SDWIS Prime (SDWIS Primacy Agency) Update

Greg Fabian

To

EN2014

Philadelphia, PA

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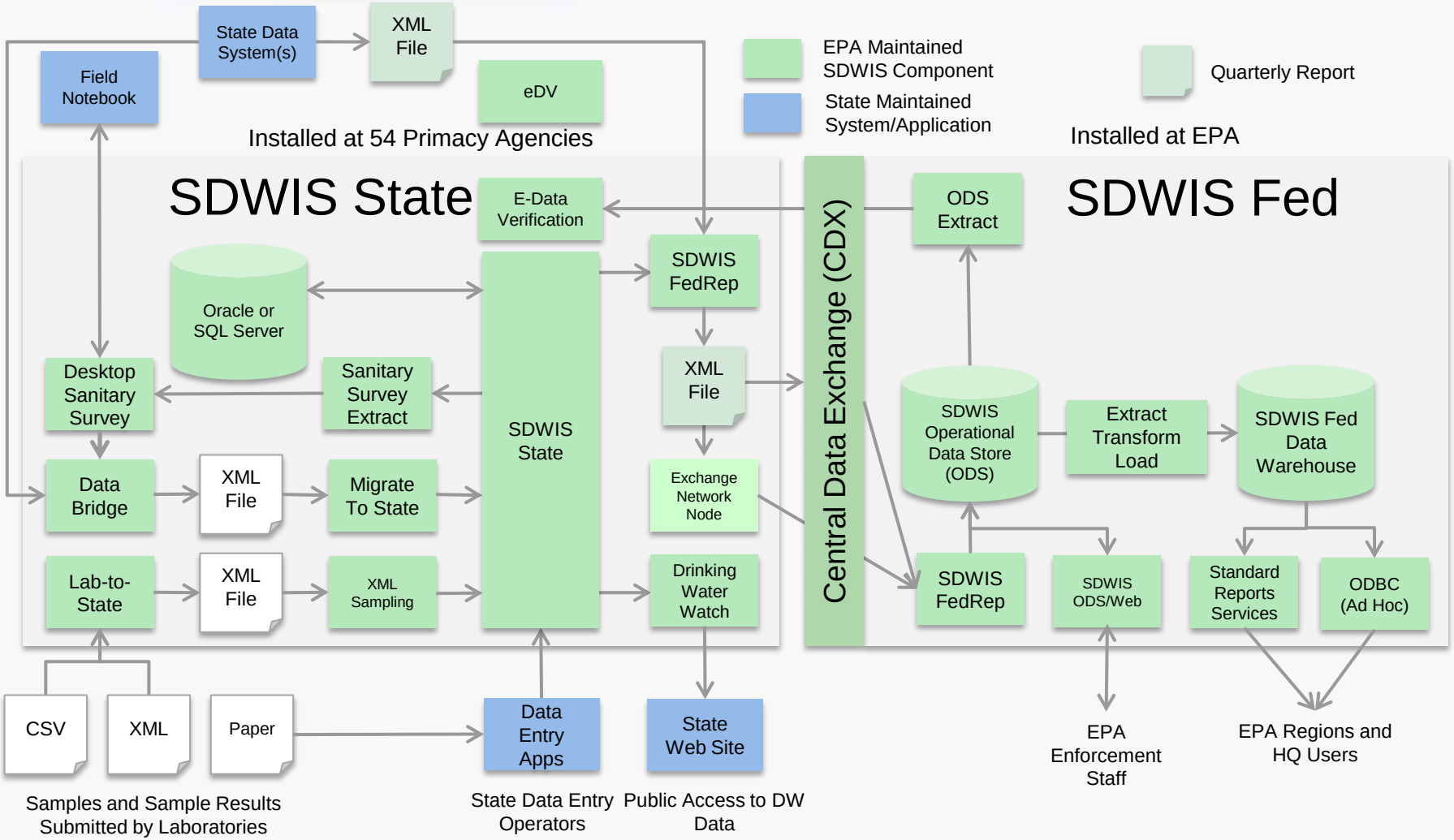
Topics

