

# Watershed Information Network (WIN)

## Fixed Price: Phase 1 Analysis & Design

An Enterprise 24x7, Inc. Project Success

“The Division of Environmental Assessment and Restoration (DEAR) is responsible for protecting, assessing, and restoring the quality of Florida’s waters. The DEAR Bureau of Watershed Restoration (BWR), which manages the Florida STORET system, seeks a vendor to assist with the Watershed Information Network (WIN) Initiative to address the needs for a replacement of Florida STORET. The WIN Initiative will consolidate and modernize the input, validation, analysis, and reporting of data managed by DEAR. As part of WIN Initiative Phase 1, the Selected Vendor will provide Business Analysis, Technical Design, and Project Management work to develop specifications and plans, as well as to propose a solution recommendation with detailed design specifications towards the development of WIN Initiative Phase 1 and the proposal of a WIN Project Phase 1 solution.”

### Watershed Information Network (WIN) Phase I Analysis & Design

DEP-DEAR had been working internally and with other vendors on two prior attempts to replace the EPA STORET database system used to collect and report water quality data for the State of Florida. The new system, WIN, needed to include the following new features to be deemed successful:

- Align to the EPA Water Quality Exchange (WQX) data characteristics so validated data could be transmitted to the EPA.
- Enforce hundreds of Basic (E.g. field length, standard value...) and Advanced (E.g. range of values, value dependencies, uniqueness rules...) Minimum Data Quality Standards (MDQS) prior to accepting the data into the final information network used by DEP for analysis and reporting.
- Provide a web interface that enabled the data providers to fix their pre-qualified data that failed to comply with the MDQS Basic and Advanced rules.
- Allow the data providers to submit data in any order and with different standards values that would then be aligned and translated to the DEP standards and format using customizable configurations.
- Allow the data providers to submit their data as often as desired and up to a size limit that could be managed by DEAR.
- Provide ability for DEAR to manage standard value lists and MDQS value combination rules using the interface.
- Support complex roles and permissions that restricted data providers to their own data for all actions other than reporting.
- Provide dynamic search capabilities.
- Provide a mechanism to allow the data provider and authorized DEP roles to edit data previously accepted into WIN.
- Provide a history of all key field changes to the data accepted into WIN that was subsequently changed by a manual edit or a reload of the data.

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- Provide a public interface for reporting across all water quality data accepted into WIN.
  - Include the ability to search by map
  - Include ability for data providers and DEP role users to create and save dynamic search and output preferences for recurring use.
  - Include ability to display data online or export data in a downloadable format.

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### Executive Summary

DEP-DEAR released a competitive Fixed-Price Request for Proposals soliciting a solution outline and cost proposal.

- Enterprise 24x7 Inc. was one of three vendors selected for final team presentations and interviews.
- DEP-DEAR selected the Enterprise 24x7 Inc. solution and team and entered into negotiations which resulted in Enterprise 24x7 Inc. being awarded the contract.
- The schedule negotiated between Enterprise 24x7 Inc. and DEAR included the following key deliverables:
  - Eight (8) Joint Requirements Planning (JRP) Sessions for As-Is Processes
  - As-Is Workflow Diagrams for current data process by section within DEAR
  - Eleven (11) Joint Requirements Planning (JRP) Sessions for To-Be Processes
  - To-Be Workflow Diagram for WIN
  - Requirements Traceability Matrix
  - Minimum Data Quality Standards
  - Conceptual Prototype
  - Security Matrix
  - Logical Data Model
  - Impact Assessment
  - Detailed Design Package & Executive Presentation of Solution
  - Project Closure

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### Challenges

- Gathering and confirming requirements across several separate business units with differing expectations and needs.

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- Designing a system that was flexible, interactive and could be maintained, within reason, without the need for an on-going developer support.
- Designing a system that fit the agency IT standards and integrated with existing enterprise security, agency interface look & feel and standard values.
- Designing a solution to support the large volume of data expected during uploads and the long-term growth of accepted data.
- Designing a flexible search mechanism that would eliminate the need for a variety of search screens.
- Designing a flexible filter and output capability that would reduce the number of static reports and let the registered users save their most commonly used searches and output preferences.

### Our Solution

#### The Team:

- The assembled a team had decades of combined expertise in the DEP technology environment as well as Water Quality Data characteristics, Oracle Database Design, Java interfaces, Business Analysis & Project Management.
- The Project Manager and Business Analyst both worked on prior DEP projects and were able to provide realistic estimates for the efforts and durations required to produce & secure approval for key project deliverables.
- The technical architect had a strong understanding of the DEP web interface requirements and the DEP Oracle database standards.
- The team worked in an open room environment to facilitate information sharing.
- The team was located in close proximity to the DEAR Project Champion and Business Lead to facilitate communication.

