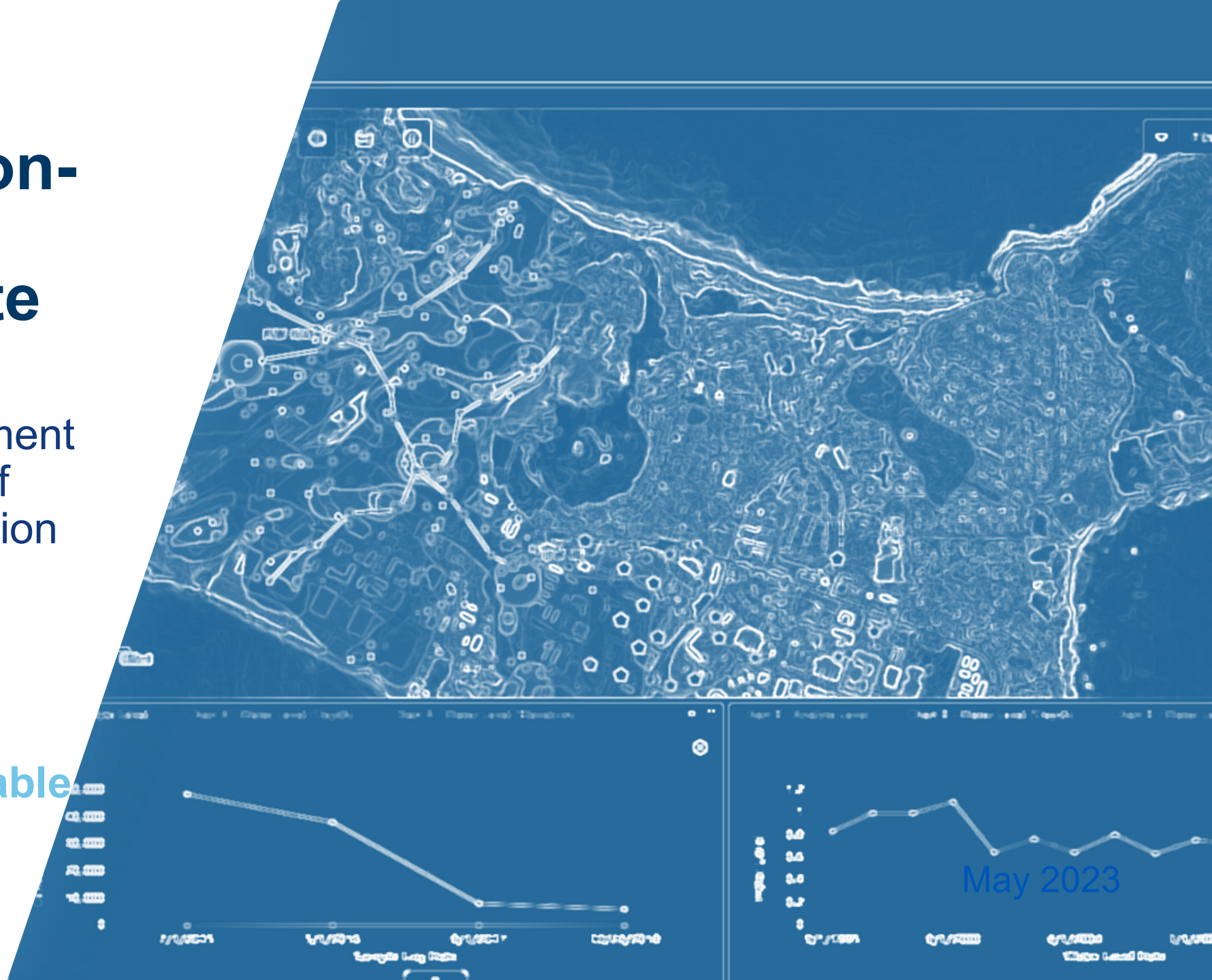


Web Application- Based Digital Conceptual Site Models

A Critical Site Management
Tool In the PFAS Age of
Groundwater Remediation

Federal Remediation
Technologies Roundtable
2023



Introduction



Colin Plank, CPG

Associate Geologist & Advanced Geosciences Group Lead

>20 years of experience working with interdisciplinary project teams to develop CSMs.

Emphasizes the use of sound geologic models and synthesis of multiple lines of evidence to reduce site uncertainties and guide remediation.

Presentation Goals



Demonstrate a technology that has changed the way we use and deliver CSMs.



Give you hands-on / Demo time with our standard web application:
The Digital Site Management Tool (DSMT).



Technology Merit: Digital Site Management Tool (DSMT).

The Vision and The Challenge: Life Cycle Conceptual Site Models (CSMs)



United States
Environmental Protection Agency

Office of Solid Waste and
Emergency Response (5102G)

EPA 542-F-11-011
July 2011

Environmental Cleanup Best Management Practices: Effective Use of the Project Life Cycle Conceptual Site Model

