Network Knowledge Meeting
May 5, 2003
San Francisco, CA
Draft Meeting Summary

Attendees

Molly O'Neill, ECOS	Pat Garvey, EPA OEI	JeanCirciello, EPA Region 9
Nadeen Paradis, Arizona DEQ	Daniel Kwit, Arizona DEQ	Nora McGee, EPA Region 9
Robert Zimmerman, Delaware NREC	Charles Holloway, Arkansas DEM	Laura Yoshii, EPA Region 9
Melanie Morris, Mississippi DEQ	Pat Helling, Hawaii Dept. of Health (Office of Env. Control)	Sandra Chew, EPA Region 9
Dennis Burling, Nebraska DEQ	David Hindin, EPA OECA	Pat Eklund, EPA Region 9
Jeff McKay, Bay Area Air Quality Mgt District	Stephen Hale, EPA ORD	Chun Liu, EPA Region 9
Renee Martinez, New Mexico ED	Mike Shapiro, EPA OW	Denise Zvanovek, EPA Region 9
Debbie Stewart, Washington Dept. of Ecology	William Sonntag, EPA OEI	Catherine Brown, EPA Region 9
Miles Neale, Washington Dept. of Ecology	Chris Clark, EPA OEI	Warren Beer, EPA Region 9
Robin H.Trenbeath, Montana DEQ	Terry Forrest, EPA OEI	Carey Houk, EPA Region 9
Gary Arstein-Kerslake, California EPA	Dawn Caye, Cahto Tribe	Ann Lam, EPA Region 9
Peter Staklis, California Waste Integrated Mgt Board	Sarah Kelly, Institute for Tribal Env. Professionals	Jeff Losel, EPA Region 9
Robert Horowitz, California Integrated Waste Mgt Board	Randy McIntosh, NW Indian Fisheries Commiss.	Paul Podvin, EPA Region 9
Chris Allen, California Integrated Waste Mgt Board	Ronda Mottlow, Big Valley Rancheria	Pat Young, EPA Region 9
Larry Stephens, California Integrated Waste Mgt Board	M.C.Baldwin, Navajo Nation	Burney Hill, EPA Region 10
Hurshbir K. Shahi, California Integrated Waste Mgt Board	Deb Misra, Navajo Nation	Pat Moore, Oracle Consulting
Laurie Monserrat, Cal/EPA	Michael Mann, Guam EPA	Joan Abate, Oracle Corporation
Roy Troyer, California DTSC	Jo Noto, DHS, Drinking Water Program	Nancy Cahey, Integro
Nancy Barham, California DTSC	Paul Collins, DHS, Drinking Water Program	Ed Luczak, Computer Sciences Corporation
David Harris, California Resources Agency	Lisa Robertson, Childhood Lead Poisoning Prevention	John Castro, CNMI
Tricia York, Tahoe Regional Planning Agency	Dan Firth, Palo Alto Fire Department	Frances Castro, CNMI
Christine Rudolph, Nevada DEP	Michael Bachmann, BAAQMD	Mark Chmarny, Windsor Solutions
Glen Carr, Oregon DEQ	Brett Stein, XAware, Inc.	Guy Outred, Windsor Solutions
Mitch West, Oregon DEQ	Tony Pruitt, CIBER, Inc.	Skip Campbell, SWRCB
Mary O'Kicki, SAIC	Michael Yu, CIWMB	Darryl Petker, CIWMB
Tom McMichael, New Mexico ED	Holly McCracken, Ross & Associates Env.Consulting	Andrea Reisser, Concurrent Technologies Corporation

Welcome and Statement of Purpose

Jean Circiello and Warren Beer of EPA Region IX welcomed the meeting participants and provided building logistics and suggestions regarding lunch.

Pat Garvey (EPA OEI) gave opening comments and provided a summary of the Network Knowledge Meeting binder and the day's agenda. The contents of the binder, as well as the presentation slides, will be posted to the Network website (www.exchangenetwork.net).

Meeting Objectives:

1. Establish a common information base among the participants about the technical and organizational aspects of the Network.
2. Describe the guidance/resource materials available.
3. Provide an overview of the components of building a functioning Network Node based on State experiences.
4. Solicit input from States/Tribes/Territories on their experiences/needs to determine future support requirements.

Exchange Network Principles and Components *(Molly O'Neill, NSB Executive Staff, ECOS)*

The Exchange Network (Network), described in the Network Blueprint and the Network Implementation Plan, was developed in response to requests by State environmental agencies to improve reporting processes. As States/Tribes/Territories build information systems and integrate data to meet their business needs, the Network Steering Board (NSB) is providing access to reusable XML Schema, data standards, and technical guidelines for exchanging data with EPA using the Internet. Approved Schema can be downloaded from the online Network Registry (accessible from the Network website) and Schema guidelines are available to Schema writers. Network participants will build a "Node" using the Network Exchange Protocol, Network Node Specifications, and Network Node Implementation Guide. Trading Partner Agreements (TPAs) have been drafted between States and EPA to establish the frequency, type, and use of data exchanged. Samples of the TPAs are posted on the Network website in the "Toolbox." The Core Reference Model, which organizes blocks and groups of environmental data and relationships, has been developed to define opportunities for data standards and to identify opportunities to leverage and share XML Schema. Seven Nodes and five TPAs were established in Year 1 of the Network Grant program. TPAs have been signed on facility identification exchanges between EPA and the State agencies of Nebraska, Mississippi, Delaware, Pennsylvania, and Minnesota. The State agencies of New Jersey and New York are expected to sign TPAs soon.

Network Node Overview Presentation *(Dennis Burling, NE; Melanie Morris, MS; and Tom McMichael, NM)*

The session provided an overview of the Network Node guidance products developed through Alpha, Beta, and v1.0 stages (slides will be posted to the Network website). The next stage will be for a Node and Flow Configuration Group to test and provide instructions for flowing data between Nodes. A help desk for answering questions for all Network participants will also be institutionalized. The Node was described as a simple service that uses the Internet, exchange protocols, and security measures (more detailed descriptions are in the Node guidance documents). The Network Node Specification is designed to show how the Nodes should operate, and the Exchange Protocol describes the expected formats of queries and responses between Nodes. The products are forward-looking; however, they will need to be updated within one or two years to keep up with technologies and lessons learned. States that participated in the Node pilot project documented their methods, middleware, costs, and codes involved in building their Nodes in the Demonstrated Node Configurations (available on CD and on the Network website

between May and June 2003). The Nodes will be used for regulatory data flows [e.g., EPA's National Emissions Inventory (NEI) data] and are envisioned to also support non-regulatory flows, such as the exchange of beach monitoring data for use on public websites. Secure transactions over the Internet will be authorized and authenticated using automated systems.

Lessons learned

- Web services standards and Network technologies are still evolving. The pilot Nodes used Web Services Description Language (WSDL), but the Universal Description Discovery and Integration (UDDI) was not mature enough. The UDDI could be used in the future to create one registry for all Nodes and for all types of exchanges. Direct Internet Message Encapsulation (DIME) is a new, more efficient transfer protocol; however, it is not yet fully supported.
- Interoperable Nodes can be built in at least eight different hardware/middleware/software environments.
- The costs of building Nodes vary widely. Each Node pilot had different levels of expertise, used different platforms/middleware, and different program sizes. Once the data flows occur, costs will be easier to quantify.
- Mapping data to backend databases can be time consuming and difficult. Program staff need to be just as involved in the mapping process as the system administrators.
- Systems do not need to be integrated in order to have and use a Node. Some States have loosely confederated warehouse systems, while others have chosen to integrate their systems. However, the Node can be configured to adapt to any type of system.
- Administrative hurdles should not be understimated.

Questions/Discussion

- In response to a question on using a meta compiler for reducing the burden of the data exchange/mapping processes, Dennis Burling stated that the process of mapping Schema to individual systems cannot be automated because of the variety in labels for similar data elements. Although graphical tools in middleware are helpful, the administrators must still visually confirm the accuracy of the data mapping. Systems can have as many as 650 data elements. Pat Garvey recommended that the group review the Schema on the Network website and use the Schema guidelines to build consistency and harmonization between Network participants. Vendors familiar with this process are listed in the Node Implementation Guide.
- To the extent possible, products and lessons learned will be shared between Network partners to reduce burden and costs of participation.
- Potential Network partners will need assistance in demonstrating the benefits of investing in the Network to their program staff. The Network was conceived to solve existing reporting problems, not necessarily to save money (although it might prove to be very cost effective). However, the Network is expected to lower the burdens associated with traditional means of reporting and system modification costs over time. If one partner changes its system (e.g., EPA Program Office legacy system), other partners will not have to. The Network is designed to be scalable so that data can be exchanged through less traditional relationships—future exchanges between environmental and health agencies will depend on technological interoperability. Nebraska DEQ is considering using its Node to send data to an underground facility to store sensitive data in times of

emergency. The NSB will strive to provide examples of Network benefits and uses through communications and tools/guidance on its website. An abridged version of the original Network Blueprint could be useful for communicating why one would want to participate in the Network.

- EPA's Central Data Exchange (CDX) will provide authentication and authorization services for EPA/partner exchanges and may expand to include other Network exchanges in the future through the Network Authentication and Authorization Services. However, each Network participant has the option of building local services anytime.

Exchange Network Website *(Pat Garvey, NSB Executive Staff, EPA/OEI)*

Pat Garvey reported that many people have commented on the usefulness of the Network Knowledge Meeting binders that were distributed at the meeting. All of the contents of the binders will be posted to the Network website: www.exchangenetwork.net. Pat provided an overview of the website and its ease of use and navigation. Products not mentioned in the Node overview are also posted on the website: XML design guidelines (221pp.) and the Core Reference Model (256pp.). Pat strongly recommended that participants review the standards posted on the Environmental Data Standards Council website: www.epa.gov/edsc.

Exchange Network Registry and XML Schema *(Molly O'Neill, NSB Executive Staff, ECOS)*

The Network Registry is being hosted on the Network website and is powered by EPA's Environmental Data Registry as an interim solution for lags in the technological sector. This registry allows users to download sections of or entire Schema. Each Schema is accompanied by a metadata file. These Schema are reviewed by the NSB's Technical Resource Group as part of the registration process. Schema priority timetables for 2002/2003 are available upon request.

Action Item

- Molly O'Neill—Post RCRAInfo timetable to the Network website.

State/Tribe Experiences with Implementing Nodes/Flows

Representatives gave updates on the status of their FY2002 challenge grant activities.

1. **"Electronic Discharge Monitoring Reports."** *Members:* Michigan (Lead), Florida, Indiana, Minnesota, Pennsylvania, Wisconsin, New York, Texas, Rhode Island. *Goal:* Develop a generic set of tools and frameworks for each State to be able to establish a Node and data exchange capability to accept (from NPDES permitted facilities) and exchange Electronic Discharge Monitoring Reports (e-DMRs). *Update:* This grant established a precedent for granting funds to help groups maintain progress on activities already underway. This group is focused on testing the Schema for Facility-State e-DMR flows, but will have to wait until all parties (including EPA) achieve the necessary readiness level. They have used a website (link posted on the Network website) and web conferencing to coordinate their activities. Meetings were held to conduct training and demonstrate data flows. This group is coordinating with the "drinking water labs" Challenge Grant through a mutual contractor. Next steps include establishing a Node, signing a TPA and flowing data to CDX or EPA's Permit Compliance System (PCS). The tool sets used will be posted with the e-DMR Schema in the Network Registry.
2. **"Tempo States."** *Members:* Mississippi (Lead), New Jersey, New Mexico, Kentucky, Tennessee. *Goal:* Build RCRAInfo and NEI data flows from their State systems to CDX.

Update: An interface is being built as a common system between all of the States. Each State will modify as needed. By the end of May 2003, a technical and conceptual design for the flows will be established. The NEI flow will be complete by June 2003, but RCRAInfo implementation is expected to occur in late 2004. Some work has been done on mapping to existing NEI Schema. The lessons learned on flow mechanics will help other Network partners, but each partner must map the data to their systems. X-Aware has a useful tool for mapping all flows.

