EBCI Integrated Geographic Information System (IGIS)

Integrated GIS

GIS  EDMS
WORKFLOW  GEMS
Everyone within the Tribe, and working with the Tribe, looking at one master set of Tribal geo-spatial assets (data)
Integrating Enterprise Systems

Enrich and improve workflows to increase organizational efficiency

People & Workflows

ERP/Finance

EDMS

CAD/E911

GIS
EBCI IGIS
Geodatabase Design/Prototype Presentation

DESIGN PHASES
Logical Database Design

• Comprehensive data model with attribution
  – Feature classes
  – Tables
  – Relationship classes
  – Domains
  – Feature datasets (no feature datasets were created for EBCI)

• Addresses the business rules of the Site Plan Review process
Tribal Integrated Geographic Information System
Turning Data and Information into Business-Relevant Knowledge

Executive Dashboard Reporting
Statistical Demographic & Data Analysis
Economic Development
Project Management Workflow
Centralized Housing Services
Site Selection
Engineering Design
Land Records Property Management

Building Inspection
Emergency Preparedness & Response

Environmental Management

Cultural Site Preservation & Protection
Permitting Compliance
Infrastructure & Utilities Inventory Management

Enterprise GIS for EBCI
The data model provides a solid foundation upon which to build

- Parcel data - Possessory Holdings
- Environmental data – Environmental Impact studies
- Historical data – Tribal Historic Preservation Office site protection
- Transportation data – Integration of 9-1-1 and highway maintenance data
- Utilities – Identification of services and pipeline locations
Conceptual Model
Logical Model

Buildings and Parcels

Environmental
Logical Model
Land Development

SITE PLAN REVIEW PROCESS
The IGIS Enterprise Model was built around the Site Plan Review Process

- Identified by EBCI as a primary target for process improvement
- Integral part of any construction project to be implemented by EBCI
- Engages majority of departments that use GIS
- Encompasses majority of GIS layers currently in use at EBCI
- Includes many layers not currently captured but targeted for IGIS enhancement (e.g. parcels)
The Site Plan Review is the “quickest way to a No” for determining project feasibility.

The Site Plan Review represents Step 2 of the overall project planning process.

1. Project Concept
2. Initial Project Feasibility
3. Initial Project Design
4. Detailed Project Feasibility
5. Detailed Project Design
What is the project?

Who has the authority to approve the project?

Who is going to fund the project?

Who is going to manage the project?
Initial Project Feasibility

- Where is the project located?
- Who owns the land?
- What structures are located on the project site?
- What facilities are available?
- Are there any environmental factors?
- Does the project involve land clearing?
- Is erosion control required?
- Is the project in a flood plain?
- Will any threatened or endangered species be impacted?
- Will any historical sites be impacted?
Detailed Project Feasibility

- Slope
- Elevation
- Flood data
- Parcel
- Aerial photography
- Site boundary
- Soils
- Archeological Assessment
- Detailed Environmental Review
- Engineering Approval

Feasibility for:
- Roads
- Houses
- Houses with basements
- Utilities
- Septic Systems
- Farming
1. Overview

The Project Review Management Application (PRMA) is a web-based solution designed to allow EBCI staff to review and manage projects.

The application was developed using Microsoft Silverlight 4 and the Esri ArcGIS API for Microsoft Silverlight / WPF. The following additional technologies are used to support and deploy PRMA:

1. Microsoft Windows Server 2008
2. Microsoft SQL Server 2008
3. Microsoft IIS 7
4. Esri ArcGIS Server 10 SP1
5. Esri ArcSDE 10 SP1
The application has three functional areas, the header, map, and footer.
2. Authentication

- The PRMA is designed to work with Windows Authentication (Active Directory).
- The application administrator has assigned users to either an Editor or Viewer group.
- When a user accesses the application the user is prompted to enter a User Name and Password.
3. Map
<table>
<thead>
<tr>
<th>RelatedProjectID</th>
<th>ManagerID</th>
<th>Name</th>
<th>Description</th>
<th>ProjectInitiator</th>
<th>ProjectType</th>
<th>GeneralComments</th>
<th>Editor</th>
<th>EditDate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010120316115441</td>
<td>Project 1</td>
<td>This is a test Project</td>
<td>Test</td>
<td></td>
<td></td>
<td>CHARLOTTENC\john2876</td>
<td>12/3/20</td>
</tr>
</tbody>
</table>

**X = -9277105.6089, Y = 4232794.7999**

**Project Name: Project 1**

**Project ID: 2010120316113895**
4. Project Administration

Under project administration users can select existing projects, add new projects, assign/change a project manager, and assign/change a related project id.
5.4. Geoprocessing