Office of Superfund Remediation and Technology Innovation

Quick Reference Fact Sheet

Six Stages of Project Life Cycle CSM

Preliminary
CSM

Baseline
CSM

Characterization
CSM

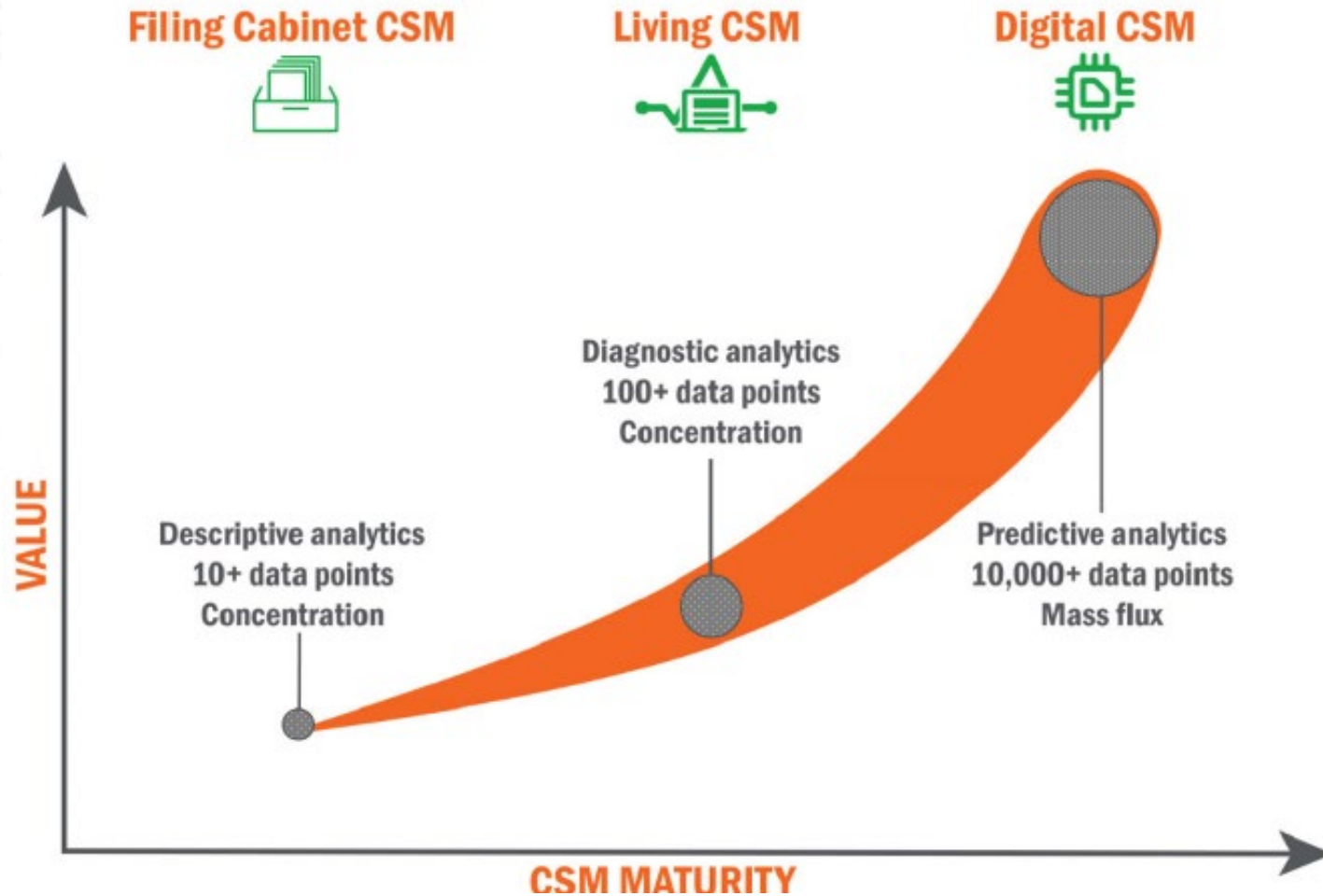
Design
CSM

Remediation
CSM

Post Remedy
CSM

- ▶ A versatile and powerful tool used to support project and site decisions unique to each stage of a cleanup project.
- ▶ A CSM developed and maintained on a **single platform** is highly effective at integrating new information into existing data sets.

CSMs Are Evolving To Digital Data Models



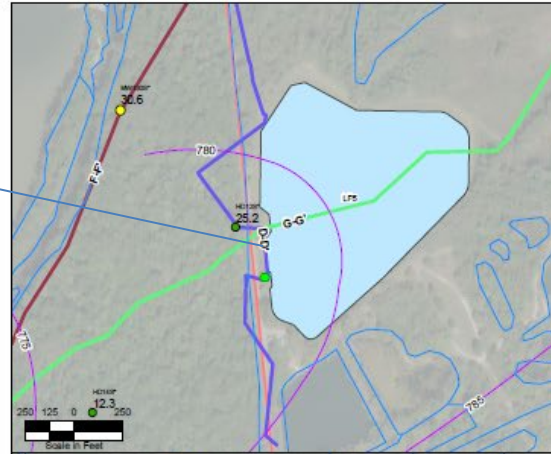
One challenge with the living and Digital CSM is “Fragmentation”- cross platform sharing.

Does a Digital CSM mean Investing in Specialized Software or Software Solutions?

J. Horst et al./ Groundwater Monitoring & Remediation 40, no. 3/ Summer 2020/pages 14-20

An Example of Fragmentation

Rock Ware,
Illustrator

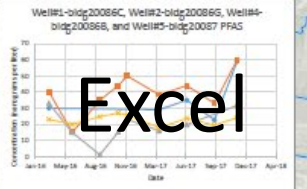
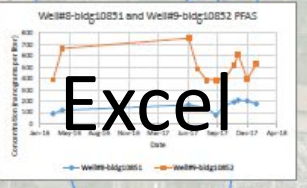
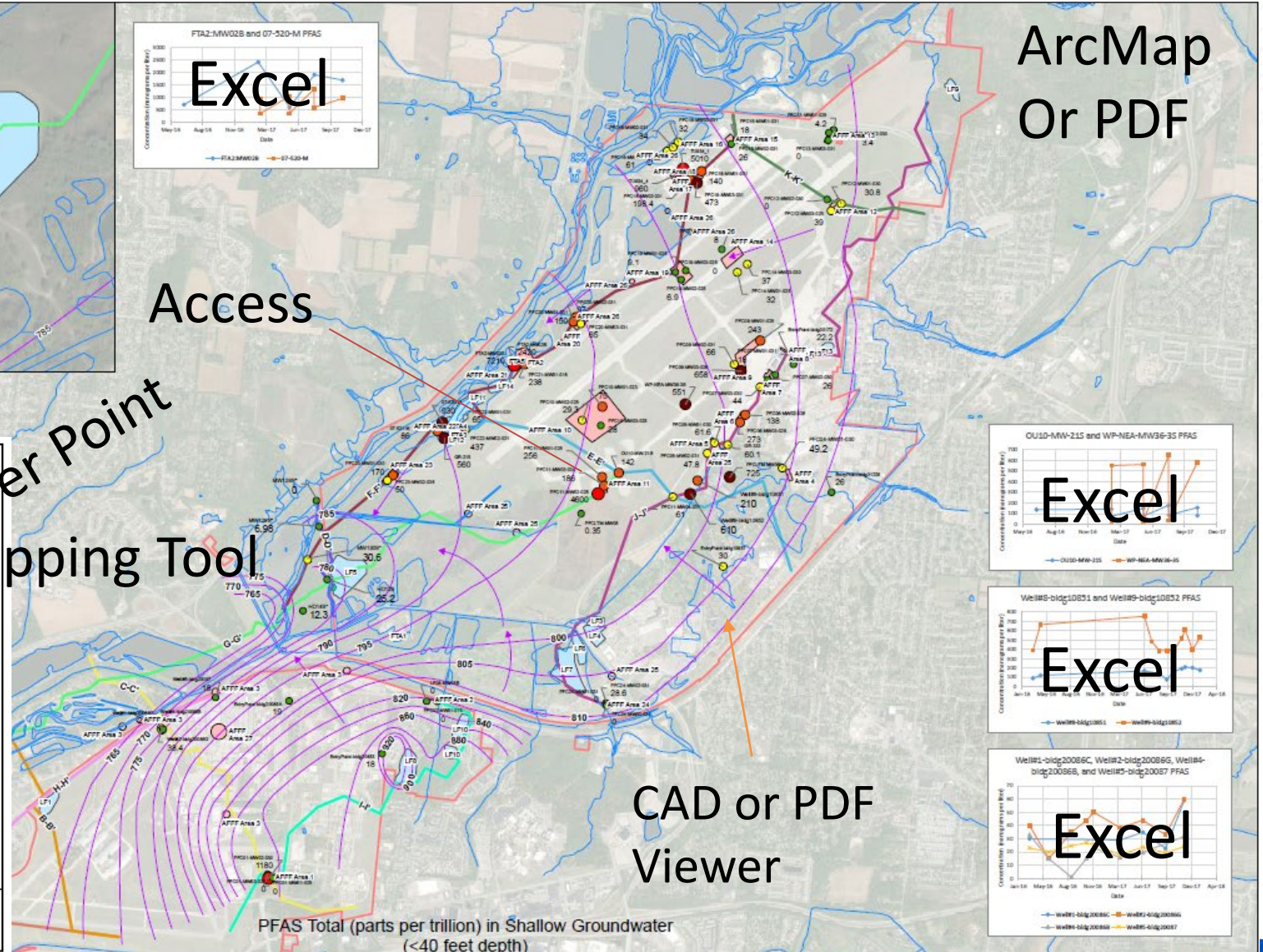
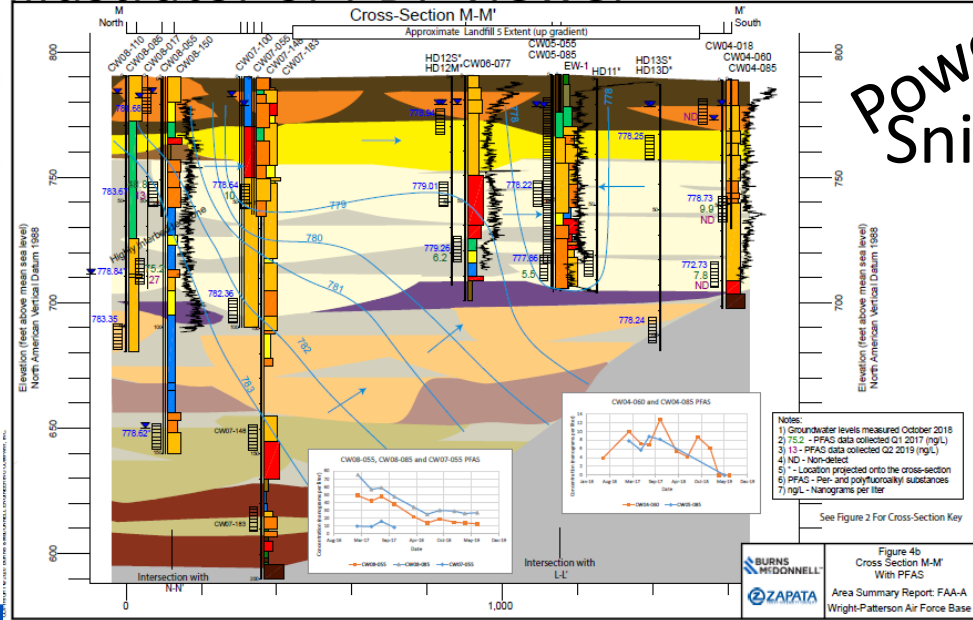


