SAFE SOFTWARE

STORIES FROM AROUND THE WORLD


WORLD TOUR
2019
LEVEL LEADERBOARD
1 Discover FME Innovation
2 Explore New Ideas
3 Take Inspiration Home
START

Buccleuch Estates

Christine Brown, Edinburgh, Scotland

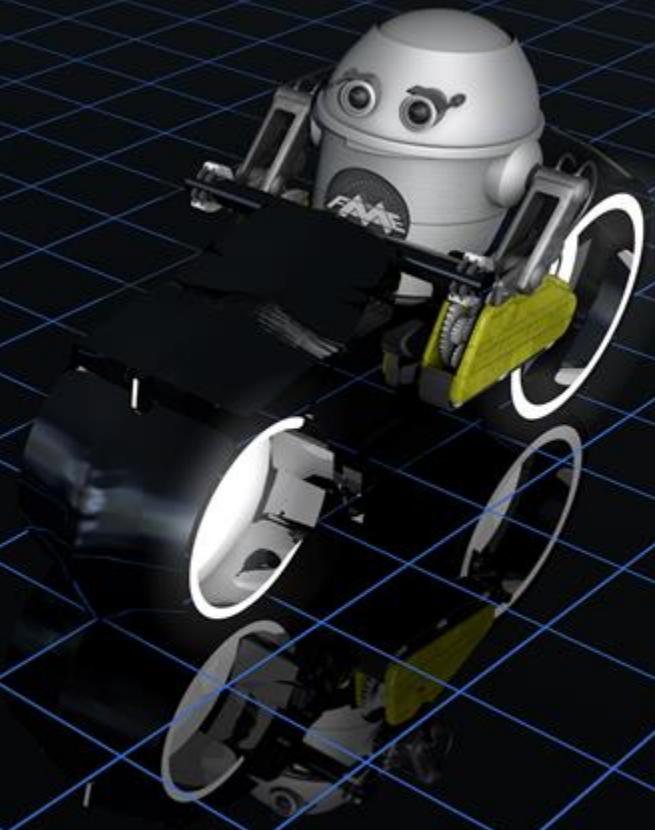
Objectives

Increase efficiency of farm maintenance inspections (fences, gates, troughs).

- Automate compiling and delivering farm condition inspection reports.

Challenges

- Existing processes involved manually compiling photos and notes into a Word doc.
- Images and text needed to be converted into a report automatically.



Solution

START

FINISH

Source data from Trimble device

GPS coordinates and photos

FME Workflow

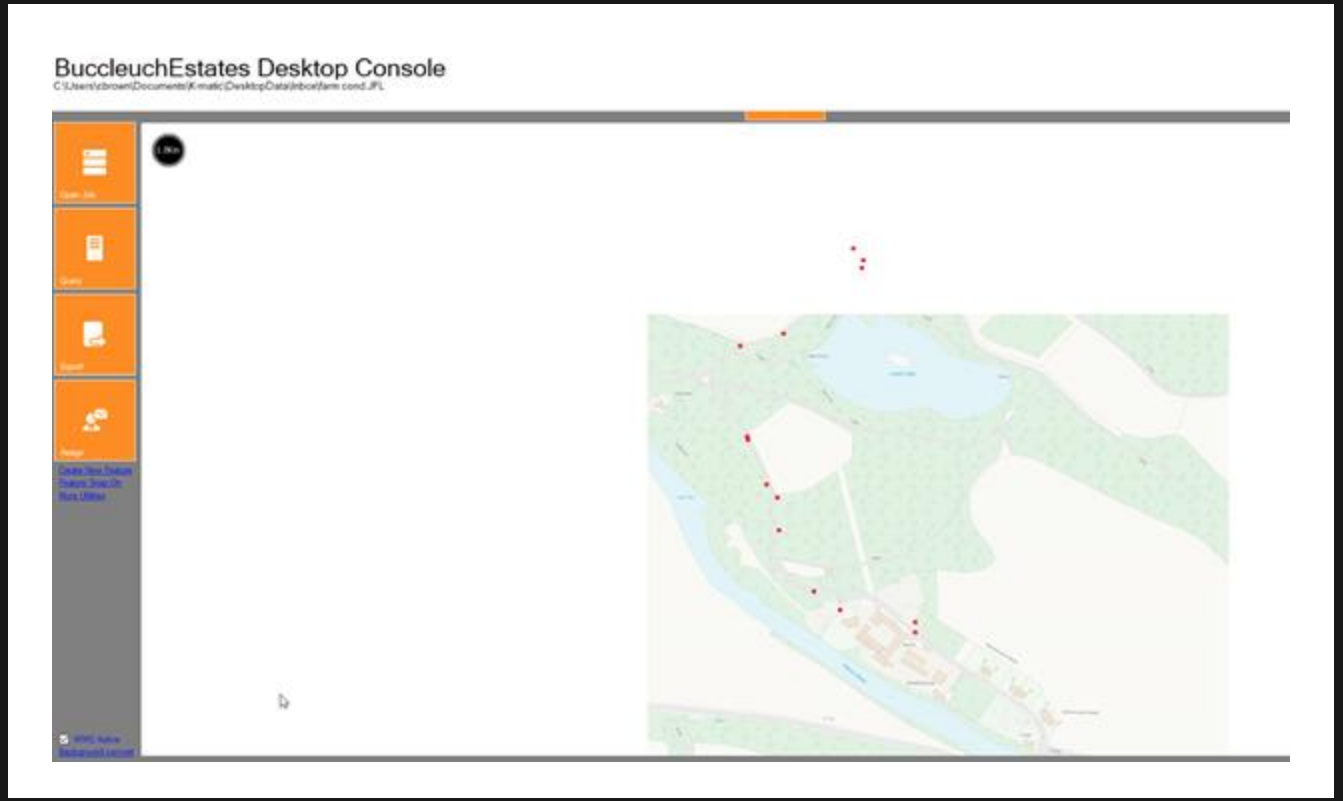
Buffer, read, clip features and attributes

Output to PDF

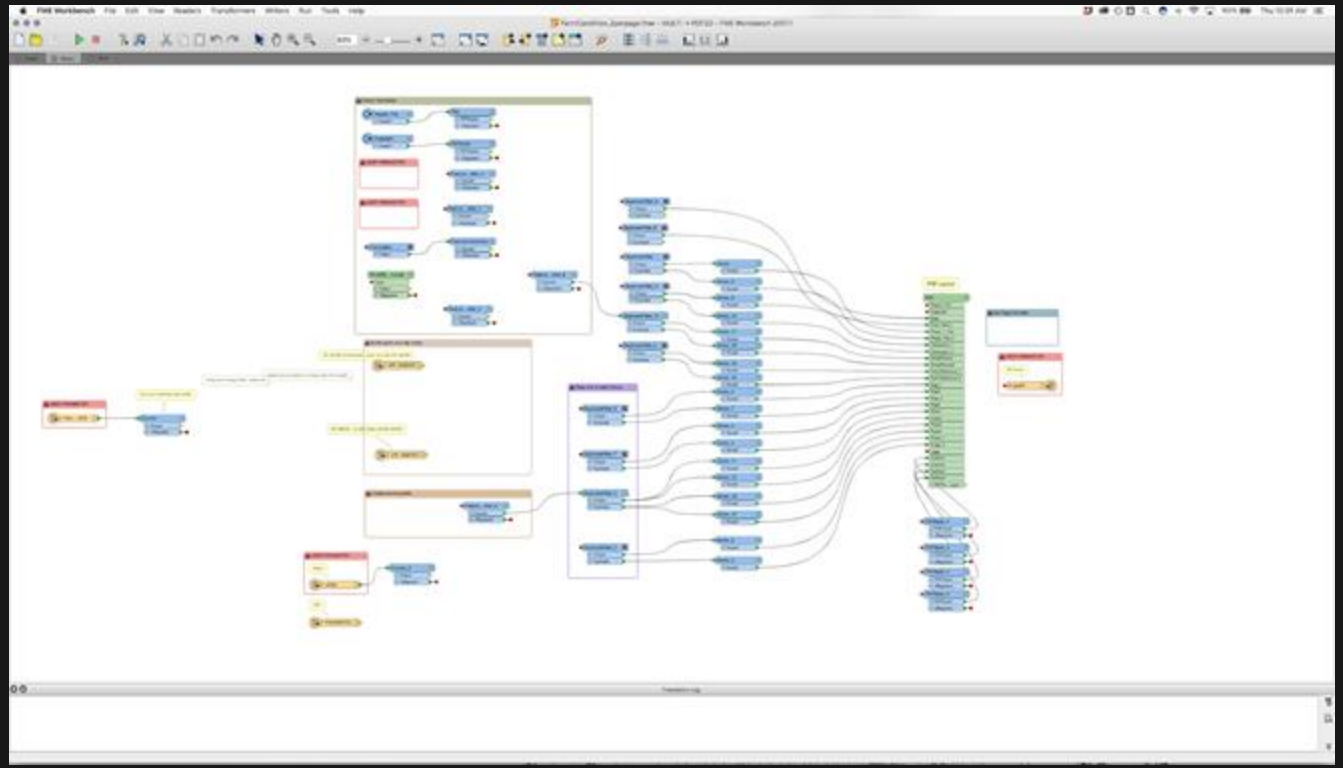
Farm condition inspection report with photos

BuccleuchEstates Desktop Console

Input:
Data from
Trimble device



Input:
Shapefiles and photos online



FME Workspace:
Generate farm condition report

BUCCLEUCH

Record Of Condition

Around Estate Office

11th December 2018

LOCATION 13

Photo Name: 13
Subject: Wooden Gate
Condition: Good condition
Remarks:2.4 megapixel

Grid Reference 342,765, 627,335

What3Words: boxing.happen.community

LOCATION 14

Photo Name: 14
Subject: Wire Fence
Condition: Needs attention
Remarks:Sagging wire.

Grid Reference 342,846, 626,952

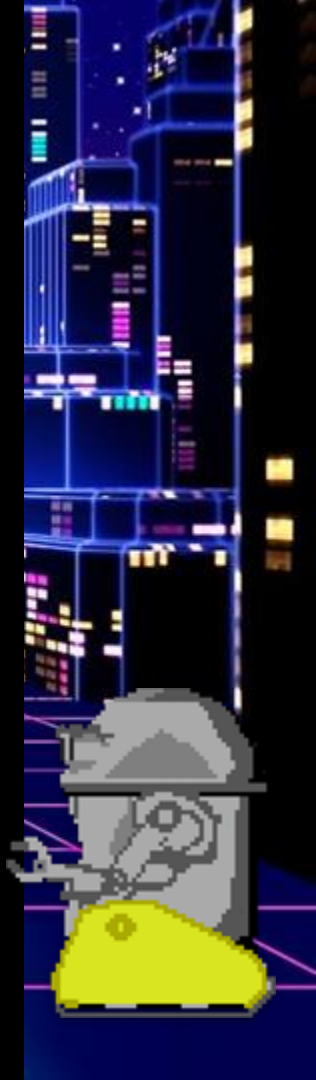
What3Words: ditching.bride.bangle

Output: PDF report

Results

- Multi-page PDF showing two features per page.

- This method is now being tested throughout Buccleuch Estates.



Benefits

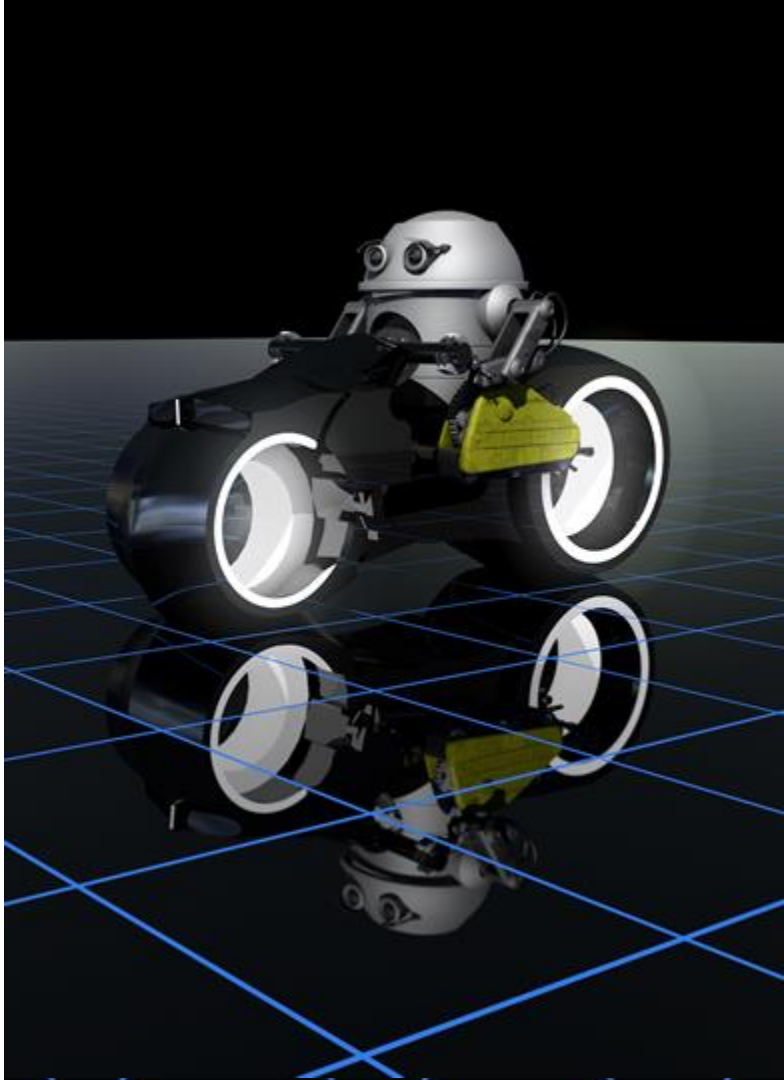
Farm condition reports are created:

- Faster
- More easily
- In a standardized format

Tips

- PDFFormatter and PDFStyler are helpful and easy to use.

- Use Counter and Grouper to ‘pass’ features in order.



Future Plans

- Expand the attribution data following user feedback.
- Include the option to produce reports in a Word format.


“Using FME with Trimble is a huge time saver for compiling Farm Condition reports.”
- Christine Brown, Buccleuch Estates

Valeron Enviro Consulting

Jaroslav Hruskovic, Slovakia

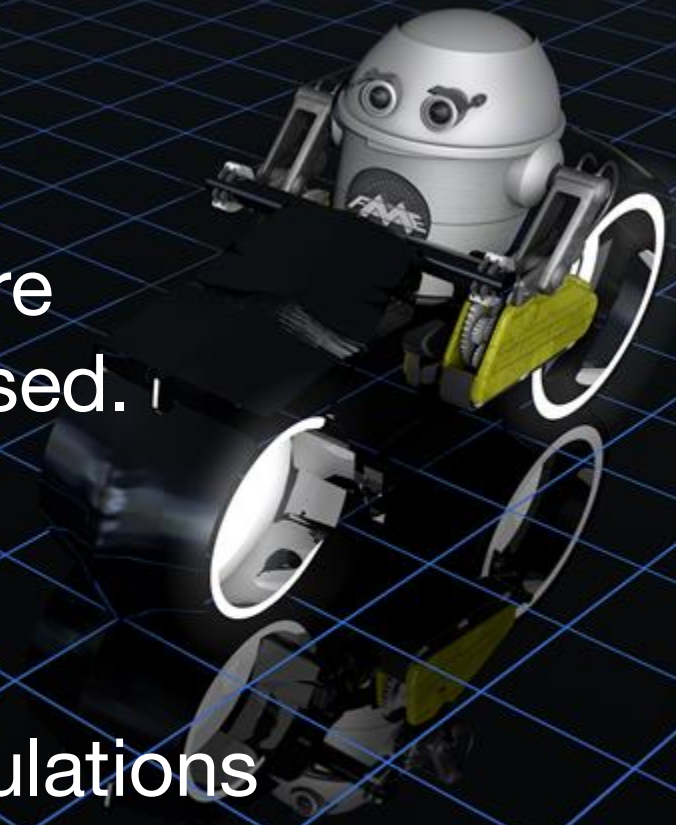
Objectives

Visualize windfields for urban architects.

- Convert and analyze windfield data models.

Challenges

- Windfield data models were previously discarded, unused.
- Generate windfield maps.
- Perform analysis and calculations on the data.



