currently along with the open source OpenNode2, which is provided along with plugins needed to implement the FRS, NEI, AQS, WQX, SDWIS, and RCRAInfo Handler data flows. Many other flows are currently in development include the HERE, FacID, EIS, Beaches, RCRA CME, ICIS-NPDES, TRI, UIC, and due to be released in the near future.

Please see http://www.exchangenetwork.net/opennode2.htm for further information.

Deployments of Windsor's latest Node have been completed or are currently underway in many agencies nationwide. Windsor has implemented Network Nodes for many Exchange Network partner organizations, and the following table illustrates our current known deployments.

The table below lists the currently known deployments of Windsor Nodes on the Exchange Network. As the Node has been available as an open source product for several months now, other agencies and tribes unknown to Windsor have self-deployed OpenNode2, and these numbers are constantly increasing.

Exchange Network Partner	.NET		Java	
	1.1	2.0	1.1	2.0
Alaska Department of Environmental Conservation	■			
Arizona Department of Environmental Quality		■		
Arkansas Department of Environmental Quality		■		
California Climate Action Registry		■		
California Environmental Protection Agency	■			
Colorado Department of Public Health and Environment		■		
Connecticut Department of Environmental Protection	■			
Georgia Department of Natural Resources			■	■
Gulf of Maine Ocean Observing System		■		
Hawaii Department of Health	■	■		
Idaho Department of Water Resources		■		
Iowa Department of Natural Resources	■	■		
Illinois Environmental Protection Agency	■			
Kansas Department of Agriculture	■			
Kansas Department of Health and Environment	■	■		
Marianas Islands Department of Environmental Quality	■			
Massachusetts Department of Environmental Protection	■			
Minnesota Pollution Control Authority		■		
Missouri Department of Natural Resources			■	■
Montana Department of Environmental Quality		■		
Nebraska Department of Environmental Quality	■	■		
Nevada Division of Environmental Protection	■	■		
New Mexico Environment Department			■	■
New York Department of Environmental Conservation				■
New York Department of Health				■

Exchange Network Partner	.NET		Java	
	1.1	2.0	1.1	2.0
North Dakota Department of Health				
Northwest Indian Fisheries Commission				
Ohio Environmental Protection Agency				
Oklahoma Department of Environmental Quality				
Oklahoma Department of Agriculture				
Pollution Prevention Resource Council				
Snohomish County, Washington				
Stillaguamish Tribe of Indians				
US Geological Survey				
Washington Department of Ecology				
Washington Department of Natural Resources				
Wyoming Department of Environmental Quality				

Windsor Nodes on the Exchange Network

Key

Complete

In Progress

Reference

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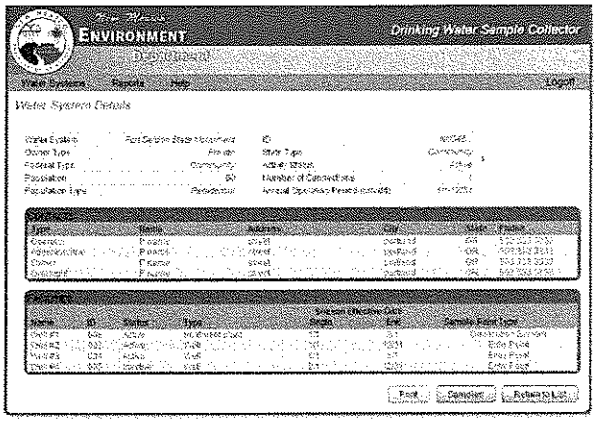
New Mexico Environment Department – Lab Data Exchange Project

Relevance

- Deployment in a Windsor Java Node environment
- Deployment of the SDWIS data flow
- Experience with Lab-to-State
- Electronic Reporting
- Implementation of an Electronic Data Interface for SDWIS
- Familiarity with eDWR XML Schema and SDWIS XML Schema

- Design for CROMERR Compliance
- Experience querying SDWIS/State

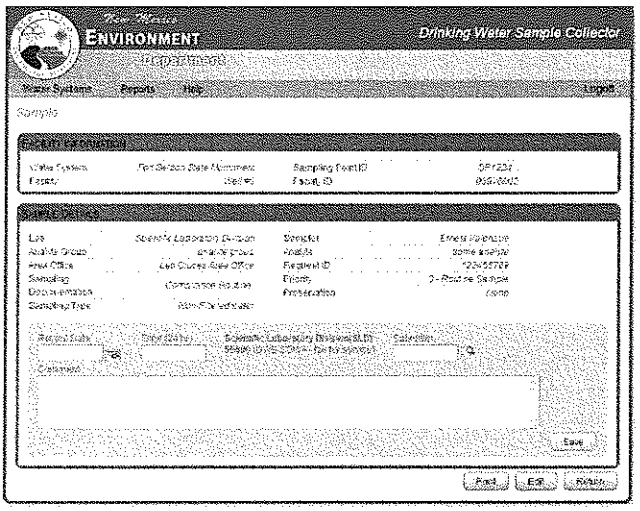


Details

Following the original deployment of an Exchange Network Node and SDWIS data flow in late 2005, Windsor was requested by the New Mexico Environment Department (NMED) to analyze, design, and build a lab data exchange to support the sampling collection and lab results submittal processes.

The NMED contracts with several laboratories for services to analyze drinking water samples for both chemical/metal and bacteriological analysis. The sample collection, data submittal, and data entry systems used a combination of manual and electronic technologies that were time- and resource-intensive. In addition, the disparate systems made it difficult to track water samples that had been collected, sent to the lab for analysis, submitted to NMED, and finally loaded into SDWIS.

NMED wished to standardize the sampling process and reporting by contract laboratories of analytical results for water samples to an electronic format that would facilitate the import of this information into NMED databases. A standards-based, fully functional data exchange solution for water quality data would facilitate the laboratories' efforts to meet their contractual obligations to the NMED and applicable regulatory requirements.



Windsor worked with NMED on a multi-phased project to first perform requirements gathering and analysis and then to complete a Lab Data Exchange design. The design also included the detailed functional design for a secure Web portal through which all externally available applications could be accessed. The portal supports a single login and point of entry for a vendor who may use multiple NMED applications. Windsor's proposed design incorporated the use of the EPA's SDWIS/Lab-to-State tool for the submission of electronic drinking water results. The design incorporated three major tasks.

- Electronic Data Submission
- Sample Result Data Entry
- Sample Collection Data Entry

Windsor has just completed development and production deployment of the sample collection data entry application. NMED has completed development and production deployment of the secure Web Portal, known as SEP (Secure Extranet Portal), and the Sample Collection data entry application is the first application to be made available in production through the SEP portal.

Reference

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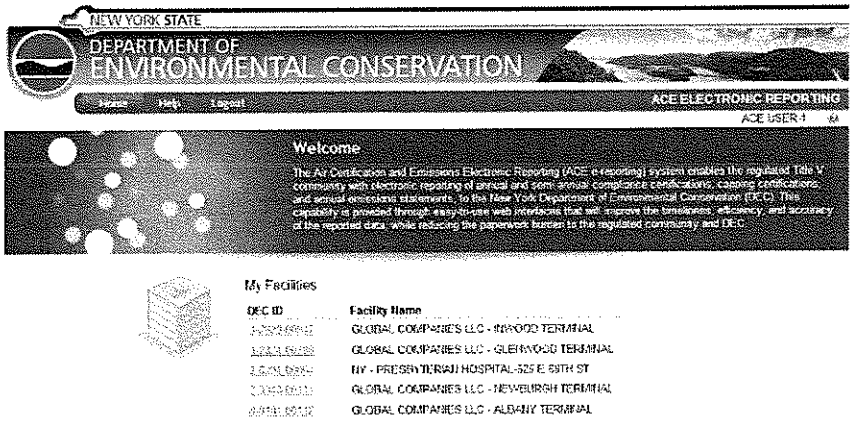
New York Department of Environmental Conservation – Air Compliance Emissions - Electronic Reporting

Relevance

- Electronic Reporting
- CROMERR Module

Details

Federal law mandates that facilities holding Title V operating permits under the Clean Air Act submit compliance certification reports and annual emissions statements to the New York State Department of Environmental Conservation (DEC). Facilities must self-report on their instances of intermittent or continuous compliance for each permit condition within their Title V permit, and facilities must detail their emissions of regulated pollutants from their operations.



The current paper-based process introduces several challenges. The hand-keying of data from all submitted reports into DEC's information management system introduces the potential for human error. Additionally, the data entry process often results in significant lag times between the identification of violations and any appropriate enforcement action. For emissions data, the time consuming data entry and validation process also impacts DEC's ability to meet reporting obligations to EPA's National Emissions Inventory.

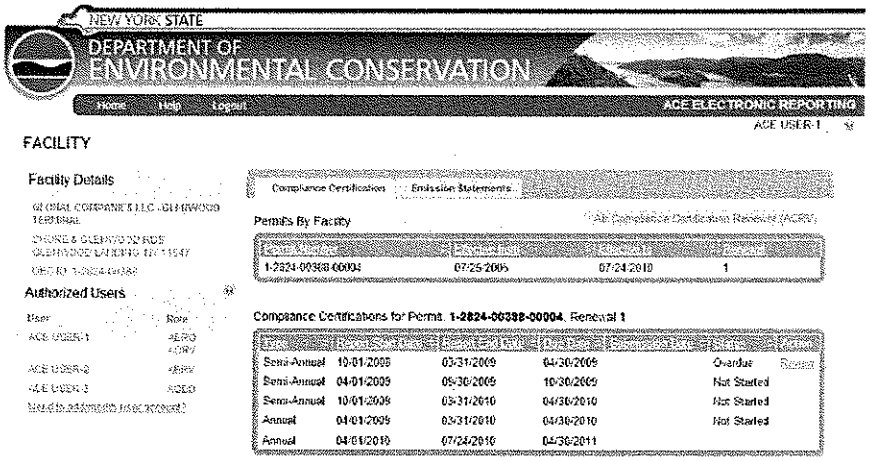
To address challenges presented by the paper-centric reporting process, Windsor and DEC began a project in March 2009 to improve the timeliness, efficiency, and accuracy of the submission of compliance certification reports and annual emissions statements by designing, developing and implementing an Internet-enabled electronic reporting application for permitted Title V facilities – the Air Certification and Emissions Electronic Reporting System (ACE e-reporting system).

An integral part of the project is ensuring that the ACE e-reporting system design meets the needs of the regulated community. This input is critical to the development of a successful, usable application. For that reason, industry representatives were recruited to work with DEC and Windsor to help confirm business requirements and provide input to the application design. This early industry stakeholder involvement helped the project to gain a thorough understanding of the reporting hurdles faced today and how an electronic reporting system can help alleviate these challenges.

The ACE e-reporting system implementation project also involves designing, developing, and implementing a reusable Cross-Media Electronic Reporting Regulation (CROMERR) compliant architecture that meets federal electronic signature and copy of record requirements. The designed architecture provides a flexible and configurable component-based service-oriented framework, allowing for varying electronic reporting application work flows, while encapsulating common signature collection and signed document management details. The clear separation of components helps provide an agency-wide CROMERR compliant solution, while allowing for required customizations at an application specific level.

The development of this new electronic reporting application utilizes a rich Web-based, component-driven J2EE architecture backed by an Oracle database connected through JDBC. The application is configurable through XML for easy maintenance.

The ACE e-reporting system is scheduled for production implementation in early February 2010. DEC looks forward to collecting 2009 annual emission statements through the agency's first electronic reporting application.



Reference

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New York Department of Health and Department of Environmental Conservation – Groundwater Data Exchange Project

Relevance

- Implementation of OpenNode2, the open source Node that provides support for both the Node 2.0 and Node 1.1 Protocol and Specification
- Deployment of a Java Node
- Implementation on an Oracle 10g database
- Deployment of the SDWIS data flow

Details

The New York State Department of Health (DOH) and New York State Department of Environmental Conservation (DEC) received funding under the EPA Exchange Network Grant program to develop a Groundwater Data Exchange (GWDX). The objective of the GWDX project is to increase the effectiveness of the New York State Brownfield and Groundwater GIS program, which supports and enhances the remediation, protection and management of groundwater resources in the State of New York. Multiple new Exchange Network data exchanges were developed to provide program staff in each agency with greater access to the information they need to coordinate environmental and public health program efforts to protect resources and respond to contamination.

Through the GWDX project, DEC and DOH designed and developed several innovative new data flows over the Exchange Network. Data exchanges from DOH to DEC include drinking water quality information and geospatial public water supply area locations, while data exchanges from DEC to DOH include regulated facility details, remediation sites, and hazardous materials spill information. Most of these new data flows were designed and built from scratch including the development of new XML schema, flow configuration specifications, and the necessary data service components implemented on

each organization's Exchange Network Nodes. When implementing the SDWIS data flow Windsor utilized the files generated through FedRep and passed these to the exchange partner via the DEC Node. The data flows between the two agencies improve program effectiveness by increasing the speed, timeliness, and efficiency of data use between partner programs, as well as increasing data use, integration, and access across institutional boundaries.

The project is unique in many respects:

- Exchanges data supporting both environmental and public health objectives.
- Introduces multiple new data flows.
- Establishes bidirectional data flows between the two organizations providing close to real-time data synchronization.
- Reuses existing Facility Registry System data flow.
- Includes Public Water System and Facilities geospatial data expressed and transported using GML.
- Integrates with existing or creates new application databases using common architecture.

This project also included upgrading the existing DEC Network Node to Windsor's latest open-source solution, OpenNode2, and implementing OpenNode2 at DOH, thereby establishing the organization as a presence on the Exchange Network.

Reference

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518-402-8258

Georgia Department of Natural Resources – Exchange Network Project

Relevance

- Implementation of OpenNode2, the open source Node that provides support for both the Node 2.0 and Node 1.1 Protocol and Specification
- Deployment of a Java Node
- Implementation on an Oracle 10g database
- Deployment of the SDWIS data flow

Details

In February 2006, Windsor implemented a Network Node and SDWIS data flow to EPA systems for the Georgia Department of Natural Resources (DNR). The Node was based on the same specification implemented at the New York Department of Environmental Conservation and employs the J2EE development environment, together with the Apache Web services toolkit and an Oracle database. As part of this project Windsor implemented the SDWIS data flow, which submits Georgia's drinking water data from their implementation of SDWIS/State to the EPA via the CDX.

In February 2008, Windsor upgraded the Network Node to the latest 2.0 version and implemented an additional data flow to allow DNR to flow data to the EPA WQX system.

Windsor is currently upgrading the Windsor Node 2008 to the OpenNode2 Java platform operating against an Oracle 10g database. Along with the Node upgrade Windsor is contracted to upgrade the

existing SDWIS, Beaches and WQX data flows to the new specifications as well as implementing further WQX flow capabilities and the EIS data flow.

Reference

Steve Allison

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Atlanta, GA 30334

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404-463-0077

Missouri Department of Natural Resources – Exchange Network Project

Relevance

- Implementation of OpenNode2
- Deployment of a Java Node
- Experience querying SDWIS/State

Details

In January 2007, Windsor implemented a Network Node and initial FRS data flow to the EPA system for the Missouri Department of Natural Resources.