ArcMap
Or PDF

Access

Power Point
Snipping Tool

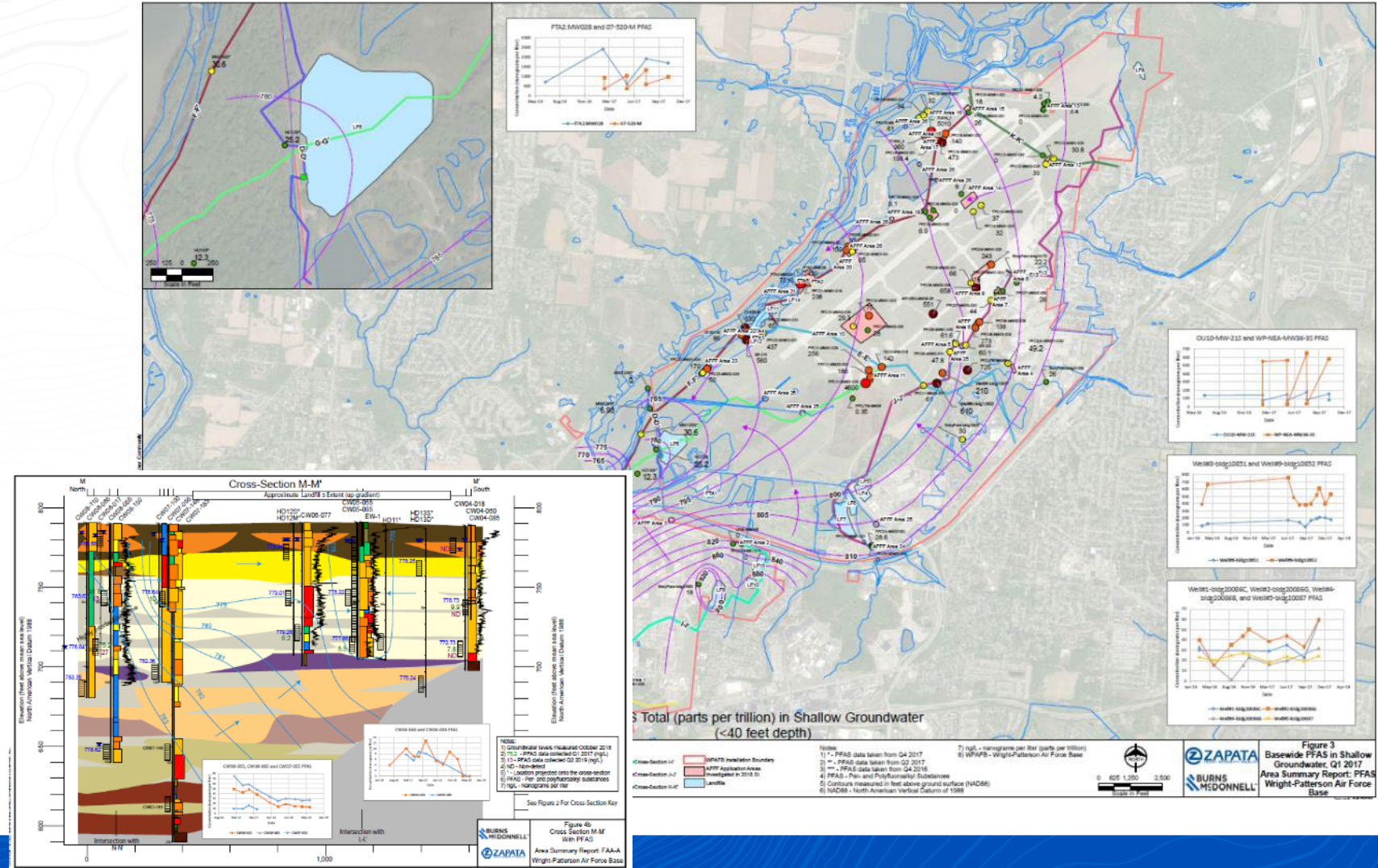
Illustrator or PDF viewer



CAD or PDF
Viewer

GIS Web-Applications Provide An Off The Shelf Solution

- ▶ On many projects we use Web-Applications internally to streamline synthesis and avoid fragmentation
- ▶ Web-Applications Can Be a Deliverable Product: *The Web-Application Based CSM*



What Is a “Web-Application” Based CSM?