Solution

Windfield Matrices

FME Workspace

Calculate, analyze, visualize

Result

Multi-page PDF with results

konvertovany_vystup.txt

```
x y uref dref vx vy v
0 0 20 10 0 0 0
0 6 20 10 -0.0561478 0 0.0561478
0 12 20 10 -0.0561471 0 0.0561471
0 18 20 10 -0.0561465 0 0.0561465
0 24 20 10 -0.0561459 0 0.0561459
0 30 20 10 -0.0561453 0 0.0561453
0 36 20 10 -0.0561446 0 0.0561446
0 42 20 10 -0.056144 0 0.056144
0 48 20 10 -0.0561433 0 0.0561433
0 54 20 10 -0.0561427 0 0.0561427
0 60 20 10 -0.0561419 0 0.0561419
0 66 20 10 -0.0561413 0 0.0561413
0 72 20 10 -0.0561404 0 0.0561404
0 78 20 10 -0.0561398 0 0.0561398
0 84 20 10 -0.0561389 0 0.0561389
0 90 20 10 -0.0561383 0 0.0561383
0 96 20 10 -0.0561373 0 0.0561373
0 102 20 10 -0.0561366 0 0.0561366
0 108 20 10 -0.0561355 0 0.0561355
0 114 20 10 -0.0561349 0 0.0561349
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0 126 20 10 -0.056133 0 0.056133
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0 258 20 10 -0.0560996 0 0.0560996
```
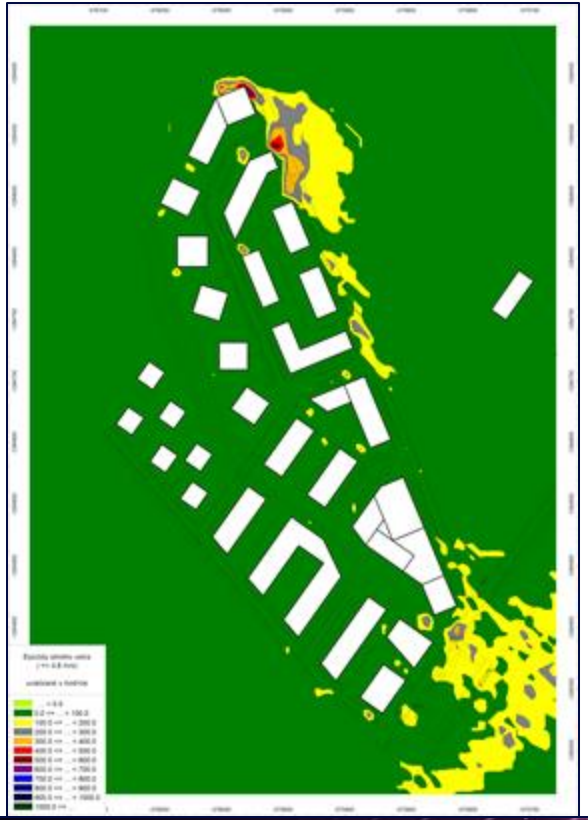
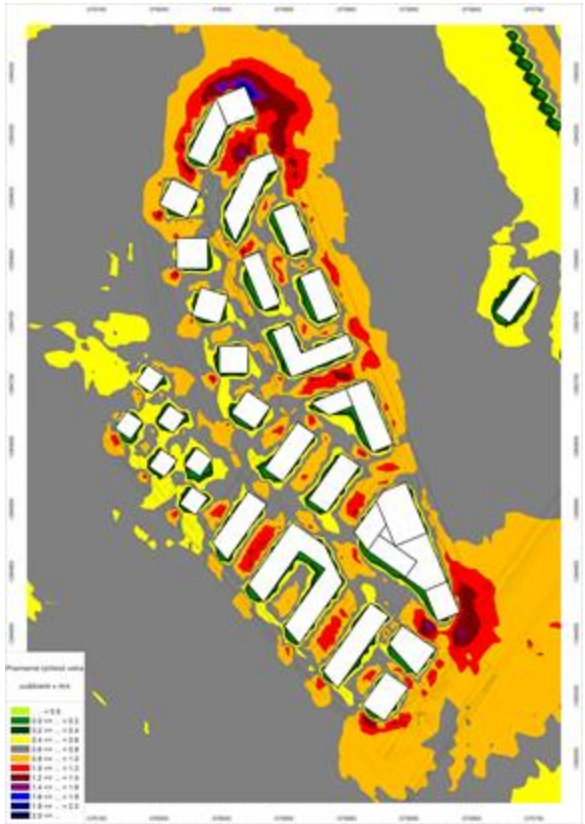
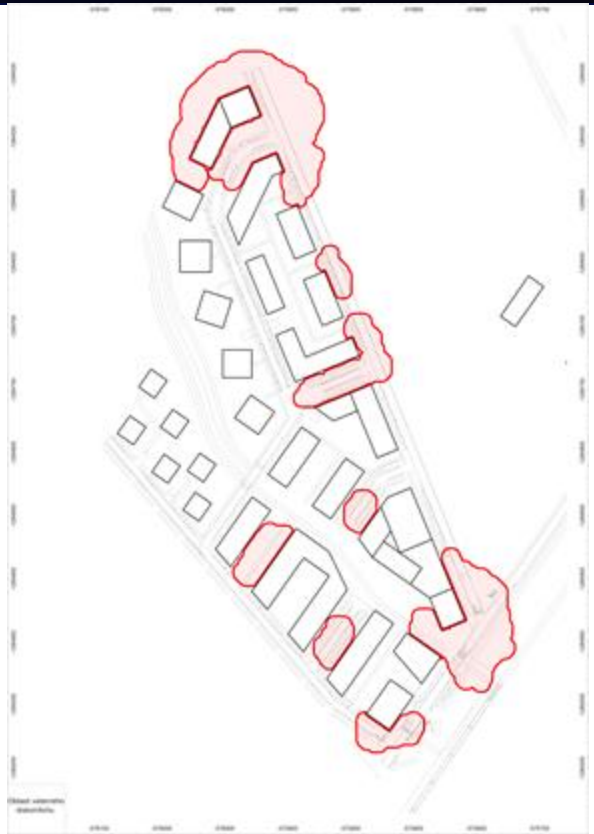

Input



Output





Output

Avg > 1 m/s, max > 10m/s, OR 320 hrs > 5m/s

Results

- A fully developed product offering wind analysis.
- In demand by architects, especially for designing outdoor activity spaces.

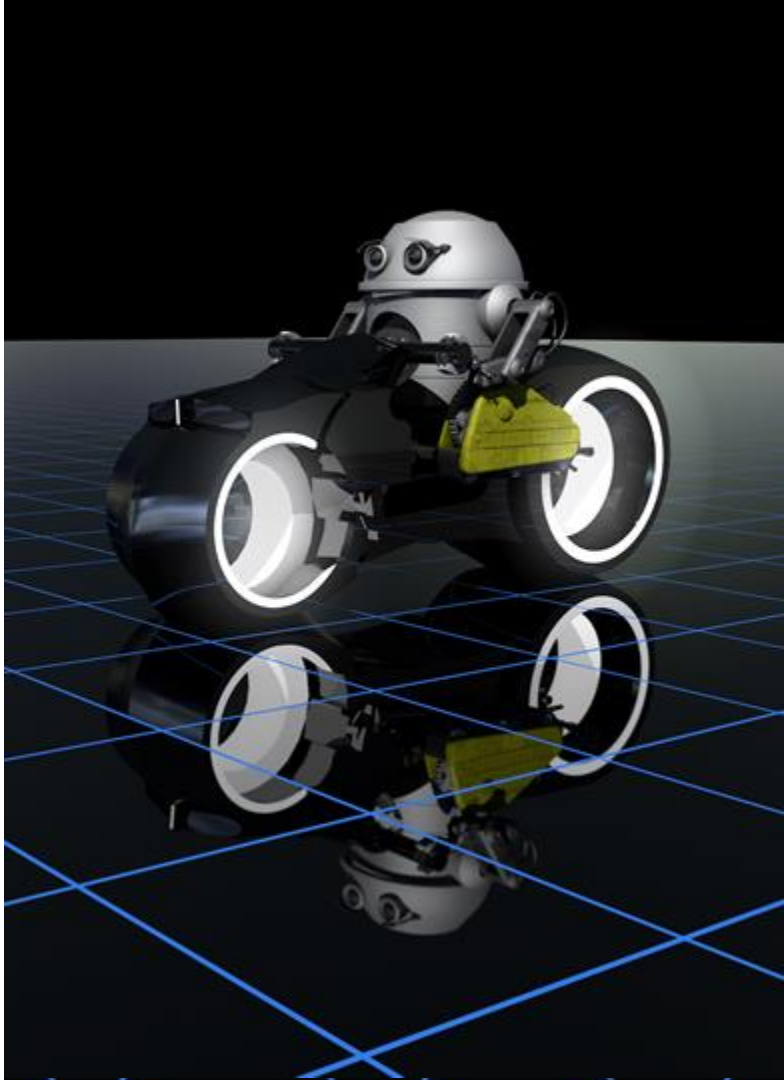
Benefits

- Reduced the number of applications to create an automated workflow from many to just one.
- Shortens calculations from days to hours.

Tips

- Complex challenges can be simple to solve.

- **Group-by** makes processing simple.




“With FME this project can be easily modified and the outputs can be updated with ease.”
- Jaroslav Hruskovic, Valeron Environ Consulting

Future Plans

Extend workflows to identify:

- Typical snow deposition locations.
- Pollen spread for allergen prediction map.

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Tesera Systems

Michael Kieser, Canada

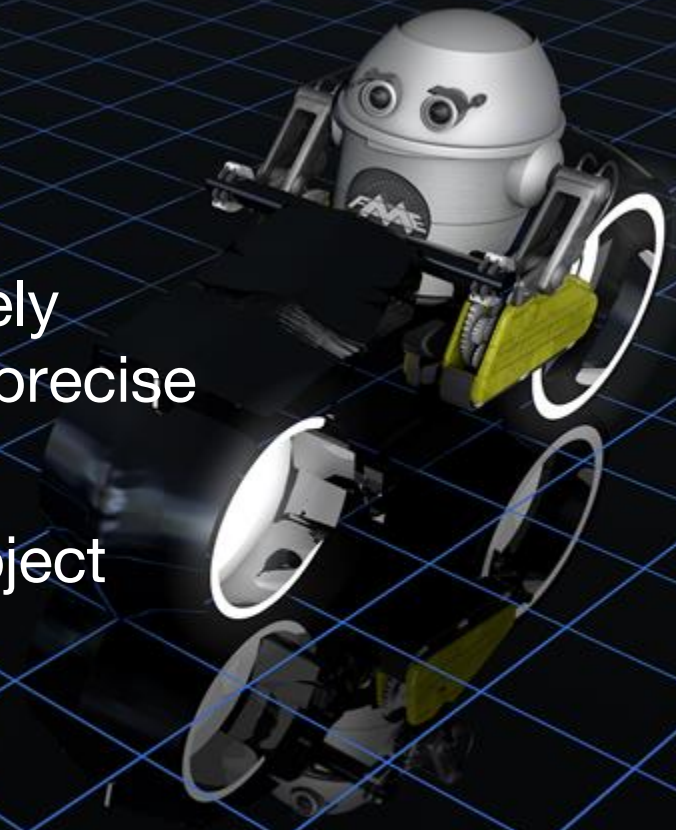
Objectives

Create high-resolution forest inventories.

- Integrate high-resolution raster and precise vector data.
- help forestry clients derive business information from satellite imagery, LiDAR, and ground plots

Challenges

- Integrating high-resolution remotely sensed imagery and LiDAR, with precise ground measured plots
- Managing this data over large project areas 10,000-150,000 km^2.



Solution

Tiling Scheme
Standard across all projects

FME Workspaces
Generic across projects

Tiled Project Data
Universal data storage & access

START

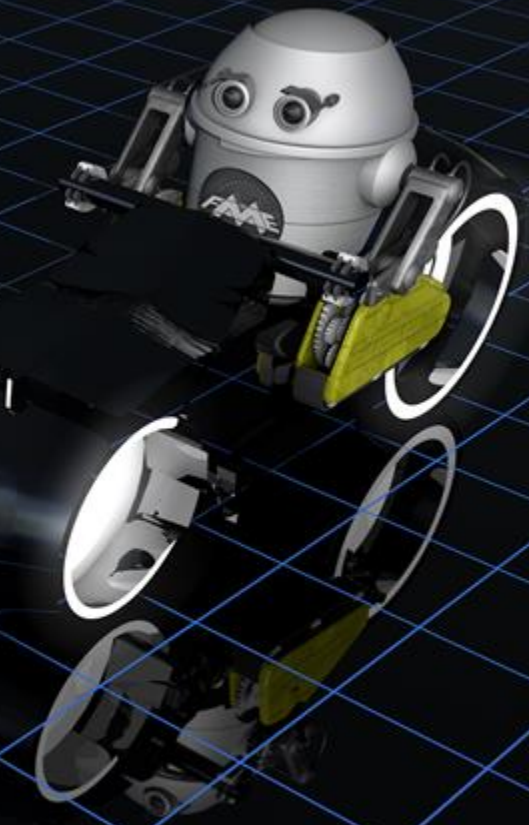
FINISH

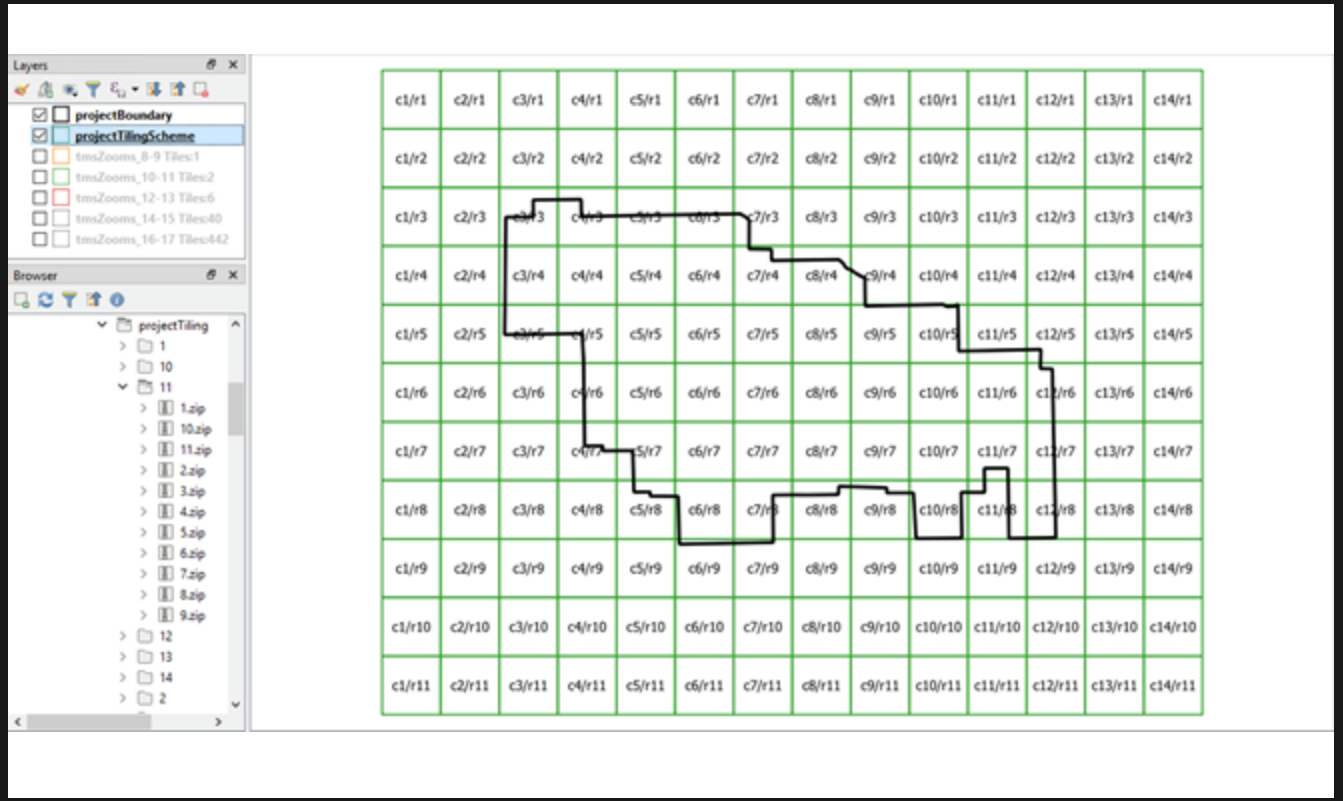
FME Cloud

Disparate Source Data
LiDAR, CIR, LCC, plot

Example (re-tile imagery)

- Tiled imagery layers derived from CIR and LiDAR (colour, false colour, NDVI, hillshade, CHM)
- Generate Google Compatible slippy map tiled imagery layers
- Tile layers stored on AWS S3
- Deliver layers in desktop GIS & web viewer (Leaflet, Mapbox)




