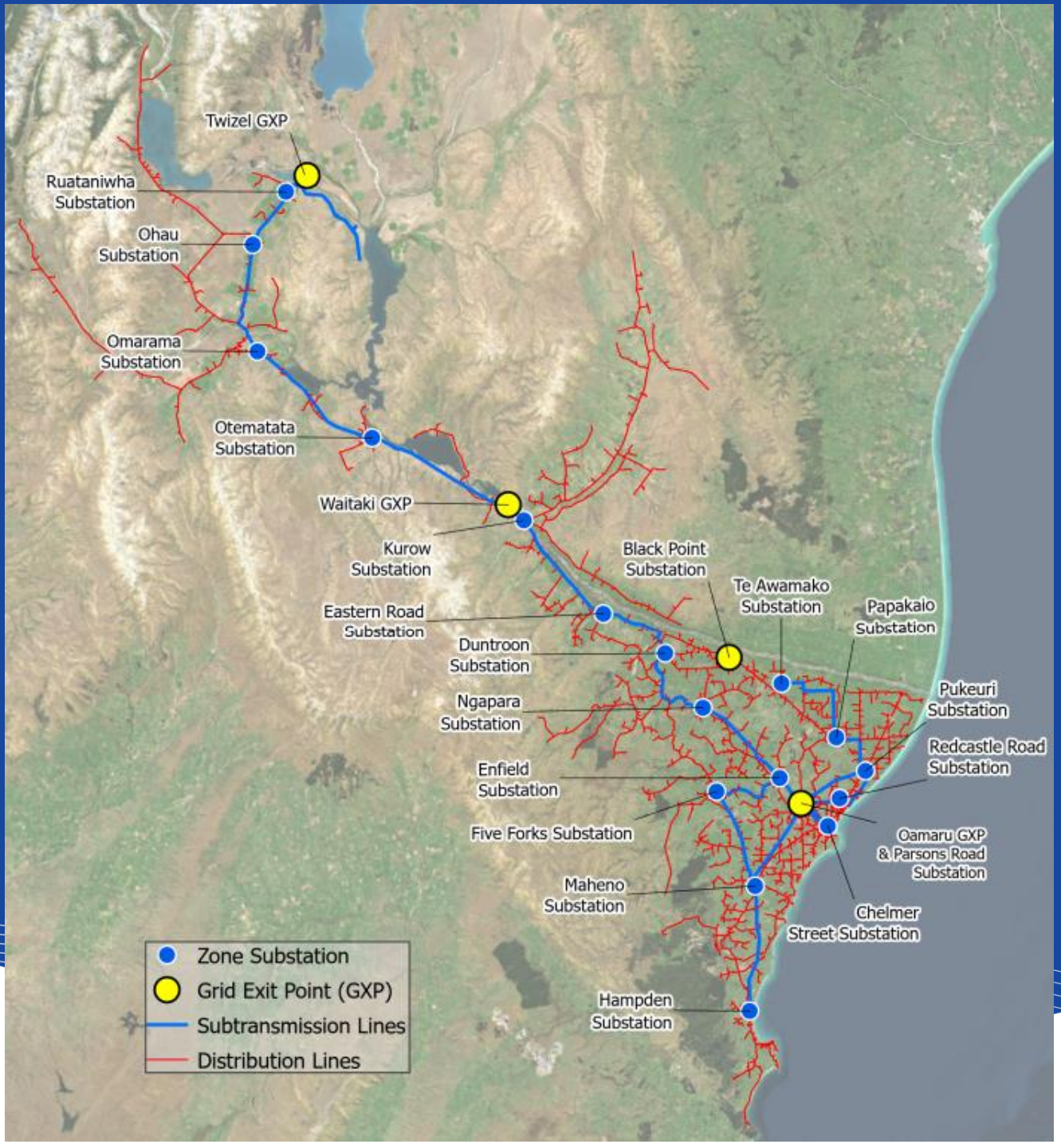
Harnessing the Power of FME for Utility Network



WE ARE ONE TEAM

WE ARE FUTURE THINKING

WE LOVE OUR REGION

WE CARE ABOUT OUR PEOPLE

EDB operating in the North Otago and South Canterbury regions

~14000 Connections

Network Waitaki

FME Form
(FME Desktop)

FME Flow
(FME Server)

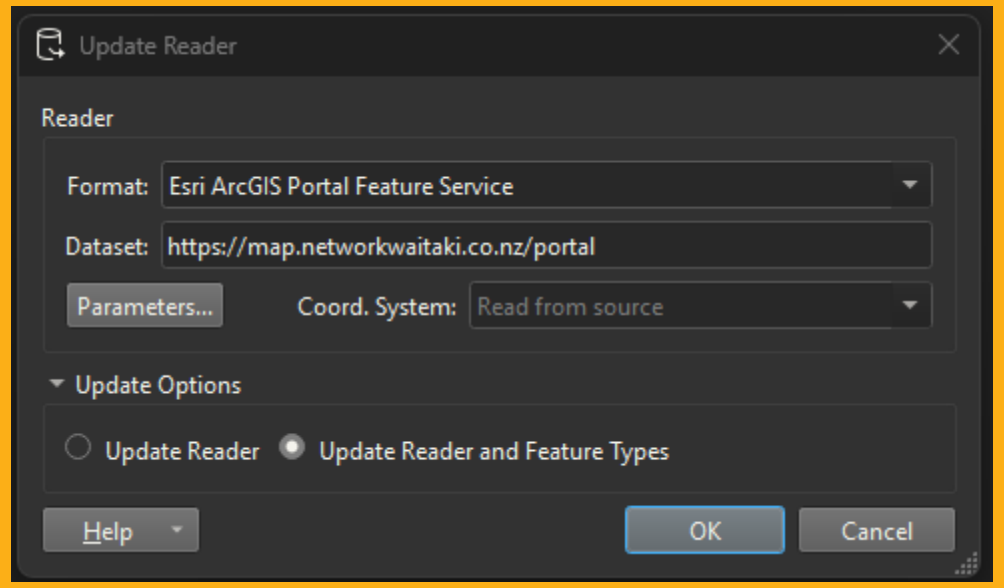
WORKSPACE APP

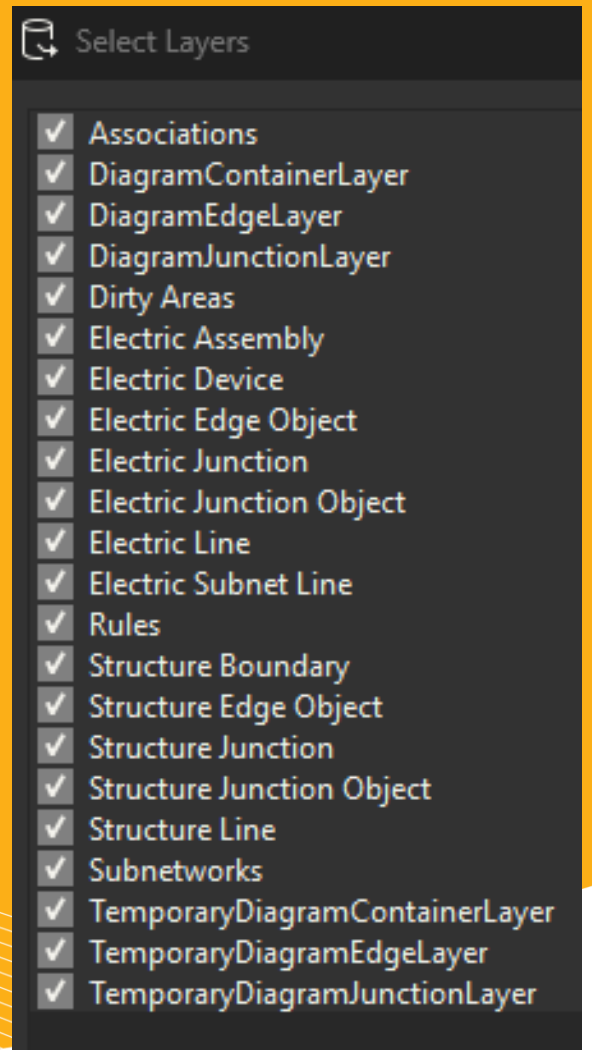
AUTOMATIONS
(Scheduled Jobs)

FME Form
(FME Desktop)

FME Flow
(FME Server)

