CREATING A COMPREHENSIVE DATA MANAGEMENT NETWORK: RESHAPING WITHOUT REINVENTING

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- Cautionary Tale
- Story about understanding the Solution and not necessarily the Problem
- Three Lessons
  1. Form and function are not indelibly linked in databases.
  2. Someone, somewhere has already worried about and likely solved the same problem.
  3. Listen to your intuition and know that when something appears to be a little hokie, it's probably a little hokie.

OWRB Water Quality Division

- **Regulatory**
  - Water Quality Standards
  - WQS Implementation
  - Data Support
- **Monitoring & Assessment**
  - Lakes and Wetlands
  - Rivers and Streams
  - Groundwater
- **Special Studies**
  - Lake Restoration
  - Bathymetric/ Hydrologic
  - Contractual

Diverse Program and Data Types

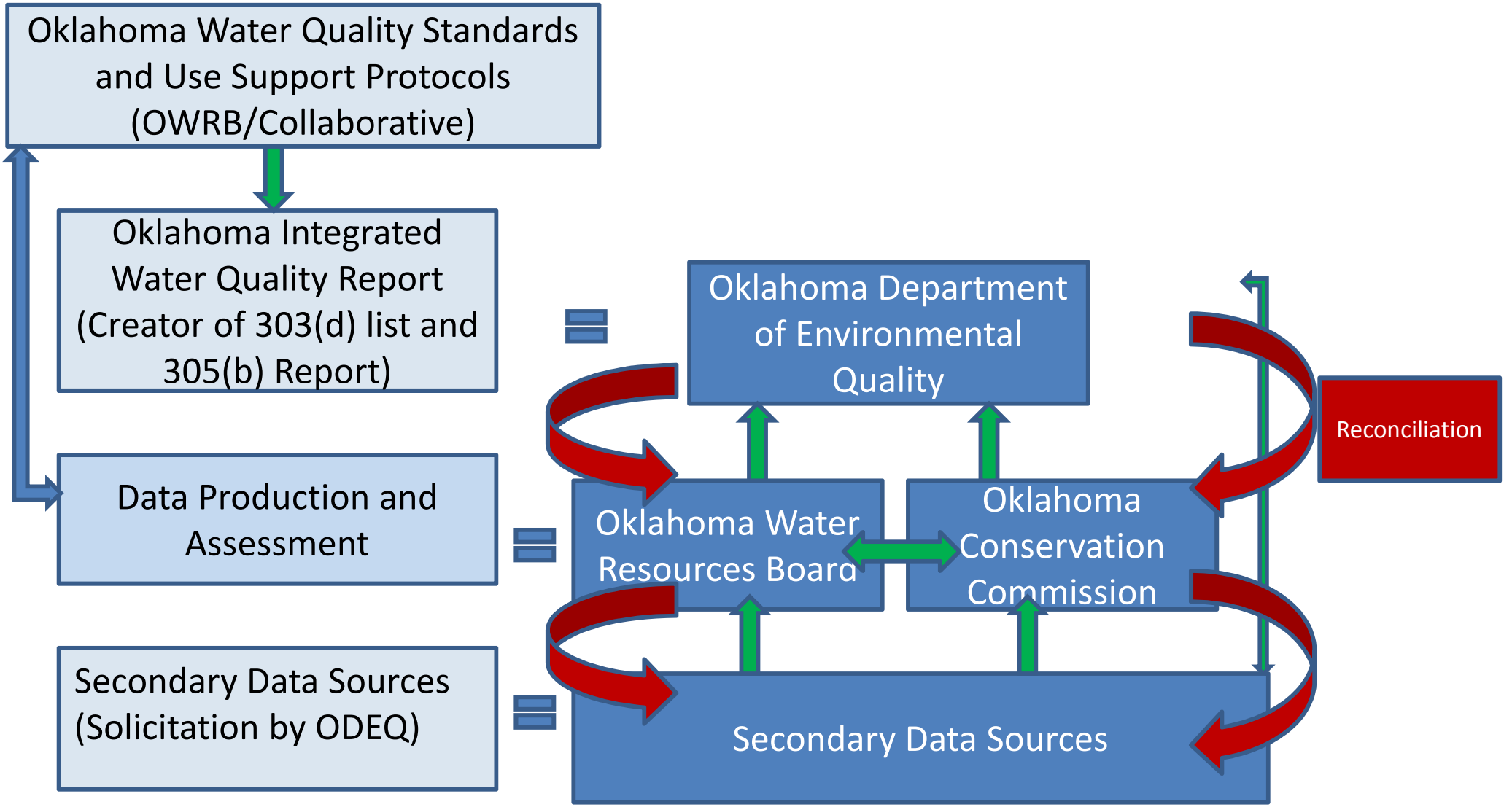
Programmatic Diversity
- Fixed Station (Trend and Assessment)
- Probabilistic
- Special Studies
- Contractual (Highly Variable)