Layers
projectBoundary
projectTilingScheme
tmsZooms_8-9 Tiles:1
tmsZooms_10-11 Tiles:2
tmsZooms_12-13 Tiles:6
tmsZooms_14-15 Tiles:40
tmsZooms_16-17 Tiles:442
Browser
projectTiling
1
10
11
1.zip
10.zip
11.zip
2.zip
3.zip
4.zip
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6.zip
7.zip
8.zip
9.zip
12
13
14
2
c1/r1 c2/r1 c3/r1 c4/r1 c5/r1 c6/r1 c7/r1 c8/r1 c9/r1 c10/r1 c11/r1 c12/r1 c13/r1 c14/r1
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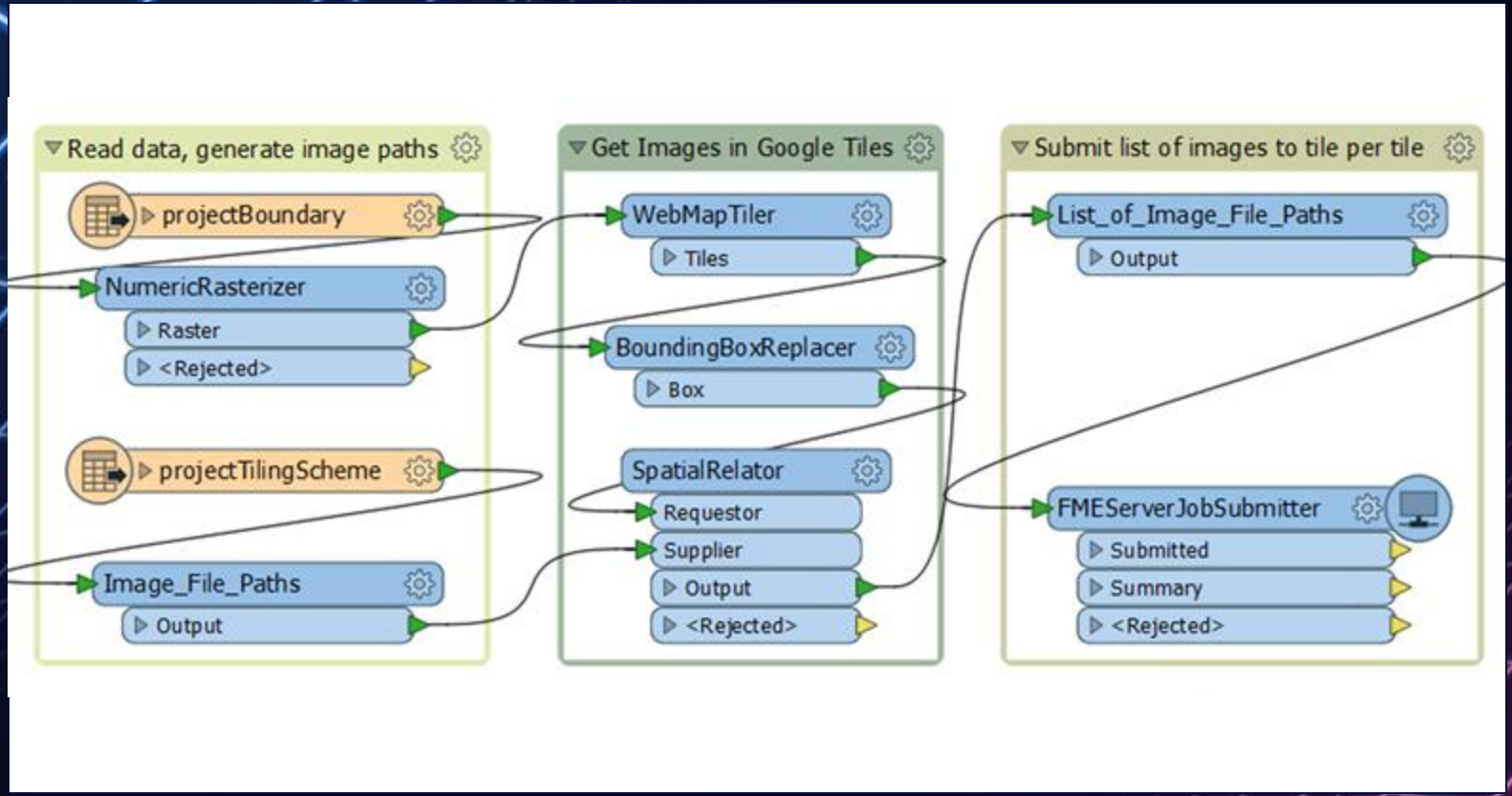
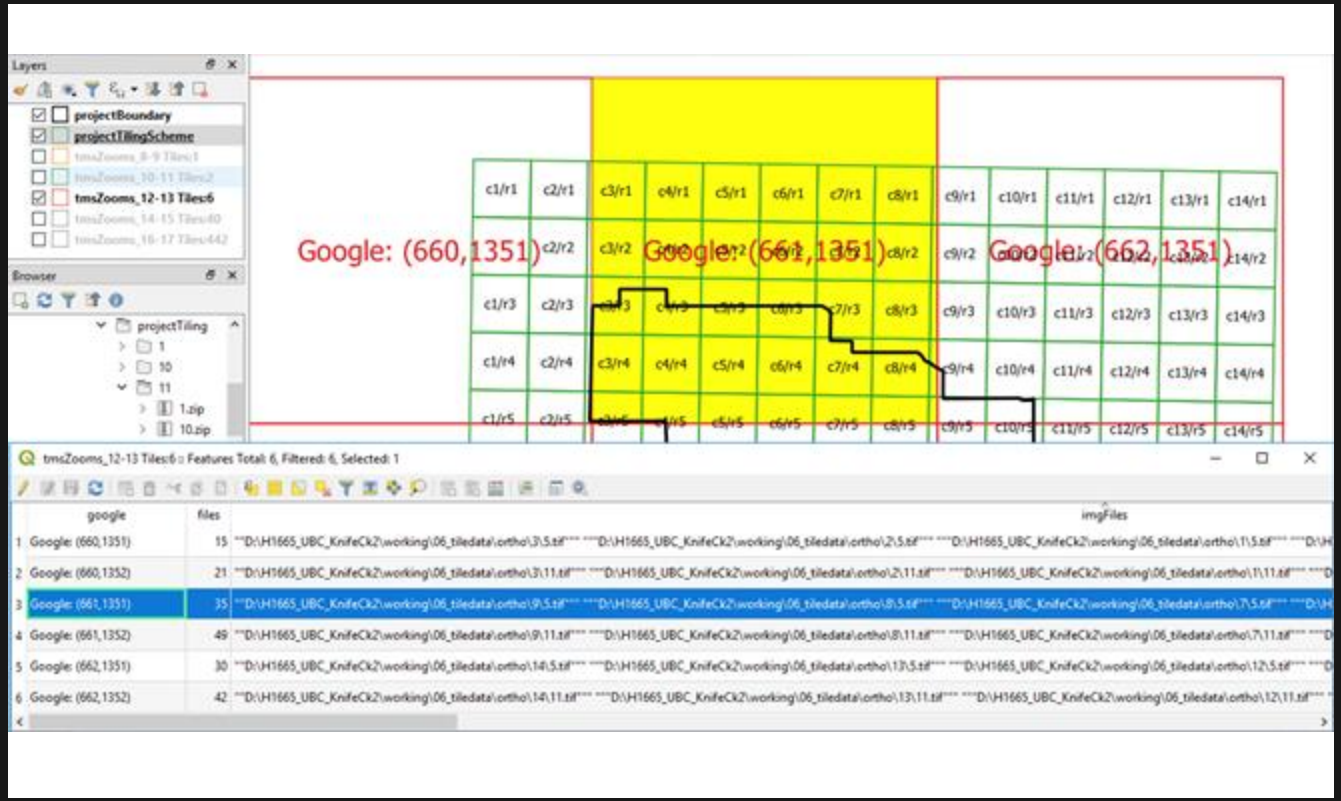
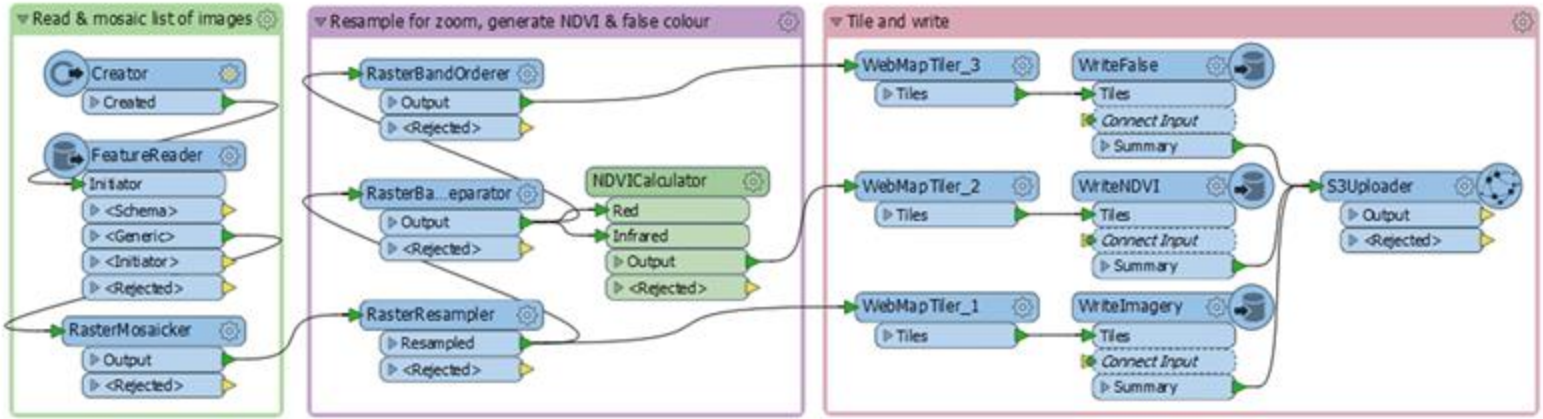
Input



FMECloud - 1 kick-off job

Tilings

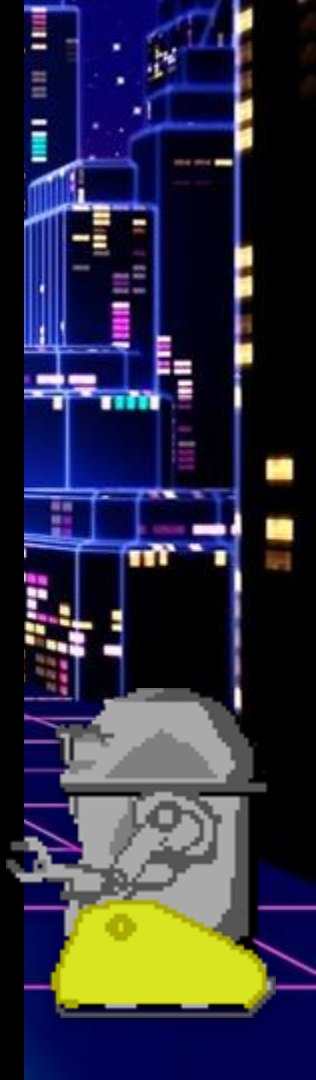

Layers
projectBoundary
projectTilingScheme
tmsZooms_12-13 Tiles:6
Browser
projectTiling
1
10
11
1.zip
10.zip
Google: (660,1351)
Google: (661,1351)
Google: (662,1351)
tmsZooms_12-13 Tiles:6 Features Total: 6, Filtered: 6, Selected: 1
google
files
imgFiles
1 Google: (660,1351) 15
2 Google: (660,1352) 21
3 Google: (661,1351) 35
4 Google: (661,1352) 49
5 Google: (662,1351) 30
6 Google: (662,1352) 42



FMECloud - 491 server jobs

Results

viewer.hris.tesera.com

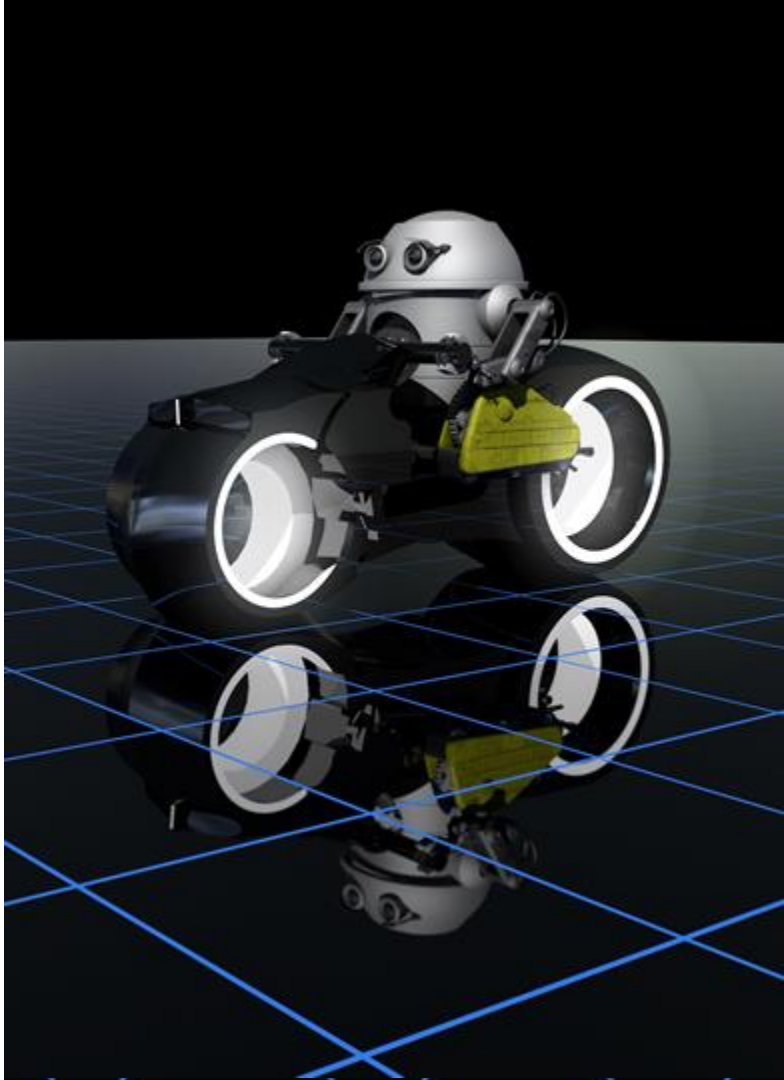


Benefits

- Tiling data is fundamental to automation
- FME Workspaces require only a few parameter adjustments for each client
- FMECloud provides scalability

Tip

- BoundingBoxReplacer: 3rd party data
- SpatialRelator: project tile with 3rd party BB
- Process by project tile
- WebMapTiler: static raster tiles
- AWS S3: storing & serving static raster tiles
- Can’t wait for vector tiles in FME




“FME Cloud is a critical tool for orchestrating and running our integration processes.”
- Michael Kieser, Tesera Systems

Santa Clara County

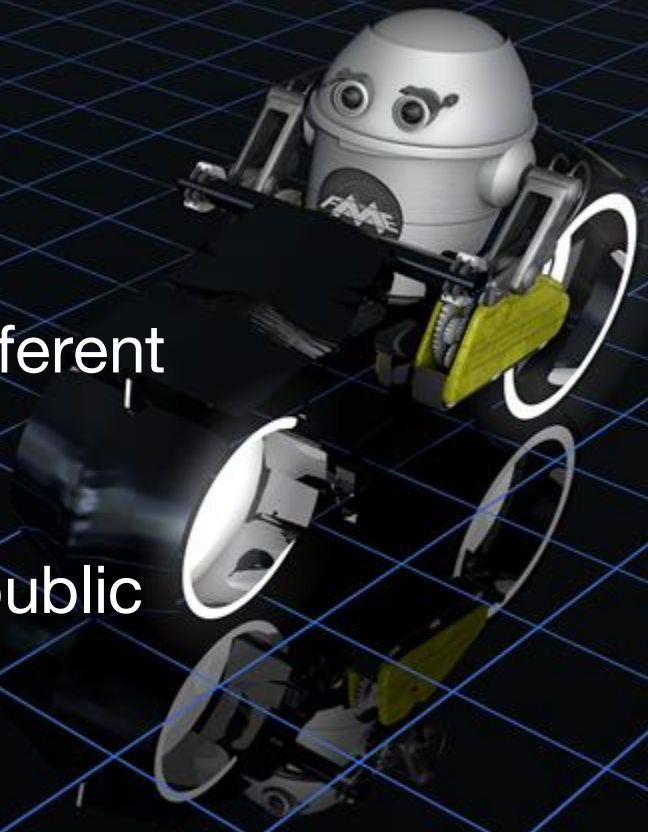
Steven Hong, California, USA

Objectives

- Improve the call location accuracy and response time for 911 dispatch system.
- Empower cities to become data stewards and contribute addresses on a regular basis.

Challenges

- Aggregate and standardize 15 different city data schemas.
- Supplement data schemas with public safety layers.



Solution

START

15 unique
city datasets

FME Workflow

Transform the data into
standardized schemas

FINISH

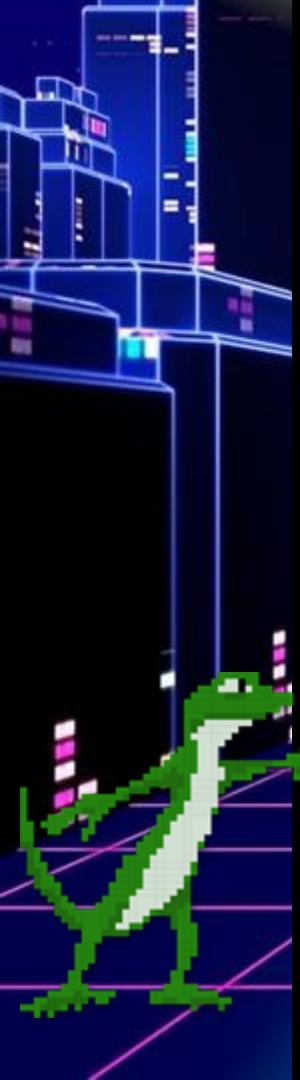
**Aggregated
address datasets:**
RAM + RAMPS

Assessor Address Points

PRE- RAMPS

City-sourced Address Points

RAM/RAMPS

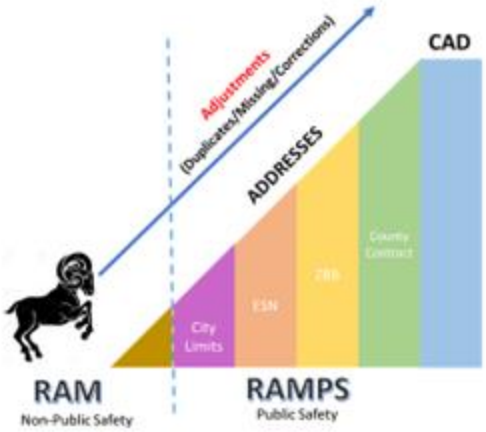


Results

- Cities are empowered to contribute accurate addresses to a county-wide aggregation.
- Project completed on time.

