Fort Wayne GIS Evolution

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Agenda

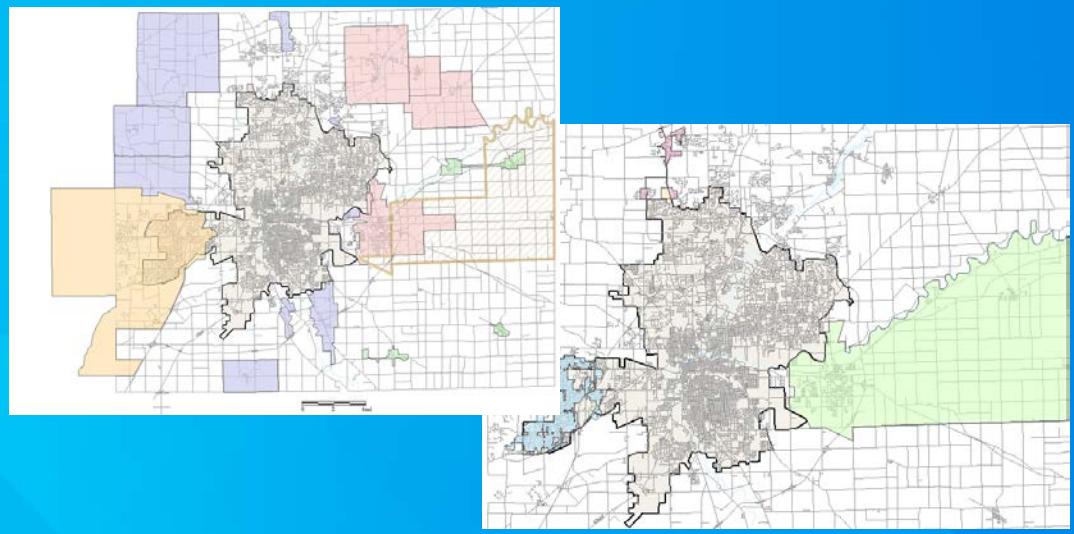
1. Overview of Fort Wayne City Utilities
2. Challenges
3. Solution
4. Takeaways
5. Next Steps

