Florida Department of Agriculture And Consumer Services
Geospatial Data Integration (GDI) Project
Enterprise 24x7 Inc. Project Summary

Overview

To augment homeland security and prepare for potential threats to Florida's citizens and resources, the Florida Department of Agriculture and Consumer Services (FDACS) needed to rapidly identify, locate, and notify its own employees as well as the emergency contacts for its own and other regulated facilities in the event of an emergency. Technical and organizational challenges limited the Department's ability to respond in a timely manner. Lack of integrated, consistent, current, and easily accessible department-wide information was identified as one critical reason for this situation.

In 2003, the Department initiated the "Geospatial Data Integration (GDI) Project – Step 1" to address this and other related issues. This Step 1 project validated that a GDI System could provide the information necessary to support domestic security needs and other needs of the Department requiring integrated data. Such a system was composed of data integration business rules, integration processes, enterprise databases, technology, and most importantly, people.

The mission of the GDI System was to improve how FDACS executives and FDACS Divisions / Offices carry out their missions, especially targeting domestic security planning and response business functions. The GDI System accomplished this by selectively gathering existing operational data; validating and integrating that data to provide department-level data in formats effective for its intent; and providing feedback to FDACS operations to help improve source data quality and effectiveness.

Since 2003 FDACS moved onto Step 2 and began to formally implement key components of the GDI System. In 2008, a formal project established an official production environment for the GDI Repository, consisting of data from four (4) source data systems. In addition to the GDI Repository, the project also established the first formal consumer of the GDI Repository: a web-based map-viewing tool to support FDACS emergency planning and initial response. Essentially, the GDI Repository System copies data from disparate FDACS Division data and combined the data into a standardized, easy to use format, using automated procedures. The Repository's primary purpose was to provide data for FDACS business functions that cross divisional boundaries. One example of such a business function is emergency planning and response.

The GDI Repository System increased the value of data by providing data in new formats – including visual display on a map and by increasing the data consumer base. It reduced the number of secondary consumers directly using operational databases for other than division or bureau specific mission-critical activities. At the same time, it reduced both the effort to prepare for and the number of direct requests for data access from these secondary consumers. Most importantly, the GDI Repository System reduced the individual divisional burdens of integrating disparate data together while increasing the availability of such data.

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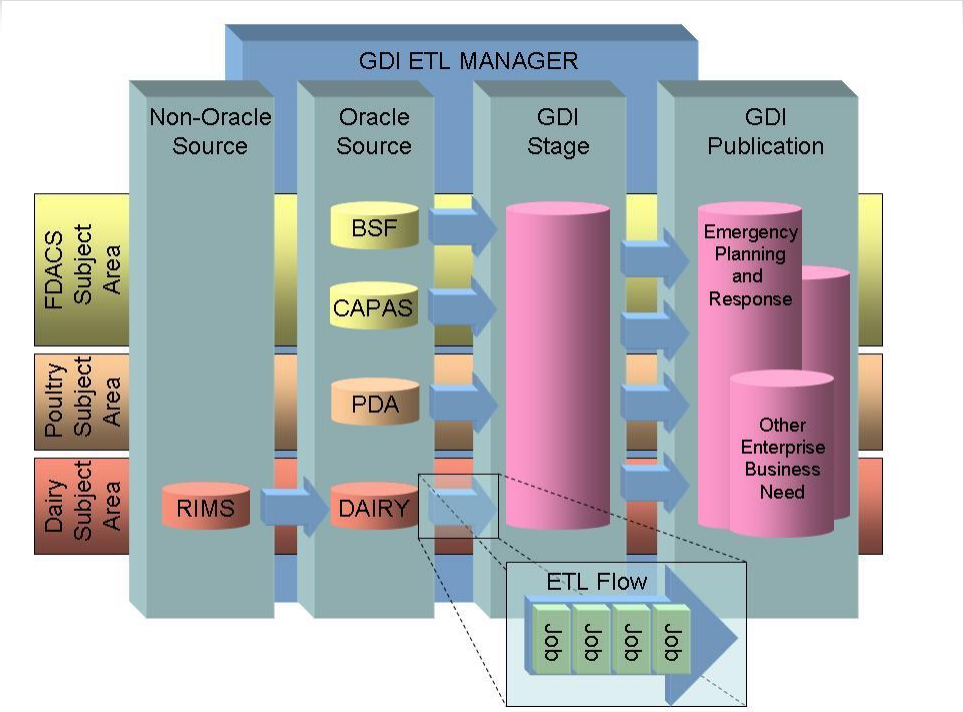

Figure 1: GDI Repository Components

System Components

The diagram in Figure 1 provides an overall view of the GDI Repository. The GDI Repository consists of several components, which are described here. These components will be referenced throughout the document.

- Oracle Database Source Objects– FDACS operational databases that exist inside the FDACS enterprise architecture, which is a confederation of Oracle databases. These databases are outside of the GDI Repository and are the primary responsibility of the FDACS business areas. The diagram shows examples of several operational databases for different Divisions within the Department. As more Divisions share their data via the GDI Repository
- Non-Oracle Database Source Objects – FDACS operational databases that outside of enterprise architecture (e.g., in MS Access). These databases are just as important to the Divisions, but typically require additional steps to load copies of them into the GDI Repository.
- GDI Stage Database Objects – operational data that has been extract, transformed, and loaded into the GDI Repository. These tables, views, and GIS feature classes are structured to support easier data integration across the Department by conforming to the guidelines outlined for the GDI.
- GDI Publication Database Objects – GDI Stage data that has been further transformed into data that is formatted for specific purposes. There may exist several variations of the same data in different databases, because each one is structured for a particular use. This duplication of data is acceptable since it is done in an automated and managed environment.
- GDI ETL Flow Objects – a collection of jobs that, when combined together, produce a database object (table, view, GIS feature class) that is ready for use. ETL stands for Extract – Transform –

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Load, which are a standard classification of actions taken when data is initially extracted from a Database Source object and eventually loaded into either the GDI Stage or GDI Publication databases. An ETL Flow is typically made up of one or more ETL Jobs.

- GDI ETL Job Objects – a collection of procedures (code) that perform a logical group of actions as part of an ETL flow (Extract – Transform – Load) Flow. Most jobs produce an intermediate database output during an ETL flow. Some jobs are designed to be used by many different flows for many different GDI Subject Areas. These jobs can be directly related to the database such as SQL scripts or stored procedures, or can be third party tools such as Python, ESRI geo-processing commands, and executables.
- GDI ETL Manager Objects – manages what and when ETL flows are executed and how the status of the ETL flows are communicated to FDACS staff. Typically, ETL Manager executes flows after business hours.
- GDI Subject Areas – the combination of GDI Database Sources, GDI Stage objects, GDI Publication objects, and ETL flows for a given business area. This grouping allows Divisions to have control over what and how their data is provided to others. A GDI Subject Area may be made up of multiple GDI Database Sources and multiple GDI Publication Database objects.

E24X7INC Services

Enterprise 24x7 Inc. was brought aboard by other Teaming Partners six (6) months before the project deadline to:

- Verify the Business needs and create the Technical Detailed Requirements for the GDI data related to the four databases: BSF, CAPAS, PDA, DAIRY
- Develop and deploy the entire ETL Flows to load GDI-required tables for BSF, CAPAS, PDA, DAIRY.
- Create the User test-cases
- Create the documentation to outline the ETL processes

Enterprise 24x7 Inc provided the following services to help get the project back on track:

- Database Architect & Database Analyst
- Business Analyst
- Contract Manager

The Project was completed successfully and on time.

Technologies Leveraged

- .NET
- PL/SQL
- Batch Processing
- Oracle Database
- SQL
- ArcIms
- XML
- MS Access 2003

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