UTILITY NETWORK SERVICE





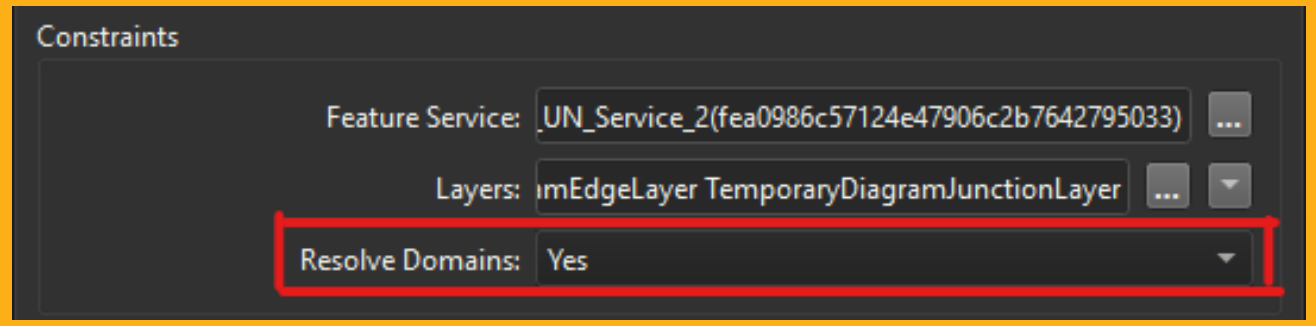
Network Waitaki

FME Form (FME Desktop)

FME Flow (FME Server)

UTILITY NETWORK SERVICE

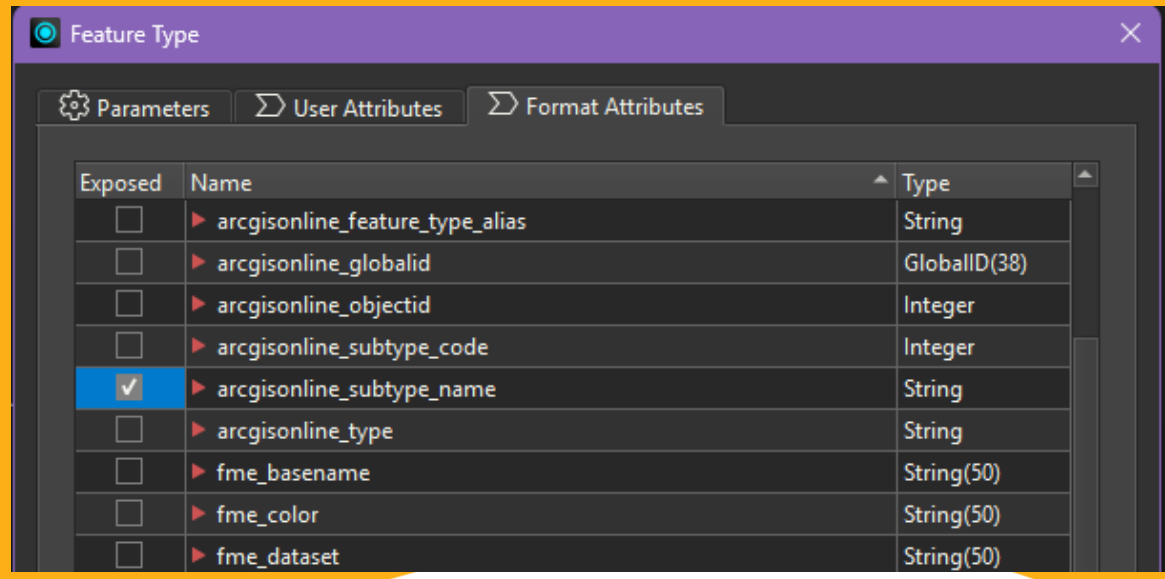
UN Data contains many domains.
Resolve Domains to make data easier to work with.



Table

Electric_Device

	OBJECTID	ASSETGROUP	ASSETTYPE	ASSETTYPE resolved	ASSOCIATIONSTATUS
1	1814	7	1	High Voltage Link	0
2	1815	7	1	High Voltage Link	0
3	2770	7	1	High Voltage Link	0
4	2811	7	1	High Voltage Link	0
5	2900	7	1	High Voltage Link	0
6	2904	7	1	High Voltage Link	0

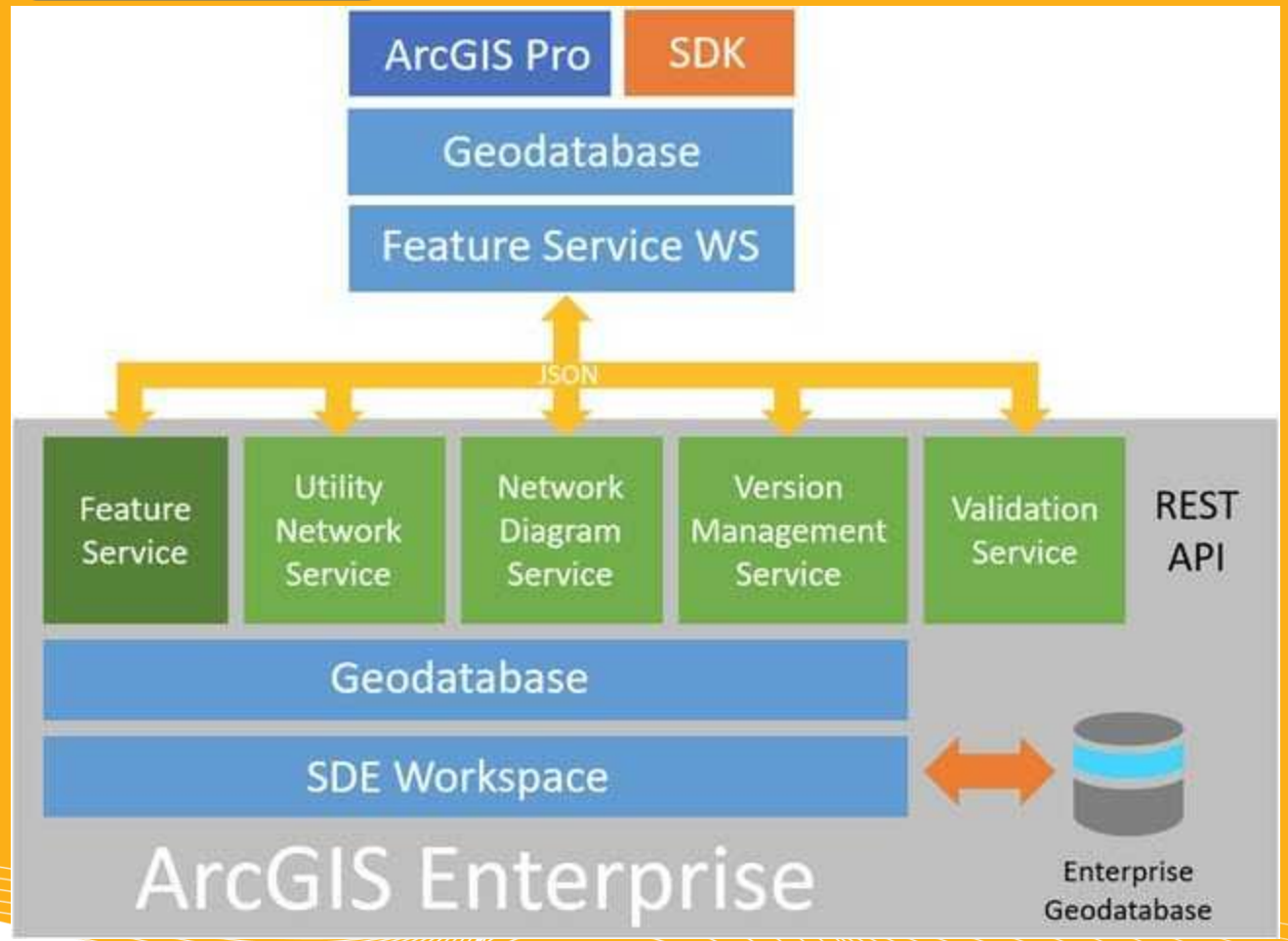


Network Waitaki

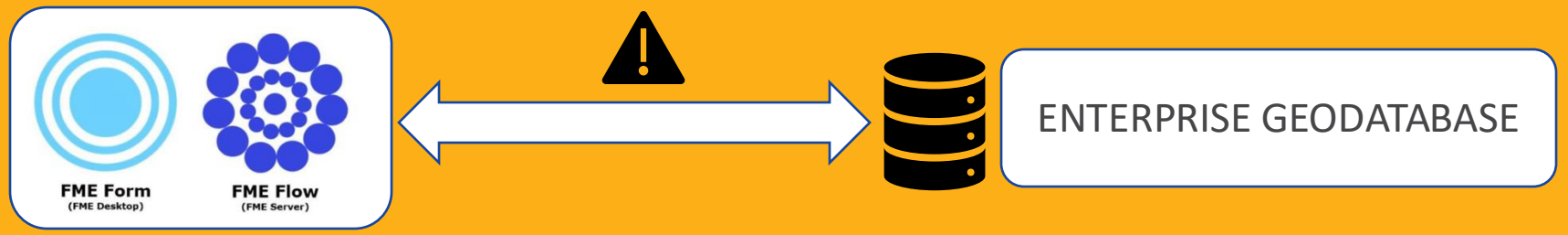
FME Form
(FME Desktop)