#### The Solution:

- Solution proposed met all of the approved Requirements gathered during the JRP sessions.
- Enterprise 24x7 Inc. worked closely with DEAR to evolve the requirements so the solution proposed could allow greater flexibility for DEAR to manage the application and key system variables using an interface to reduce long-term developer dependency.

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- The Help system was designed to be page and section specific and manageable by DEAR over time.
- The Menus were role driven and provided clear navigation to the key areas of the application.

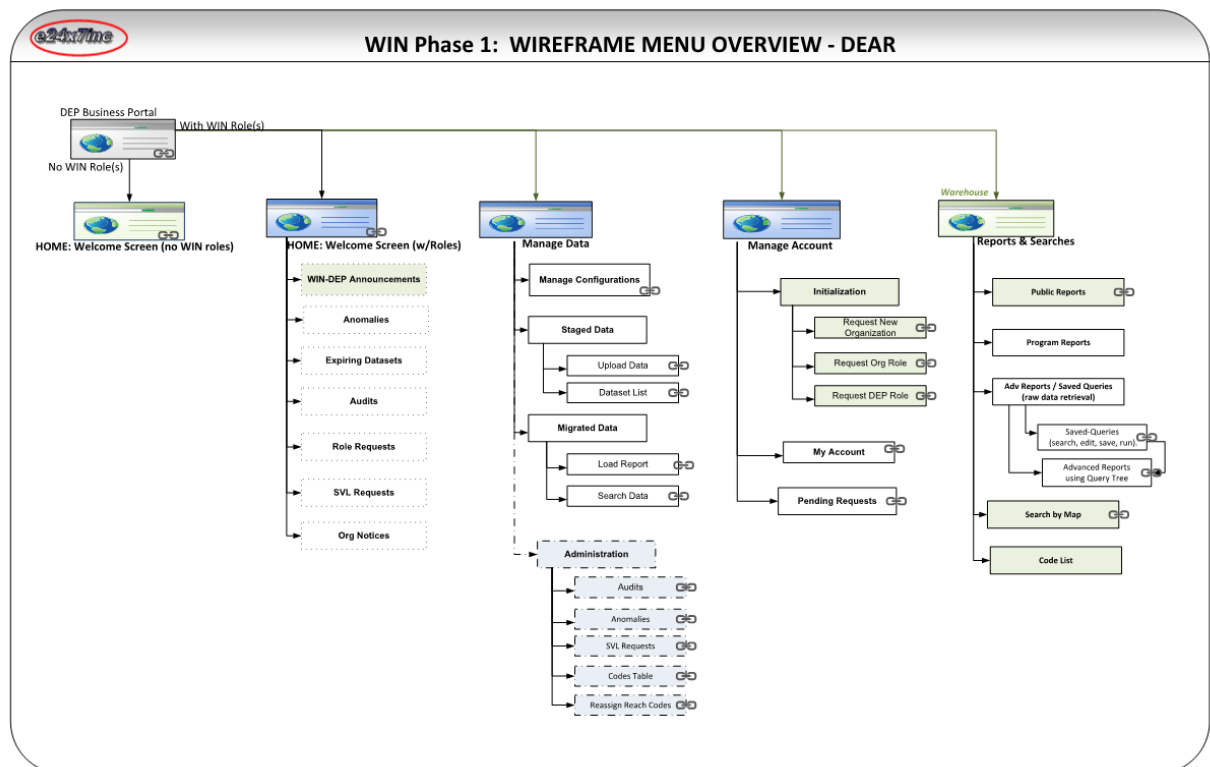


Figure 1 WIN Menu Overview

- Roles and role level permissions by screen and screen action were identified in the Security Matrix and incorporated into the proposed design.
- Role Initialization module was designed to allow DEAR to manage the role assignments over time and to designate subsets of responsibilities to specific roles (E.g. DEP Oversight by District)

