

# Automating Floor Plan Data Movement to ArcGIS

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# Introduction

- **CAD to GIS Sync for buildings is evolving**
- **Industry moving quickly based on drivers**
  - **Space/Asset reporting**
  - **Operations**
  - **Logistics**
  - **Public Safety, Security**
  - **Health and Safety**
- **This session is about building Enterprise Facilities Information Systems**

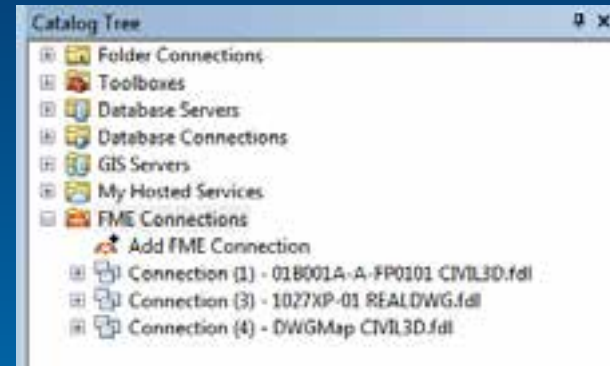


# Floorplan Challenges

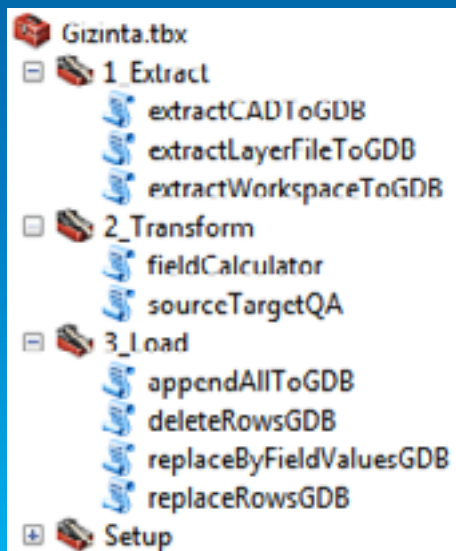
- **Seamless GIS database from 00s and 000s of drawings**
- **2D Floorplans to 3D seamless GIS**
- **Spatial Reference differences**
- **Identity and Attributes**
- **Geometry**
  - **Rooms within rooms**
  - **ArcGIS vs CAD**
- **Additional GIS Data creation**
  - **Auto-create more datasets**
  - **Often dependent on previous processing steps**
- **Change-only updates**
- **Source and target data needs evolve**
  - **Processing has to be modular**
- **QA and long transactions**

# Ways to Move Data to ArcGIS

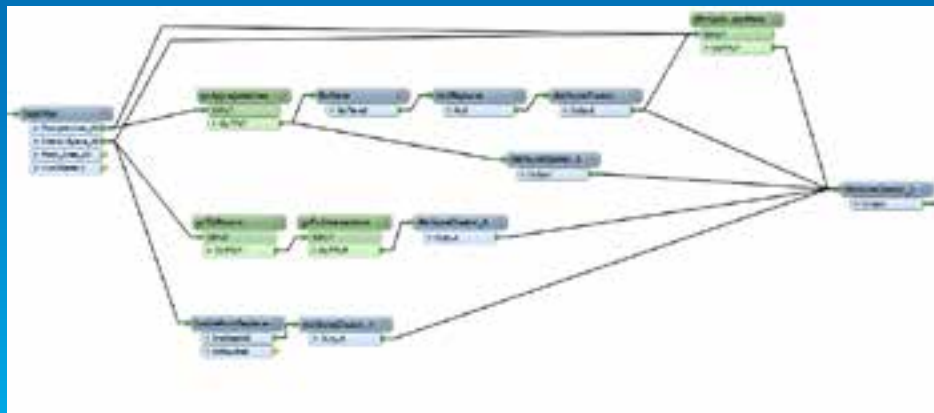
- Geoprocessing and Arcpy
- ArcGIS Data Interoperability Extension
- Safe Software's FME (Feature Manipulation Engine)



