IMAGE MATTERS

Locate. Innovate.

FGDC CAP Category 2 Grant Project for Documenting Best Practices in Geospatial SOA:

Development of a Wetlands Permitting Solution

EPA / FWS / ACE / Image Matters

March 31, 2008

Project Overview

The purpose of this project is two-fold:

1)Produce best practices documentation for future development of SOA Web Services at federal agencies.

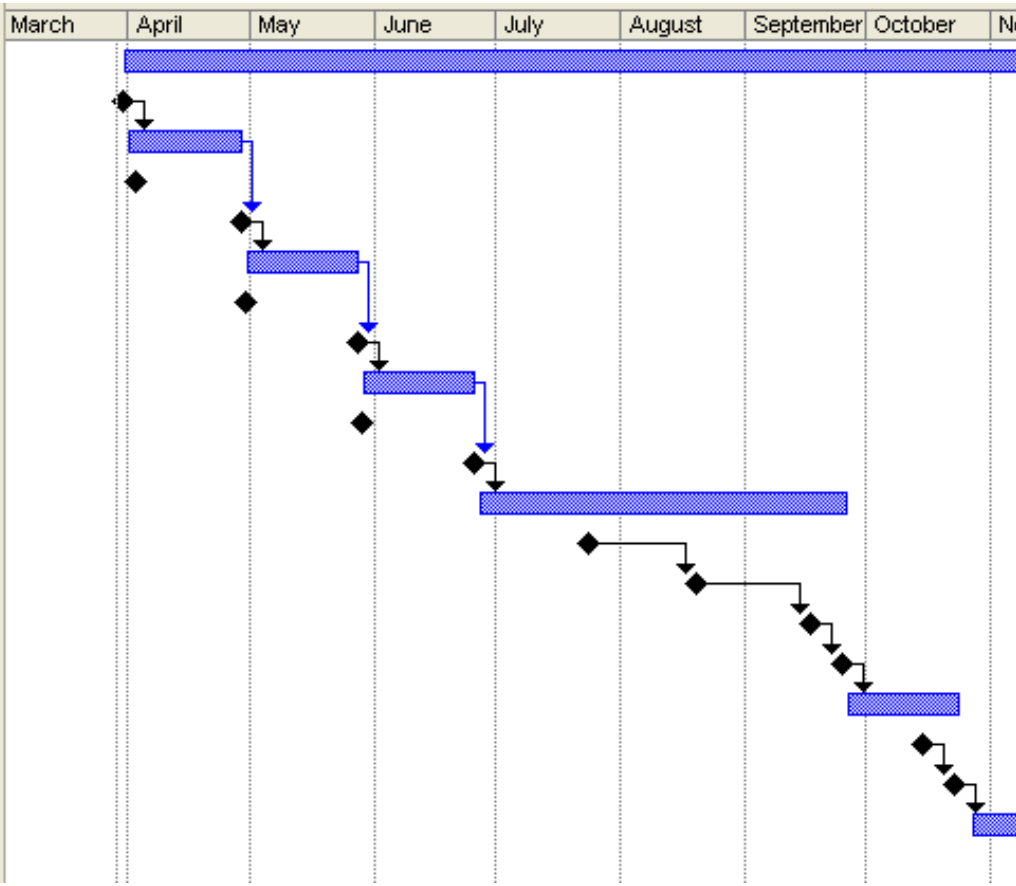
- Primary FGDC Deliverable
- Image Matters works with FGDC & other CAP Cat II grantees

2)Provide services that support an application that identifies "jurisdictional wetlands“ – the EPA OW / ACE wetlands permitting application

- A case study as a source of material for above SOA Web Services best practices documentation
- Three distinct services to be accessed:
  a) FWS WFS that serves the National Wetland Inventory (NWI) features
  b) 2 EPA Web Processing Services (WPS): feature proximity geoanalysis, and feature overlay geoanalysis.