Data Types
- Chemical and Physical
- Biological and Habitat
- Bathymetric and Hydrological
- Observational

Temporal Density
- Continuous Data
- Regular Intervals
- Event Sampling
- Single Visit Sites

Metadata
- Methodology
- Geospatial
- Characteristic
- QA/QC

Oklahoma's CWA Reporting Structure



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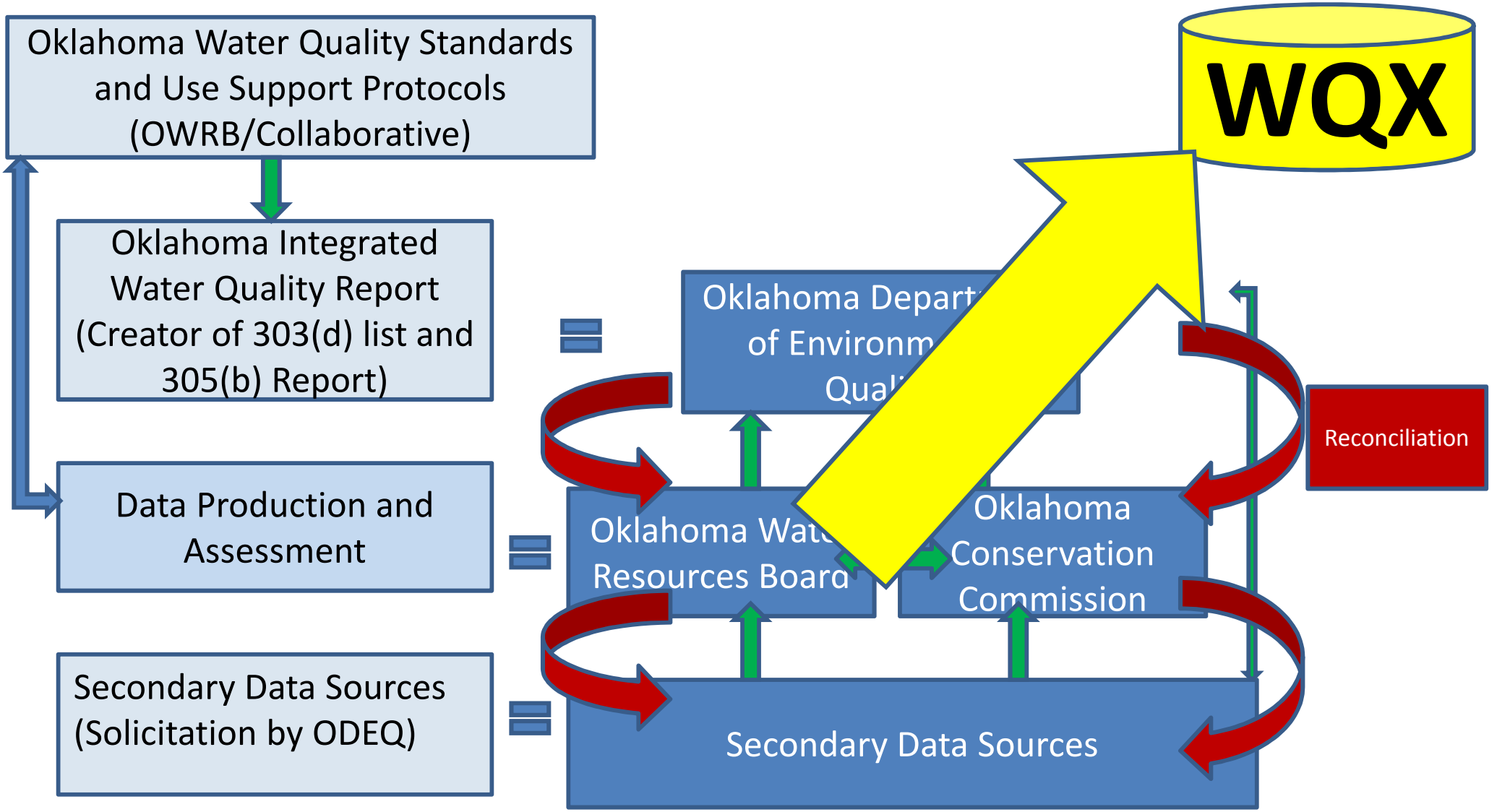
Data Reporting for CWA Programs



