Agenda

1. Overview of Fort Wayne City Utilities
2. Challenges
3. Solution
4. Takeaways
5. Next Steps
Section 1
Overview of Fort Wayne City Utilities
Fort Wayne City Utilities Breakdown

- County Seat of Allen County, Indiana
- Water Services - Provides Water for 250,000 residents
- Sanitary Sewer Services – Service area covers 161 square miles and 19 square miles of combined sewers. Approximately 1,400 miles of sewer mains
- Storm Sewer Services - 600 miles of storm mains, ditches, open channels and drains. Serves approximate 72,200 residents
Project Objectives

• Migrate GIS database to Esri format
• Redesign GIS database to more traditional model
• Automate synchronization between GIS and Hansen asset inventories (In Progress)
• Add mapping capabilities to Hansen (In Progress)
Section 2
Challenges
Challenges

- Custom designed GIS Database Model
  - Designed in the 1980’s
  - Needed to move to a standard model
  - Originally only contained point features
Challenges

- FWCU managed asset attributes within custom IMS database
  - Pipe attributes stored on connected nodes
  - The database hardware was failing
Challenges

- Synchronization of asset data between IMS and Hansen databases was difficult
  - Script was used to move data between IMS and Hansen
  - Script often would fail to run
Challenges

- Utility had developed custom online mapping solution to show work activities
  - Work Activities were not displayed in real time
  - Could not be used for planning maintenance activities
Section 3
Solution
Convert existing GIS database to Esri Format

• New Data Model Based on Local Government Model

• Created a Spatial ETL Package
  - Special type of FME Workbench
  - User-created Geoprocessing tool
  - Transforms data between different data models and different file formats
Spatial ETL Transformations

- Merged multiple feature classes into single feature class
  - Junctions and Plugs were merged into wFitting
Spatial ETL Transformations

- Used AttributeValueMapper to convert attribute values to match the value in Hansen
  - Example – Manufacturer
Spatial ETL Transformations

- Conditionally calculated attributes based on value
  - Example – Installation Date
Spatial ETL Transformations

- Split feature class into multiple feature classes based on attribute
  - Example – Point Type
Data Maintenance Procedures Redesigned

- Leveraged Esri’s Attribute Assistant Add-in
  - Automatically populate attributes when updating or adding new features to the geodatabase
  - Similar to Feature Templates but more powerful
Attribute Assistant Rules

FacilityID’s of Nodes – Sequential id based on quarter section

- Method – GENERATE_ID_BY_INTERSECT
- Argument -
  quarter_sections|Qsect_Name|wSystemValve|4|
  [id] [seq]

FacilityID’s of Pipes – Concatenation of Start and End Node FacilityID’s

- Required three rules
  - FROM_JUNCTION_FIELD, TO_JUNCTION_FIELD, EXPRESSION
Attribute Assistant Rules
Used to Generate Hansen Required Fields

- Populated Hansen Unique Identifiers based on Asset Type
- Entered Default Values for fields required by Hansen

<table>
<thead>
<tr>
<th>Required Field</th>
<th>Unknown/default value</th>
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<td>Facility Identifier</td>
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<td>Valve Type</td>
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<tr>
<td>UNITYPE</td>
<td>Same as Valve Type</td>
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Section 4
Takeaways
Issues Encountered

• Database redesign took much longer than anticipated
  - It wasn’t a simple matter of plugging the existing data into the new data model
  - Field types and sizes needed to be changed to match Hansen

• Data Extraction tool many iterations
  - Each conversion iteration required an extensive review by FWCU GIS Team
  - Found some issues with the source data, features had incorrect point type values

• Attribute Assistant did not work in a multiple user environment
  - Esri provided a patch to fix issue
Section 5
Next Steps
Hansen GeoAdministrator Tool

- Acts as interface between ESRI and Hansen Databases
- Loads to GIS features as Hansen Assets
- Synchronizes edits to GIS asset features with related Hansen asset record
Hansen Map Drawer

- Provides mapping capabilities to Hansen
- Associates Map Service Layers to related asset type
- Displays locations of work orders and service requests
Questions?

To learn more, please contact cpatterson@ema-inc.com