Results

50% increase in number of addresses available to 911 operators

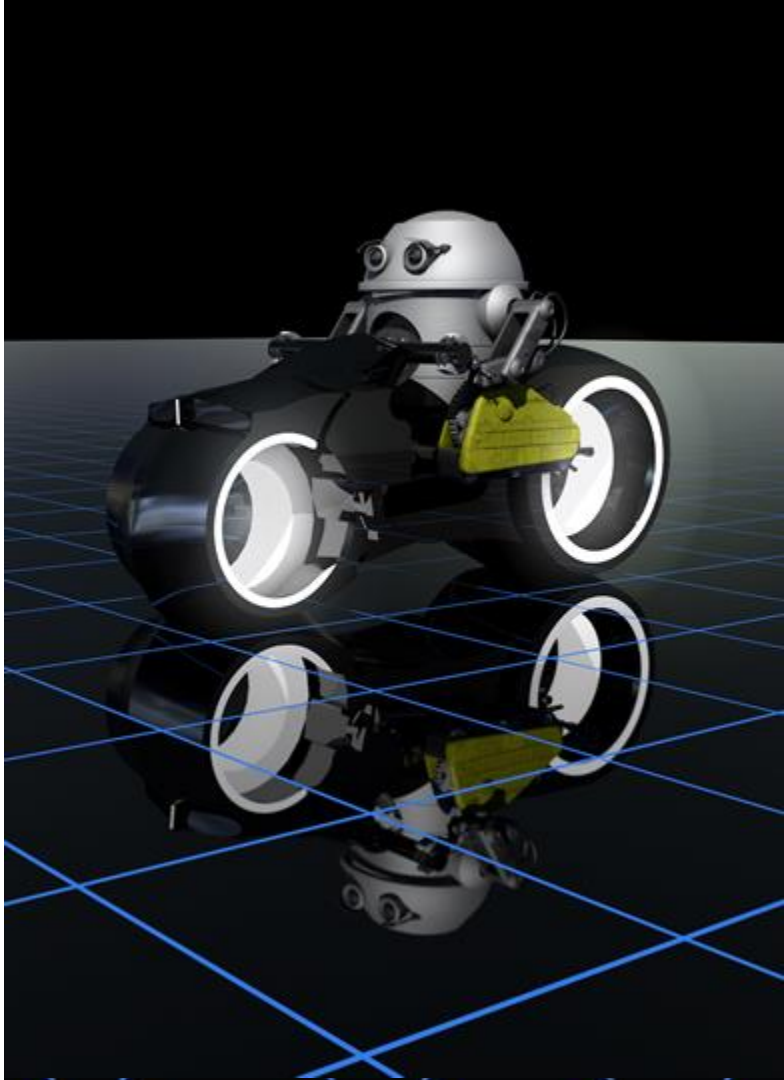


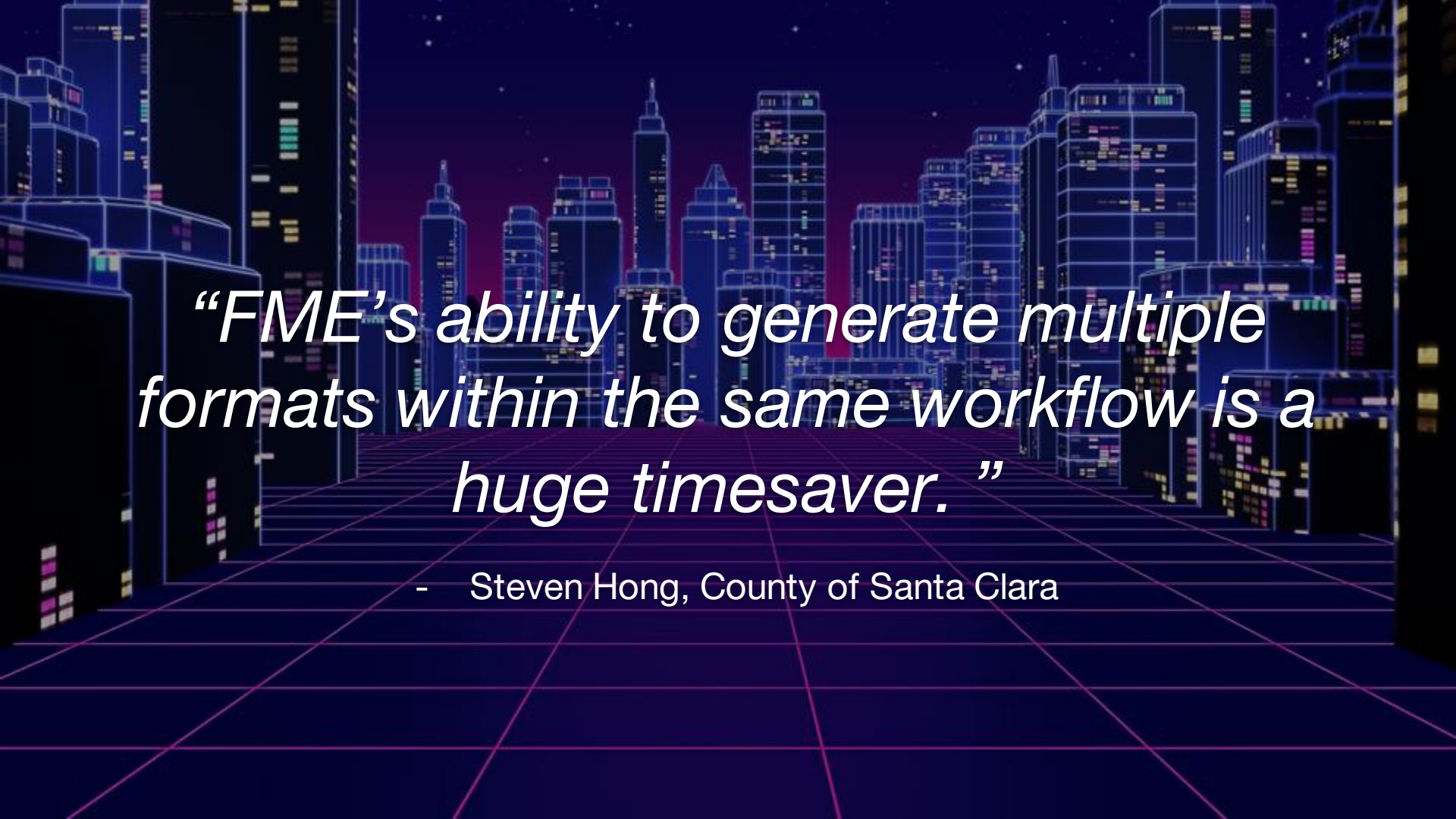
Benefits

- Allowed for fast, iterative changes to workflows as new data was discovered.
- Flexibility means being prepared for future changes.

Tip

- DuplicateFilter helps identify duplicate data points (a great help for a 911 dispatcher working with addresses)




“FME’s ability to generate multiple formats within the same workflow is a huge timesaver. ”
- Steven Hong, County of Santa Clara

Australian Rail Track Corporation (ARTC)

Mike Gresham, Australia

Objectives

Visualize properties for the design & feasibility phase of railway construction.

- Create geospatial representations of land access agreements.

Challenges

- Integrate an Excel register of land access agreements with GIS land parcel data.
- Agreements may contain multiple land parcels.
- Program covers three states with unique cadastral identifiers.

Solution

START

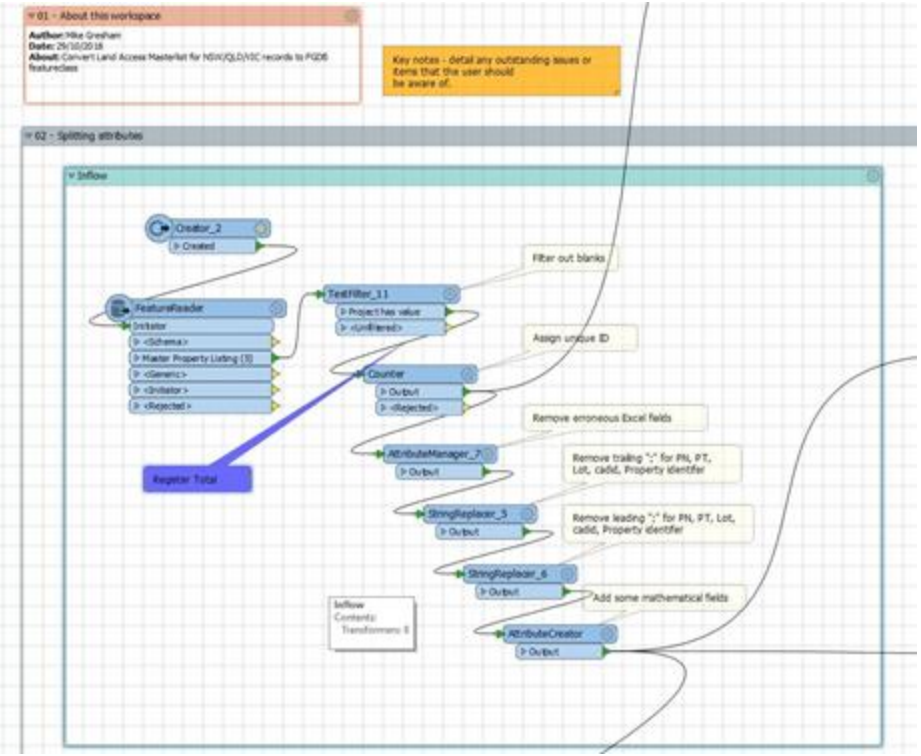
Excel Land Agreements
+
GIS Land Parcels

FME Workspace

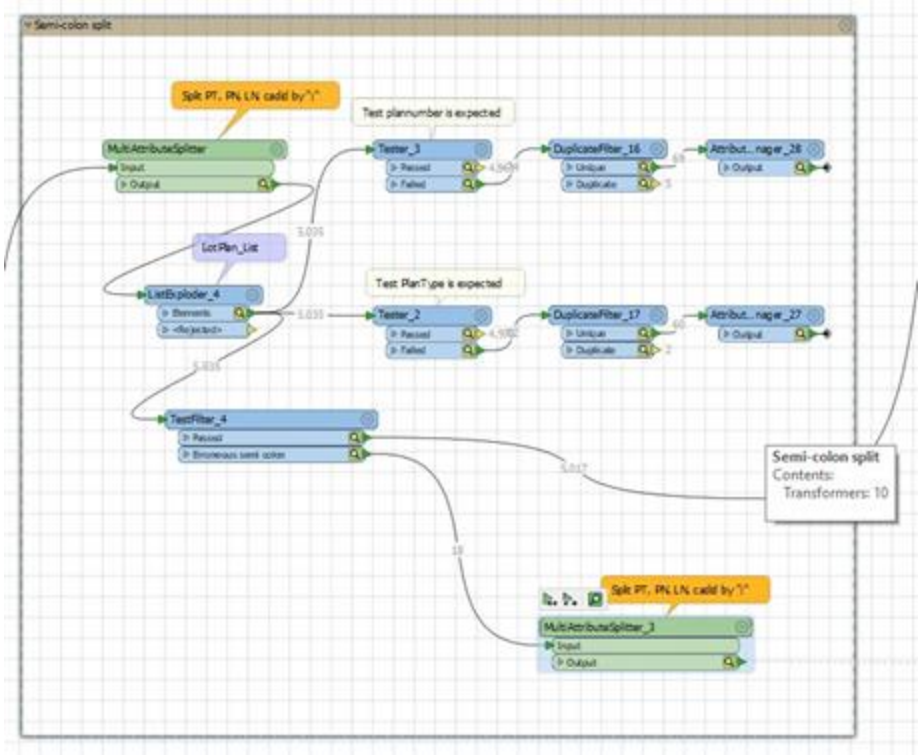
Split, join, cache, and validate land agreement data

FINISH

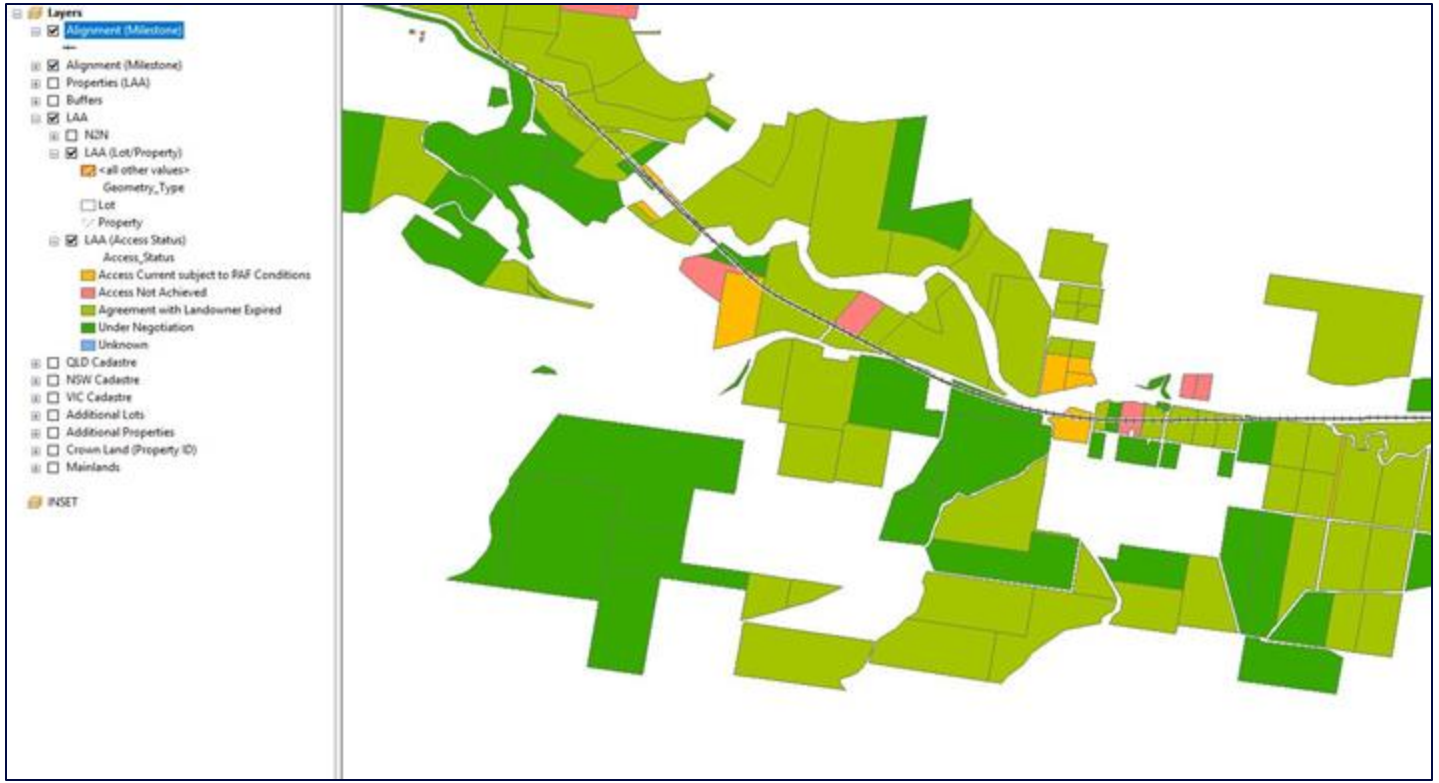
Comprehensive GIS Layer



Data cleaning and enrichment



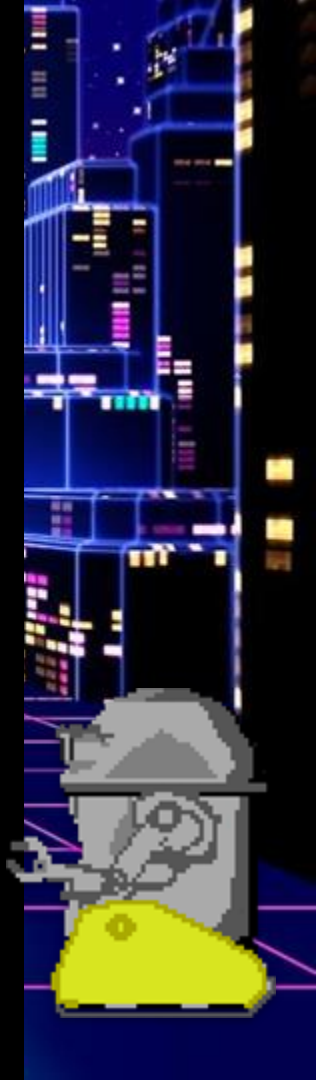
Data Restructuring


Layers
Alignment (Milestone)
Alignment (Milestone)
Properties (LAA)
Buffers
LAA
N2N
LAA (Lot/Property)
<all other values>
Geometry_Type
Lot
Property
LAA (Access Status)
Access_Status
Access Current subject to PAF Conditions
Access Not Achieved
Agreement with Landowner Expired
Under Negotiation
Unknown
QLD Cadastre
NSW Cadastre
VIC Cadastre
Additional Lots
Additional Properties
Crown Land (Property ID)
Mainlands
INSET

Output Data

Results

- Visualization of properties and related access agreements.
- Lowers risk of trespassing.
- Ensures amicable relationships with land owners.

