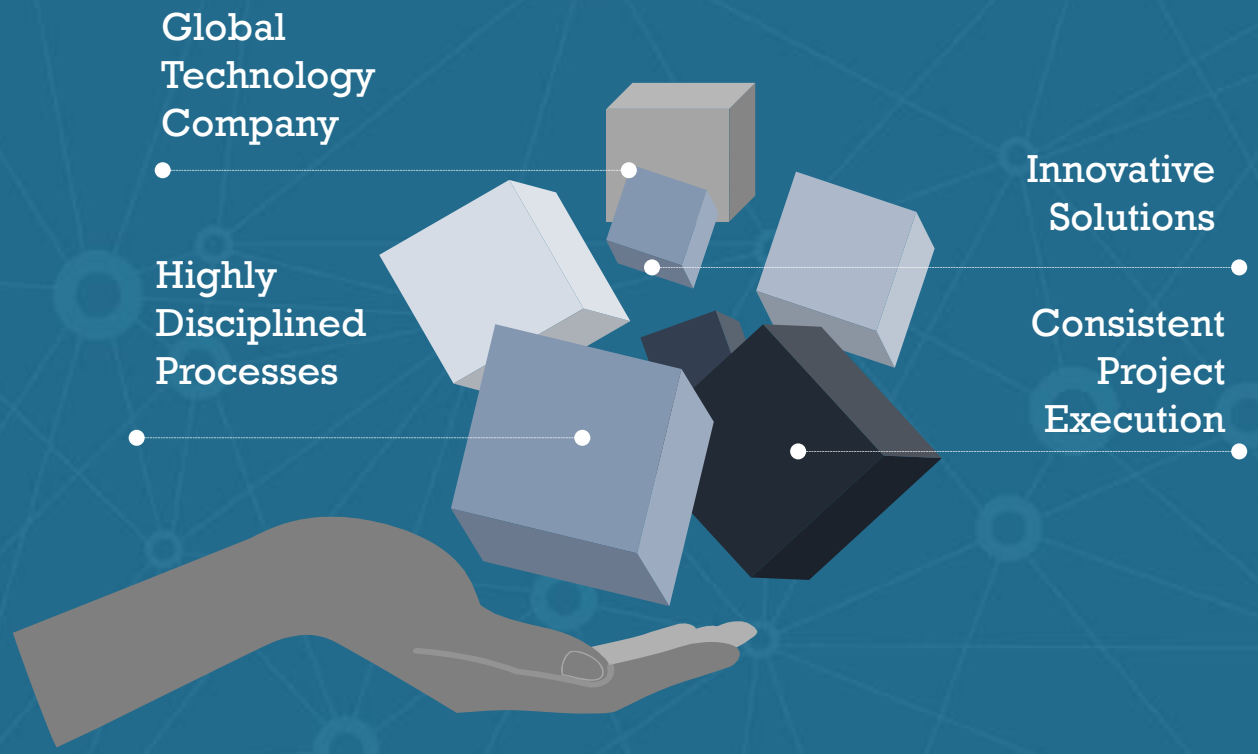
Processing Building Plans using FME Server

Brooks E. Kelley, Avineon

Corporate Mission



- Avineon is a global technology company specializing in Information Technology, Geospatial, BIM, and Engineering Services for government and private industry.
- We deliver total system solutions that provide outstanding value by applying our innovative approaches, skilled people, and disciplined processes.

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Company Overview

- **Privately Held Information Technology Firm**
  - Founded in 1992
  - Financially Stable – Debt Free
- **Headquartered in McLean, Virginia**
- **Over 1,000 Employees Worldwide**
- **Quality and Process Driven**
  - CMMI® Maturity Level 3
  - ISO 9001:2015
  - ITIL v3
- **Extensive Experience in Federal Government and Industry**
- **Strong Geospatial Program**
  - Esri Business Partner for Over Ten Years
  - Safe Software FME Partner and Solution Provider
- **Offshore Capability**
- **100% Project Success Rate**