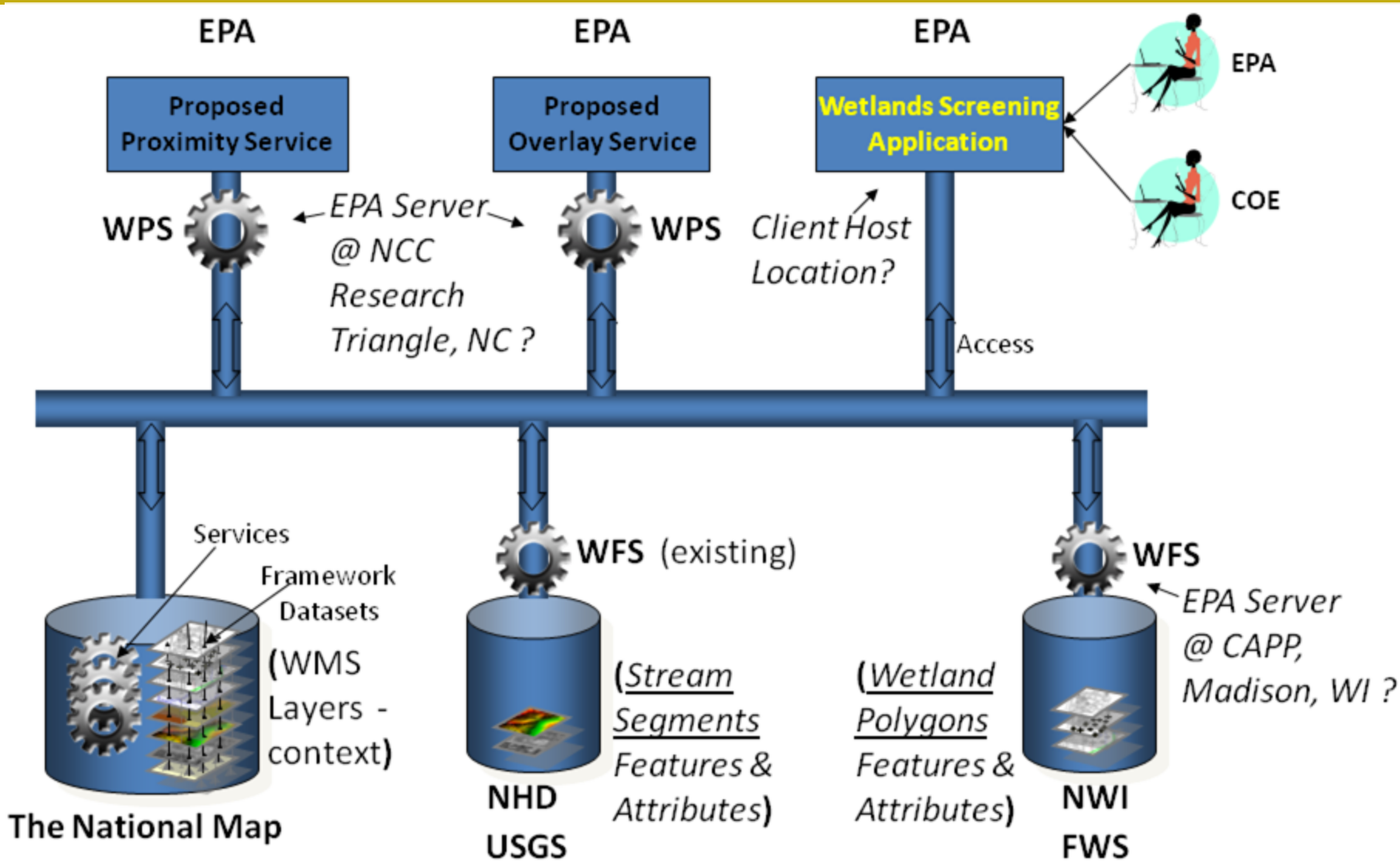
Project Schedule (tentative)

	Task Name
1	1. Project Management
2	M1 - Kickoff Meeting
3	2. Develop Common SOA Terminology and Modeling Approach
4	M2 - CAP Category 2 Participants SOA Terms and Modeling Workshop
5	M3 - Common SOA Terminology Document and Modeling Approach Document
6	3. Requirements and Business Process Modeling
7	M4 - EPA/ACE Needs Assessment
8	M5 - All Business Process Modeling and Requirements Documents
9	4. Design and Planning
10	M6 - Critical Design Review Meeting
11	M7 - Final Design, Integration Plan, and Test Plan Documents
12	5. Implementation
13	M8.1 Demo of Capabilites - Development Iteration 1
14	M8.2 Demo of Capabilites - Development Iteration 2
15	M8.3 Demo of Capabilites - Development Iteration 3
16	M9 - Integrate Services into EPA Development Environment
17	6. Integration Testing, Deployment, and Documentation
18	M10 - Final Acceptance Testing
19	M11 - Deployment into Operational Environment
20	7. Preparation of Guidance Materials
21	M12 - SOA Service Development Guidance Document and Presentation



