Dam Safety Mobile Collection Analytics Reporting and Storage Application

The Dam Safety Branch application collects, analyzes, reports and stores critical data pertaining to the safety and performance of State Water Project dams. Utilizing a web-based interface with integrated GIS functionality and a mobile application, Dam Safety Branch engineers can easily identify instrumentation as well as collect pertinent data. In addition, integrated seismic data management aids in the identification of potentially impacted structures when a seismic event occurs. CARS, which TrinityTG presented to O&M's Dam Safety Surveillance and Reporting Project, is a comprehensive data management system that facilitates the monitoring, collection, analysis, storage, and presentation of dam surveillance data.

Overview

The Department of Water Resources Dam Safety Collection Analytics Reporting and Storage Application (CARS) replaces several disparate data sources with a singular repository of all relevant information which can be accessed and reported with ease. This solution also significantly reduced multiple data entry efforts and improved overall quality assurance of the data.

The Dam Safety Branch is responsible for the safety and performance of all SWP (State Water Project) dams. As the manager of O&M's dam safety program, the Branch provides advice to the field divisions on maintenance practices that affect dam integrity and performance. The Branch is responsible for FERC dam compliance monitoring and reporting, management and coordination of the Director's Dam Safety Review Boards, coordination of SWP dam remediation projects, and management of the SWP seismic monitoring program.

Key Benefits to the Client

- **User Management** – Multiple users in different locations of the state can access and exchange pertinent data utilizing the data management system.

- **Consolidation and Centralized Storage** – Data about seismic activity is aggregated in a central repository regardless of location of data input.

- **Consolidation for Data Entry and Data Source Management –** Multiple and disparate sources are interconnected via Web Application portal (including Mobile support connection), which allows real time data entry, eliminates redundancies, and reduces data entry errors.

- **Accurate & Stable Data Exchange & Retrieval –** Users in and out of the field have access to accurate and updated information. This saves time and money wasted by discrepancies resulting from redundancies.

- **Increased Robust Reporting and Analytics Engine –** CARS offers multiple reporting formats: csv, text, and PDF export capabilities.
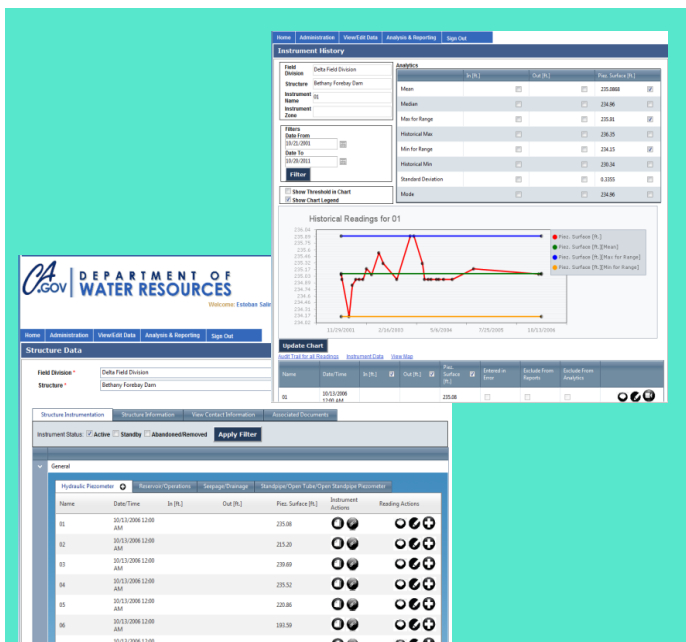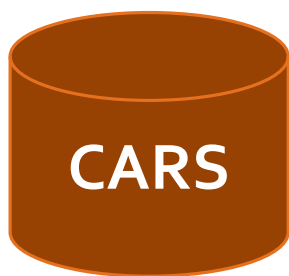
Web Application
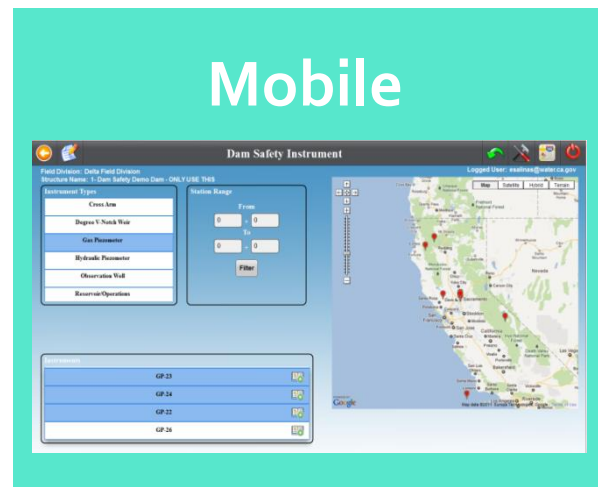
Mobile
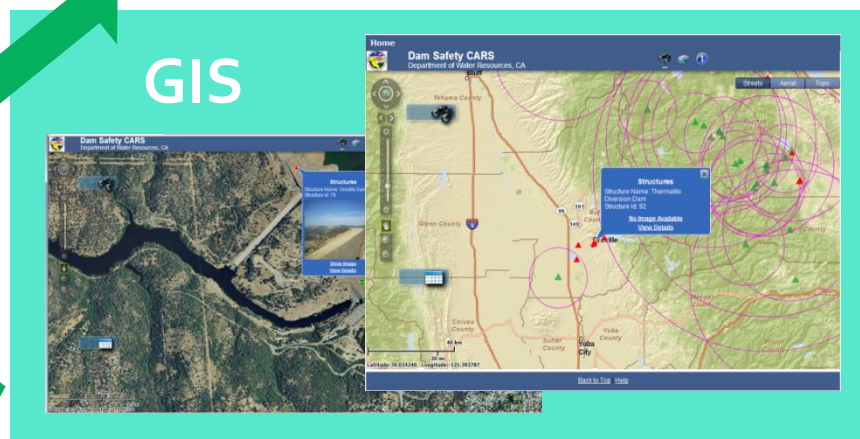
GIS