SAFE SOFTWARE™ AUTHORIZED PARTNER

ESRI Technology AUTHORIZED BUSINESS PARTNER

Microsoft CERTIFIED Partner

ORACLE PartnerNetwork MEMBER PARTNER

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Global Presence

North America
- McLean, VA
- Saint Petersburg, FL
- Traverse City, MI

Europe
- London (UK)
- Paris (France)
- Montpellier (France)
- Lier (Belgium)
- Roosendaal (Netherlands)
- Waardenburg (Netherlands)

Asia
- Hyderabad (India)
- Kakinada (India)
- Abu Dhabi (UAE)

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Client Profile

1. Large Federal Agency.
2. National in scope with offices in all states and most territories.
3. Approximately 800 facilities with more than 5,000 floors.
4. 40 million square feet (3.7 km^2) of rentable space.
5. Data maintained in AutoCAD.
6. Data analysed/archived in IBM Tririga IWMS (Integrated Workplace Management System).

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The Federal Building Floorplan Challenge

AVINEON
Visualize IT. See IT Through.

1. One agency owns buildings, others use them.
2. Owner and users have different priorities, requirements, and standards.
3. Owner agency divided into regions; each region does things a bit differently.
4. User agency has one standard.

   PLINE.dwg – Gross, GrossMeasured, Space, Labels layers

   ARCH.dwg – Background features e.g. doors, sinks, stairs.
5. Have things changed?

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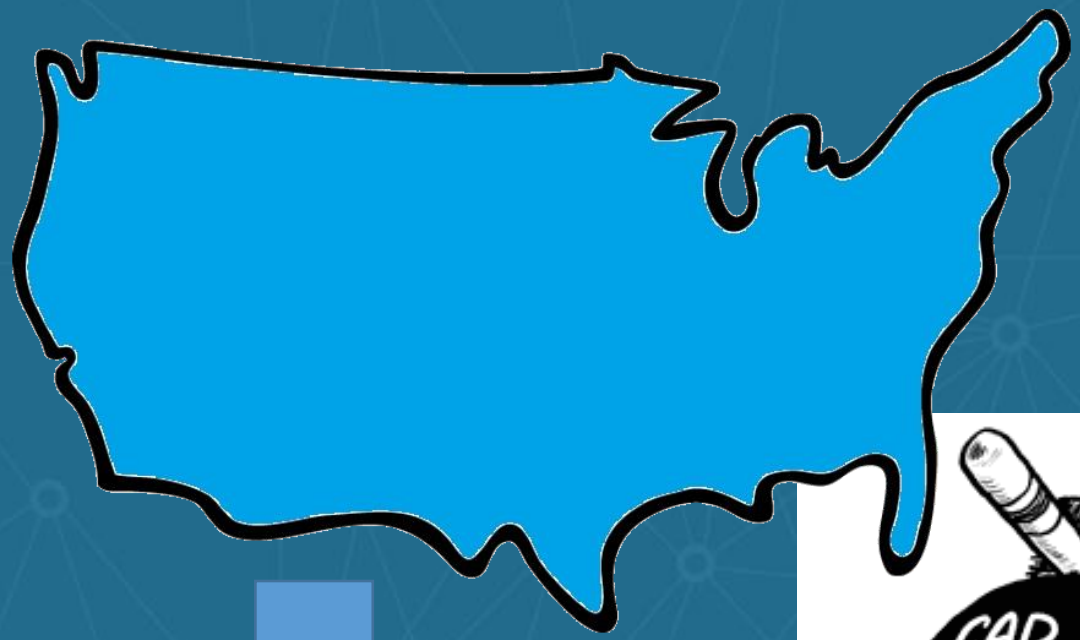
1. Overall Workflow