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

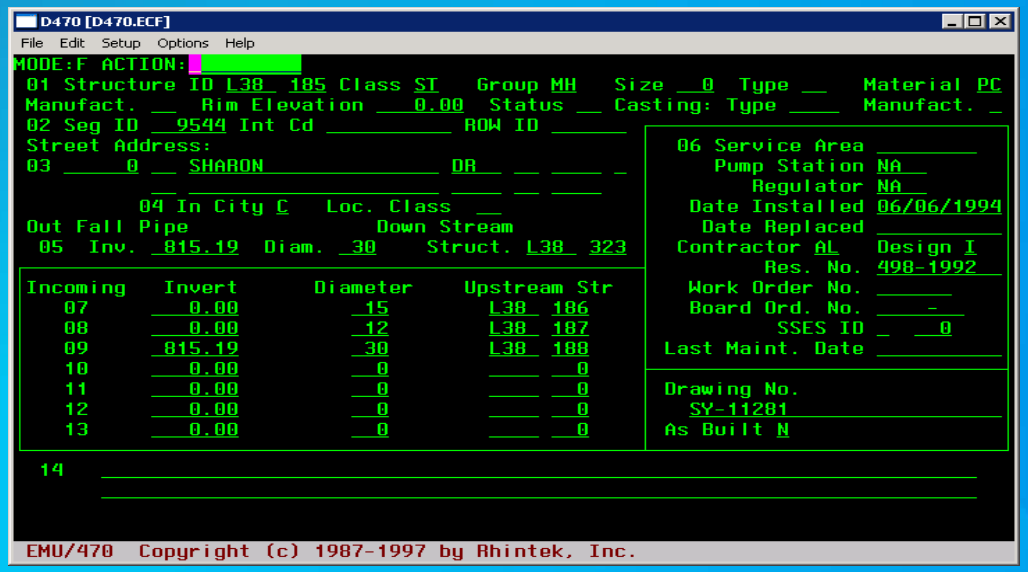
Challenges

Challenges

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

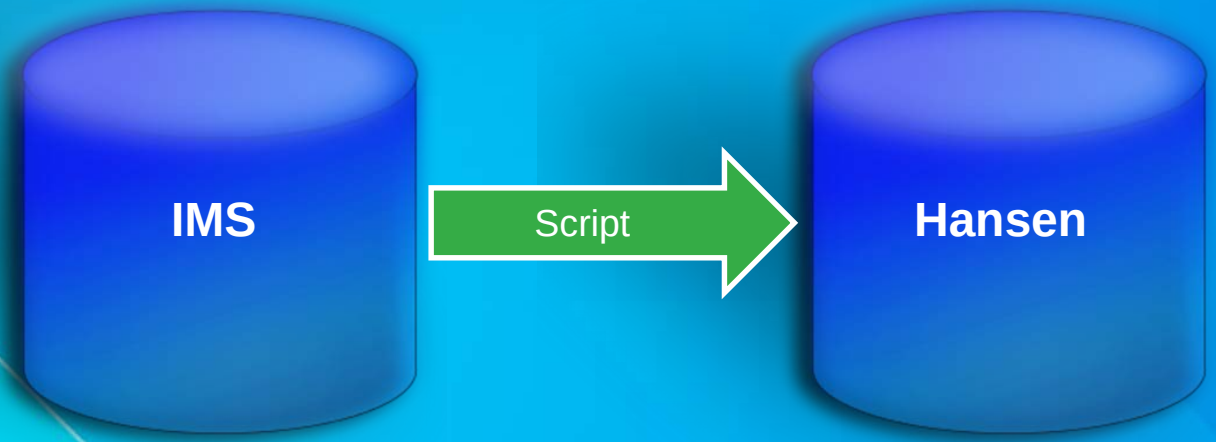
Challenges

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