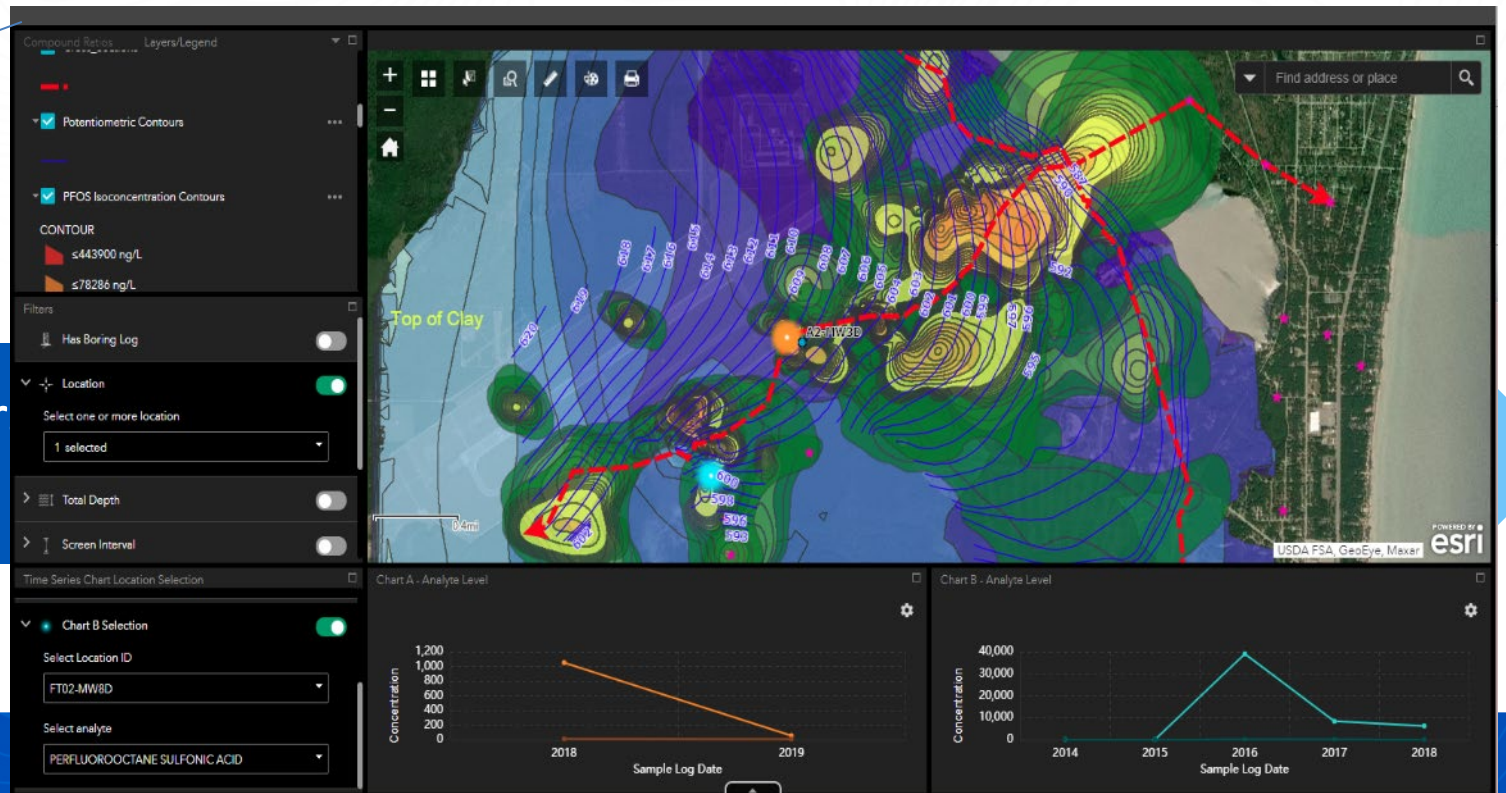
- ▶ A **web application** is a program that utilizes web browsers and web technology to perform tasks over the Internet. Various Web Apps In Use in the Federal Space
- ▶ A **Web-App Based CSM** makes the current CSM (including live data, static data products, and traditional CSM elements) available to all team members via their web browser.
- ▶ Data resides with client or shared project org. space

Preliminary
CSM

Baseline
CSM

Char

Burns & McDonnell Digital Site
Management Tool

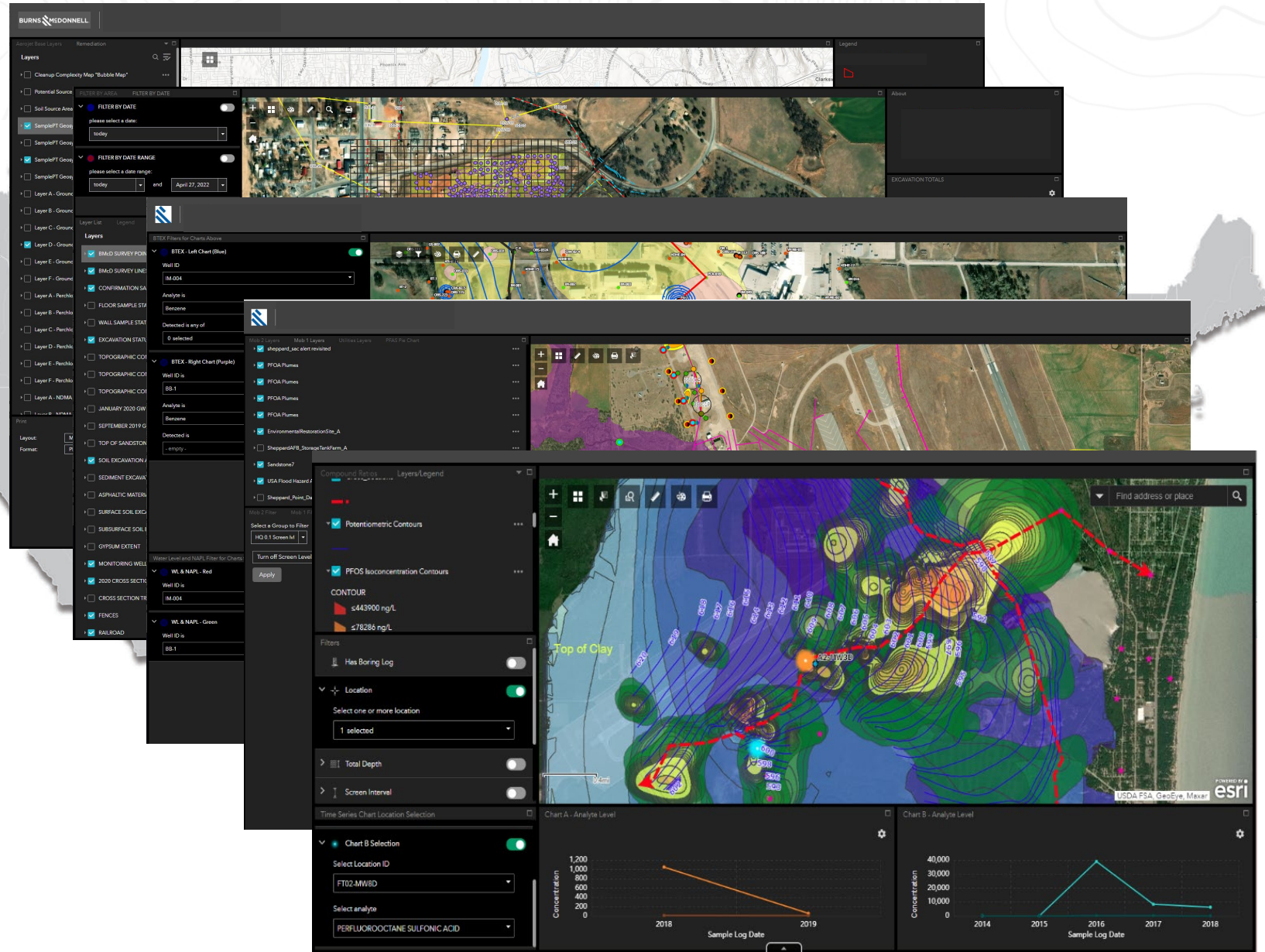


Web-Application Based CSMs

Utilized at Over 15 locations

Supporting:

- Remedial Investigation
- Remedial Alternatives Analysis
- Risk Assessment
- Operations