WHAT DO WE DO TO MOVE FORWARD?

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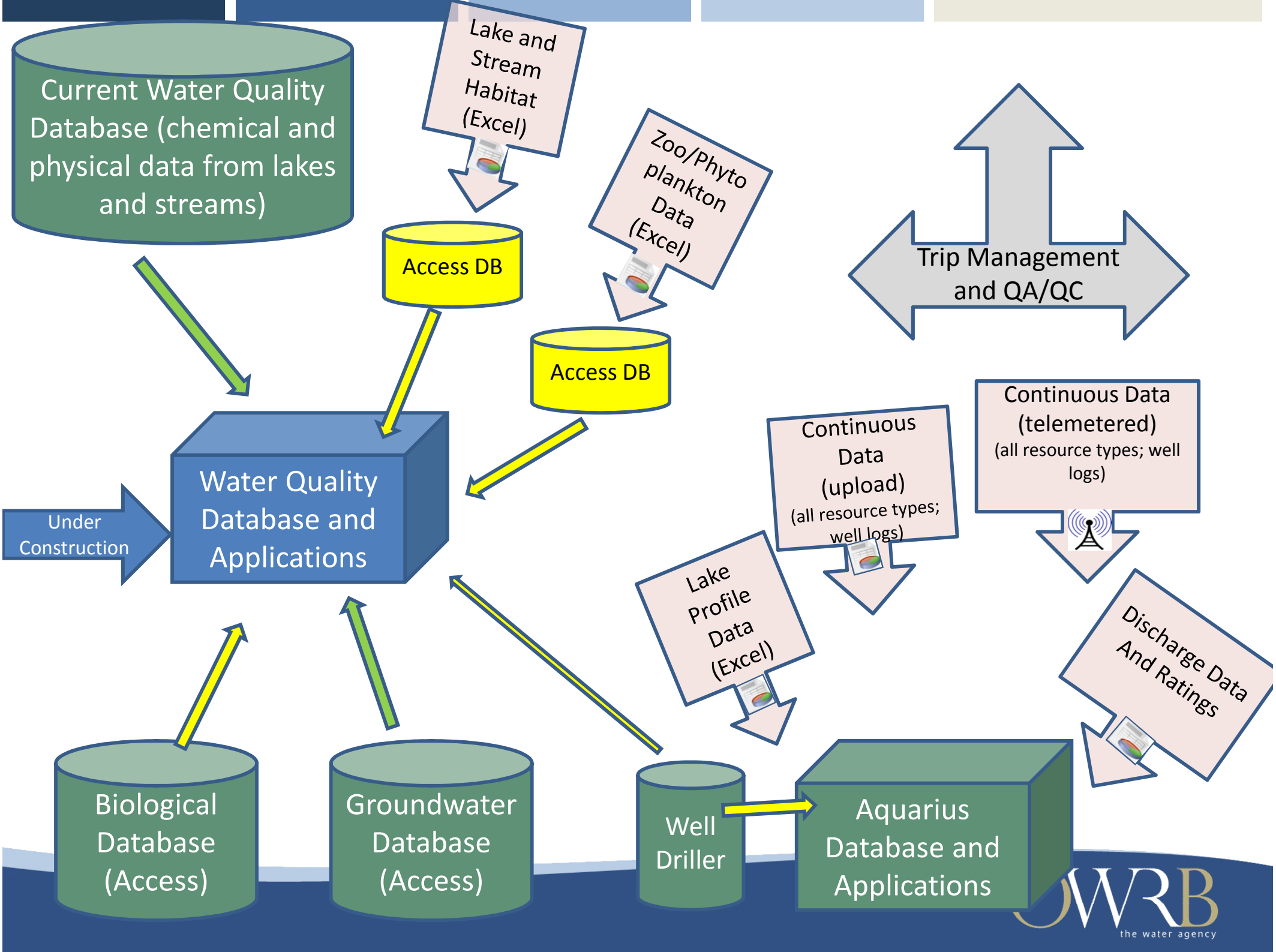
Current Water Quality Database (chemical and physical data from lakes and streams)
Lake and Stream Habitat (Excel)
Zoo/Phyto plankton Data (Excel)
Trip Management and QA/QC
Access DB
Access DB
Continuous Data (telemetered)