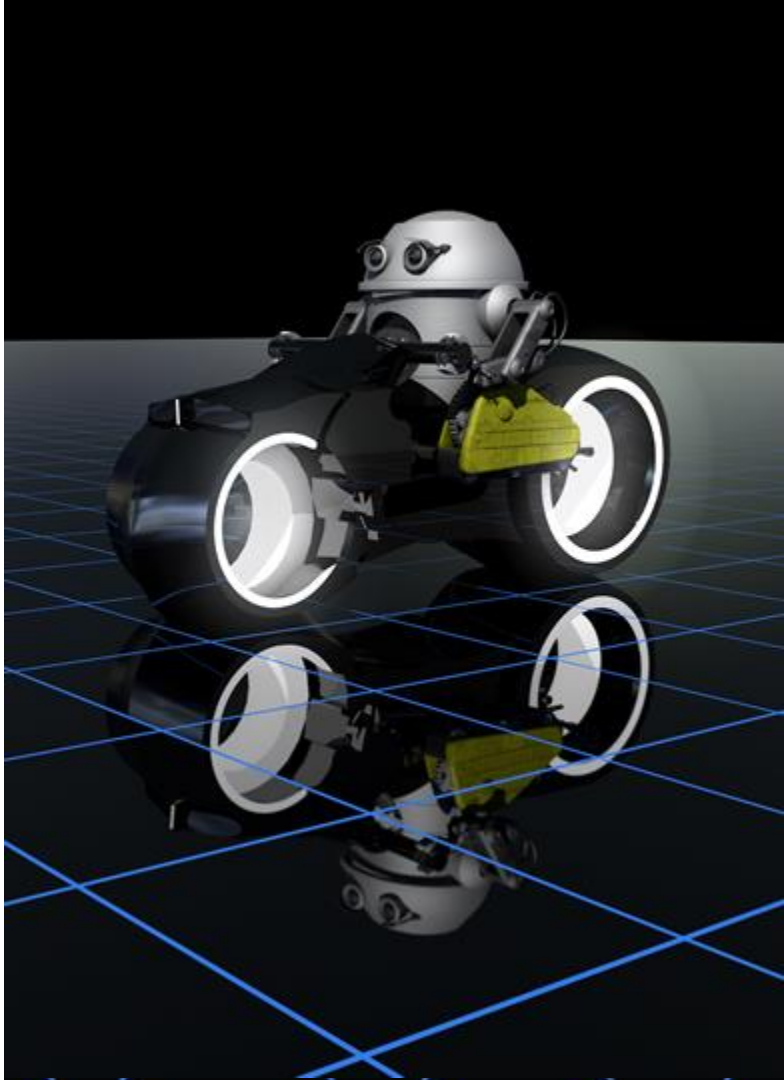


Benefits

- Ordinary GIS software would not have been able to accomplish this process.
- Automated daily updates.

Tip

- Take time to understand FME’s unique capabilities, how they work, and how they contribute to the end result.




“FME produced a result where mainstream GIS software couldn’t without the use of scripting.”
- **Mike Gresham, ARTC**

Plains Midstream Canada

Patrick Cheng, Canada

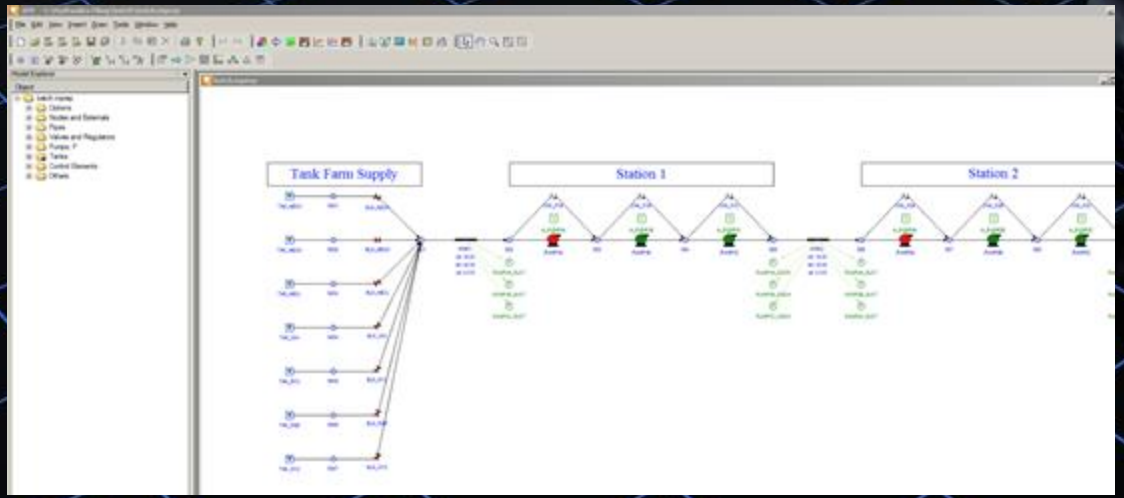
Objectives

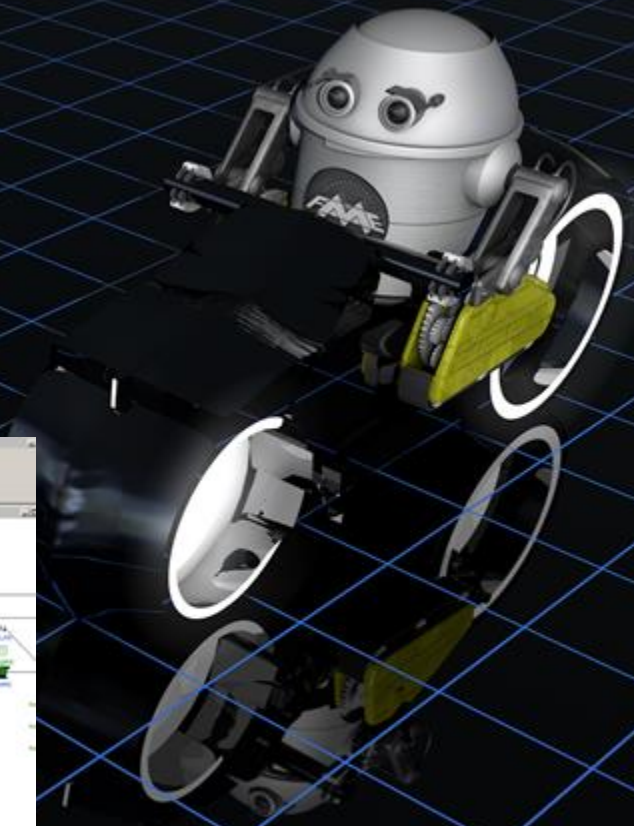
Create models for simulating fluid in pipelines.

- Automate data integration for pipeline design, optimization, and leak detection.
- Keep up-to-date with business demands of using hydraulic profiling/pressure models.

Challenge

Automate a previously month-long model creation process.





Solution

START

GIS spatial data
+
PODS attribute data

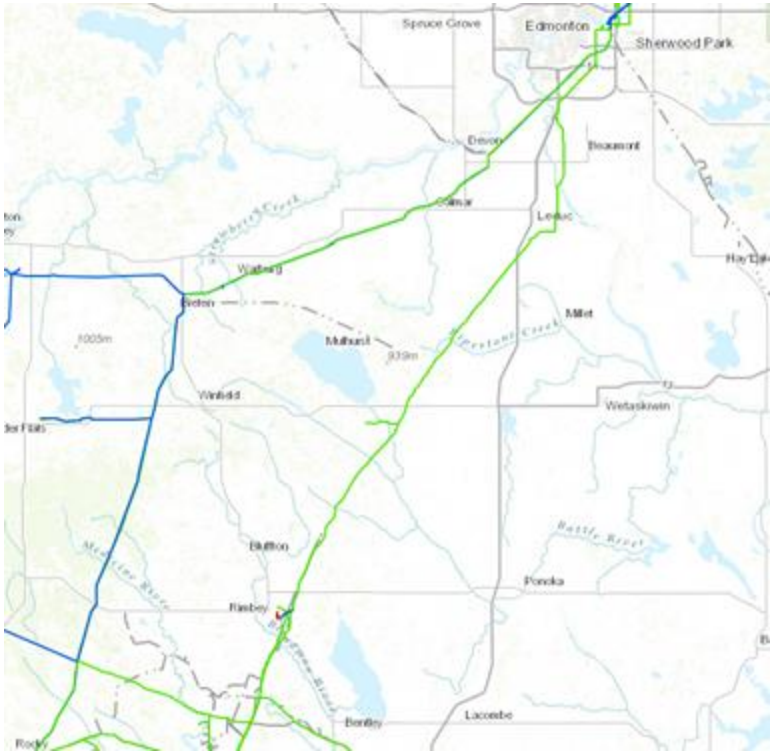
FME Workflow

Integrate data and convert into a text-based format

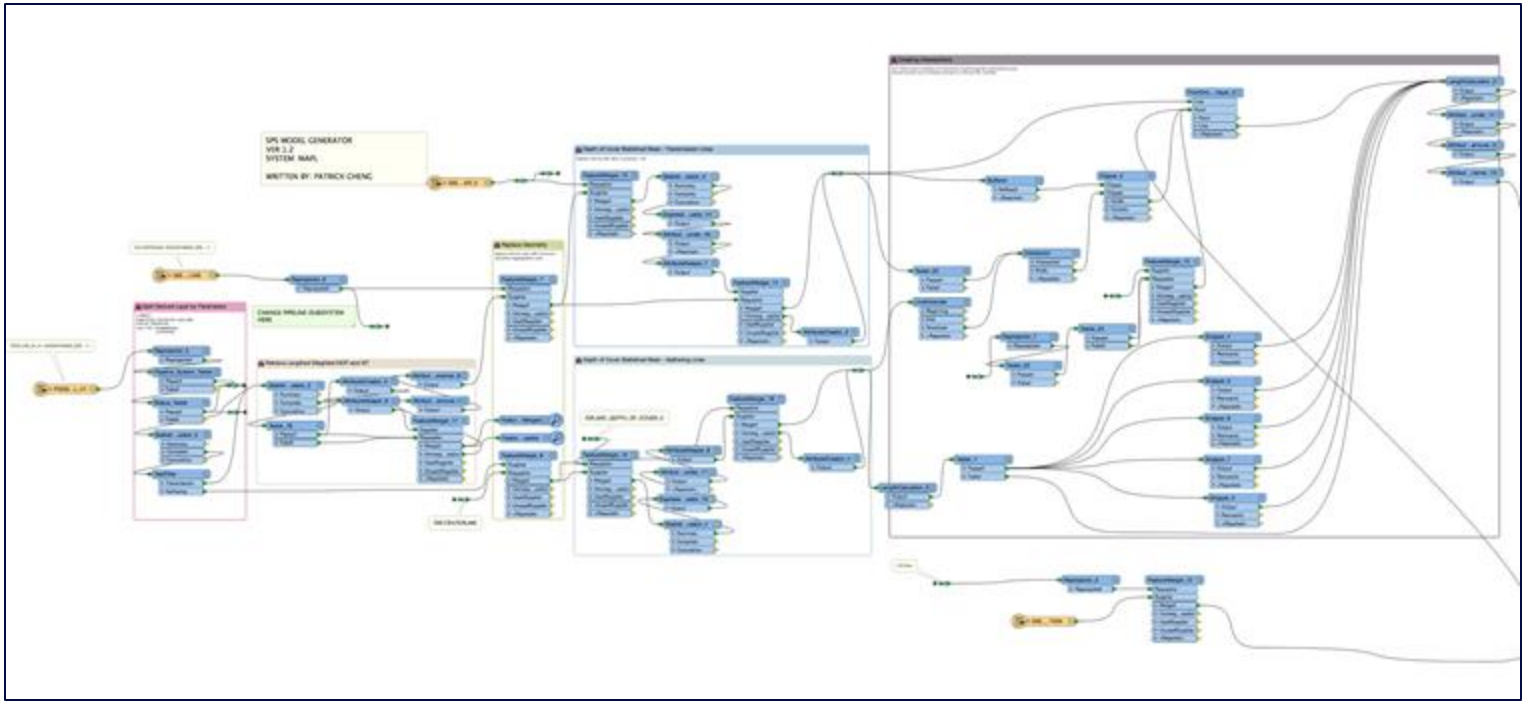
FINISH

SPS

Fully functioning system


Spruce Grove
Edmonton
Sherwood Park
Devon
Beaumont
Leduc
Wabamun
Millet
Wetaskiwin
Bluffton
Ponoka
Rimbey
Lacombe
Bentley

Input

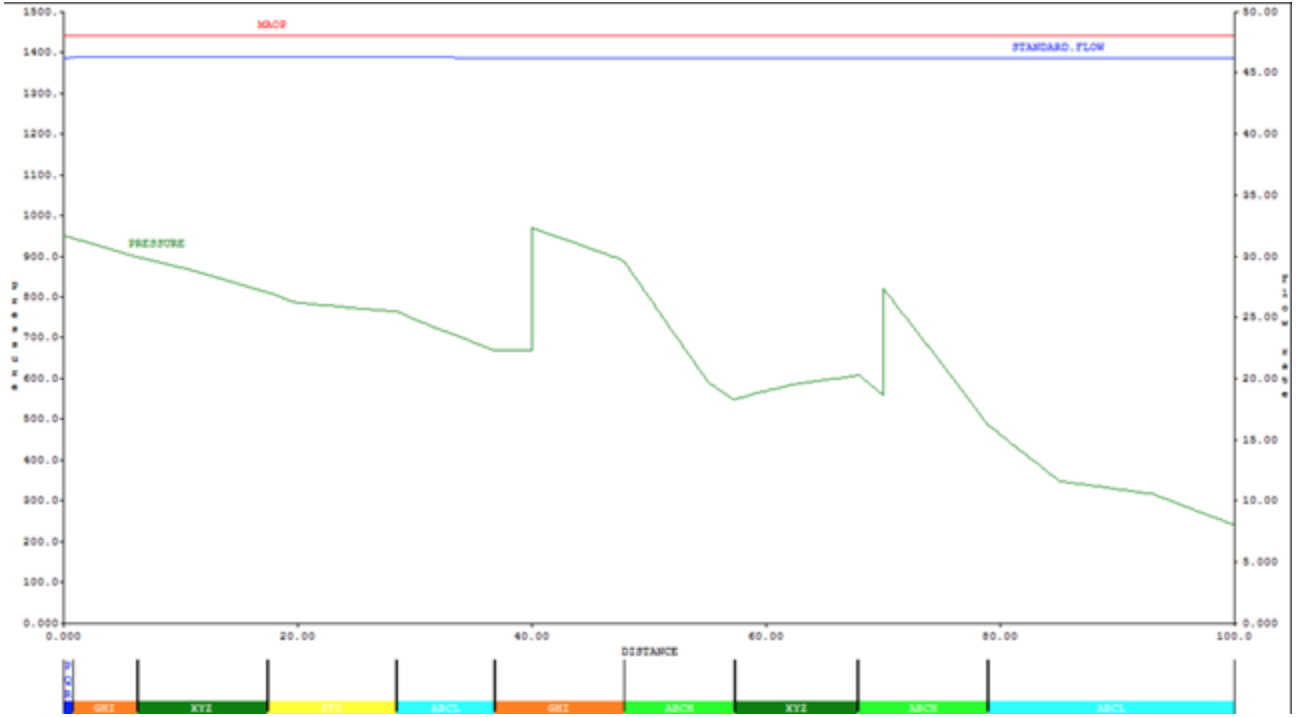


FME Workspace

```
=LIQUID
=TRANSTHERMAL

DEFUNITS MICROM = IN / 3.93701e-05
DEFUNITS GPM-PSI.5 = MB/D-PSI.5 / 0.0342857
DEFUNITS USG/MIN-PSI.5 = MB/D-PSI.5 / 0.03428634
DEFUNITS MPAA = PSIA / 6894.735
DEFUNITS MM3/H = MB/D / 6624.469
DEFUNITS MPAA_ = PSIA / 0.0001450382
DEFUNITS MM3/H_ = MB/D / 0.0001509555
DEFUNITS MPA = PSIA / 145.0382
DEFUNITS DTYW = HP / 1.341093
DEFUNITS HCD = BTU/HR-FT-DF / 577.8213
DEFUNITS HTSF = PSI-FT/SEC-DF / 0.2643652
DEFUNITS KCAL/M3 = BTU/FT3 / 0.1123275
DEFUNITS GALLON = MB / 42000
DEFUNITS #/HR = MB/D / 0.0002777778
DEFUNITS MPH = FT/S / 5280
DEFUNITS YARDS = IN / 36
DEFUNITS YARD = IN / 36
DEFUNITS YRD = IN / 36
DEFUNITS BM3/YR = MB/D / 17234.08
DEFUNITS GPH = MB/D / 0.0005714286
DEFUNITS GPD = MB/D / 2.380952e-05
DEFUNITS GAL = MB / 2.380952e-05
DEFUNITS MCF = MB / 0.1781077
DEFUNITS NN = MB/D / 1509.55
DEFUNITS NN1 = MAB/D / 1509.55
DEFUNITS T/D = LBM/S / 0.0255165
DEFUNITS W/M-DC = BTU/HR-FT-DF / 0.5778213
DEFUNITS W/M2-DC = PSI-FT/SEC-DF / 0.0002643652
DEFUNITS -KW = HP / 1.341093
DEFUNITS CMPS = MB/D / 0.001840136
DEFUNITS WM3/D = MB/D / 62.89811
DEFUNITS MPAG =  ( PSIA - 14.696 )  / 145.0383
DEFUNITS KM3/H = MB/D / 150.9555
DEFUNITS MW = HP / 1341.022
DEFUNITS YIM3/YEAR = MB/D / 1797.087
DEFUNITS NN_ = MB/D / 62.89811
DEFUNITS NN1_ = MAB/D / 62.89811
DEFUNITS MPA_ =  ( PSIA - 14.696 )  / 145.0383
DEFUNITS WF/D = MB/D / 62.89811
DEFUNITS YF/A = MB/D / 1723.408
DEFUNITS MPAA__ = PSIA / 145.0382
DEFUNITS WM3/H = MB/D / 1509.555
DEFUNITS LI = IN / 19685.04
DEFUNITS LBM/H = LBM/S / 0.0002777778
DEFUNITS MPAA___ = PSIA / 6894.735
DEFUNITS MPAA____ = PSIA / 0.0001450382
DEFUNITS MPA__ = PSIA / 145.0382
```

