California Environmental Exchange Network
CEDEN

- ◆ **Program Background**
- ◆ **High Level Overview of the System**
- ◆ **Answer questions**

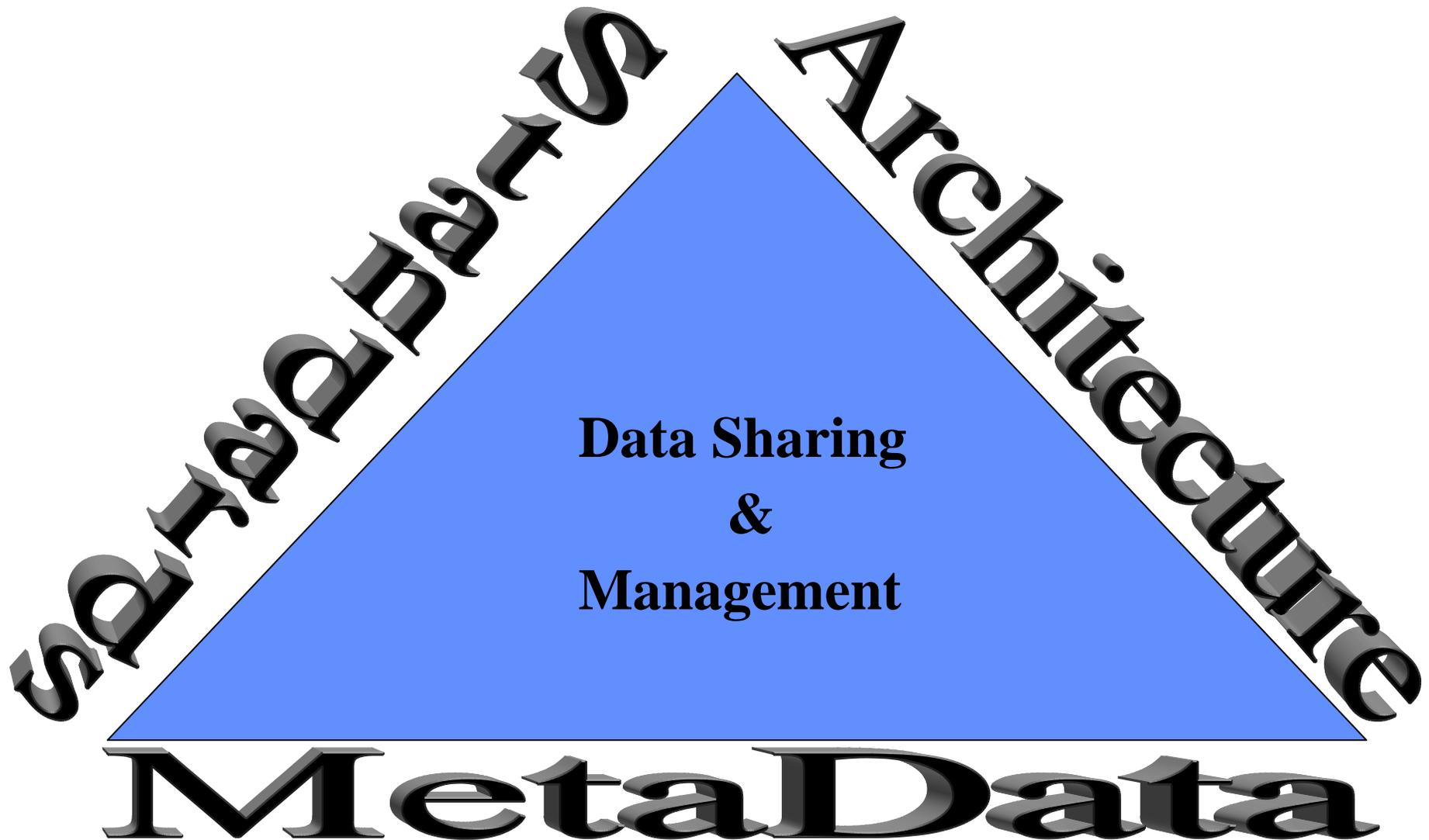# Background: Why?

♦ Many agencies, university groups, private entities, bond funded monitoring programs, and stakeholder entities collect large amounts of environmental data

♦ In many cases there is a great demand for this data to be available as a comprehensive, interoperable, and standardized data set by SWRCB, RWQCB technical/enforcement personnel, and decision makers.