FME Flow
(FME Server)

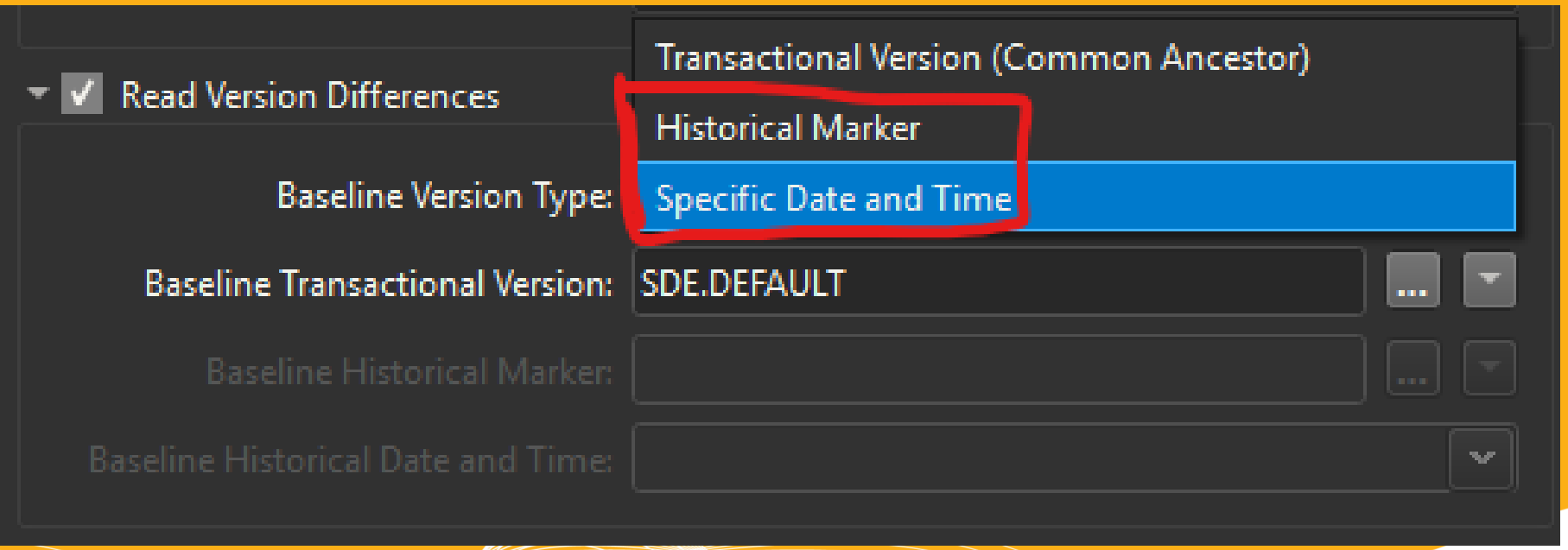
UTILITY NETWORK REST API



Network Waitaki



- Reading/Querying is okay
- Direct writes to UN Database not recommended. Can Cause data corruption and orphaned records