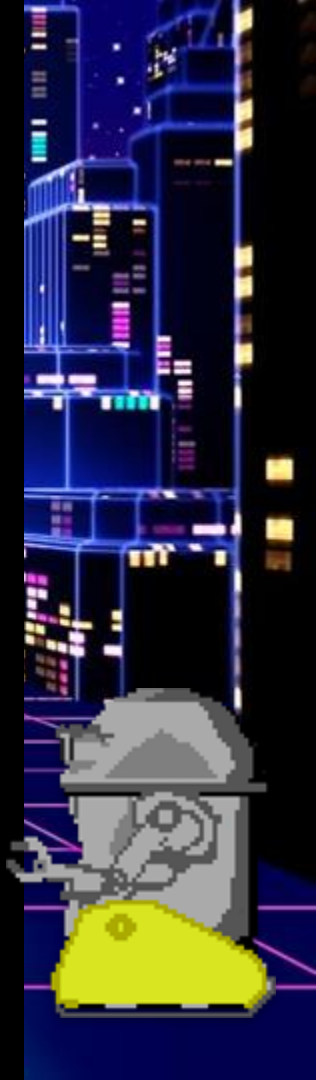
Output



Output

Results

- A fully functioning system replaces models.
- 1 month of effort has been reduced to 1-2 hours.

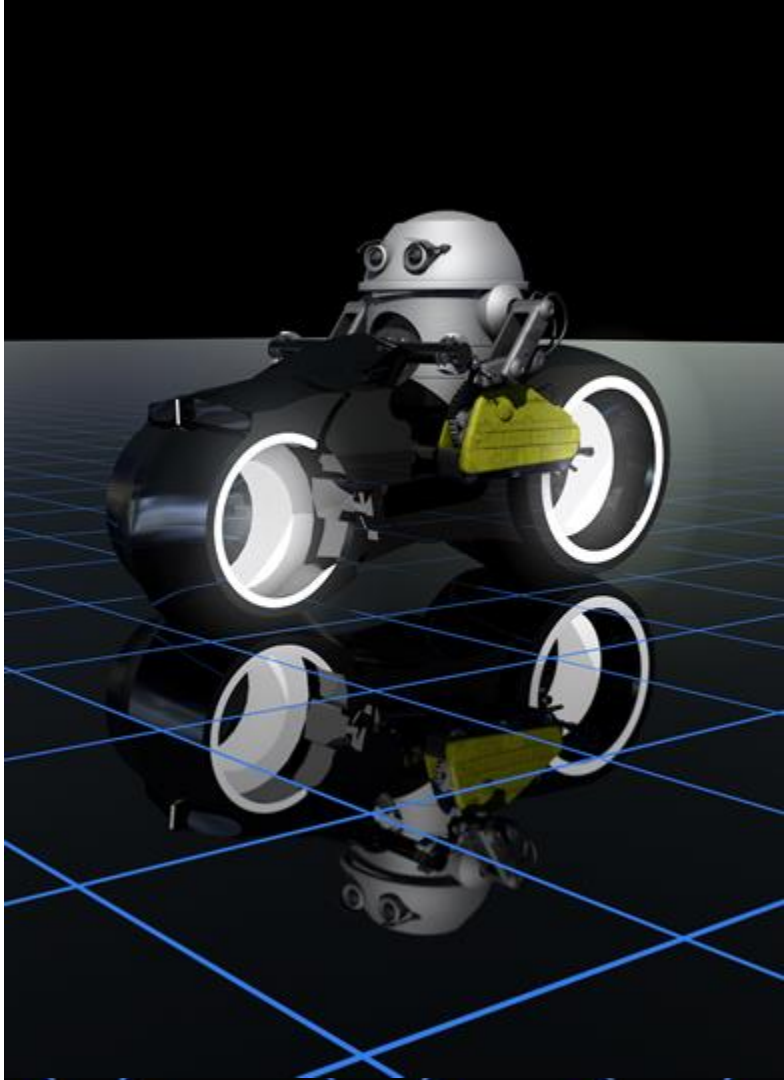


Benefits

- Increased standardization and accuracy of pipeline attributes.
- Automation of model creation.
- Time is saved to free up resources and staff workload.

Tips

- ListBuilder, Sorter, and Concatenator are helpful for creating multiline attributes.
- ExpressionEvaluator is helpful for creating scaling factors.
- StringConcatenator is helpful for generating script syntax.




“I have definitely seen a much greater scope of functionality for FME that is not limited to just GIS data.”
- Patrick Cheng, Plains Midstream Canada

Abley

Todd Davis, New Zealand

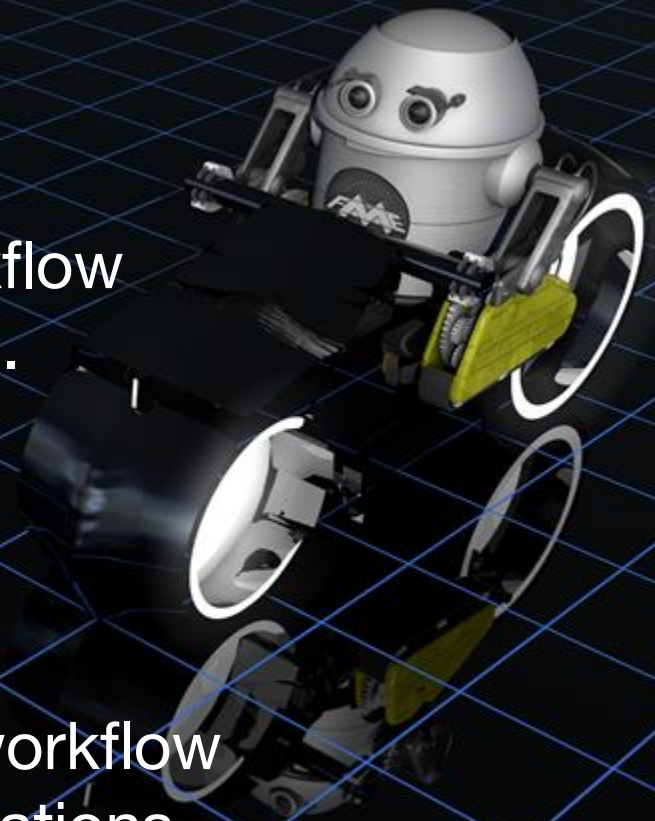
Objectives

Improve road safety with a new *Safe View* product.

- Analyze roads and calculate overtaking visibility and limitations.
- Scalable, automated process.

Challenges

- Developing a methodology. Workflow allows for varying input/scenarios.
- Handling large data volumes of high-accuracy LiDAR.
- Building an optimised, scalable workflow that can perform billions of calculations quickly and accurately.



Solution

START

Road Centerline
Digital Surface Model/ LiDAR

FME Workspace

Integrate datasets, calculate visibility

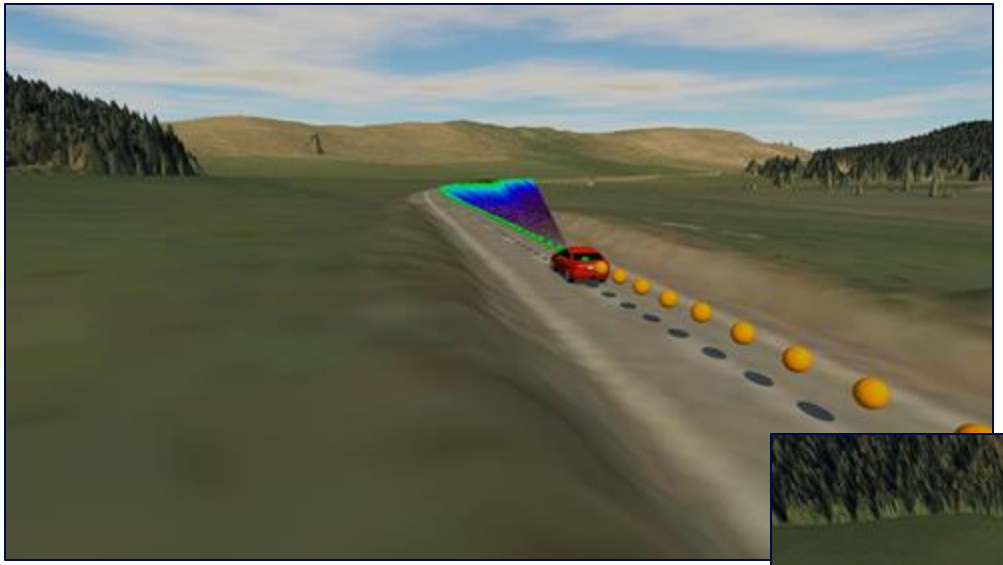
FINISH

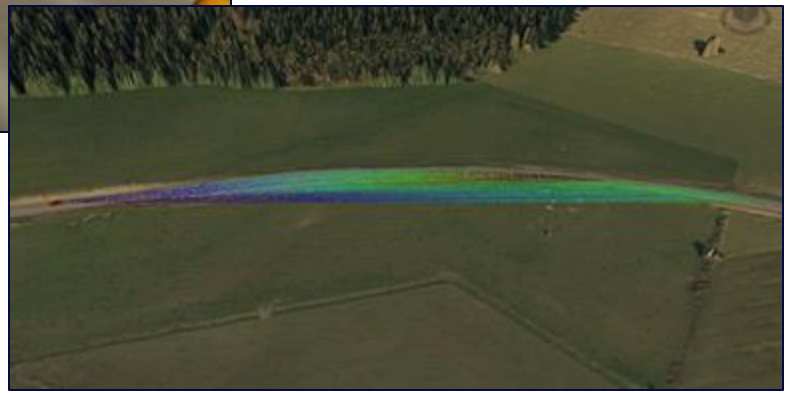
Visibility Obstruction Dataset

Output

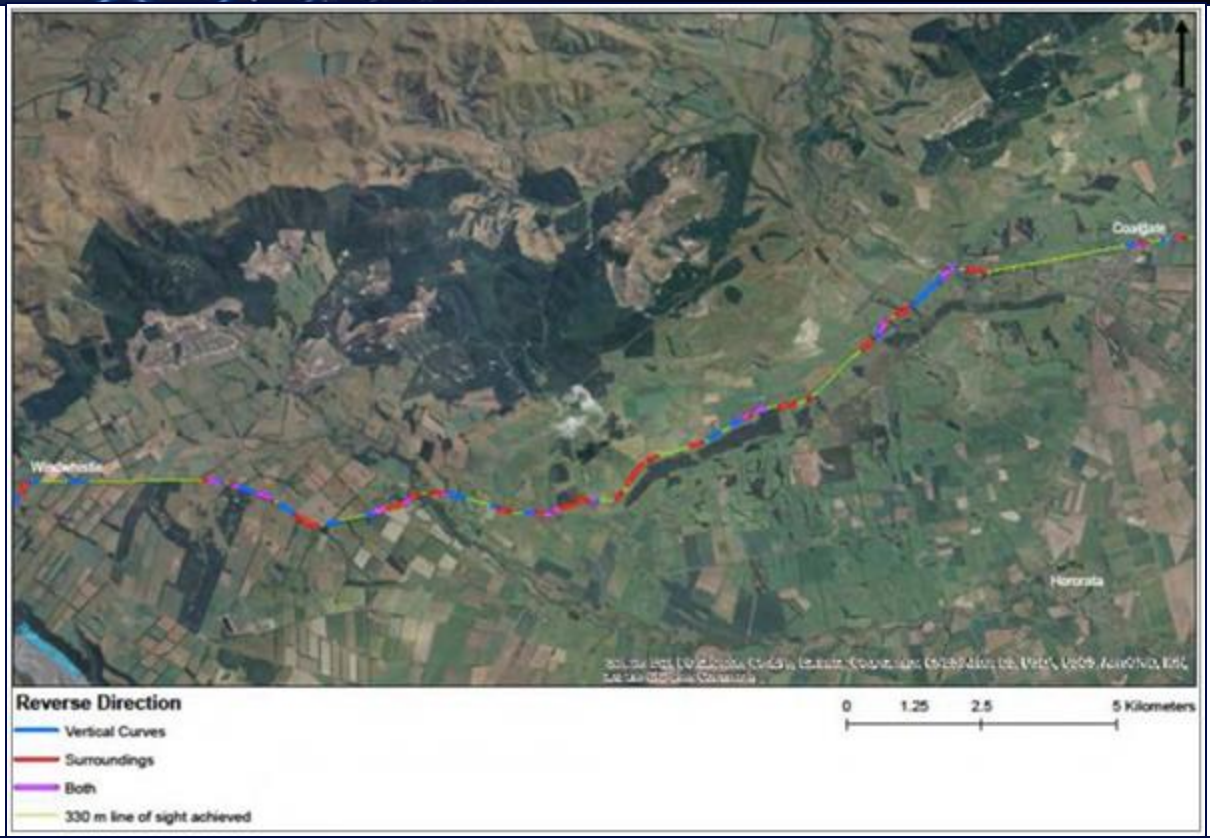
Output

Output





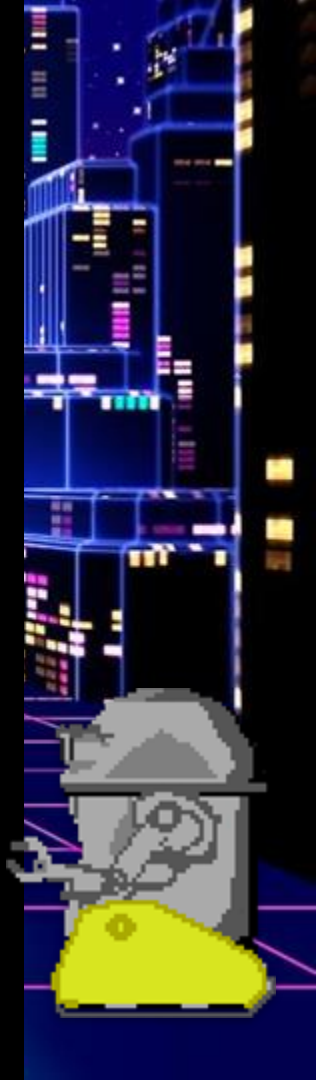
Output


Reverse Direction
Vertical Curves
Surroundings
Both
330 m line of sight achieved
0
1.25
2.5
5 Kilometers

Output

Results

- Safe View was field validated and accepted as accurate by the New Zealand Transport Agency.
- Scalable road safety product that can be utilised anywhere within the world.
- Enhanced existing road safety processes.

