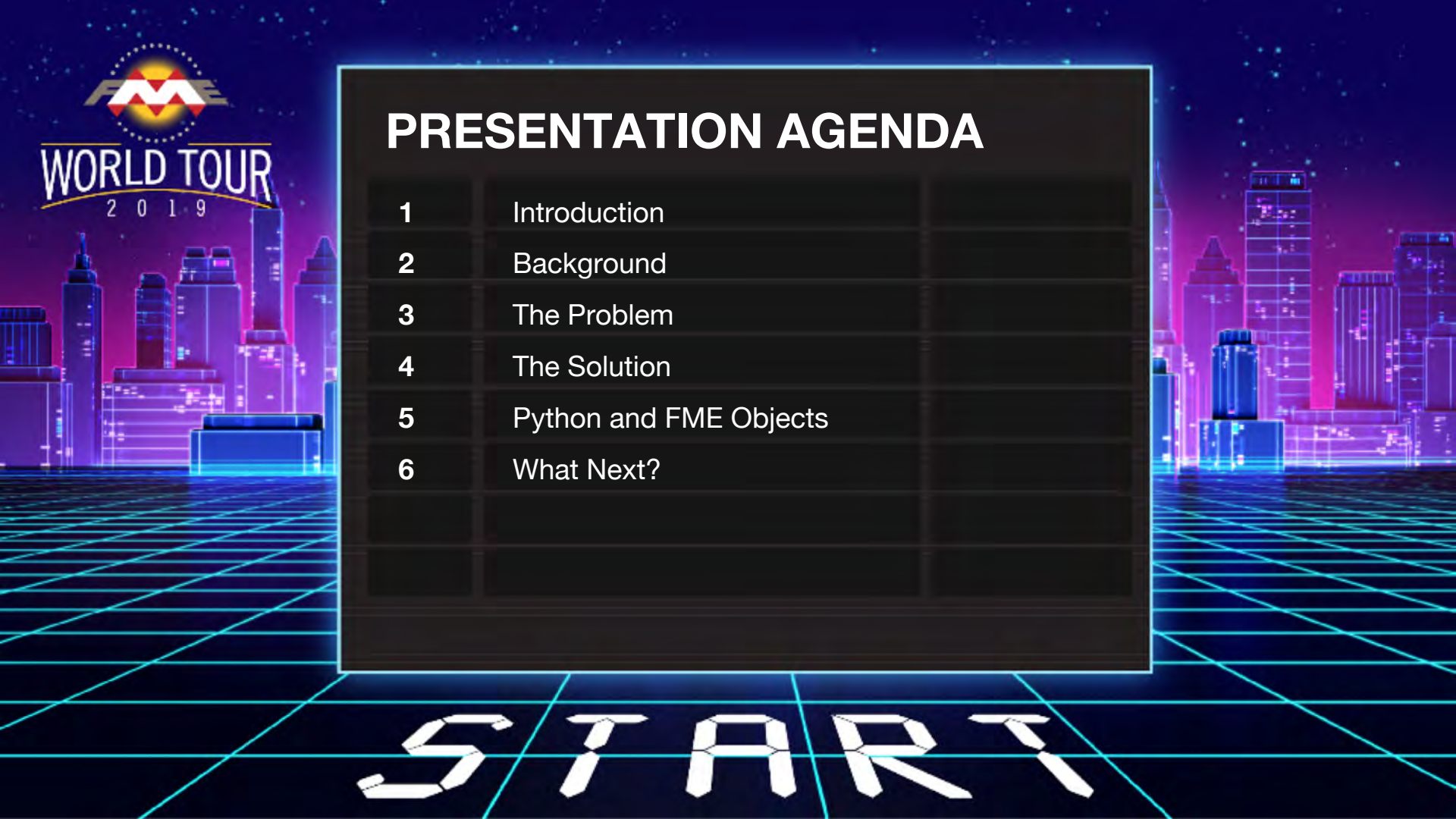
SAFE SOFTWARE

Interrupting Your Workbench

Hamish Kingsbury


WORLD TOUR
2019
PRESENTATION AGENDA
1 Introduction
2 Background
3 The Problem
4 The Solution
5 Python and FME Objects
6 What Next?
START

What we do

- Abley is a specialist professional services company, long experienced in transportation planning and engineering, spatial and data intelligence
- Abley empower our clients to make effective decisions by providing clear and insightful advice
- Legacy of transportation and spatial capabilities

Partners

Who Am I?