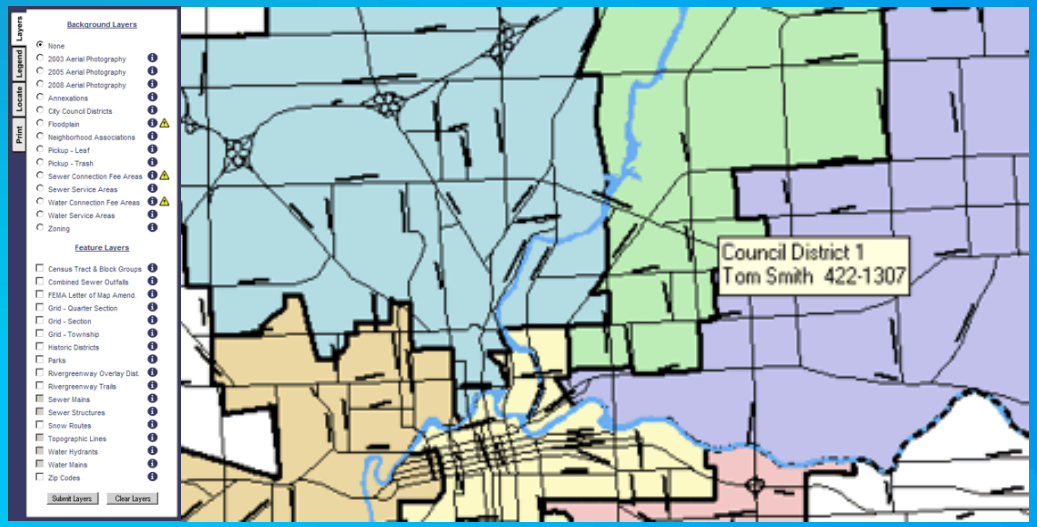
Challenges

- 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

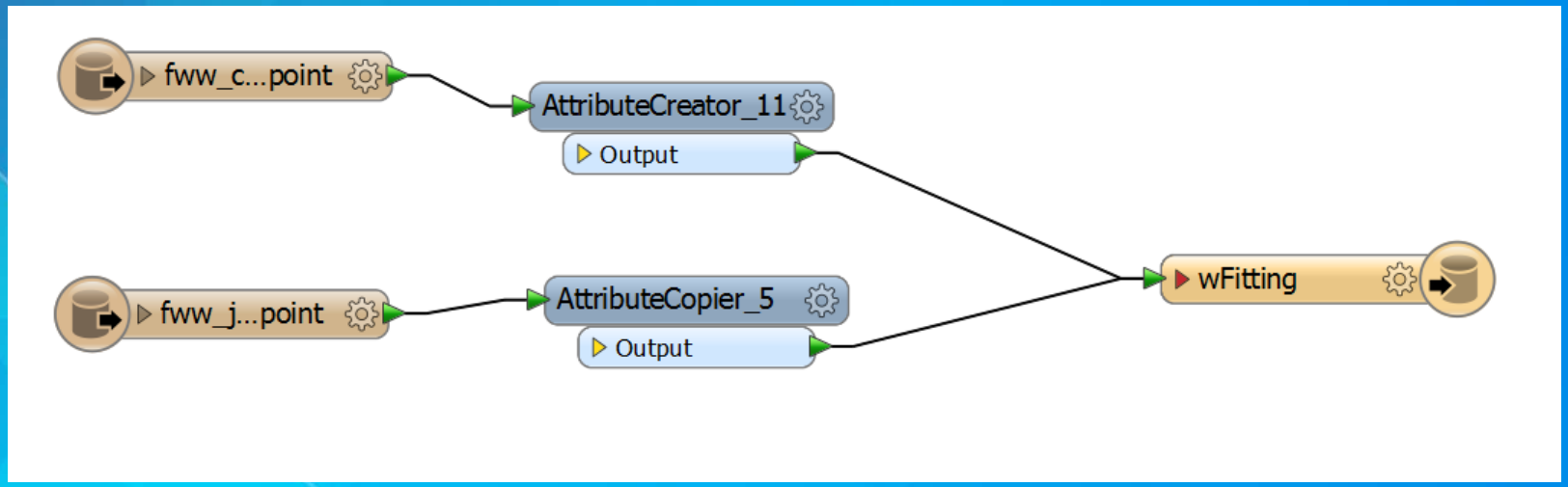
Solution

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

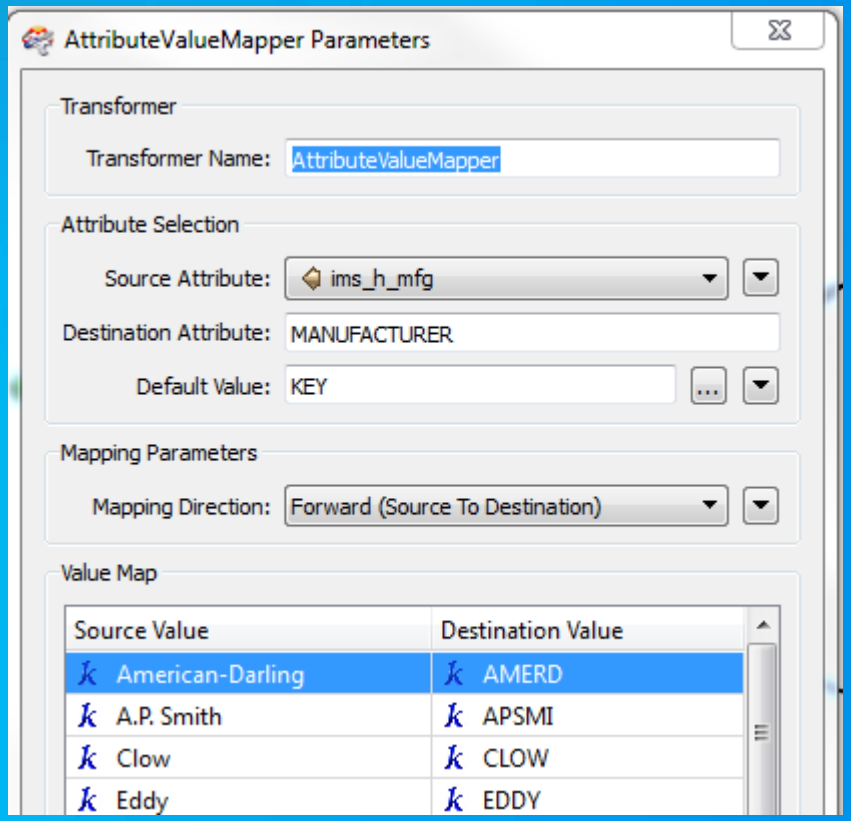
Spatial ETL Transformations

