NWIS Future Architecture
Alan Lumb, NWIS Chief
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Topics

- Quick summary of process
  - Purpose
  - Questions
  - Requirements
- Review Component Map of Architecture
- Summary of AMS recommendations
- Proposed strategy
- Issues for input and discussion

Purpose for Developing Future NWIS Architecture

- Critical for IT Capital Planning Process and Budgets
- Basis for Procuring Software/Hardware
- Basis for Defining Network Bandwidth Needs
- Basis for Planning District, Region, National Support
- Basis for Training Staff and Acquiring Expertise
- Basis for Planning Development Resources

Process

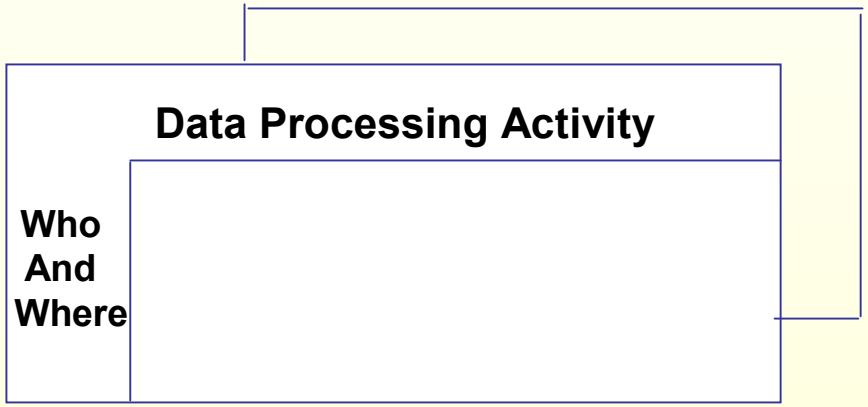
- Team with AMS
- Work Sessions with NWIS Leaders
  - Babcock, Briggs, Christman, Lumb, Trapanese
- JAD Session with Expanded Participation
  - Added Augenstein, Bostwick, Dreyer, House, Winkless
- Presented to ITAC for Comments
- Presented to NWIS Executive Steering Committee
- Still more to do

Basic Questions

- Should data production systems be separate from the data use systems?
- What are the best user interfaces?
- How many servers/databases?
- What is on server and what is on client?
- What bandwidth is needed?

Requirements

- **Requirements Organized in a Set of Matrices:**



Type of Interface

- **Cells Contain:**
  - **How Much**
  - **How Often**
  - **How Complex**
  - **How Critical**
  - **Current User Satisfaction**

Requirements

Future	Perform Project Setup					
Interface Name: All Interfaces	Define Project	Define Site(s)	Identify Data to be Collected/ Estimated/ Calculated	Identify Equipment and Methods	Define Discipline Specific data/ metadata	Notify Lab About Samples
Data Preparers:						
Data Collectors-Field						
Data Collectors-Remote Office						
Data Collectors-At Database Location						
Reviewers-Remote Office						
Reviewers-At Database Location						
Reviewers-Regional/National Office						
Data Users:						
Investigators-Remote Office						
Investigators-At Database Location						
Investigators-Regional/National Office						
Water managers-Anywhere						
External investigators-Anywhere						
Recreation-Anywhere						
General Public-Anywhere						

Requirements

Future	Data Capture		
Interface Name: All Interfaces	Observations, measurements, and samples	Field instrument download	Telemetered real-time data
Data Preparers:			
Data Collectors-Field			
Data Collectors-Remote Office			
Data Collectors-At Database Location			
Reviewers-Remote Office			
Reviewers-At Database Location			
Reviewers-Regional/National Office			
Data Users:			
Investigators-Remote Office			
Investigators-At Database Location			
Investigators-Regional/National Office			
Water managers-Anywhere			
External investigators-Anywhere			
Recreation-Anywhere			
General Public-Anywhere			

Requirements

Future	Data Upload, Entry, and Storage			
Interface Name: All Interfaces	Observations, measurements, and samples	Field instrument download	Telemetered real-time data	Lab Data
Data Preparers:				
Data Collectors-Field				
Data Collectors-Remote Office				
Data Collectors-At Database Location				
Reviewers-Remote Office				
Reviewers-At Database Location				
Reviewers-Regional/National Office				
Data Users:				
Investigators-Remote Office				
Investigators-At Database Location				
Investigators-Regional/National Office				
Water managers-Anywhere				
External investigators-Anywhere				
Recreation-Anywhere				
General Public-Anywhere				

Requirements

	Data QC				
	Field verify	Approve Data	Automatic screening of real-time data	Manual Office analysis, review	Manual Office analysis, review, and edit
Data Preparers:					
Data Collectors-Field					
Data Collectors-Remote Office					
Data Collectors-At Database Location					
Reviewers-Remote Office					
Reviewers-At Database Location					
Reviewers-Regional/National Office					
Data Users:					
Investigators-Remote Office					
Investigators-At Database Location					
Investigators-Regional/National Office					
Water managers-Anywhere					
External investigators-Anywhere					
Recreation-Anywhere					
General Public-Anywhere					

Requirements

	Computation (Aggregation)		
	Retrieve, graphically edit, and store	Retrieve, mathematically edit, and store	Retrieve, spatially edit and store
Data Preparers:			
Data Collectors-Field			
Data Collectors-Remote Office			
Data Collectors-At Database Location			
Reviewers-Remote Office			
Reviewers-At Database Location			
Reviewers-Regional/National Office			
Data Users:			
Investigators-Remote Office			
Investigators-At Database Location			
Investigators-Regional/National Office			
Water managers-Anywhere			
External investigators-Anywhere			
Recreation-Anywhere			
General Public-Anywhere			