Using A Web-Application Based CSM



Layers/Legend

- MW,Yes
- PW,No
- SB,No
- SD,No
- SEEP,No
- SW,No
- VAS,No
- VAS,Yes
- others

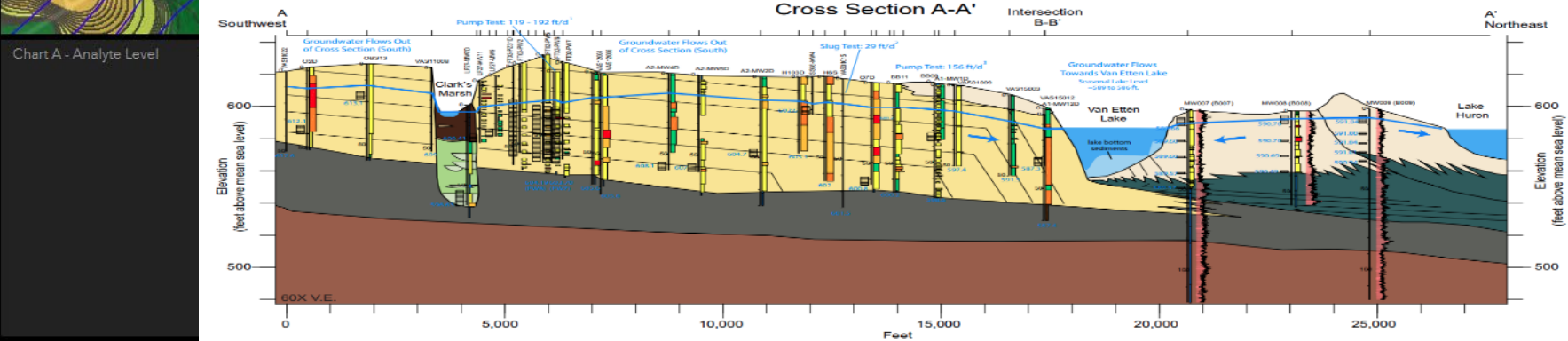
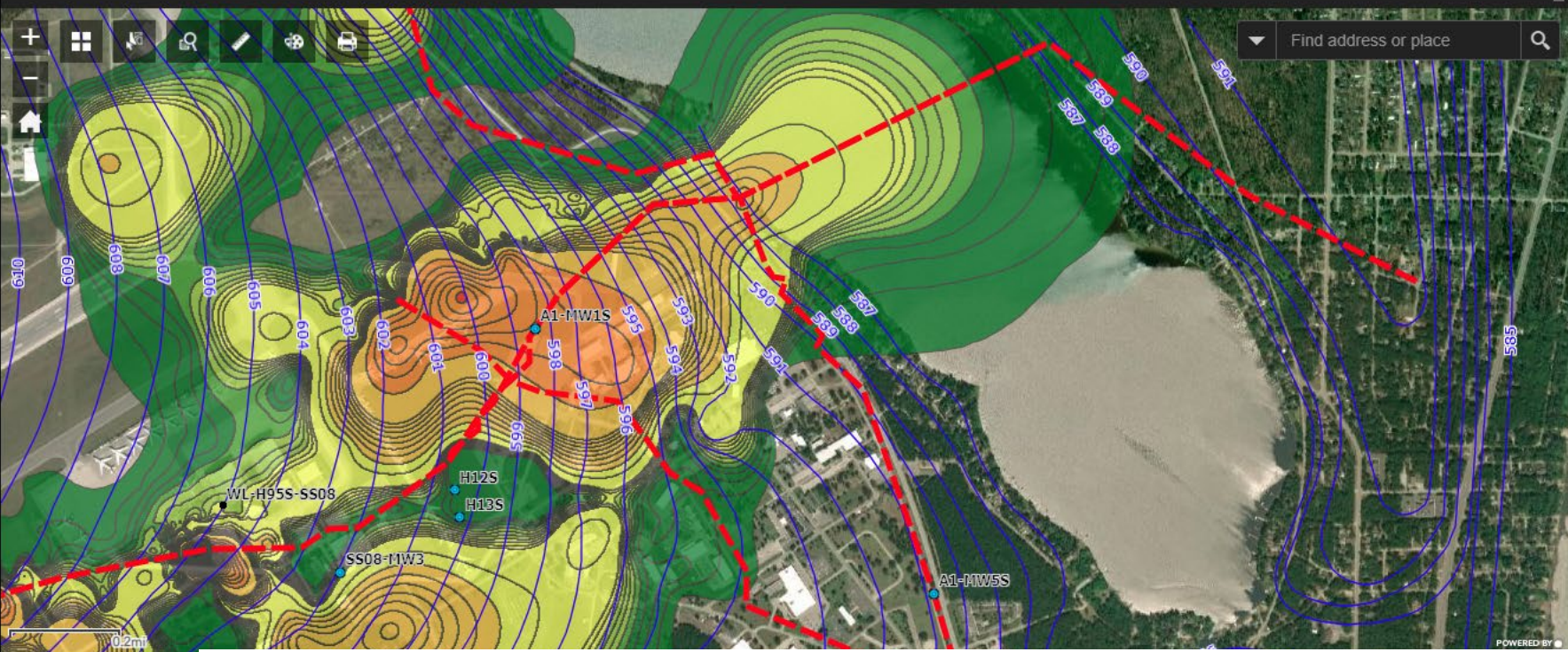
Existing_New_RI_Sampling_Locations

Filters

- Total Depth
- Screen Interval
- Screen top (ft): 20
- Screen bottom (ft): 30
- results

Time Series Chart Location Selection

- Chart A Selection
- Select Location ID: - empty -
- Select analyte
- Select time range start and end (optional)



Public Facing Demo: Isle of PFOA Uh'Oh

DSMT Demo

Digital Site Management Tool | Fictitious site data: The Island of P'FoaUhoh

Learn more about PROGRESS

PFAS Compound Ratios

Perfluorooctane sulfonate

Filters

PFAS Results

Select PFAS Compounds: 14 selected

Show Non-Detects? No

Time Series Chart Location Selection

Chart B Selection

Select Location ID: MW 624

Select analyte

Find address or place

0.3mi

POWERED BY esri

Earthstar Geographics

Chart A - Analyte Level

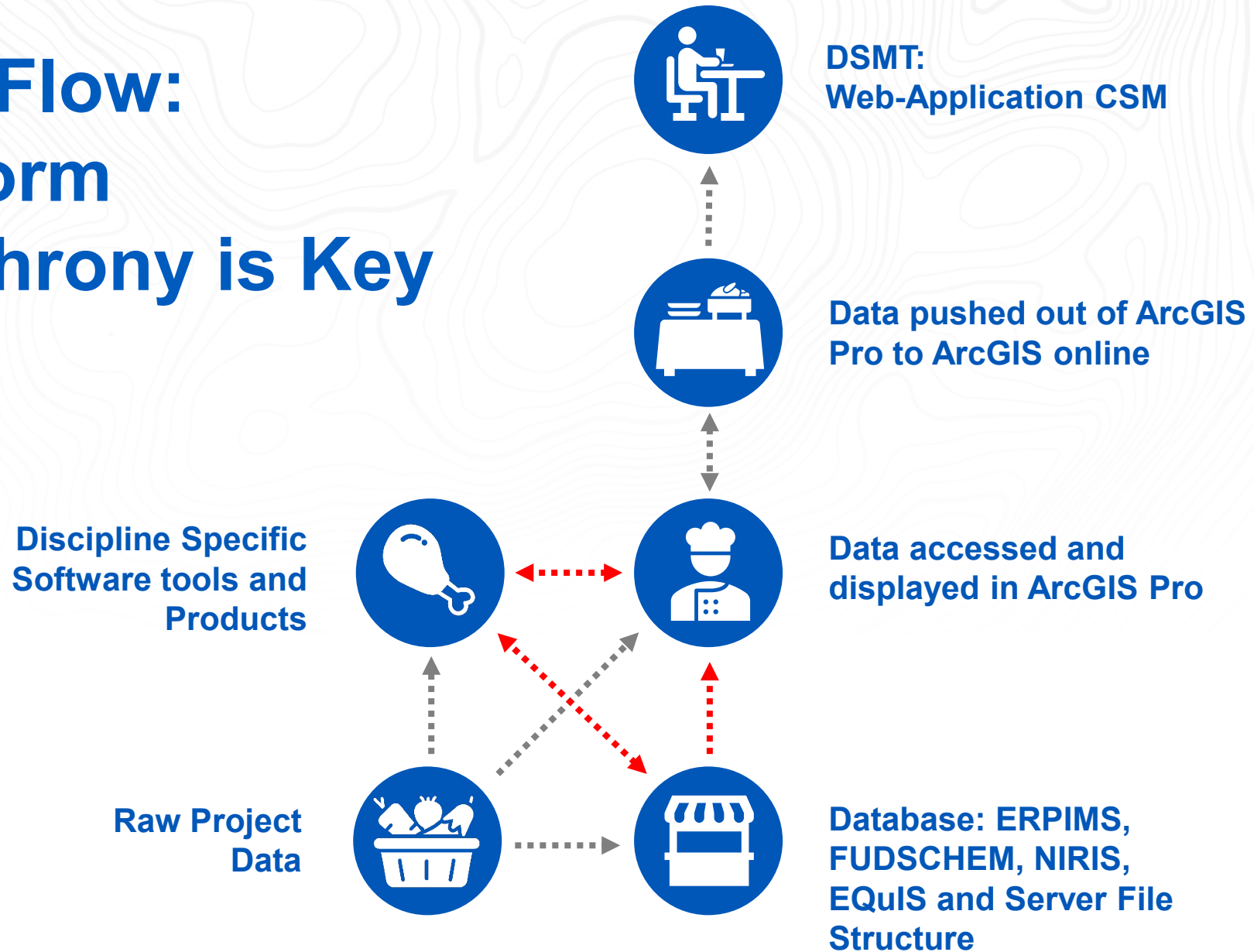
Sample Log Date	Concentration
7/1/2015	45,000
5/1/2016	35,000
8/1/2017	10,000
10/24/2018	5,000