ArcGIS Desktop Certified esri

Web Application Developer Certified esri

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Partners

Background


NCTIR


Raramai
DRAFT CONCEPT

The Problem


NCTIR
Map Viewer
Help
Find address or place
Layer List
Layers
Recent Earthquakes (Updated Every hour)
ECan Contours (Post EQ)
Road Status
Reference
Indices
Projects
NCTIR Works
Geohazards
Geology
Utilities
Safety
Environmental
Chainages
Client Assets
Fulcrum Inspection
Survey
Specific mean annual low flow (NIWA)
Seven-day mean annual low flow (NIWA)
Coastal Uplift
LiDAR Elevation Change (m) Nov2016-June2018
LiDAR Elevation Change (m) Nov2017-June2018
LiDAR Elevation Change (m) May2017-Nov2017
LiDAR Elevation Change (m) Nov2016-May2017
INLAND ROUTE R500/0 (KAIKOURA #118)/2000
INLAND ROUTE R500/0 (KAIKOURA #118)/0
015-0155/2000
015-0155/3000
015-0155/4000
015-0155/5000
015-0155/6000
015-0155/7000
015-0163/0
015-0163/1000
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Layers:

- Archaeology (73)
  - NZAA Sites (83)
  - The New Zealand Heritage List/Rārangi Kōrero (17)
  - Cultural/Heritage Sites (16)
  - Archaeology Risk Areas (153)
    - Lines (100)
    - Boundary (152)
  - Archaeology Risk Sites (99)
  - Other Risk Areas (117)
- Consents (109)
  - Coastal Consent Line (2018-03-26) (105)
  - Coastal Construction Zone Line (2018-03-26) (106)
  - Coastal Construction Zone Polygon (2018-03-26) (107)
  - Coastal Indicative Shared Path (2018-03-26) (108)
- Significant Plant Species (4)
- Seed Collection Waypoints (115)
- Hydroseeding (101)
  - Hydroseeding (102)
  - Seed and Fertilizer (103)
- Wells (32)
- Bird Way Points (81)
- Water Quality (56)
  - Surface Water (55)
  - Stream Health (54)
  - Groundwater (53)
- Active Resource Consents (47)
- Listed Land Use Register (45)
  - Activities (42)
  - Investigations (43)
  - Sites (44)
- Cultural Sensitive Zones (64)
- Bird Habitats (79)
- Seal Habitat (94)
- Lizard Habitats (150)
- Freshwater Fish Species - NIWA (121)
- River Environment Classification - NIWA (123)
- Ecological Value of Natural Waterways (119)
- Stockpile Sites (71)
- Kaikoura District Council (16)
  - Significant Landscape (35)
  - Outstanding Landscape (34)
- Hurunui District Council (33)
  - Outstanding Natural Areas (Proposed District Plan) (32)
  - Significant Natural Areas (Proposed District Plan) (31)
- Areas of Significant Natural Value (26)
- Wairahu Reserve Areas temp (28)
- QEII National Trust Open Space Covenants (18)
- Hurunui Area (24)
- Protected Marine Areas (1)
- Protected Marine Areas (14)
- High Value Terrestrial Areas (22)
- Public Conservation Areas (20)
- All Subject Parcels (66)
- Land Resource Inventory (46)

Layers:

- Telecoms (0)
  - Vodafone (1)
    - Fibre - Vodafone Responsibility (2)
      - South Island Fibre Optic Transmission (3)
      - South Island Fibre Optic Transmission vaults (4)
    - Aqualink (5)
      - Aqualink (6)
      - Aqualink vaults (7)
  - Chorus (8)
    - High Risk Cable (& Sheath Route Gather) (9)
    - Poles (10)
    - Terminal Enclosure (11)
    - LANA Exchange (12)
    - Underground Utility Box (13)
    - Underground Routes (14)
    - Aerial Routes (15)
- Power (16)
  - Transpower (17)
    - Sites (18)
    - Transline (19)
  - Marlborough Lines (20)
    - Underground (21)
    - Overhead (22)
  - MainPower (23)
    - Substation (24)
    - Poles (25)
    - LV Poles (26)
    - MV Lines (27)
    - LV Lines (28)
    - LV Cables (29)
    - HV Cables (30)
- 3 Waters (31)
  - Hurunui District Council (32)
    - Water Supply (33)
      - WS Points (34)
      - WS Lines (35)
    - Waste Water (36)
      - WW Points (37)
      - WW Lines (38)
    - Stormwater (39)
      - SW Points (40)
      - SW Lines (41)
  - Kaikoura District Council (42)
    - Water Supply (43)
      - WS Points (44)
      - WS Lines (45)
    - Waste Water (46)
      - WW Points (47)
      - WW Lines (48)
    - Stormwater (49)
      - SW Points (50)
      - SW Lines (51)
    - Assessments (52)
  - ECAN (53)
    - Camper Sewage Disposal (54)
    - Water Supply (55)
    - Waste Water (56)
    - Storm Water (57)
    - Water Point (58)

Layers:

- Work Zones (1)
- Road Closure (2)
- Research Project (3)
- Kiwirail MN: Detour (4)
- TTS (5)
- LO NCTIR Copy (6)
- Traffic Loading (7)
- Trial Land (8)
- TC Count Site (9)
- SL Pole (10)
- Sign (11)
- SH Detail (12)
- Retaining Wall (13)
- Pavement Test Pit (14)
- NT Diversion (15)
- Minor Structure (16)
- Island Location (17)
- Island (18)
- Intersection Locations (19)
- Intersection (20)
- Features (21)
- Drainage (22)
- Crossing (23)
- UD Work Zone (25)
- UD Wooden Bridge (26)
- UD Unavailable Utility Services (27)
- UD Traffic Growth (28)
- UD Special Routes (29)
- UD Special Route Groups (30)
- UD Special Route Detail (31)
- UD School Bus Routes (32)
- UD Percentile SNP (33)
- UD NCC (34)
- UD LTTP (35)
- Kiwirail MN: Diversion (36)
- UD HREB (37)
- UD Five Percentile Snap (38)
- UD EQ NCTIR Copy (39)
- UD Curve Context (40)
- UD Areas (41)
- Treatment (42)
- UD Channel (43)
- Ballarat (44)
- NT Diversion (45)
- Natural (46)
- Island Use (47)
- Intersection Loc (48)
- Carriage Way (49)
- UD Maintenance (51)
- UD Minor Works and Hazards (52)
- UD Pedestrianscore (53)
- UD Pedestrianscore (54)
- Treatment Length (55)
- Shoulder (56)
- Retaining Wall (57)
- NT Diversion (58)
- Minor Structure (59)
- Island (60)
- Footpath Renew (61)
- Crossing (62)
- C Surface (63)
- Bridge (64)

Layers:

- LAV Survey Areas (0)
- Post Earthquake (4)
  - Primary Survey Control (NCTIR Benchmark Survey February 2017) (2)
  - Secondary Survey Control (NCTIR Benchmark Survey February 2017) (3)
- Pre Earthquake (7)
  - Survey Marks (5)
  - Geodetic Marks (6)
- Indices (11)
  - Ratonomic Imagery Footprints (12)
  - Post EQ DEM tile index (13)
  - Post EQ DEM tile index (Inland Route) (14)
  - December 2016 image tile index (15)
  - May 2017 image tile index (16)
  - November 2017 image tile index (17)
  - March 2018 image tile index (18)
  - June 2018 image tile index (22)
  - Aerators River Tile Index (19)
  - Waiau River Tile Index (20)
- Conway River Survey (21)
  - Conway River Contours 1m (25)
    - Major (23)
    - Minor (24)
  - Aerial Imagery (26)
    - Boundary (27)
    - Footprint (28)
    - Image (29)
  - Hillshade LiDAR (26)

Layers:

- Vodafone (25)
  - Fibre - Vodafone Responsibility (26)
    - South Island Fibre Optic Transmission (39)
    - South Island Fibre Optic Transmission vaults (27)
  - Aqualink (27)
    - Aqualink (21)
    - Aqualink vaults (36)
- Chorus (7)
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  - Poles (8)
  - Terminal Enclosure (1)
  - LANA Exchange (2)
  - Underground Utility Box (3)
  - Underground Routes (5)
  - Aerial Routes (6)

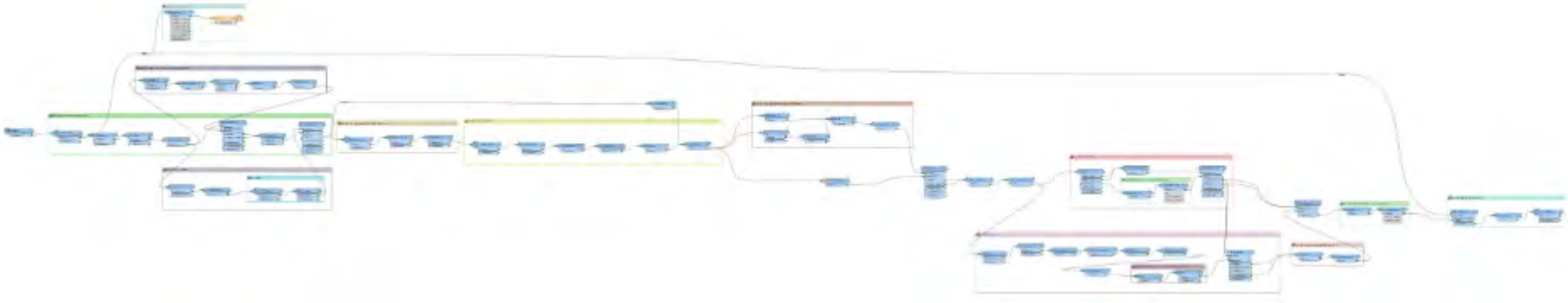
Layers:

- Emergency Retrieval Locations (51)
- Emergency Evacuation Locations (55)
- Crashes (27)
  - 2012-2016 (25)
  - 2000-2011 (311)
- Alternate Route KiwiRAP (14)
  - High Risk Intersections (2011-2015) (2)
  - Alternate Detour Speed Limits (3)
  - Collective Risk 5km (2011-2015) (0)
  - Collective Risk 5km (Predicted +5,000ADT) (1)
  - Star Rating 5km (2012) (4)
  - Operating Speed (85 %ile km/h) (5)
  - Curve Risk (10)
    - Out of context (12)
    - In context (13)
- SH1 KiwiRAP (40)
  - Medium to High Risk Intersections (2011-2015) (31)
  - Star Rating calculated 5km (32)
  - Collective Risk 5km (2011-2015 data) (33)
  - Personal Risk 5km (2011-2015 data) (34)
  - Speed Limit (current) (35)
  - Curve Risk (38)
    - Out of context (36)
    - In context (37)
  - Operating Speed (85 %ile km/h) (39)
- Construction Safety Zones (62)
- KDC NCTIR Haul Route Maintenance (58)
  - NCTIR (65)
  - KDC (67)


But what if we want to update more than one layer?

Surely there's a better way?

The Solution



- FME!
- a few HTTP calls
- And a bit of JSON wrangling

HTTPCaller [HTTPCaller]
HTTPCaller_2 [HTTPCaller]
HTTPCaller_3 [HTTPCaller]
HTTPCaller_6 [HTTPCaller]
HTTPCaller_8 [HTTPCaller]
JSONExtractor [JSONExtractor]
JSONExtractor_3 [JSONExtractor]
JSONFlattener [JSONFlattener]
JSONFlattener_3 [JSONFlattener]
JSONFlattener_4 [JSONFlattener]
JSONUpdater_2 [JSONUpdater]
JSONUpdater_3 [JSONUpdater]

So what does it do?

- GETs JSON from AGOL
  - Backup (save) the original JSON
- Gets metadata of layers from Map Service(s)
- Updates popups in JSON
- POSTs JSON back to AGOL

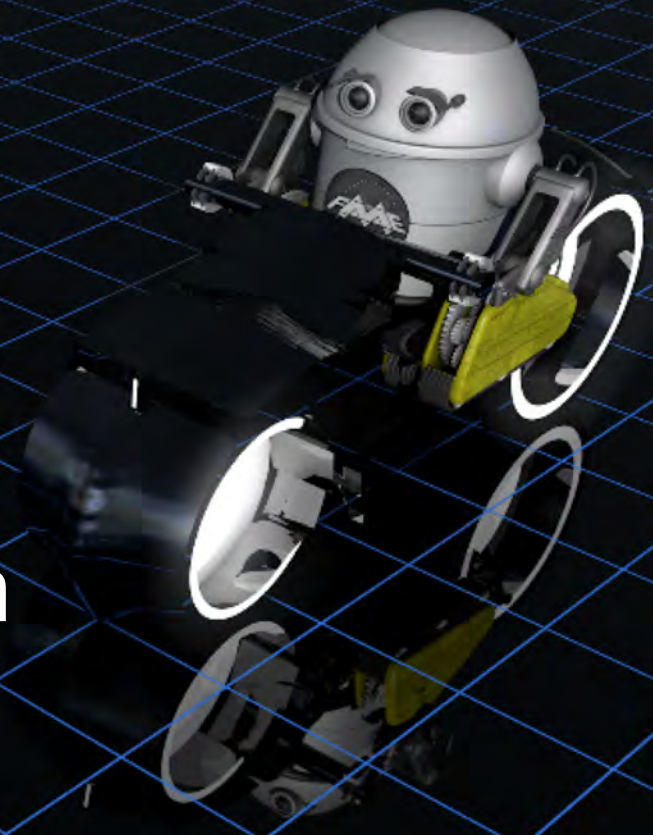
How do we specify what layers?

- Have a hardcoded parameter at the start of the transformation containing all the layers?

- Ask user to manually specify what layers they want to update?
    - What if the user doesn’t know all the layers?
    - Or they want to update 10s or 100s of layers?

How about asking for user input…

…. While the workbench is running?