- Legacy SDWIS State
  - Architecture and Data Flow
  - The Case for Replacing SDWIS State
- SDWIS Prime
  - Vision and Guiding Principles
  - Stakeholders and Context
  - Architecture and Possible Data Flow
- Project Schedule
- Issues
- Wrap-up
- Compliance Monitoring Data Portal

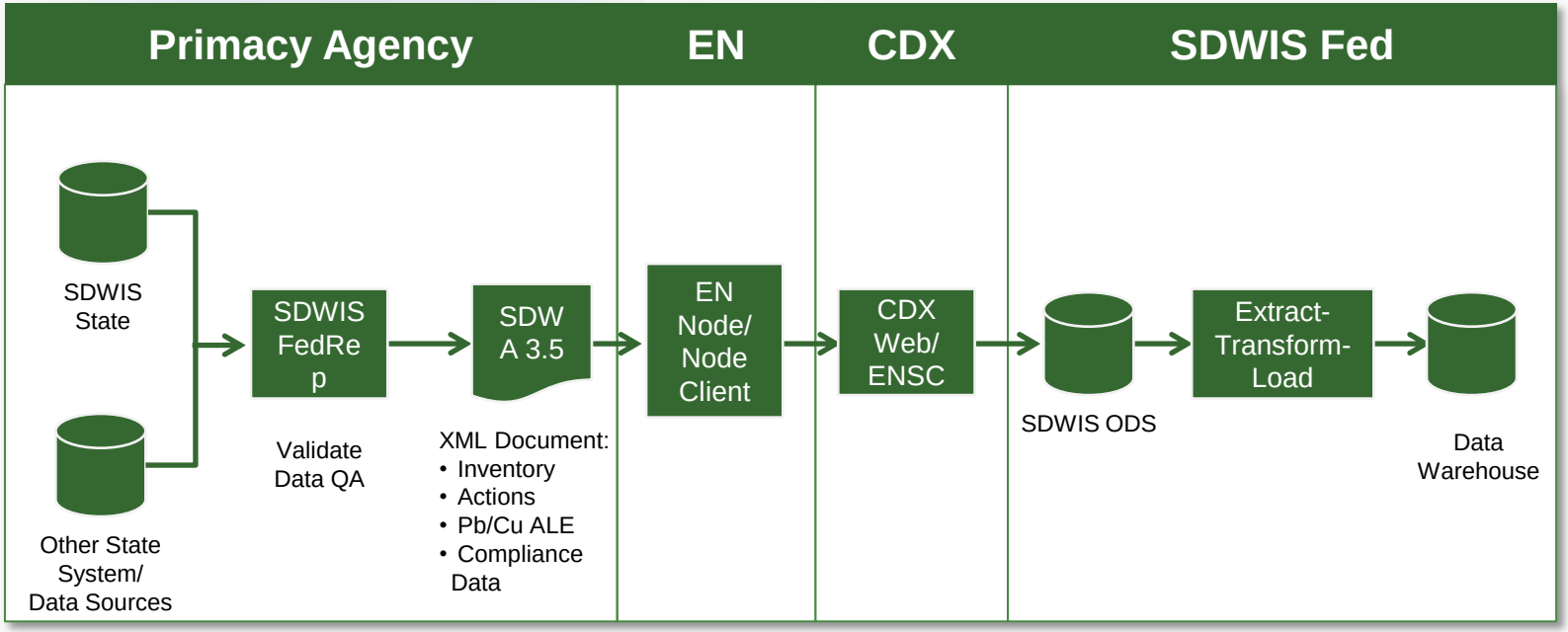
SDWIS State

- OGWDW developed and provided software installed and operated by the drinking water primacy agencies
- Web-based version first released in 2006
  - Replaced earlier “heavy client” LAN-based version (“SDWIS LAN”)
- Installed in and used by 54 of 66 primacy agencies
- Developed using CA Gen – Java/JavaScript code generation
  - Computer Aided Software Engineering (CASE) development toolset
- Consists of several web applications distributed in their own war files

SDWIS State Architecture (With CDX & SDWIS Fed)



SDWIS State Data Flow (SDWA 3.5)