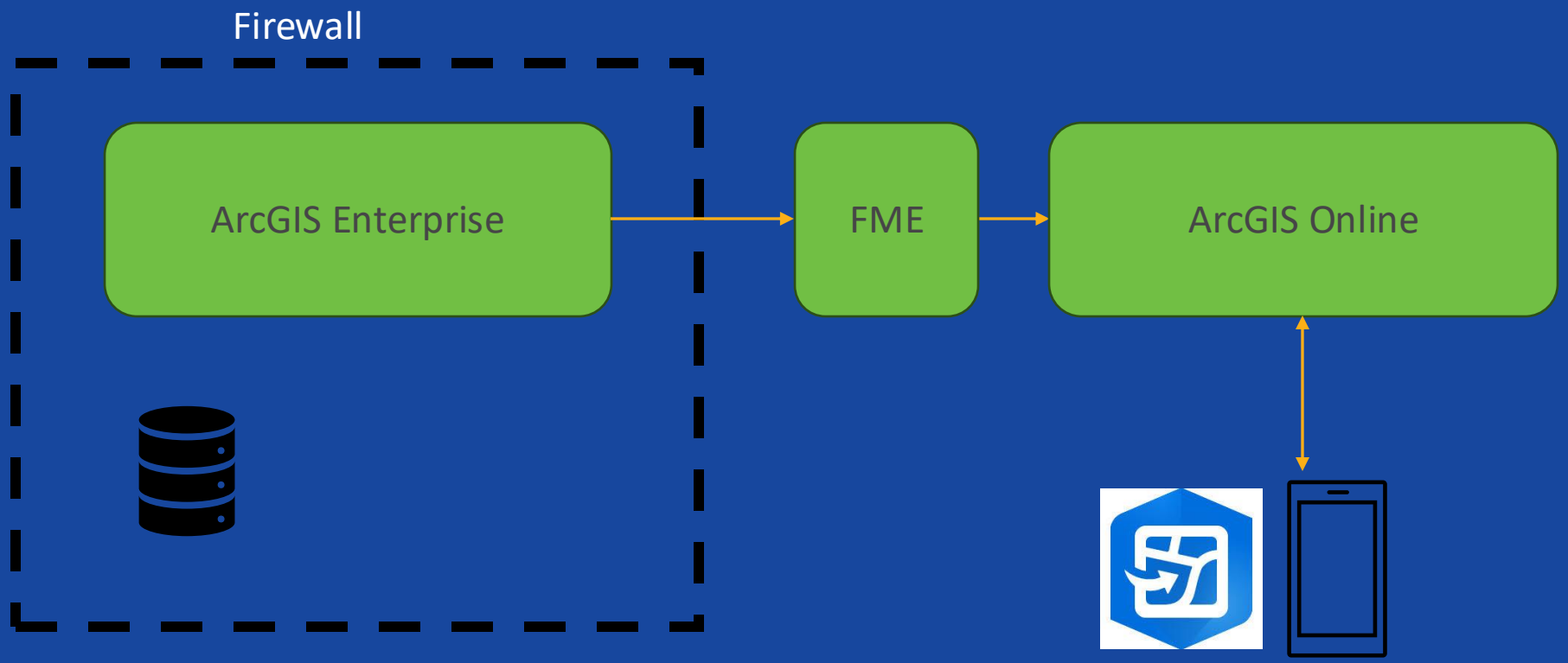


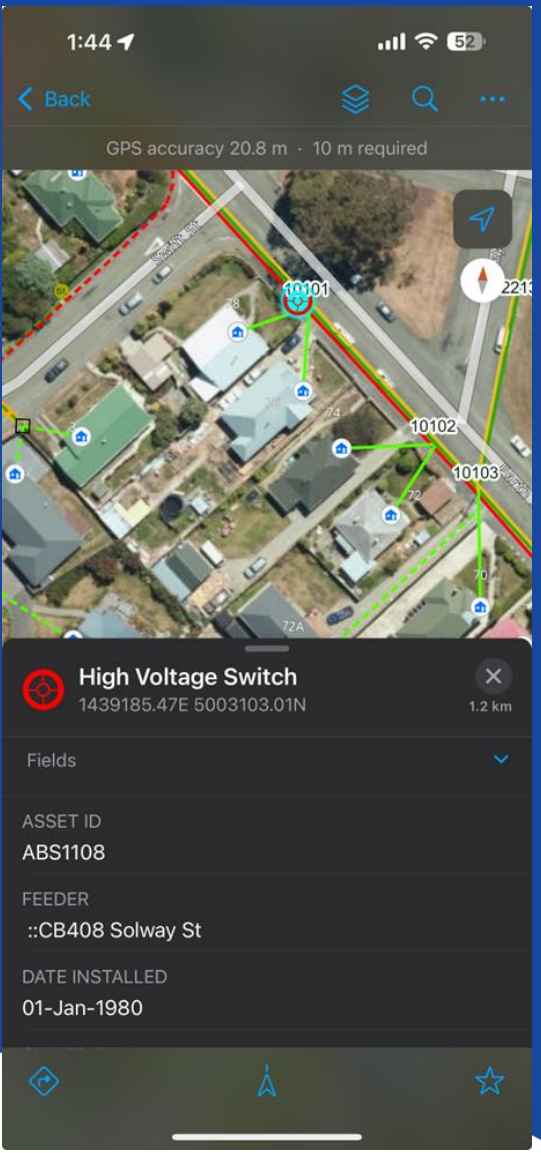
Fringe Use Cases –

- View data at a moment in time
- Access data from Archive Tables
- Read many records where using a service might be too slow

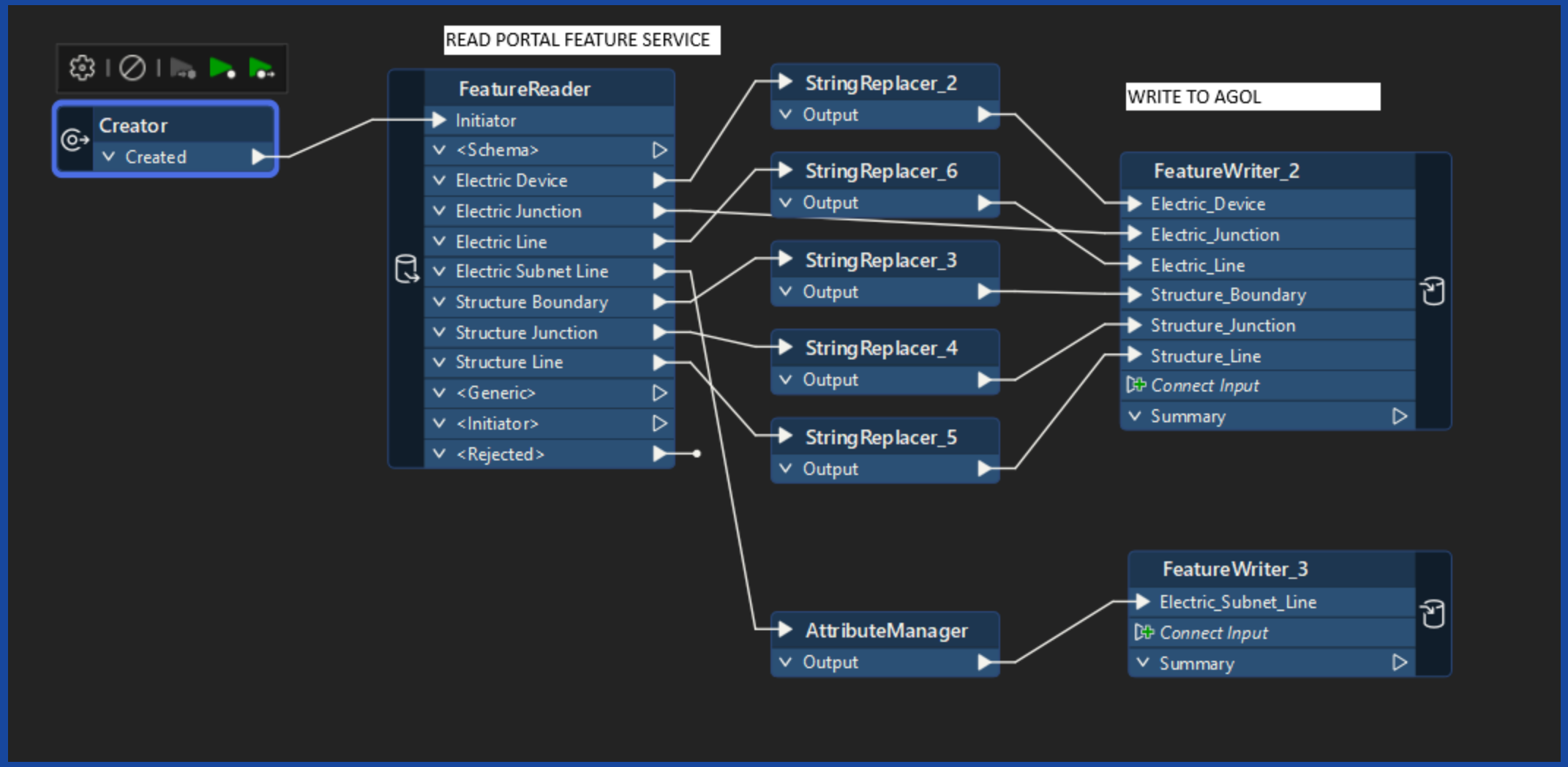
Network Waitaki

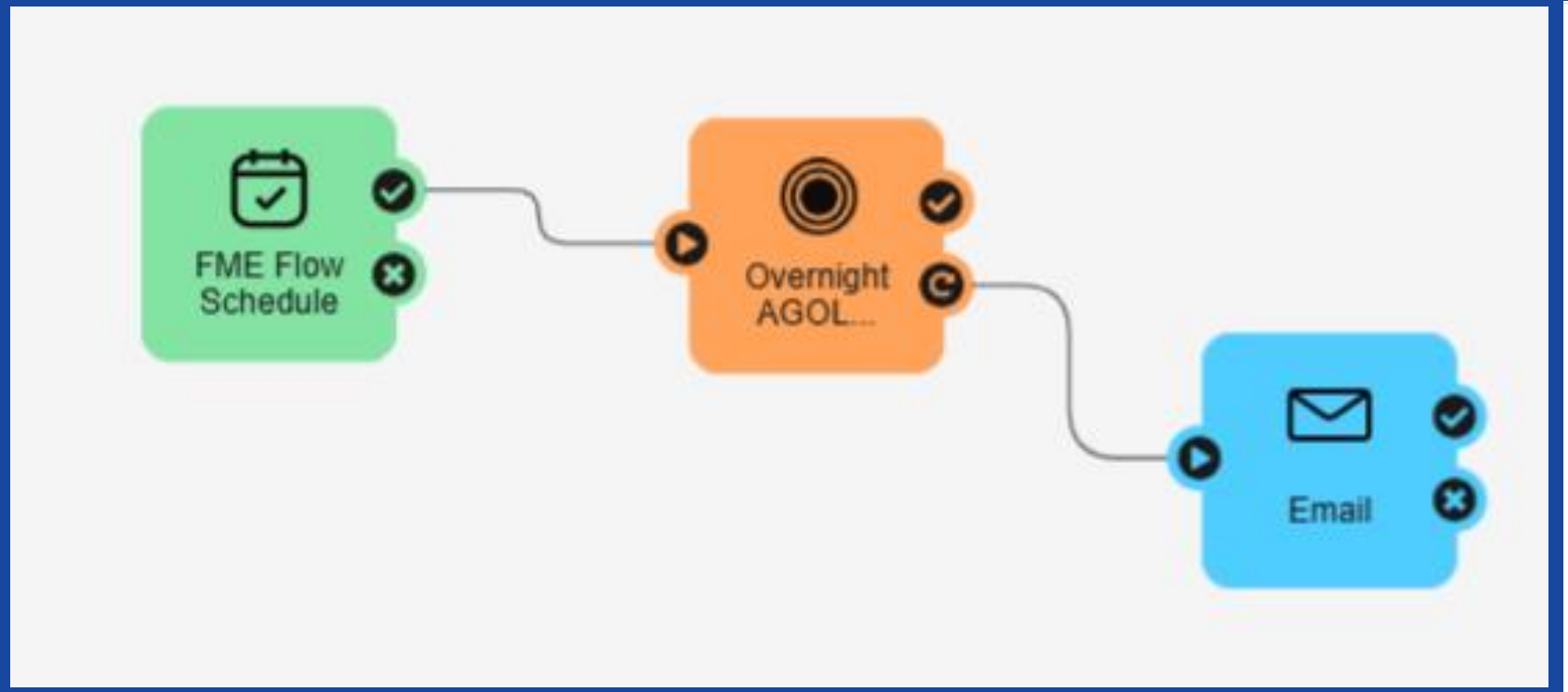
Workspace Example 1





Network Waitaki


READ PORTAL FEATURE SERVICE
Creator
Created
FeatureReader
Initiator
<Schema>
Electric Device
Electric Junction
Electric Line
Electric Subnet Line
Structure Boundary
Structure Junction
Structure Line
<Generic>
<Initiator>
<Rejected>
StringReplacer_2
Output
StringReplacer_6
Output
StringReplacer_3
Output
StringReplacer_4
Output
StringReplacer_5
Output
AttributeManager
Output
WRITE TO AGOL
FeatureWriter_2
Electric_Device
Electric_Junction
Electric_Line
Structure_Boundary
Structure_Junction
Structure_Line
Connect Input
Summary
FeatureWriter_3
Electric_Subnet_Line
Connect Input
Summary



