Applying 'GIS Services Bus GSB in the Enterprise

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Agenda

- Traditional Approach
- Business Needs
- Concept
- System Architecture
- Methodology
- Examples
Central Consolidated Approach

- Spatially Enabled Centralized Information Systems.
- Centrally managed and maintained using relational DBMS technology.
- Migrating datasets from different departments to a homogeneous GIS environment.
GIS Application for Dept 1
Embedded GIS
Arc Objects
(Thin-Thick)

GIS Application for Dept 2
Browser
(Thin)

GIS Application for Dept 3
Browser
(Thin)

GIS Application for Dept 4
Desktop GIS
Arc Map

Server GIS
ArcIMS

Application Server

Data Server

Server GIS
ArcSDE
- Spatial data & other database accessibility via ArcGIS desktop application.
- Applications Duplication.
Spatial data & other database accessibility via embedded GIS application "MapObjects or ArcEngine"

Any change in the system, database, or user needs requires re-development of hard-coded components.

Central Geodatabase

Other Database

Link Between Tables

Or Periodical Extractions

Embedding GIS Component inside client's own application "ArcEngine"

Data accessibility via a hard-coded GIS application
Spatial data & other database accessibility via GIS link or embedded GIS application

- Semi-hard Coded
- Any change in the system, database, user needs requires re-development
Properties

- Migrating whole departments datasets to GIS central repository
- Information is centrally managed and maintained
- GIS in the main focal point.
- GIS is the most important component in the organization

*Most Appropriate in organizations where GIS is the core business (e.g., Map Production)*
Disadvantages

- GIS isn’t mission critical in most enterprises
- GIS is needed as a complementary aided technology not as a core business leader.
- Full power to GIS Center
- Employees’ offensive attitude
- No system loyalty
- Complex integration with legacy systems (sometimes requires hard coding)
Orienting business towards GIS

Not

Orienting GIS towards business
Organizations mostly have...

- Systems evolved over a number of years.
- A number of utilized different technologies and platforms.
- A well defined way of work.
- A familiar interface.
To achieve the most appropriate GIS, it should provide the following:

- Easy & direct accessibility to Geographic knowledge.
- Flexible integration with the organization used applications.
- Maintaining same Feel & Look of the organization's familiar interfaces.
- Easily performing the required GIS business services (functionalities) on the required data.
- No need to specific tools.
- No need to heavy training.
- Independency on GIS Specialists.
- Independency of GIS on the existing systems.
- Scalability & Interoperability.
Migrating towards GIS...
Geographic Knowledge Delivery
The New Approach is based on:

- Service Oriented Architecture (SOA).
- Generalizing Global GIS Services to broaden usability.
- Creating independent Global GIS Services (Serving required data along with the appropriate customized interface).
- GIS Services Delivery (On Call).
- Services can be called in defined sequences to form business processes.
- Sequences can be easily changed.
- Services are independent.
- Reusable.
- Standards Compliant.
System Architecture
System Architecture

“In Case of the need of individual heavy GIS functionalities”
System Architecture

“In Case of the need of Global heavy GIS functionalities”
System Architecture

“ In Case of the need of increasing performance ”
Methodology

- Organization Needs Assessment.
- Requirements Generalization, to defining Global functions which will be Global GIS Services within the Enterprise.
- Building unified Geodatabase including all spatial entities, database structure, cardinality relationships, and connectivity rules.

...Using Standard RDBMS Technology...
Methodology

- Building unified coding scheme (Geographic Unique Identifier)
- Linking the Geodatabase with the departmental datasets via the Geographic Unique Identifier.
Methodology

- Providing departments with easy, efficient, and valuable accessibility for GIS services including data and interface
**Examples**

**GIS Service (Nearest Store)**

**Request**

Where is the Nearest Store?

**GIS Server**

**Respond**

Map of Nearest Store

**Client**

Map of Nearest Store

**XML / SOAP**
Examples

GIS Service (Meters Location)

Where are the locations of non paid customers in a water company?

Sending request for Customers Meters Locations extracting Meters GIS IDs stored in Billing Database

Linking Meters GIS IDs in both Geodatabase & Billing database

Map of Meters Locations

XML / SOAP

Respond

Client

Map of Meters Locations

GIS Service (Meters Location)
Examples for GIS Services

GIS Services for GeoCall Center

Call Center Package

Empower Call Center Package with GIS Services (functions) to be GeoCall Center

Hook on GIS Services Bus

In case of changing Call Center Package, Independent GIS Services remains alive, to be reused...
Case Study
(Vodafone Egypt)

- Phase 1
- Integration with Remedy is required
- GIS was in separate interface
- Duplication for users
- Unsatisfactory solution
Case Study (Vodafone Egypt)

- Phase 2
- Integration with Remedy is required
- GIS was embedded in the Remedy interface
- Hard Coded Application
- Non flexibility
- Vodafone took decision to replace Remedy
- GIS investment gone by the way
- Unsatisfactory solution
Case Study (Vodafone Egypt)

- Phase 3
- Service Oriented Architecture
- Integrating the whole organization via Enterprise Service Bus
- Loose coupling
- Independent Global GIS Services
- Flexibility of deployment (n-tier)
- Performance and scalability
- Achieve application interoperability with web services
GIS Services Bus integration with the Enterprise

Service Consumers

Task Force, Marketing, Radio Desktop Applications

Call Center Browser

Web Services
- Siebel Services
- GIS Services

Web Applications
- Siebel Applications
- GIS Application

TIBCO EAI
(messageing service, routing service, transformation, etc)

GIS Services Bus

Adapters

Service Providers

ArcSDE Server

ArcIMS Server
- Geocode Service
- Proximity Service
- Map Service

Siebel Server
- Get Customer
- Notify Employee
- Create Complaint

GIS Application

Siebel Services

GIS Services

Web Server

ArcIMS Server

Geocode Service

Proximity Service

Map Service

SDE Server

Service Providers

ArcGIS server

GIS Application

Siebel Services
GIS Services Bus integration with the Enterprise
Finally
“Traditional Approach”

- Client Server Based
- Most Appropriate for Map Production Organizations
- Suitable for Middle Level Organizations
- Widely spread.
- Building specific local GIS applications for each department
- Requires heavy training and specific tools.
- Orienting business towards GIS (GIS Focused)
Finally

“GIS Services Bus Approach”

- Service Oriented Architecture Based
- Most Appropriate for Organizations where GIS isn’t mission critical
- Suitable for High Level Organizations with many different business sectors.
- Future Trend.
- Delivering on call GIS business services
- No need for training and specific tools.
- Orienting GIS towards business (Business Focus)
Questions
Thanks for Attending...

Enjoy the conference