The Node is based on the same specification implemented at the New York Department of Environmental Conservation and employs the J2EE development environment, together with the Apache Web services toolkit and DB2 database.

Windsor subsequently also implemented the RCRAInfo data flow for DNR targeting the submission of the information required to support the Handler module. Most recently Windsor has deployed the OpenNode2 Java Node against the Missouri DB2 database as part of the recent enhancement of the Homeland Emergency Response Exchange (HERE). Also as part of the HERE deployment was the implementation of the SDWIS data flow.

Reference

Tom Hoer

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573-751-8398

Massachusetts – Exchange Network Project

Relevance

- Implementation of OpenNode2
- Implementation on an Oracle 10g database
- Implementation of the SDWIS data flow

Details

Massachusetts Department of Environmental Protection (DEP) recently announced Windsor as the apparent successful bidder on a project to upgrade their existing Node to a 2.0 compliant Node and to upgrade all of their existing data flows.

Windsor was selected for this project in part because of the firm open source commitment to the OpenNode2 Node solution. This community owned solution comes with many flows already available and is freely available as a download from the Google open source repository.

As part of this project Windsor will be working on the following data flow upgrades:

- SDWIS
- RCRAInfo
- EIS
- WQX
- UIC
- TRI
- FRS

Reference

Deborah Quinn

Massachusetts Department of Environmental Protection
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Boston, MA 02108

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617-292-5911

Hawaii Department of Health – SDWIS Data Flow and Map Viewer

Relevance

- Implementation of OpenNode2
- Implementation of the SDWIS data flow
- Design of a SDWIS inquiry interface
- Experience querying SDWIS/State

Details

Windsor is in the process of completing an environmental health warehouse project for the state of Hawaii's Department of Health (DOH). The DOH is following that project with the design and implementation of a SDWIS viewer designed to provide better access for local government into the SDWIS data.

This SDWIS Viewer will allow users to query SDWIS data and bring back a result set for display in a spatial format. User will then be able to drill into the details behind specific sampling locations to look at results and to use this to make more intelligent decisions.

The SDWIS Viewer will tie into the overall environmental health warehouse, allowing users to query at the environmental interest level and then drill down to investigate SDWIS specific details.

Reference

Andy Matsumoto

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Additional SDWIS deployments

In addition to the projects referenced above, Windsor has had extensive involvement with SDWIS. The following table indicates those clients with whom we have deployed, or are currently working on the deployment of, the SDWIS data flow.

Exchange Network Partner	SDWIS	FRS	NEI	EIS	AQS	WQX	TRI	UIC	RCRAInfo	Beaches	HERE	eManifest	P2	DMR - PCS
Arizona Dept. of Environmental Quality	■	■		■	■	■			■					
Colorado Dept. of Public Health and Env.	■	■				■	■						■	
Georgia Dept. of Natural Resources	■			■		■	■			■				
Hawaii Dept. of Health	■	■					■							
Iowa Dept. of Natural Resources	■	■	■								■			■
Kansas Dept. of Health and Environment	■	■	■		■		■				■			
Marianas Islands Dept. of Env. Quality	■													
Massachusetts Dept. of Env. Protection	■	■	■						■			■		
Nevada Div. of Environmental Protection	■	■	■		■	■								
New Mexico Environment Dept.	■	■	■											
New York Dept. of Env. Conservation	■	■	■		■	■								
New York Dept. of Health	■													
North Dakota Dept. of Health	■	■	■		■	■		■						
Oklahoma Dept. of Environmental Quality	■	■	■						■					

SDWIS Data Flows Deployed on Windsor Nodes (plus other flows on those Nodes)

Key

Complete ■

In Progress ■

Approach

1. Initiate Project

This initial task will focus on establishing a plan to guide the project and instituting the appropriate project management controls to ensure project success.

1.1 Prepare Draft Project Plan

A draft project plan and schedule will be developed to ensure that the planned tasks include all required activities and deliverables.

Deliverables[2]*:*

- Draft project plan

1.2 Hold Project Kickoff Meeting

A meeting will be conducted with the necessary DHHR staff (project team) to review the objectives for the project as well as the draft project plan and schedule.

The purpose of the meeting will be to ensure that the project team understands the goals of the project, the expected outcomes, and the roles and responsibilities of all parties. The proposed project schedule will be reviewed to confirm key dates and project timing. Significant issues with project approach or scheduling will be noted at this time.

Deliverables:

- Project kickoff meeting

1.3 Prepare Final Project Plan

Following the project kickoff meeting, the draft project plan will be updated as necessary and circulated to the project team for review. Any issues and their resolution will be reflected in the final project plan and schedule.

Deliverables:

- Final project plan

2. Implement Node

This group of tasks will focus on satisfying Deliverable Number 1: Delivery of a Node Product that meets the specifications of the National Environmental Information Exchange Network version 2.0.

2.1 Confirm Technical Architecture

Windsor will review the DHHR technical environment, including network topology and application architecture. A meeting will be conducted with DHHR staff (those who perform roles relating to network support, application architecture and security) to review the OpenNode2 technical architecture and installation/configuration requirements.

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[2] Each project deliverable has been assigned an identifier number. Use this identifier number to reference the deliverable in the contract task order.

Deliverables:

- Technical architecture meeting

2.2 Implement Test Node

Windsor will deploy the latest OpenNode2 in DHHR's technical environment. The Node will be deployed with the suite of standard data flow plugins. Please note, however, that plugin deployment does not mean that the data flow will automatically function. However DHHR or other West Virginia Agencies will be in a position to utilize these plugins as part of future data flows if they desire.

Deliverables:

- OpenNode2 test deployment

2.3 Implement Test SDWIS Data Flow

If necessary, Windsor will deploy the necessary components for the SDWIS data flow, and these will conform to the SDWIS XML Schema v2.0. This will include configuration of the plugin.

Deliverables:

- SDWIS data exchange test deployment

2.4 Test Node and Data Flow

Windsor will test the OpenNode2 components in the DHHR environment, according to the technical architecture agreed upon earlier. Windsor will test the implemented Node using Windsor's NodeClient testing application, to evaluate basic operation and functions. Windsor will, if necessary, also test the established SDWIS data flow to ensure that the configuration was completed properly.

Deliverables:

- Tested SDWIS plugin
- Tested Node

2.5 Implement Production Node

Windsor will work with DHHR technical staff to install the production version of the Node in the DHHR production environment. Security will be set up to allow the DHHR staff to access the system.

Deliverables:

- OpenNode2 production deployment

2.6 Implement Production SDWIS Data Flow

If necessary and following testing, corrections will be made as necessary. The SDWIS data flow components will then be installed and verified in a production mode.

Deliverables:

- SDWIS data exchange production deployment

2.7 Prepare System Documentation

Windsor will finalize the system documentation that can be used to support the DHHR in future use and maintenance of OpenNode2.

Deliverables:

- System documentation

2.8 Training

Windsor will provide operational and administrative training to DHHR staff through an onsite meeting and application walk-through. Documentation developed earlier will be provided to DHHR staff and explained.

Deliverables:

- Onsite technology transfer meeting

3. Develop Exchange Interface to SDWIS Data

This group of tasks will focus on satisfying Deliverable Number 2: Development of an exchange interface to use Lab-to-State for Laboratories and / or public water systems to accept bulk or manually loaded data and transfer that data over the internet into SDWIS/State while being CROMERR compliant.

3.1 Requirements Gathering

3.1.1 Prepare for and conduct Exchange Interface requirements gathering workshop

Windsor will prepare for and facilitate onsite requirements gathering meetings for the Exchange Interface (EI) with the project team. Preparation will include a review of any existing DHHR materials to understand known and documented needs. The purpose of these meetings will be to understand the detailed functional and information requirements for the EI.

During the meetings Windsor will cover the requirements of the DHHR for the EI, including bulk uploads, manual data entry, local LIMS products, use and capabilities of Lab-to-State, CROMERR requirements, eDWR Schema structure, and other topics.

As part of the requirements gathering process, a meeting will be conducted with technical resources within DHHR to discuss the technical specifications for the EI including access to Lab-to-State, SDWIS/State and local LIMS products. The WV Office of Technology policies as described at http://www.state.wv.us/ot/article2.cfm?atl=82E13BB8-9E19-5AF4-2845EB154B1C0142&fs=1 will be reviewed and adhered to.

Deliverable

- EI requirements gathering meetings

3.1.2 Develop Requirements Document

The findings from the requirements workshop will be documented in a draft requirements document. This document will detail the functional capabilities that the EI must support and the information elements that will need to be provided. Appropriate technical requirements will also be defined.

The draft requirements document will be circulated for review by the project team. Windsor will support the review and will respond to questions regarding the content of the draft document as required.

The requirements document will be updated based on the results of the review. Windsor will follow up with the DHHR Project Manager to resolve any final issues. The DHHR Project Manager will be responsible for obtaining consensus amongst reviewers where conflicting comments are received. A final version of the requirements document will be prepared and circulated.

Deliverable

- EI requirements document

3.2 Exchange Interface Design

3.2.1 Prepare for and hold EI design workshop

Windsor will prepare for an onsite design workshop with the project team to review, discuss, and confirm the EI design needs. As part of the preparation Windsor will develop an EI prototype that demonstrates how functional and information requirements could be met in concept. This application prototype will be used throughout the design workshop to facilitate discussion.

Using the application prototype, Windsor will facilitate onsite meetings with the project team to review, discuss, and confirm the EI application design and requirements

As a result of this workshop, Windsor will have established an understanding for how internal and external users will interact with the application, the capabilities to be offered in the final application and how these satisfy the earlier captured requirements. From a technical perspective Windsor will capture how the application will exist and interact with other systems within DHHR's environment.

Deliverable

- EI application prototype
- EI design workshop

3.2.2 Create Design Specification

Findings from the design workshop will be documented in a draft design specification. This document will include detailed definitions for each of the system's components, including the application navigation map, page/report specifications, database, and technical requirements.

The draft design specification will be circulated for review by the project team. Windsor will support the review and will respond to questions regarding the content of the draft document as required.

The design specification will be updated based on review feedback received. Windsor will follow up with the DHHR Project Manager to resolve any final issues. The DHHR Project Manager will be responsible for obtaining consensus amongst reviewers where conflicting comments are received. A final version of the design specification will then be prepared and circulated.

Deliverable

- EI design specification

3.3 Build Exchange Interface Components

3.3.1 Establish development environment

Windsor will establish an environment that closely replicates the DHHR environment for development purposes. This will include the implementation of Lab-to-State so that the developed solution can be unit tested against this application. Other databases that comprise part of the overall solution may be established for similar development purposes.

Deliverable

- None (Windsor internal)

3.3.2 Develop security framework

The application security components will be developed based on the agreed-upon technical requirement definition. This will include development of components to handle differential access by the public and other stakeholders if necessary. CROMERR compliance will be addressed through the development of these security components. Security features specified on pages 6-8 of the RFQ will be provided as part of this security framework.

Deliverable

- EI Security framework

3.3.3 Develop Web Application

The Web pages/reports that will comprise the EI application will be developed, including the core pages that allow the user to authenticate to the system and maintain default configuration parameters, as well as the bulk upload and manual data entry forms components designed to provide the required functionality.

Deliverable

- EI Web application

3.3.4 Develop Test Plan

Windsor will develop a test plan to guide testing activities to be conducted by Windsor and DHHR staff. Windsor will test all developed components prior to releasing the application into DHHR's test environment to ensure that design requirements have been met. The test plan will define the specific testing stages, including system and user acceptance testing to be performed by DHHR staff.

Deliverable

- EI Web application test plan

3.4 Test Exchange Interface Application

3.4.1 Perform system testing

Establish test environment

Windsor will work with DHHR staff to deploy the EI components in the DHHR test environment. This will include support for deployment of Lab-to-State (if this work is not already complete). Security will be set up to allow the system test users to access the system, including DHHR and external stakeholder access.

It is assumed that a test version of SDWIS/State is already available in the DHHR environment and that it can be utilized throughout system and acceptance testing.

Train users

Windsor will present the EI application during a training meeting and explain how it functions to DHHR testers and others outside of DHHR who will utilize the future system.

Support user testing

Windsor will support the DHHR system test activity. As testers identify any issues with the system, Windsor will assist with understanding what the issue entails.

Resolve identified issues

An issue log will be used during testing, allowing all testers to see all issues and monitor the progress of resolution. Windsor will keep track of all modifications made, so that the users can re-test the system to confirm that the appropriate resolution has been achieved.

Deliverables

- Installed and tested EI Web application
- Training meeting
- Issue/resolution log

3.4.2 Perform acceptance testing

Update test environment

Windsor will work with DHHR technical staff to install an updated version of the application in the DHHR test environment.

Support user testing

Windsor will support the DHHR acceptance test activity. As testers identify any issues with the viewer, Windsor will assist with understanding what the issue entails.

Resolve identified issues

An issue log will be used during user acceptance testing, allowing all testers to see all issues and monitor the progress of resolution. Issues discovered during the user acceptance testing task will be addressed as quickly as possible and returned to the testers for confirmation of resolution.

Deliverables

- Installed and user-accepted EI Web application
- Issue/resolution log

3.5 Implement Exchange Interface Application

3.5.1 Deploy application in production

Windsor will work with DHHR technical staff to install the production version of the application in the DHHR production environment. Security will be set up to allow the DHHR staff to access the system.

Windsor will also meet with DHHR technical staff and identified gatekeeper responsible for the ongoing maintenance and administration of the viewer system.

Deliverables

- Installed and user-accepted EI Web application
- Issue/resolution log

3.5.2 Prepare system documentation

Windsor will finalize the system documentation that can be used to support the DHHR in future use and maintenance of the application. Windsor will also deliver an EI user guide for distribution amongst DHHR staff.

Deliverables

- Technical system documentation
- EI application user guide

4. Develop Monthly Operational Reports (MOR) Exchange Interface

This group of tasks will focus on satisfying Deliverable Number 3: Development of an exchange interface and software to enter bulk or manual electronic versions of DHHR Monthly Operational reports for transfer to SDWIS/State over the internet into while being CROMERR compliant.

While many of the tasks are similar to those required for Deliverable Number 2, they differ in the respect that maximum re-use will be made from components identified, designed and built for earlier deliverables. For instance, this deliverable will reuse the security framework already described and therefore it is not described again in this task list. However, the testing of the security module for the MOR module is still a necessary task.

4.1 Requirements Gathering

4.1.1 Prepare for and conduct Exchange Interface requirements gathering workshop[3]

Windsor will prepare for and facilitate onsite requirements gathering meetings for the MOR Exchange Interface with the project team. Preparation will include a review of any existing DHHR materials to understand known and documented needs including the current operational reports. The purpose of these meetings will be to understand the detailed functional and information requirements for the MOR module and the elements to be included in an MOR XML Schema.

During the meetings Windsor will cover the requirements of the DHHR for the MOR, including bulk uploads, manual data entry, CROMERR requirements, MOR XML Schema structure, among other topics.

As part of the process, a meeting will be conducted with technical resources within DHHR to discuss the technical specifications for the MOR including access to SDWIS/State. As with other deliverables the WV Office of Technology policies as described at http://www.state.wv.us/ot/article2.cfm?atl=82E13BB8-9E19-5AF4-2845EB154B1C0142&fs=1 will be adhered to.

Deliverable

- MOR requirements gathering meetings

4.1.2 Develop requirements document

The findings from the requirements workshop will be documented in a draft requirements document. This document will detail the functional capabilities that the MOR module must support and the information elements that will need to be provided. Appropriate technical requirements will also be defined.

The draft requirements document[4] will be circulated for review by the project team. Windsor will support the review and will respond to questions regarding the content of the draft document as required.

[3] Windsor anticipates that requirements gathering workshops will be conducted as a concentrated effort for all project deliverables thus reducing the potential duplication of effort and maximizing the progress that can be made by Windsor staff in the presence of DHHR's business experts.

The requirements document will be updated based on the results of the review. Windsor will follow up with the DHHR Project Manager to resolve any final issues. The DHHR Project Manager will be responsible for obtaining consensus amongst reviewers where conflicting comments are received. A final version of the requirements document will be prepared and circulated.

Deliverable

- MOR requirements document

4.2 MOR Interface Design

4.2.1 Prepare for and hold MOR design workshop

Windsor will prepare for an onsite design workshop with the project team to review, discuss, and confirm the MOR design needs. As part of the preparation Windsor will develop an MOR prototype that demonstrates how functional and information requirements could be met in concept. This application prototype will be used throughout the design workshop to facilitate discussion. It will also be based on the same design principles used for deliverable 2.

Using the application prototype, Windsor will facilitate onsite meetings with the project team to review, discuss, and confirm the MOR application design and requirements[5].

As a result of this workshop, Windsor will have established an understanding for how internal and external users will interact with the application, the capabilities to be offered in the final application and how these satisfy the earlier captured requirements. From a technical perspective Windsor will capture how the application will exist and interact with other systems within DHHR's environment.

Deliverable

- MOR application prototype
- MOR design workshop

4.2.2 Create design specification

Findings from the design workshop will be documented in a draft design specification. This document will include detailed definitions for each of the system's components, including the application navigation map, page/report specifications, database, MOR XML schema and technical requirements.

The draft design specification will be circulated for review by the project team. Windsor will support the review and will respond to questions regarding the content of the draft document as required.

The design specification will be updated based on review feedback received. Windsor will follow-up with the DHHR Project Manager to resolve any final issues. The DHHR Project Manager will be responsible for obtaining consensus amongst reviewers where conflicting comments are received. A final version of the design specification will then be prepared and circulated.

Deliverable

- MOR design specification

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[4] If acceptable to the DHHR Windsor could include the requirements for each module as a subsection of an overall project requirements document. This would reduce the duplication of review effort on the part of DHHR staff and Windsor.

[5] As with the requirements workshops, it is anticipated that design workshops and discussions will occur in a concentrated effort in order to minimize the impact on DHHR staff and to increase the efficiency of the project.

4.3 Build Exchange Interface Components

4.3.3 Develop Web application

The Web pages/reports that will comprise the MOR application will be developed, including the core pages that allow the user to authenticate to the system and maintain default configuration parameters, as well as the bulk upload and manual data entry forms components designed to provide the required functionality. The development effort of the MOR module will make use of the security framework developed for deliverable 2.

Deliverable

- MOR Web application

4.3.4 Develop test plan

Windsor will develop a test plan to guide testing activities to be conducted by Windsor and DHHR staff. Windsor will test all developed components prior to releasing the application into DHHR's test environment to ensure that design requirements have been met. The test plan will define the specific testing stages, including system and user acceptance testing to be performed by DHHR staff.

Deliverable

- MOR Web application test plan

4.4 Test Exchange Interface Application

4.4.1 Perform system testing

Establish test environment

Windsor will work with DHHR staff to deploy the MOR components in the DHHR test environment. Security will be set up to allow the system test users to access the system, including DHHR and external stakeholder access.

As with previous testing efforts, it is assumed that a test version of SDWIS/State is already available in the DHHR environment and that it can be utilized throughout system and acceptance testing.

Train users

Windsor will present the MOR system during a training meeting and explain how it functions to DHHR testers and others outside of DHHR who will utilize the future system.

Support user testing

Windsor will support the DHHR system test activity. As testers identify any issues with the system, Windsor will assist with understanding what the issue entails.

Resolve identified issues

An issue log will be used during testing, allowing all testers to see all issues and monitor the progress of resolution. Windsor will keep track of all modifications made, so that the users can re-test the system to confirm that the appropriate resolution has been achieved.

Deliverables

- Installed and tested MOR Web application

- Training meeting
- Issue/resolution log

4.4.2 Perform acceptance testing

Update test environment

Windsor will work with DHHR technical staff to install an updated version of the application in the DHHR test environment.

Support user testing

Windsor will support the DHHR acceptance test activity. As testers identify any issues with the viewer, Windsor will assist with understanding what the issue entails.

Resolve identified issues

An issue log will be used during user acceptance testing, allowing all testers to see all issues and monitor the progress of resolution. Issues discovered during the user acceptance testing task will be addressed as quickly as possible and returned to the testers for confirmation of resolution.

Deliverables

- Installed and user-accepted MOR Web application
- Issue/resolution log

4.5 Implement Exchange Interface Application

4.5.1 Deploy application in production

Windsor will work with DHHR technical staff to install the production version of the application on the DHHR production environment. Security will be set up to allow the DHHR staff to access the system.

Windsor will also meet with DHHR technical staff and identified gatekeeper responsible for the ongoing maintenance and administration of the viewer system.

Deliverables

- Installed and user-accepted MOR Web application
- Issue/resolution log

4.5.2 Prepare system documentation

Windsor will finalize the system documentation that can be used to support the DHHR in future use and maintenance of the application. Windsor will also deliver an MOR user guide for distribution amongst DHHR staff.

Deliverables

- Technical system documentation
- MOR application user guide

5. Develop SWOCS/SDWIS Viewer

This group of tasks will focus on satisfying Deliverable Number 4: Development of an exchange interface that allows authorized users to view SDWIS/SWOCS data. As with the work involved for deliverable number 3, the tasks for deliverable 4 will make reuse of investments made in earlier deliverables.

5.1 Requirements and design

For this deliverable, Windsor proposes combining the requirements gathering and design tasks into a single workshop. This is because we anticipate that the design metaphor will be firm based on previous deliverables and that for this deliverable the requirements are relatively straightforward.

5.1.1 Prepare for and conduct requirements confirmation and design workshop.

Windsor will prepare for and facilitate a joint requirements gathering and design workshop. A review of any existing materials, plus the use of earlier deliverables, will allow Windsor to develop a prototype that demonstrates how functional and information requirements could be met in the SDWIS Viewer.

The requirements will be discussed in the context of the prototype and will be documented along with modifications to the design. Aspects such as security and the workflow process will form part of the workshop as well as any technical needs including access to SDWIS to extract the necessary data. As with other deliverables, the WV Office of Technology policies as described at http://www.state.wv.us/ot/article2.cfm?atl=82E13BB8-9E19-5AF4-2845EB154B1C0142&fs=1 will be adhered to.

Deliverable

- SDWIS viewer prototype

5.2.2 Create design specification

Findings from the requirements confirmation and design workshop will be documented in a draft design specification. This document will include detailed definitions for each of the system's components, including the application navigation map, page/report specifications, database, and technical requirements.

The draft design specification will be circulated for review by the project team. Windsor will support the review and will respond to questions regarding the content of the draft document as required.

The design specification will be updated based on review feedback received. Windsor will follow up with the DHHR Project Manager to resolve any final issues. The DHHR Project Manager will be responsible for obtaining consensus amongst reviewers where conflicting comments are received. A final version of the design specification will then be prepared and circulated.

Deliverable

- EI design specification

5.3 Build SWOCS/SDWIS Viewer Components

5.3.3 Develop Web application

The Web pages/reports that will comprise the SWOCS/SDWIS viewer application will be developed, including the core pages that allow the user to authenticate to the system and maintain default configuration parameters.

Deliverable

- SWOCS/SDWIS Viewer Web application

5.3.4 Develop test plan

Windsor will develop a test plan to guide testing activities to be conducted by Windsor and DHHR staff. Windsor will test all developed components prior to releasing the application into DHHR's test environment to ensure that design requirements have been met. The test plan will define the specific testing stages, including system and user acceptance testing to be performed by DHHR staff.

Deliverable

- SWOCS/SDWIS Viewer Web application test plan

5.4 Test Exchange Interface Application

5.4.1 Perform system testing

Establish test environment

Windsor will work with DHHR staff to deploy the SWOCS/SDWIS Viewer components in the DHHR test environment. Security will be set up to allow the system test users to access the system, including DHHR and external stakeholder access.

Train users

Windsor will present the SWOCS/SDWIS Viewer system during a training meeting and explain how it functions to DHHR testers and other outside of DHHR that will utilize the future system.

Support user testing

Windsor will support the DHHR system test activity. As testers identify any issues with the system, Windsor will assist with understanding what the issue entails.

Resolve identified issues

An issue log will be used during testing, allowing all testers to see all issues and monitor the progress of resolution. Windsor will keep track of all modifications made, so that the users can re-test the system to confirm that the appropriate resolution has been achieved.

Deliverables

- Installed and tested SWOCS/SDWIS Viewer Web application
- Training meeting
- Issue/resolution log

5.4.2 Perform acceptance testing

Update test environment

Windsor will work with DHHR technical staff to install an updated version of the application in the DHHR test environment.

Support user testing

Windsor will support the DHHR acceptance test activity. As testers identify any issues with the viewer, Windsor will assist with understanding what the issue entails.

Resolve identified issues

An issue log will be used during user acceptance testing, allowing all testers to see all issues and monitor the progress of resolution. Issues discovered during the user acceptance testing task will be addressed as quickly as possible and returned to the testers for confirmation of resolution.

Deliverables

- Installed and user-accepted SWOCS/SDWIS Viewer Web application
- Issue/resolution log

5.5 Implement SWOCS/SDWIS Viewer Application

5.5.1 Deploy application in production

Windsor will work with DHHR technical staff to install the production version of the application on the DHHR production environment. Security will be set up to allow the DHHR staff to access the system.

Windsor will also meet with DHHR technical staff and identified gatekeeper responsible for the ongoing maintenance and administration of the viewer system.

Deliverables

- Installed and user-accepted SWOCS/SDWIS Viewer Web application
- Issue/resolution log

5.5.2 Prepare system documentation

Windsor will finalize the system documentation that can be used to support the DHHR in future use and maintenance of the application. Windsor will also deliver an SWOCS/SDWIS Viewer user guide for distribution amongst DHHR staff.

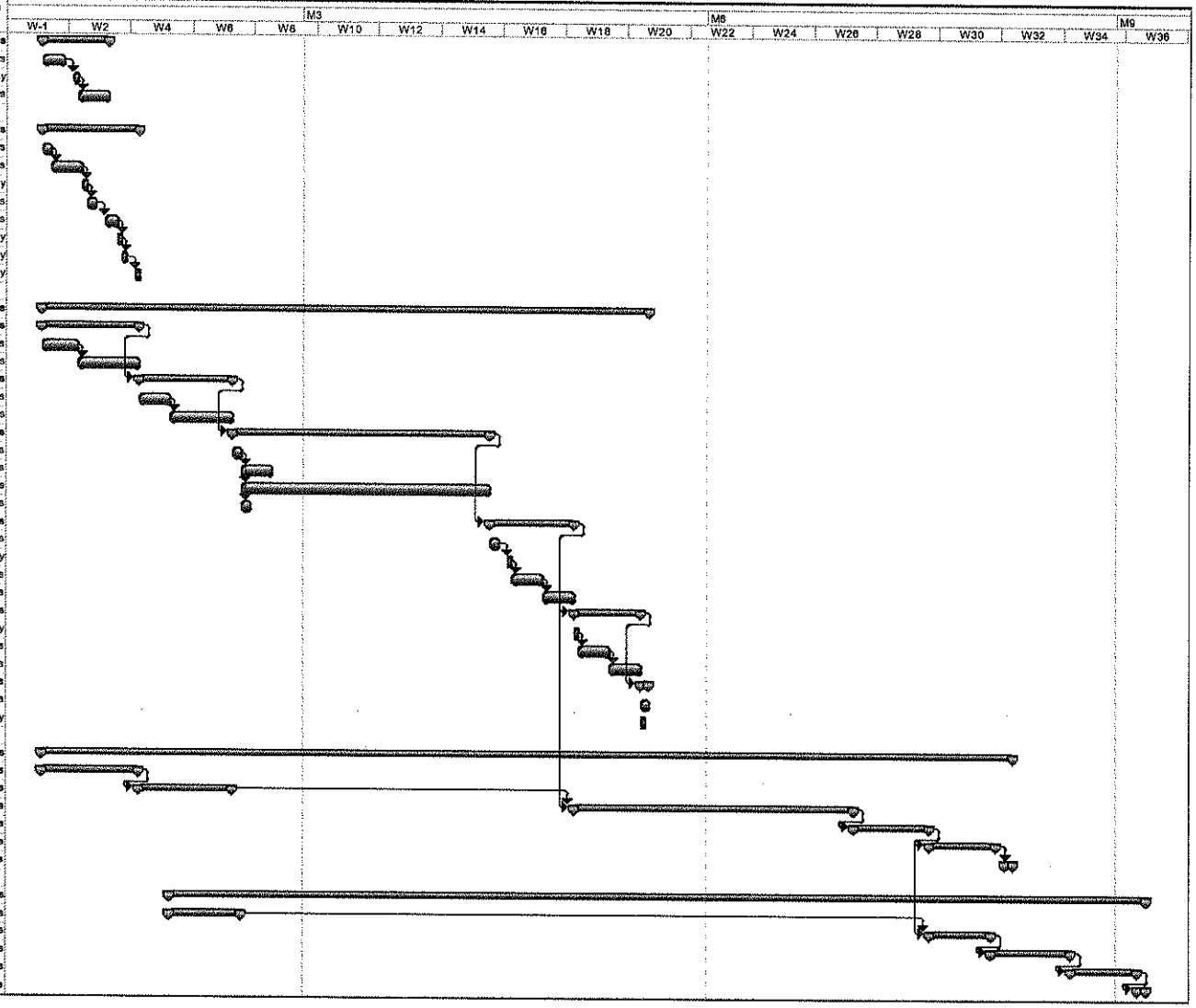
Deliverables

- Technical system documentation
- SWOCS/SDWIS Viewer application user guide

Project Plan and Schedule

Tasks have been expanded for Deliverable 2 to indicate the project progression over time. Tasks 3 and 4 have not been expanded in order to save space, however this general progression will also apply to those deliverables.