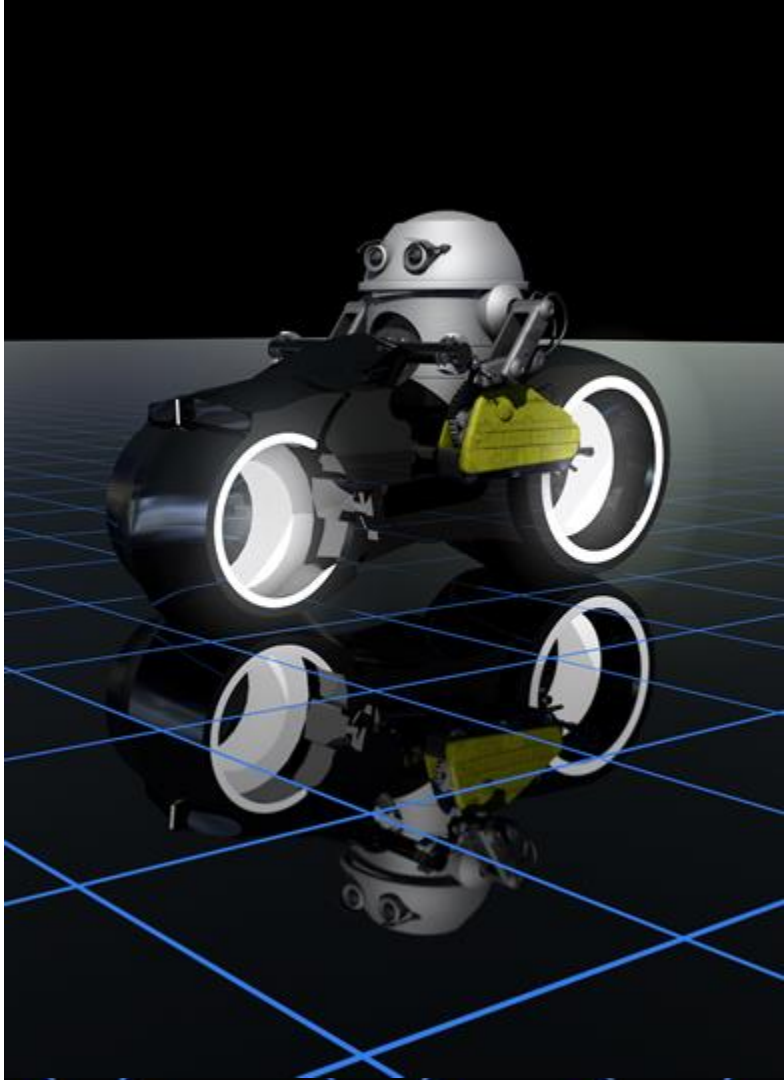


Benefits

- Allows roading authorities to have confidence in their placement of yellow “no overtaking” lines.
- Highlights area that can be considered for minor realignment, regrading, or vegetation management to create or extend overtaking opportunities.

Tip

- Point Cloud processing in FME is very fast.
- Point Clouds don’t need to have geometry.
- Getting rid of attributes/components that aren’t used will make your process run quicker.




“FME enabled us to add value to existing datasets, re-purposing and leveraging data that was already captured.”
- Todd Davis, Abley

Suncor Energy Inc.

Alonzo de la Cruz, Canada

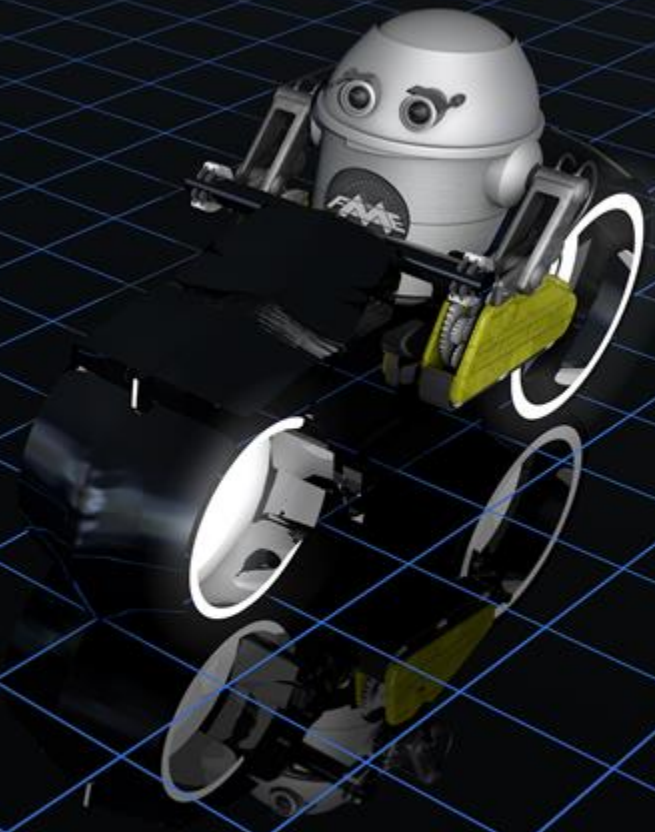
Objectives

Performing geospatial data integration for subsurface engineers.

- Reduce time spent on straightforward but time-consuming data integration tasks.
- Reduce human error.

Challenges

- Existing processes involved manual steps across several applications.
- Large data volumes needed cleaning and formatting.



Solution

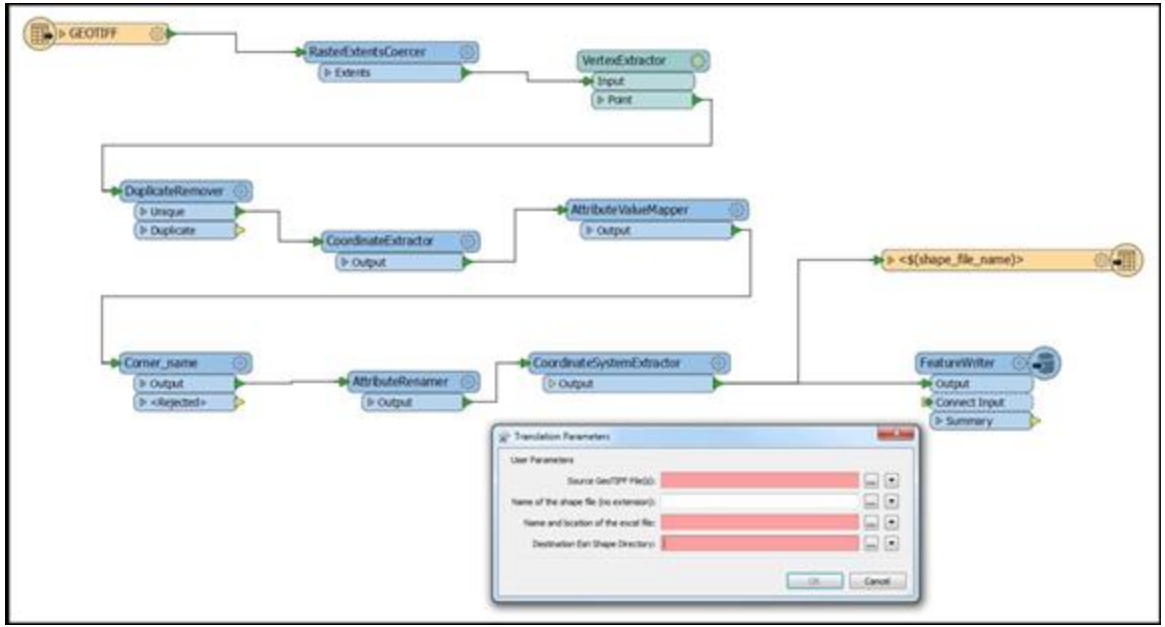
START

FINISH

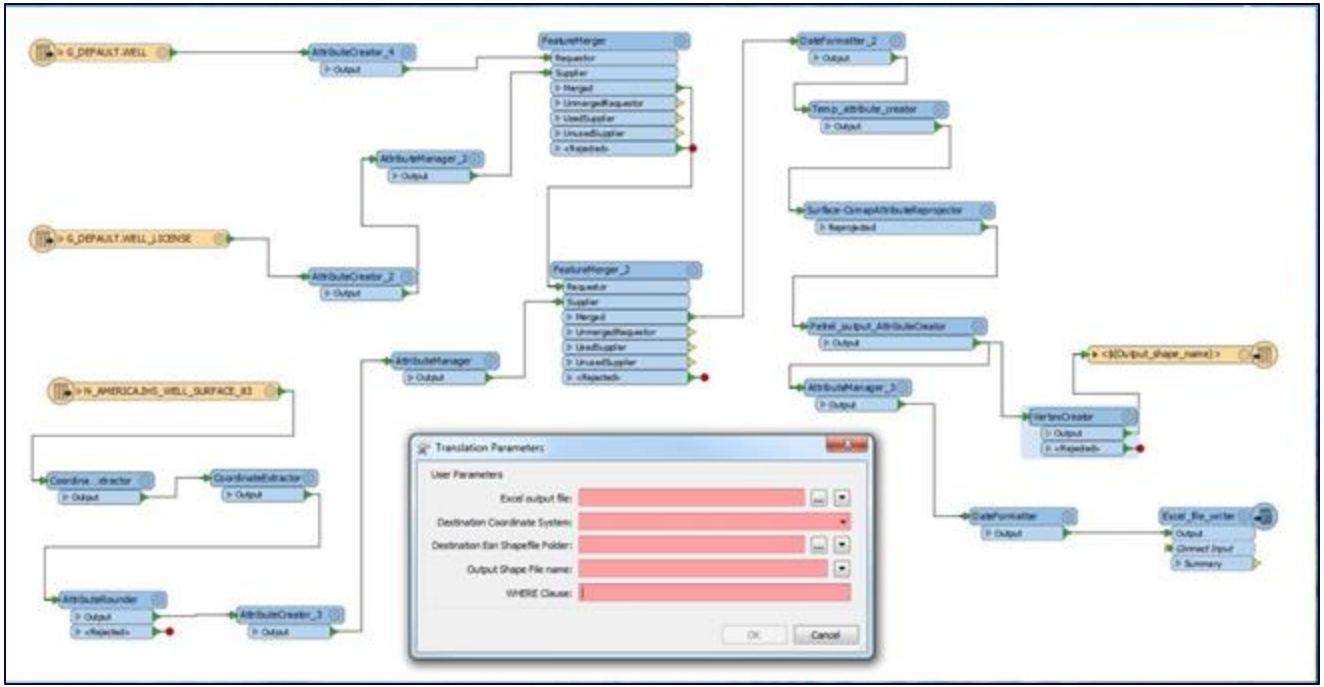
Source Data
from many systems

Solution
Convert, Manipulate, Clean

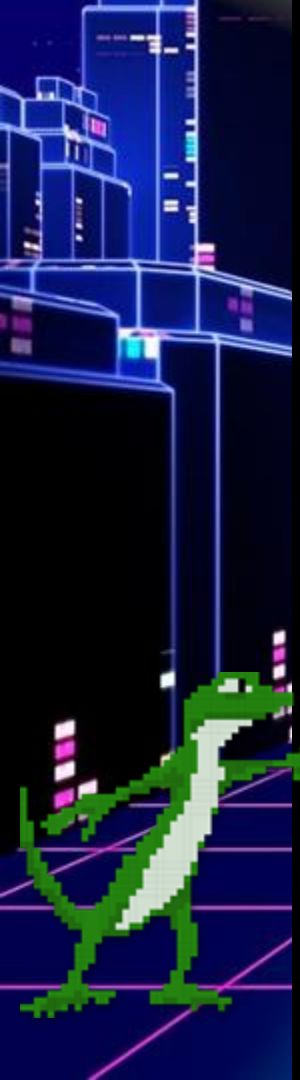
Usable Data
for engineers



FME Workspace:
Get corners of GeoTIFFs

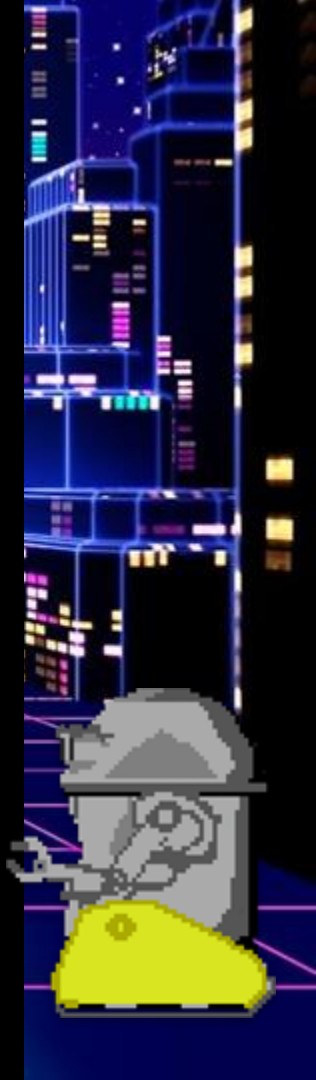


FME Workspace: Transform data from 3 database tables



Results

- Subsurface teams (geologists & geotechs) access data within minutes of their requests.
- Geospatial data tasks are reduced from hours of manual work to minutes of automated work.



Benefits

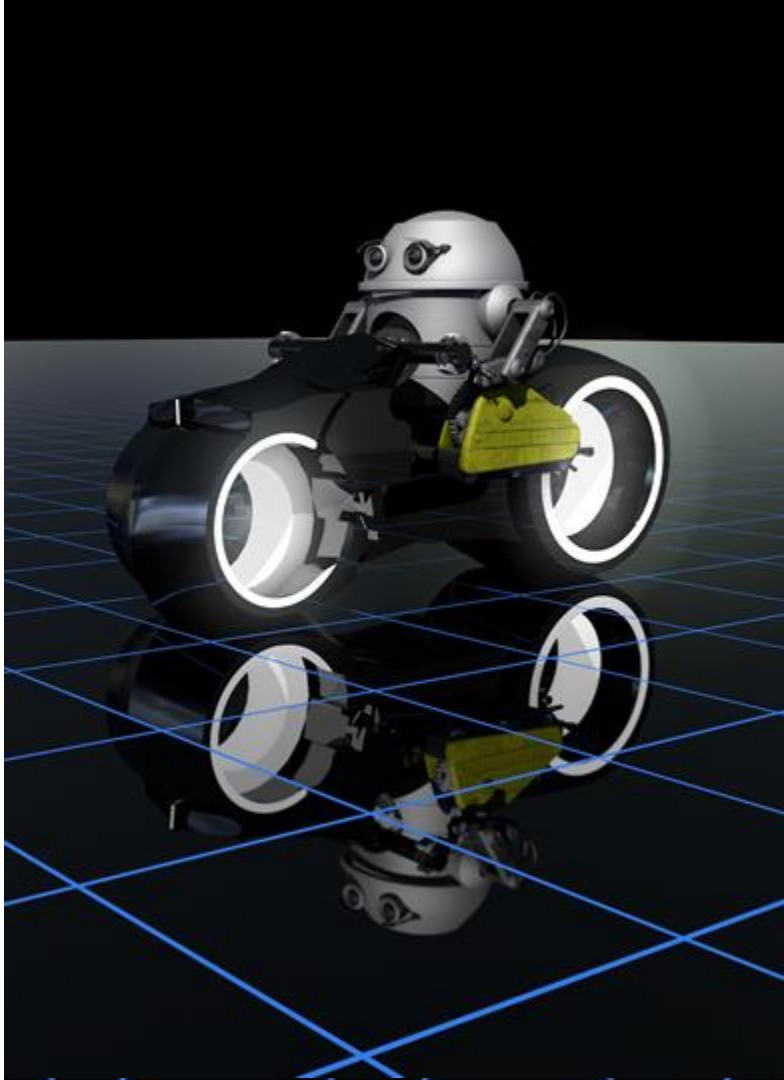
Alonzo is the hero at work.

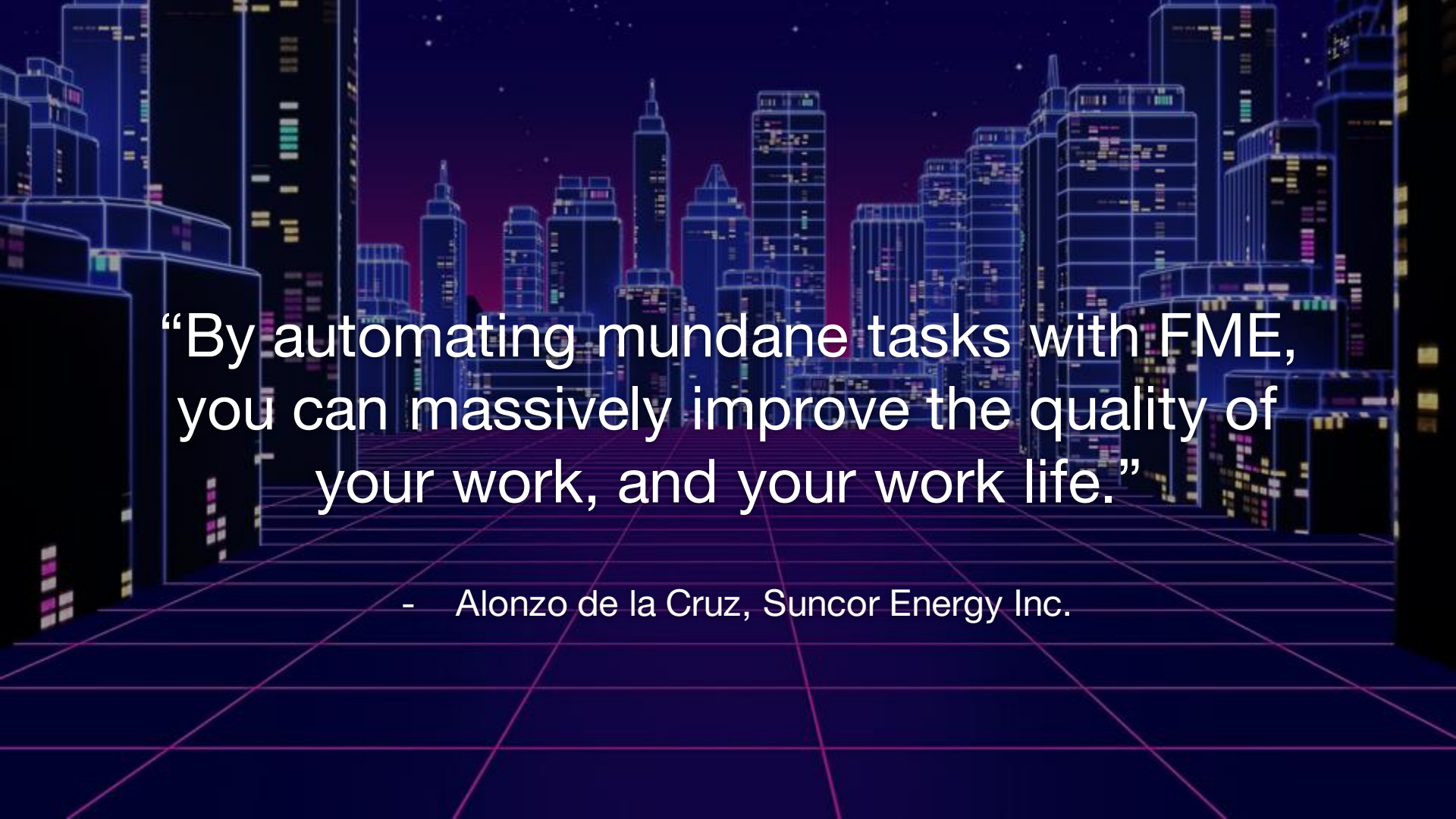
- Data integration reduced from hours to minutes.
- Removed manual work to create an automated process.
- Reduced risk of human error.

