

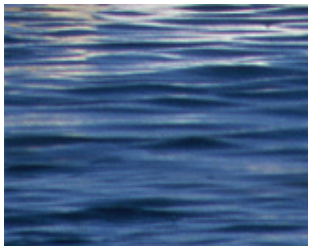


State of Michigan
Department of Environmental Quality

e-Manifest Pilot Project Lessons Learned

U.S. EPA Webinar 1

Wednesday, April 22, 2009

WINDSOR SOLUTIONS, INC.
Environmental + Health Information Systems

e-Manifest Lessons Learned

Agenda

- Project overview
- Pilot system overview
- Lessons learned

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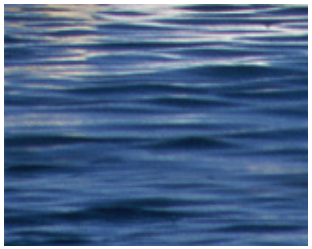


Project Overview

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Project Overview

Objectives

- Pilot an electronic manifest process using the Exchange Network as the enabler
- Through the pilot, demonstrate:
  - Burden reduction for industry and state regulators by eliminating paper based processes where possible
  - Enhanced cradle to grave tracking of hazardous waste by providing comprehensive and timely access to data consumers
- Complement federal rulemaking process so that both initiatives are coordinated and jointly support the implementation of a subsequent national e-Manifest system

Project Overview

State Burden

- Excessive quantities of manifest to process
  - MI DEQ ~ 40,000 paper manifests per month (2,000+/day)
  - MA DEP ~ 33,300 paper manifests per month
  - NJ DEP ~ 7,080 paper manifests per month
  - MN PCA ~ 3,920 paper manifests per month
- Transfer to electronic formats (scanning, microfilm, data entry)
- Manual QA/QC and validation, often resulting in data quality problems and timing issues

Project Overview

Industry Stakeholder Burden

- Cost nationwide for hazardous waste handlers to comply with paper-based process is approximately $410 million/year (over $500 per manifest).
- Cost includes manifest preparation, postage, recordkeeping, state copy submission, and employee training.
- Largest cost is the systems required to manage rules and parallel regulatory reporting requirements.
- If approximately three-quarters of all manifest transactions were electronic, EPA estimates an annual savings of about $100 million to states and the regulated community. This projected amount is equivalent to a net unit savings of $23 to $40 for each completed manifest form.

Project Overview

Participants

State Environmental Agencies

- Michigan DEQ
- Massachusetts DEP
- New Jersey DEP
- Minnesota PCA

US EPA Office of Resource Conservation and Recovery

Windsor Solutions

Industry Stakeholders

- Access Business Group (Generator)
- Consumers Energy (Generator)
- Enviro-Safe (TSDF)
- Environmental Recycling Group (Transporter)
- EQ Industrial Services (Transporter)
- Environmental Quality (TSDF)
- Marine Pollution Control (Transporter)
- Safety-Kleen (Transporter/TSDF)
- Triumvirate Environmental (Transporter)
- Veolia ES (Transporter/TSDF)

These companies participated in actual pilot activities. Including face-to-face meeting and survey participation, the pilot project has involved about 30-40 organizations.

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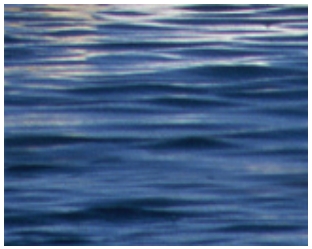
Project Overview

Status

- Pilot period ended in December 2008
- Lessons learned report completed and reviewed
- Continued involvement with EPA's national efforts
- e-Manifest XML Schema updates