(all resource types; well logs)
Continuous Data (upload)
(all resource types; well logs)
Under Construction
Water Quality Database and Applications
Lake Profile Data (Excel)
Discharge Data And Ratings
Biological Database (Access)
Groundwater Database (Access)
Well Driller
Aquarius Database and Applications
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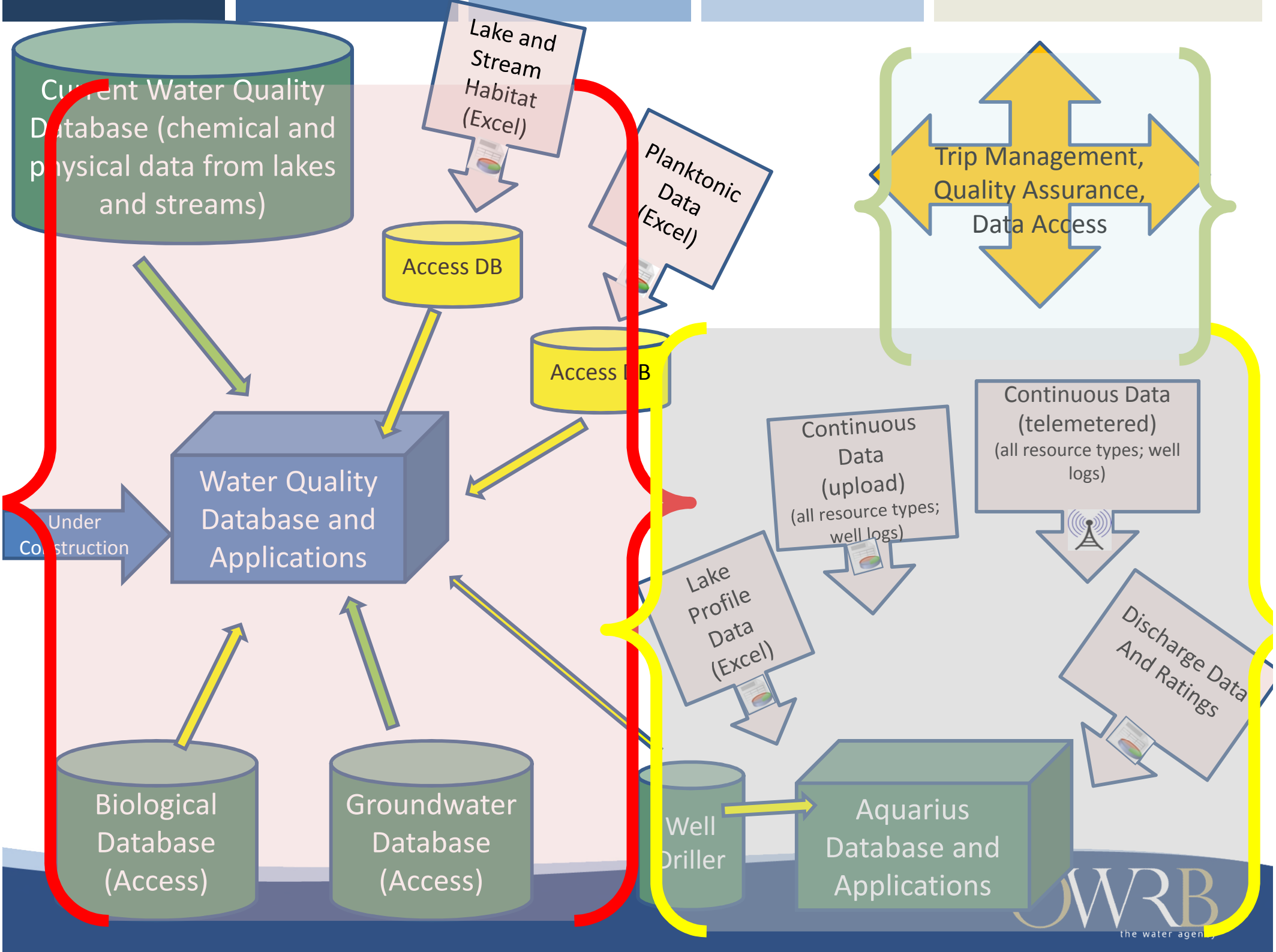
Current Water Quality Database (chemical and physical data from lakes and streams)
Lake and Stream Habitat (Excel)
Planktonic Data (Excel)
Access DB
Access DB
Trip Management, Quality Assurance, Data Access
Under Construction
Water Quality Database and Applications