Overnight AGOL Map Viewer Updater Details

Parameters | Output Attributes | Advanced | **Retry**

- [x] Retry on failure
- [x] Use custom retry settings

Number of attempts
Maximum number of retries, if the action failed.
3

Wait between attempts
Wait time between tries, in seconds.
15 | Minutes

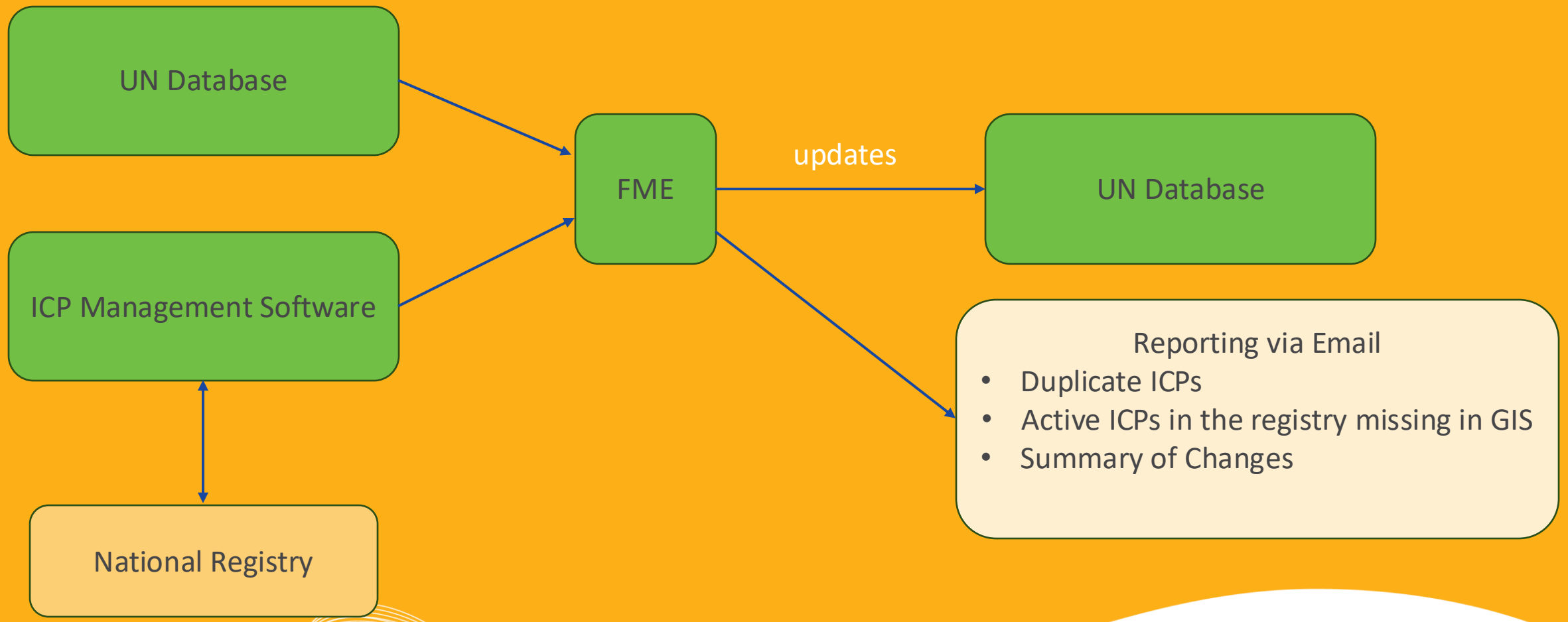
Backoff multiplier
Factor to increase the wait time for subsequent retries.
2

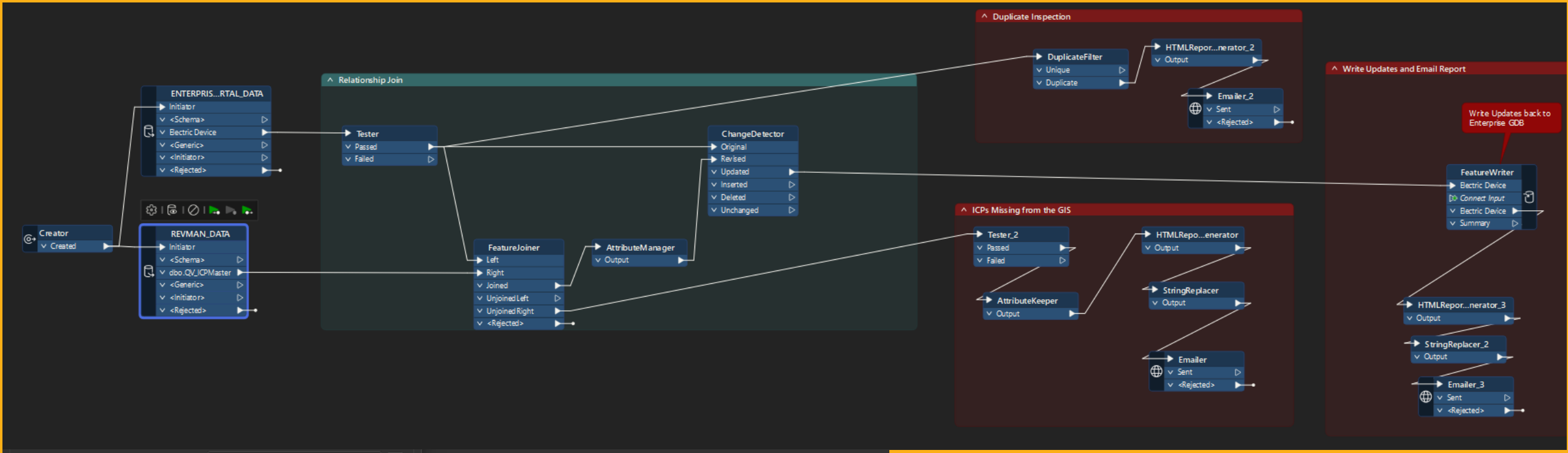
Randomization factor
Factor for introducing randomness to wait time.
25

Maximum wait between attempts
Maximum wait time between retries, in seconds.
20 | Minutes

Network Waitaki

Workspace Example 2





Item Source: User Content

Folder: UN Service

Group:

Feature Service Handling: Use Existing

Selected Feature Service: 986c57124e47906c2b7642795033)

Feature Service Name:

If Feature Service Exists:

Publishing

Target WKID: 2193

Branch Versioning

Advanced

Features Per Request: 1000

Use Global IDs: Yes

Preserve Global ID: No

Verify HTTPS Certificates: Yes

Asynchronous Writes: No

Parameters | User Attributes | Format Attributes

General

Layer Name: Electric Device

Geometry: arcgisonline_no_geom

Dynamic Schema Definition

Layer

Feature Operation: Update

Feature Type Handling: Use Existing

Update Spatial Column(s): No

Upsert Match Column:

ures_written

Network Waitaki

Active ICPs missing from GIS

F FME_Server_Notification
To Sahil Bhouraskar; Jeremiah Gbolagun; Graham Tee; Craig Jones

Reply | Reply All | Forward
Thu 20/03/2025 8:18 am

If there are problems with how this message is displayed, click here to view it in a web browser.

