Implementing ESRI's LGIM in a Cloud Production Environment

MIKE BROWN
GEOGRAPHIC SYSTEMS SPECIALIST II, CITY OF SAN JOSE
Capital of Silicon Valley

Serve 1,015,785 residents

3rd largest city in CA; 10th in U.S.

Cover 180 square miles

Located on the southern shore of San Francisco Bay

Annual budget of $3 billion

Workforce of 6,000+ in 10+ Departments
Modernize GIS production environment in order to provide accurate and up-to-date data/tools to facilitate informed decision making
What is the LGIM?

Local Government Information Model

Set of predefined standards

Common workflows for local/county/state governments and utilities

Apps, tools and templates based on the LGIM
Why the LGIM?

Out-of-the-box ESRI (and 3rd party) apps, tools and templates

Built-in quality assurance

Interagency collaboration and seamless data sharing

Ready trained employees
Migrating to the LGIM

Phase I: Project Implementation Plan: Needs Assessment
Phase II: System Architecture Design
Phase III: Data Modeling
Phase IV: Pilot and Final Data Migration and QA/QC
Phase V: ArcGIS Local Government Map Template and Data Maintenance Tool Deployment
Migrating to the LGIM

Phase I: Project Implementation Plan: Needs Assessment

Phase II: System Architecture Design

Phase III: Data Modeling

Phase IV: Pilot and Final Data Migration and QA/QC

Phase V: ArcGIS Local Government Map Template and Data Maintenance Tool Deployment
OUT WITH THE OLD...

*Oracle Spatial/Intergraph GeoMedia environment*
- On-premise
- 6 year-old software
- Intelligence built into the database
- One OS/DB update away from breaking

...IN WITH THE NEW

*SQL Server/ESRI environment*
- Cloud production
- Less time investment and training
- Large user community
- Scalable and flexible
- Simplified integration
Why the Cloud?

- Redundant
- Scalable
- Accessible
- Fast (less bureaucracy and red tape)
- New software
- Flexible
What is Cloud production?
What is Cloud production?

Amazon Workspaces

Microsoft SQL Server 2014 database

Running alongside secure ArcGIS Server 10.3

Web server/Web Adaptor machine to distribute traffic and publish custom mapping applications

All secured within distributed, redundant Amazon Web Services (AWS): Virtual Private Cloud (VPC)
Migrating to the LGIM