Continuous Data (upload) (all resource types; well logs)
Continuous Data (telemetered) (all resource types; well logs)
Lake Profile Data (Excel)
Discharge Data And Ratings
Biological Database (Access)
Groundwater Database (Access)
Well Driller
Aquarius Database and Applications
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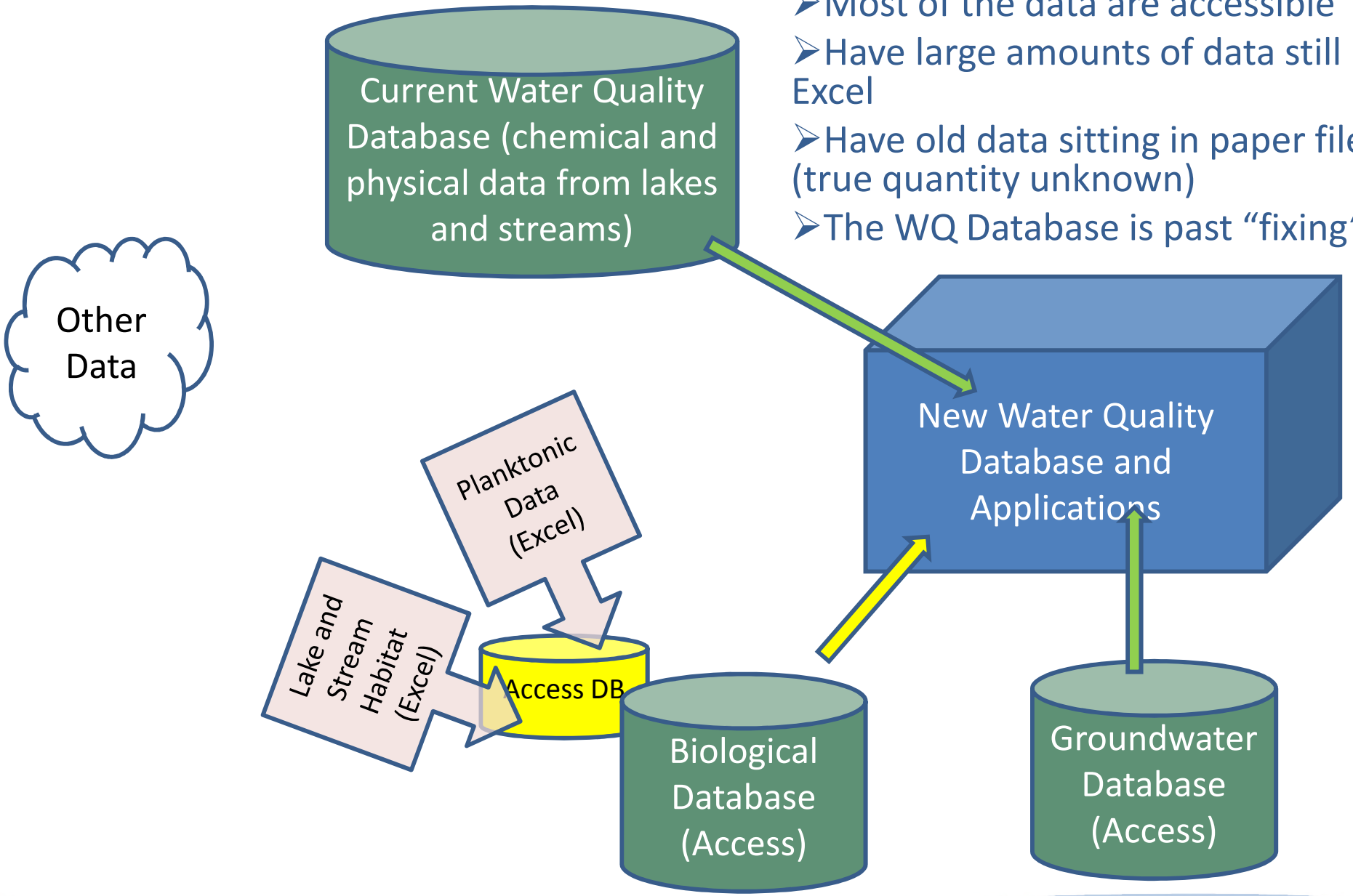
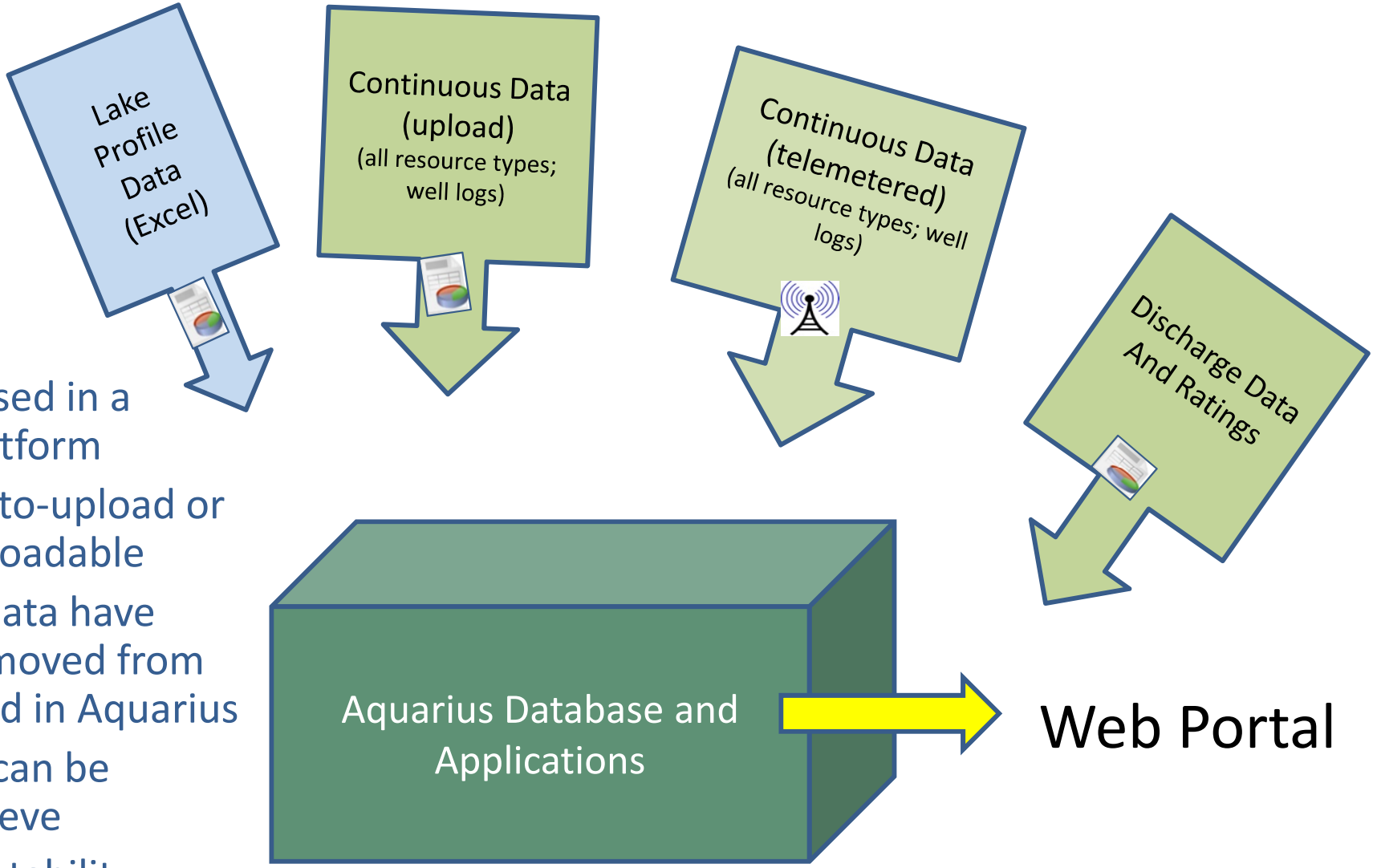
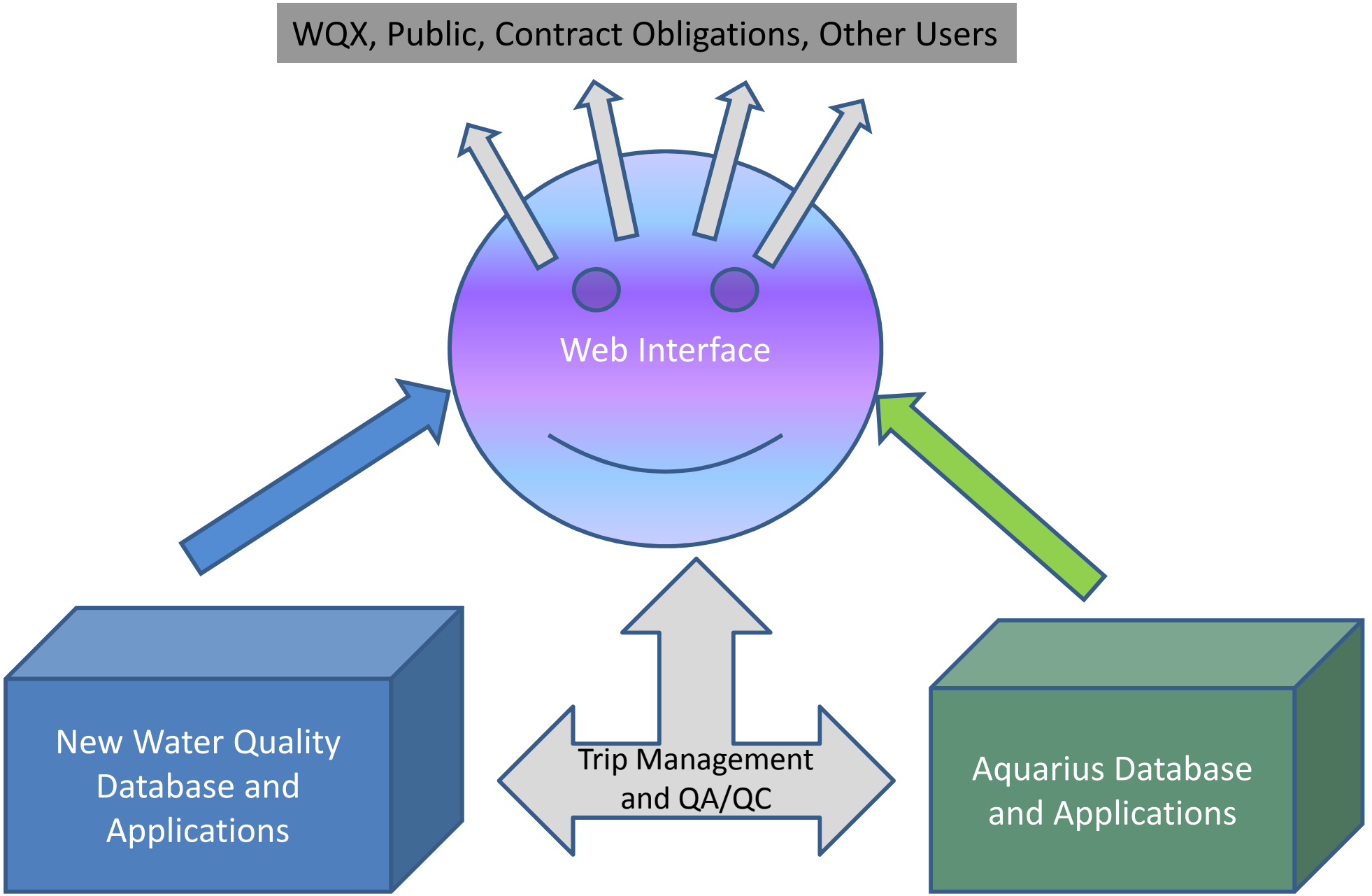
- Most data are in a relational format
- Most of the data are accessible
- Have large amounts of data still in Excel
- Have old data sitting in paper files (true quantity unknown)
- The WQ Database is past "fixing"