- Human intervention for submitting quarterly drinking water data to EPA (EN node/node client facilitates XML file uploads)
- FedRep (developed by EPA) extracts data from the SDWIS State database and creates XML files
- Primacy Agencies not using SDWIS create their own XML files and use FedRep for file validation and data checks

The Case for Replacing SDWIS State

- Expensive for EPA to maintain
- Business logic is hard-coded; difficult and expensive to program new drinking water rules
- Development tool (CA Gen); finding developers difficult
- Primacy agency need technical staff (DBA, system administrator) to operate and manage the system
- Some primacy agencies having difficulty upgrading to the latest version because of a lack of IT support
- Inefficient user interface
- Data quality issues

SDWIS Prime Vision

The technology platform that efficiently supports state/EPA collaboration for managing the public water system supervision program to ensure safe drinking water and public health protection throughout the nation

- As developed by the SDWIS Steering Committee and approved by the SDWIS Prime Project Sponsor (Director, Office of Ground Water and Drinking Water)

SDWIS Prime Guiding Principles

1. SDWIS Prime will reduce IT support costs because there is no software to install and maintain at the primacy agency
2. SDWIS Prime will improve data quality because it will detect errors sooner when they are easier to correct
3. SDWIS Prime users are more productive because the SDWIS Prime user interface reflects the way that work is accomplished
4. SDWIS Prime will be built using technologies that will make it faster and less time consuming to accommodate new drinking water rules
5. SDWIS Prime will allow Primacy Agencies to manage user access to their portion of the system

SDWIS Prime Guiding Principles

6. SDWIS Prime will use a secure mechanism for Primacy Agencies to exchange data with their other applications external to SDWIS Prime
7. All that will be needed to use SDWIS Prime is a standard web browser and access to the internet- all user functionality is delivered through the web browser
8. SDWIS Prime will support the existing required reporting of data to EPA
9. SDWIS Prime will have improved support of EPA program management and oversight responsibilities
10. SDWIS Prime will make compliance decision on all existing rules (user will accept or reject these decisions)