CARS

Approach

TrinityTG built a solution that focused on providing a comprehensive data management system and enhancing efficiency of business processes.

- TrinityTG's holistic approach to increasing the business functionality and model overall resulted in a universal data capture and management system that facilitated data collection processes and reporting of Dam Safety Inspectors in the field including Personalized Mobile User Interfaces.

- TrinityTG's solution to increasing the efficiency and efficacy of data capture was to provide a comprehensive data management system. The Dam Safety Collection Analytics Reporting and Storage Application (CARS) allows data entry from multiple and disparate sources in real time.

- Utilization of a Web Application based interface with integrated GIS functionality allowed Dam Safety Branch engineers to identify key instrumentation in the field and the expedient collection of data. Furthermore, extended integration via CARS facilitated in the exchange and retrieval of seismic activity data and allows authorized users access to statewide information and data via web browser interface.

Searches

Seismic Data

GIS is more than tables

TRINITY
TECHNOLOGY GROUP

User Management

User Structure Management

| Home | Administration | View/Edit Data | Analysis & Reporting | Sign Out |

User Name Daniel Garcia
User Email dang@water.ca.gov

Select Structures

- Delta Field Division
  - Antioch Water Treatment Plant
    - Antioch Water Treatment Plant - Ground level
  - Barker Slough PmP
  - ☑ Bethany Dam No. 1
    - ☑ Bethany Dam No. 1 - Embankment
      - ☑ Bethany Dam No. 1 - Embankment - Crest
      - ☑ Bethany Dam No. 1 - Embankment - Downstream Face
        - ☑ Bethany Dam No. 1 - Embankment - Downstream Face - Left Groin
        - ☑ Bethany Dam No. 1 - Embankment - Downstream Face - Right Groin
      - ☑ Bethany Dam No. 1 - Embankment - Left Abutment
      - ☑ Bethany Dam No. 1 - Embankment - Right Abutment

[Apply] [Save] [Back]

Complex Calculation Engine

Add Edit Calculated Value

| Home | Administration | View/Edit Data | Analysis & Reporting | Sign Out |

Field Division Southern Field Division - East Branch
Structure Perris Dam
Instrument Line 1

Calculations

Name * Area
Units * ft.
Reading Select... [Add]
Constant Select... [Add]
Operator Select... [Add]

Formula 1/8*(2*asin((sqrt(([Reference Point].[ft.]-[m----line].[ft.])*([Re Diameter].[ft.]-([Reference Point].[ft.]-[m-s (2*asin((sqrt(([Reference Point].[ft.]-[m-sc Diameter].[ft.]-([Reference Point].[ft.]-[m-([Pipe Diameter].[ft.]^2)

[Apply] [Save] [Back]

Back

Personalized Mobile Inspection Sheets

Edit Mobile Instrument List

List Name Weekly Piezometer Run

Instrument List

Field Division * Delta Field Division
Structure * 1- Dam Safety Demo Dam - ONLY USE THIS
Instrument Type * Hydraulic Piezometer

[Filter Instruments]

Filtered Instruments ☐ Check All

- ☐ HP-01
- ☐ HP-6
- ☐ HP-7
- ☐ HP-9
- ☐ HP-10
- ☐ HP-12

[Add To List Instruments]