Knowledge Base

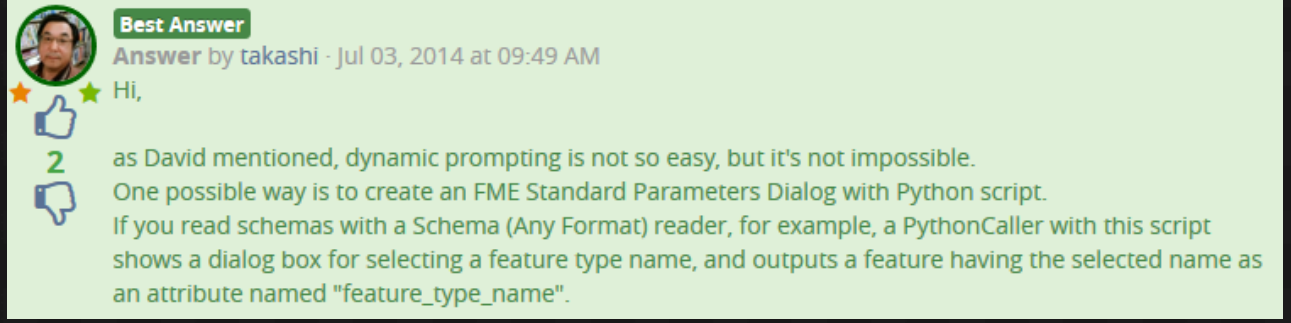
takashi

Takashi Iijima
Tokyo, Japan
Pacific Spatial Solutions Inc.
Joined: Oct 27, 2015 at 07:15 PM
Last seen: 11 hours ago

FME Certified Professional
FME Certified Server Pro

24 Questions 2494 Answers 3997 Comments 0 Favorites

Python and FME Objects



Best Answer

Answer by takashi · Jul 03, 2014 at 09:49 AM

Hi,

2

as David mentioned, dynamic prompting is not so easy, but it's not impossible.
One possible way is to create an FME Standard Parameters Dialog with Python script.
If you read schemas with a Schema (Any Format) reader, for example, a PythonCaller with this script shows a dialog box for selecting a feature type name, and outputs a feature having the selected name as an attribute named "feature_type_name".

