STRATEGIC ARCHITECTURE TEAM MANAGEMENT
GENERIC MAP CONTROL ARCHITECTURE PLAN

FOR: AGENCY ARCHITECTURE REVIEW

CREATED BY: EWAN WHITAKER

SAT REVIEWED & APPROVED DATE:

OCTOBER 12, 2009

VERSION 1.0

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A. Application Description

The Generic Map Control is an ASP.NET server control to be consumed by other ASP.NET applications to support their mapping needs. The Generic Map Control provides the ability to search/display spatially enabled data as well as facilitate live inserts for point, lines and polygon spatial data into SQL Server 2008 databases.

Features & Benefits

- Ecology ASP.NET developers can easily leverage the map control to provide mapping functionality in their applications.
- Portions of the map control are configurable to meet disparate usage scenarios.
- One code base to manage, while supporting multiple applications.
- Common user interface leveraged across applications.

Number of intranet (Ecology) users: NA – Dependent upon consuming application.

Number of internet (public) users: NA – Dependent upon consuming application.

Why are we doing this project (the business need)?
This project originated with the need move away from ArcIMS technology (not to be supported in next release) to ArcGIS Server technology to provide the mapping functionality for the Facility/Site redevelopment. This switch in technology also allows us to take advantage of improvements in map rendering speed available at ArcGIS Server 9.3. The decision was made to expand the scope of the project, making the map control generic enough to be consumed by multiple ASP.NET applications. The goal of this was to minimize developer time spent on coding and code maintenance.

What other products did you consider as alternatives?

We considered the OpenLayers, Google Maps, and Microsoft Virtual Earth APIs.

B. Tools, Technologies and Architecture Approach

Development Tools: Visual Studio 2008, SQL2008 Studio Management, ArcGIS 9.3

Technologies:

- .NET 3.5
- Ajax Control Toolkit
- SQL Server 2005
- SQL Server 2008
- ArcGIS Server 9.3
- ArcSDE 9.3

Architecture Approach:

- ASP.NET server control

Security Strategy:

- NA – Handled by consuming application

Backup Strategy:

- The agency enterprise servers host the applications and databases that interact with this server control, which are backed up by the network group

Data migration strategy:

- NA

Replication Strategy:

- NA

Bandwidth requirement:

- The size of the data travelling between client and server ranges from 1 KB – 100 KB.
- Total transmitted data per map interaction (ex: zooming in to new extent) approximately 1 MB.

Method of collecting and distributing data and frequency:

- For geometry inserts and edits SQL Server 2008 geometry data is captured via web front end (map). Saving these data and the frequency of transactions is dependent on the consuming application.

C. Software and Hardware Requirements and Dependencies

- .NET 3.5
- Ajax Control Toolkit
- ArcGIS Server 9.3
- ArcSDE 9.3

For inserts/updates:

- SQL Server 2008

Does application write data such as log file to the non-database server?

No. All transactions are handled by consuming application.

Other Helpful information about the software:

N/A

D. Data Integration Questionnaire

Geographic Location
Does the planned application /activity capture geographic location information such as Latitude and Longitude? If so, how will this information be obtained? What location metadata (regarding coordinate reference systems, methods of measurement, and accuracy of measure) will be included?
Yes. When spatial data (geometry) is captured the spatial metadata required by Facility/Site is calculated when possible based on the method of insert/edit.

Will other location information such as City, County, Watershed, WRIA, Township-Range-Section, River Name, Hydrologic Catalog Unit, Puget Sound Action Area, etc. be collected by this application? If so, which ones? Will there be validation between the location coordinates entered, and the reported City, County, WRIA, etc.
No.

Regulated Facility & Sites
Does the planned application /activity capture information about, or related to, regulated Facilities and Sites as defined by Ecology's Facility/Site database application? If so, how will integration with Facility/Site be achieved?
Possibly. When spatial data (geometry) is captured the spatial metadata required by Facility/Site is calculated when possible based on the method of insert/edit.

Pollutant, Release & Environmental Measures
Does the planned application /activity capture information about chemicals, contaminants, pollutants, releases, discharges, or other data regarding chemical substances? If so, what naming and unique identification standards will be employed when referencing these substances?
No.

Agency Common Data (employees; regulated persons & businesses, Ecology offices…)
Does the planned application / activity capture or associate activities with Ecology staff? If so how will integration with the Ecology's Employee Plus Information System be achieved?
No.

Will information about Person's/Business'/Organization's name, address, and contact information be captured? *No*

E. Operation and Support questionnaire

- Is installation instruction available? Describe the minimum skills required to perform the installation.

  Developer instructions have been created to support consumption of map control by host application. Minimum Skills: ASP.NET experience.

- Will this software require users to have read / write access to the server?

  No. End users require only a web browser. Read/Write access is handled through database security handled by consuming application.

- Describe cross-training plan to address employee turnover.

  TBD.

- Identify or suggest the technical support unit/personnel for this product when it is in the production? Who would be the point of contact for users for day-to-day operation?