Pilot System Overview

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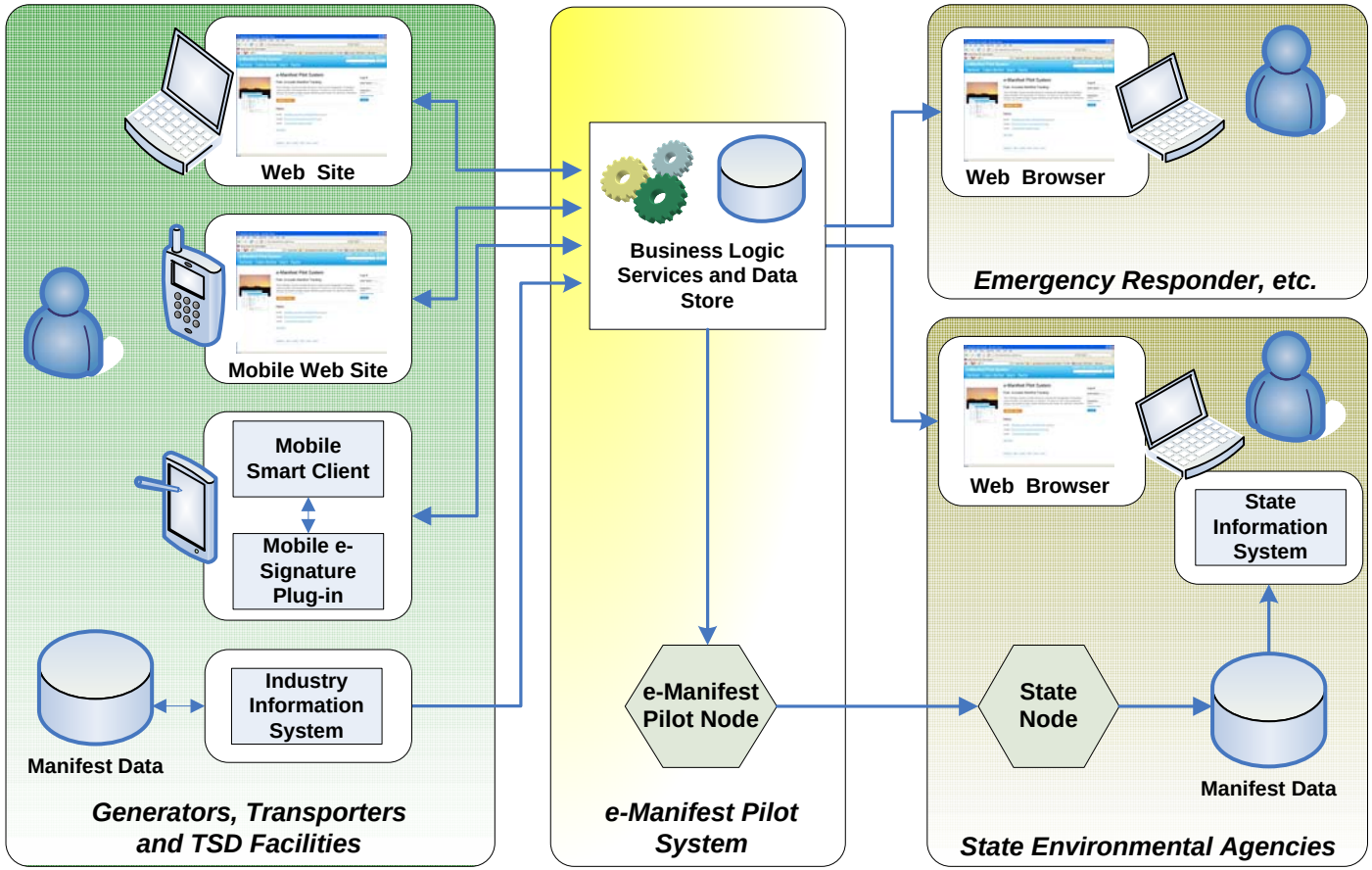
Pilot System Overview

Conceptual Design



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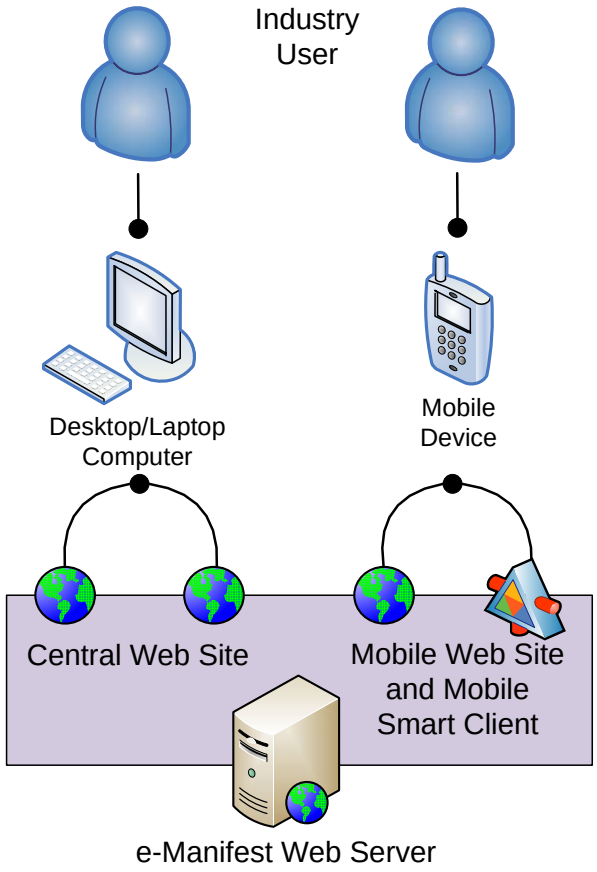
Pilot System Overview