- 9-month project (proposed)
- Note that early FGDC requirements for collaboration/agreement on Common Terms and Modeling Approach (Milestone 2)

System Overview

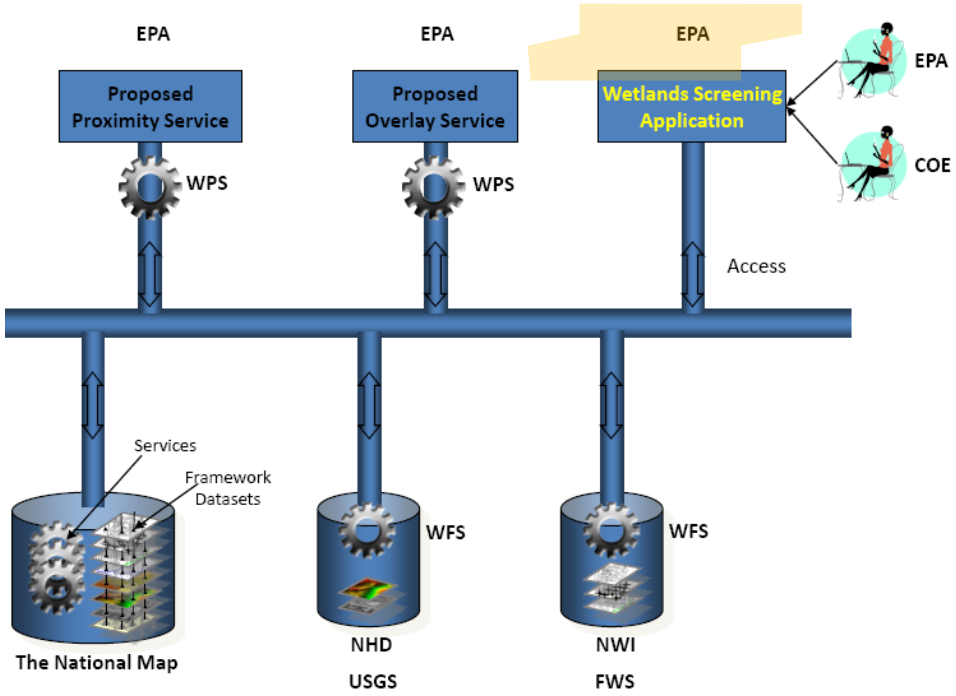


Dependencies on FWS NWI - WMS

Display NWI polygons

(Not shown in diagram)

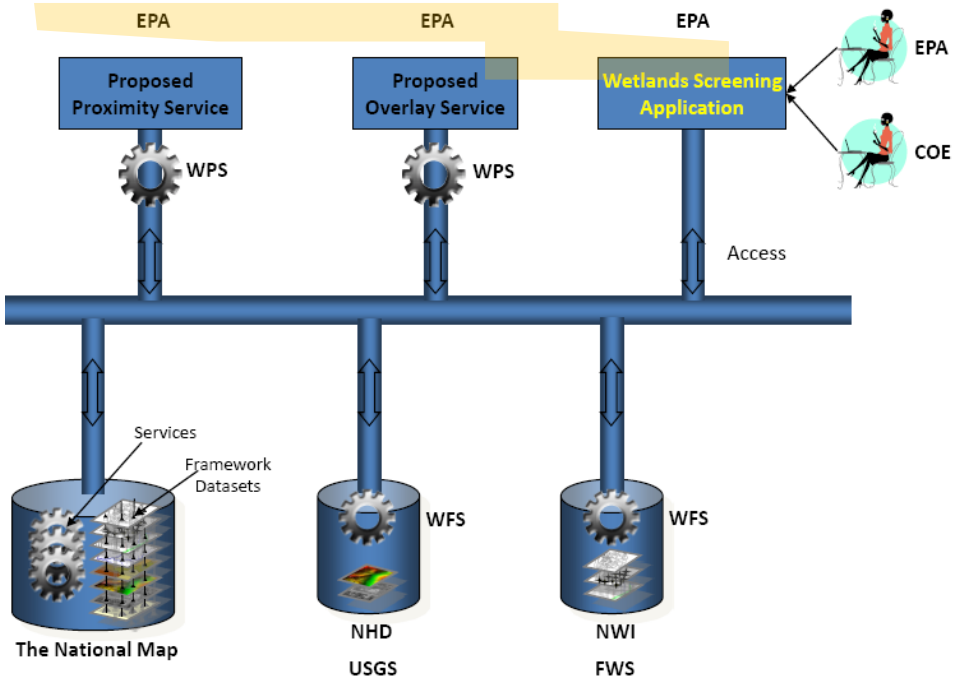
- Assumes map widget in application
- **Existing** FWS WMS capability
- Client issues *getMap* request to FWS WMS, which returns image of NWI features for display
- Users must specify which NWI polygons are the subject of the EPA WPS geoanalytical tools – need to obtain ID's.
- Users click on map image
- Client issues *getFeatureInfo* request to FWS WMS which returns ID(s) of NWI