  GIS Unit .NET Developer is the point of contact. This role is currently assigned to Ewan Whitaker.

- Who will manage security and access rights for users?

  The consuming application will manage the security.

- Is there any concern the that incompatibility issues may occur when the agency upgrades the Microsoft operating system, service packs or the Microsoft Office applications? Do you have any or suggestions on how to deal with such problems?

  The map control requires a specific version of the Ajax Control Toolkit to be present in consuming application. Otherwise, there are no anticipated special incompatibility issues.

- Do other Programs have a need for the functionality provided by this product?

  Yes. Currently, the following programs have plans to utilize the map control in their applications:
  - Water Quality: eDMR
  - Toxics Cleanup Program: ISIS
  - Applications and Data Services: DMS and Facility/Site

- Are there other products currently in use in Ecology that have a similar function?

  Ecology has historically leveraged ArcIMS technology for its mapping needs. Bing Maps is being consumed by AQP for the Air Monitoring Sites web map. Google maps and Bing maps APIs may have been used for prototype applications.

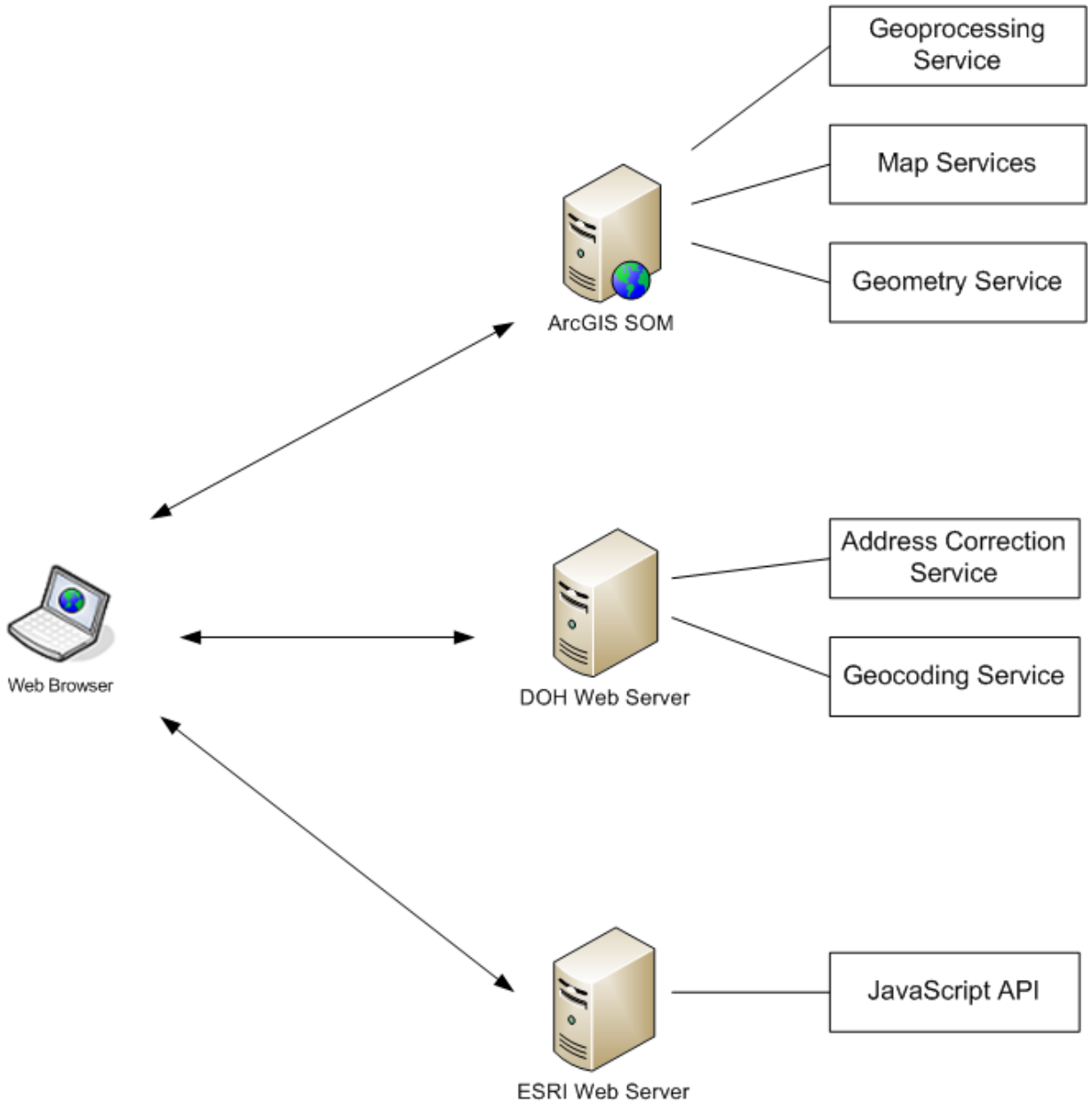
- Once the installation is complete, what level of permissions does the “administrator” of need? Do they need to be part of the server administrator group?