These ICPs are active in the Registry but not found in GIS. Please place these in the right place and connect them up to the network. This will ensure they are part of outage notifications.

ICPs to be created in GIS

ICP Number	ICP Name	REGISTRY ADDRESS	REGISTRY STATUS	CUSTOMER NAME
0000240076WT592	Private Residence Flat 2 10 Clyde Street; Oamaru North Oamaru 9400 Timaru & Oama	Flat 2 10 Clyde Street; Oamaru North Oamaru 9400 Timaru & Oam-aru	Active/Energised	[redacted]
0000320157WTBB2	Private Residence 24a Itchen Street; Oamaru 9400 Timaru & Oamaru	24a Itchen Street; Oamaru 9400 Timaru & Oamaru	Active/Energised	
0000460496WTB83	New ICP 36 Chambers Street; Kakanui Oamaru 9495 Timaru & Oamaru	36 Chambers Street; Kakanui Oamaru 9495 Timaru & Oamaru	Active/Energised	[redacted]
0000640223WT36D	Private Residence 4 Heworth Street; Maheno Oamaru 9495 Timaru & Oamaru	4 Heworth Street; Maheno Oamaru 9495 Timaru & Oamaru	Active/Energised	

Overnight ICP Updates - Success

F FME_Server_Notification
To Sahil Bhouraskar; Jeremiah Gbolagun; Graham Tee; Craig Jones

Reply | Reply All | Forward
Wed 19/03/2025 9:24 am

If there are problems with how this message is displayed, click here to view it in a web browser.

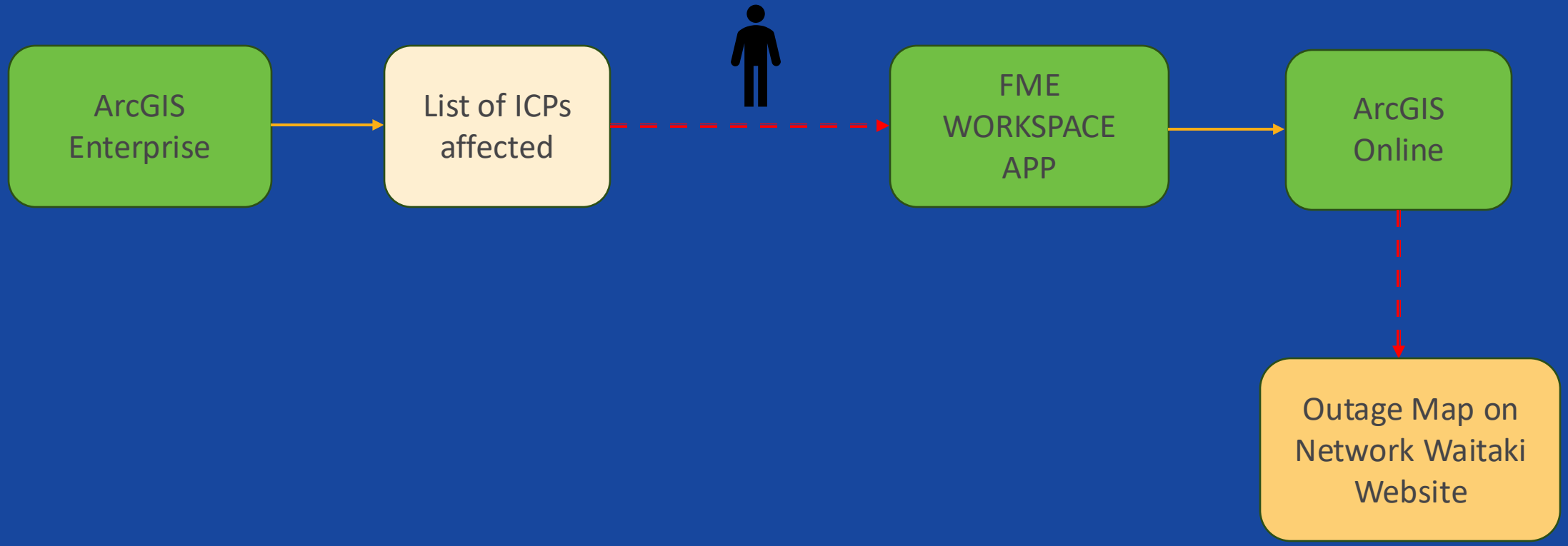
The following ICPS were updated. For more details please refer to REVMAN. http://nwlrevman01:2200/Regulatory.aspx

Following records were updated in GIS

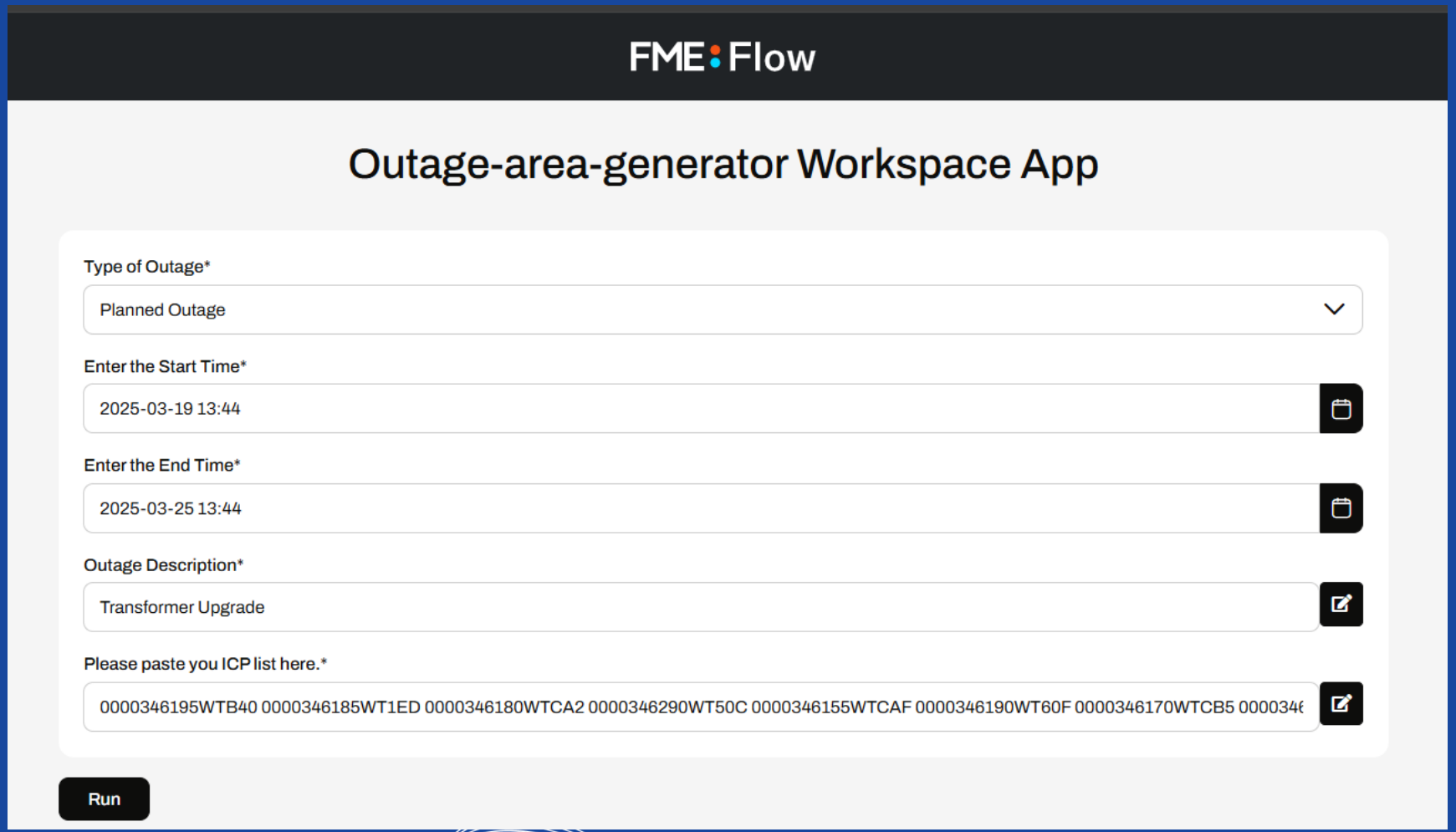
ICP Number	Customer Modile Phone	Customer Business Phone	Customer Email	Customer Name	Disconnect Restriction	Fuse Size	ICP Name	Installation Type	Medical Restriction	Premise Type	Meter List	Pricing Plan	Registry Status
0000312405WT45[redacted]	[redacted]		[redacted]	[redacted]	N	63	Private Residence 13 Selwyn Street; South Hill Oamaru 9400 Timaru & Oam-aru	L		000000 Residential	21713016	15C	Active/Energised | Active
0000312400WT919[redacted]	[redacted]		[redacted]		N	63	Private Residence 11 Selwyn Street; South Hill Oamaru 9400 Timaru & Oam-aru	L		000000 Residential	SD16057	RLC	Active/Energised | Active

