Land Information Management
Using Silverlight and ArcGIS Server

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About Georgia Power Land Department

- Georgia Power – A electric utility serves 2.35 million customers in Georgia. The largest of four electric utilities that make up Southern Company.

- Land Department – to provide a broad support of acquisition, management and protection of the Georgia Power’s property rights through a variety of services, including engineering, surveying, and various information systems availability.
Background and Challenges

- All land properties managed by GPC Land are of spatially representative data associated with land parcels, right-of-way corridors, company assets, and a host of geographic data information concerning Georgia Power footprint.
- It demands an easy to use GIS application for the whole department and their customers.
- Due to the vast footprint, it requires the GIS application be accessible through internet internally and externally.
- The professional GIS tools are too complicated for general users.
- A simple Web GIS tool cannot meet the requirements of a comprehensive GIS application.
- The GIS application must be fully configurable and customizable to meet different customer needs.
- The GIS application must be secured to provide the right information to the right users.
GIS Centric Land Information Management System

LIMSGis

- A feature rich, easy to use and high performance GIS application targeted for non-GIS professionals.
- Developed with Microsoft Silverlight and ESRI ArcGIS API for Silverlight
- Access GIS services through ArcGIS Servers
- Fully configurable and customizable
- Integrated with Southern Company security system - CoolCompliance
System Architecture

ArcGIS Server

Base Map Layers
- Bing Maps
- ESRI Streets/Imagery Maps
- Google Maps
- Open Street Maps
- ESRI Topographic Map
- ESRI Elevation Map
- ESRI Shade Relief Map
- ESRI World Physical Map

Internet

LIMS GIS Silverlight Application

LIMS App Data
- User Table
- Application Profiles
- User Profiles
- User Sessions

Cool Compliance Web Services

Cool Compliance Web Service

External Shared Class 2 Web Server
limsgis.southernco.com

ArcGIS API - RESTful Web Services

Land GIS Servers

Land Base Layers
- Land Boundaries
- County Tax parcel
- Transportation
- Water Features
- Company Facilities
- Survey Accurate Data
- Map Indices

Land Operational Layers
- ROW Encroachment Line
- ROW Encroachment Point
- ROW Encroachment Polygon
- ROW Line
- ROW Point
- ROW Polygon
- ROW Report
- Bulk Property
- Fee Simple Property
- Sold Fee Simple Property
- Transmission Easements

View/Query

Query/Add/Edit

Dedicated ArcGIS Server 10
gpiland.southernco.com

EAST GIS SDE ORACLE DATABASE SERVER
Oracle 11

SAS Storage

SASR Storage
Base Map Selection

- Bing Maps
- ESRI Street/Imagery
- Open Street Maps
- ESRI World Topographic
- ESRI Terrain Map
- ESRI Shaded Relief Map
- ESRI World Physical Map
- Can also use Google Maps
GIS Operational Layer Management

- Turn on/off layers
- Change opacity of a layer
- View layer legends
- Configure layer orders
- Add/Remove GIS layers
- Search features of a layer
Add GIS Operational Layers

- Add a GIS layer from ArcGIS Server REST service
- Support ArcGIS Dynamic, Tiled and Image service layers
- ArcGIS Server Service Explorer to browse the map services
- Service searching and filtering
Add Custom Coordinate Point Layer

- User definable coordinate system
- User definable coordinate fields
- User definable field separator/text qualifier
- Data preview screen
- Additional field data can be displayed as graphic point attributes
Configurable Application Profile

- Manage default application appearance, default base map and map extent, default operational layers and their orders, visibilities and opacities, etc.
- Application profile is stored in application database as XML data
Customizable User Profiles

- User profile stores current map extent, base map and type selection, operational layers and their visibilities and opacities, user added layers, redline drawings.
- When set as default, the user profile will be open when the application is launched.
- User Profile Types
  - Private – accessed only by the user
  - Protected – shared with a specific user group
  - Public – shared with all users
General Search Bar for Location and Feature Search

- Address/Place search using Bing geocode service
- Coordinate location with different coordinate systems and formats
- Specific layer feature search with predefined prefix (wild card supported)
- Selected layer search (with autocomplete and lookup)
General Layer Feature Search

- Can search any layer
- Support search operators and wildcard search
- Search fields are configurable (Less and More display)
Layer Spatial Search

- User defined search area
  - Draw a rectangle
  - Draw a polygon
  - Draw a point to define a circle with a specified buffer
  - Draw a polyline to define line buffer
  - Use current map extent
  - Use a current graphic selection
Location Identifier to Identify Land Locations

- Provide the capability to identify the selected location’s coordinate, address, zip code and other land location information such as County, Land Lot, Land District, GMD, Region and Service Area.
Feature Identifier with Hyperlink to Stored Document

- Identify the selected feature in the selected layer.
- List all attributes of the identified feature.
- If the attributes contain a Hyperlink field, click on the Hyperlink button will open the stored document through hyperlink URL.
Redline Operations

- Provide general redline drawing and editing
  - Point, Polyline, Polygon, Rectangle, Circle, Ellipse, Triangle, Freehand, Arrow
  - Text symbol
- The graphic drawing can be saved to a file or in the user profile as a graphic layer.
Georeference Image

- Designed for non-professional GIS users.
- Georeference an image by selecting a point on the image and selecting a corresponding point on the map. After more than two points selected, a reference rectangle will display the image location on the map.
- Click Preview will display the georeferenced image on the map.
- For known control points, user can enter the coordinates that will provide more accurate georeferenced image.
- Georeferenced image parameters can be saved to a file for future retrieval.
Georeferenced Image Process

- Provide a simple way to process the georeferenced image to make it more visible and readable on the map
  - Change the white background transparency
  - Change the black drawing to other color
  - Remove gray background
Customizable Overview Map

- The overview map is resizable
- The overview map is customizable to specify the area of interesting ratio, constrain zoom to GA state, maintain zoom to GA state, or maintain current extent.
Map Printing

- Preview window displays what will be printed.
- User can enter map title and comments.
- User can select print map only, and/or with Legend, Map Title, Overview Map.
- User can use the current map extent or selected map scale.
Jump To Other Map Applications

- Right click context menu provides the capability to jump to other map applications such as Google, Bing maps at the same location.
- The jump to links are configurable in the application profile.
Conclusion

- Web based GIS application opens the door to general users who do not have special GIS knowledge and skill.
- Microsoft Silverlight and ArcGIS API for Silverlight provide rich internet application (RIA) experience and interactive GIS operations.
- ArcGIS server provides an easy way to access GIS map services and geoprocessing services through internet.
- With Silverlight, it is possible to do complex tasks inside web browser such as georeferencing an image.
- A Silverlight application can be designed as fully configurable and customizable.
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