Desktop FME Connections



Arcpy scripts



FME Workbench files

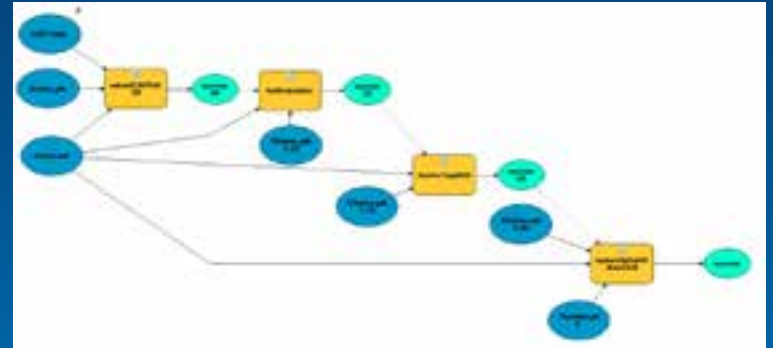
## 2 Key Patterns

- **Load/Reload data from source**
  - Typically 1-time or batch reload
  - Great for smaller campuses
  - Heavy on processing time
- **Sync Engine**
  - Enterprise implementations
  - Change detection
  - Optimized processing
  - Derived datasets



# Pattern 1 – Bulk Load

- Processing
  - Extract from CAD
  - Field Calculator
  - Source Target QA
  - Replace by Field Values
- Replaces 1 floor at a time
- Bulk update
- No derived processing
- Free download example on <http://gizinta.com>



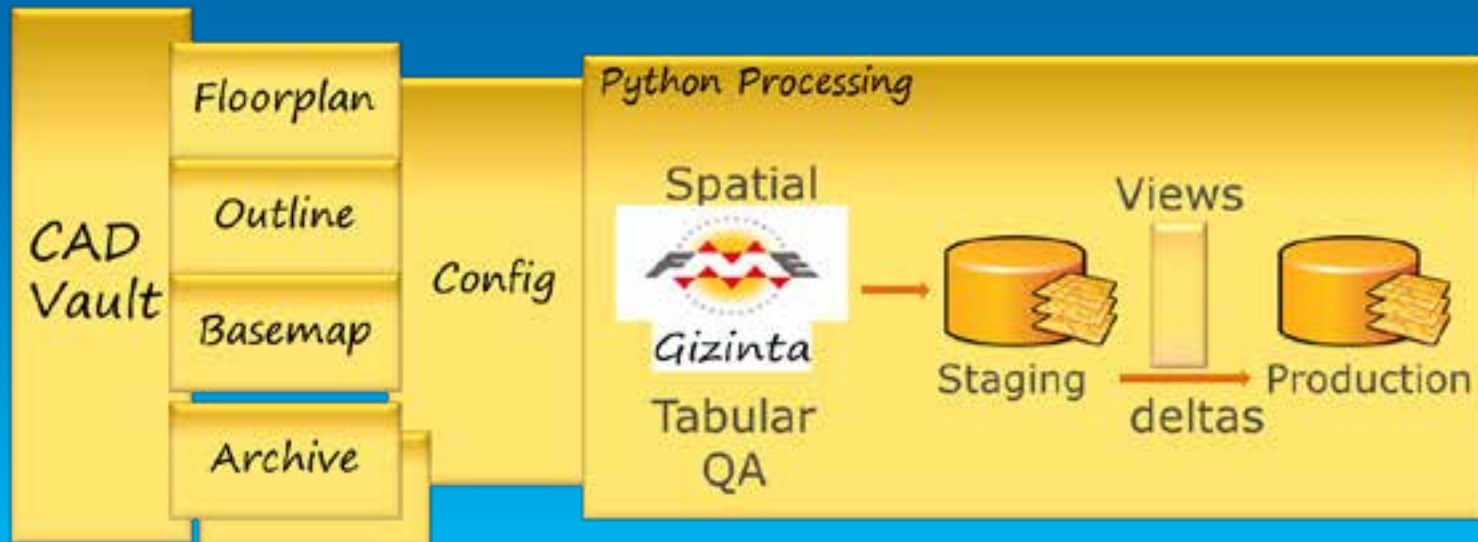
# Floorplan Drawing Setup



- Use to build source feature classes for ArcGIS
  - <https://www.youtube.com/watch?v=cXXK1IOpXrY>
  - <https://github.com/aaronch/floorplangis>
- Also possible to use Data Interop Extension to get more of the CAD properties for ArcGIS Desktop...
  - Like `autocad_extended_data{0}.handle{0}`