Network Waitaki

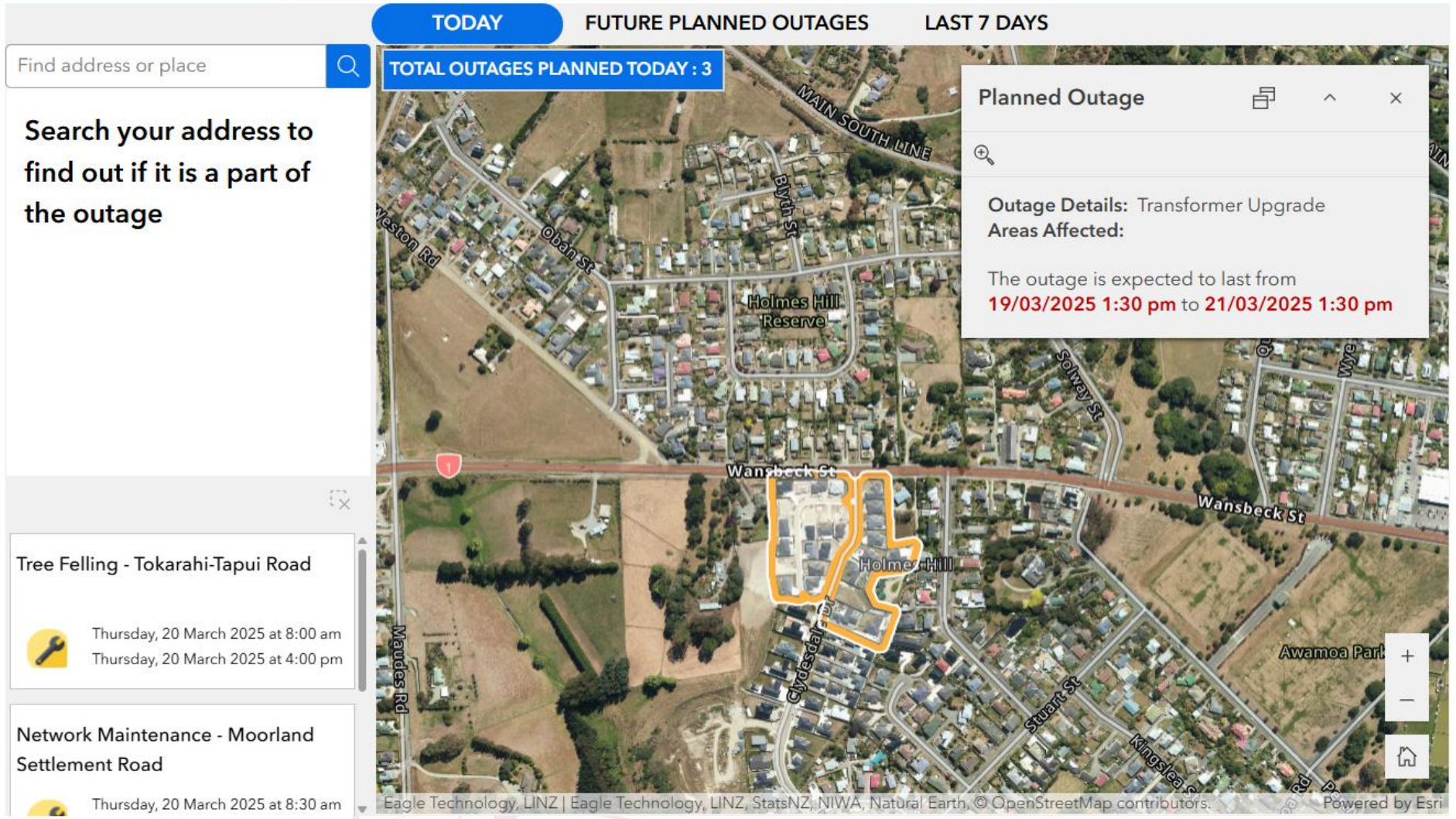
Workspace Example 3



FME WORKSPACE APP USED BOUTAGE PLANNERS



OUTAGE MAP ON NETWORK WAITAKI WEBSITE



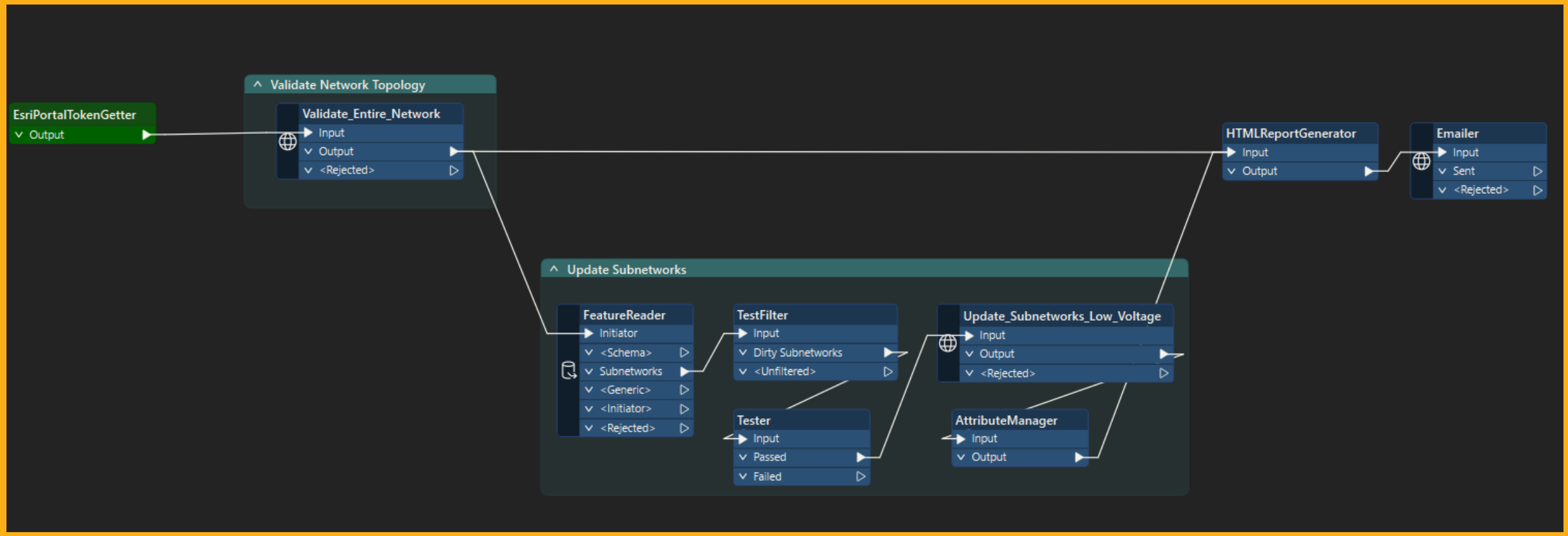
MAINTENANCE WORKFLOWS

Workspace Example 4

Usually covered as a part of updaters workflow but if you are receiving topology affecting data from External Sources like SCADA,ADMS or field workers you might could trigger a FME workspace to Validate Network and Update Subnetworks.