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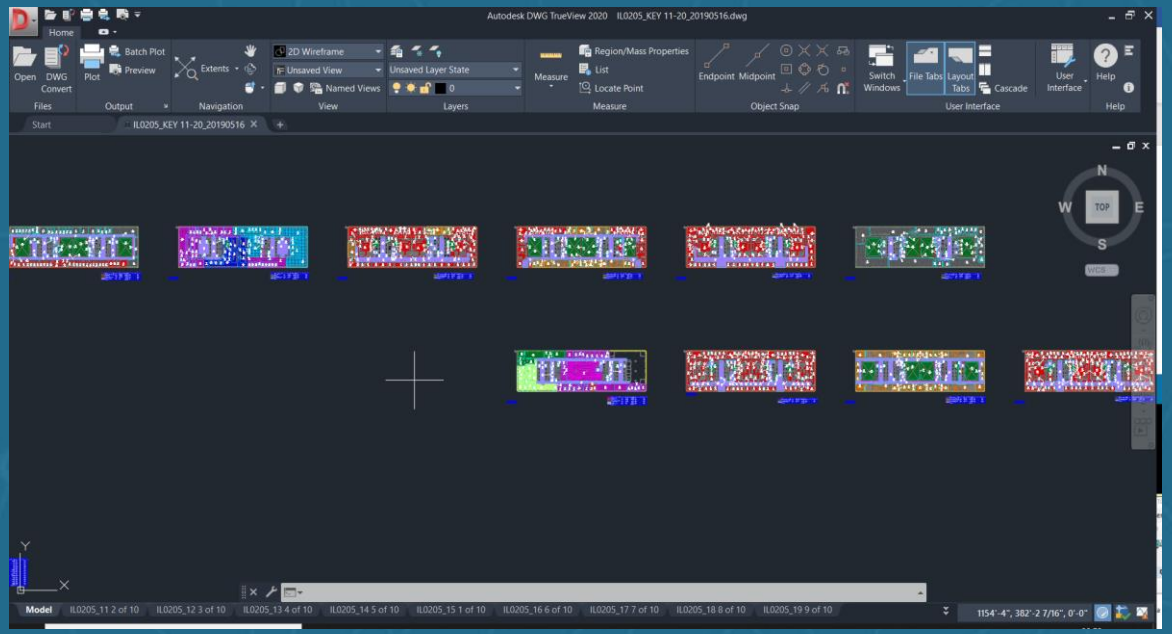
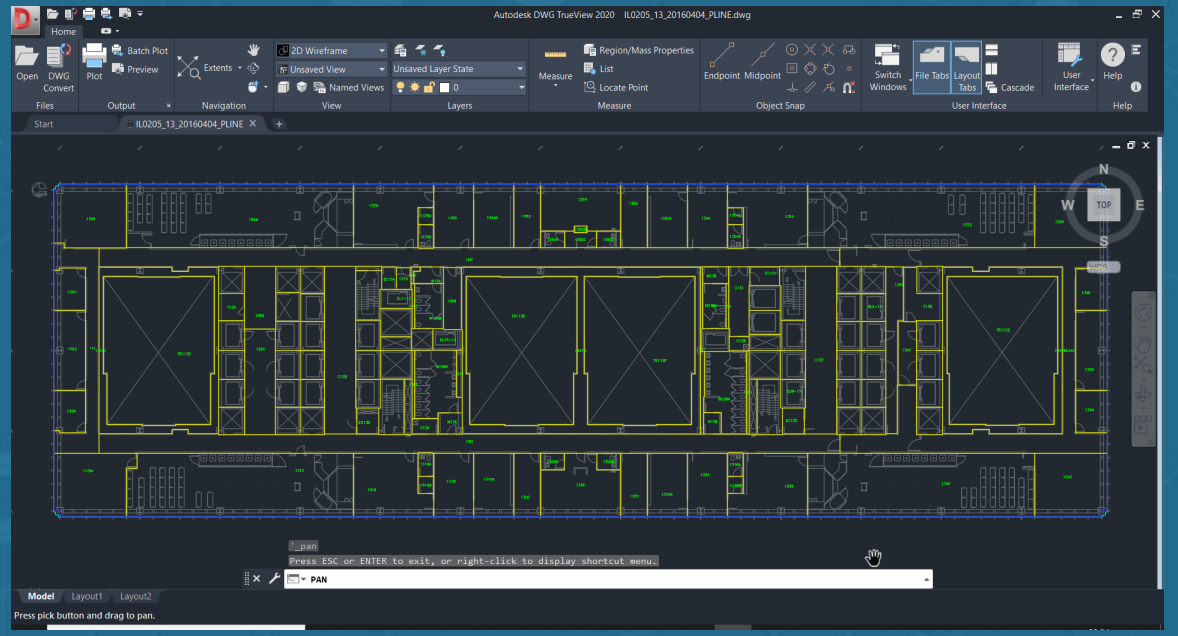
1. Overall Workflow Example





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Why FME?