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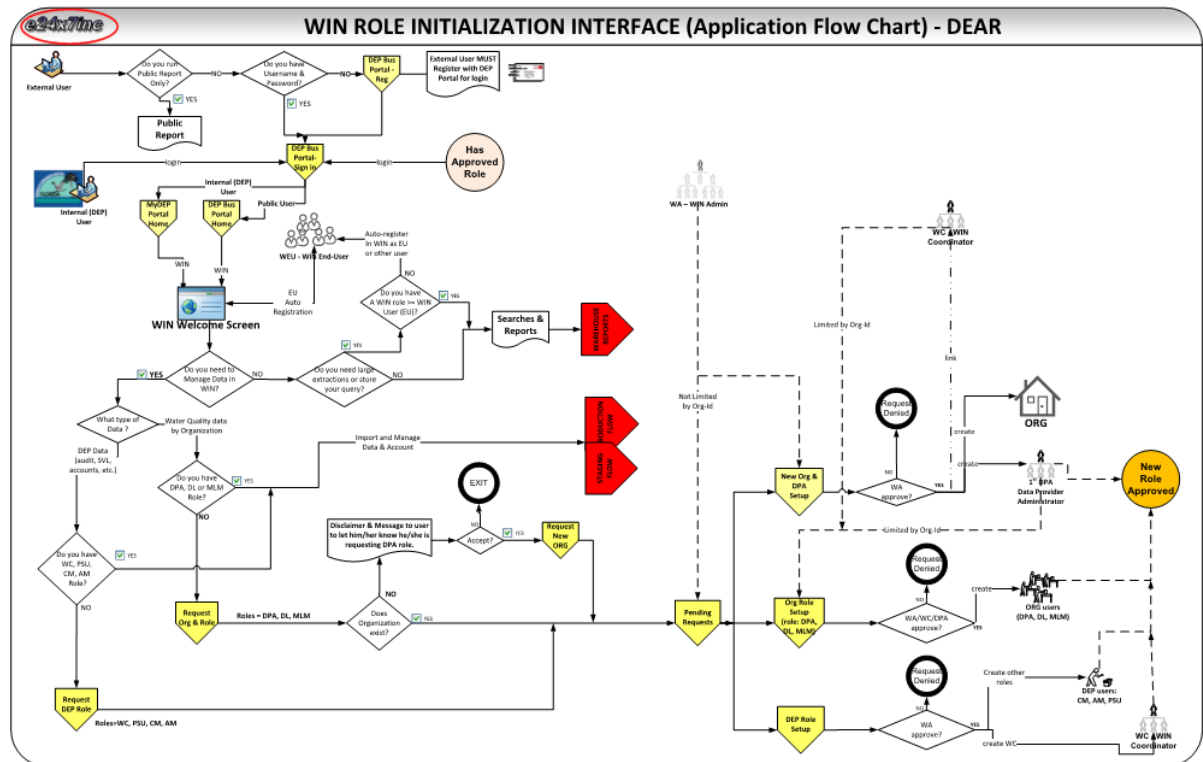


Figure 2 Initialization Workflow

- Team designed an upload process that would transform the delimited text files into temporary Oracle tables used to transform and validate the data against the MDQS rules.
- Team designed an Oracle table and package driven rule engine that could perform all of the MDQS checks in a logical sequence and present the non-conforming data back to the data provider on an appropriate interface to allow them to modify the data accordingly.
- The solution proposed allowing editing of data by transforming it to be treated as an Edit file manageable through the upload interface to avoid duplication of rule management and screens.

