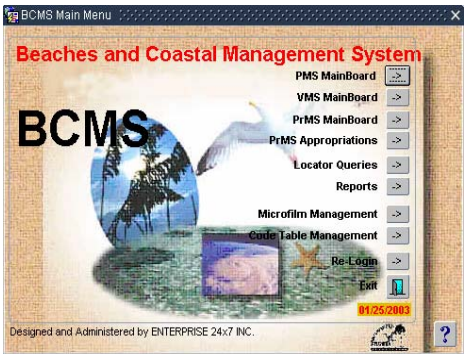
ENTERPRISE 24x7 INC.

BCMS



OBCS DATA MANAGEMENT - CASE STUDY

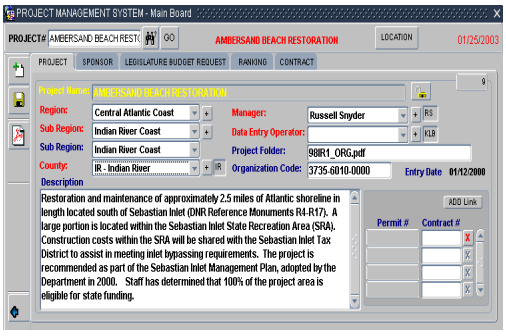
The Office of Beaches and Coastal Systems (OBCS) of the Florida Department of Environmental Protection (FL DEP) relies on its daily operation on the existence of several heterogeneous digital types of data. The data is heterogeneous both in nature and in format. The *nature* depends on the different functions and operations OBCS performs:

- Environmental/Engineering permitting.
- Violations and Compliance.
- Beach and Coastal Ecosystem Management (BCEM).
- Research Analysis and Policies (RAPP) development.
- Coastal Data Acquisition (CDA).

The *format* varies from discrete data, definable in term of numbers, characters, dates, financial values etc. to binary large objects such as images (pictures, aerial-photos etc.), documents (permits, contracts, research papers, etc.), profile-data (numeric values tabulated in text format), films and microfilms.

The complexity of the OBCS Data Management case study is amplified by the following needs:

1. Need to access data from different Florida sites and not only from the Tallahassee office.
2. Need to answer each specific function and operation of the different OBCS sections with a powerful and customized tool.
3. Need to transparently transfer information among the different sections of the office, reducing the need of verbal and/or inter personal communication.
4. Need of use highly friendly Graphical Interface that would allow users to become quickly accustom to enter and retrieve data.
5. Need to retrieve the most pertinent information relative to the analyzed problem from different perspective (sections, type of officer, etc.).
6. Need to quickly acquire more knowledge on data appearing on lists and reports.
7. Need to respect Florida statuary times to process applications (30, 90 days).
8. Need to manage the status of the applications received to decide on the next action: request for additional information, completion, revision of applicant's data, issuing of permit or denial, monitoring before and after permit issuance, file closure, paper-application destruction (microfilm, or digital archive), retrieve of historical data.
9. Need to decrease duplication during data entry and to increase the use of the already entered data in order to ease the data entry process and decrease the data entry errors.
10. Need of embedding Quality Assurance and Controls policies to decrease the number of erroneous entries.
11. Need to link Binary Large Object (BLOB) data files with metadata information already recorded in the database. The OBCS data is in fact analyzed from different perspectives, using various software tools (MS-Word, MS-Excel, MS-Project, AutoCAD, etc.) and saved in different format.
12. Need to interact with several different databases that not necessarily belong to the same class of product such as: Oracle and MS-Access.
13. Need for document automation to decrease the workload and increase the quality.
14. Need for a clear and detailed database and interface documentation to allow other departments to review the project development.
15. Need for an easy and clear User Manual to present the interface to the users.



PrMS Mainboard

OBCS represents a typical example of a complex organizational structure with a complex Data Management case. The Beaches and Coastal Management System (BCMS) is a solution to the above-mentioned needs.

BCMS - BEACHES AND COASTAL MANAGEMENT SYSTEM

BCMS is a software tool developed for OBCS to manage Applications, Permits, Violations, Compliance, Projects and Contracts.

BCMS uses an Oracle 8.1.7 database constituted of more than 100 major tables, 70 code tables, 300 indexes (primary, foreign, unique keys, etc.), 100 views and snapshots.

PMS Mainboard

The BCMS multi-tier Internet graphical Interface has been built using Oracle Forms 6i and Reports 6i conforming to the department standards. The BCMS interface consists of more than 90 main screens, 50 code table forms, 55 reports, charts and diagrams.