Chart B - Water Level (Depth)

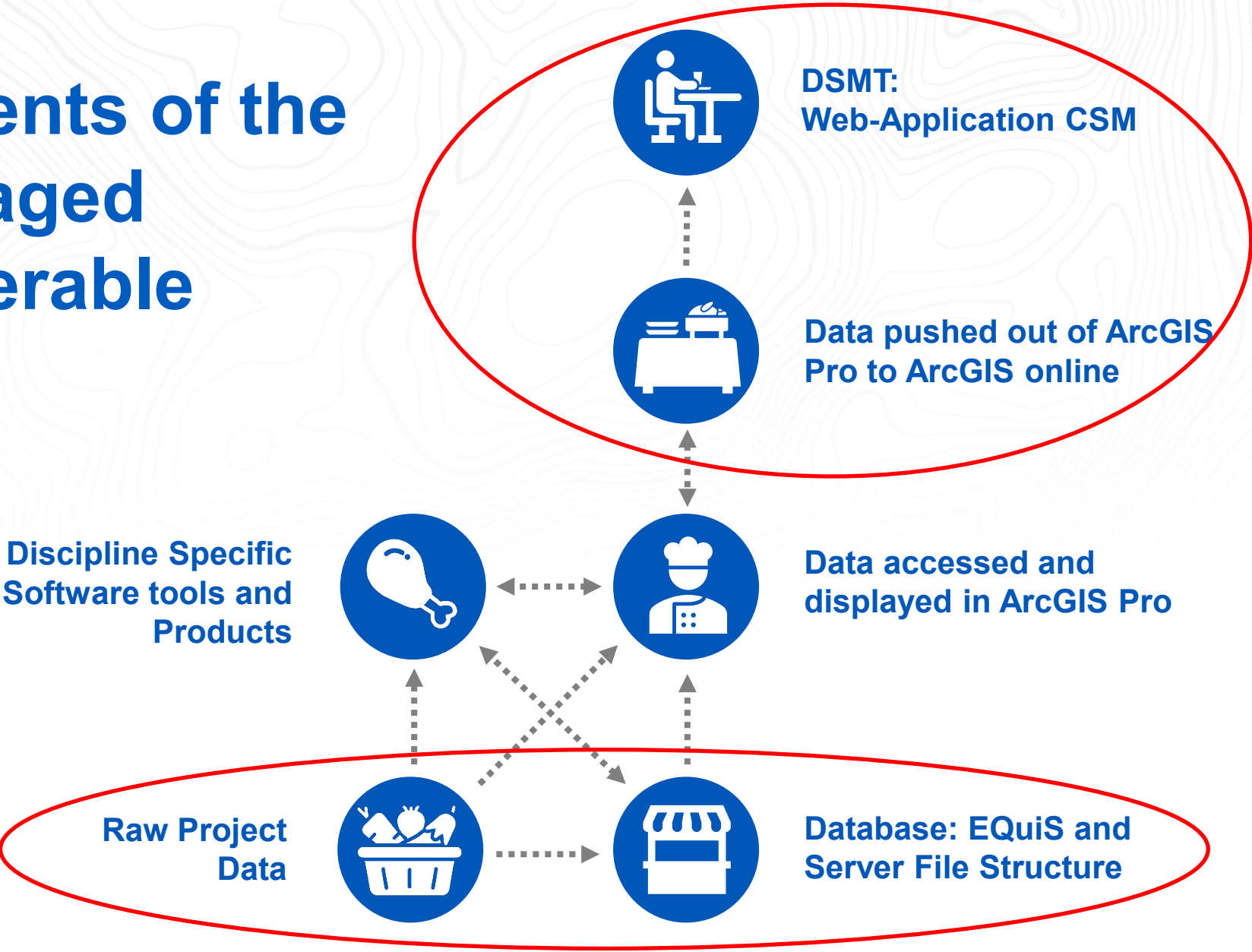
Water Level Date	Water Level
9/1/1995	0.8
8/1/2000	0.9
4/1/2004	0.7
1/1/2005	0.8
11/1/2012	0.9

[The Island Awaits](#)