ID	Task Name	Duration
1	**Initiate Project**	**11 days**
2	Prepare Draft Project Plan	5 days
3	Hold Project Kickoff Meeting	1 day
4	Prepare Final Project Plan	5 days
5		
6	**Implement Node**	**16 days**
7	Confirm Technical Architecture	2 days
8	Implement Test Node	5 days
9	Implement Test SDWIS Data Flow	1 day
10	Test Node and Data Flow	2 days
11	Implement Production Node	3 days
12	Implement Production SDWIS Data Flow	1 day
13	Prepare System Documentation	1 day
14	Training	1 day
15		
16	**Develop Exchange Interface to SDWIS Data**	**99 days**
17	**Requirements Gathering**	**16 days**
18	Prepare for and conduct EI req gatheri	6 days
19	Develop Req Gathering Document	10 days
20	**Exchage Interface Design**	**15 days**
21	Prepare for and hold design Workshop	5 days
22	Create Design Specification	10 days
23	**Build EI Components**	**42 days**
24	Establish development environment	2 days
25	Develop Security Framework	5 days
26	Develop Web Application	40 days
27	Develop Test Plan	2 days
28	**System Test EI Application**	**13 days**
29	Establish test environment	2 days
30	Train users	1 day
31	Support user testing	5 days
32	Resolve identified issues	5 days
33	**Acceptance Test EI Application**	**11 days**
34	Update test environment	1 day
35	Support user testing	5 days
36	Resolve identified issues	5 days
37	**Implement Viewer**	**2 days**
38	Implement Production Application	2 days
39	Prepare System Documentation	1 day
40		
41	**Develop MOR Interface**	**157 days**
42	**Requirements Gathering**	**16 days**
45	**Exchage Interface Design**	**15 days**
48	**Build MOR Components**	**45 days**
51	**System Test MOR Application**	**13 days**
56	**Acceptance Test MOR Application**	**11 days**
60	**Implement Viewer**	**2 days**
63		
64	**Develop SWOCS / SDWIS Viewer Interface**	**158 days**
65	**Requirements and Design**	**12 days**
68	**Build Viewer Components**	**10 days**
71	**System Test Viewer Application**	**12 days**
76	**Acceptance Test Viewer Application**	**11 days**
80	**Implement Viewer**	**2 days**



Project Management

Project Management Plan

Communication Management Plan

The Project Team's project management methodology focuses on communication and interaction as a means of reducing project risk. By making all team members aware of project plans, project control mechanisms, deadlines, status and standards, we increase overall project ownership which helps with problem and issue resolution and enables the focus to be on the delivery of a quality deliverable with minimal risk. Our approach involves thorough project planning and task assignment, followed by careful tracking and effective control while enabling the assigned project staff to efficiently perform their duties.

Type	Mode	Frequency	Content
Status Report	E-mail	Weekly	Tasks performed, issues identified, anticipated tasks during next period, updated Risk Management Plan, updated project plan
Project Management Meeting	In person or call	Ad-hoc, but regular	Regular discussions about project performance, including discussion of issues, staff resourcing, deliverable feedback, etc.
Requirement meetings	In person	Facilitated meeting or interview	Meeting with program and/or technical staff to solicit their input. Intended to identify and refine requirements and design the solution.
Documentation	Via agreed repository	Ongoing	Produce and store documents including project organization chart and contact information, Project Plan, FCDs, TPAs, design specifications, agendas, minutes, etc.

Project Management Approach

Dedicated Project Manager

The Project Team will provide a dedicated Project Manager who will be responsible for all aspects of the project execution and communications with DHHR. This manager will utilize the tools outlined by the Project Management Institute® (PMI) to effectively manage the project.

It is understood that DHHR will also nominate an individual to act as primary Project Contact for the agency. The Windsor Project Manager will work directly with the DHHR Project Manager throughout the project in addition to meeting other communication requirements with other project stakeholders.

Scope Process

It is the responsibility of both parties to assist with the management of project scope. One of the major risks to a project and the cause of many unsatisfactory implementations is the lack of appropriate acknowledgment and management of scope.

Project requirements will define the work to be completed as a part of the project. Schedule will be defined based on the work to be completed for the project. As a result, it is important to understand that requirements relate directly to the work performed on the project and changes to one can impact the other.

The initial project scope shall be defined based on the business requirements found in this document. Throughout the project, Windsor will provide DHHR with project deliverables. These deliverables are intended to take a specific portion of the project to a defined state of completion and, unless they represent the final project deliverable, will also define the scope of further project work. This is to say that scope will be progressively elaborated upon and therefore refined. These refinements in scope will be reflected and documented in subsequent design documents and project deliverables. These deliverables are intended to incorporate all discussions and decisions made during the design process and subsequent phases, regarding the scope of the new system. As such, project deliverables will represent a revised and refined statement of scope for the project, and will supersede any previous definitions of scope, including any prior planning and analysis activities that may have been performed.

As the scope represented in the project deliverables will be used as the basis for any subsequent scope discussions for the remainder of the project, it is imperative that the DHHR review all project deliverables (including the design documents) both for correctness (adherence to stated requirements and scope) and completeness (breadth of coverage of those requirements scope).

The client will sign off on each project deliverable. Deliverables submitted for acceptance will be reviewed and either responded to with feedback, or accepted within ten (10) business days. An extension beyond the 10 days may be requested by DHHR at the time of delivery on the agreement that the additional time required to perform the review and to provide feedback will be covered through a change request. Where corrections to a deliverable are required, Windsor will make the necessary modifications and provide the revised document for sign-off. In order to manage the review cycle appropriately, any review that follows the initial review should focus only on those parts of the deliverable affected by the change. Where substantial changes may affect the integrity of the entire deliverable, a full review maybe requested by the client. Approved deliverables will be managed via a formal change control process.

Change Control

In the systems development cycle, changes to the business or system requirements or the project scope are sometimes necessary to ensure project success. Windsor acknowledges the need to follow a formal change management process to control this process. This is an essential component of an effective project management methodology and will allow Windsor and DHHR to make educated decisions on potential schedule and budget impacts.

Once the scope has been defined, any changes will be managed through a change management process. The initial identification of a change request often is the result of the resolution of issues or risks identified during the project, but may also be identified as a change request up front. Changes to the project scope generally occur for three reasons:

- Unforeseen external events affect the Project objectives
- A task in the Project Plan reveals unexpected information that could affect the Project Scope or plan
- A delayed is required for the project
- New ideas or suggestions for improvement surface that would have a significantly positive impact on the outcome of the Project.

Any change that has the potential to cause modifications to previous deliverables, or will change future task scope, work or schedule, must be recorded using Windsor's extranet issue tracking tool (iTest) (or a DHHR provided change management tool) along with Microsoft Word based project change request (PCR) forms.

The iTest tool will provide support by acting as a repository for project issues and change requests, allowing easy submittal and review at any time or location. Each change request will need to include the following information:

- Change Summary – A summary of the change requested.
- Change Detail – A detailed explanation of the change.
- Reason for change – A description of why the change is needed.

iTest will be utilized to catalog all requests and will enable the monitoring of each request until accepted or closed. Outstanding iTest items will be covered as an agenda item at regular project status meetings. This process will enable the project team to have visibility on those items that have an impact on the project. The existing contractual process will be used to jointly adopt, in writing, any changes that are approved.

Windsor's approach allows any potential addition to scope to be captured regardless of when or how it is discovered. Windsor's iTest application allows issues to be converted to change orders and for original change orders to be created including their initial description and rationale for the change. The iTest application manages a record of the change order while the Windsor Project Manager and the DHHR Project Manager determine whether or not to investigate it further.

Risk Management Plan

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 foresee and prepare for potential "show-stoppers." This process is performed in partnership with the DHHR 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.

Risk will be managed through proactive risk assessments and risk response planning. Windsor and the DHHR will jointly develop the risk register and risk response plan for the project. The risk register and risk response plan will contain the following:

- A numeric identifier for a risk event that will be used for reference purposes.
- A description of a risk event that can occur on the project.
- 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).
- A proposal to respond to the more serious project risk events.

It's 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 are considered to 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.

Some of the most significant risks that could affect this project and the Project Team's proposed steps for monitoring and mitigation are outlined below. These risks will be confirmed and other risks identified with input from DHHR during the project initiation.

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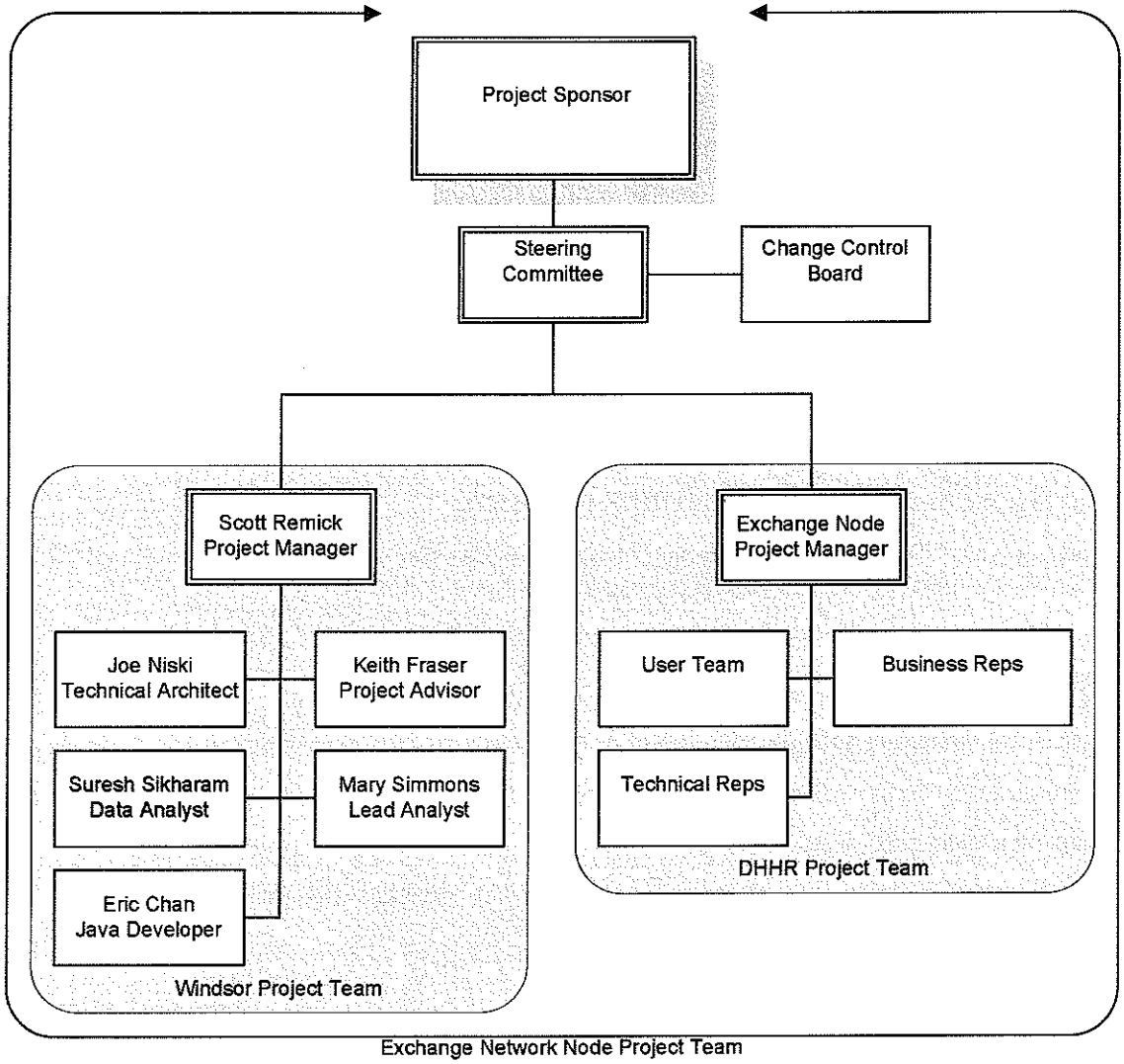
Organization

Proposed Project Team

The organization chart below presents our proposed project team for both Windsor and DHHR staff members.



DHHR

Windsor proposes the DHHR project team consist of the following project roles; a Project Sponsor, a Steering Committee, a Change Control Board, the Exchange Node Project Manager, the User Team, Business Representatives, and Technical Representatives. During the planning phase of the project, actual team member names will be identified for each of the project roles. These responsibilities for each project role are described below.

Project Sponsor

- Leading, championing, and promoting the project effort.

- Alleviating project roadblocks and challenges out of the project team's control.
- Ensuring resources are available to perform project responsibilities.

Steering Committee

- Defining the objectives of the project.
- Directing the project.
- Ensuring project objectives are met.

Change Control Board

- Reviewing all scope changes to determine which changes, if any, are required for the project to meet the project objectives.
- Controlling change and ensuring that only the most critical changes are performed.
- Consists of a subcommittee of the project Steering Committee.

Exchange Node Project Manager

- Providing comprehensive oversight of the project.
- Managing day-to-day project activities.
- Directing and managing work for the DHHR project team.
- Working with Windsor's Project Manager to create a plan that meets the project scope and is achievable within the time and budget specified.
- Working with Windsor to manage the execution of this plan.
- Reporting progress regularly to stakeholders.
- Proactively managing and resolving issues as they arise.
- Defining, monitoring, and managing project risks.
- Ensuring project processes.
- Defining and building quality assurance into the project and managing quality control.
- Performing performance management.
- Improving business processes.
- Preventing conflict and facilitating conflict resolution.

User Team

- Testing the product functionality to ensure a quality result.

Business Representatives

- Functioning as liaison for a business unit on the project.
- Maintaining intimate knowledge of the business unit and having the ability to and responsibility for making decisions on behalf of the business unit.
- Helping gather and refine business requirements.

- Reviewing and validating the analysis and requirements documentation.
- Reviewing and validating that design specifications meet product requirements.
- Testing the product functionality to ensure a quality result.

Technical Representatives

- Functioning as liaison for networking, infrastructure, and/or application development units for the project.
- Maintaining intimate knowledge of the business unit and having the ability to and responsibility for making decisions on behalf of the networking, infrastructure, and/or application development units. Note that a representative for each unit interested is required.
- Helping gather and refine business requirements.
- Reviewing and validating the analysis and requirements documentation.
- Reviewing and validating that design specifications meet product requirements.
- Testing the product functionality to ensure a quality result.

Windsor

Windsor has an unparalleled depth of experience in the Exchange Network, with specialists in the technology of the network and nodes, specialists in each of the flows, and specialists in the Network's policies and procedures. Windsor has constructed a team that combines both dedicated and talented engineers, along with limited involvement from specialists to lend their experience to targeted areas of the project.

Our proposed Project Manager, Scott Remick, has extensive relevant experience in projects similar in size and scope to this project. Windsor will work closely with DHHR to ensure timely communication and efficient use of project resources.

For this project, Windsor proposes the following key staff with extensive relevant experience.

Scott Remick, Project Manager

Scott, based in Windsor's Northampton, Massachusetts office, has over 12 years experience in environmental information technology-based projects. He brings information systems project management, analysis, design, and development experience from Web-based database driven applications to data warehousing and data exchange projects. Scott's technical background combined with his extensive analysis and design skills allows him to successfully manage projects from a unique and proven perspective.

Most recently, Scott has been instrumental in designing and managing various data exchange projects with environmental State agencies. His understanding of both the technical and process components/aspects of the data exchange has allowed him to provide immediate impact to new data exchange projects.

His skills include project planning, budgeting and scheduling, resource management, facilitation, requirements gathering, application design, training documentation, database modeling and Web development.