https://knowledge.safe.com/questions/4144/

python™

FME™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Everything
Modules
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Everything
All Classes
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fmeobjects.FMEAlpha8Tile
fmeobjects.FMEArc
fmeobjects.FMEArea
fmeobjects.FMEAreaIterator
fmeobjects.FMEBRepSolid
fmeobjects.FMEBand
fmeobjects.FMEBandProperty
fmeobjects.FMEBlue16Tile
fmeobjects.FMEBlue8Tile
fmeobjects.FMEBox
fmeobjects.FMECSGSolid
fmeobjects.FMECSGSolidIterator
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fmeobjects.FMECompositeSurface
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FMEBand
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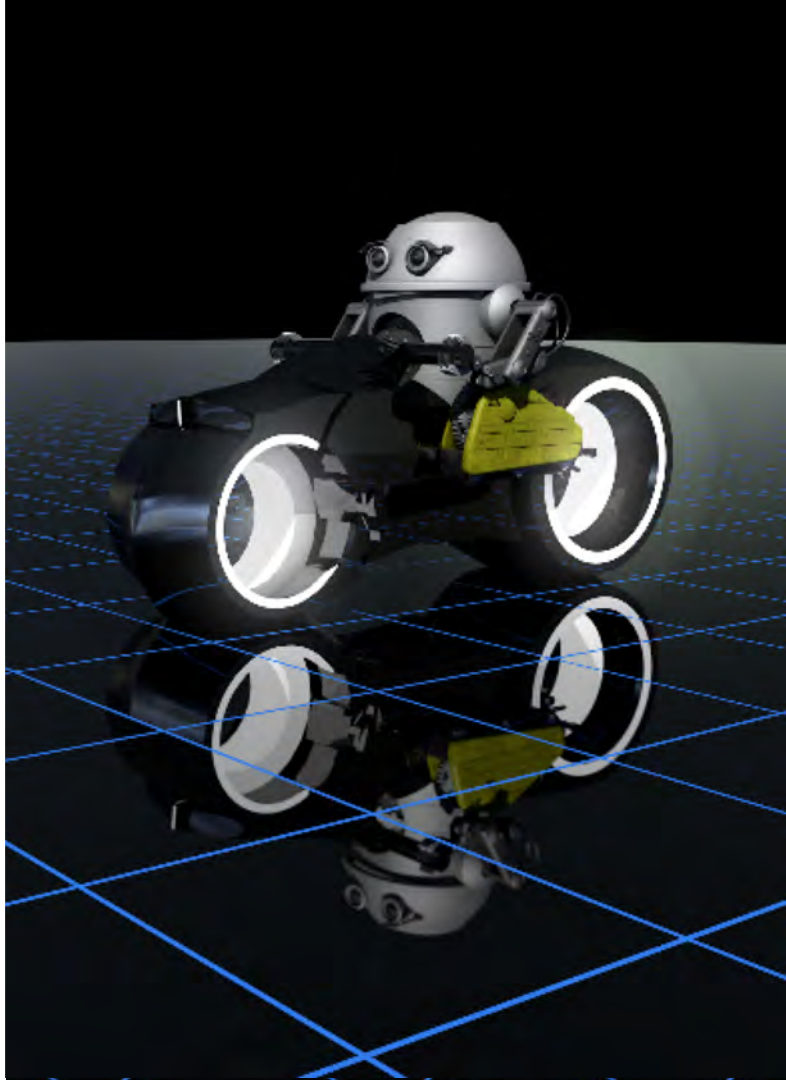
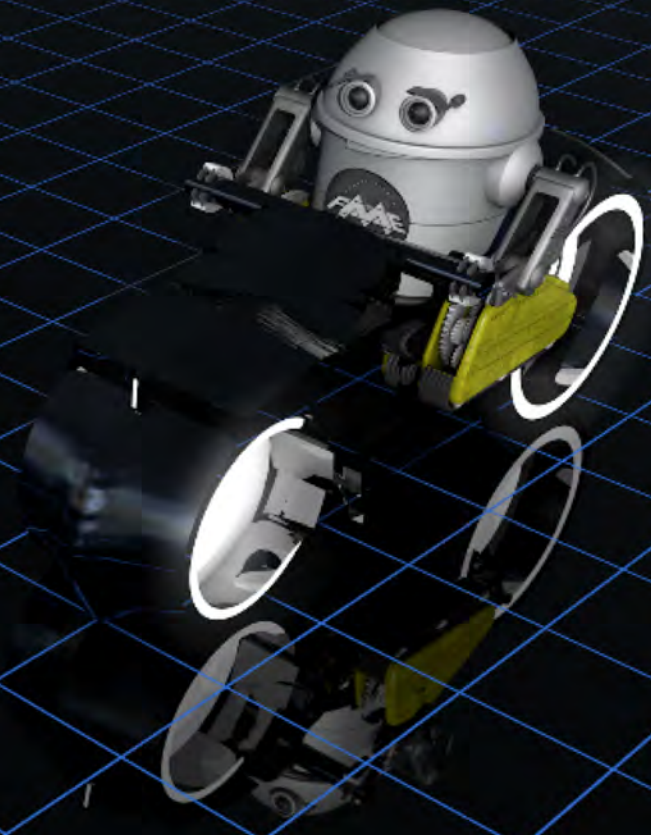
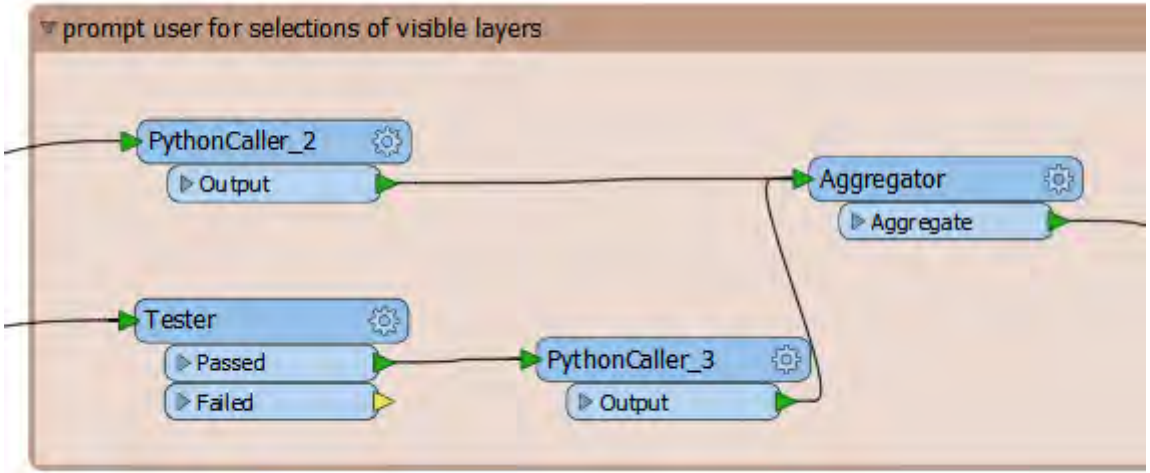
init(MultipleInvocations)
FMEBandTilePopulator
FMEBandTilePopulator Superclass
FMEBlue16Tile



I’m no expert on this!




prompt user for selections of visible layers
PythonCaller_2
Output
Aggregator
Aggregate
Tester
Passed
Failed
PythonCaller_3
Output