♦ Unfortunately, within California, the many groups who collect monitoring data store them in different databases with inconsistent formats, Quality Assurance Quality Control (QA/QC), and data collection procedures.

Background

- Participants: SWRCB(SWAMP), SFEI, SCCWRP, EPA, UCD, MLML, DWR Stakeholder groups, and others

- Data types include ambient monitoring data: fish, Bio-assessment, benthic, pesticides, nutrients, water quality, field data, meteorological, hydrodynamic, habitat data, GIS coverage, etc.

Principals of Data & Information Sharing Systems

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Systems

Architecture

Data Sharing
&
Management

MetaData

Background Composition

◆ CEDEN data participants can be broadly divided into three categories:

◆ Data providers,

◆ Regional Data Centers (RDC), and

◆ Data users.

Background
Data Providers

◆ Data providers are monitoring programs that collect environmental monitoring data-including Prop 40, 50 and eventually 84 funded programs.

◆ These groups will use many different types of DM systems from simple spreadsheets to complex enterprise systems. In some cases, there may not be a system for managing data in digital form.

Background
Regional Data Centers

♦ In the CEDEN system, data providers within a geographic region work with their local RDC to form a regional environmental recording network that:

  ♦ Integrate data in their region
  ♦ Outreach
  ♦ Promulgate data standards
  ♦ Help Desk
  ♦ Provide program information with metadata
  ♦ Provide information technology (IT) to obtain data from data providers
  ♦ Provide and receive data from CEDEN and
  ♦ Can provide QA of data

Regional Data Centers

- Davis: University of California, Davis
- Sacramento: SWRCB & DWR
- Oakland: SFEI
- Moss Landing: Marine Labs
- Orange County: SCCWRP

CEDEN IM Standards

- Propagation of Data Standards
  - State Legislature requirement to be SWAMP comparable for grant recipients
  - QA/QC, QAPPs interoperability of data
- Propagation of Metadata
  - Data about Data
  - Program Documentation