SDWIS Prime and SDWIS State Differences

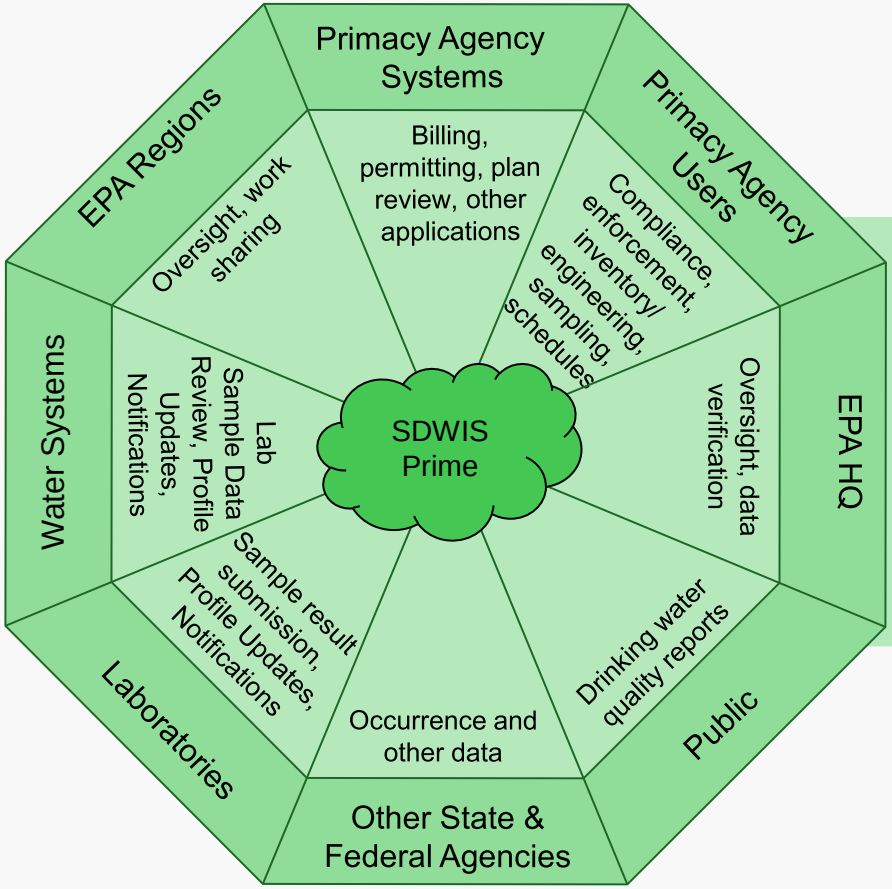
SDWIS Prime

- Single database shared by all primacy agencies
- CDX provisions/ authenticates users
- Cloud provider maintained hardware and software
- Updates immediately available to users
- EPA pays for system O&M

SDWIS State

- Each primacy agency has its own database
- Primacy agency provisions/ authenticates users
- Primacy agency maintained hardware and software
- EPA distributes; primacy agency installs updates
- Primacy agency pays for system O&M