User Interfaces



- Central and Mobile Web Site user interfaces require “live” connection
- Smart Mobile Client can operate with or without “live” connection
- Smart Mobile Client interfaces with central system via Web Services
- Full feature set of e-Manifest pilot available through Central Web Site
- Subset of e-Manifest pilot feature set through available through mobile user interfaces

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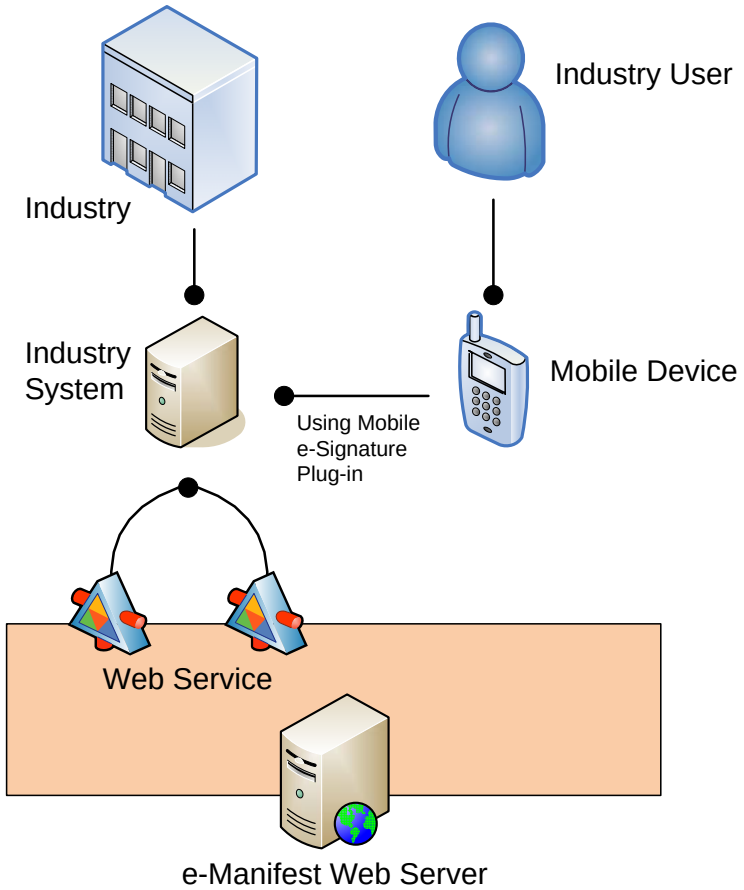
Pilot System Overview

System Interfaces



- Industry can send manifest data to central system via available Web Services interface
- Subset of e-Manifest pilot feature set through available through Web Services interface
- Allows multiple-record (“bulk”) transactions

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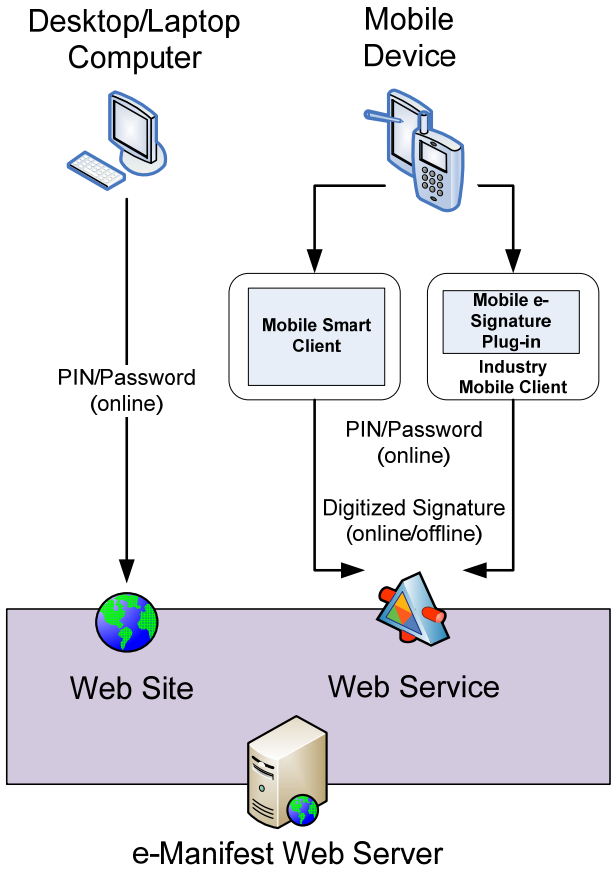
Pilot System Overview

e-Signature Alternatives



- Electronic signatures available via multiple user interfaces
- PIN/Password and digitized signature methods will be piloted
- PIN/Password method requires an Internet connection, but digitized signatures supported in online and offline modes
- Pilot evaluating the use of existing industry mobile solutions to sign electronic manifests

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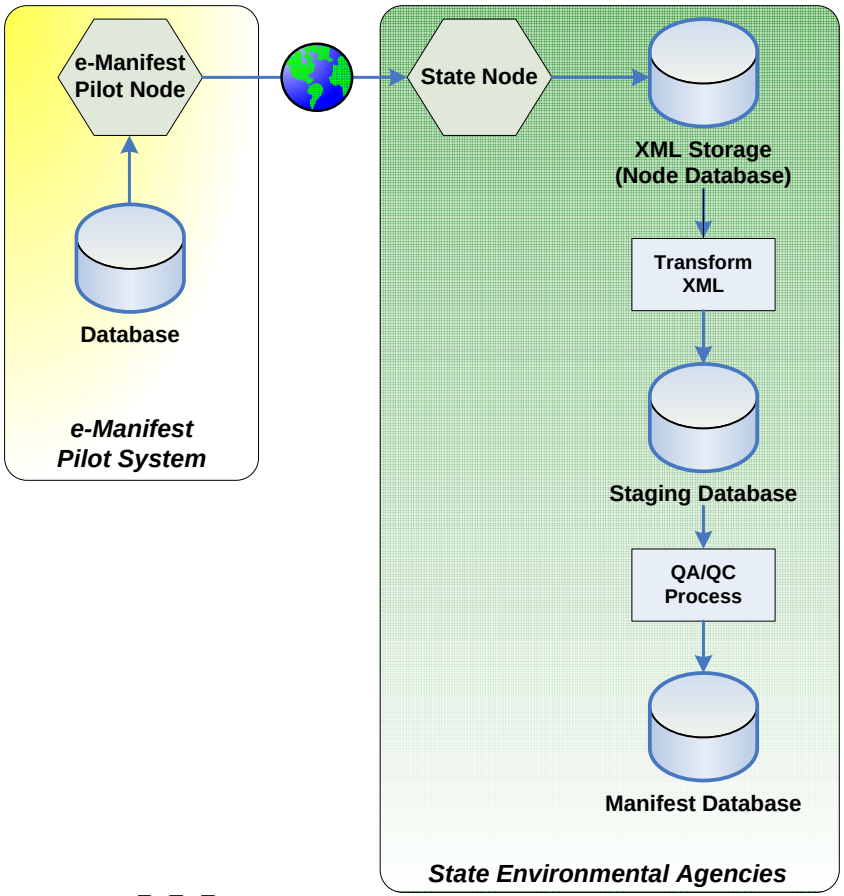
Pilot System Overview

State Data Flow Design



- Manifest XML payload submitted to State Node via Exchange Network
- Utilizes eUHWM XML Schema
- XML transformed into relational staging database
- State agency specific QA/QC executed against staged data
- Manifest data loaded into State agency hazardous waste manifest databases

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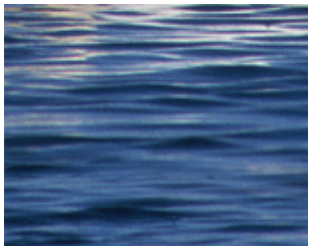


Lessons Learned

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Lessons Learned

Overview

- Pilot system interfaces
- Functional capabilities
- Electronic signature options
- Managing electronic custody
- Offline capabilities
- Manifest tracking number generation
- Exchange Network role
- State data exchanges
- Industry stakeholder involvement

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Lessons Learned

Pilot System Interfaces

Web Site

- Full functional capabilities
- Most widely used interface
- Best means to understand and exercise system
- Targets smaller generators and brokers

Mobile Site

- Scaled-down version of Web Site interface
- Demonstrated basic search and view manifest functions
- No offline capabilities

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Lessons Learned

Pilot System Interfaces

Mobile Smart Client

- Offline mode operation
- Targeted Windows Mobile operating system
- Two supported use cases
  - Existing manifest downloads
  - Template-based manifest creation
- Tool to streamline the electronic signature process throughout chain of custody
- Limited real estate resulted in usability and efficiency issues

Lessons Learned

Pilot System Interfaces

Industry Web Services

- Programmatic interface to connect industry systems
- Desktop client software developed in support
- Used shared XML schema
- Industry could maintain autonomy while provide timely and accurate data
- Vast majority of manifests received via Web services
- Effort required upfront, but operation seamless and reliable

Lessons Learned

Functional Capabilities

- Used online survey to rank functional capabilities before and after pilot
- Clearly value in a simple, straightforward and usable application
- Unanimous favorites
  - Ability to electronically submit manifest data to states
  - Eliminating or reducing need for completing, transmitting or retaining paper records
  - Reduce biennial reporting burden
  - Template-driven manifest creation
  - Email notifications
  - Manifest snapshots

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Lessons Learned

Electronic Signature Options

Alternatives

- Web Site offered PIN/password electronic signature
- Mobile Smart Client featured digitized signatures
- Piloted digital manifest hardcopies using Web Services interface
- Evaluated development of a third-party electronic signature plug-in

Results

- PIN/password approach effortless and straightforward to use
- Requirement to provide user credentials along with digitized signature unnecessary
- Industry concerned about required mobile technology investment

Lessons Learned

Managing Electronic Custody

- Managing electronic custody ensured that signatures collected in correct sequence by correct handlers
- Signature event established electronic custody
- Only handler with electronic custody could modify manifest
- Electronic custody of manifest and physical custody of waste may not match
- Additional evaluation of options recommended
    - Dual signature collection
    - Use of bar-coding or RFID technology

Lessons Learned

Offline Capabilities

- Mobile Smart Client supported online and offline modes
- Manifests signed offline stored on device until Internet connection established
- Undetected violations due to limited business rules built into Mobile Smart Client interface
- Physical transaction receipts might be required for proof
- Better version control and data synchronization capabilities needed
- No foolproof method to ensure person has signatory rights and is associated with the handler

Lessons Learned

Manifest Tracking Number Generation

- Number generated and assigned by the central system upon the first successful validation and saving of the manifest
- Format consistent with the UHWM (e.g., WIN999999999, etc.)
- Offline manifest creation required manual entry of tracking number
- Industry creating manifests in own system could reserve tracking numbers or be assigned an unique prefix (e.g., VES, etc.)

Lessons Learned

Exchange Network Role

- Potential uses of the Exchange Network in national system
  - RCRAInfo outbound services
  - State environmental agency outbound services
  - Central system data publishing services
- Explore NAAS integration for account security management
- Investigate using EPA's CDX to provide CROMERR related capabilities
- Explore Node implementations at large companies to facility manifest submissions

Lessons Learned

State Data Exchanges

- Manifest submission process can be easily automated with limited additional resources
- Real-time vs. monthly or quarterly
- Common, reusable components could be developed and shared amongst states
- Data exchange supported electronic document attachments

Lessons Learned

Industry Stakeholder Involvement

- Instrumental to definition of pilot system
  - Provided manifest business process and workflow vision
  - Face-to-face meeting participation
  - Documentation and deliverable reviews
  - User testing
  - Pilot system in parallel to existing paper-based process
- If industry reporting needs are not met and manifest-related burden not reduced, national system will not be used

e-Manifest Lessons Learned

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