BCMS answers each of the above mentioned 18 needs in the following ways:

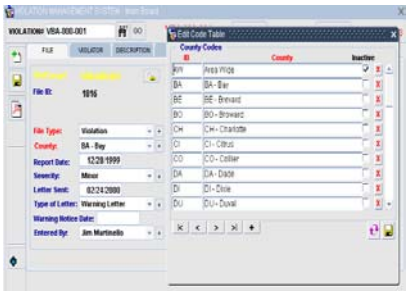
1. BCMS is a internet application developed with Oracle technology. BCMS is implemented as intranet application in FL DEP. It is accessible to any user having a login in FL DEP and a browser (Internet Explore 5.5 or higher or Netscape 4.7 or higher).
2. The BCMS database structure is built over three sub-systems:

   PMS - Permit Management System
   VMS - Violation Management System
   PrMS - Project Management System

   Each sub-system is an independent *"star structure"* database, with its own business polices, sharing common code tables, and feeding a powerful Mainboard interface that displays the collected information as pages in a record.
3. The information is shared among the three sections through connection tables that link the three sub-systems. This way it is possible to quickly switch among each BCMS Mainboard

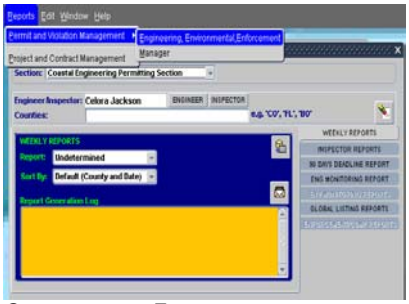
interface to analyze related data that belongs to a different sub-system.

4. BCMS uses tab pages, pull-down lists, lists of values, drill-in, code-table forms to quickly update lists and to create an highly friendly Graphical User Interface (GUI) built on Java technology able to run on Microsoft and Unix operating systems.



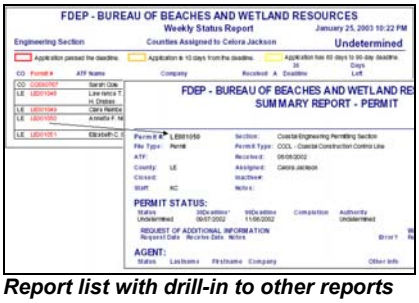
VMS Mainboard & Code-table Form

5. BCMS queries and reports are fired from a common query-report form. This design increases the integration of the three subsystems and allows users inexperienced with a system to still be able to perform the desired query. This common query-report form dynamically changes with the user's choice of sub-system, office section, and type of report.



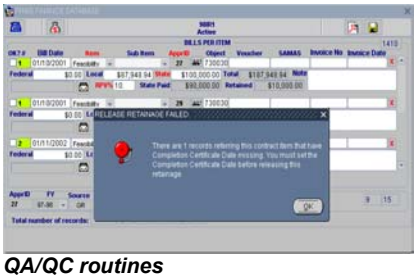
Query-reports Form

6. BCMS offers reports and forms with drill-in capability to provide more information on a specific record. The drill-in links each record to the Summary Report, in case of report-listing, or back to the Mainboard, in case of form-listing.
7. BCMS sets, stops, resets a 30 and 90 days clock for each file application according to the actions the user performs (new file, request for additional information, waiver, completeness, etc.) in order to respect the Florida statuary times to process applications (30, 90 days).
8. BCMS provides several reports on the different status of the life cycle of an application, to allow the user to decide over the next action to take.
9. To reduce duplication during the data entry process, BCMS utilizes several Lists of Values based on queries that retrieve previously entered data in order to fill new record.



Report list with drill-in to other reports

10. BCMS provides Quality assurance and controls mechanisms to decrease the probability of erroneous data entries:
    - Different permissions are implemented for different classes of users.
    - Additional security is implemented to change critical data (lock/unlock mechanisms).
    - Data are distinguished between manager's revised data and raw data (PrMS - Finance database). Only the manager can change the revised data.
    - Business policies are implemented at the BCMS database level to ensure the respect of record references and data constraints.
    - Quality assurance and control routines are performed to verify the respect of more complex relations and dependencies (such as completion of a task, release of retainage, etc.).
11. Using Oracle technology, BCMS allows the user to browse the Office main servers in search of existing data-files to be linked to a specific database record. Once the file path is recorded in the database, the user can open the corresponding data-file from BCMS independently by the type of file format (doc, xls, mpp, gif, jpeg, txt, zip, etc).

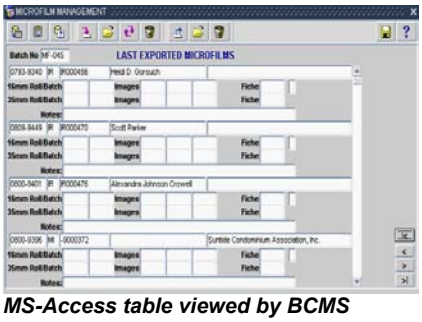


QA/QC routines

12. Using Oracle OCA methodology, BCMS interacts with a MS-Access database, opening connections, transferring data from/to Oracle tables to/from MS-Access tables, and transparently displaying MS-Access data into the Microfilm Management Interface, a component of BCMS.

Binary Large Object file

13. Different types of compliance letters are automatically built by BCMS, using letter templates and data retrieved from the database.
14. More than 70 reports are built and published on an intranet site, and an alert message is e-mailed to each engineer, environmentalist, and manager to communicate the creation of the reports with the click of a button.



MS-Access table viewed by BCMS

15. The BCMS structure is documented in about 3,000 pages of Database Documentation and about 7,000 pages of Interface Documentation. These two Acrobat Reader files are directly linked and accessible from BCMS to the Database Administrator user.
16. The Database Documentation includes about 40,000 lines of internal procedure written to transfer the original data and create the BCMS structure.
17. Three different User Manuals are linked and accessible from BCMS. Each manual describes a different sub-system and helps the user to navigate through the interface.