# Pattern 2 – Sync Engine

- Scheduled task
- Load to Staging
- Change-only updates
- Derived data





# Processing Logic

Folder

For each drawing

Run playlists **Config**

Call  
FME as subprocess



If no errors

Call  
Sync to Prod

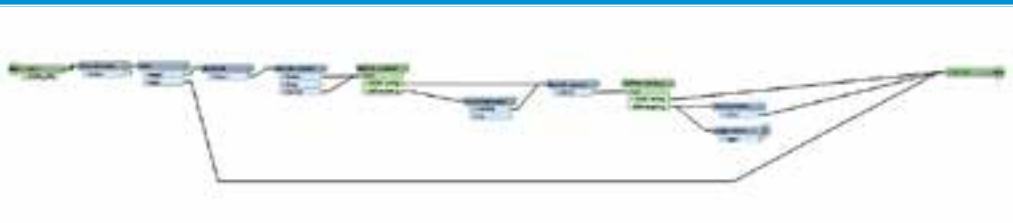
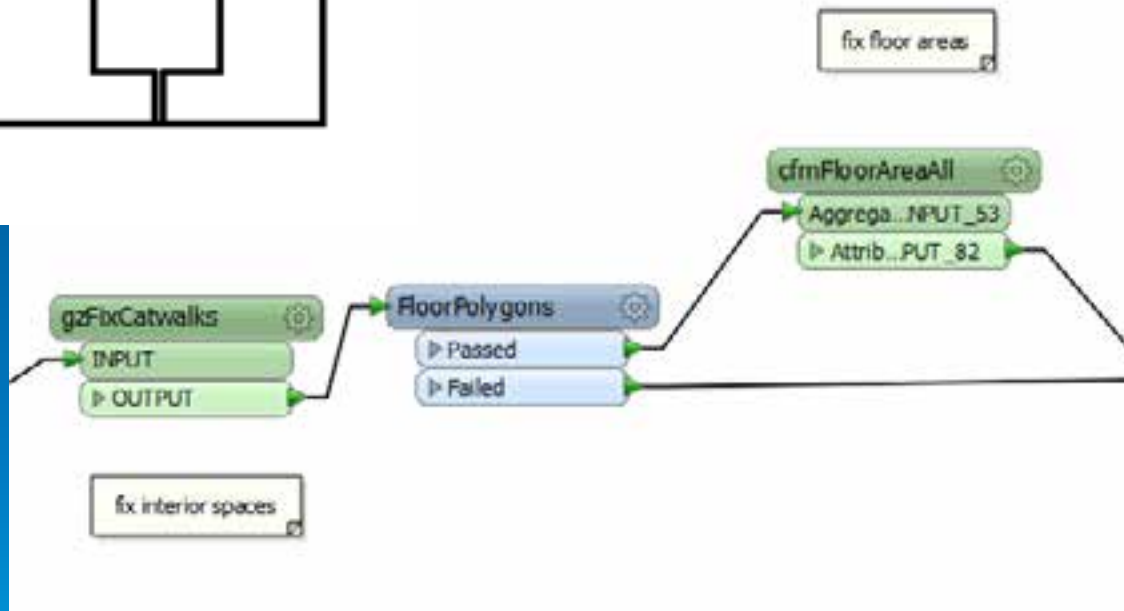
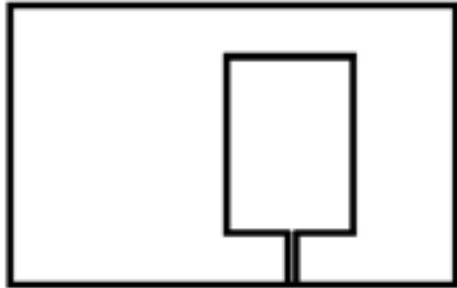
Gizinta  
arcpy



