Implementation of a Web Portal for Managing and Sharing Environmental Data

Prepared for:

2011 DoD Environmental Monitoring & Data Quality Workshop

Presented by:

Jason Samus
EA Engineering, Science and Technology, Inc.

Maria Orosz
U.S. Army Corps of Engineers
Baltimore District

March 31, 2011
### Implementation of a Web Portal for Managing and Sharing Environmental Data

**Report Date:** 31 MAR 2011  
**2. Report Type:**  
**3. Dates Covered:** 00-00-2011 to 00-00-2011  
**4. Title and Subtitle:** Implementation of a Web Portal for Managing and Sharing Environmental Data  
**5a. Contract Number:**  
**5b. Grant Number:**  
**5c. Program Element Number:**  
**5d. Project Number:**  
**5e. Task Number:**  
**5f. Work Unit Number:**  
**6. Author(s):**  
**7. Performing Organization Name(s) and Address(es):** U.S. Army Corps of Engineers, Baltimore District, 10 South Howard Street, Baltimore, MD, 21201  
**8. Performing Organization Report Number:**  
**9. Sponsoring/Monitoring Agency Name(s) and Address(es):**  
**10. Sponsor/Monitor’s Acronym(s):**  
**11. Sponsor/Monitor’s Report Number(s):**  
**12. Distribution/Availability Statement:** Approved for public release; distribution unlimited  
**13. Supplementary Notes:** Presented at the 2011 DoD Environmental Monitoring & Data Quality Workshop (EMDQ 2011), 28 Mar – 1 Apr, Arlington, VA.  
**14. Abstract:**  
**15. Subject Terms:**  
**16. Security Classification of:**  
<table>
<thead>
<tr>
<th>a. Report</th>
<th>b. Abstract</th>
<th>c. This Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>unclassified</td>
<td>unclassified</td>
<td>unclassified</td>
</tr>
</tbody>
</table>
**17. Limitation of Abstract:** Same as Report (SAR)  
**18. Number of Pages:** 26  
**19a. Name of Responsible Person:**

Standard Form 298 (Rev. 8-98)  
Prescribed by ANSI Std Z39-18
Agenda

- Introduction
- USACE Philadelphia FUSRAP Web Portal
- USACE Baltimore Project Management Portal
- Questions
Introduction

- Environmental Restoration Programs
  - Generate a large volume of data to be analyzed
  - Technically and geographically diverse project teams

- Programs have associated challenges for managing information
  - Data Collection, Analysis & Reporting
  - Team Communication & Collaboration

- Technology can help solve these challenges
  - Centralized Web Portal
  - Discuss 2 Examples
USACE Philadelphia FUSRAP Web Portal

Background

- **DuPont Chambers Works FUSRAP Site**
  - Project Site in New Jersey with ongoing data collection

- **Diverse Project Team**
  - Multi-disciplinary technical team
  - Team members located across the country
  - Unique data analysis needs
  - Coordination of input from team members critical
USACE Philadelphia FUSRAP Web Portal

Web Portal

- Implemented in 2004

- Centralized Project Management Portal
  - Environmental Data Reporting
  - Document Management
  - Mapping
  - Team Communication Tools

- Associated Public Outreach Website
  - Project Background
  - Public Meeting Announcements and Minutes
Environmental Data Reporting

- **Custom Reporting**
  - Standardized Chemical Data
  - User-Defined Query Criteria

- **Data Exporting**
  - Export Data in Multiple Formats
  - Used in External Applications (MS Excel, MS Access)

- **Standard Reports**
  - Quickly Generate Report Ready Chemical Tables
USACE Philadelphia FUSRAP Web Portal

Document Management

- Central Repository for Project Documentation
  - Browse by hierarchical folder structure
  - Full text, keyword search

- Facilitated Document Review
  - Assign reviewers and track comments
  - Capture all comments and responses in central location
USACE Philadelphia FUSRAP Web Portal

Mapping

- Basic Map Generation & Viewing
  - User-Friendly Interface
  - No GIS Experience
  - Built on ESRI ArcIMS Technology

- Basic Spatial Analysis
  - Ability to Query & Display Chemical Data Results
  - Generate Maps Based on User Defined Criteria
USACE Philadelphia FUSRAP Web Portal

Mapping (Cont.)

● Figure Generation
  ▪ Generate printer-friendly PDF Figures
  ▪ Multiple layouts and Figure/Paper Sizes

● Team Collaboration
  ▪ Save custom maps for sharing with Team Members
USACE Philadelphia FUSRAP Web Portal

Team Communication Tools

- Team Directory
  - Listing of All Team Members

- Message Board
  - Collaboration among Team Members on complex analysis, project reports and deliverables

- Calendar of Events
  - All Project Events, Milestones captured on Project Calendar
USACE Philadelphia FUSRAP Web Portal

Public Site

- Public Information Portal
  - Provides information intended for the general public
  - Project Background
  - Meeting Announcements & Minutes
  - Project Status
  - Project Photos
Background

