

Integrated Information Management System (IIMS)--an Information and Data Management System for Science Based River Management

USBR Science and Technology Project ID 165

As reported by Eric Peterson¹, May 2014.

Research Question * How can the disparate information required to make river management decisions be brought together and made accessible through one integrated information system?

Reclamation's Trinity River Restoration Program (TRRP) is mandated to implement a science-based approach to river system management that necessitates the collection, analysis, and reporting of large volumes of physical and biological measurements, investing upwards of four million dollars annually. A systematic approach to managing this information is imperative if costs are to be controlled and the maximum potential of the data realized within the tight windows for annual management decisions. As the leading body responsible for managing rivers in the Western United States, Reclamation is in a unique position to implement an integrated river information system readily replicated on multiple river systems.

Duration: Fiscal Year 2006 through Fiscal Year 2009

Lessons Learned

This project succeeded in building a desktop application for accessing and analyzing river resource data from a centralized database. However, there is a disconnect between research software development and IT business practices that make it difficult to develop new software applications due to a heavy administrative burden and IT roadblocks. This is especially true when sharing between Reclamation offices and/or program partners and the public is involved. IT requirements and technology are constantly changing and required re-programming of the software on two occasions. Multi-year research software development proposals need to account for the IT disconnect and re-programming in the proposal budgets. Starting user needs assessment was a critical first step to formulate software development requirements. Annual check in's with the users are critically important to maintain visibility, support, and keep the software relevant in the rapidly changing IT environment.

Sharing Your Products

Annual workshops with various Reclamation offices and program partners were held to demo the current capabilities and set the work priorities for the next year of software development. A requirement for this application was data sharing with program partners, so a preliminary port to a web based application was developed, which will be improved with future work. Unfortunately, it was not possible to host the web based database on a Reclamation server that is accessible to the public so development is currently outside of Reclamation with

¹ Eric Peterson was brought into TRRP as a contractor in 2009 to lead Data Stewardship across the TRRP Partnership, and assisted with oversight of the completion of Project ID 165. Peterson became a USBR employee in 2011, filling a similar role and taking direct oversight for the subsequent Project ID 3625 and completion of reporting on ID 165 from Andreas Krause, who no longer works for USBR.

	the intention that it may be used in the future either internally within Reclamation or publicly accessible if future IT policy allows.
Partnerships	During the course of IIMS development, funding has been provided by the Trinity River Restoration Program (TRRP), the San Joaquin River Restoration Program, and the Klamath Basin Area Office. Additional participation has come from Reclamation's MP Regional offices (IT support), Reclamation's Technical Services Center (advising), and various TRRP partner agencies (needs assessments and content suggestions) including the U.S. Fish and Wildlife Service, California Department of Fish and Game, the Hoopa Valley Tribe, and the Yurok Tribe.
Future Plans	While IIMS development through 2009 yielded a highly useful system for data management and access, some limitations were identified. Administration of a desktop application to be distributed among reclamation offices while retaining a connection to a centralized database required intensive coordination with IT staff, prohibited use of IIMS on computers using other centralized databases, and required customized SMS packaging for each office for each software update. Additionally, the Trinity River Restoration Program and similar programs in Reclamation have an obligation to share data with partner agencies but were unable to provide access to the centralized IIMS database outside of Reclamation networks. This led in 2009 to a decision to refocus IIMS development into a web-based data portal. A team of Reclamation staff from multiple regions was brought together to capitalize on the desktop development of IIMS and its underlying relational database, and to guide development of a robust data portal with intuitive user interfaces appropriate for public access via the internet. Funding was sought and obtained through a combination of TRRP budgeting and an additional S&T grant (#3625). Please visit http://www.iims.trrp.net from time to time and watch the progress unfold! [Note: IIMS was renamed to the Online Data Portal, or ODP, in 2010. The web address is now http://odp.trrp.net/]

The IIMS Project as defined in Project ID 165 concluded in FY2009 with:

- Centralized Oracle database
 - Modular data structure for multiple data types
 - Automated import of select data types
- Desktop application with access to centralized database
 - Data query and extraction for external analysis
 - Time series analyst (TSA) to graphically view data
 - Document library
 - Preliminary data management tools including upload capabilities
- ArcGIS extension for spatial query of data
- Realty module for land access agreements
- Web portal with simplified, static versions of:
 - Document Library
 - TSA
 - A geospatial viewer