Outside Web development projects, his experience includes: system conversions, large-scale application testing, information system strategies, software package selection and systems analysis and design. Scott has been involved in an advisory role on many of Windsor's projects to ensure that the product delivered

meets the clients' expectations in terms of quality, price, and duration. Scott has the additional advantage of being highly knowledgeable about all aspects of relevance to this project, as well as being accessible to DHHR staff during normal operating hours from Windsor's Northampton, Massachusetts office.

Project Role

Scott will be responsible for all aspects of successful project delivery and will be the project team's primary contact. His responsibilities will include:

- Serving as the interface between the DHHR Project Manager and all project team personnel participating in this engagement.
- Facilitating regular communication with the DHHR project manager through a combination of telephone, e-mail and in-person communications/meetings.
- Providing weekly status reports/updates, review of the project plan's performance against the baseline, ensuring timely communications, document management and timely reporting.
- Working with DHHR's Project Manager to create a plan that meets the project scope and is achievable within the time and budget specified.
- Revising the project plan as necessary based on information gathered during weekly status meetings and distributes and/or publishes to the DHHR Project Manager and other members of the project team.
- Working with DHHR and Windsor staff to manage the execution of this Project Plan.
- Identifying and establishing key meeting dates in advance which will be mapped against the project plan for scheduling purposes and to ensure everyone knows the topics, purpose and outcomes of key meetings.
- Facilitation of weekly team and project status meetings and subsequent issuance of a written summary of the status, identifying key tasks, responsible parties, and due dates.

Keith Fraser, Project Advisor

Keith is a PMI certified Project Management Professional (PMP) and brings more than eighteen 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 management skills.

Keith has worked across a variety of environmental program areas, including safe drinking water, and brings skills that will enable him to help guide this project to successful completion.

Project Role

The Project Advisor will report to the Project Manager and will be utilized as necessary to ensure success of the project.

- Providing guidance to the Windsor Project Manager and project team relating to any aspect deemed appropriate by the Project Manager.

Joe Niski, Technical Architect

Joe Niski is senior developer for the Java implementation of Windsor's Exchange Network Node. Prior to joining Windsor in 2008, Joe spent fifteen years as a software architect, development manager, and IT industry analyst. Joe's software development background includes complex messaging systems and high-volume transactional applications for the banking industry, data-driven web applications for consumers and large corporations, and interactive training curricula. Joe has a broad background in scripting languages, messaging protocols, open source frameworks, and development automation, with a focus on Java EE.

Project Role

The Technical Architect will report directly to the Project Manager having the following responsibilities:

- Ensuring all technical aspects of the project are addressed in a timely manner and in accordance with the project schedule.
- Working on the development and implementation of the required deliverables.
- Assisting in resolution of project issues as requested by the Project Manager.
- Ensuring the quality and consistency of the work product of the development staff.
- Establishing and documenting the architectural direction for the project.
- Coordinating with DHHR technical staff to ensure that the project's technical infrastructure dependencies are clearly understood, responsibilities are clearly defined and agreed to, and any technical concerns are appropriately considered and resolved.

Mary Simmons, Senior Analyst

Mary has over a decade of experience as a programmer, project manager, and business systems analyst. Her proficiency with all phases of the software development life cycle and project life cycle has been augmented with environment information technology based projects, specifically data exchange systems.

Most recently, Mary has served as an analyst for the NYDEC's WQX upgrade. This project entailed upgrading a legacy Access application to EQuIS 5, then extracting the data from EQuIS for submission to WQX using the WQX 2.0 schema.

Mary's area of expertise is business and systems analysis with an emphasis on data intensive solutions. She has led many projects requiring strict adherence to privacy and security best practices. Continuously seeking further education opportunities, Mary strives to stay on top of current environmental technology trends and apply emerging standards that result in quality, customer-focused deliverables. Mary has also served as project and technical team lead on corporate wide projects impacting up to 5,000 employees.

Project Role

The Senior Analyst will report directly to the Windsor Project Manager having the following responsibilities:

- Ensuring day-to-day assignments based on the project plan are known and performed.
- Working on the development and implementation of the required deliverables.
- Assisting in resolution of project issues as requested by the Project Manager.
- Leading and facilitating the business analysis and design activities and sessions.
- Leading the team of analysts involved on the project.

- Responsible for the production of all analysis and design deliverables
- Responsible for the resolution of analysis and design issues.
- Performing quality control on the developed product to ensure a quality result.

Suresh Sikharam, Data Analyst

Suresh is the lead database analyst/developer on multiple projects at Windsor and has developed some highly complex programs for the New York State Department of Environmental Conservation. With many years of experience Suresh prides himself in architecting cutting edge solutions for complex real world problems. Suresh brings a wealth of database development experience and has a track record of exceeded expectations through delivering efficient programs on Oracle and SQL Server databases. He has also converted numerous databases from SQL Server to Oracle and vice versa. Suresh is an effective data analyst responsible for the management and manipulation of data directly within the database. He is supporting several Exchange Network initiatives to establish and implement data flows to the CDX over the Exchange Network.

Project Role

Suresh will be responsible for all design and programming work for data extraction, transformation and loading of data in the Oracle database. He will also be responsible for the migration of data from existing data sources into the new database, revising data mappings, updating ETLs, and creating staging tables.

- Working with the analyst to confirm data mapping.
- Creation, modification and implementation of necessary staging tables.
- Creation, modification and implementation of extract, transform and load processes.
- Assisting in resolution of project issues as requested by the Project Manager.

Eric Chan, Java Developer

Eric is a senior Java developer with Windsor and brings a combination of technical and design expertise to his assignments. He has worked on a variety of environmental projects for Windsor including the implementation of a Facility Profiler data warehouse for increased accessibility to otherwise difficult to access data, the implementation of a hazardous waste manifest tracking and management application. Of specific relevance to the DHHR is Eric's involvement in the application for New Mexico that enables entry of drinking water sample collection data by samplers into a Web based application.

Project Role

Eric will be responsible as a Java Developer reporting to the Project Manager having the following responsibilities:

- Work with the Business Analyst to confirm application design
- Create, modify and implement all necessary Java application code
- Ensure that the developed application adheres to the technical architectural direction established for the project
- Assist in resolution of issues identified during user testing as requested by the Windsor Project Manager

Maintenance and Support

Windsor agrees to provide maintenance and support for the life of the initial contract. The costs for this maintenance and support are included in our estimated costs in the *Bid Sheet* section. Windsor is also happy to provide ongoing support for the life of any contract renewals for maintenance, enhancements or upgrades if DHHR wishes. In Windsor's experience with similar projects, maintenance and support costs typically range from 10-15% of the total cost of the application.

In order for this support to work effectively, appropriate communication mechanisms and agreed levels of service need to be put in place. All enhancements and problem fixes must be handled through a formal release management mechanism. Without these controls, the integrity of the software and data cannot be guaranteed.

Support Process

Windsor will provide support via three potential communication mechanisms: phone, email and the project Web site. In all instances, the request for support will be recorded and managed in Windsor's project support application (iTest).

This approach supports the client in a variety of ways. First, the client is able to contact Windsor's support team in the manner they find most effective for their circumstances. Second, when concerns are expressed or help is required, the information is recorded and the resolution is attached to the initial request for future reference. Third, the log of help requests is available for client access through the project Web site, making this log essentially an online help resource for both the client and Windsor support team.

Below is an outline of the support process:

Step1: Submit Problem Request

Client logs help request with Windsor support team. As discussed above, requests can be made by telephone (503.675.7833), email (support@windsorsolutions.com) or using the Windsor iTest application (www.windsorsolutions.biz).

Step 2: Log Problem Request

If the help request is received by phone or email, it will be entered into iTest by the support team. The following information will be associated with each request: client name, application name, requestor name, requestor phone number, requestor email address and problem description.

Step 3: Route Problem Request

The help request is routed to the appropriate support team staff. If client-specific support team staff is currently unavailable, an alternate support staff member will work to address the request. The support staff will work with the client to resolve the request in an expedited manner, and the work will be subject to the service level agreement in place with that client for the application in question.

Step 4: Address Problem Request

- If immediate resolution is available and known, the support staff will record the resolution to the help request in iTest and will provide this to the client.
- If the resolution is not immediately known, the support staff will search the help system for similar requests. If a resolution is found, this will be recorded in iTest and provided to the client.
- If the resolution is not immediately available either directly from the support staff or through searching the help logs, the support staff will outline, agree and record the plan of action to resolve the request for help.

A plan of action will typically require a technician working with the client to resolve the particular issue. Research may be required, and code fixes may need to be established. A request may be assigned to a future release; however, a fatal error will be addressed immediately. The technician will contact the client using details provided in the initial call to ensure they understand the exact issue / problem and to ensure they understand the time sensitivity of the request. The technician will be in regular contact with the client until a satisfactory resolution can be found.

Once the resolution is provided to the client, the client is asked to confirm that their request for help has resulted in a satisfactory resolution to their problem / issue. If confirmed by the client, the help log will be marked as resolved.

Maintenance Process

All maintenance is performed via a release management process implemented and managed under a maintenance contract. This maintenance plan details the processes for performing release management and documents the appropriate communication mechanisms and service level agreements. All enhancements and problem fixes must be handled through this release management mechanism. Without these controls, the integrity of the software and data cannot be guaranteed.

Effective management of the post implementation effort is required to ensure that DHHR receives the correct level of service, and that changes to the application are completed in a controlled and consistent manner. Once the application is in production, integrity cannot be compromised; therefore, the release management processes must be adhered to.

Whether an emergency fix or the addition of a desired piece of functionality is required, the release management process will be used. However, an emergency fix will be expedited to provide the benefit to the state as quickly as possible without impacting other system components.

All work performed within the release management mechanism will result in a change request. The work to be performed under a change request will be assigned to a release and worked on with other tasks that are assigned to the same release.

Release Management Approach

For each scheduled release, the following phases are envisioned:

Planning

The Planning phase will involve a review and prioritization of all logged issues, followed by the identification of those issues to be tackled in the next release. A rough understanding of the issues and their likely resolution approach will be required at this point, although a detailed impact analysis for each issue will be performed during the Analysis phase.

Analysis & Design

Each issue previously identified as a candidate for the current release will be analyzed in more detail, and design documentation produced where necessary. An analysis of impact for each issue will then be produced – this impact analysis will cover the following areas:

- Description of required system modification – essentially the results of the Analysis and Design effort for this issue. This description will clearly define the individual system components that will require modification.
- Time Impact – how long it will take to perform the modifications required to resolve the issue. This will help determine if more (or less) issues can be resolved during the current release.

- Cost Impact– perceived value to DHHR in relation to the cost of addressing the issue. This will be useful in determining the cost/benefit to DHHR of each issue.
- Cost/Benefit Judgments – these will be the sole responsibility of DHHR, and will be incorporated into the Impact Analysis documentation by Windsor.

Once the impact analysis has been completed for the identified issues, Windsor and DHHR will use the additional information to discuss any necessary modifications to the list of identified issues for the current release. One other additional factor in making these adjustments is the availability of both DHHR and Windsor staff during the release period – in many cases, an issue will require significant effort involving both Windsor and DHHR, in order for a subsequent system modification to be made.

Development

Once the list of issues to be tackled has been confirmed, work will begin on the system modifications required to resolve these issues. This work will take place at Windsor's Offices, and may require substantial analytical input from DHHR staff members as the development effort progresses. At the end of development, Windsor will work with DHHR technical staff to deploy a new version of the application in the DHHR test environment.

Testing & Acceptance

The extent of the testing necessary, and the number of testing iterations required for each release, is likely to depend on the scope and scale of the changes being made. Changes to logic which is used across the entire system are more likely to require a full regression test than changes which are specific to a single area within the system, where it may be appropriate to "spot-test" just those changes. Windsor will work with DHHR to define the most appropriate testing strategy for the current release; however it should be borne in mind that the extent of testing will have an effect on overall schedule for the release, so some thought will need to be given to the testing process during the Planning phase.

Any problems encountered as a result of the modifications and testing will be corrected and retested as required.

Deployment

Once the modifications to the application have been tested and accepted by DHHR, the system will be moved into production at a time agreed by both Windsor and DHHR. Production verification of the deployment will take place to ensure that the deployment is successful, and that all necessary data migration tasks have been performed correctly.

Closure

Once deployment has been successfully performed, the release effort will be completed by performing the following tasks:

- Documentation Updates – all system design and maintenance documentation will be updated to reflect the current state of the application.
- Project De-brief/Lessons Learned – a meeting will be held to discuss the effort, successes and failures, and discuss any opportunities for improved future performance for both Windsor and DHHR.

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Warranties

Windsor warrants to the West Virginia DHHR that commencing from the date of delivery and continuing for a period of ninety (90) days: the software solution provided to satisfy this RFQ is (i) furnished to be free of defects and workmanship under normal usage and service and, (ii) conforms in all material respect to the specifications for the software which have been delivered to DHHR in connection with the project.

This limited warranty covers only the original customer (namely DHHR). Windsor's sole obligation and DHHR's sole remedy for any failure of the software is limited to the repair or replacement of the software at Windsor's discretion. Windsor's liability is limited to the amount paid for the software

Windsor shall not be liable for indirect, special, consequential or liquidated damages or penalties, including claims for lost revenues, profits or business opportunities, even if Windsor had or should have had any knowledge, actual or constructive, of the possibility of such damages.

This warranty shall be void if DHHR fails to use or maintain the software in accordance with Windsor's specifications or instructions, or if the software or any part thereof has been subject to any unauthorized modifications, improper operation, user negligence, service by unauthorized person, company or association, use with any unauthorized attachment, device or feature, accident neglect, misuse, tampering, acts of God, or any event other than ordinary use.

Policy Compliance

Windsor will comply with the West Virginia Office of Technology and DHHR security policies for IT services and applications. As noted in the Project Approach section, the WV Office of Technology policies as described at http://www.state.wv.us/ot/article2.cfm?atl=82E13BB8-9E19-5AF4-2845EB154B1C0142&fs=1 will be reviewed and adhered to throughout the project.

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Bid Sheet

Tasks (includes all components as described in specifications)	Deliverable Due Dates	Vendor Quotation Cost for Tasks
DELIVERABLE #1: Delivery of a Node Product that meets the specifications of the National Environmental Exchange Network version 2.0.	Within the first 5 months of contract date	$ 20,252
DELIVERABLE #2: Development of an exchange interface to use the software known as Lab to State for Laboratories and/or public water systems to transfer data over the internet into the existing Safe Drinking Water Information System/State version (SDWIS/State) which already exists within the WV DHHR environment.	Within the first 7 months of contract date	$ 192,250
DELIVERABLE #3: Development of an exchange interface and software for public water systems to enter an electronic version of existing or DHHR Monthly Operational reports, either by upload or by manual, on-line entry through a web form, transfer this information through the Node into SDWIS/State and be CROMERR compliant.	Within the first 9 months of contract date	$ 133,385
DELIVERABLE #4: **(Deductive Alternate)** Development of an exchange interface to allow water and wastewater operators plus water well drillers and pump installers, to view the information currently in SWOCS/SDWIS or associated databases through a vendor developed interface that establishes an individual user name and password for the operators, drillers and pump installers. Note: This deliverable will be a deductive alternative. In the event that the total cost of completed project exceeds the funds available, this deliverable may be deducted to complete the previous three deliverables.	Within the first 11 months of contract date	$ 49,918
	Total cost of completed Project	$395,805

Attachment A: Staff Resumes

Scott Remick

Project Experience

Biodiversity Data Exchange and Web Application Project – New York Department of Environmental Protection – Project Manager 2008 - Current

The main goal of the Biodiversity Data Exchange and Web Application project is to increase the effectiveness of the New York State Natural Heritage Program (NYNHP) and disseminate rare species and natural community data to entities within and outside the agency. As project manager, Scott has been responsible for developing the project schedule, the project plan and ensuring that the project is performed on time and within budget. Working with a team of analysts and developers, Scott has managed the analysis, design, development and implementation phases of the Biodiversity Web Application project. The Web application, called Nature Explorer, has an integrated spatial component. This application seamlessly integrates ArcGIS Server with a tabular-based Java Web application.