SDWIS Prime Stakeholders

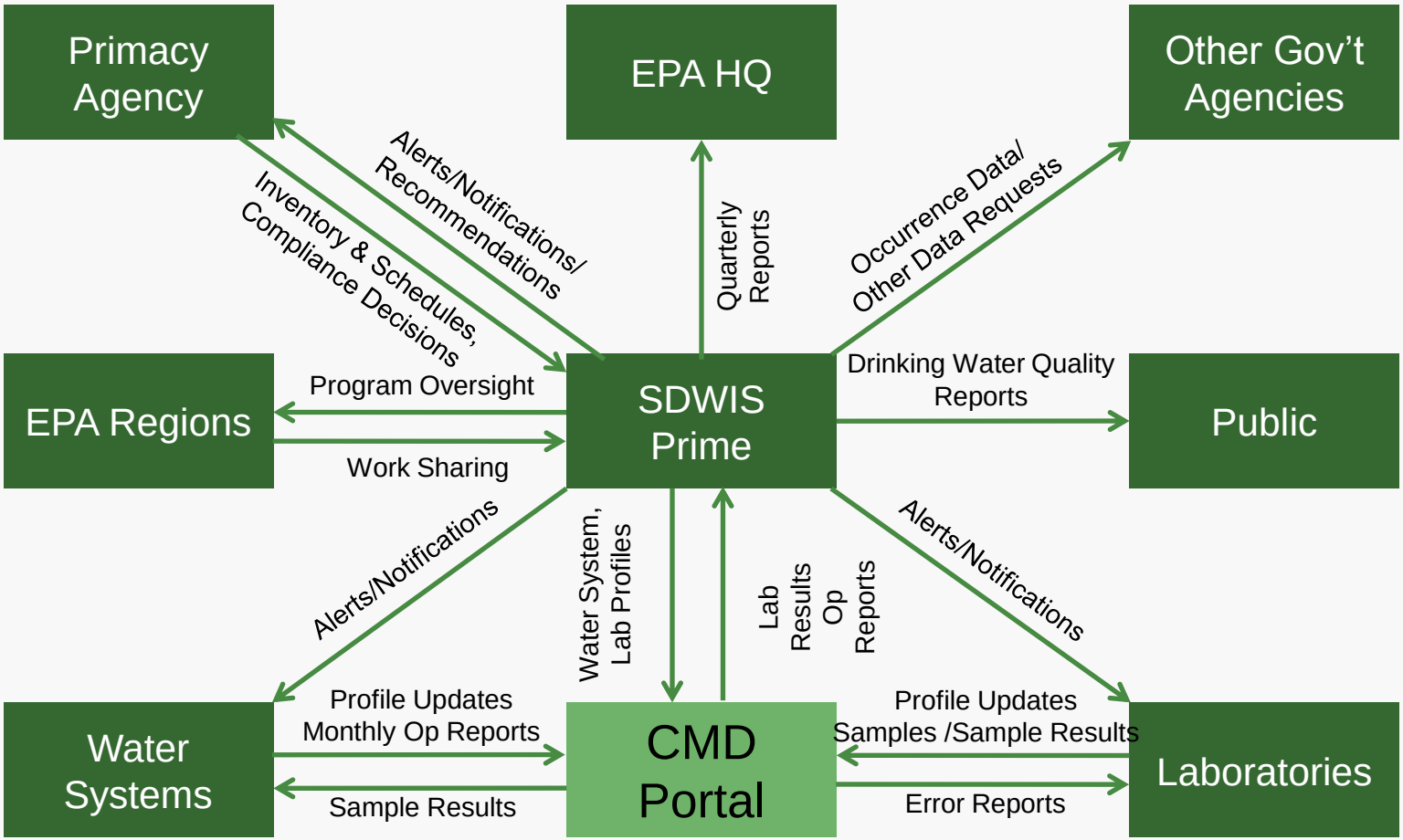


Reporting of inventory, actions, and compliance monitoring data



- Data Warehouse
- Compliance Monitoring Data
- Standard Reports
- Performance Measures
- Data Analytics