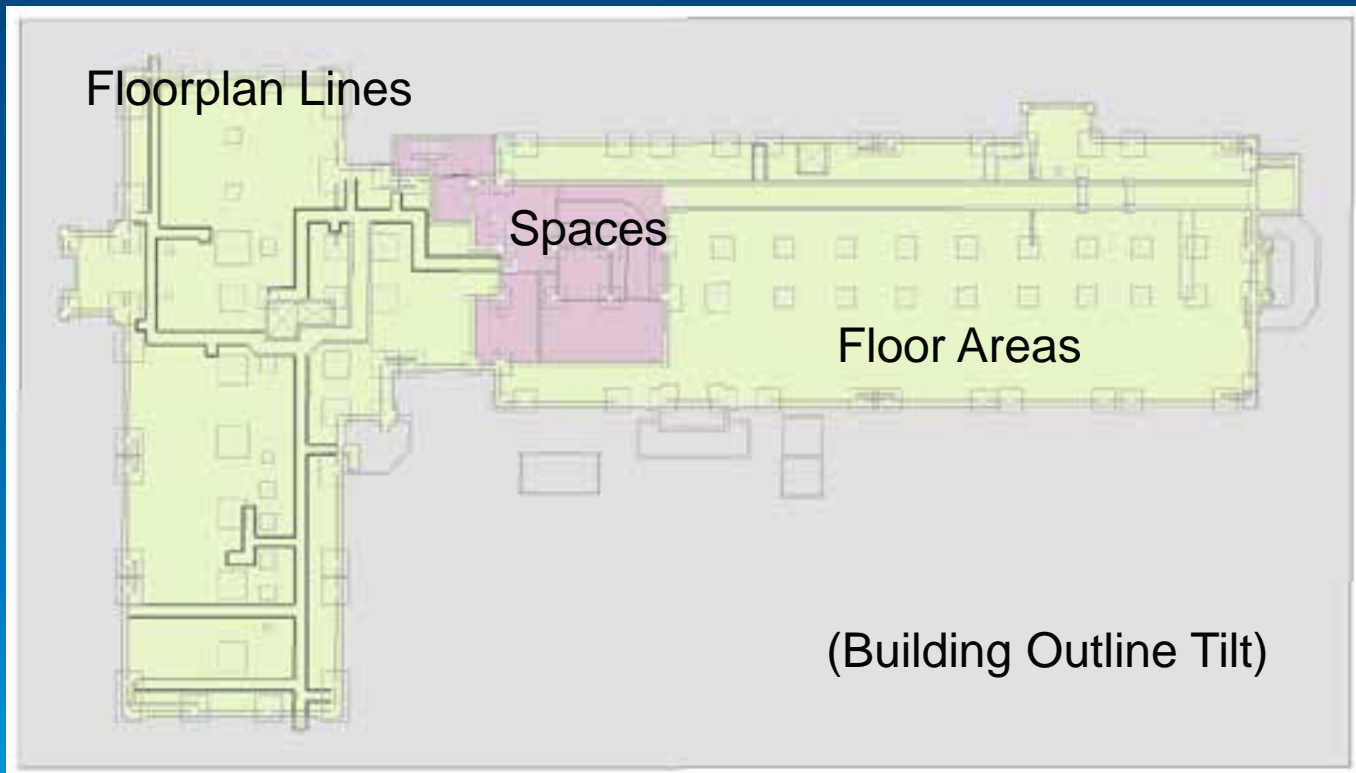
Example

```
py\\cfmLoaderFME.py fpLoadPlaylist.xml,fpDerivePlaylist.xml cfmDataConfig.xml True False
```

