Research Update

Bottom Line

This research project investigated Reclamation's need for centralized data systems and the advantages that a centralized information system architecture would provide for Reclamation programs.

Better, Faster, Cheaper

A Center for Programmatic Data Management (CPDM) would assist the programs with organizing, storing, analyzing, and retrieving data. Now, programs must strike out on their own to find data collection, management, and storage systems. This leads to inconsistent practices, duplicated efforts, and even the lack of data needed to fulfill Reclamation's mission.

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Keeping Track of Data
Investigating the need for a center for programmatic data management

Problem

Reclamation has a wide variety of complex programs for facilities, operations, restoration, and more. These programs need accurate data—tracking water, fish, sediment, hydropower, and so much more is vital to managing our programs, infrastructure, and resources. Moreover, our projects are not becoming simpler—indeed, data acquisition and analysis requirements have skyrocketed in today's complex environment.

Reclamation programmatic needs relating to data management and analysis, data dissemination, and stakeholder interaction are not being met, with significant shortcomings such as a lack of consistency, inabilities to meet requests from stakeholders and publics, tying up staff time, questions of the level of quality control on data, and more. Agency-level oversight, adherence to data management standards, security support, software development standards, and lifecycle management are largely absent. Programs are forced to independently forage for help, often from external consultants and delivery systems. This duplicates efforts, prevents cooperation within Reclamation and with our partners and other entities, and severely reduces Reclamation's ability to meet long-term programmatic and stakeholder needs.

It is time for Reclamation to take a serious look at its programmatic data management strategy and develop a long-term vision centered on its data being a precious asset that facilitates programmatic execution. Initiatives like "Open Data" are providing a promising general direction for data transparency and collaboration. Reclamation programs, however, typically have very specific legislated and/or regulatory requirements, which call for specific solutions. These solutions require teams with focused skillsets to implement data management and collaboration strategies, as well as support to maintain these implementations.

Solutions will need to allow programs to efficiently share data and foster interactions with external scientists, stakeholders, and the general public. At the same time, computer security concerns are well-founded and should be taken seriously.

Solution

This Reclamation Science and Technology Program research project interviewed numerous Reclamation program and data managers across Reclamation on their data management needs and their insights into possible solutions.

This research solidified the need for Reclamation to up its game to maintain and use data assets. The technologies are now available and the need is established to implement a more formal and centralized data management approach. The programs

would be able to get centralized, consistent, and professional advice and technical assistance with their substantial data management needs.

Interviewees highlighted programmatic needs for data management, from setting up a data system with quality assurance/quality control and metadata requirements that met the information needs for the program to getting assistance with technology options, contract language, and web application development. All of those interviewed felt that the programmatic needs, information technology transformation, and cloud platform availability have evolved to a point where a centralized data management solution is achievable, and that historic obstacles can be overcome with the "right people in the room," proper oversight, and investment.

Ideas coalesced into a "Center for Programmatic Data Management" (CPDM). The center could be comprised of a manager, Oracle/SQL Server database administrator(s), web developer(s), geographic information system (GIS) administrator(s), analyst(s), developer(s), and contract help. The CPDM could be base-funded to some level to ensure continuity of support and agency data management vision and objectives.

CPDM could assist with:

- Data collaboration tools
- Security issues
- Application development
- Contracting procedures
- Liaison between program staff and Information Technology
- Liaison with Public Affairs
- Data management strategies
- Data storage
- Reporting services
- Interaction with non-Reclamation program partners

Future Plans

A final report paper has been completed and intended to be a springboard and reference document for further discussions on establishing a CPDM. Recommendations for further actions include:

- Further identify data needs and establish a foundation for peripheral programmatic data to be built

- Develop a system for centralized management and accessibility of identified data

- Develop procedures for working seamlessly with Reclamation's Open Data Team and with the various data communities of interest

- Identify business data stewards who could oversee mission critical datasets where consultation with the CPDM is required

- Bring in the Reclamation system, BORGIS (and other GIS systems), to assist with the geospatial component of these data

- Develop a sustainable system with data management, lifecycle management, and stewardship controls

"Since the public paid for the information, they should have access to it. Established applications and data delivery systems would be a big time saver and would free up staff for direct programmatic functions"

Ali Forsythe
Manager, San Joaquin River Restoration Program
Reclamation's Mid-Pacific Region

"The main issue is that we have a collection of subject matter experts in a program, and we have a computing infrastructure, but we do not have a group to interface between the two."

David Mooney
Administrator, Central Valley Project Improvement Act
Reclamation's Mid-Pacific Region

"The proposal of a centralized data management solution is a great idea. Instead of a pilot, we just need to 'do it'."

Kurt Wille
Manager, Geographic Applications and Analysis Group
Reclamation's Technical Service Center

More Information

www.usbr.gov/research/projects/detail.cfm?id=7671