Requirements

	Use Data						
	Maps	Graphs	Tables	Text	Files	Images	Define Retrieval/ Output Format
Data Preparers:							
Data Collectors-Field							
Data Collectors-Remote Office							
Data Collectors-At Database Location							
Reviewers-Remote Office							
Reviewers-At Database Location							
Reviewers-Regional/National Office							
Data Users:							
Investigators-Remote Office							
Investigators-At Database Location							
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Water managers-Anywhere							
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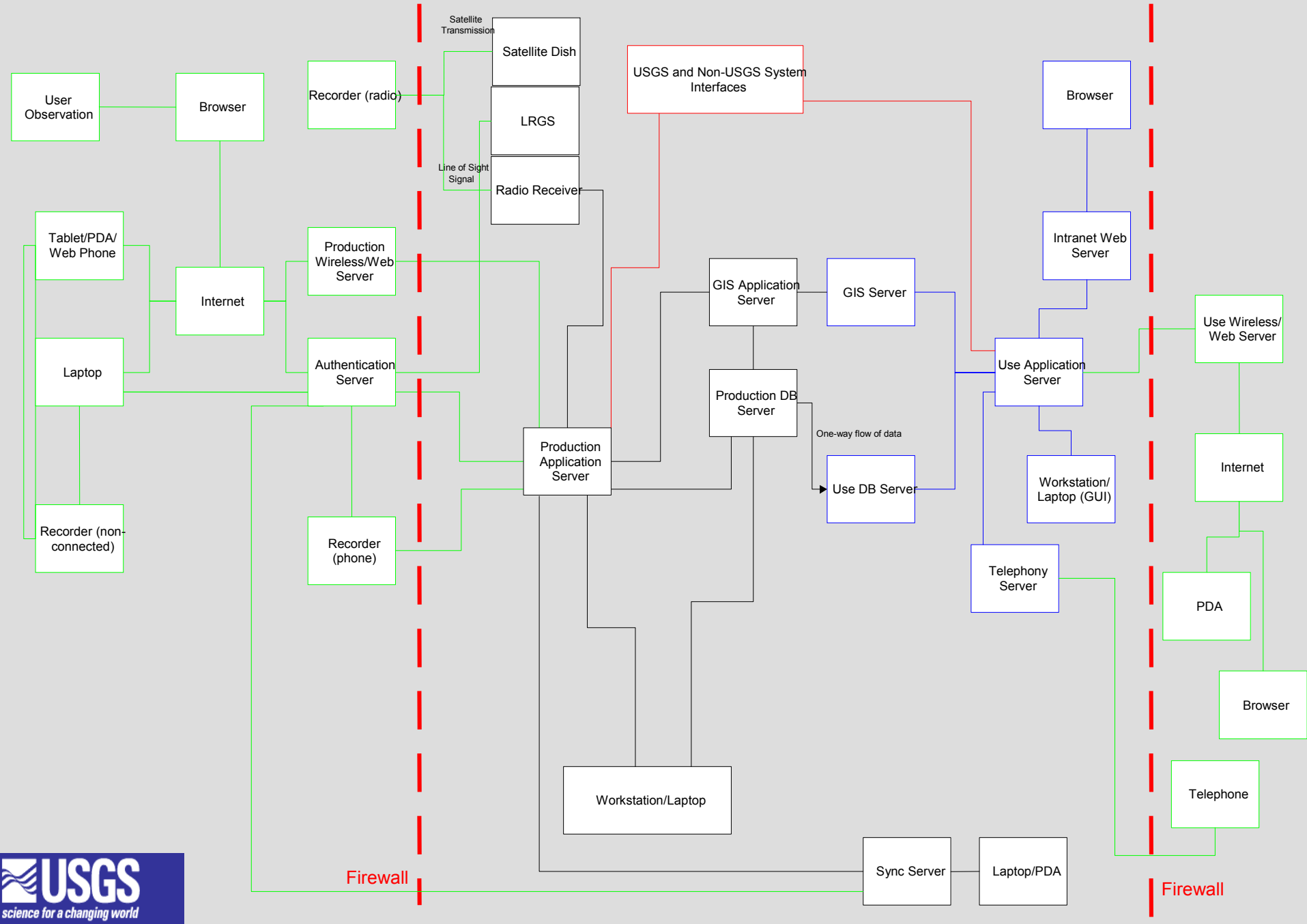
Component Map



USGS science for a changing world

AMS Recommendations

http://wwwnwis.er.usgs.gov/cm/ams/future_arch011204.pdf

- Separate data production and data use systems
- Begin to centralize to two data repositories for data production and data use
- Use internet browser applications when feasible
- Migrate thick-client application and user interface to Java
- Use Oracle for data base engine
- For web use Java, Apache or Oracle IAS, Oracle, Sun
- Use Java components for customized graphics
- Connect to database with JDBC

Proposed Strategy

- Centralize data use servers by implementing NatWeb and enhancing NWISWeb
- Isabelle to task team to assess conversion to Oracle
- Assessing Java applications with LRGS and GCLAS
- Ohe leading effort to assess graphics options
- Need technical analysis of different implementation scenarios
  - Estimate resources
  - Select scenario
- Finally, develop budget and schedule

District Concerns

- Will there be the same quality of service with the centralized concept?
- Will there be the same or better performance?
- Will there be the needed bandwidth and reliability?
- Will there be the technical support for applications and database?
- Will there be any enhancements while the new architecture is being developed?
- Others?