List Instruments

Instrument Name	Field Division Name	Structure Name	Instrument Category	Instrument Type	Sort Order	Actions
GP-31	Delta Field Division	1- Dam Safety Demo Dam - ONLY USE THIS	General	Gas Piezometer	1	🗑
GP-21	Delta Field Division	1- Dam Safety Demo Dam - ONLY USE THIS	General	Gas Piezometer	2	🗑
GP-23	Delta Field Division	1- Dam Safety Demo Dam - ONLY USE THIS	General	Gas Piezometer	3	🗑
GP-24	Delta Field Division	1- Dam Safety Demo Dam - ONLY USE THIS	General	Gas Piezometer	4	🗑
GP-22	Delta Field Division	1- Dam Safety Demo Dam - ONLY USE THIS	General	Gas Piezometer	5	🗑

Structure and Instrument Management

Manage Structures

| Home | Administration | View/Edit Data | Analysis & Reporting | Sign Out |

Select Structure

Field Division * Oroville Field Division - Oroville
Structure * Oroville Dam

[Manage Associated Instruments] [Manage Contact Information] [Upload Picture]

| General Information | Area Information | Structure Details |

State Dam Number 1-048
Structure Type * Dam
National ID CA00035
Abbreviated Name Oro Dam
ACC Contact Number 530-534-2385-____

Oversight Agency
- ☐ Department of Water Resources

[Apply] [Save] [Back]

Advanced Filtering for Data Graphing and Exports

Home | Administration | View/Edit Data | Analysis & Reporting | Sign Out

Add/Edit Graph

Graph Name: New Report

| Select Instruments | Set Graph Parameters |

Field Division * Delta Field Division
Structure * 1- Dam Safety Demo Dam - ONLY USE THIS
Select Category * General
Select Type Gas Piezometer

Filter by Station Range:
Station From:
Station

Instrument Zone: [All]

Select Instrument:
All Cat

Available
GP-21 - Tip Elevation
GP-21 - Distance to W
GP-21 - Distance to W
GP-21 - Distance to W
GP-21 - Water Surface
GP-21 - Water Surface
GP-21 - Water Surface
Reason
GP-21 - Water Surface

Axis Scales and Labels, and sort orders for exports

| Select Instruments | Set Graph Parameters |

Select Date Range:
From Date: * 1/1/1999   To Date: * 12/12/2011

Select Date Range to Exclude:
[All]
Date Ranges Excluded (Instruments) Remove
From Date: To Date: Add

Sort Order	Instrument Elements	Grid Axis	Axis	Label	Scale - Min	Scale - Max
1	HP-6 - Tip Elevation	Left y	Left y		0	0
2	HP-6 - Tip Elevation - Comments	Left y	Right Y		0	0
			Both		0	0
			Lower Left Y		0	0

Generate Graph

Export Format [Select Export Form
Export Path
Export Filename

Export

Apply | Save | Bac

Export To Excel, CSV, Text and PDF

	A	B	C	D	E	F
1	Reading Date	HP-6 - Tip Elevation (ft.)	HP-6 - Tip Elevation (ft.) - Comments			
2	1/31/2008 0:00	1307.6	Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.			
3	2/29/2008 0:00	1307.6	Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur.			
4	3/27/2008 0:00	1307.6	Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis			

Easy to use instrument selection

Simple data entry screen with locational information and Image of instruments.

Device shows prior / latest readings

Trinity Technology Group Provides Innovative Solutions

At TrinityTG, we are in the business of solving the problems that arise with shifts in business strategies and operations. **No matter what information technology challenges you face, we can use those challenges as opportunities to find solutions that fit your current and future needs.** We can help to develop business, technical, and enterprise architectures to improve business processes and transactions. **Our Strategic Planning approach focuses on re-use and adaptation vs. re-building from scratch.** We perform process analysis with an eye to best leverage your current system. We design process maps to enable effective communication between business and technical users throughout the project life cycle. **At every phase, we use new technologies and techniques to maximize your investment in business systems.** To establish cohesive and effective interaction through the project life cycle, we produce formal plans for all of the following critical processes for every project: Communication, Risk Management, Change Management, Configuration Management, Implementation Management, and Project Management.

TrinityTG's Success is Measured in the Satisfaction of our Clients

Our clients are among the largest of state agencies across the public sector and the most progressive and advanced in the private sector. Our clients' success drives our business; 95% of our business comes from referrals from current and past clients. **We distinguish ourselves by our approach, working in connection with our clients to ensure their satisfaction every step of the way.**

We Listen.
We Produce.
And We Deliver Extraordinary Results.
Give us an opportunity to show you what we can do for you.

Our clients include:

TRINITY
TECHNOLOGY GROUP

2015 J Street, Suite 105
Sacramento, CA 95811
916.779.0201
www.trinitytg.com