As part of this project, which is being supported by the Exchange Network Grant program, Scott will work with NatureServe and NYNHP to automate the biodiversity data exchange using DEC's Exchange Network Node and NatureServe's Exchange Network Node.

Groundwater Data Exchange Project – New York Department of Environmental Protection – Project Manager 2007 - Current

Scott is currently the project manager for the Groundwater Data Exchange, a collaborative data exchange project between the New York Department of Conservation (DEC) and the New York Department of Health (DOH).

Scott is responsible for maintaining the project plan and ensuring the project stays on schedule, and is performed within the allotted budget and specified scope. He has facilitated requirements gathering and design workshops and managed the development phase of the project. As part of this effort Scott has assisted in the design and development of several custom XML schemas to support the bidirectional flow of data between DEC and DOH. This large scale data exchange project includes four distinct flows between the two agencies, as well as a SDWIS flow to the EPA.

Water Quality Data Exchange & EIMS Project – New York Department of Environmental Protection – Project Manager 2007 - 2009

Scott was responsible for managing the Water Quality Data Exchange & Environmental Information Management System (EIMS) project with the New York Department of Conservation (DEC). DEC's goal was to implement an EIMS with the goal of providing a common integrated repository for the various sources of surface and groundwater data. The EIMS will improve and enhance the Department's environmental stewardship and protection of human health by enabling staff to better understand the condition of the natural environment in a cross-programmatic, holistic manner.

As the project manager Scott worked with both DEC staff and the EIMS contractors in order to facilitate a seamless system implementation. Scott has facilitated data need requirements sessions, data mapping and migration design sessions and strategy workshops. As part of this project, Scott was responsible for the flow of water quality data from the EIMS to the EPA utilizing WQX 2.0 as part of the national exchange network. DEC successfully sent their 2008 ambient water monitoring data to the EPA using the WQX 2.0 in mid-2009.

eManifest Pilot Project - New York Department of Environmental Protection – Lead Analyst/Designer 2007

As part of a Data Exchange Network challenge grant, the States of Michigan, Minnesota, Massachusetts and New Jersey have come together to develop a multi-state electronic manifest tracking system prototype. This e-Manifest system pilot will provide electronic tracking and management of hazardous waste manifests from the original generation of the identified waste to

its ultimate disposal.

As lead analyst on the eManifest project, Scott has facilitated large workshops with participants from several State agencies, as well as stakeholders from the regulated community in order to gather requirements and perform design sessions. Besides being a major contributor to the analysis documentation, Scott was responsible for the user interface design for the entire eManiest application.

Site Information Management System – Connecticut Department of Environmental Preservation – Team Lead 2004 - 2006

Scott was a team lead involved in the analysis, design, development, testing and implementation of the Site Information Management System (SIMS) for Connecticut DEP. The SIMS system is a suite of web-based applications designed to allow DEP 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.

As part of this project Scott managed several developers as well as worked with sub-contractors to ensure an smooth team effort working on concert. This project allowed Scot to become much more familiar with the integration between GIS spatial applications and tabular applications. SIMS spatial query tools, developed using FLEX, are an integral part of the overall solution.

The SIMS system was deployed in production at DEP in December 2006, and is intended to be a foundation for the development of future integrated systems at DEP. The first two of these integrated systems, the application and permit management application (PAMS) and the Accounts Receivable application (AR), are currently in the process of being built as part of the SIMS project.

EcoDeals Web site Development Project, State of Washington, King County Division of Solid Waste – Lead Developer 2005

Scott was an integral part of the EcoDeals Web site project. He held information sessions to gather requirements from the EcoDeals client team. He helped bring the ideas and concepts of the EcoDeals team into a concrete design that would produce a Web application that would meet the team's desired goals.

EcoDeals is supported by a Database driven, secure administration Web site, which was integrated into the existing Solid Waste Division (SWD) administration Web site. Here, SWD staff can post new discount coupons by uploading coupons (pdfs) and product photos directly to the database. These files are rendered on the public portion of the EcoDeals Web site where general public can browse products and download coupons. Users are tracked as they browse the site which provides important statistics to SWD staff, included most popular partner (store), most popular product and most downloaded coupon.

Scott performed all design and development tasks for the EcoDelas Web site project using ASP, JavaScript, XHTML 1.0 with a SQL Server Database.

Compliance Monitoring and Enforcement Data Warehouse Project, Michigan Department of Environmental Quality (DEQ) – Lead System Analyst 2004 - 2005

As part of the existing Facility Profiler data warehouse, Scott worked on a project with the goal of migrating facility and compliance data from multiple systems. This provided a comprehensive view of facility and compliance data throughout the entire agency, where administrative staff can merge duplicative facilities derived from multiple systems. Scott was involved from the start of the project, performing one-on-one data analysis meetings with each system representative. Scott created several project deliverables including the data model, data element dictionary, application design specification and system data mapping documents for each system.

Scott was the led system analyst and supported the development team during the construction phase of this project.

Treasury Web Portal Design & Build Project, State of Washington, Clark County, Treasury Department – Systems Analyst/Project Manager 2004-2005

Scott was lead analyst in a project performing 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 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 Website. 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.

Scott worked as Team Lead and Project Manager for the build phase of the project. During this period he led the development team in the creation of a secure ASP.NET/SQL Server Web Portal application. The portal database pulls from various data sources, including Oracle Financials. Scott held weekly status meetings with Clark County Project Managers to ensure that the entire team was kept abreast of the project status and schedule.

Water Quality Effectiveness Monitoring Web Application - State of Washington, Snohomish County, Public Works Department – Lead Developer 2004 - 2005

Scott designed, developed and implemented the Water Quality Effectiveness Monitoring application to support this newly established program. The Web application allows Effectiveness staff to enter structure, habitat, culvert and cross section survey data for particular streams and related projects. During the requirements gathering phase, Scott worked with the Effectiveness team to design a Web-based comprehensive report and delta report. Scott developed both reports using ASP/SQL Server technologies.

Reuse Recycle Database and Web Application Development Project, State of Washington, King County Division of Solid Waste – Lead Developer 2003 - 2005

Scott was involved as team lead on a project with King County Solid Waste Division to design and implement a reuse and recycle database. The solution provides the Division and the public differing easy-to-use interfaces to the information based upon their levels of authorization. Partner entities such as recycling facilities, providers, haulers, and cities are able to manage their specific information including facility information and recycling options for materials.

Implemented in SQL Server 2000 and ASP the application enables the user community to query the database from a "What do I do with" perspective. It then provides results that include reuse and recycling options for materials at facilities such as online material exchanges, charitable organizations, transfer stations and landfills. Users are able to locate facility information geographically through a map interface.

Scott currently maintains the administrative web application as well as the database driven portions of the public Web site. He frequently develops enhancement components based on Solid Waste request.

Salmon Recovery (Natural Resources) Web Data Portal - State of Washington, Interagency Committee for Outdoor Recreation – Team Lead 2003

Scott was responsible for the development of a web-based metadata portal for the State of Washington's salmon recovery efforts' data. From requirements gathering to the development of the portal, Scott was an integral part of the entire project. Using ASP on the interface and Microsoft SQL Server 2000 on the back end, a robust search tool and exceptionally secure system was delivered for external/internet usage. Security was enhanced by the exclusive use of stored procedures in the database.

Web Site Redesign Project – State of Washington, Clark County – Team Lead 2002 – 2003

Scott supported Clark County with the implementation of their Web site re-design. Working with all departments within the County, Scott assisted County staff implement development templates, establish the appropriate development environment, make technical architecture purchasing decisions, perform a content management package selection and provide specific development expertise.

Web Simulation Financial Transaction Interface Project – State of Washington, Clark County, Treasury Department – Team Lead 2002

As part of the Clark County Treasury Department's involvement in implementing Oracle Financials, they wished to establish an automated process of extracting/downloading financial transaction

history from their banking institutions and importing the data into Oracle Financials software. Financial transaction extractions were required from the following banking institutions: US Bank, Bank of America and First Independent. The goal was to perform these actions on a daily basis without human intervention.

The department elected to use Web simulation scripts to solve this challenge since the functionality of automatically importing financial transactions into Oracle Financials software from financial institutions was not available. Scott worked with the Department to investigate alternatives and the various offerings for each financial institution. He then designed and implemented the workflow and extract from County financial institutions, utilizing Internet macros and windows scripting host, in readiness for loading into Oracle Financials.

PDA System Analysis Project - Michigan Department of Environmental Quality (DEQ) – Systems Analyst 2002

Scott was the lead systems analyst on the portable digital assistant (PDA) system analysis project. He met with clients to gather detailed business and system requirements. Created a requirements definition and developed use case documentation using object-oriented modeling. The use case scenarios allowed the team to create accurate technical specification documentation for follow-on development efforts that would enable scalability, security and robust execution.

Ground Water Management Database Development Project – State of Washington, Snohomish County, Public Works Department – Lead Developer 2002

Scott was the lead Internet developer for the Ground Water Management Database project. He worked with the Snohomish County Surface Ground Water Management program to design and develop a relational database, data entry application and a Web Inquiry application. The Web application displays Ground Water data in both a textual (report) and geographical format. Scott built download routines that would allow further analysis and/or manipulation in comma-delimited file. Scott worked to integrate the Web inquiry application with a geographic ArcIMS application. This would allow users to perform geographically based search. Scott had to ensure that the design of the Web inquiry application complied and conformed to the existing Snohomish County Web site standards.

Surface Water Management Online Reporting Project – State of Washington, Snohomish County, Public Works Department – Lead Developer/Analyst 2001 – 2002

Scott worked with the Snohomish County Surface Water Management program to design and develop an online reporting application. The objective of this application was to make hydrologic, water quality monitoring and lake quality data available to both internal staff and the public community.

The Web application allows visitors to drill-down into data covering stream gages, rain gages, water quality and lake quality monitoring through a point-and-click map interface. The public can also select surface water points of interests and retrieve all measured data in a downloadable format for further manipulation and studies. The project involved the integration of a relational database. This allowed users to interrogate a database of over a million surface water measurements, and to produce meaningful textual and graphical representations of that data for research. Scott had to ensure that the design of the Web inquiry application complied and conformed to the existing Snohomish County Web site standards. Scott was involved in the analysis, design, development and implementation stages of the project.

Facility Profiler – Search and Report Web Site Application Project – Michigan Department of Environmental Quality (DEQ) – Lead Developer 2001 - 2002

Scott was the lead Internet Developer for the DEQ Facility Profiler project. He worked on the development of a browser-based application and data warehouse to support integration of agency data in the State of Michigan concerning facilities subject to environmental regulation. The goal of the project is to provide both internal staff and the general user community with text and geographic-based facility search capabilities. During the initial stage of this project, Scott worked with graphic designers to design the entire facility profiler application. He then implemented the design, and developed the text-based search and reporting capabilities. The next stage will be to

broaden the search capabilities to include geographic-based functionality.

Information Strategy Planning Project – Connecticut Department of Environmental Protection (DEP) – Lead Analyst 2001

Scott performed the role of integration systems analyst for an Integrated Information System (IIS) project as part of DEP overall Information Strategy Plan (ISP). The overall goals of this engagement were to develop a formal strategic information management framework and to define technology projects that support the DEP.

Scott developed a Web-based agency-wide survey to characterize current information stores and systems. The Web-based survey allowed multiple DEP employees from various locations to enter information about their particular systems. The data was stored in a normalized SQL Server database, which was converted to an Access format for future analysis by DEP. Scott developed a written summation of the current information technology tools and systems and presented the findings to DEP staff.

Intranet Content Management Application Project – State of Washington Office of the Governor – Lead Developer 2001

Scott was the lead Internet Developer for the Washington State Governor's office project. He designed and developed a custom content management solution for the automation of time-critical content displayed on the Governor's Web Site. He was involved with the detailed analysis that identified and justified the types of content to be maintained via the new content management application. Scott assessed the current technical architecture employed by the Office of Financial Management and State's Department of Information Services (DIS). The implementation of the Governor's system involved filling gaps between two unique architectures employed across three State agencies.

Web Site Redesign, Intranet and E-government Project – The City of Woodinville – Lead Developer 2000 – 2002

Scott performed the role of Internet Developer on this project to enhance the city's Intranet, which was developed earlier in this project. Scott was involved throughout the Woodinville project, which included the following components: web site redesign, custom-built web site content management, and the City of Woodinville Intranet. Each component had the particular objective of advancing the capabilities of the Web site towards the City's vision for an advanced community Internet presence. During this project, Scott designed and developed a content management application that could be used by internal users to update the website. Scott also focused on the implementation of Intranet and e-government capabilities, which included a roadmap for integration of future requirements over time.

Water Rights Litigation Project – New Mexico Office of the State Engineer – Business Analyst 2000 – 2001

As a senior systems analyst, Scott conducted a comprehensive system requirements definition for the Legal Services Division's adjudications information management system. Scott utilized an object-based approach to perform business and technical requirements gathering tasks, including the development of as-is and to-be business models, requirements gap analysis, and the development of use cases. He also helped to define the technical architecture required to support the adjudications system, including consideration of the architectural direction for the Division and agency as a whole.

Information Strategy Planning Project – Arkansas Department of Environmental Quality (DEQ) – Business Analyst 2000

Scott performed the role of integration systems analyst for an Integrated Information System (IIS) project as part of DEQ's overall Information Strategy Plan (ISP). Scott performed a current systems assessment by developing a current systems inventory for the agency. As part of Scott's responsibilities was the facilitation of strategic requirements gathering sessions for the 20-person workgroup to identify integration information needs, integration benefits and possible risks and obstacles. He also investigated other State integration initiatives as well as other integration software packages for possible adaptation and/or purchase. Based upon the analysis of the

gathered information Scott contributed to the development of a conceptual architecture and implementation plan.

B2B Portal Project – Radnet, Inc. – Developer 1999

Scott was involved in this engagement from business requirements capturing through project implementation. As a designer and developer he was additionally assigned responsibility for enhancements to the existing PortalworkX product. He developed custom components for the Compaq Marketing Portal utilizing a variety of Internet technologies.

Insurance Product Conversion Project – John Hancock Mutual Life Company – Lead Analyst 1998 – 1999

As a functionality expert and interface system expert, Scott assisted with the creation and implementation of a scaleable and reusable insurance product conversion process for the John Hancock Mutual Life Company. Scott was responsible for capturing business requirements and for facilitating mapping workshops. He also acted as the primary liaison between the development team and the Interface Target System team throughout development, implementation and production.

