Screenshots from the "FME and Internet of Things" talk at the New Zealand FME World Tour events by Gary Nicholson from Locus Ltd.

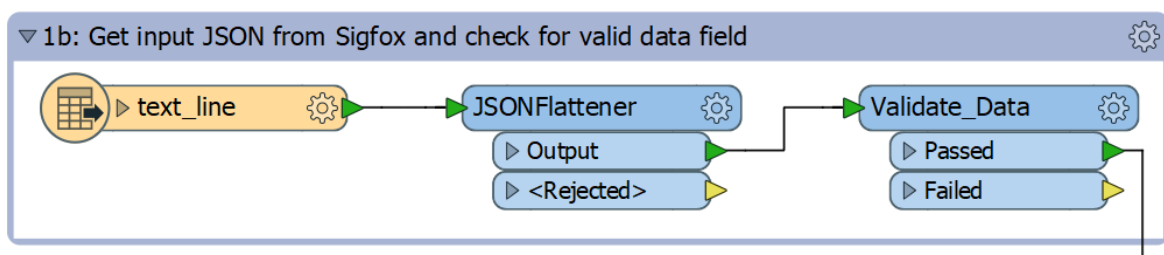Please ask gary@locus.co.nz if you would like the workspace.

1a: JSON received from Sigfox

Sigfox calls this workspace
http://*******.co.nz/fmejobsubmitter/
Locus/getdata.fmw

with this json:

```
{
 "device":"2C379C",
 "time":1526163395,
 "duplicate":false,
 "snr":37.19,
 "station":"4F68",
 "data":"0053c0f7e95a5a3e680000a8",
 "avgSnr":45.40,
 "lat":-37.0,
 "lng":175.0,
 "rssi":-106.00,
 "seqNumber":2571
}
```

1b: Get input JSON from Sigfox and check for valid data field

text_line → JSONFlattener
  Output
  <Rejected>
→ Validate_Data
  Passed
  Failed

1c: Example decode

raw data is 24 hex characters:
0053c0f7e95a5a3e680000a8

This contains:
utctime = 2018/05/12 22:16:35
latitude = -36.963934
longitude = 174.8916826
heading = 0
speed = 0
battery = 4.2

2: Extract individual bytes

SubstringExtractor — ▷ Output
Substrin...ractor_2 — ▷ Output
Substrin...ractor_3 — ▷ Output
Substrin...ractor_4 — ▷ Output
Substrin...ractor_5 — ▷ Output
Substrin...ractor_6 — ▷ Output

Substrin...ractor_7 — ▷ Output
Substrin...ractor_8 — ▷ Output
Substrin...ractor_9 — ▷ Output
Substrin...actor_10 — ▷ Output
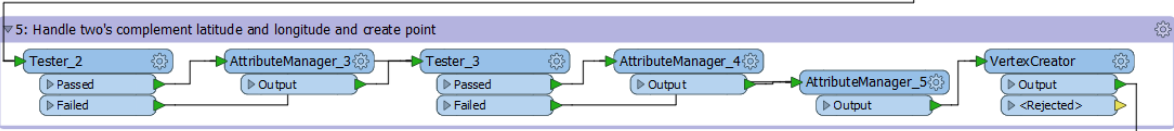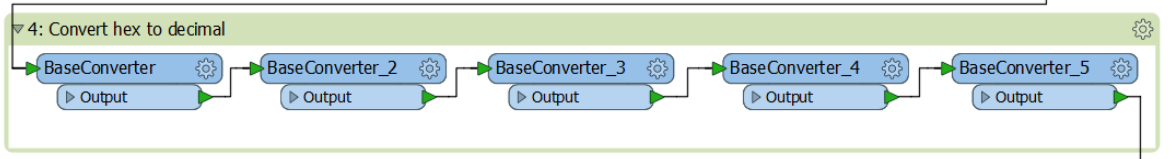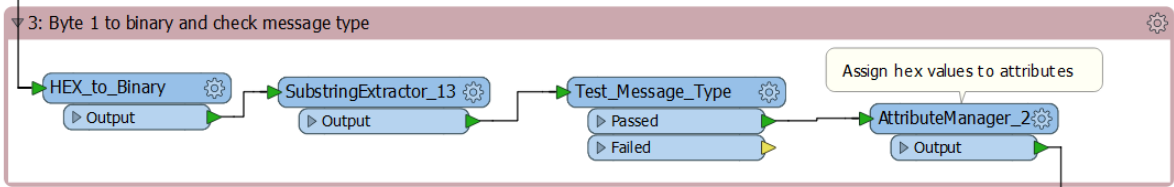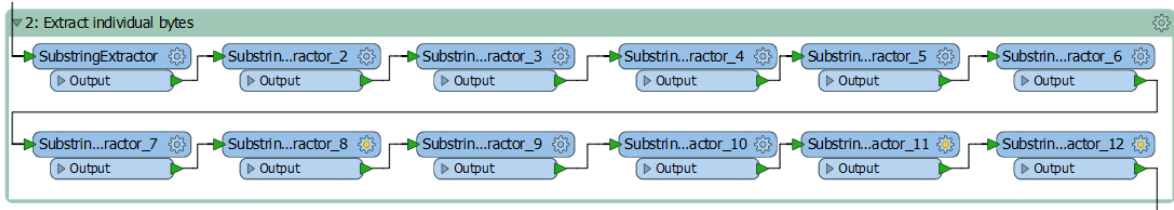Substrin...actor_11 — ▷ Output
Substrin...actor_12 — ▷ Output