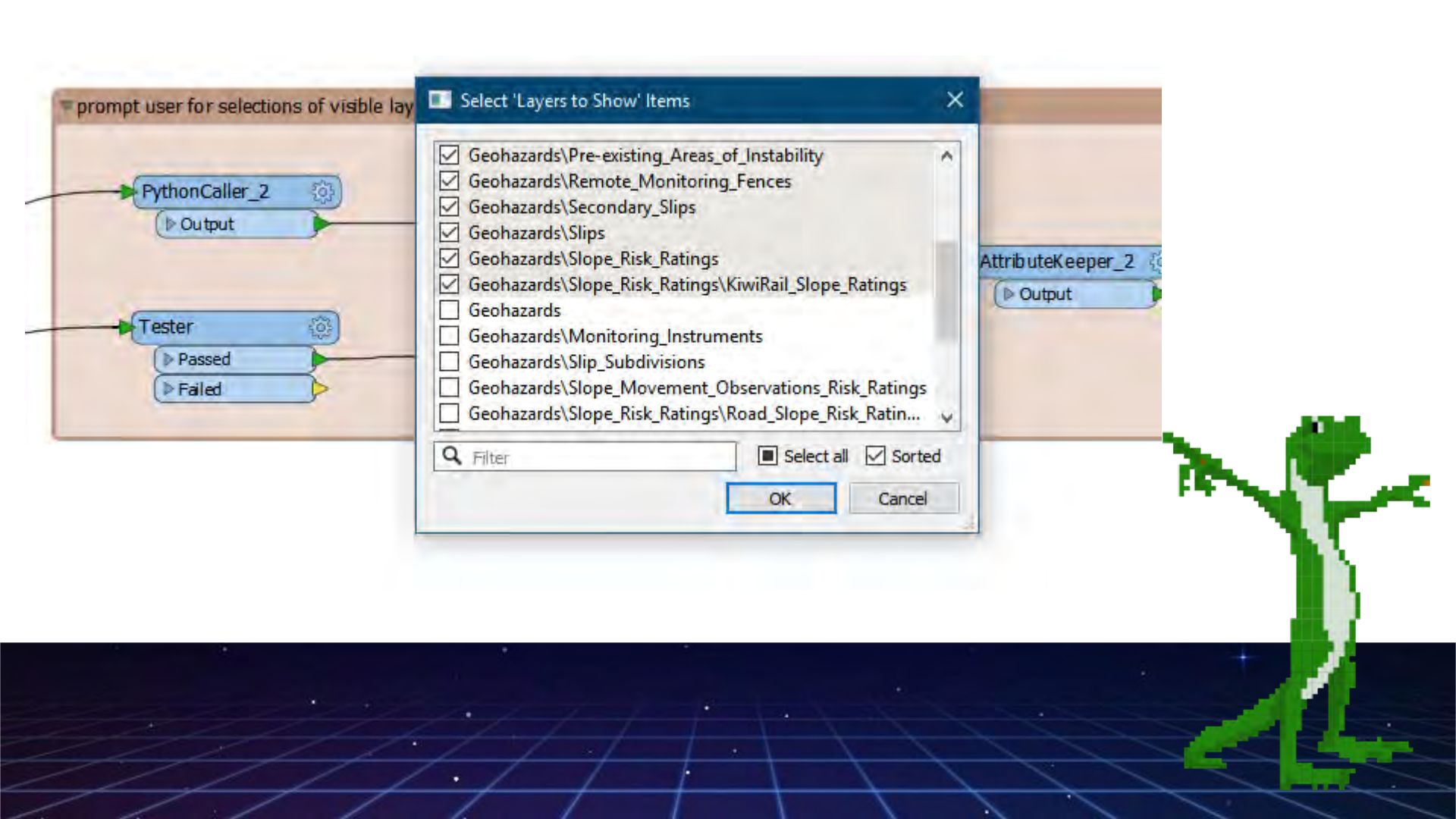
```
6  class FeatureTypeSelector(object):
7      def __init__(self):
8          self.names = []
9          self.checked = []
10         self.dict = {}
11
12     def input(self, feature):
13         # Collect feature type names from the input feature
14         # read by a SCHEMA reader.
15         name = feature.getAttribute('Fullname').replace(' ','_')
16         self.names.append(name)
17         self.dict[name]=feature.getAttribute('_uuid')
18         if feature.getAttribute('visibility') == True or feature.getAttribute('visibility') == 'Yes':
19             self.checked.append(name)
20
```

```
29          # Create FME GUI directives.
30          gui = 'GUI TITLE Select Layers to Enable\n'
31          gui += 'DEFAULT_VALUE FEATURE_TYPE %s\n' % ' '.join(self.checked)
32          gui += 'GUI LISTBOX FEATURE_TYPE %s Layers to Show' % '%'.join(self.names)
```

```
36              # Create a temporary file and save the FME GUI directives.
37              fd, guiPath = tempfile.mkstemp(dir = '.')
38              os.write(fd, gui)
39              os.close(fd)
```

```
1 GUI TITLE Select Layers to Enable
2 DEFAULT_VALUE FEATURE_TYPE Geohazards\Slips Geohazards\Secondary_Slips
  Geohazards\Pre-existing_Areas_of_Instability Geohazards\Geohazard_Assessment
  Geohazards\Geohazard_Assessment\Landslide_Hazard
  Geohazards\Geohazard_Assessment\Rockfall_hazard
  Geohazards\Geohazard_Assessment\Debris_flow_hazard
  Geohazards\M7.8_Kaikoura_Earthquake_14Nov2016
  Geohazards\M7.8_Kaikoura_Earthquake_14Nov2016\Horizontal_PGA
  Geohazards\M7.8_Kaikoura_Earthquake_14Nov2016\Vertical_PGA
  Geohazards\Kaikoura_Faults_(ECan) Geohazards\Slope_Risk_Ratings
  Geohazards\Slope_Risk_Ratings\KiwiRail_Slope_Ratings
  Geohazards\Remote_Monitoring_Fences
3 GUI LISTBOX FEATURE_TYPE
  Geohazards\Slope_Risk_Ratings\Road_Slope_Risk_Ratings_South\Road_Risk_-_Short_Term_Road
  _Opening_%Geohazards\Slope_Risk_Ratings\Road_Slope_Risk_Ratings_South\Road_Risk_-_Long_
  Term%Geohazards\Slope_Risk_Ratings\Road_Slope_Risk_Ratings_South\Road_Risk_-_Initial%Ge
  ohazards\Slope_Risk_Ratings\Road_Slope_Risk_Ratings_South%Geohazards\Slope_Risk_Ratings
  \Road_Slope_Risk_Ratings_North\Road_Risk_-_Short_Term_Road_Opening_%Geohazards\Slope_Ri
  sk_Ratings\Road_Slope_Risk_Ratings_North\Road_Risk_-_Long_Term%Geohazards\Slope_Risk_Ra
  tings\Road_Slope_Risk_Ratings_North\Road_Risk_-_Initial%Geohazards\Slope_Risk_Ratings\R