Teller System Project – BankBoston (Fleet) – Lead Analyst 1998

Scott performed the role of testing analyst and testing team lead with the responsibility of developing and implementing a testing methodology for current and future release management of the Teller System. Scott facilitated meetings to discuss defects with the client and the development community at which optimal solutions for both the business function and the technical teams were evaluated.

Document Management Package Implementation Project – DuPont Corporation – Systems Analyst 1997

As a systems analyst, Scott performed "as-is" analysis and defined business requirements in order to ensure an accurate and efficient software selection process. Scott performed requirements mapping to packages and established supporting data elements, data flow and process flow diagrams to assist with the package selection.

Employment History

Consultant, Windsor Solutions, Inc.	2000 – Present
Consultant, Accenture (formerly Andersen Consulting)	1997 – 2000
Research Consultant, Amicon A.B.	1996

Education

B.Sc. Finance / Investments and Economics – Babson College, Wellesley, MA 1996

Achievements

Valedictorian, Babson College, Wellesley, MA 1996

Qualifications and Skills

Technologies	*Languages*
SQL Server	ASP 3.0
Oracle	JavaScript
Active Server Pages	VBScript

ASP.NET
XML

Software

Dreamweaver/ Fireworks
oXygen XML Designer
SQL Server Management Tools
TOAD / Aqua Data Studio

XML
HTML / CSS / DHTML
TSQL
Windows Scripting Host

Skills

Project Management
Analysis / Requirements Gathering
Business Process Reengineering
Design / Prototyping
XML Schema Design
Use Cases Development
Software Package Evaluation
Data Warehouse Design
Programming

Keith Fraser

Project Experience

Drinking Water Sample Collector – New Mexico Environment Department – Project Manager 9/08 – Present

Keith is currently managing 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 consists 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 are able to retrieve information about those samples via a web-service available over the internet. The Sample collector system is designed to integrate with the SDWIS/state system, in common use throughout the U.S. The Drinking Water Sample Collector system is being built using Java with an Oracle 10g DBMS, and is scheduled to be deployed in February 2009.

Air Emissions Inventory Reporting – New Mexico Environment Department – Project Manager 4/08 – 8/08

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. The Air Emissions Inventory Reporting system is scheduled to be built in March 2009, using Java with an Oracle 10g DBMS.

Site Information Management System – Connecticut Department of Environmental Preservation – Project Manager 11/04 - Present

Keith is currently leading a team performing the development, testing and implementation of the Site Information Management System (SIMS) for Connecticut DEP. The SIMS system is a suite of web-based applications designed to allow DEP 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 deployed in production at DEP in December 2006, and is intended to be a foundation for the development of future integrated systems at DEP. The first two of these integrated systems, the application and permit management application (PAMS) and the Accounts Receivable application (AR), are currently in the process of being built as part of the SIMS project. Both of these integrated applications are scheduled for production deployment at DEP by the end of 2008

Cost Recovery Invoicing System Migration – Oregon Department of Environmental Quality – Project Manager 09/04 – 11/05

Keith led a team performing the re-engineering and migration of Oregon DEQ's Cost and Revenue accounting system (CRIS). This large system allows Oregon DEQ to manage and recover the cost of cleanup and spill response activities conducted throughout the state. Windsor has completed an analysis of the capabilities of the existing system and any requested enhancements. A new system design has been produced which supports the analysis findings, whilst migrating the system to a more modern .NET and SQL Server-based platform. New system build is currently underway.

Environmental Information Portal Analysis & Design – Washington Department of Ecology – Project Manager 09/04 – 03/05

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 07/04 - 02/05

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 03/04 - 06/04

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 10/02 - 02/04

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 03/03 - 06/04

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 12/02 – 08/05

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 04/02 – 01/03

Keith managed the Windsor project team engaged in this project to redevelop DEQ's Environmental Cleanup Site Information (ECSI) system using Microsoft's leading edge .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 leading edge 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 09/01 – 03/02

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 10/00 – 08/01

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

Technology recommendations covered development tools and languages, web servers, application servers, middleware, security and application components.

Pickup & Delivery System – Menlo Worldwide – Project Manager 01/00 – 09/00

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 04/98 - 12/99

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 01/99 - 12/99

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 04/98 - 11/98

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 01/97 - 03/98

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 activities.

Cargo Operations – Menlo Worldwide – Business Analyst 01/96 - 12/96

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 02/95 - 12/95

Keith completed a client engagement at PacifiCorp a Northwest Electricity generator and provider, developing 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 10/93 - 01/95

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 a CICS/DB2 production environment.

Core Logistics System – Rank Xerox – Analyst Programmer 09/91 - 09/93

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.

Employment History

Project Manager, Windsor Solutions, Inc.	01/00 – Present
Consulting Partner, Deschutes Consulting, Ltd.	04/98 – 12/99
Senior Consultant, Emerald Solutions, Inc.	01/96 – 03/98
Senior Consultant, Claremont Technology Group, Inc.	10/93 – 12/95
Analyst Programmer, Rank Xerox PLC.	09/91 – 09/93

Education

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

Achievements

Certified Project Management Professional (PMP) 2003

Qualifications and Skills

Technologies

Languages

Software

Other

Project Management, Requirements Gathering, Workshop Facilitation, Current System Analysis, Management of Data Migration efforts, GUI Design, Relational Database Modeling and Design, Management of VB.NET projects

Joe Niski

Project Experience

OpenNode2 Implementation– Georgia Department of Natural Resources – Technical Architect 10/09 – present

Joe is upgrading Georgia DNR's Windsor Node to OpenNode2. This installation will include upgrading production Exchange Network flows SDWIS, WQX and Beach Notification.

OpenNode2 and HERE Implementation– Ohio Environmental Protection Agency – Technical Architect 08/09 – present

Joe architected, developed, tested, and is deploying OpenNode2 for the Ohio EPA. This installation includes implementing the SDWIS flow for submitting drinking water data to the US EPA, and implementing the FACID and Tier2 in support of version 2 of the Homeland Emergency Response Exchange (HERE).

OpenNode2 and HERE Implementation– Missouri Department of Natural Resources – Technical Architect 06/09 – present

Joe architected, developed, tested, and is deploying OpenNode2 for the Missouri DNR. Joe also deployed several production Exchange Network flows, including FRS 2.3, RCRA, and SDWIS, as well as several HERE flows.

ECOS Award and Release of OpenNode2 as Open Source EN Node Solution– Technical Architect 04/09 – present

Joe helped prepare, document, and release v1.0 of OpenNode2 Exchange Network Node solution to the open source community. OpenNode2 was selected by ECOS to be the open source Exchange Network Node solution for network partners. Two months later, Joe helped release v1.1 of OpenNode2 with multiple enhancements as part of a continuous improvement effort of the software. Joe provides ongoing support for OpenNode2 open source solution to Exchange Network partners, and will architect and develop several additional Exchange Flow plug-ins that will be released at part of OpenNode2 through the end of 2009.

Network Node 2.0 Implementation Project – New York Department of Environmental Conservation and Department of Health – Technical Architect 07/08 – present

This project is a major upgrade to Windsor Solutions' implementation of the DEC's Exchange Network Node. Joe is enhancing the Node to process messages based on version 2.0 of the Network Node functional specification, which in turn is based on new web services standards. The upgraded Node will offer more robust document-handling for applications built on the 2.0 specification, while continuing to process version 1.1 messages. This will allow the DEC to gradually migrate to the new messaging architecture. Joe is responsible for evaluating and selecting key technology components, and for implementing the new system architecture.

In addition, Joe deployed a new installation of the Node to the Department of Health, and designed and developed a suite of custom data flows that enable inter-agency exchange of drinking water and groundwater contamination data between the DEC and DOH.

Joe continues to provide support for the Windsor Node to both DEC and DOH.

E-Commerce Framework - US Bank - Technical Architect and Development Lead 04/02 - 09/06

Joe had primary responsibility for designing and developing an in-house J2EE application framework for business-to-consumer, business-to-business, and internal systems. This framework is used by hundreds of developers to build dozens of applications, including on-line consumer banking, payment processing, loan applications and processing. The framework makes extensive use of distributed messaging systems for integrating with mainframe and distributed applications hosted within the bank and by business partners. In addition to extensive custom code, the framework leverages best-of-breed commercial and open source middleware and component

libraries.

Joe played a central role in designing, developing, and supporting the framework. He also provided architectural guidance, implementation assistance, documentation, and production support for business systems built on the framework. His efforts resulted in the COO's Distinctive Leadership Award for Intellectual Effectiveness in 2005.

MediaNet - Quaker Oats - Technical Architect and Development Lead 05/01– 03/02

Quaker's Media Relations team needed an easy-to-use tool for communicating with the trade press and news media. Joe designed and developed a secure, template-driven application that reduced the time and effort required to format and publish press releases and email campaigns, and that improved the user experience for media visitors.

DarkSite – Quaker Oats - Technical Architect and Development Lead 11/00 – 04/01

Quaker Oats needed an emergency web-publishing mechanism in the event of product tampering, contamination, or recalls for over a dozen Quaker food brands. Joe designed a custom content management system that allowed Quaker staff to securely create and update breaking news, and to automatically place alerts and links to emergency information on the websites of all Quaker brands.

Joe worked directly with the client to define functional, performance, and security requirements, led the development and testing teams, coordinated deployment and testing with the hosting provider, and supervised the first real-world use of the system.

Cap'n Crunch Website – Quaker Oats - Technical Architect and Development Lead 08/00 – 11/01

Joe lead the technical architecture and development of a complete redesign of a promotional website targeted to children from ages 8 to 12. Site features included parent-approved membership, personalization and themes, secure email and discussion groups, interactive games and puzzles, and customized content based on user profiles and on-site behavior.

Joe partnered with the creative design and hosting teams to deliver a high-performance site that made extensive use of rich media content. He designed the data model and personalization subsystem, and led the development and testing teams.

Thinking Economics - National Council on Economic Education - Technical Architect and Development Lead 09/99 – 08/00

Joe was the technical architect and led the development team for this interactive economics course for high school students. The curriculum includes text and graphics, narration, video, interactive quizzes and tests, and workbook exercises. Delivered on CD-ROM, the curriculum can be run on individual PCs, across a LAN, or delivered via the web.

Working with a large team of instructional designers, audio and video producers, and graphic artists, Joe designed a custom content-management solution that let writers, videographers, designers, and voice talent work in tandem, and built an integration framework that allowed technical staff to produce a working version of the curriculum on a moment's notice. Content was developed domestically and assembled by an off-shore sourcing partner; Joe installed the integration system at the partner's site, trained the production staff, and coordinated the integration and testing phases.

Employment History

Consultant, Windsor Solutions, Inc.	07/08 – Present
Senior Industry Analyst, Burton Group	09/06 – 06/08
Senior Framework Architect, U.S. Bank	04/02 – 09/06
Senior Project Architect, Cybersight/Nine Dots	08/00 – 03/02
Technical Director, Creative Media Development	12/97 – 08/00
Director of Engineering, Creative Multimedia	04/96 – 10/97

Education

Coursework in Mathematics and Computer Science, Portland Community College	1990
Graduate Coursework in Adult Learning and Instructional Design, Portland State University	1989
Bachelor of Arts – Reed College, Portland, Or	1983

Achievements

Author of twenty in-depth whitepapers on software development practices, methodology, frameworks, and tools. Consultant to corporate IT organizations in North America, Europe, and the Middle East.	2006-2008
Recipient of U.S. Bank COO's Distinguished Leadership Award for Intellectual Effectiveness	2004

Qualifications and Skills

Technologies

Java and Java Enterprise Edition

Open-source Java components and application frameworks

Message-oriented Middleware: JMS, Tibco Rendezvous, IBM MQ

SOAP and the Web Services Framework

.NET 2. And 3.x

Web protocols and languages (XML, HTML, JavaScript, AJAX)

Database systems (DB2, MS SQL Server, Oracle, MySQL)

Build automation and scripting (ANT, make)

Unit testing frameworks

Languages

Java

JavaScript

HTML/XHTML

XML/XSD/XSLT

Ruby

C#

ColdFusion

Visual Basic

Software

Major integrated development environments, version control/configuration management tools, open source and commercial productivity software

Other

Unified Modeling Language

Rational Unified Process (RUP)

Agile development techniques

Experience developing on and administering Windows, MacOS, Unix, and Linux systems.

Mary Simmons

Project Experience

NYDEC29 - Air Certification and Emissions Electronic Reporting– New York Department of Environmental Protection – Business Analyst 2009 - present

The goal of this project is to improve the timeliness, efficiency, and accuracy of the submission of annual and semi-annual air compliance certification reports. Mary is currently assisting the Windsor Solutions team and the DEC in developing and implementing a Web-based application that will be used by the regulated community. The system will expand the electronic compliance certification system to include semi-annual compliance reports and annual capping certifications, as well as annual emissions inventory reports. These enhancements will allow regulated facilities to make one submittal that is accessible to all recipients, and will speed evaluation of the reports, leading to improved data quality and faster compliance enforcement. As a business analyst, Mary works within a team to gather and document requirement data and reporting requirements. She was also responsible for generating mock-up GUIs based on required and business processes. Mary will also be part of the testing process during all stages of the project.

Water Quality Data Exchange & EIMS Project – New York Department of Environmental Protection – Business Analyst 2008 – 2009

Mary was responsible for data analysis of the Water Quality Data Exchange & Environmental Information Management System (EIMS) project with the DEC. DEC's goal was to implement an EIMS in order to provide a common integrated repository for the various sources of surface and groundwater data. The EIMS improved and enhanced the Department's environmental stewardship and protection of human health by enabling staff to better understand the condition of the natural environment in a cross-programmatic, holistic manner.

As the business analyst, Mary worked with both DEC staff and the EIMS contractors to complete data modeling, data mapping and migration design tasks. As part of this project, Mary shared responsibility for the flow of water quality data from the EIMS to the EPA utilizing WQX 2.0 as a part of the national exchange network.

Human Resources Information System – Checkwriters Payroll, Inc - Lead Business Systems Analyst 2008

Mary was lead analyst on this project to manage sensitive human resource related information from end users and/or human resources personnel. Part of this project included extracting data from a separate payroll specific database. Having this data available in a holistic view allowed payroll managers and human resource personnel increased efficiency in data entry, data management and reporting, as well as in communicating within departments and with the employee. Mary worked with Checkwriters staff to develop business requirements and a development strategy for this tool. Additionally, she interviewed and recommended web design firms to aid in the graphic design of the tool.

MMInfo Redesign and Content Management Application – MassMutual, MMInfo – Senior Systems Analyst 2006-2007

Mary was the lead analyst on this project to redesign the existing intranet architecture and introduce the first content management application to the Corporate Communications department. She worked closely with the developers identify intranet structure and implement a library of re-useable components using the latest Java technology. Mary also facilitated sessions with the end users to gather and confirm business requirements that included mandatory workflows as well customization and usability. Additionally, Mary created test scripts and delivered all Quality Assurance requirements as necessary.

POS and Payroll Deduction – MassMutual, Corporate Services – Project Manager 2004 - 2006

Mary was the project manager on this two campus, company-wide initiative. Working with a project team that included two outside vendors, a development staff located on two separate

campuses, security departments on two campuses and the human resources department, this project implemented the company's first point of sale system. The initial phase involved three cafeterias and the main campus gift shop, future phases were scheduled to include over a dozen other services or vendors within the buildings. A payroll deduction system was also customized with the initial rollout, and interfaced with both the POS and the Payroll systems.