1. At its core, this is an ETL process involving data standardization.
2. Need to run this same process on many input drawings.

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Why FME Server?

1. Lots of drawings.
2. Coming in a various times.
3. Being processed by several people.
4. Wanting to “batch” these.
5. Version control.

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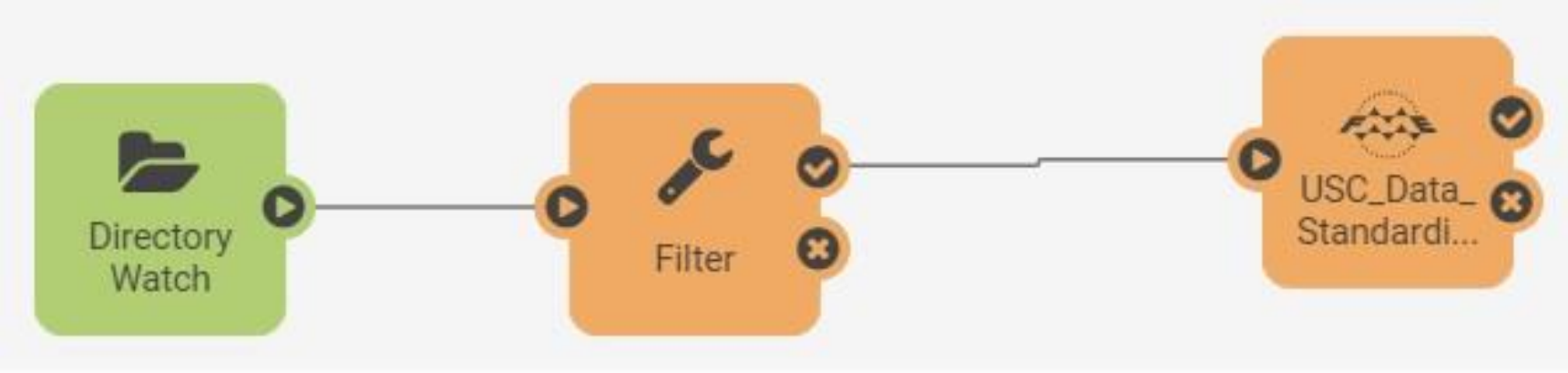
FME Server Automations

A means to automate data-driven workflows within FME Server using *Triggers* and *Actions*.

For example, watch a folder, when a new AutoCAD drawing appears, run an FME workspace!