Tips

- FME is great for data cleaning and reformatting.

- A simple FME Workspace can be your most powerful tool.




“By automating mundane tasks with FME, you can massively improve the quality of your work, and your work life.”
- Alonzo de la Cruz, Suncor Energy Inc.

GHD

Steven Cyphers, California, USA

Objectives

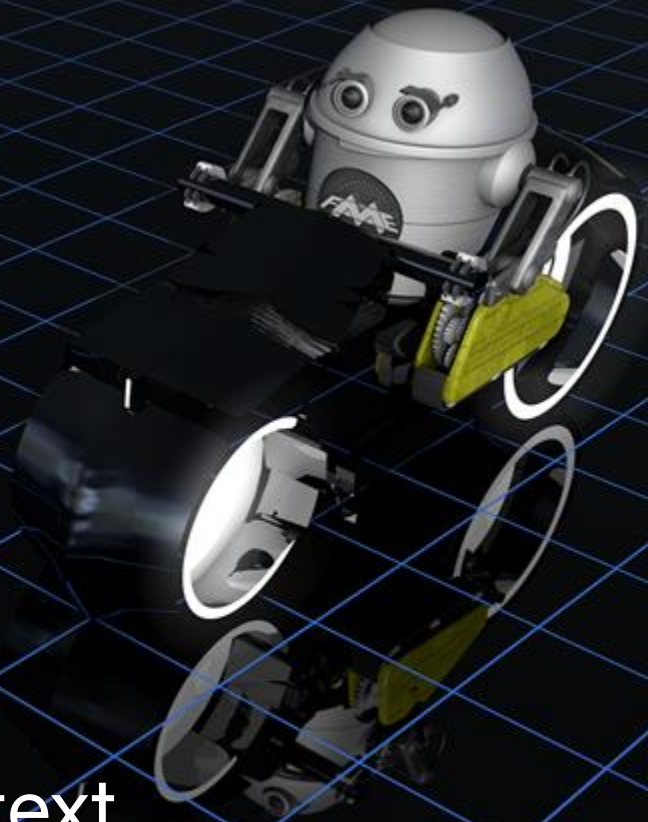
Gather business intelligence from monetary data.

- Analyze company spending for abnormalities.
- Find investment diversification opportunities.

Challenges

- Large data volumes. Must extract relevant data from 21 million filings (450 GB).

- Cleaning, formatting, and categorizing unstructured text.



Solution

START

FINISH

EDGAR Files

Pull filings from the web via API.

FME Workspace

Pull, retrieve, aggregate, & apply machine learning.

Data Collation

Put into SAP HANA for further BI tasks.

Input

AMAZON COM INC	10-Q	1018724	2018-10-26	edgar/data/1018724/0001018724-18-000159.txt
AMAZON COM INC	4	1018724	2018-10-31	edgar/data/1018724/0001018724-18-000165.txt
AMAZON COM INC	4	1018724	2018-10-31	edgar/data/1018724/0001018724-18-000166.txt
AMAZON COM INC	4	1018724	2018-10-31	edgar/data/1018724/0001018724-18-000167.txt
AMAZON COM INC	4	1018724	2018-11-06	edgar/data/1018724/0001018724-18-000169.txt
AMAZON COM INC	4	1018724	2018-11-16	edgar/data/1018724/0001018724-18-000171.txt
AMAZON COM INC	4	1018724	2018-11-19	edgar/data/1018724/0001018724-18-000183.txt
AMAZON COM INC	4	1018724	2018-11-19	edgar/data/1018724/0001018724-18-000184.txt
AMAZON COM INC	4	1018724	2018-11-19	edgar/data/1018724/0001018724-18-000185.txt
AMAZON COM INC	4	1018724	2018-11-19	edgar/data/1018724/0001018724-18-000186.txt
AMAZON COM INC	4	1018724	2018-11-19	edgar/data/1018724/0001018724-18-000187.txt
AMAZON COM INC	4	1018724	2018-11-19	edgar/data/1018724/0001018724-18-000188.txt
AMAZON COM INC	4	1018724	2018-11-19	edgar/data/1018724/0001018724-18-000189.txt
AMAZON COM INC	4	1018724	2018-11-19	edgar/data/1018724/0001018724-18-000190.txt
AMAZON COM INC	4	1018724	2018-11-19	edgar/data/1018724/0001018724-18-000191.txt
AMAZON COM INC	4	1018724	2018-11-19	edgar/data/1018724/0001018724-18-000192.txt
AMAZON COM INC	4	1018724	2018-11-19	edgar/data/1018724/0001018724-18-000193.txt
AMAZON COM INC	4	1018724	2018-11-21	edgar/data/1018724/0001018724-18-000196.txt
AMAZON COM INC	4	1018724	2018-11-21	edgar/data/1018724/0001018724-18-000197.txt
AMAZON COM INC	4	1018724	2018-11-30	edgar/data/1018724/0001018724-18-000200.txt
AMAZON COM INC	8-K	1018724	2018-10-25	edgar/data/1018724/0001018724-18-000157.txt
AMAZON COM INC	CORRESP	1018724	2018-10-12	edgar/data/1018724/0001018724-18-000155.txt
AMAZON COM INC	IRANNOTICE	1018724	2018-10-26	edgar/data/1018724/0001018724-18-000161.txt
AMAZON COM INC	UPLOAD	1018724	2018-10-01	edgar/data/1018724/0000000000-18-030959.txt
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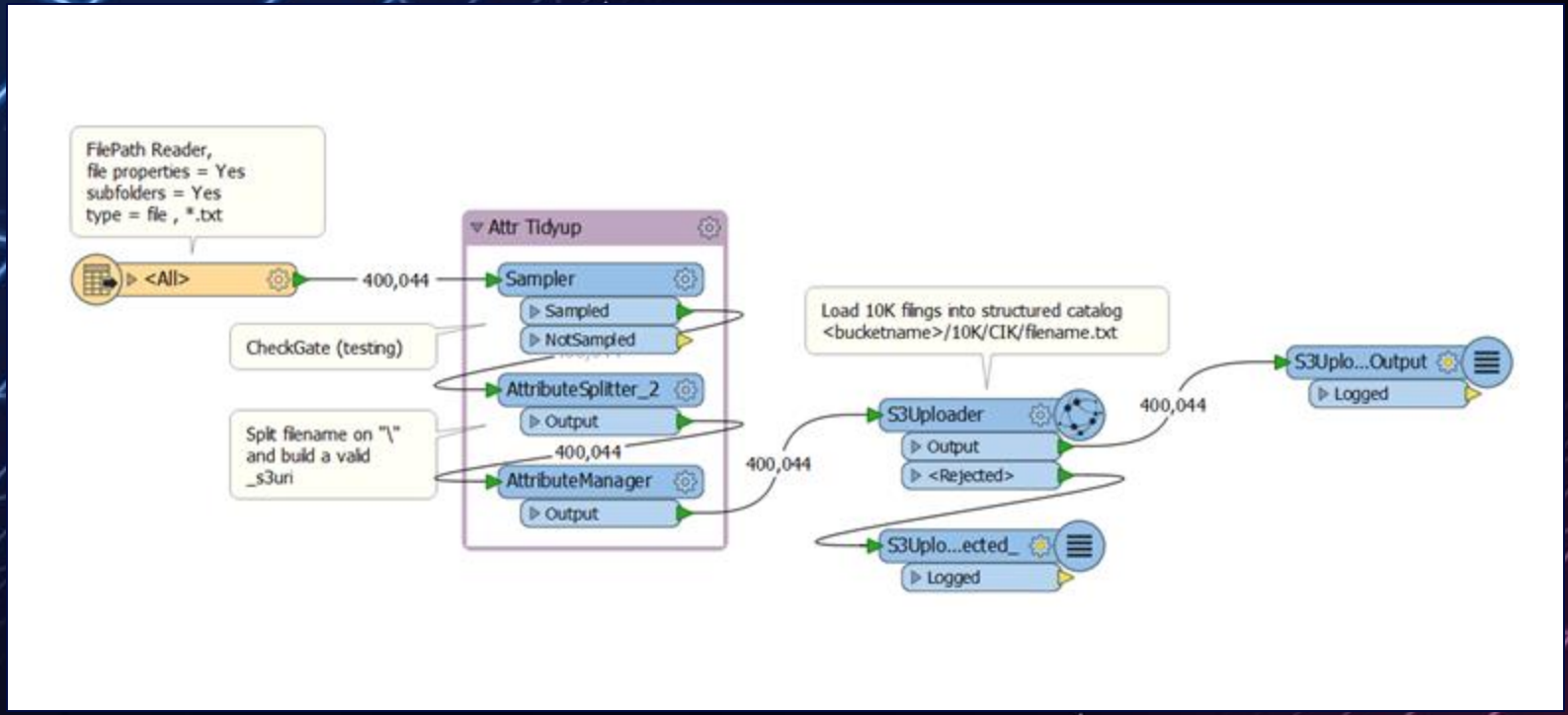
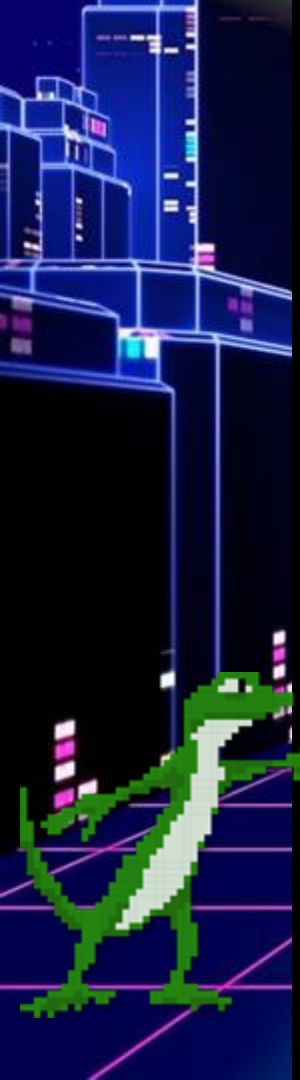


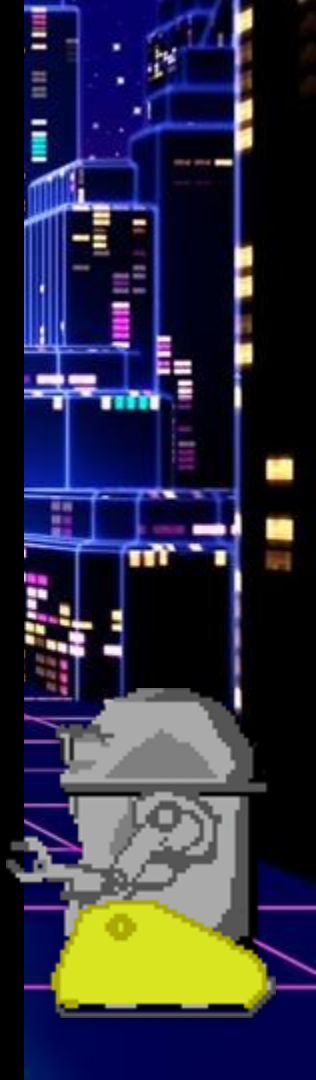
FME Workspace



Results

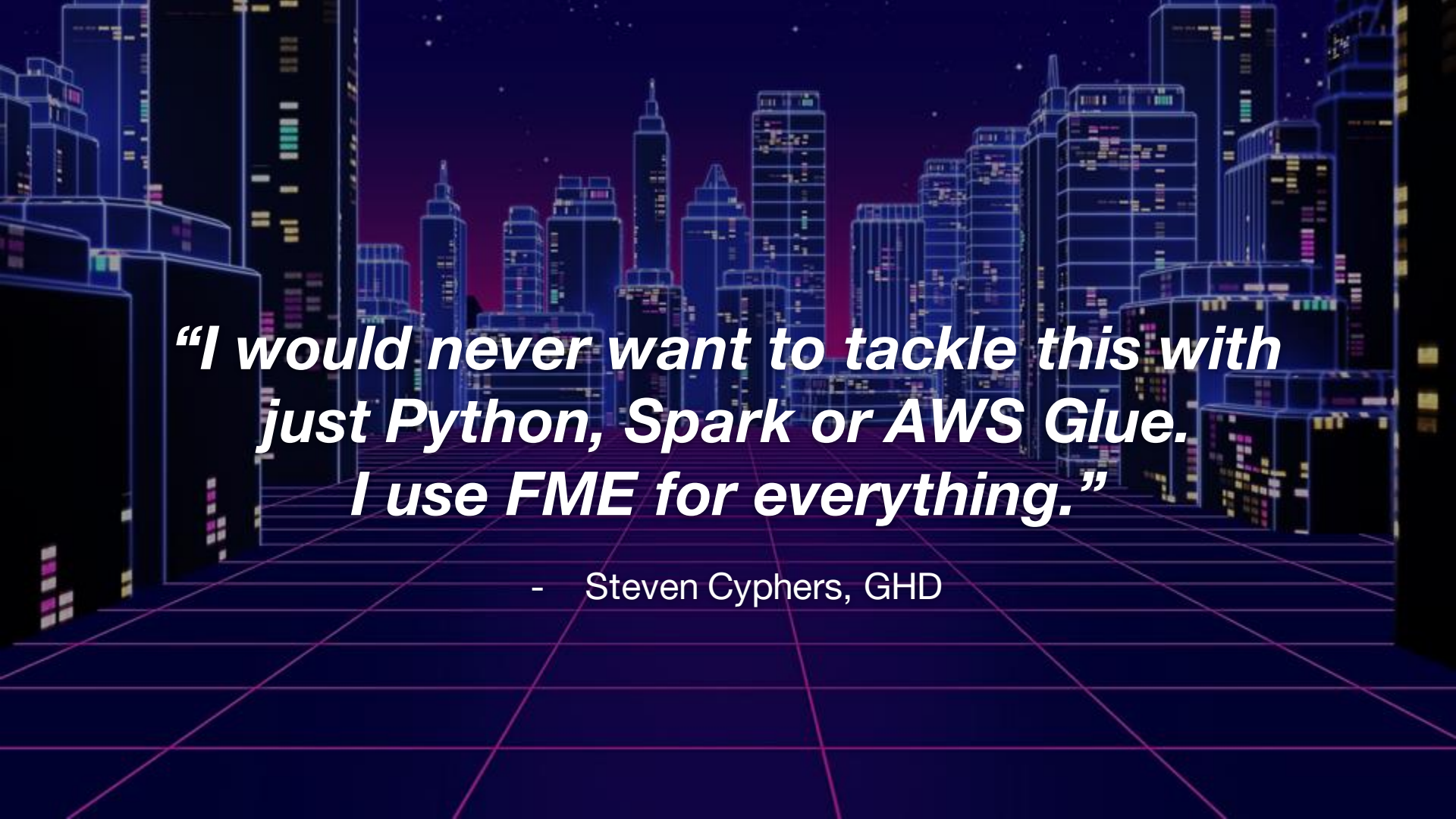
Data is in SAP HANA for business intelligence:

- Financial data collation.
- Keywords are flagged for further exploration.



Benefits

- Gathered publicly available data and derived business intelligence for a competitive edge.


“I would never want to tackle this with
just Python, Spark or AWS Glue.
I use FME for everything.”
- Steven Cyphers, GHD

Tip

AttributeManager + HTTPCaller are your BFFs for building APIs.