Dependencies on FWS NWI - WFS

Request and obtain one or more NWI polygons

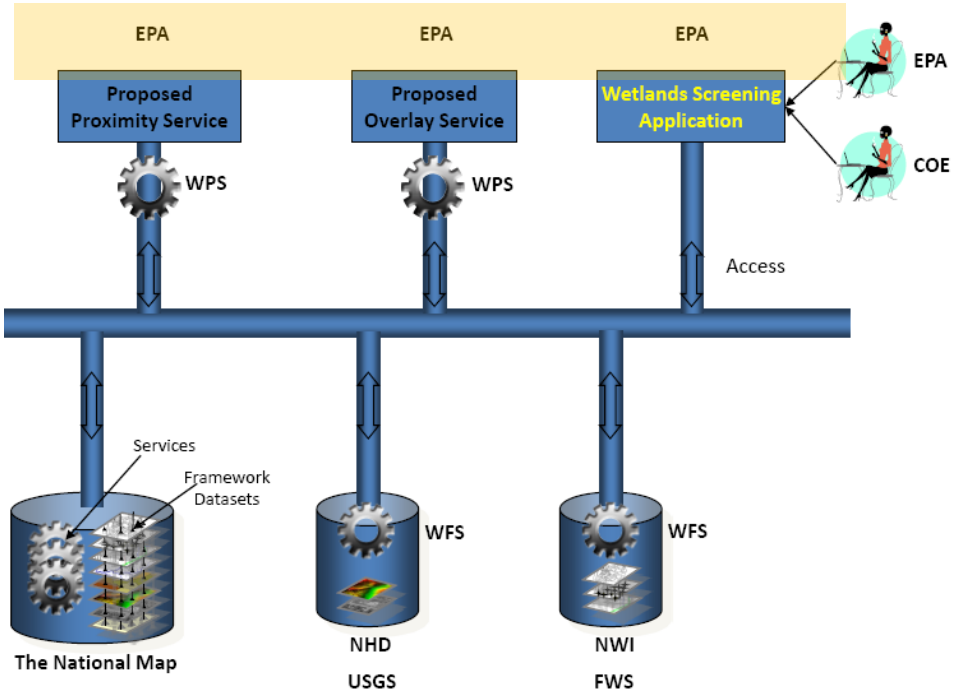
- WFS to be implemented on EPA server at USGS CAPP, in Madison, WI (?)
- Client software references stored ID results from WMS *getFeatureInfo* request, and passes ID(s) to the WPS
- WPS makes *getFeature* request via WFS for features of specified ID(s)
- NWI WFS returns GML to WPS for specified features



Application Client use of WPS

Application accesses WPS's

1) WPS's to be deployed in hosted server environment at EPA's National Computer Center (NCC) (?)
2) Client invokes proximity WPS, passing NWI Feature IDs as part of the request, and specifies dataset to be queried (i.e., NHD) for proximity to NWI features
3) Client invokes overlay WPS, passing NWI Feature IDs as part of the request, and specifies dataset to be queried for overlay with NWI features
4) WPS's access and process NWI and NHD data and return result to client.



Questions about use case

Our current understanding is that 2 queries regarding NWI and NHD need to be made:

- Is the wetland intersected by an NHD stream segment?
  - What about lacustrine wetlands associated with underlying *Lake/Pond* features?
  - Are underlying *Swamp/Marsh* features of relevance?

- (If it is not intersected by an NHD stream segment,) How close is the wetland to an NHD stream segment?
  - Does the type of stream segment important to consider (e.g., *Stream/River* v. *Connector*

Questions about data requirements

NWI

- Are only polygons required from the NWI ?
- Use line features? – these have some correspondence to NHD features

NHD

- Permanence (Perennial, Intermittent, Ephemeral - FCODE)?
- Stream Order? - in NHD+ - NHDFlowline Value Added Attributes (VAA) table
- No “navigable” attribute

Other data sets necessary?