  oad_Slope_Risk_Ratings_North%Geohazards\Slope_Risk_Ratings\KiwiRail_Slope_Ratings%Geoha
  zards\Slope_Risk_Ratings%Geohazards\Slope_Movement_Observations_Risk_Ratings%Geohazards
  \Slips%Geohazards\Slip_Subdivisions%Geohazards\Secondary_Slips%Geohazards\Remote_Monito
  ring_Fences%Geohazards\Pre-existing_Areas_of_Instability%Geohazards\Monitoring_Instrume
  nts%Geohazards\M7.8_Kaikoura_Earthquake_14Nov2016\Vertical_PGA%Geohazards\M7.8_Kaikoura
  _Earthquake_14Nov2016\Horizontal_PGA%Geohazards\M7.8_Kaikoura_Earthquake_14Nov2016%Geoh
  azards\Kaikoura_Faults_(ECan)%Geohazards\Geohazard_Assessment\Rockfall_hazard%Geohazard
  s\Geohazard_Assessment\Landslide_Hazard%Geohazards\Geohazard_Assessment\Debris_flow_haz
  ard%Geohazards\Geohazard_Assessment%Geohazards Layers to Show
```

```
41              # Create and show a parameter settings dialog box.
42              # If the user exits the dialog with [OK], output a feature
43              # having the selected name as attribute called "feature_type_
44              dlg = fmeobjects.FMEDialog()
45              if dlg.parameterPrompt(guiPath):
46                  f = open(guiPath)
47                  rows = [r.strip() for r in f.readlines()]
48                  f.close()
49                  for i in rows[1].split(' '):
50                      feature = fmeobjects.FMEFeature()
51                      feature.setAttribute('_uuid', self.dict[i])
52                      feature.setAttribute('visibility', 'Yes')
53                      self.pyoutput(feature)
```


prompt user for selections of visible lay
PythonCaller_2
Output
Tester
Passed
Failed
Select 'Layers to Show' Items
Geohazards\Pre-existing_Areas_of_Instability
Geohazards\Remote_Monitoring_Fences
Geohazards\Secondary_Slips
Geohazards\Slips
Geohazards\Slope_Risk_Ratings
Geohazards\Slope_Risk_Ratings\KiwiRail_Slope_Ratings
Geohazards
Geohazards\Monitoring_Instruments
Geohazards\Slip_Subdivisions
Geohazards\Slope_Movement_Observations_Risk_Ratings
Geohazards\Slope_Risk_Ratings\Road_Slope_Risk_Ratin...
Filter
Select all
Sorted
OK
Cancel
AttributeKeeper_2
Output

Advantages

- Dynamic interaction
- Fast
- Easy
- All in one workbench

Disadvantages

- Can’t be automated (Server)
- Breaks FME’s natural flow
- ‘Hack’
- Better as a webapp?

What Next?

What Next?

- Currently
  - Layer visibility
  - Hide/show popups
- In Development
  - Symbology
  - Hide/show popup fields (using regex)
  - Label configuration

THANK YOU!

Hamish.Kingsbury@abley.com