3. **"Drinking Water Labs."** *Members:* New Hampshire (Lead), Maine, Rhode Island, Vermont, New Jersey. *Goal:* Create a flow for laboratories to enter drinking water data into the various State drinking water program websites. *Update:* This group will become an Integrated Product Team with the Safe Drinking Water Information System (SDWIS) team in EPA.
4. **"Beach Data."** *Members:* New Jersey (Lead), Delaware, California, Georgia, North Carolina, Association of State and Interstate Water Pollution Control Administrators (ASIWPCA). *Goal:* Build upon the Earth 911 Beach Reporting System (BRS) Information System to establish "immediate" data flows of water quality monitoring information, health risk determinations, and beach closure occurrences between local and State agencies and EPA. *Update:* Annual beach notifications will be implemented by Memorial Day 2003.
5. **"Northwest Water Quality Grant."** *Members:* Oregon (Lead), Washington, Idaho, Alaska. *Goal:* To develop and implement a Node to flow water quality data drawn from distributed sources throughout the four States comprising EPA Region 10. *Update:* The Oregon Node is now the intermediary between the three other States and EPA's STORET (short for STOrage and RETrieval). STORET is not ready to accept real-time data from monitoring sites. In the meantime, Oregon has offered to host the data not currently stored in STORET. Alaska is unique in that it relies solely upon watershed councils, local governments, and Tribes for its monitoring data. Alaska will map its Microsoft Access database into a Schema. Economic conditions and geographical challenges have made coordination difficult. Next steps include working on a logical data model and Schema to support specific projects. See project website: http://www.ecy.wa.gov/pnwdx/pnwdx_main.htm.

2003 Grant Process *(Pat Garvey, EPA OEI)*

Overall, 117 proposals were submitted.

- One Stop: 7 (all eligible States submitted)
- Readiness: 64 (only one per State allowed; some States submitted more than one proposal)
- Challenge: 33
- Tribes: 23
- Territories: 6 (either One Stop or Readiness)

Evaluation of the FY2003 grant proposals and recommendations for funding took place between April 23–25 in Chicago, IL. Challenge grant awards will be announced in May and others will follow as they are determined. Appropriations will occur between October and December 2003. The FY2003 Grant amount is $20M (down from $25M in FY2002).

Since the One Stop Program will close in 2003, funding and priorities will be reallocated in the FY2004 grant program. Participants requested that the following items be considered as EPA drafts its FY2004 Grant Guidance. Additional comments should be raised to the NSB.

- Include Operation and Maintenance (O&M) as a category under the Readiness Grant and modify requirements to accommodate participants that have a Node but need to make infrastructure investments before they are "ready" to exchange data.
- Include scoring criteria to help applicants determine the weights of different questions.
- Maintain or increase the Tribal "set-aside" funds in relation to demand.
- Allow non-environmental agency grants as long as they are consistent with the Network.
- Be cognizant that lead agencies bring focus to multi-agency challenge grants. Some agencies, such as Cal/EPA, have media programs that are larger than most State agencies.
- Highlight interest in program/media areas by labeling focus areas.
- Provide grants for mentoring efforts so that less advanced groups that have more challenges can get the assistance they need.

Participants Report on Their Network Activities and Needed Support *(Pat Garvey, EPA OEI)*

Each State/Tribe/Territory shared their expected or actual hardware/software and priority flows, then proceeded to discuss the challenges they are facing in implementing their grant goals.

State/Tribe/ Territory	Database/Hardware	Middleware (expected)	Priority Flow (s)	Implementa -tion Date
NM	Integrated environmental database on Oracle 8i, Sun Solaris	IBM Websphere (for node and web portal)	NEI	Jun-04
AZ	Oracle 9i, Sun Solaris	Unsure	Facility Registry System (FRS)	2004
OR	Oracle 734 to MS Sequel Server	Visual Studio.Net	Unknown	Unknown
WA	MS Sequel (backend)	.NET, XML Spy for mapping (integrated facility site to FRS system)	Water Quality	Jul-03
MT	Oracle 9i, Dell	Unknown	Natural Resource Information System	Spring 2005
NV	Oracle, FoxPro	Unknown	FRS	Unknown
AR	Oracle	Unknown		2004
NE	Integrated environmental database AS4, DB2	Xaware -mapping, NT server	FRS, NEI (All flows)	2004
MS	oracle 8i, Sun Solaris	.NET	FRS, RCRAInfo, NEI, PCS/IDEF, AFS	Unknown
CA	MS SQL (backend), Dell	.NET	Unknown	Unknown
	Oracle 9i	.NET	Unknown	Unknown
Guam	PCs, individual programs, (want to integrate)	Unknown	Unknown	Unknown
Northwest Indian Fisheries Commission	Work with Washington Dept of Ecology: no Node	Unknown	Unknown	Unknown
Navajo Nation	Applied for Readiness grant	Unknown	Unknown	Unknown