CEDEN Background Technologies

- CEDEN is distributed data systems
- CEDEN subscribes to multiple technologies for data distribution and integration:
  - Web services (SOA as specified by the EPA)
    - National Environmental Information Exchange Network (*NEIN*)
    - Nationally recognized system includes infrastructure for IT and standards
  - Symmetrical replication
  - Standardized templates
  - Web data entry
  - Other Technologies
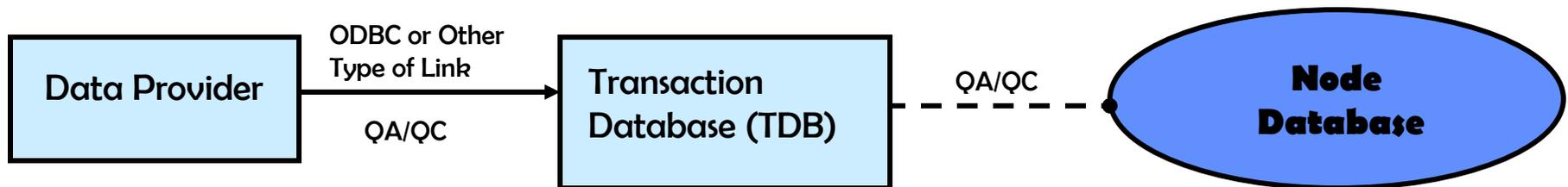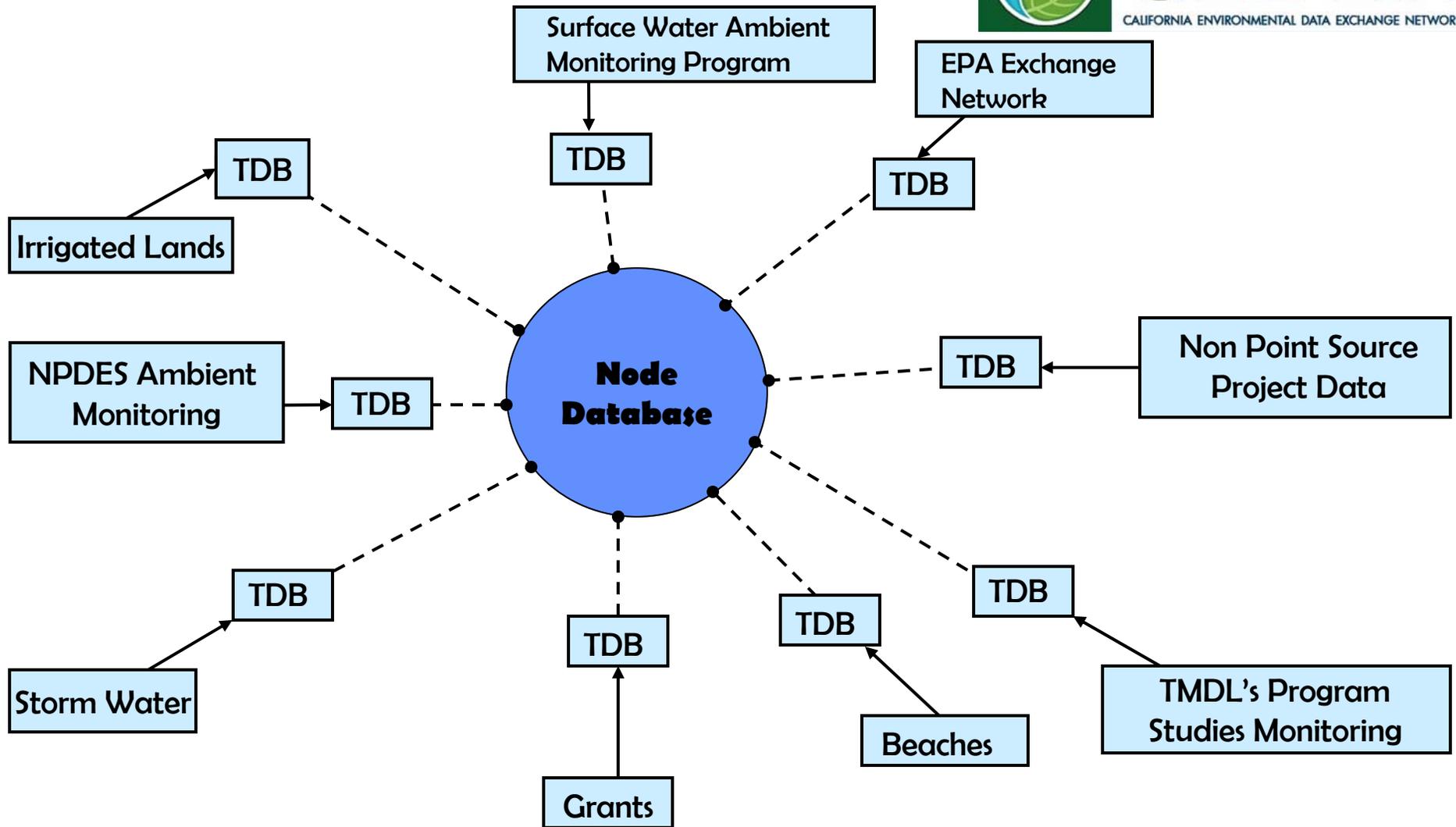- CEDEN embraces standards and metadata