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



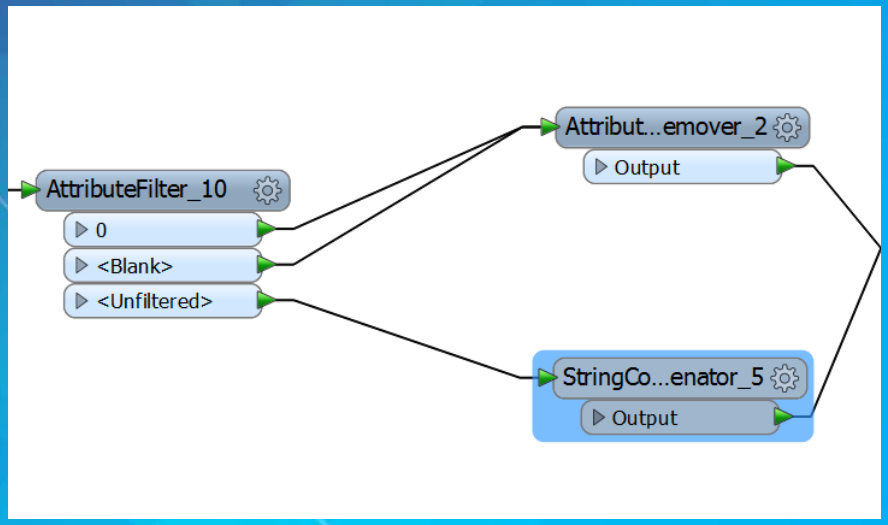
Spatial ETL Transformations

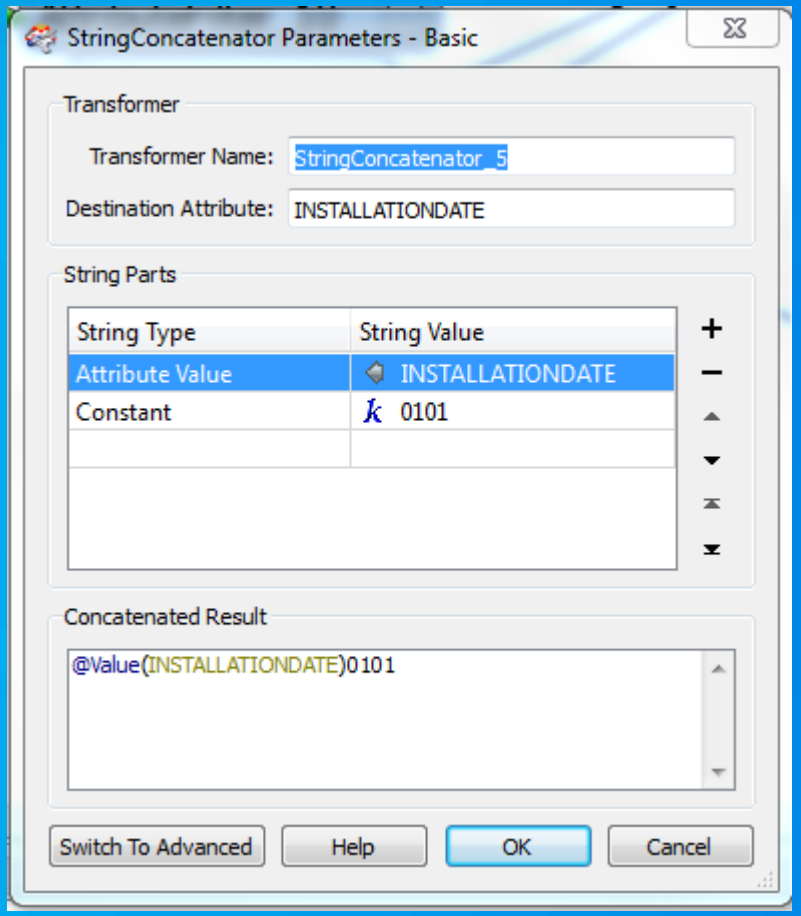
- Used AttributeValueMapper to convert attribute values to match the value in Hansen
  - Example – Manufacturer