- Data are housed in a commercial platform
- Most data auto-upload or are "easily" uploadable
- Lake profile data have been recently moved from Excel and placed in Aquarius
- Certain data can be difficult to retrieve
- Server compatability issues have been prevalent



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LET'S DEVELOP A DATABASE!!

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LET'S DEVELOP A DATABASE….

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Developers with Little or No Natural Resources Experience

Developers Going Through a Revolving Door

Eventually Hired a Contract Business Analyst (She left!!)

Agency Project Prioritization

Not Understanding the Solution

LOOK TO WQX

WQ Project
WQ Project is the upper level for all monitoring

Many WQ Projects per WQ Station

Many WQ Activities per WQ Project

WQ Station
Contains elements for monitoring ID's, locations, and other geographical information related to

WQ Activity
WQ Activity groups sampling activities into activity types (e.g., water or biological)

WQ Program
General Program

Many WQ results per WQ Activity

WQ Result
WQ Result is the individual result of a particular parameter, whether it be chemical, physical, biological, habitat, etc.

Schema Review

- Serendipitous
- EPA Contract with Gold Systems to assist WQX Implementation with States
- Step by step review of OWRB's newly developed schema
  - Comparison to WQX
  - Are there logic holes
  - How do we facilitate data transfer?
  - Does the schema make sense or is it overly complex?
- Eventually, led to an internal discussion that an off the shelf system might be best

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Questions

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