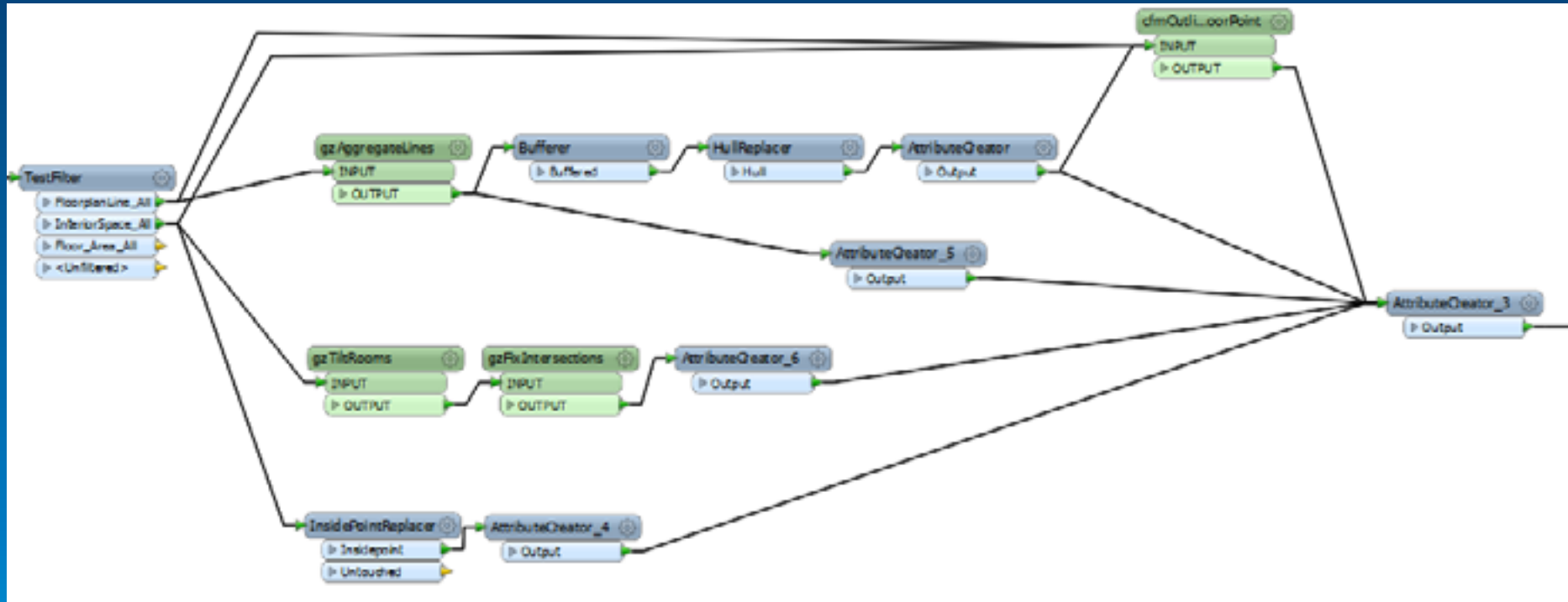
# Floorplan Loader



# Floorplan Datasets

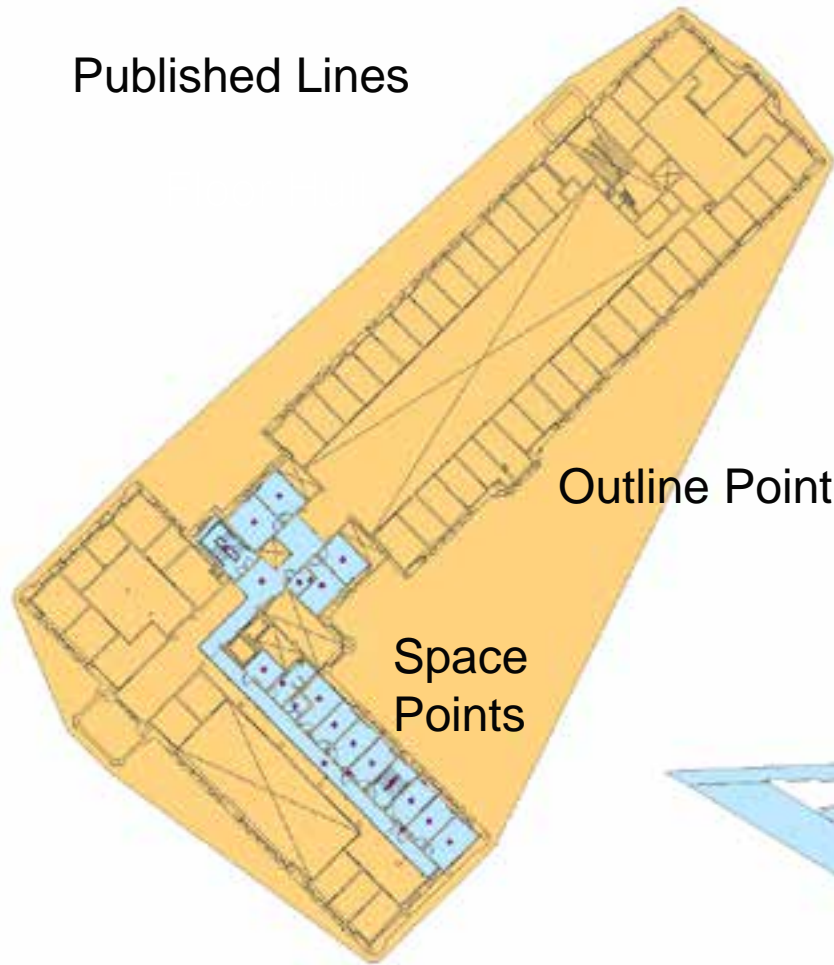


# Floorplan Derive



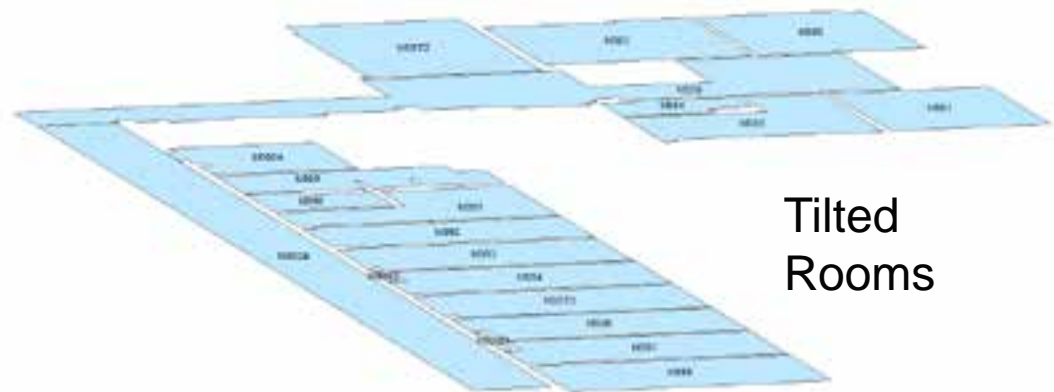
# Derived Datasets

Published Lines



Outline Point

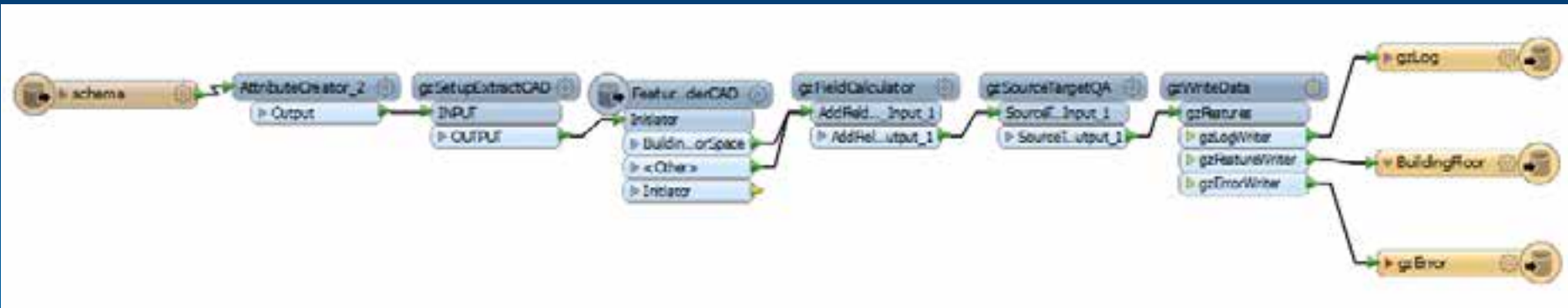
Space Points



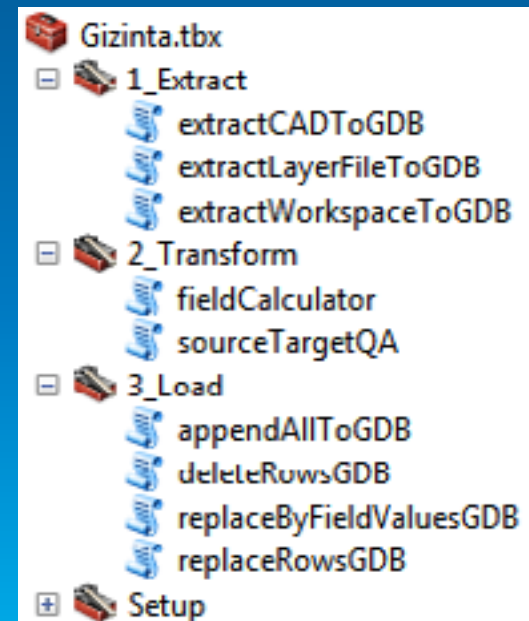
Tilted Rooms

# Gizinta for ArcGIS and FME

Make the simple stuff easier!



- Tools
  - FME Custom Transformers
  - Arcpy scripts
- Xml-driven extract from sources
- Attribute and geometry QA
- Logging and error handling
- Higher-level functionality/tools
- Xml-driven database update
- Playlists



# Contact Info

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