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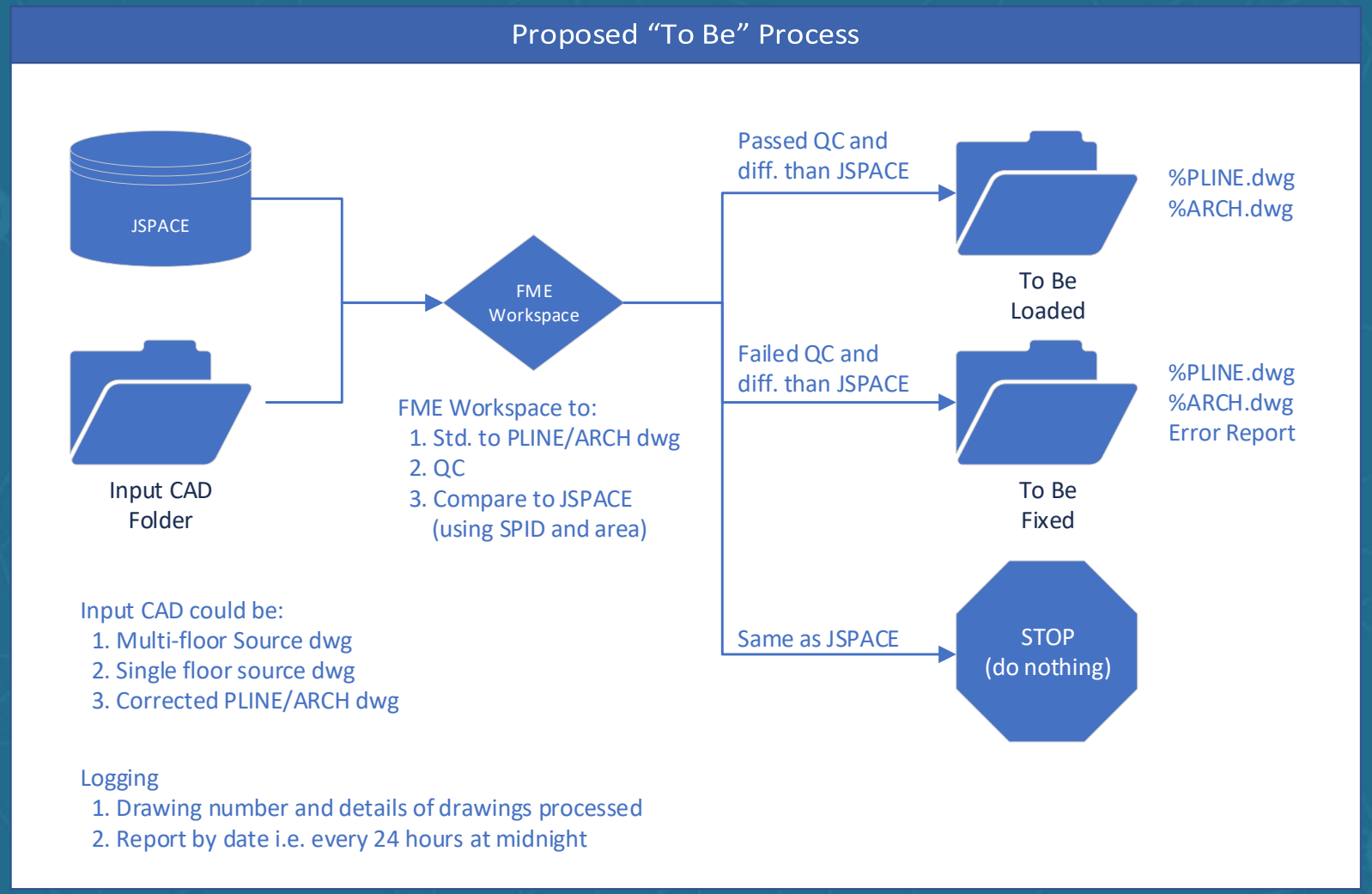
1. Overall Workflow



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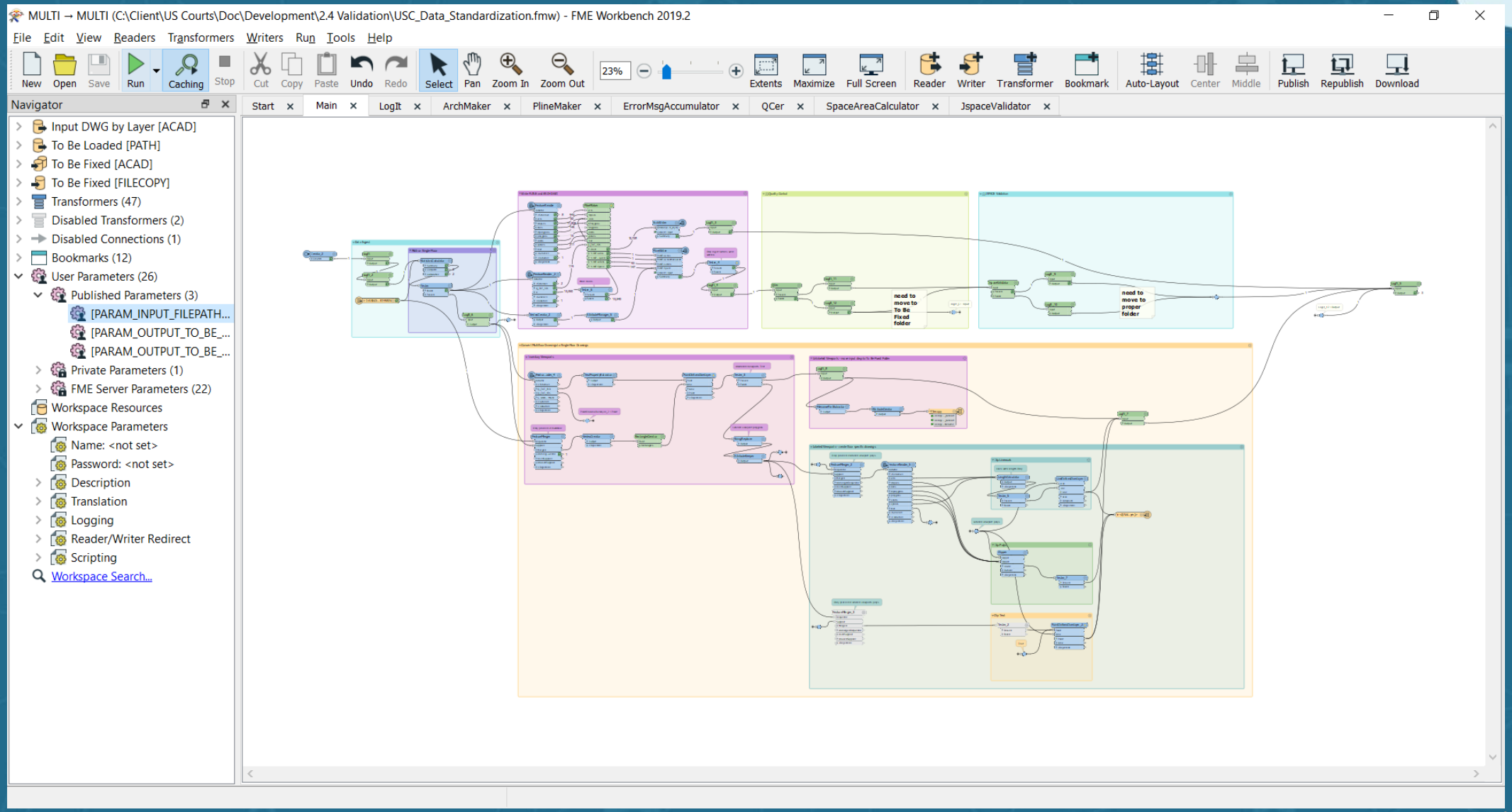
The Workspace



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Custom Transformers

Transformer	Purpose
Main	Ingest, general processing, and drawing output.
PlineMaker	Standardize drawings to Agency PLINE specification.
ArchMaker	Standardize drawings to Agency ARCH specification.
Qcer	Perform Quality Control of standardized drawings.
ErrorMsgAccumulator	Write to error report.
LogIt	Writes to log.
JSpaceValidator	Validate standardized and QCed drawings against those in Tririga database.
SpaceAreaCalculator	Calculates space-specific areas of a standardized and QCed PLINE drawing.

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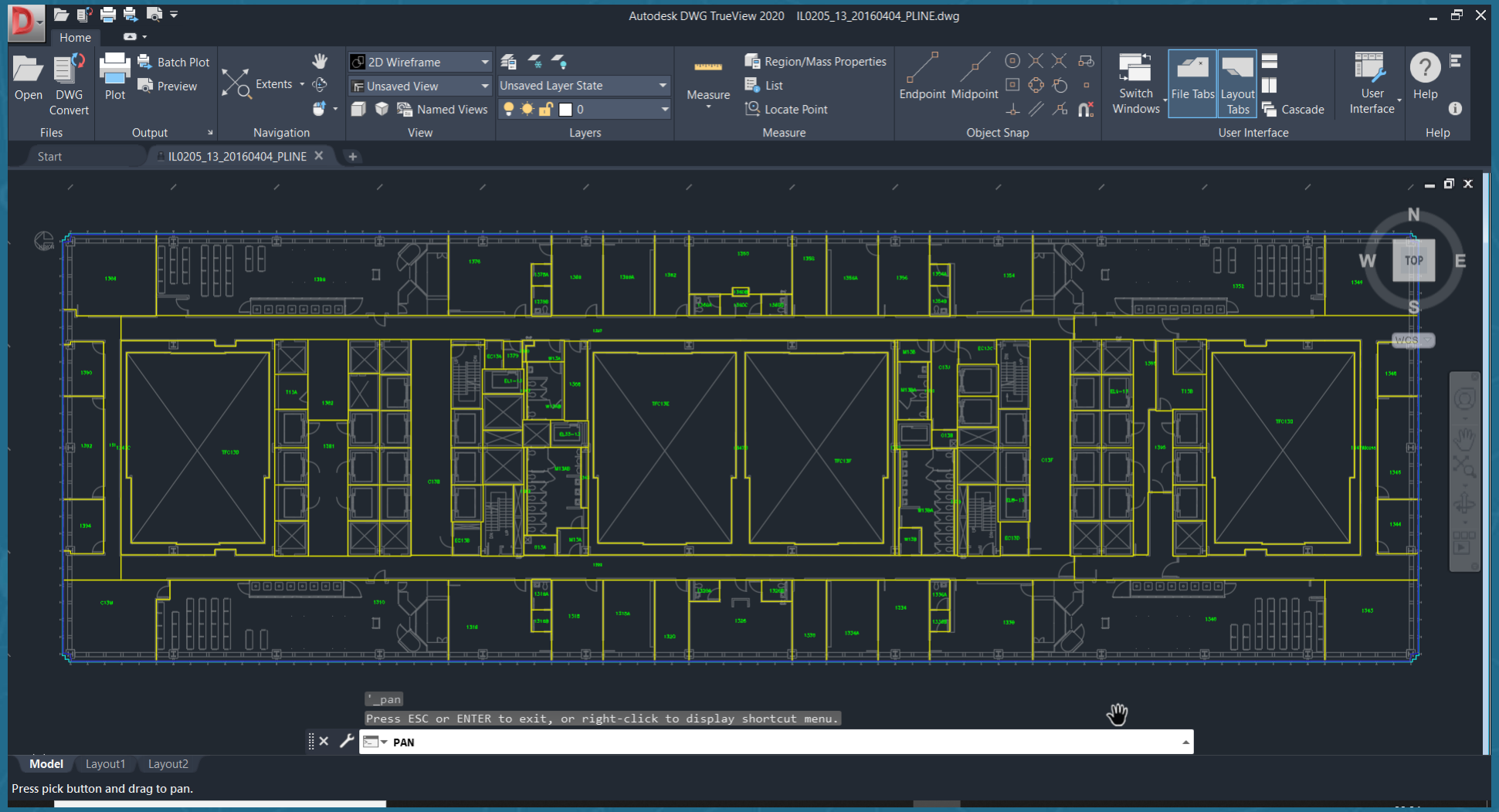
Output: PLINE and ARCH Drawings



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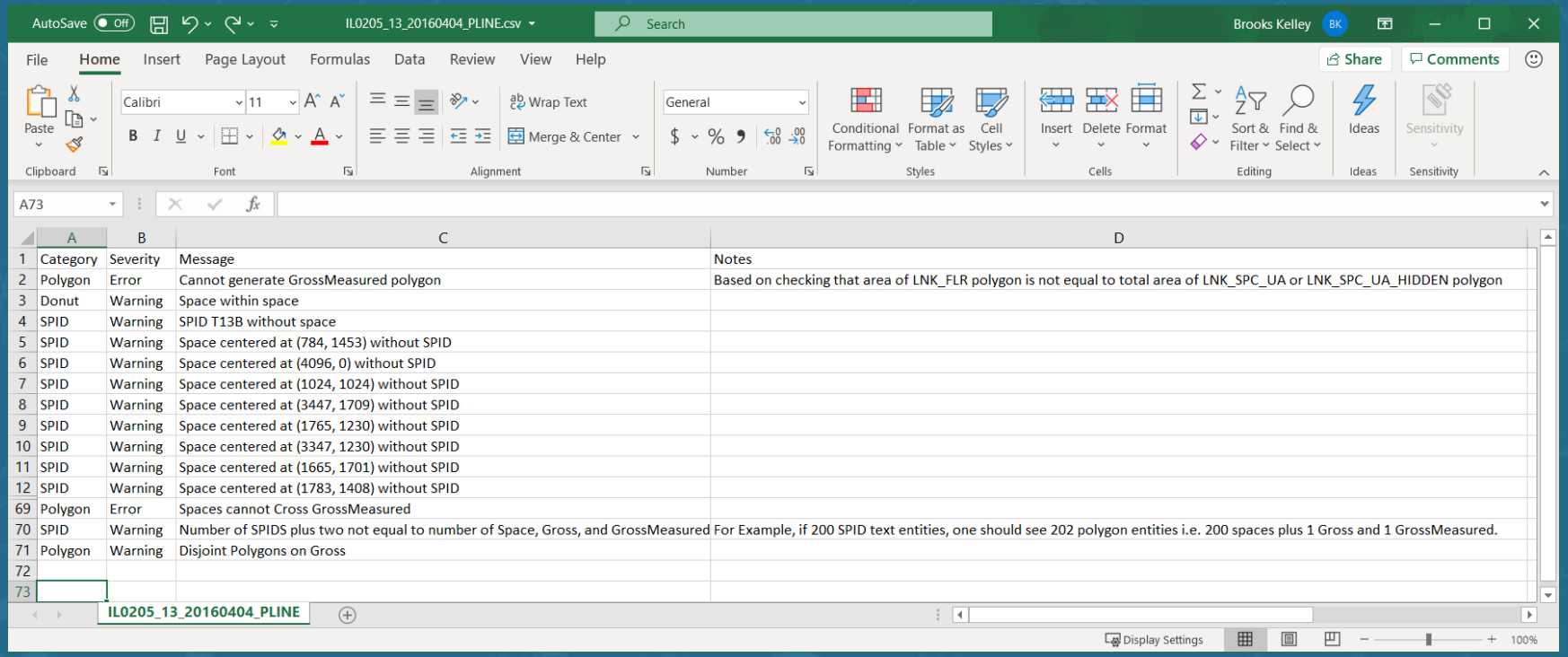
Output: QC Error Report

Drawing-specific csv file listing errors.



	A	B	C	D
1	Category	Severity	Message	Notes
2	Polygon	Error	Cannot generate GrossMeasured polygon	Based on checking that area of LNK_FLR polygon is not equal to total area of LNK_SPC_UA or LNK_SPC_UA_HIDDEN polygon
3	Donut	Warning	Space within space	
4	SPID	Warning	SPID T13B without space	
5	SPID	Warning	Space centered at (784, 1453) without SPID	
6	SPID	Warning	Space centered at (4096, 0) without SPID	
7	SPID	Warning	Space centered at (1024, 1024) without SPID	
8	SPID	Warning	Space centered at (3447, 1709) without SPID	
9	SPID	Warning	Space centered at (1765, 1230) without SPID	
10	SPID	Warning	Space centered at (3347, 1230) without SPID	
11	SPID	Warning	Space centered at (1665, 1701) without SPID	
12	SPID	Warning	Space centered at (1783, 1408) without SPID	
69	Polygon	Error	Spaces cannot Cross GrossMeasured	
70	SPID	Warning	Number of SPIDS plus two not equal to number of Space, Gross, and GrossMeasured	For Example, if 200 SPID text entities, one should see 202 polygon entities i.e. 200 spaces plus 1 Gross and 1 GrossMeasured.
71	Polygon	Warning	Disjoint Polygons on Gross	
72				
73				

IL0205_13_20160404_PLINE.csv

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Output: Daily Log File

Date-specific text file listing work done over a 24-hour, midnight-to-midnight period.

```
======================
IL0205_11_20160404.dwg
----------------------
2019.11.01 10:06:00 IL0205_11_20160404.dwg ingested.
2019.11.01 10:06:05 IL0205_11_20160404.dwg standardized to PLINE.dwg.
2019.11.01 10:06:07 IL0205_11_20160404.dwg standardized to ARCH.dwg.
2019.11.01 10:06:10 IL0205_11_20160404_PLINE.dwg passed QC.
2019.11.01 10:06:15 IL0205_11_20160404_ARCH.dwg passed QC.
2019.11.01 10:06:20 IL0205_11_20160404_PLINE.dwg validated against JSPACE.
Source file is different than corresponding JSPACE data.
2019.11.01 10:06:25 IL0205_11_20160404_PLINE.dwg and
IL0205_11_20160404_ARCH.dwg output to the To Be Loaded folder. Please use CAD
Integrator to load this data.
2019.11.01 10:06:30 IL0205_11_20160404.dwg processing complete.
```

USC_20191101.log

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Summary

Here, FME Server is an ideal tool to:

1. Effectively process *a lot* of data.
2. Standardize, QC, and validate data.
3. Improve data quality
4. Save staff time.

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Thank You

AVINEON
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Thank you!

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