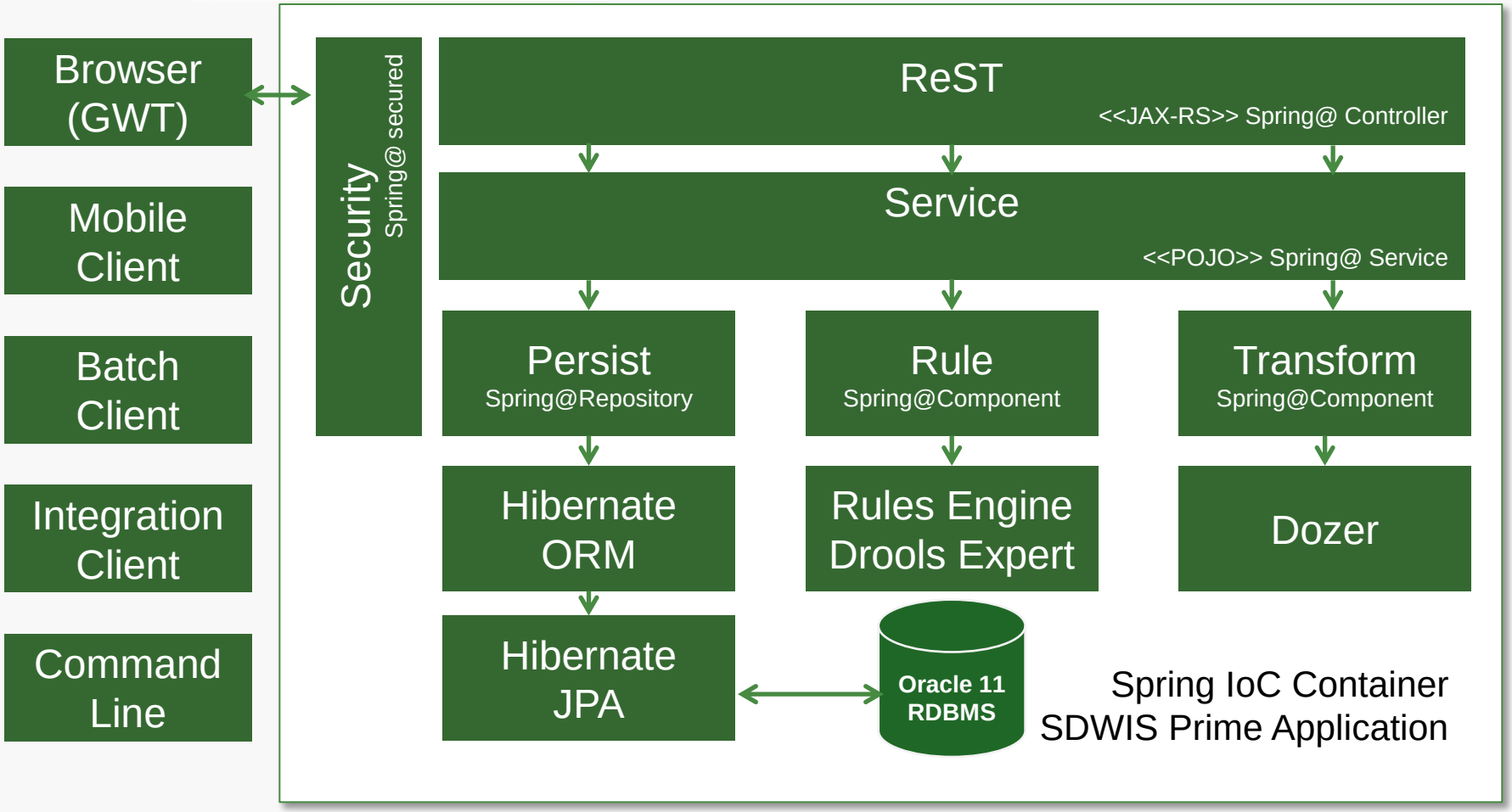
SDWIS Prime Context



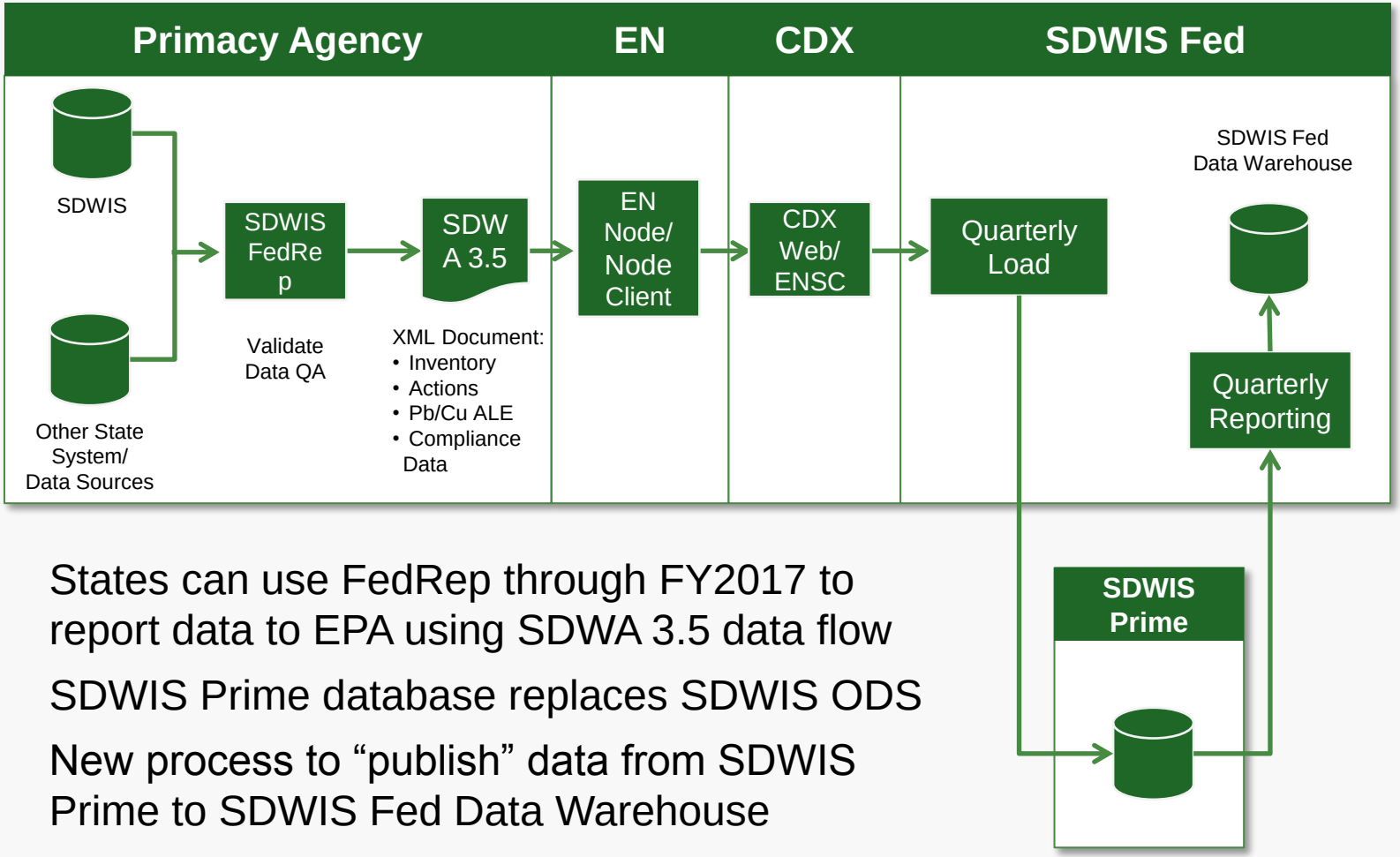
SDWIS Prime Architecture

- Java with Spring IoC framework, extensible MVC pattern
- JBOSS Drools Expert business rules engine
  - Separates business logic for complex drinking water rule evaluation from program logic
- Google Web Toolkit (user experience)
- Single Oracle 11 (for now) database optimized for high transaction throughput
  - All primacy agency data managed in the same schema
- CDX user provisioning/authentication

SDWIS Prime Technology "Stack"



Possible SDWIS Prime Data Flow



- States can use FedRep through FY2017 to report data to EPA using SDWA 3.5 data flow
- SDWIS Prime database replaces SDWIS ODS
- New process to “publish” data from SDWIS Prime to SDWIS Fed Data Warehouse

SDWIS Prime Project Schedule

- May 30, 2015 – development complete, begin transition of States to SDWIS Prime
  - Complete transition planning and pilots
  - Complete drinking water rules analysis, programming and testing of business logic for the business rules engine
- September 30, 2016 – End of EPA support for SDWIS State
- September 30, 2017 – FedRep end of support
  - Replace with off the shelf product (Altova MapForce?) for primacy agencies not using SDWIS prime

Issues

- Physical control of data
- Ad hoc queries against a transaction optimized database
- Query performance in a shared database environment
- Data latency
- ODBC and cloud security
- Microsoft Access

Topics of Discussion for Thursday's Workshop

Thank You!



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Compliance Monitoring Data Portal (CMDP) and SDWIS Prime

Will Bowman, US EPA/OW/OGWDW

Jonathan Haynes, TCEQ

to

Exchange Network 2014 Conference