Spatial ETL Transformations

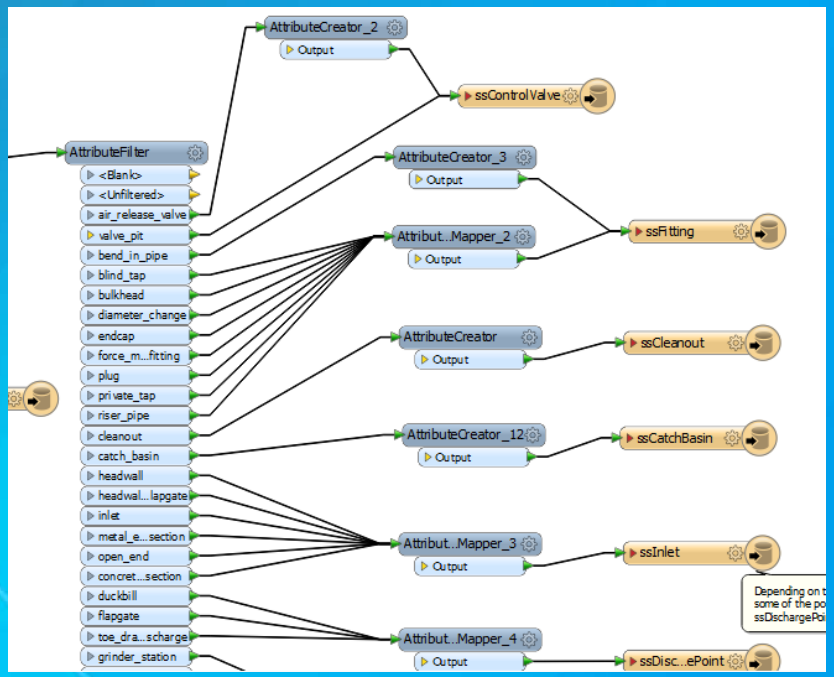
- Conditionally calculated attributes based on value
  - Example – Installation Date





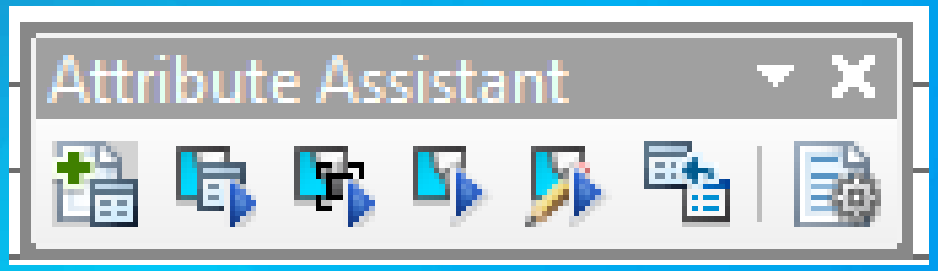
Spatial ETL Transformations

- **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_JUNTION_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

Water Control Valve

Required Field	Unknown/default value
Facility Identifier	
Valve Type	
UNITID	Same as Facility Identifier
COMPTYPE	46
MainCOMPKEY	1
AddressKey	1
SegmentCOMPKEY	1
IntersectionCOMPKEY	1
UNITTYPE	Same as Valve Type

Section 4

Takeaways

Issues Encountered

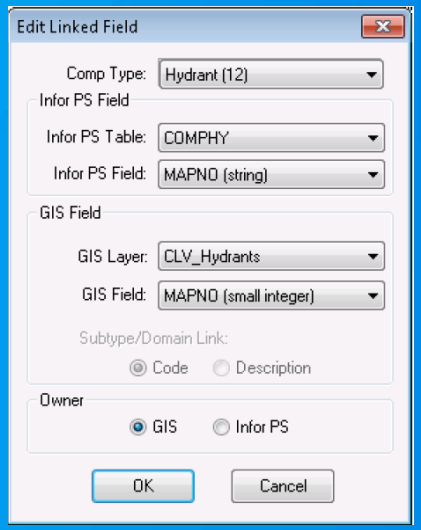
- Database redesign took much longer than anticipated
  - It wasn't a simple matter of plugging the existing data into the new data model
  - Field types and sizes needed to be changed to match Hansen
- Data Extraction tool many iterations
  - Each conversion iteration required an extensive review by 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
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