Data modeling/crosswalk using X-Ray
## Datasets

<table>
<thead>
<tr>
<th>FieldName</th>
<th>Type</th>
<th>Length</th>
<th>Description</th>
<th>AlliName</th>
<th>DomainName</th>
<th>DefaultValue</th>
<th>InNullable</th>
<th>Precision</th>
<th>Scale</th>
<th>Required</th>
<th>DomainFlag</th>
<th>Mapped Field</th>
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<tbody>
<tr>
<td>FACILITYID</td>
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<td>Locally assigned Facility ID</td>
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<td>10</td>
<td>Populated with ID stored in GeoMedia. For new Integer ID</td>
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<td>10</td>
<td>Matching Hansen ID for asset in SSMS Hansen Hansen Key</td>
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<td>null</td>
<td>false</td>
<td>true</td>
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<td>Digital elevation model elevation in feet</td>
<td>DEM Elevation</td>
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<td>true</td>
<td>8</td>
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<td>null</td>
<td>DEM_ELEV</td>
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<td>The elevation of the manhole rim in feet</td>
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<td>true</td>
<td>8</td>
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<td>RIM_ELEVATION</td>
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<tr>
<td>HIGHELEV</td>
<td>Double</td>
<td>8</td>
<td>High pipe elevation inside manhole in feet</td>
<td>High Pipe Elevation</td>
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<td>null</td>
<td>false</td>
<td>true</td>
<td>8</td>
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<td>HIGH_ELEV</td>
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<tr>
<td>INVERTELEV</td>
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<td>The lowest invert elevation of the manhole in feet</td>
<td>Lowest Invert Elevation</td>
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<td>The bottom elevation of the manhole in feet</td>
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<td>The type of manhole</td>
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<td>null</td>
<td>TYPE see domain</td>
</tr>
<tr>
<td>CVTYPE</td>
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<td>The type of sewer manhole cover</td>
<td>Cover Type</td>
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<td>null</td>
<td>TYPE see domain</td>
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<tr>
<td>WALLMAT</td>
<td>String</td>
<td>8</td>
<td>The manhole wall material</td>
<td>Wall Material</td>
<td>pPipeMaterial</td>
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<td>false</td>
<td>true</td>
<td>0</td>
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<td>null</td>
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<tr>
<td>OWNERID</td>
<td>String</td>
<td>8</td>
<td>Indicates which organization owns the asset</td>
<td>OwnerId</td>
<td>AssetOwner</td>
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<td>false</td>
<td>true</td>
<td>0</td>
<td>false</td>
<td>null</td>
<td>IF STATUS = &quot;Private&quot; THEN PVT. IF STATUS = EXISTIN</td>
</tr>
<tr>
<td>REHABYEAR</td>
<td>SmallInteger</td>
<td>4</td>
<td>Year manhole was rehabilitated</td>
<td>RehabYear</td>
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<td>null</td>
<td>false</td>
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<td>0</td>
<td>false</td>
<td>null</td>
<td>null</td>
</tr>
<tr>
<td>INSTALLYEAR</td>
<td>SmallInteger</td>
<td>4</td>
<td>The year the asset was installed</td>
<td>InstallYear</td>
<td>null</td>
<td>null</td>
<td>false</td>
<td>0</td>
<td>0</td>
<td>false</td>
<td>null</td>
<td>null</td>
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<tr>
<td>SOURCEYEAR</td>
<td>String</td>
<td>8</td>
<td>The source of the year for the asset</td>
<td>SourceYear</td>
<td>pSourceYear</td>
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<td>false</td>
<td>true</td>
<td>0</td>
<td>false</td>
<td>null</td>
<td>IF STATUS = &quot;EXISTING&quot; OR PRIVATE OR PROPOSED OR LINED OR REPLACE THEN Yes, IF STATUS = &quot;ABANDONED&quot; OR REMOVE THEN No. Greater of GEO_MOD_DATE OR ATTR_MOD_DATE</td>
</tr>
<tr>
<td>ACTIVETYPE</td>
<td>SmallInteger</td>
<td>2</td>
<td>Indicates if the feature is in use/active</td>
<td>Active Flag</td>
<td>BooleanDomain</td>
<td>1</td>
<td>true</td>
<td>2</td>
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<td>0</td>
<td>null</td>
<td>null</td>
</tr>
<tr>
<td>LASTUPDATE</td>
<td>Date</td>
<td>8</td>
<td>The date the feature was last updated in the m2s</td>
<td>Last Update Date</td>
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<td>null</td>
<td>false</td>
<td>0</td>
<td>0</td>
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<td>null</td>
<td>null</td>
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<tr>
<td>LASTEDITOR</td>
<td>String</td>
<td>8</td>
<td>The user who performed the last update</td>
<td>Last Editor</td>
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<td>null</td>
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</tr>
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<td>PLANEDIT</td>
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<td>25</td>
<td>Reference for the plan or permit number that was created</td>
<td>Plan Created</td>
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<td>0</td>
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<tr>
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<td>26</td>
<td>Reference for the plan or permit number that was modified</td>
<td>Plan Modified</td>
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<td>NOTES</td>
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<td>255</td>
<td>Miscellaneous notes pertaining to the feature</td>
<td>Notes</td>
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<td>false</td>
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</tr>
</tbody>
</table>
ETL Creation

ESRI Professional Services

Developed ETLs using SAFE Software's FME

ESRI modeled existing database, and tested before pilot

Developed and modeled workflows for complex migration tasks
Pilot Migration

Uploaded to SQL Server database in AWS

QA/QC: Updates and feedback given to ESRI, changes made and process repeated

Shared FME Workspaces with the City
Final Migration

1. Push data directly to Cloud using FME
   ◦ minimal downtime
2. Configure production environment
3. Data cleanup
4. New mapping applications
Lessons Learned

Integration
- Consider target systems, streamline

Team participation
- Identify key resources both internally and externally
- Use qualified leads to ensure consistency and minimize education process

Management buy-in
- "Build once, utilize often"
- Inter-departmental coordination and support
Questions?

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Shameless plug

**ESRI Professional Services**

http://www.esri.com/apps/company/profservices

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