February 25, 2014

Philadelphia, PA

Original Vision for Exchange Network Grant to Develop a Data Reporting Portal

Designed to Support Electronic Reporting to SDWIS Prime

- Multi-State endeavor to create a SDWIS Prime module for submitting compliance monitoring data, i.e., parametric sample data from labs, and monthly operating reports from public water supply systems.

Key Features of Original Vision for a Data Portal

- Drinking water node flow plug-in on the Exchange Network to receive data directly from labs and states via their node or standalone client application

- Standalone desktop node client application developed and distributed to all partners submitting data. This client would support both the uploading and downloading of cloud data

- Inquiry/reporting application which allows for the querying, reporting, and geographical mapping of cloud data

Data Portal Projected Benefits to Users

Potential to Reduce Drinking Water Data Management Costs:

- States currently maintain their own application and database servers, database licenses which must be renewed annually, IT staff to maintain servers and software, staff to enter or migrate sample or MOR records.
- Allowing labs and systems to migrate their submissions directly to the cloud-based SDWIS Prime database via the CMDP saves States valuable staff time for migrations or data entry, reducing entry-errors.
- Defrayed costs of cloud-based application maintenance and database costs will help reduce overall State expenses for software, hardware, and IT support.
- With the implementation of this proposed CMDP, state and private labs will have the ability to submit parametric sample data directly to the cloud, for multiple systems, even for different States.