Challenges

Montana
Robin Trenbeath explained that as a new CIO, his highest priority is to identify the nature of problems in his agency. The greatest challenge is their need to coordinate a wide variety of media and locations of data. An improved content management system will increase their ability to collect accurate, usable data in a timely manner without duplication. Geospatial data collection/analysis is not coordinated agency-wide. He sees the Node as a focal point for internal and external improvements.

Arizona
Arizona's problems are similar to Montana's and would benefit from mentoring from more advanced States. They would like to leverage lessons learned, especially regarding how other States evaluated their choices. Daniel Kwit and Russ Brodie are the main contacts.

Oregon
Mitch West explained that Oregon is working well with XML, but is finding it difficult to coordinate its WSDL with the WSDL used by EPA. The discrepancies make it difficult to attach documents and exchange data using Simple Object Access Protocol (SOAP).

Washington
Washington is building its Node with help from a contractor. The agency will map data across its integrated facility site system and EPA's FRS.

Nevada
Nevada is trying to gain the support of its program offices for participating in the Network. Currently, the agency is tackling problems related to disconnected databases, DOS-based systems, and duplication of efforts. All staff are interested in facility data and integration. Dave Emmy is the main contact.

California
Gary Arstein-Kerslake sees California's size as its largest obstacle. Policies and perspectives vary between programs and regions. In-reach and coordination are difficult, and California is looking to U.S. EPA Program Offices to help with communicating Network benefits.

Hawaii
Hawaii just submitted its final One Stop grant application. Their first steps will be to create a workflow system and create an enterprise-wide database with Oracle. Hawaii's goal is to coordinate the progress of all of its programs. Currently, its air program is the strongest.

Arkansas
Arkansas needs to improve its data quality. Charles Holloway believes that sophisticated systems are meaningless if based on bad data. Their first steps will be to improve their facility location data. The facilities are high in number and there are many name variations that result in duplication.

Cahto Tribe
The Cahto Tribe is tackling cooperation and coordination obstacles as it compiles data, improves data quality, and implements its grant goals.

Navajo Nation
The Navajo Nation (Nation) is completing its goals under its One Stop grant and has applied for a grant under the FY2003 program. Currently, the Nation is coordinating with regulated communities and other

partners so that they will be ready to participate in the Network by 2004. The Nation is evaluating consultants to build a Node and is seeking interested partners for challenge grants at this time.

Institute for Tribal Environmental Professionals
Sarah Kelly mentioned the FY2002 Challenge Grant led by the Confederated Tribes of Warm Springs (OR). Four Tribal groups set a goal to acquire, collate, and analyze/display air quality data for the Columbia River Gorge National Scenic Area. The Tribes envision sending continuous monitoring for particulate matter directly to a website. The data would be sent to the Aerometric Information Retrieval System (AIRS) for widespread access to data. The largest challenge is staff shortages; therefore, the Tribes want to use the most advanced technologies to automate processes.

Support Needs

The NSB staff offered to provide more information to new participants.

- **Training.** Participants requested data flow-specific meetings, especially by product, which also provide Node implementation training. If participants cannot attend meetings, offer abbreviated sessions using web conferencing. EPA Regional Offices could provide conference rooms so that participants can meet in person while participating in web conferences. The agendas should include hands-on technical training.
- **Funding.** Tribes are interested in finding sources for travel reimbursement similar to the ECOS sponsorship of State travel.
- **Guidance.** Participants are interested in learning about the inherent challenges in mapping data and how more advanced groups are responding to these challenges.
- **Coordination.** Many participants expressed a need to bridge the gap between their information technology and program areas. They would like the NSB and EPA to increase their communications with their program staff regarding the Network. EPA Regions need to be more involved in these types of meetings.