Data Flow: Platform Synchrony is Key

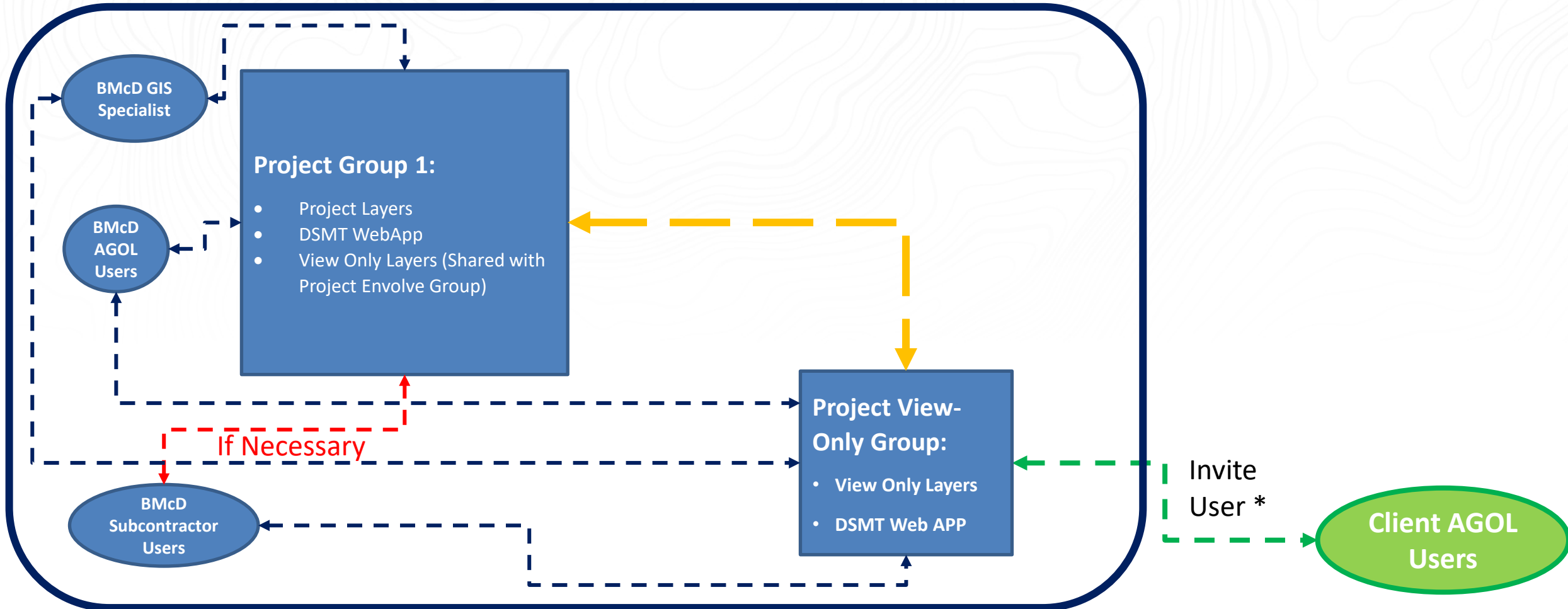


Elements of the Packaged Deliverable

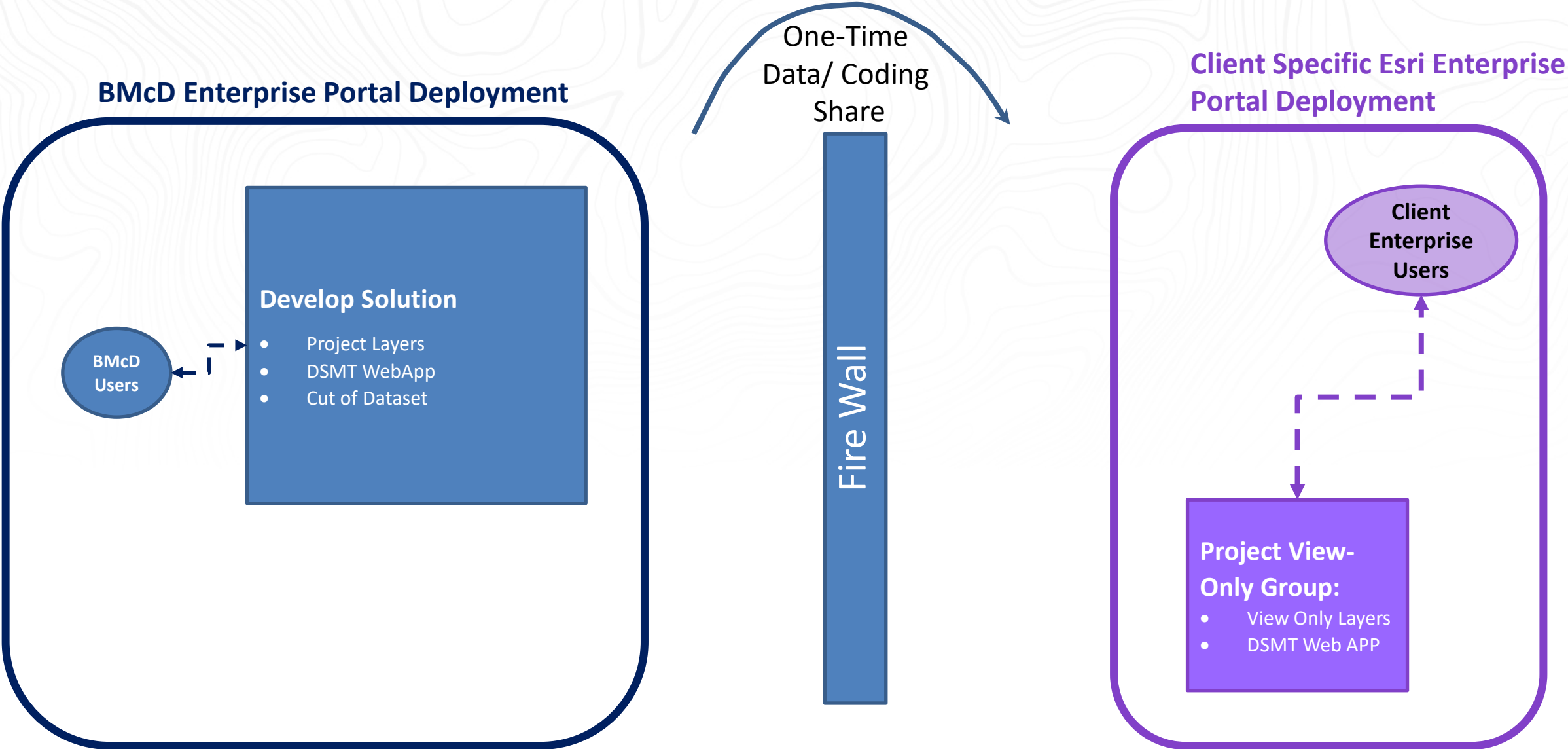


Data Model Using BMcD AGOL Org

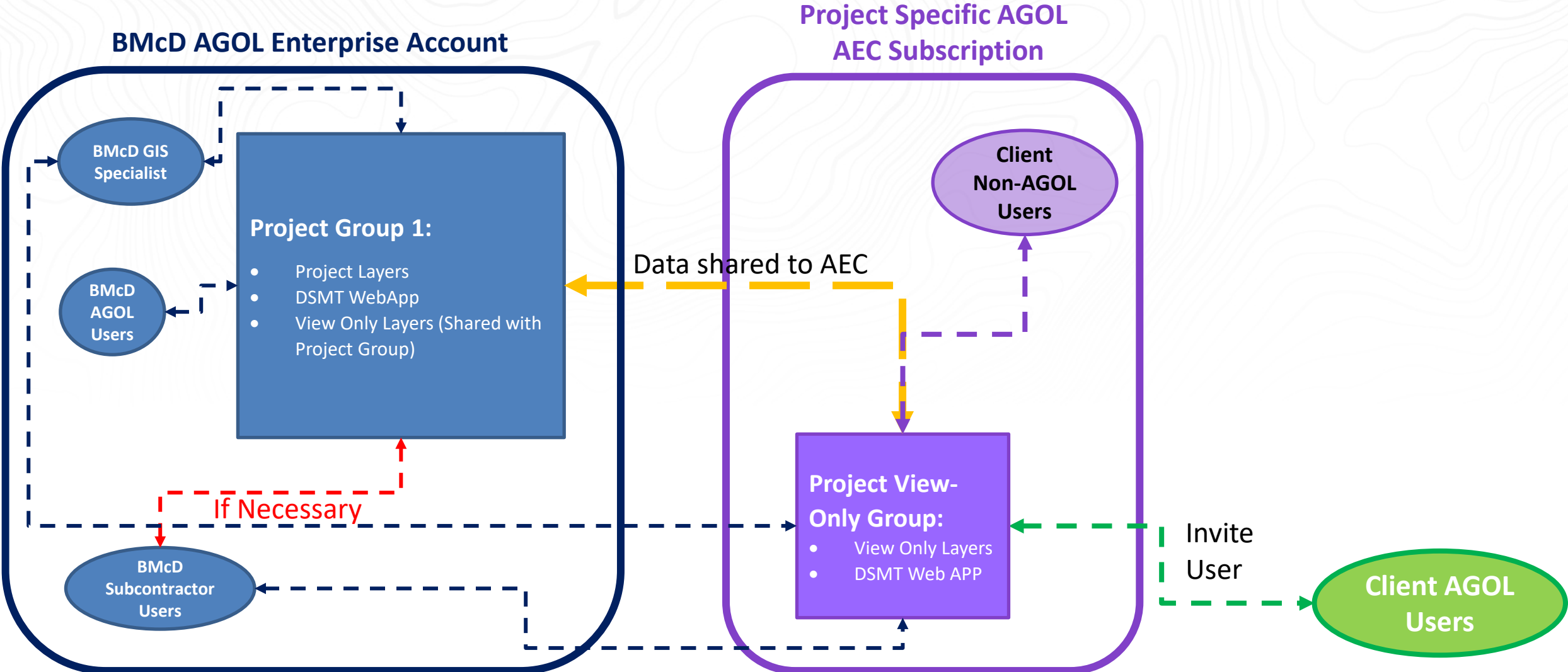
BMcD AGOL Enterprise Account



Data/App Model With Enterprise Portal (Behind Firewall)