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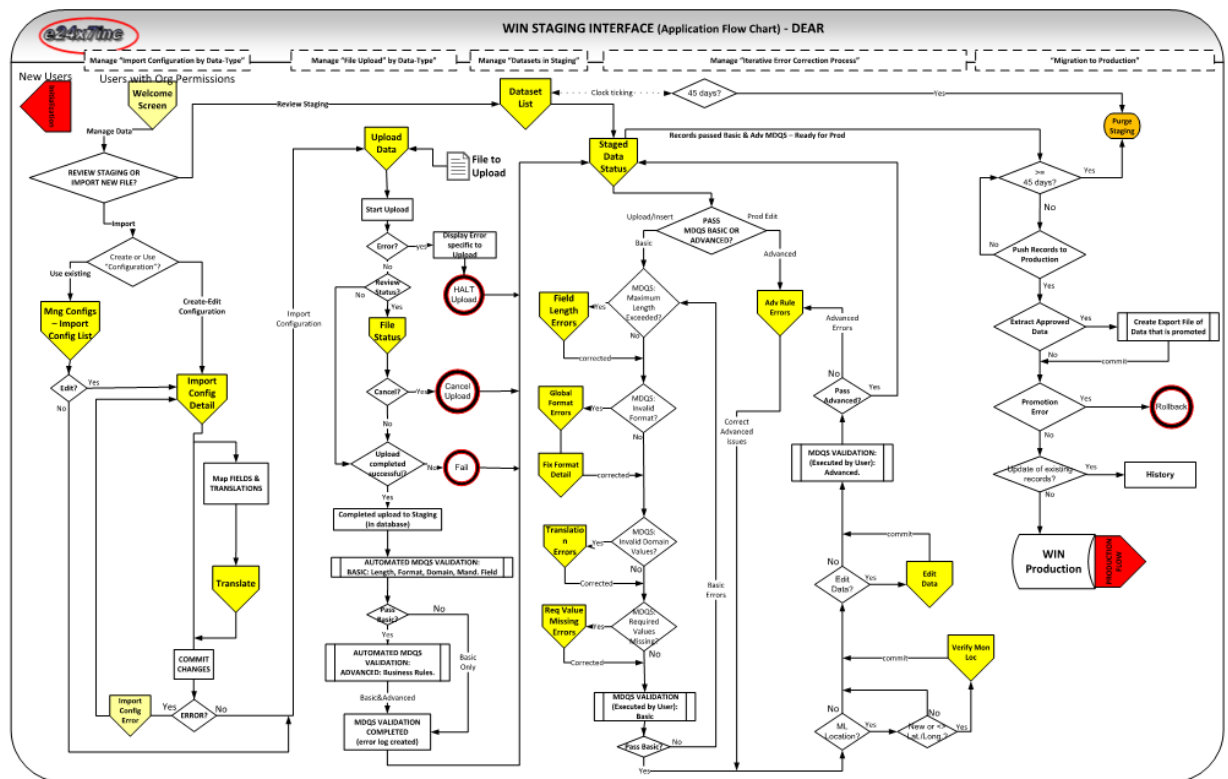


Figure 3 Data Upload and Error Remediation Workflow

- The solution ensured the data that met all MDQS rules was managed in an area used for DEP load history, data anomaly & audit identification. This module included a dynamic search engine that would navigate to one of five standard list screens for maximum reusability.

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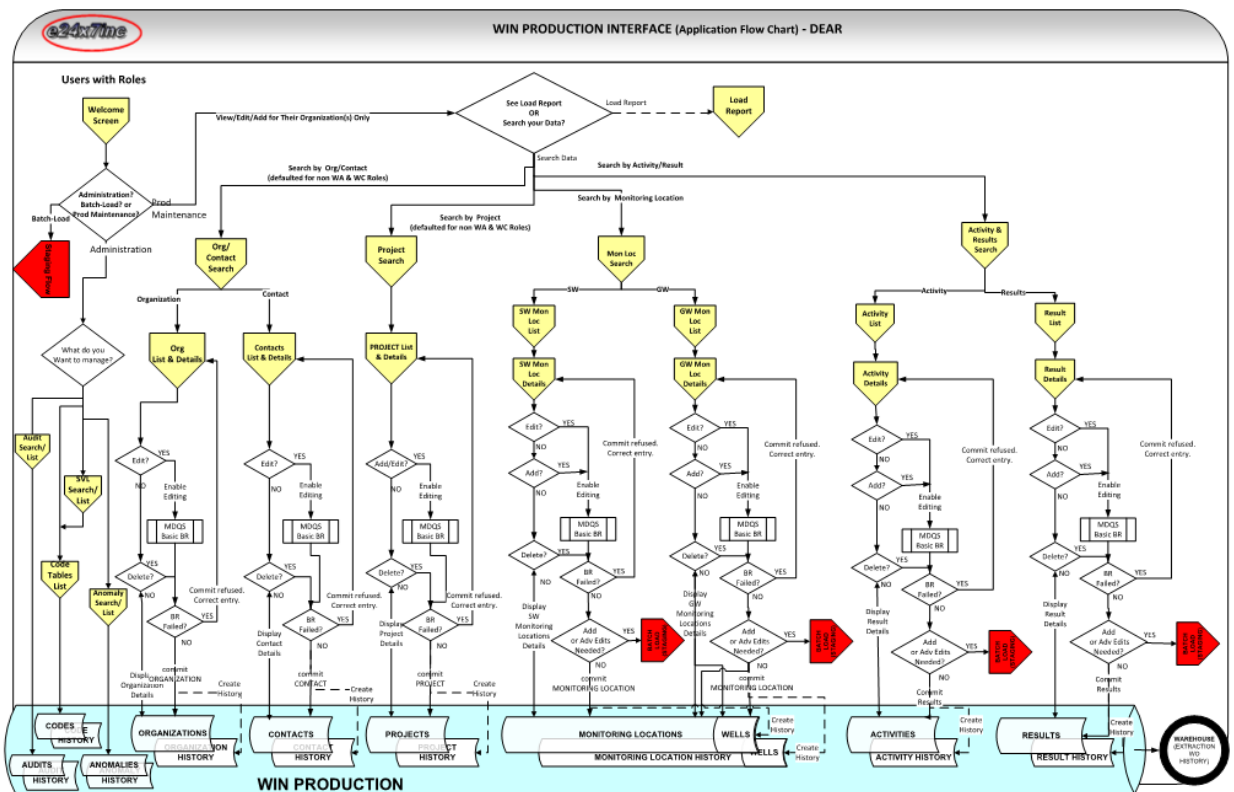