Types of Data Flows Envisioned for the Data Portal

TCEQ like most States, would ideally receive electronically as much *structured* and *unstructured* data as possible, including:

- Total Coliform Rule (TCR) sampling data
- Chemical sampling data
  - ✓ Inorganic and Organic Chemicals, Disinfectants, Disinfection By-products
- Monthly Operating Report data on Water System Operational Parameters, i.e.,
  - ✓ Turbidity, Total Organic Carbon, Chlorite, etc.
- Sample site selection and changes
- Public notice responses
- Monitoring Plans
- New rule base-line submittals

Moving from EN Grant Work Group to Data Portal Work Group (DPWG)

- **EPA and the 4 Original EN Grant partners (KS, LA, IN, NY) agreed to subsume the original project under the overall SDWIS Prime project**

- **ASDWA, EPA and states formed the Data Portal Work Group (DPWG) to develop the CMDP**
  - ✓ allows the 4 original partnering States, as well as 6 other States, to directly develop the CMDP to support state programs desiring electronic reporting

- **Advantages of transition from EN grant work group to DPWG include:**
  - ✓ Input from a larger group of States
  - ✓ Closer coordination with other SDWIS Prime state-EPA focus groups
  - ✓ Ability to bring other funding resources to the table to expand and enhance the portal
  - ✓ EPA involvement helps ensure close tie-in between CDMP development and the overall SDWIS Prime project

Data Portal Work Group Members

States

Darrell Osterhoudt, Association of State Drinking Water Administrators (ASDWA)

Chris Roy, **Connecticut**
Wayne Wang, **Indiana***
Darrell Plummer, **Kansas***
Johan Forsman and Kate Gilmore, **Louisiana***
Tom Becker, **New York***
Rick Magni, **Ohio**
Steve Wright, **Oklahoma**
Chuck Michael, **Oregon**
Jennifer Brock, **Pennsylvania**
Jonathan Haynes, **Texas (State Co-Chair)**

**States were original recipients of EN grant for a laboratory portal connected to SDWIS Prime*

EPA

Will Bowman, **OGWDW**, DWPD, Protection Branch (EPA Co-Chair)
Greg Fabian, **OGWDW**, DWPD, Infrastructure Branch
Adrian Hanley, **OST**
Michella Karapondo , **OGWDW**, SRMD, Technical Support Center

DPWG Roles and Objectives

DPWG Roles

- Provide leadership and expertise on technical issues related to the design and implementation of the CMDP
- Coordinate communications with laboratories, water utilities, and their associations and representatives
- Identify policy issues and recommend whether and how to address those issues
- Provide subject matter expertise to ensure that the CMD Portal supports the business needs of all users

DPWG Objectives

- Complete and prioritize BRD with input from all users (states, laboratories and water utilities) then translate requirements into user stories to support an Agile development sprint.

- Ensure successful acceptance testing (UAT) of a prototype CMDP and conduct extensive pilot-testing of data flows through the CMDP to a test environment.

- Identify tools (including web-based forms and templates), as well as guidance and best practices in training and technical assistance, to ensure laboratories and water system interactions with the CMDP are as streamlined and intuitive as possible.

Highlights of Functional Requirements under Consideration for the CMDP

Scope

- ✓ Version 1.0 - supports states using SDWIS Prime
- ✓ Future Versions – supports any states capable of receiving sample results electronically from labs and PWSs.

Use of Exchange Network Services

- ✓ CDX for initial user registrations
- ✓ eCROMERR services

Defining Roles for Labs, PWS, States

- ✓ CMDP Administrator
- ✓ CMDP User

Data Validation Procedures

- ✓ Microbial Drinking Water Rule-specific
- ✓ Chemical Drinking Water Rule-specific
- ✓ General Sample Reporting Validations

Auto-Notification

- ✓ Sample Results beyond MCL
- ✓ Validation Error Reports,
- ✓ Electronically signed sample files successfully transmitted

Lab and PWS Profiles

- ✓ Laboratory certifications for analytical methods
- ✓ Population, source, water system facilities, sample points, etc.

3 Ways to Interact with CMDP

- ✓ Web Services from LIMS
- ✓ Web-based forms via User Interface
- ✓ Downloadable Templates for simple data entry

CMDP v 1.0 Draft Project Schedule

(All dates are estimates and subject to change)

- DPWG Business Requirements Document (CMDP BRD) – April 2014
- Lab and PWS Representative Input on CMDP BRD – May-June 2014
- Final CMDP BRD including Prioritization – July/August 2014
- Develop CMDP "User Stories" per BRD Priorities – September/October 2014
- DPWG Sprint/Development – November/December 2014
- CMDP Pilot – February 2015
- CMDP Production – June 2015

Questions?

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