Mary successfully guided this effort through the entire project lifecycle – from the RFP solicitation through the first payroll cycle after the project's roll-out. She created and maintained project cost reports, time reporting, project timelines and corporate compliance documentation. She gathered business requirements from multiple clients across three states and two campuses. She analyzed data flows between systems and architected new flows, always in accordance to privacy standards and information security practices. Mary also adhered to the corporate project management lifecycle requirements pertaining to documentation, checkpoint approvals and quality assurance approvals.

Online Procurement – MassMutual Corporate Services, MassMutual – Lead Analyst 2002 - 2003

Mary was the lead analyst on a company-wide upgrade from a legacy Outlook application to a web-based application for ordering hardware and software. Mary facilitated several requirements gathering sessions to understand the complex approval process and ordering standards, as well as the essential reporting features of the system. Detailed documentation was provided to senior management, including cost-benefit analysis, comparative analyses and project schedules.

Mary produced detailed functional and design specifications and led a team of developers, ensuring that compliance and quality assurance checkpoints and approvals were adhered to. In addition, Mary managed end user testing and training materials, as well as assisting the procurement staff in metrics gathering and ongoing training and security management.

Corporate Services Websites – MassMutual Corporate Services, MassMutual – Senior Systems Analyst 2002-2002

The goal of this project was to ensure each department within the Corporate Services umbrella established a web presence on the MassMutual Intranet site, for informational and marketing purposes. Meeting with representatives at all levels of the company, Mary gathered business and design requirements for each department, produced project plans and functional specifications for each department, and developed the sites. Mary ensured all compliance and quality assurance standards were met, as well as training some of the more technical end users in how they could upload documents to their sites. Mary also consulted with department heads on web site strategy and how the web could be used as a cost-effective marketing tool to generate revenue and increase their department's revenue.

E-Worksite – MassMutual.com, MassMutual – Senior Systems Analyst 2000 - 2001

E-Worksite was MassMutual's first e-Commerce application. Working with the Retirement Services department and developers across two campuses, Mary was an integral part of producing this tool that would allow on-line purchasing of disability insurance. Mary gathered functional requirements for this tool, formulated design, coded, tested and trained other developers in new programming languages. She also produced extensive technical documentation. During this time Mary was also active in training developers in new technology in cross-department forums.

Online Grocery Shopping Application – Independent Delivery Systems –Senior Systems Engineer 1998-1999

Mary participated in the analysis and development of a new e-commerce website for the leading on-line grocery delivery service in 1998. Utilizing new technology and working with a team of four developers, Mary gathered business requirements, wrote functional specifications, and helped to develop the application in all phases of the software lifecycle. She also initiated an effective communication strategy between the technical and business team to minimize the number of meetings that were being required. Utilizing issue tracking logs and test templates reduced the number of meetings 50%, leading to an increase in productivity and overall morale of the project.

Employment History

Consultant, Windsor Solutions, Inc.	2008 - present
Database Manager, Jewish Geriatric Services	2008 – 2008
Lead Business Systems Analyst, Checkwriters Payroll, Inc.	2007 – 2008
Senior Systems Analyst, MassMutual Intranet, MassMutual	2006 – 2007
Senior Systems Analyst /Project Manager, Corporate Services, MassMutual	2002-2006
Senior Systems Analyst, MassMutual.com, MassMutual	2000-2001
Senior Systems Engineer, New Technology Solutions, Inc.	1998-1999

Education

BA – Southern Connecticut State University, New Haven, CT 1996

Qualifications and Skills

Software

SQL Server
Vignette StoryServer/6
Microsoft Access
Microsoft Office
Microsoft Project
Microsoft Visio
Raiser's Edge
Crystal Reports

Languages & Technologies

SQL
XML/XSL
Visual Basic
TCL
HTML/ASP
JavaScript/VBScript

Project and Analysis

Application Design
Business Analysis
Data Modeling
Effort Estimating
Process/Flow Models and Diagrams
Project Management
Report Design
Requirements Gathering, Documentation, & Management
Test Plans including n-tier and Web
Use Case Writing
User Interface Design and Prototyping

Suresh Sikharam

Project Experience

State of New York Department of Environmental Conservation *April 2008 – Present*
Architect and develop database solutions for complex business problems - Comparative Analysis, Special Assessments

Suresh was the lead database analyst/developer with responsibility for developing the most complex module, Comparative Analysis and Special Assessments for NYDEC's Integrated Hazardous Waste System. Suresh's expertise allowed him to architect and develop this complex module to support e-Smart application. He created Visio architectural documents to keep all parties informed and involved. Suresh developed the solution and also created a logging mechanism to log database activity and set up e-mail routines to alert personnel when a certain event takes place in the database. With his 12+ years of database development experience he created complex and highly efficient database solutions for Manifest Production Search, Comparative Analysis, Nightly Monitoring and Refresh of Handlers, and Annual Reports, to name a few. He has also prepared technical articles and presented them in brown bag sessions to the internal staff to educate and share his knowledge. He also developed robust database scripts in the form of packages, procedures, triggers, functions, views, etc. to support the e-Smart application which runs on Oracle 10g database with Java as the front-end. Suresh worked with the clients' DBA team and transitioned very complex programs. Suresh's "logging mechanism" to log database activity initiated by the application has reduced the troubleshooting time for issues from weeks to hours in some cases minutes. He also performed numerous database conversions from SQL Server to Oracle and vice versa.

State of New York Department of Environmental Conservation *October 2007 – March 2008*
Architect and develop database solutions for complex business problems - Annual Reports (Production Search)

Suresh was the senior database analyst/developer for the development of the New York Department of Environmental Conservations' new Integrated Hazardous Waste System, which was in its second phase when he joined. This is a four-phase project that will integrate data from four separate programs: Manifests, Annual Reports, Regulatory Fees, and Special Assessments. Suresh's wealth of knowledge in database development was used in developing cutting edge solutions and resulted in the creation of some of the most complex and highly efficient database programs for Manifest Production Search. He has also prepared technical articles and presented them in brown bag sessions to the internal staff to educate and share his knowledge, proposed changes to the design where necessary and re-engineered numerous scripts for better performance. He fixed and enhanced numerous packages, procedures, triggers, functions, views, etc. to support the e-Smart application. Suresh proposed versioning of scripts to help ease maintenance, and took full responsibility in the deployment of the developed solution to the client.

AMI Semiconductor, Inc. *June 2007 – October 2007*
Sr. Programmer Analyst on I2DM (Demand Planning Software)

As a Senior Programmer Analyst, Suresh was responsible for the I2DM application support from a technical standpoint. Also responsible for data extraction, loading, training end users, supporting the system 24X7 along with application tuning, monitor system, resolving customer issues in a timely manner. He worked on state of the art forecasting methods to provide a competitive edge in the market. Worked with CCB (Change Control Board) to deploy solutions with little to no down time.

Nike Inc. *August 2004 – June 2007*
Technical Production Support Lead at Nike in the
GBI (Global Business Intelligence) Production Support

As lead of the production support team, Suresh's responsibility was to maintain accountability for delivering results to the BSD (Business Solutions Delivery) group; make decisions that save time and money for Nike; and to undertake challenging technical tasks and perform hands on development and execution of mission critical tasks. To improve performance of the Data Mart, he archived 50+ million records from a 250+million record MRP table, paying attention to detail such as setting the indexes to unusable state before the load and rebuilding them after the load. Suresh used out-of-the-box methods such as parallel partition data loads across db link to improve load times, develop, test and execute them. He tuned numerous scripts that were performing poorly by taking advantage of Oracle's performance improvement techniques such as hints (parallel hints, joins, etc.) where possible. He maintained the weekly production support calendar while taking into account team members' request for time off, etc. Taught junior developers how to properly use hints, set operations, oracle functions, etc. and helped BSA's with their questions on certain SQL functions. Worked with batch support in creating numerous autosys jobs, setting their dependencies, and also participated in the performance improvement of the batch. Prioritized and assigned tasks to team members. Trained the team members with the day to day operations while stressing the importance of adhering to the native SDLC standards. Managed a team of 4 members and tracked and approved their time. Offered suggestions in making key decisions for our group. Responsible for production support 24X7 in the Global Business Intelligence/OMDL (Order Management and Deliveries) team, identified and analyzed issues, drafted solutions and resolved them in a timely manner. Developed releases, prepared/updated technical specifications to enhance, modify/fix existing PL/SQL and UNIX code in the Data Warehouse and Data Mart space while following the native SDLC process.

Xerox, Inc. *March 2004 – June 2004*
Sr. Oracle Contractor

As part of the Eastern European revenue recognition team, Suresh worked on PL/SQL scripts that accrue revenue from various meters for various contract types. These complex scripts required design changes. Suresh provided a mechanism that resulted in recognizing revenue now vs. later. He fixed numerous bugs in the code and brought the code to a more efficient and usable state. Taught junior developers about SQL and PL/SQL, its usage and helped them understand the Oracle Architecture, etc.

Nike Inc. *October 2003 - January 2004*
Sr. Oracle Consultant at Nike in the
NSC Nike Supply Chain and APO DP (Advanced Planning and Optimization Demand Planning)

As part of the NSC (Nike Supply Chain) APO DP (Advanced Planning and Optimization Demand Planning) development team, Suresh's responsibilities included analysis, design, and development of programs using Oracle 9i, PL/SQL and UNIX. Created views, PL/SQL tables, partitioned tables, local indexes, packages, triggers, data load scripts, document UNIX processes, etc. Nike manufactures apparel and footwear/equipment product lines. Complex business rules are applied to meet the demand for these products. Part of the APO interface project is to extract and prepare large amounts (millions of rows) of product data from the OLTP system using complex logic and supply it to the downstream business warehouse system for further demand planning analysis. Suresh reviewed the functional specifications to meet the APO DP requirements, interacted with the business analysts to understand the business processes, developed and reviewed technical specifications to meet the requirements, developed PL/SQL programs to meet the technical specifications, and adhered to strict internal coding standards. Suresh was responsible for understanding the custom developed

infrastructure for the processes and providing support to address issues and incorporate new requirements that were added after the project was kicked off.

Hollywood Entertainment Corporation — *April 2002 – January 2003*
Technical Lead in the Merchandising group

As a technical lead in the merchandising group for the Like Title Right Buy Project, Suresh had heavy interaction with the customer and the information systems staff. He created the business process models using Rational UML (Swim-lane diagrams) and helped establish the contract and commitment between the customers and the IS department. He participated in the Use Case Reviews and was heavily involved in the analysis of the existing systems by reviewing UNIX shell scripts, PL/SQL scripts, and developing the architecture for the Like Title Right Buy system. Suresh identified critical components of the system for ease of re-engineering and developed complex PL/SQL packages and XML wrapper functions to support the system and business functions. He received commendation from the Director of Merchandising and the customer and his immediate IS manager for work well done in presenting the business processes model to the customer. Suresh developed a Delphi application to support internal need for monitoring system performance. He was also developer for Crystal Reports to satisfy some end user requirements.

Employment History

Sr. Consultant, Windsor Solutions, Inc.	October 2007 – Present
Sr. Programmer Analyst, AMIS, Inc.	June 2007 – October 2007
Production Support Technical Lead, Nike, Inc.	August 2004 – June 2007
Sr. Oracle Contractor, Xerox, Inc.	March 2004 – June 2004
Sr. Oracle Consultant, Nike, Inc.	October 2003 – January 2004

Education

MS in Civil Engineering, SIUE Edwardsville, USA	May 1997
BE in Civil Engineering, Osmania University (MVSR), India	June 1995

Achievements

Received Excellence certificates from clients for my work.	2000
Completed 2 of 5 Oracle Certification courses toward OCP.	1999

Qualifications and Skills

Technologies

*Oracle, SQL*Loader, SQL Navigator, PL/SQL Developer, Erwin, SALSA (Data Modeling Software and Schema Generator), Visual Basic 3.0, 4.0 and 6.0, Power Builder 4.0 and 5.0, MS-Office entire suite, MS-Access, Word Processors, PowerPoint, Lotus-123, Lotus Notes, Erdas (GIS image processing), Btrieve database system, K-man (RDBMS), Scopus. MSAD*

Languages

SQL, PL/SQL, C, C++, Visual Basic 3.0, 4.0, HTML, Java 1.1, Fortran, Pascal, QuickBasic and TCL, XML, basic understanding of ABAP, SSIS.

Software

*Oracle Applications 10.7 SC, Oracle 11g, 10g, 9i, 8i, 7.3.4, Oracle 7.3.3 (RDBMS), SQL*Plus, Forms 4.5, good knowledge in using Designer 2000 and Discoverer 2000, Borland Delphi 6.0, SAP BW, 2004S Net weaver, I2DM, Lua, SQL Server 2005*

Operating Systems

UNIX, NT, Ubuntu Linux, Windows all flavors including Windows 7 Beta., SUN OS, MS-DOS.

Eric Chan

Project Experience

Water Sample Collection Application – New Mexico Environment Department – Developer 09/08 – 02/09

Eric was the main developer on this project. This application is to support the entry of drinking water sample collection data by samplers. It also allows samplers and internet users to view and edit data. It is closely integrated with SDWIS, an existing application data point.

Main technologies used on this project are Wicket, Hibernate, Maven, and jQuery.

eSmart – State of New York, Department of Environmental Conservation- Developer 08/07 – 10/08

eSmart stands for Special assessment, Manifest, Annual reporting, Regulatory fee Tracking system. All of these hazardous waste program areas are interconnected through data gathered by the hazardous waste manifest program and identify a hazardous waste handler by their USEPA ID number. Eric worked on the Annual Reports and Special Assessment modules of this project.

Main technologies used on this project are Spring, Hibernate, Maven, and jQuery.

Windsor Node 2008 – Developer 03/08 – 04/08

Eric worked on polishing the user interface of the Node to be more user-friendly. This included more interactive elements such as form auto-completion fields and ensuring that the interface looks and behaves the same across all supported browsers.

Main technologies used on this project are HTML, CSS, and jQuery.

US Bank – Application Consultant 08/04-08/07

Helped in developing important revenue generating applications for one of their core business lines. Became one of the main developers to polish the user interface to make it more refined in look and feel. Also supported multiple business lines by maintaining and updating the main usbank.com Web site.

Nike Inc. – Intern 06/02-09/02, 06/03-9/03

Developed internal recruiting tools for the human resources department. Also co-owned an intern project called "Hoopla" that featured a new intern every week with interviews and a web page about them. The project focused on design as the Hoopla Web site was tabloid oriented and served to be fun and entertaining.

Employment History

Software Developer, Windsor Solutions 08/07 - Present

Software Developer, US Bank 08/04 – 08/07

Education

Computer Science, BS – Oregon State University 2004

Qualifications and Skills

Technologies	Languages
Wicket, Spring MVC, Struts, Maven, Hibernate, Ant, jQuery, Jasper Reports	Java, PHP, SQL, Javascript, HTML

Software

Eclipse, iReport, SQL Developer

Other

Fluent in Mandarin Chinese