Figure 4 Production Data Workflow

- The Warehouse population solution included a series of Materialized Views, nested Materialized Views and population procedures that denormalized the production data to speed up the report filtering and output generation.
- The Warehouse solution included several standardized reports that were targeted to meet the Public Reporting requirements and Advanced Reports for the DEP staff, data providers and more savvy data users.
  - Most basic reports resulted in intermediate tables of qualifying summary records which allowed the user to navigate to detail screens by data type.
- The dynamic WIN warehouse advanced viewing and extraction system (WAVES) module includes components for saving and managing individual user's favorite searches.

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**WIN Application – Watershed Information Network**  
 Userid: WATERS\_K  
 Query Tree: P\_QT\_1c

Reports & Extractions > Advanced Reports

**Advanced Reports**

Note: Collapsing a search filter category will clear the filters in that category.

Organization and Contact [SAVE AS] [SAVE (Q-ID =123456)]

Organization ID:	21F1P8CH_WQX	Organization Type:	Local-County
Organization Name:	Palm Beach County Environmental Resources Management Departm		
Contact Name:	[... multiple choices ...]		
Coordination Area:	[... multiple choices ...]		

Project

Monitoring Location

Monitoring Location ID:	000-YYYY-ZZ	County:	Wakulla
ML Name:	Wakulla River Lodge Monitoring Location ...		
Primary ML Type:	[... multiple choices ...]	Secondary ML Type:	[... multiple choices ...]
WBID:	0000	Planning Unit:	Wakulla River
HUC B:	0000 0000	HUC 12:	0000 0000 0000
Well Type:	n/a	Aquifer Confinement:	n/a
Well Total Depth (ft) From (>=):	n/a	Well Total Depth To (<=):	n/a

Spatial Search (circle):  
 Latitude: Longitude: Range in miles (<=50):

Additional Filters:  
 ...additional filter #1 ... choose value in list ...additional filter #2 ... choose value in list  
 ...additional filter #3 ... choose value in list ...additional filter #4 ... choose value in list  
 ...additional filter #5 ... type in value ...additional filter #6 ... type in value  
 ...additional filter #7 ... type in value ...additional filter #8 ... type in value

Run Report

Florida Department of Environmental Protection  
 Division of Environmental Assessment and Restoration  
 For assistance please call 850-245-2587

Screen Notes

This screen shows the case in which a user chose a previously saved query in `his/bet` (i.e. `public = no`) Saved Query List. The Q-ID is not null and the Query Type is not PUBLIC and the "Save" button is available to replace the original query.

After clicking on "Run Report" the specific Report will be called.

The Save confirmation will remind the user that there is a maximum of 25 queries that can be saved. If they try to save more, they will not be permitted to do so until they delete other queries. This maximum amount will be a system variable that can be increased. Once increased, it cannot be decreased.

SAVE AS is the only option available for a PUBLIC query.

NOTES ON QUERY:

- The "Well" filtering parameters shall be enabled only if "Primary Type" has only 1 entry = to "Ground Water"; otherwise this section shall be locked/disabled.
- "Well Total Depth" is still part of the updated JRP-9 document on 4/21/13 and therefore will part of this wireframe. DEAR shall finalize this need before the start of the use Case specific to this screen (as all other possible questions).
- The spatial query shall use the DEP coordinates in decimal degree. NICE TO HAVE: If possible the format may also accept degree/min/sec and convert in decimal degree. (This will be determined during development).

In this example the Activity and Result filter category has scrolled off the bottom of the screen.

Figure 5 WAVES filter screen

## Results

Enterprise 24x7 Inc. assembled a team and created a solution that resulted in the proposed solution and company being awarded the follow-on development and implementation! This was a milestone for DEP as Enterprise 24x7 Inc. was the first company to succeed in this initiative.