  NA – This is controlled by the consuming application.

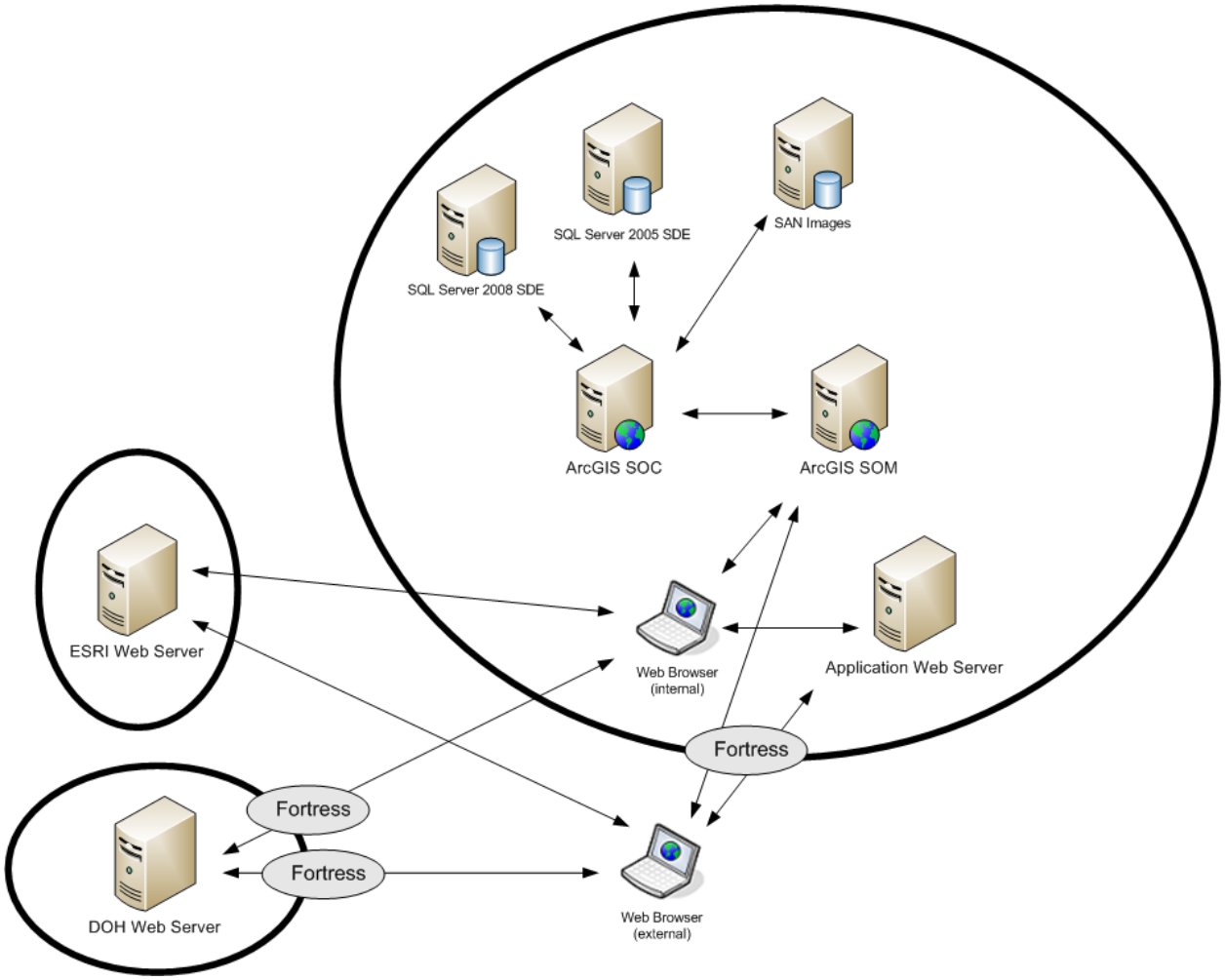
F. Application Tiers Mode

G. E/R Diagram

H. Software Context Diagram



I. Software Environment (Servers) Diagram



Application Architecture Review Check List

☐	Application Deployment Form	(ADS Operation)
☐	Components/Environment Diagram	(Application Architect / GIS Architect*)
☐	System Context Diagram	(Application Architect / GIS Architect*)
☐	Application Tiers Model	(Application Architect / GIS Architect*)
☐	Class Diagram (optional)	(Application Architect)
☐	Entity Relationship Diagram	(Data Architect / GIS Architect*)

Resources to get help for the above documents:

GIS Architect:	If your application is going to use any GIS component, Please contact Dan Saul for assistant.
ADS Operation:	Randy Moore, Mike Heiser, Tod Randle
Application Architect:	Son (Sirn) Tran
Data Architect:	Miles Neale, Bill Kellum
Data Integration Architect:	John Tooley
Network Security:	Jim French
UI design:	Tammy Pelletier

Review History

Date	Version	Review Session	Attendees/Invitees

J. Review Notes from SAT Meeting: