



Use of FME to support WEL Networks ArcGIS Online deployment

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Background

- WEL Networks GIS Manager ~ 5 Years
- Background in GIS System Admin and Data Management roles ~ 15-20 years
- FME user for 10+ years

- WEL undertaking an ArcGIS Online / Explorer App deployment

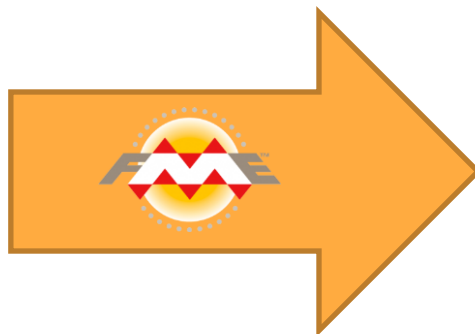




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G/Technology



ArcGIS Online



Explorer App



Simple Reader to Writer Translation?

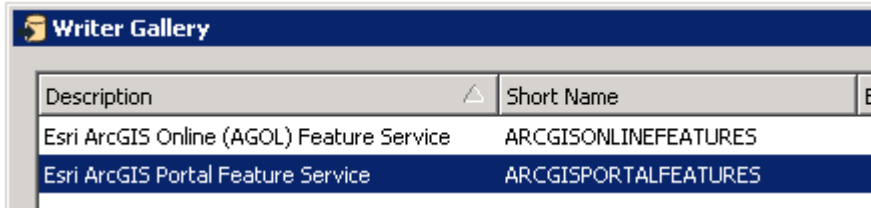
Several Challenges...

- 1) Which writer and getting support
- 2) Getting through the defences
- 3) Simple but too big and too slow
- 4) Ordinals matter
- 5) Still too slow
- 6) Failure is not an option (Parts 1 and 2)



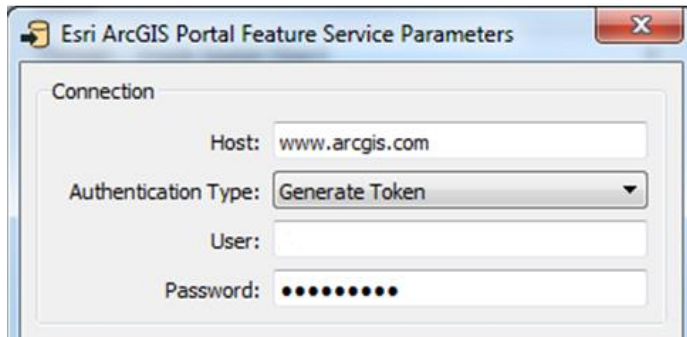
1) Which writer and getting support

Failed at first hurdle! Known problem with AGOL writer



Description	Short Name
Esri ArcGIS Online (AGOL) Feature Service	ARCGISONLINEFEATURES
Esri ArcGIS Portal Feature Service	ARCGISPORTALFEATURES

Have to use Portal writer to www.arcgis.com



Esri ArcGIS Portal Feature Service Parameters

Connection

Host:

Authentication Type:

User:

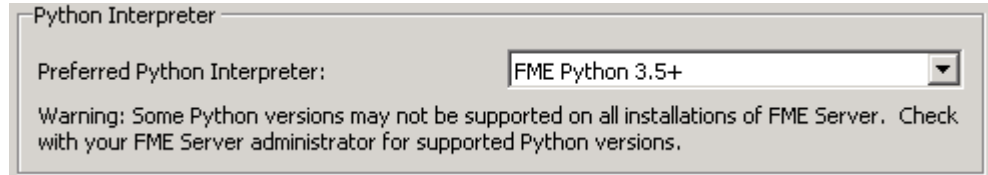
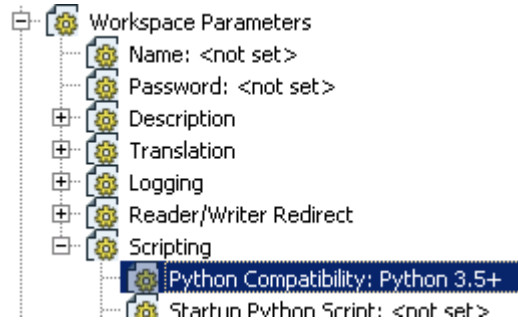
Password:



1) Which writer and getting support...

Python version is important for AGOL writer, must be 3.5+

From FME 2017 must be set in Workbench and not just Preferences

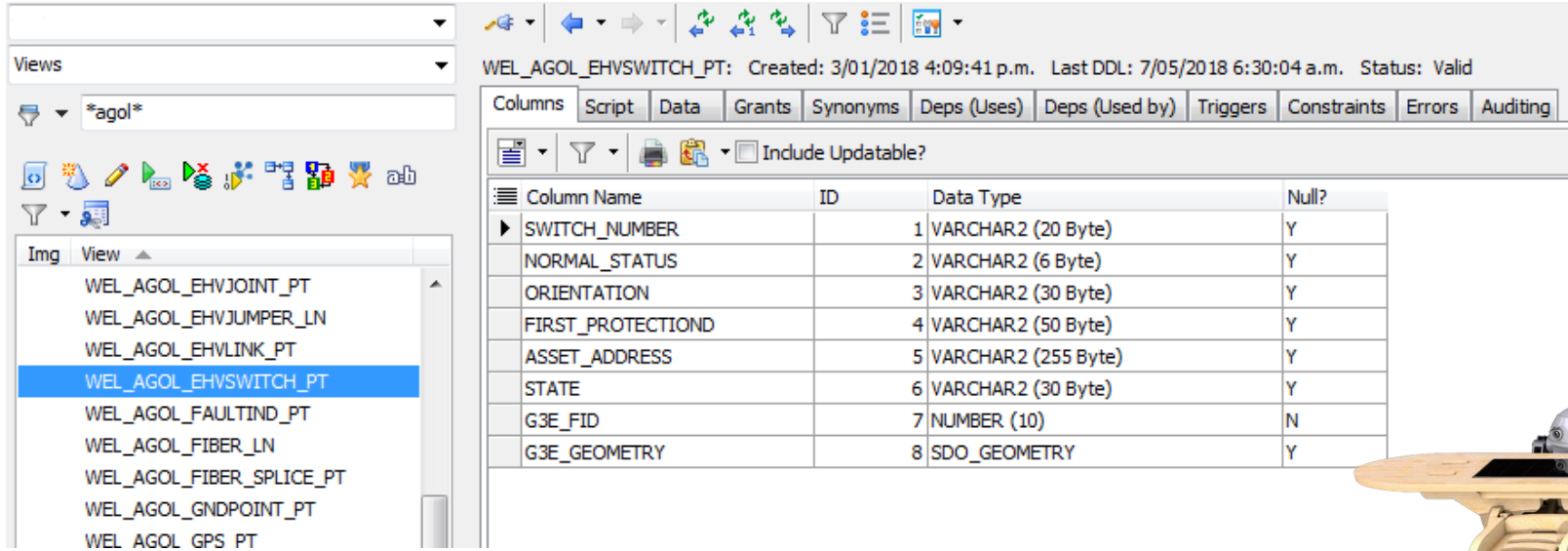


Again FME support helped us find this out quickly



1) Which writer and getting support...

On Oracle side simply set up new views for everything we needed so we could tailor the source data easily.



The screenshot displays the Oracle SQL Developer interface. On the left, a tree view shows a folder named '*agol*' containing several views, with 'WEL_AGOL_EHVSWITCH_PT' selected. The main window shows the 'Columns' tab for this view, displaying a table with the following columns:

Column Name	ID	Data Type	Null?
SWITCH_NUMBER	1	VARCHAR2 (20 Byte)	Y
NORMAL_STATUS	2	VARCHAR2 (6 Byte)	Y
ORIENTATION	3	VARCHAR2 (30 Byte)	Y
FIRST_PROTECTIOND	4	VARCHAR2 (50 Byte)	Y
ASSET_ADDRESS	5	VARCHAR2 (255 Byte)	Y
STATE	6	VARCHAR2 (30 Byte)	Y
G3E_FID	7	NUMBER (10)	N
G3E_GEOMETRY	8	SDO_GEOMETRY	Y





2) Getting through the defences

As a key utility WEL has very robust firewall and security

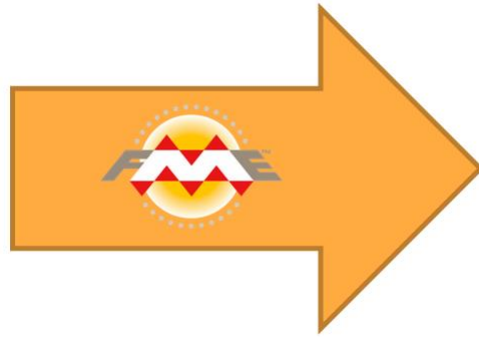
Needed significant IT support and 'buy in' to get firewall policy changed to allow data to be written to www.arcgis.com from GIS servers

- Only allowed access to needed URL
- Only from GIS Admin accounts
- May need to exclude traffic from virus scanning
- Other site dependent changes ???



So still a simple Translation?

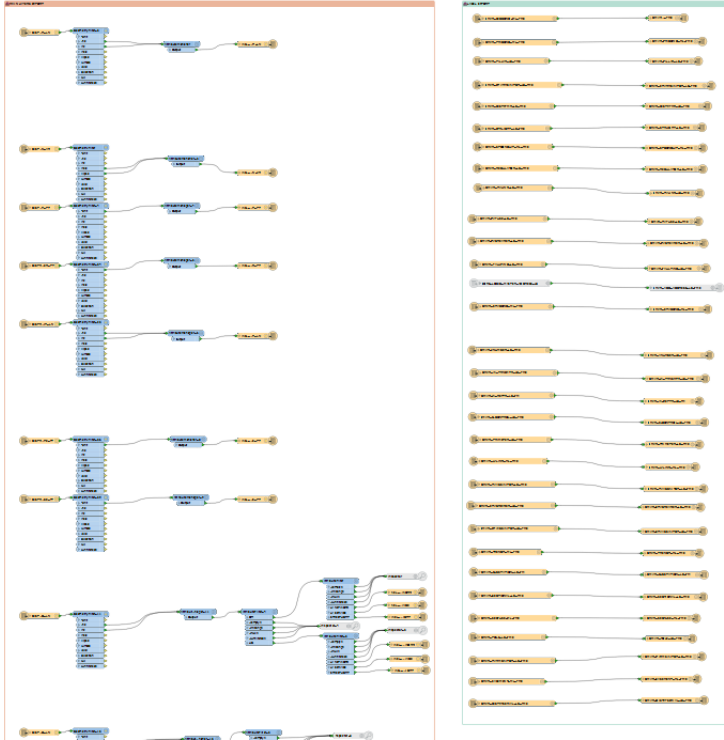
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3) Simple Read – Truncate – Write...



...but too big and too slow

...prone to failure

...data availability

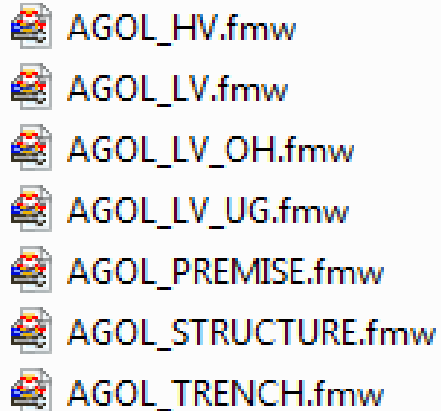
... ☹️



3) Simple ...but too big and too slow

Split

into smaller logical groups to be more manageable



- AGOL_HV.fmw
- AGOL_LV.fmw
- AGOL_LV_OH.fmw
- AGOL_LV_UG.fmw
- AGOL_PREMISE.fmw
- AGOL_STRUCTURE.fmw
- AGOL_TRENCH.fmw

- 5-15 Layers in each
- Each 30-60 minutes
- Spread out schedule throughout the day
- Delete quicker than truncate



4) Ordinals matter

AGOL manages and identifies layers in the feature service by 'ORDINAL' rather than feature/name.

ArcGIS Pro – Layer Source

▼ Data Source Set Data Source...

Data Type	Feature Service Feature Class
Url	https://services8.arcgis.com/HBLWEpJq3NptUbZf/ai
Feature Class	0
Feature Dataset	Not available

- When you delete and recreate using FME the ordinal can/will change
- Connected to workbench write order
- Difficult (impossible?) to control
- Can end up with wrong data in feature!

ArcGIS Online – Feature Service

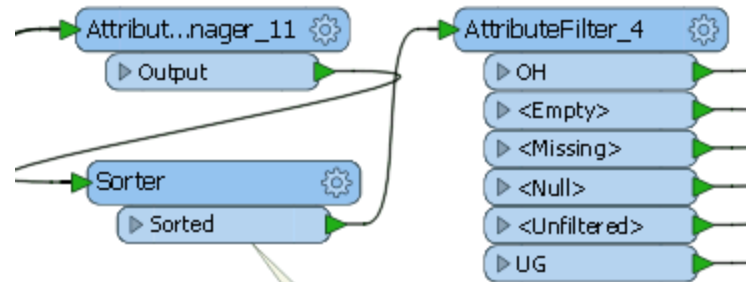
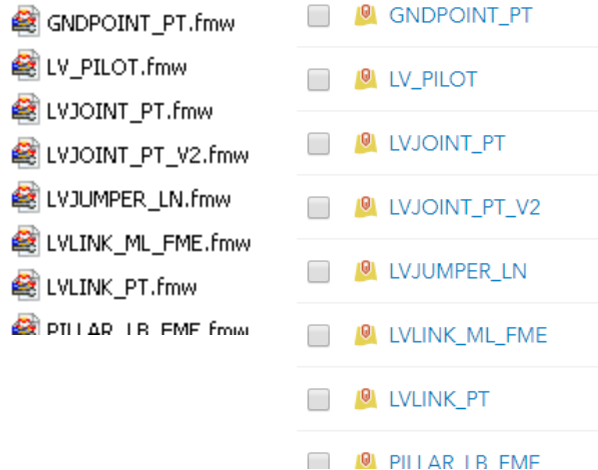
Layers:

- [WEL AGOL SECOND LN OH NETWORK](#) (0)
- [WEL AGOL SECOND LN OH SERVICE](#) (1)
- [WEL AGOL SECOND LN OH STRTLIGHT](#) (2)



4) Ordinals matter....

- Simplest solution one layer per workbench, per Oracle view, per AGOL Feature service (80+ in total!).
- Ordinal now always 0, even when deleting and recreating.
- And/or use Sorter on filtered layers to control write order



So it truncates and writes one table at a time



5) Still too slow

- Single layer per workspace was now very flexible in scheduling and spreading out updates but some layers are large and just **too slow**.
- Slower truncate and write means more chance of network failure
= no data for users = **safety issue**.
- Realised we needed to move to a INSERT, DELETE and UPDATE model
- **Why truncate 80,000 records when only 80 have changed that day!**

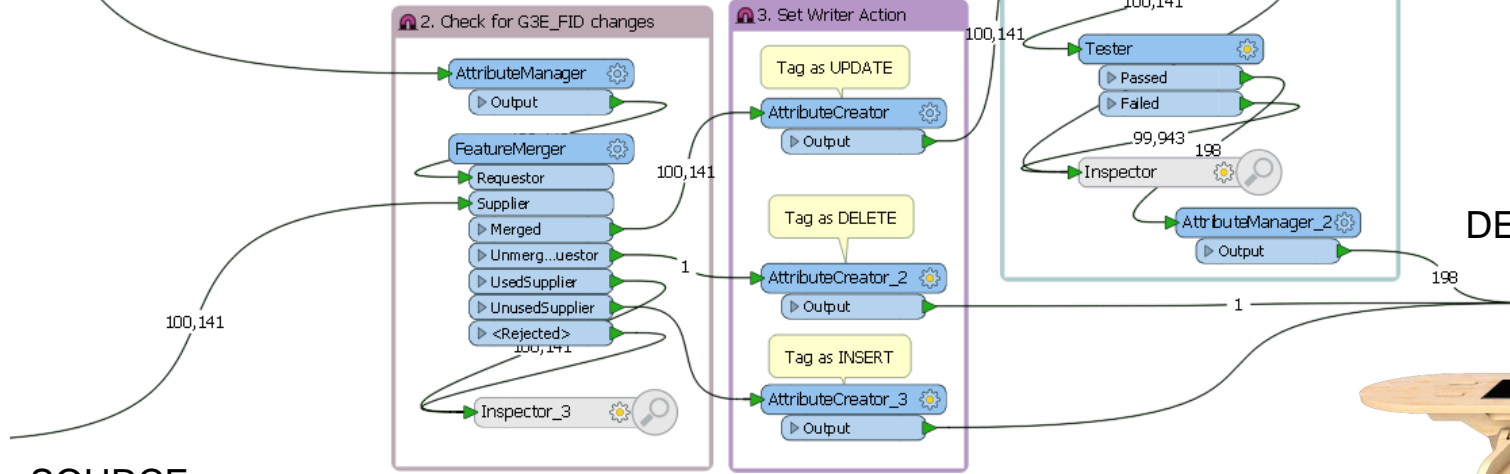


5) Still too slow, check for updates only

Solution found in online resources using 

DESTINATION

100,142



SOURCE

DESTINATION



5) Still too slow, check for updates only

FeatureMerger

Join On

Requestor	Supplier	Comparison Mode
<input checked="" type="checkbox"/> G3E_FID	<input checked="" type="checkbox"/> G3E_FID	Automatic

AttributeCreator_2

Attributes To Set

Attribute Name	Value
<input checked="" type="checkbox"/> fme_db_operation	<input type="checkbox"/> UPDATE

Tester

Test Clauses

	Left Value	Operator	Right Value	Negate	Mode
1	<input checked="" type="checkbox"/> INTERVAL	>	<input type="checkbox"/> -7	<input type="checkbox"/>	Automatic

DateTimeCalculator

Output

<Rejected>

DateTimeCalculator Parameters

Transformer

Transformer Name: DateTimeCalculator

Mode

Mode: Calculate Interval between Datetimes

Parameters

Start Datetime: @DateTimeNow()

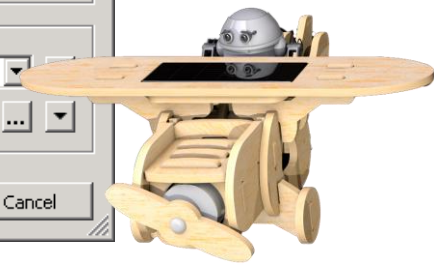
End Datetime: DATA_UPDATED

Result

Result Type: Days

Result Attribute: INTERVAL

Help Defaults OK Cancel



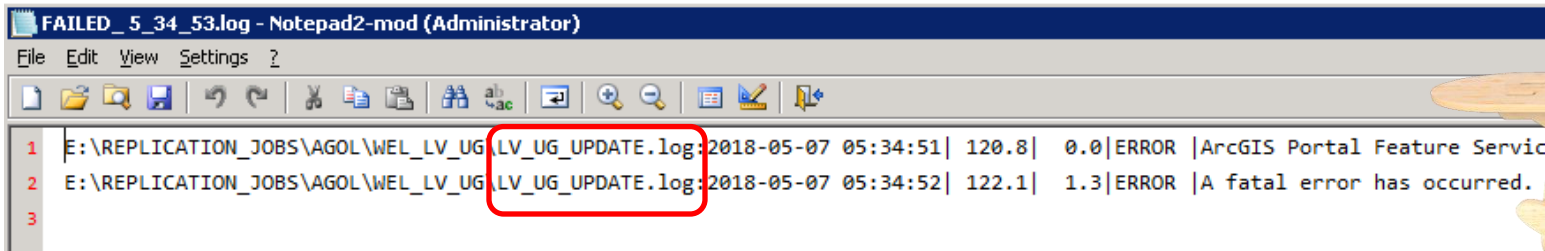
6) Failure is not an option (Part 1)

Still getting translation failures from time to time due to connection issues

Use 'FINDSTR' to look for word "error" across all FME log files, and put results in FAILED.txt file

```
REM Find FAILED workspaces
```

```
findstr /I "error" E:\REPLICATION_JOBS\AGOL\WEL_HV\*.log > E:\REPLICATION_JOBS\AGOL\LOGS\FAILED.txt  
findstr /I "error" E:\REPLICATION_JOBS\AGOL\WEL_LV\*.log >> E:\REPLICATION_JOBS\AGOL\LOGS\FAILED.txt  
findstr /I "error" E:\REPLICATION_JOBS\AGOL\WEL_LV_OH\*.log >> E:\REPLICATION_JOBS\AGOL\LOGS\FAILED.txt  
findstr /I "error" E:\REPLICATION_JOBS\AGOL\WEL_LV_UG\*.log >> E:\REPLICATION_JOBS\AGOL\LOGS\FAILED.txt  
findstr /I "error" E:\REPLICATION_JOBS\AGOL\WEL_PREMISE\*.log >> E:\REPLICATION_JOBS\AGOL\LOGS\FAILED.txt  
findstr /I "error" E:\REPLICATION_JOBS\AGOL\WEL_STRUCTURE\*.log >> E:\REPLICATION_JOBS\AGOL\LOGS\FAILED.txt  
findstr /I "error" E:\REPLICATION_JOBS\AGOL\WEL_TRENCH\*.log >> E:\REPLICATION_JOBS\AGOL\LOGS\FAILED.txt
```



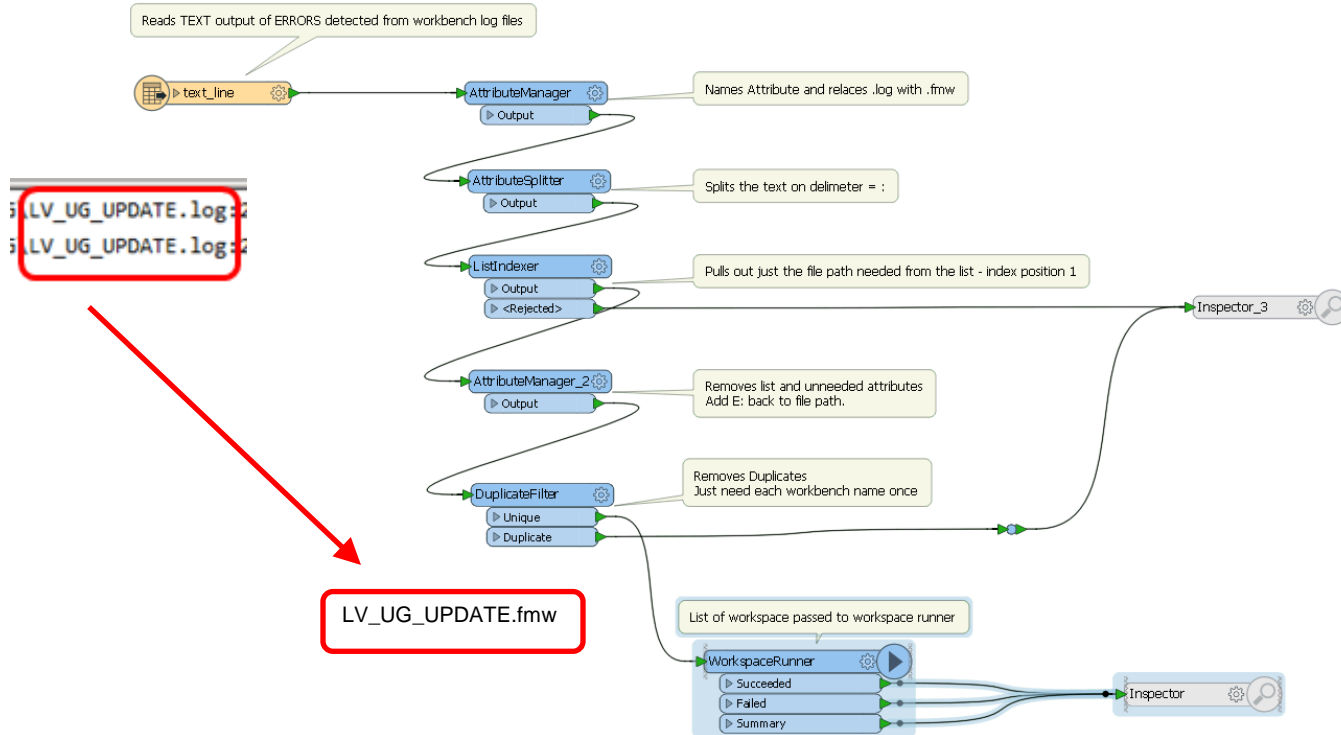
```
FAILED_5_34_53.log - Notepad2-mod (Administrator)  
File Edit View Settings ?  
1 E:\REPLICATION_JOBS\AGOL\WEL_LV_UG\LV_UG_UPDATE.log:2018-05-07 05:34:51| 120.8| 0.0|ERROR |ArcGIS Portal Feature Servic  
2 E:\REPLICATION_JOBS\AGOL\WEL_LV_UG\LV_UG_UPDATE.log:2018-05-07 05:34:52| 122.1| 1.3|ERROR |A fatal error has occurred.  
3
```



6) Failure is not an option (Part 1)...



Use FME to identify and rerun workbenches that had errors in logs.



6) Failure is not an option (Part 2)

Separate scheduled task each day to check all other tasks.

```
REM Get list of tasks and results
schtasks /query /v /fo CSV > tasks.csv
```

```
REM use FME to filter tasks and check result via
C:\apps\FME2017\fme check_tasks.fmw
```

```
REM rename output
copy /y email.csv email.txt
```

```
REM Find Errors and Email (set to only email when errors are found)
type email.txt | find /c "TaskName" > ErrCount.txt
FOR /F %I in (ErrCount.txt) Do set /a NoErrs = %I
echo The number of errors is: %NoErrs%
IF %NoErrs% NEQ 0 echo ***** ERRORS FOUND PLEASE CHECK SCHEDULED TASKS***** >> email.txt
IF %NoErrs% NEQ 0 C:\apps\blat324_64\full\blat.exe email.txt -to alan.berry-cope@wel.co.nz -
IF %NoErrs% EQU 0 echo ***** SCHEDULED TASKS ALL OK ***** >> email.txt
REM IF %NoErrs% EQU 0 C:\apps\blat324_64\full\blat.exe email.txt -to alan.berry-cope@wel.co.
```

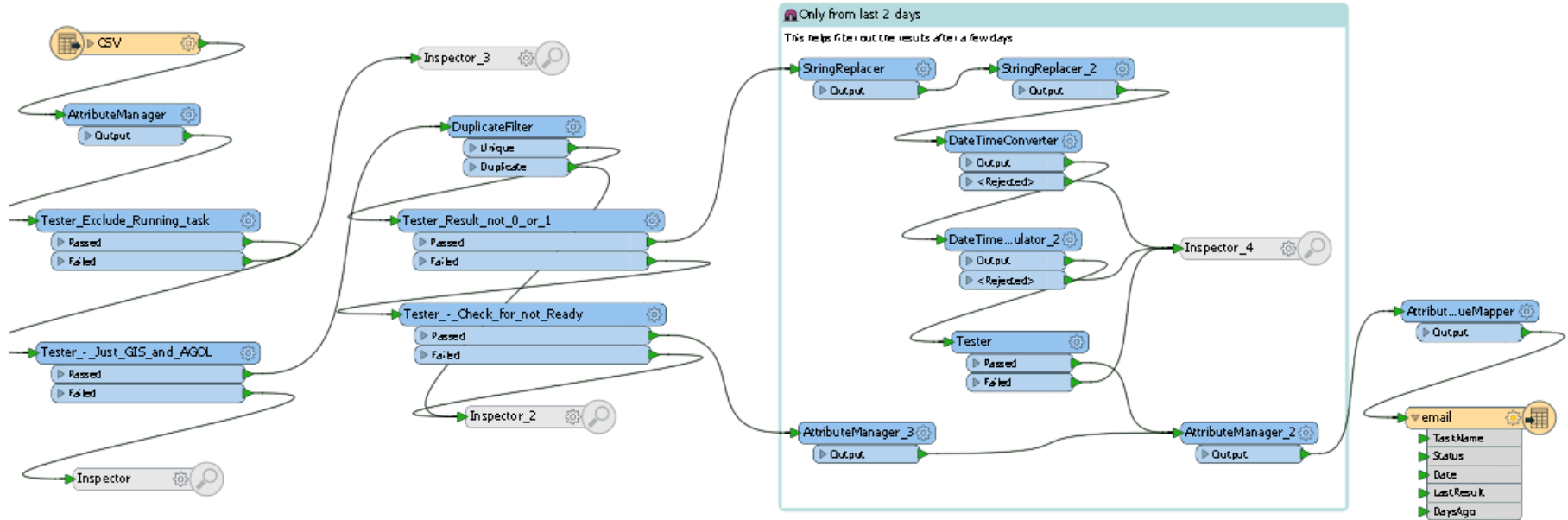
```
From: gtech_qa@wel.co.nz
To: Alan Berry-Cope
Cc:
Subject: SCHEDULED TASK - ERRORS
```

```
TaskName,Status,Date,LastResult,DaysAgo
\GIS\Batch_Trace_10_22,Ready,20/04/2018 7:00:00 p.m.,Task Terminated (timed out),1
***** ERRORS FOUND PLEASE SCHEDULED TASKS*****
```

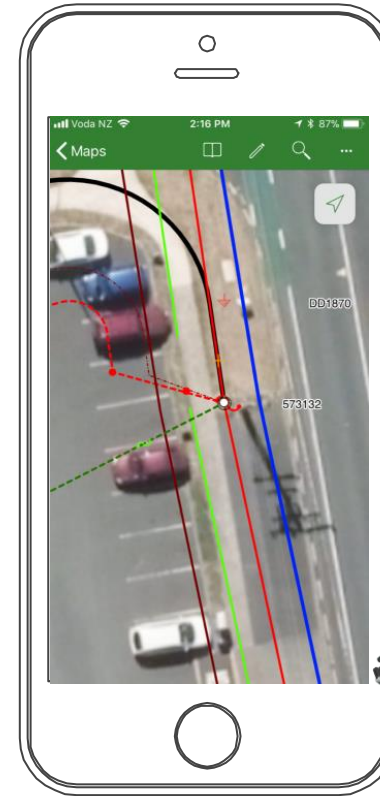
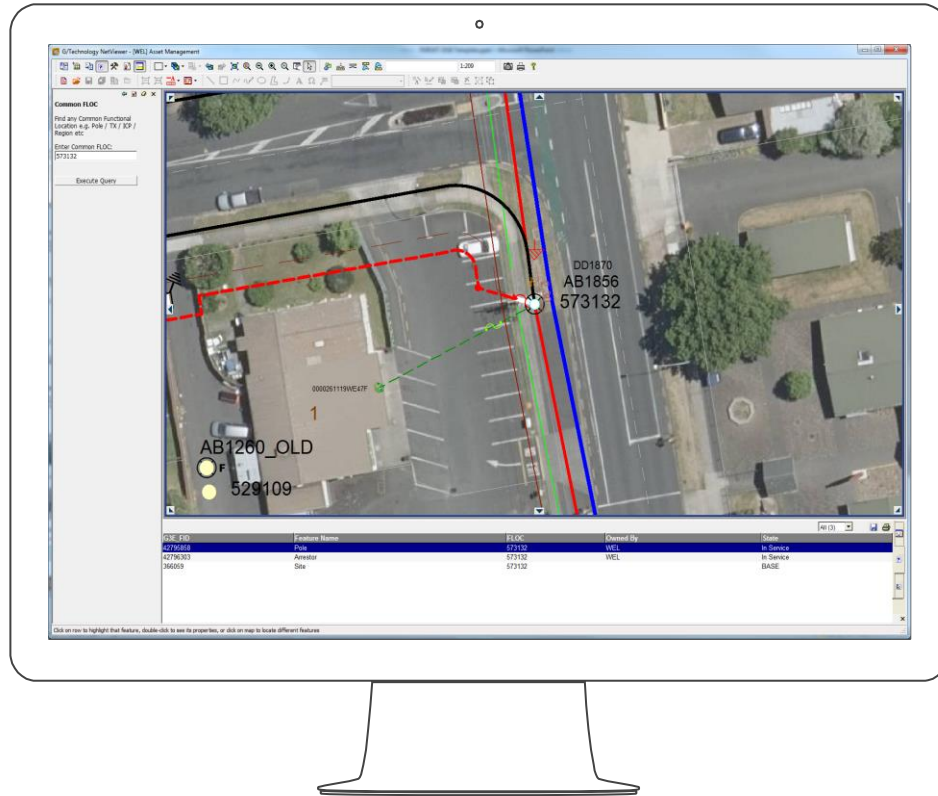


6) Failure is not an option (Part 2)...

FME parses data file and just find tasks with failure codes



Same data available in both products



Concluision

- 1) FME delivered again
- 2) Cost effective and easily matched the overall project time frame
- 3) Produced several reusable FME 'components' we can use elsewhere



Future

- 1) Hope to see improvements to FME AGOL writer, to control/set ordinal
- 2) Hope to see improvements to AGOL itself with quicker truncate/read and session restore
- 3) Only converted about 40% to 'UPDATE' mode could do the rest when time permits.
- 4) Might end up moving to ArcGIS Enterprise Portal at some point





Questions?

Alan Berry-Cope
WEL Networks