CEDEN Network
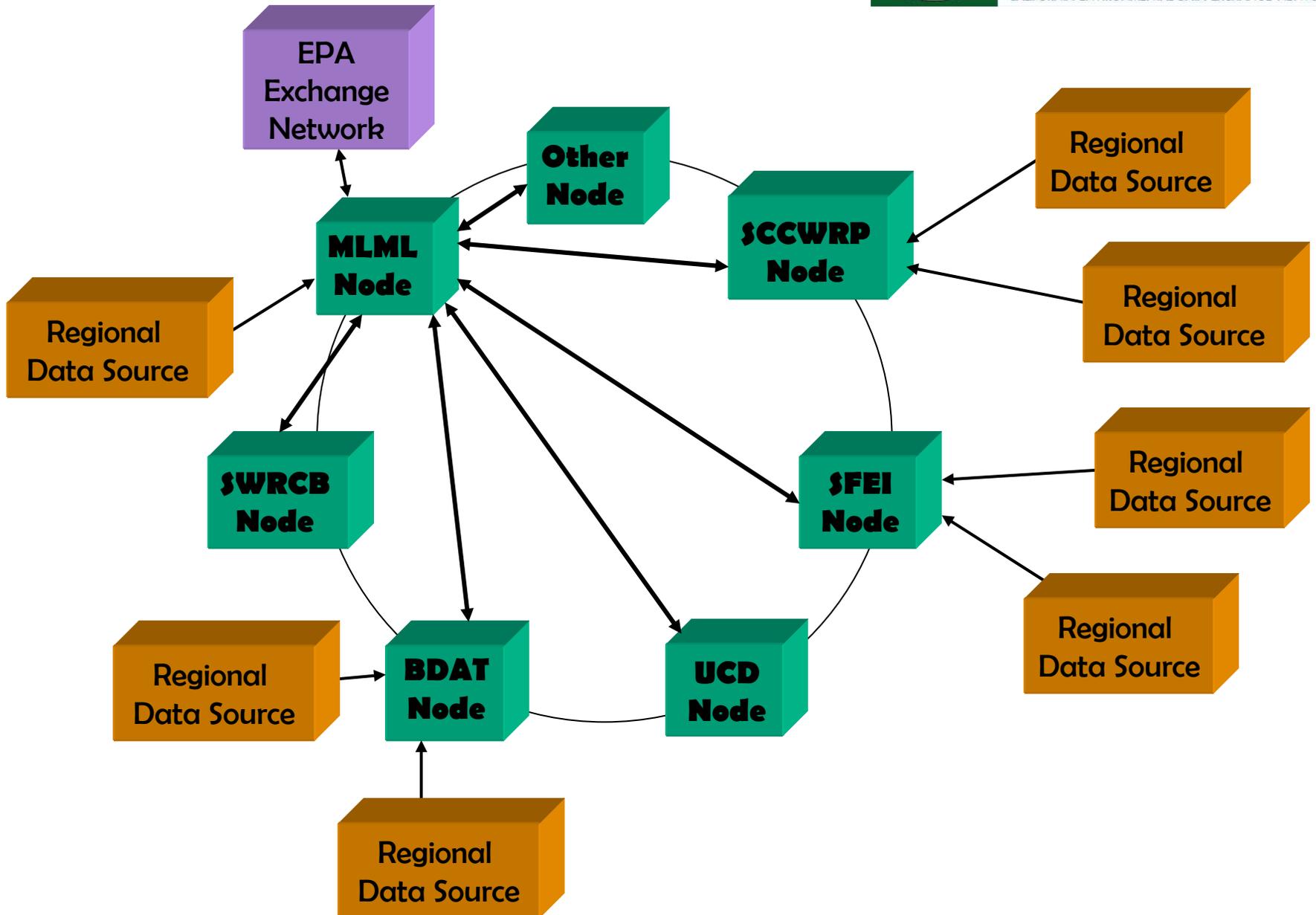
Background

- System promotes local data management, ownership, and control of data
  - * Small local databases can be developed in MS Access if funds are available
- Local data are integrated regionally at Regional Data Centers using standard naming conventions, units, coordinates, etc.
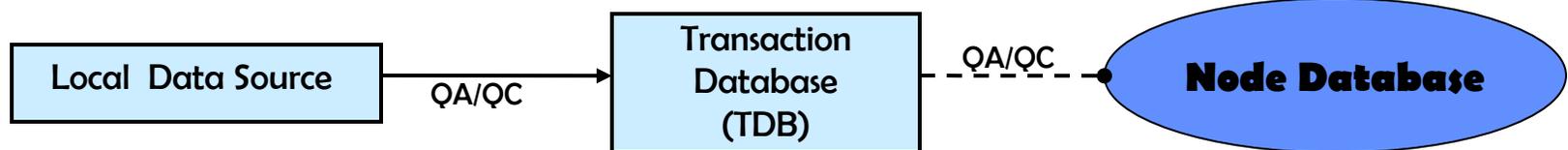
Background/Data Transfers From Remote System

| Data Provider | → ODBC or Other Type of Link / QA/QC → | Transaction Database (TDB) | - - - QA/QC - - - | Node Database |

Background Data Flow Characteristics

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Surface Water Ambient Monitoring Program

EPA Exchange Network

TDB

TDB

TDB

Irrigated Lands

TDB

Node Database

TDB

Non Point Source Project Data

NPDES Ambient Monitoring

TDB

TDB

TDB

TDB

Storm Water

TDB

TDB

TMDL's Program Studies Monitoring

Grants

Beaches

Integrated Data

◆ Provides access to a multitude of monitoring program data from many individual entities

- ◆ Provides data for predictive tools such as models
- ◆ Provides data for adaptive management
- ◆ Provides a system to distribute GIS and model output
- ◆ Provides data on mitigation devices (fish screens/barriers, etc.)
- ◆ Etc.