3: Byte 1 to binary and check message type

HEX_to_Binary — ▷ Output
SubstringExtractor_13 — ▷ Output
Test_Message_Type — ▷ Passed / ▷ Failed

Assign hex values to attributes

AttributeManager_2 — ▷ Output

4: Convert hex to decimal

BaseConverter — ▷ Output
BaseConverter_2 — ▷ Output
BaseConverter_3 — ▷ Output
BaseConverter_4 — ▷ Output
BaseConverter_5 — ▷ Output

5: Handle two's complement latitude and longitude and create point

Tester_2 — ▷ Passed / ▷ Failed
AttributeManager_3 — ▷ Output
Tester_3 — ▷ Passed / ▷ Failed
AttributeManager_4 — ▷ Output
AttributeManager_5 — ▷ Output
VertexCreator — ▷ Output / ▷ <Rejected>

6: Calculate battery, heading and time

AttributeManager_6 — ▷ Output
AttributeKeeper — ▷ Output
DateTimeCalculator — ▷ Output / ▷ <Rejected>
DateTimeConverter — ▷ Output / ▷ <Rejected>

▷ 7: Create KML files

AttributeManager_7

▽ 8: Other IoT Transformers

Creator
▷ Created

WebSocketReceiver
▷ Output

WebSocketSender
▷ Output

KinesisReceiver
▷ Output
▷ <Rejected>

KinesisSender
▷ <Rejected>

UDP Notification Publication

JMSReceiver
▷ Output

JMSSender

TCPIPReceiver
▷ Transported

TCPIPSender

AzureEventHubReceiver
▷ EventHubReceiver_Output_1
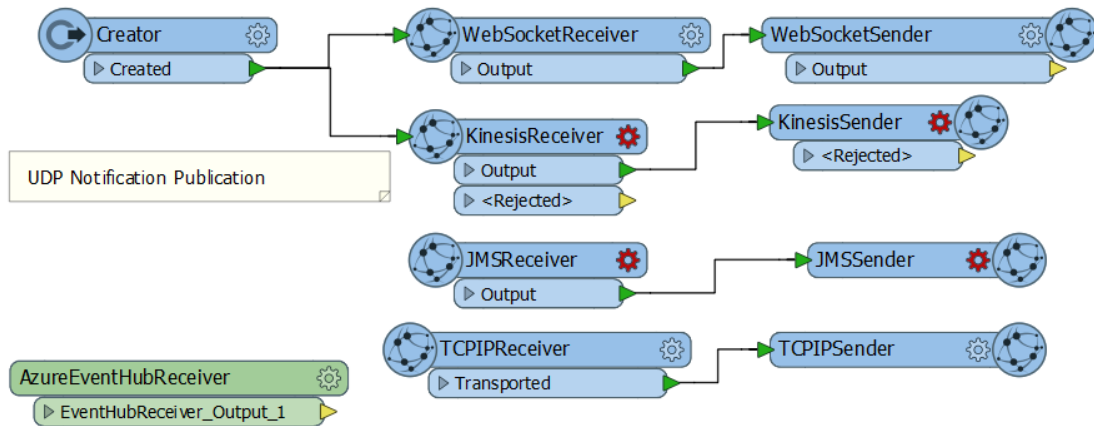
▽ 9: Tips for IoT

- Design for volume from the beginning.

- Be aware of sensor behaviour if FME Server is down.

- What third party services are you using?
- Do they have limitations?
- How is your workflow affected if an external service goes down?

- Set up queues so engines are always available for short running jobs.

- Don't do more than absolutely necessary in the workspace.

▽ 10: A word of warning about IoT

Automating a garage door opener and browser tabs
@rombulow

You know how HTTP GET requests are meant to be idempotent? Well, do I have the story for you ... a while back I added WiFi control to our garage doors with little Wemos D1s.
The Wemo's expose a simple web page with a link that says "Toggle". The endpoint for the link activates a relay, which is hooked up to the push-button on the garage door, which makes the door raise/lower/halt.
(This /toggle endpoint responds to GET requests. I threw the code together in minutes and was too lazy to spend another couple minutes figuring out POST. #regret)
Safari eventually figured out I used this /toggle page regularly, so added it to my favourites. Which are iCloud-synced between all my devices.
So every time I opened a new tab on my laptop, desktop, iPhone or iPad the garage door opened or closed. Late at night, early in the morning, or randomly throughout the day...
This, kids, is why GET requests should be idempotent.

Links

FME and Oxfam Trailwalker : https://www.safe.com/presentation/locus-and-fme-benefitting-the-community-with-oxfam/

Wireless Nation : https://iot.wirelessnation.co.nz/

Sigfox Callback URL : https://backend.sigfox.com/devicetype/******/callbacks/******/edit

Oxfam Trailwalker Tracking : https://otw18.twaack.com/testkml.html?tracker=Sigfox

▽ 11: Contact ⚙

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