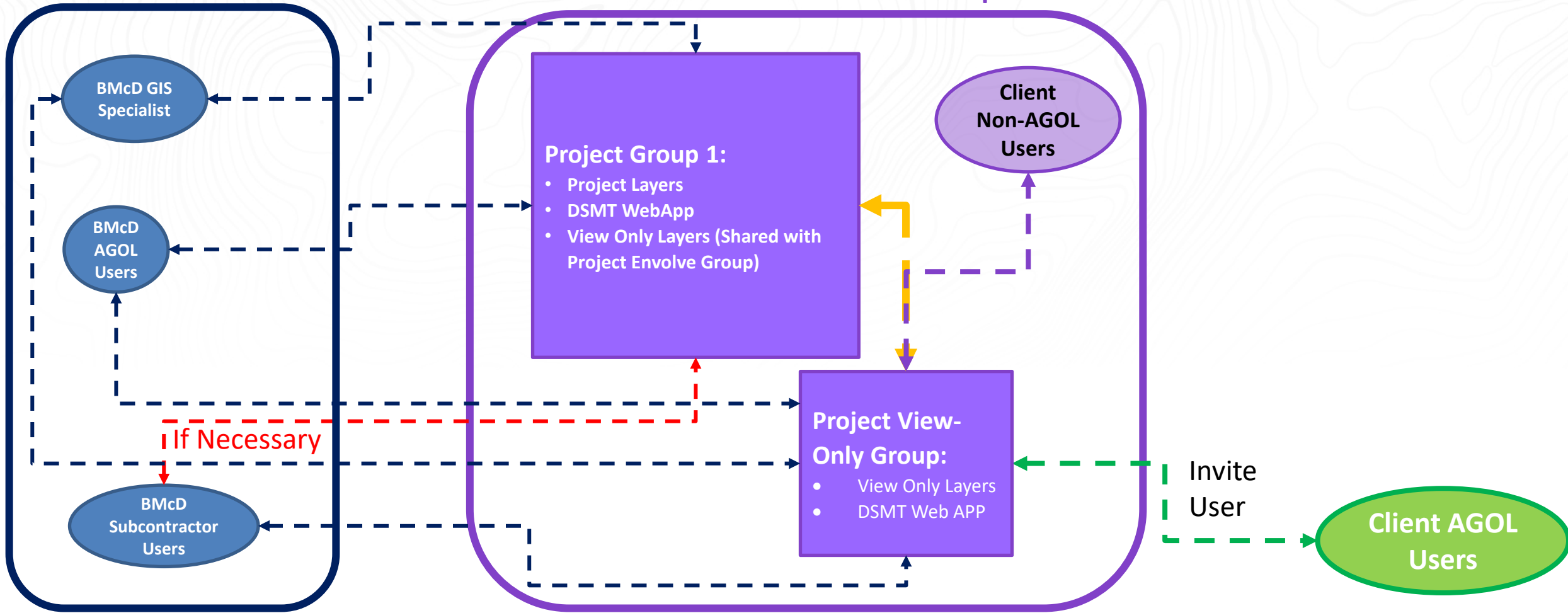
Data Model With Separate AGOL Org



Data Model Primarily Using AEC AGOL Org

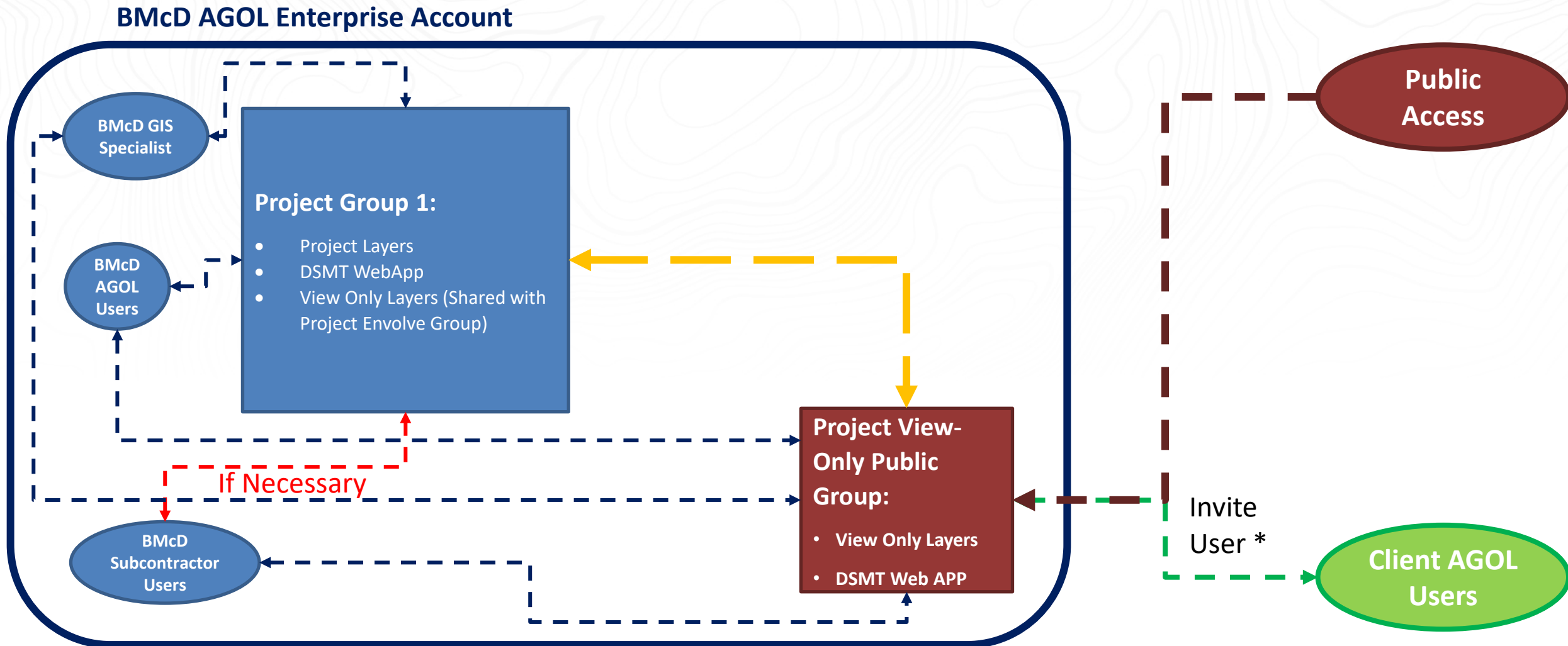
BMcD AGOL Enterprise Account

Project Specific AGOL AEC Subscription



*AEC Subscription AGOL org will cost \$600/year +\$110/year for each Client Non-AGOL user added.
Additional cost for storage credits will be necessary as well

Data Model Allowing Public Access



Questions?

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