Integrated Data
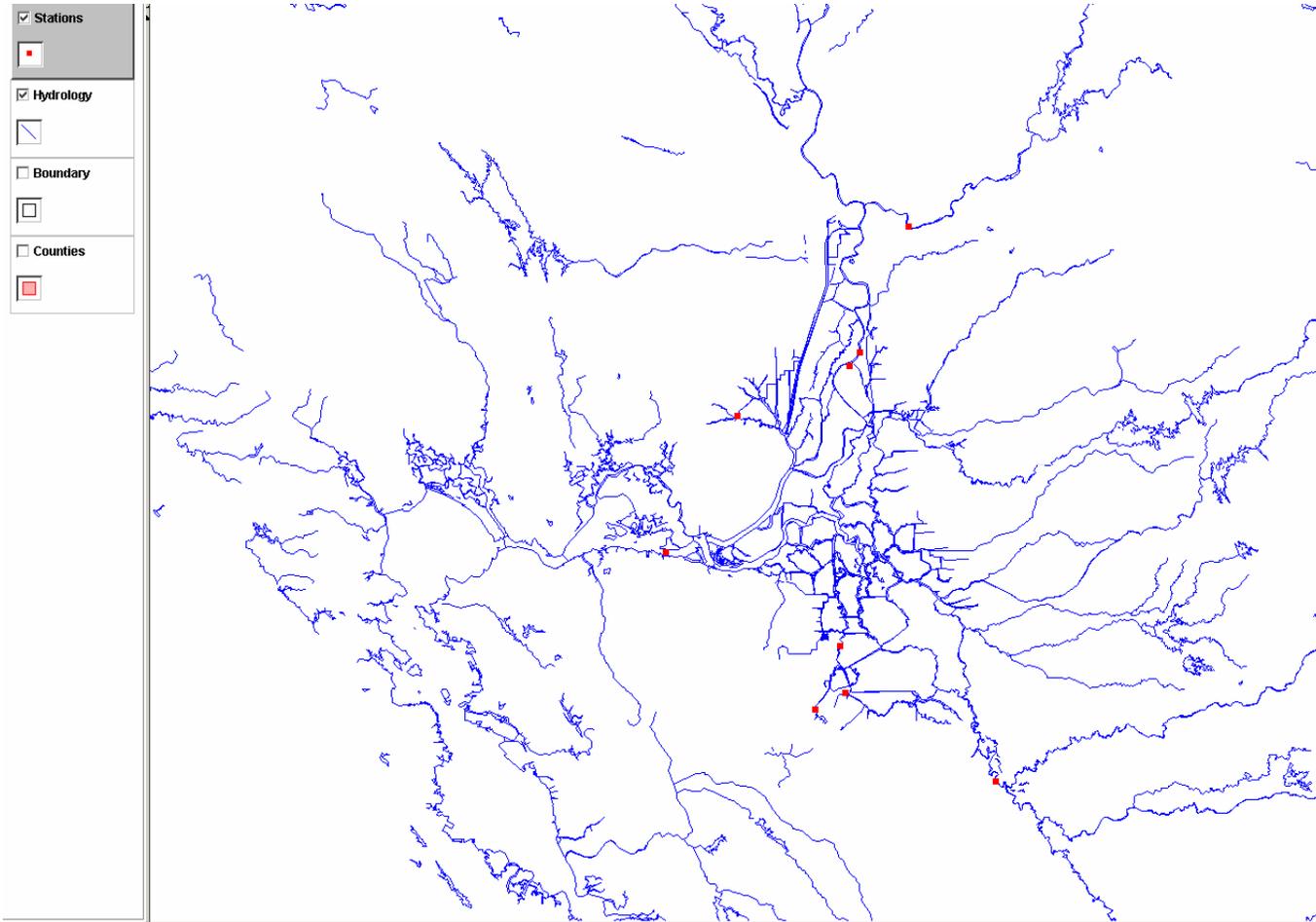
Integrated Data
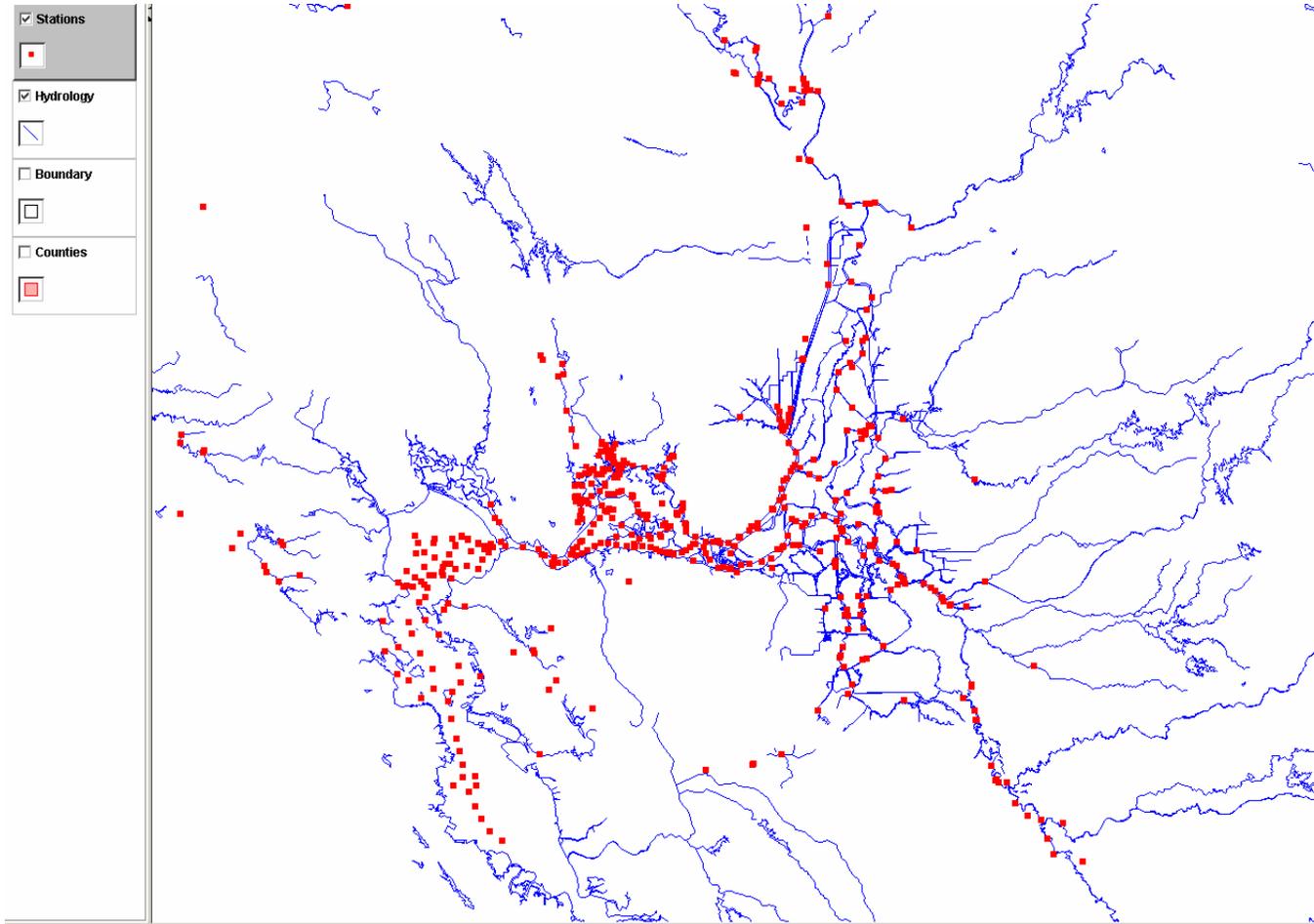
CEDEN Conclusion

- ◆ CEDEN architecture model is fully scaleable
- ◆ System combines the best features of a distributed and comprehensive data management system
  - ◆ Standardized data from many sources can be used either locally, at a data center, or remotely by groups who conduct regional or statewide analysis.
  - ◆ Data can also be accessed by applications
  - ◆ Data ownership and management is conducted by those who collect the data
- ◆ **Questions?**