When edits to sites are saved, a geoprocessing task automatically updates the Longitude, Latitude, Site Acres, Communities, Average Elevation, Land Use Types, River Basins, Counties, Watershed Units, Floodplain, Floodway, Habitats, Archaeological Sites, Average Site Grade, Soils Analysis and Water Bodies. The same can be accomplished for the selected project at any time by using the geoprocessing tool. Since this task edits the site(s) attributes, it is available only to users that are part of the Editor role.
import arcpy, os, math, datetime, urllib2

#Constants
acre_constant = 43560
ShapeFldName = "SHAPE"
ProjectIDFieldName = "ProjectID"
OIDFieldName = "OBJECTID"

#Path where the script is stored
path = str(os.path.dirname(os.path.realpath( __file__ ))).replace('\','/') + '/

#ArcSDE connection file must be located in the same path as the script
sde = path + "prma.sde/"

#Feature Classes used by script
TribalCommunity = sde + "ebci.dbo.TribalCommunity"
Contours = sde + "ebci.dbo.Contours"
LandUse = sde + "ebci.dbo.LandUse"
RiverBasin = sde + "ebci.dbo.RiverBasin"
County = sde + "ebci.dbo.County"
WaterShedUnit = sde + "ebci.dbo.WaterShedUnit"
MapFldHasAr = sde + "ebci.dbo.MapFldHazAr"
Stream = sde + "ebci.dbo.Stream"
Lake = sde + "ebci.dbo.Lake"
Wetland = sde + "ebci.dbo.Wetland"
EndangeredSpecies = sde + "ebci.dbo.Env_Areas_Grid"
HistoricSite = sde + "ebci.dbo.HistoricGrid"
ProjectSites = sde + "ebci.dbo.ProjectPoly"

#Layers used by script
FloodPlain100Yr = "Flood100Yr"
FloodWay = "FldWay"
arcpy.MakeFeatureLayer_management(MapFldHasAr, 'FloodPlain100Yr', "Zone_LID = '1005'", "", ")
arcpy.MakeFeatureLayer_management(MapFldHasAr, 'FloodWay', "Fldway_LID = '1000'", "", ")

ProjectSitesLayer = "prjSitesLyr"
IntersectLayer = "intLyr"
StreamsLayer = "streamLyr"
LakesLayer = "lakeLyr"
WetlandsLayer = "wetlandLyr"
Project Poly Table Stores Geoprocessing Results

Feature Class Properties

Field Name | Data Type
--- | ---
Longitude | Double
Latitude | Double
SiteAcres | Double
Communities | Text
AverageElevation | Double
LandUseTypes | Text
RiverBasins | Text
Counties | Text
WatershedUnits | Text
Floodplain | Text
Floodway | Text
Habitats | Text
ArchaeologicalSite | Text

Click any field to see its properties.

Field Properties

<table>
<thead>
<tr>
<th>Alias</th>
<th>OBJECTID</th>
</tr>
</thead>
</table>

To add a new field, type the name into an empty row in the Field Name column, click in the Data Type column to choose the data type, then edit the Field Properties.
Use of Soils Data in PRMA
Interpretive Feature Classes and Interpretive Reports

• Depth to restrictive layer
• Depth to water table
• Dwellings with/without basements
• Septic Tank Absorption Fields
• Local roads and streets
• Farmland Classification
• Small commercial buildings
The ImageNow section defines the values that are used by PRMA to read and write documents from the ImageNow document management system using the WebNow technology.

- The ImageNow read and write operations are dependent on specific attributes:
  - **name** – the valid options are DocRead and DocWrite.
  - **action** – the valid options are document and capture.
  - **drawer** – the drawer where documents are stored

- The ImageNowRead and ImageNowWrite nodes require a URL which is defined in the inner text of the node.
- In addition to the above items a document type is also required for the integration with ImageNow.

```xml
<ImageNow>
  <ImageNowRead name="DocRead" action="document"
  <ImageNowWrite name="DocWrite" action="capture"
  <DocumentTypes>
    <DocumentType>Conceptual Document</DocumentType>
    <DocumentType>Construction Document</DocumentType>
    <DocumentType>Site Review Permit</DocumentType>
    <DocumentType>Right of Way</DocumentType>
    <DocumentType>Contract</DocumentType>
    <DocumentType>Resolution</DocumentType>
    <DocumentType>Environmental Permit</DocumentType>
    <DocumentType>Dot Permit</DocumentType>
    <DocumentType>Building Permit</DocumentType>
    <DocumentType>Inspection</DocumentType>
    <DocumentType>Invoice</DocumentType>
    <DocumentType>Grant Reporting</DocumentType>
    <DocumentType>Owner’s Manual</DocumentType>
    <DocumentType>Closeout Document</DocumentType>
    <DocumentType>Meeting Minutes</DocumentType>
  </DocumentTypes>
</ImageNow>
```
QUESTIONS