- Two FUDS Program Sites
  - Former Nansemond Ordnance Depot NPL Site
    - 20 years of historical analytical data in varying formats (hard copy, pdf, Word, Excel and Access).
    - Approximately 320,000 rows of analytical data
    - 18 GB of GIS data consisting of base map, historical aerial imagery, digital elevation model data and contours.
    - Approximately 800 individual historical files, as well as, 100 working files in various formats (Word, Excel, PDF).
  - NASA Wallops Flight Facility
    - 18 years of historical analytical data in varying formats (hard copy, pdf, Word, Excel and Access)
    - Approximately 200,000 rows of analytical data
    - 12 GB of GIS data consisting of base map, historical aerial imagery, digital elevation model data and contours.
    - Approximately 400 individual historical files, as well as, 80 working files in various formats (Word, Excel, PDF).
USACE Baltimore Project Management Portal

Background

- Components
  - Analytical Data Repository
    - Central database for all chemical, geological, and geophysical data
  - File Repository
    - Documents, files and data of varying formats
  - Mapping
    - Web-based GIS mapping for displaying environmental compliance information
  - Document Review
    - Web-based document review to capture and track comments on reports and documents
USACE Baltimore Project Management Portal

Background

- Components (cont.)
  - Project Communication
    - Project team coordination and communication tools including a Message Board, Team Directory, Calendar of Events
  - Home Page Dashboard
    - Automatically updated to display the status of data and recent updates to information.
  - Admin Record File
  - Public Outreach Website
    - Public access to specific files and documents stored in the File Repository
USACE Baltimore Project Management Portal

Background

- Components (cont.)
  - Automated Email Notifications
    - Automated alerts and reminders sent to system users via email
  - Online Help
    - Easy to use online help including detailed instructions on the use of each module
  - System Administration
    - Ability to administer users, permissions and configurations
USACE Baltimore Project Management Portal

Background

- **Additional Standards**
  - Standardized Data Structure – SEDD 5.2 for analytical data
  - ADR.NET - analytical data
  - SDSFIE 3.0 - GIS data
  - GeologyEDD and Geophysical EDD – field data
  - State and EPA environmental standards
USACE Baltimore Project Management Portal

Background

- **Additional Features**
  - GMS - groundwater modeling
  - gINT - boring logs and well construction diagrams
  - Oasis Montaj Viewer - geophysical data

- **Integration with existing USACE systems**
  - FUDS Record Management System
  - CorpsMap
USACE Baltimore Project Management Portal

Web Portal

- Similar needs to FUSRAP project team
  - Central repository for data & documents

- Building on FUSRAP Portal Functionality
  - Document Repository, Communication Tools

- Additional, Unique Needs
  - Support multiple sites and projects
  - Robust data visualization and analysis
  - Expanded environmental data QA/QC and reporting
  - Integration with external tools
  - Expanded mapping capabilities
Environmental Data QA/QC

- **Standardized Data Structure**
  - Analytical Data - SEDD 5.2, Stage 2a/2b
  - Geologic and Geophysical data

- **EDD Import**
  - SEDD Stage 2a/2b, ADR.NET, GeoEDD
  - Perform standard checks – format, data types, etc.

- **Data QA/QC**
  - ADR.NET for Analytical Data
  - Custom for Geologic Data
USACE Baltimore Project Management Portal

Environmental Data Reporting

● Custom & Standard Reporting
  ▪ Similar custom reporting for Analytical Data
  ▪ Incorporate custom reporting for Geologic & Geophysical
  ▪ Include a series of standard reports

● Comparison to Environmental Standards
  ▪ Standards for 13 states and EPA

● Trending & Graphing
  ▪ Ability to generate user-defined charts and graphs
USACE Baltimore Project Management Portal

Integration With External Tools

- **Provide Extended Functionality**
  - Seamless integration with the Portal

- **GMS**
  - 2D, 3D, flow modeling and visualization

- **gINT**
  - Bore Logs, Well Construction Diagrams

- **Montaj Viewer**
  - Additional mapping, analysis and visualization functionality
USACE Baltimore Project Management Portal

Expanded Mapping Capabilities

- **ArcGIS Server Platform**
  - Industry Standard GIS Platform
  - Robust Spatial Visualization & Analysis

- **Remote Data Editing**
  - Ability to utilize sophisticated, desktop based GIS software to manage & analyze data

- **Simplified User Interface**
  - User-friendly web interface designed for non-GIS users
USACE Baltimore Project Management Portal

Integrated Public Facing Website

- **Standardized Website Implementation**
  - Site Specific Website(s)
  - Dynamically generated through Web Portal
  - Site/Project Background, Documents, Photos, etc.

- **Data Automatically Available**
  - Linked to portal data and documents “flagged” for public viewing
  - Easy/Low maintenance; Dynamic content automatically included/removed
Other Features

- **Dashboard**
  - Site specific dashboard
  - Recent & important data summarized for quick access

- **Future Integration with Existing USACE Systems**
  - Designed for future integration to streamline data maintenance
  - FUDS Record Management System, CorpsMap
Summary

- Environmental Restoration Programs
  - Generate a large volume of data to be analyzed
  - Technically and geographically diverse project teams

- Programs have associated challenges for managing information
  - Data Collection, Analysis & Reporting
  - Team Communication & Collaboration

- Technology can help solve these challenges
  - Centralized Web Portal
Questions ?