Workspace uses HTTP caller to build REST URLs

Network Waitaki



Network Waitaki

HTTPCaller Parameters

Transformer Name: Validate_Entire_Network

Request

Request URL: aitaki.co.nz/server/rest/services/UN_Service/Prod_UN_Service_2/UtilityNetworkServer/validateNetworkTopology

HTTP Method: GET

Use Authentication

Query String Parameters

Name	Value
token	_token
f	json
validateArea	{... (MultiLine)

Headers

Body

Request Preview

Method: GET

Full URL: https://map.networkwaitaki.co.nz/server/rest/services/UN_Service/Prod_UN_Service_2/UtilityNetworkServer/validateNetworkTopology?f=json&token=@Value(_token)&validateArea={ "xmin": 1316215.0232, "ymin": 4932130.3915, "xmax": 1470073.7674, "ymax": 5156693.0703, "spatialReference": { "wkid": 2193 } }

Send Test Request

SERVER RESPONSE


```
{
    "dirtyAreaCount": 0,
    "discoveredSubnetworks": [
        {
            "domain": "Electric",
            "subnetwork": "T3571",
            "tier": "Low Voltage"
        }
    ],
    "fullUpdate": false,
    "moment": 1742432743203,
    "success": true,
    "validateErrorsCreated": false
}
```


Network Waitaki

HTTPCaller Parameters

Transformer Name: Update_Subnetworks

Request

Request URL: workwaitaki.co.nz/server/rest/services/UN_Service/Prod_UN_Service_2/UtilityNetworkServer/updateSubnetwork

HTTP Method: GET

Use Authentication

Query String Parameters

Name	Value
token	_token
f	json
domainNetworkName	Electric
tierName	TIERNAME
subnetworkName	SUBNETWORKNAME

Headers

Body

Request Preview

Method: GET

Full URL: https://map.networkwaitaki.co.nz/server/rest/services/UN_Service/Prod_UN_Service_2/UtilityNetworkServer/updateSubnetwork?domainNetworkName=Electric&f=json&subnetworkName=@Value(SUBNETWORKNAME)&tierName=@Value(TIERNAME)&token=@Value(_token)

Send Test Request

SERVER RESPONSE

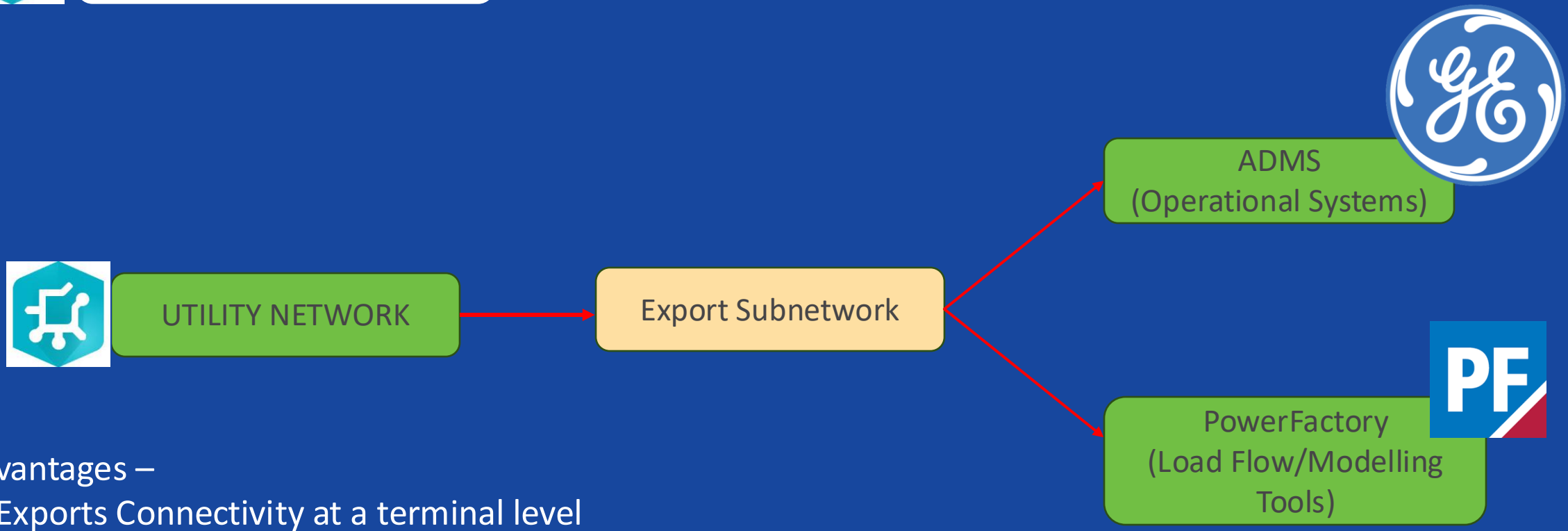
Value at row = 1 and column = UpdateSubnetwork_serverResponse


```
{
    "moment": 1742432890390,
    "success": true
}
```


Network Waitaki

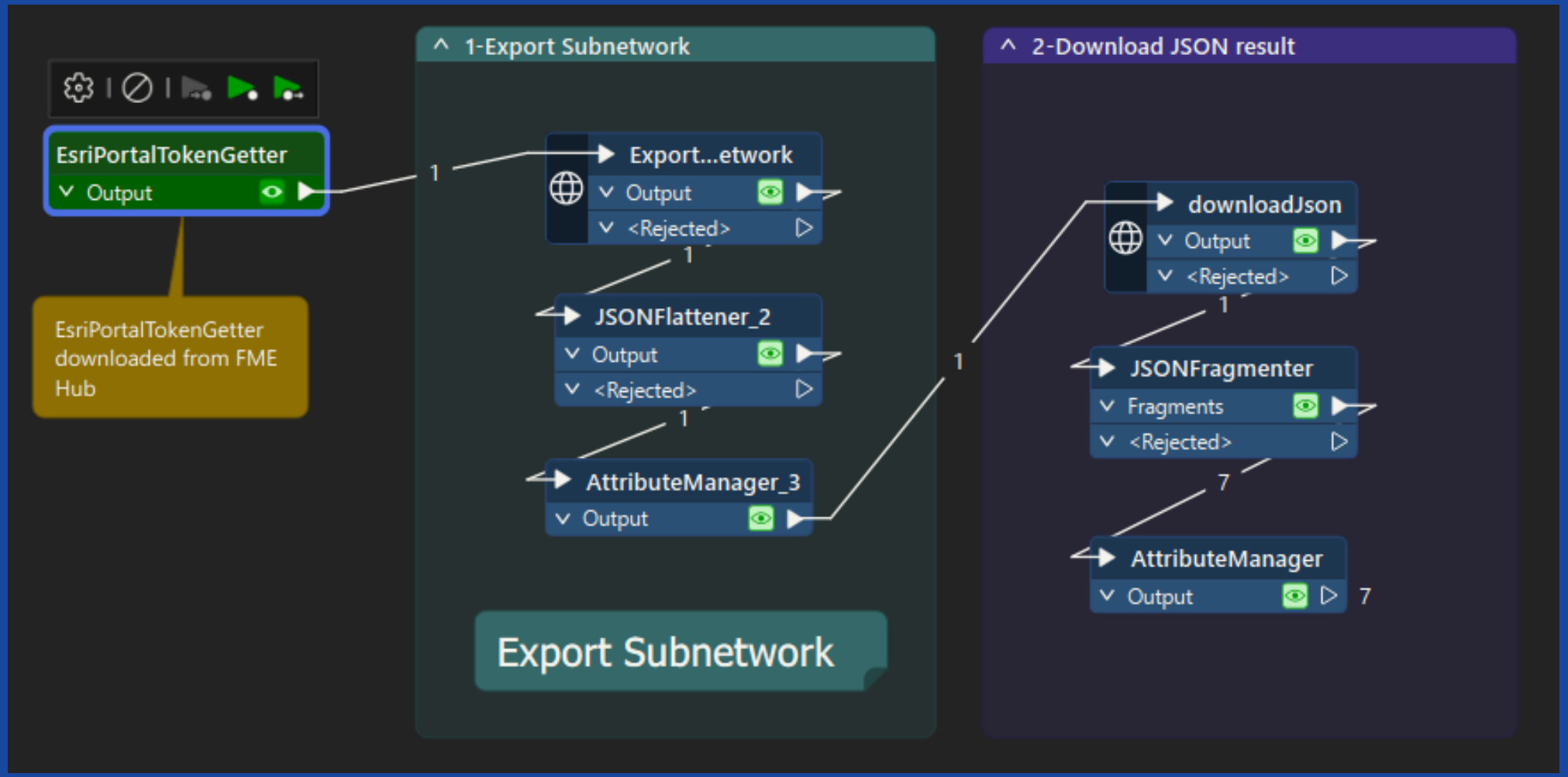
CONNECTIVITY MODEL

Workspace Example 5



Advantages –

- Exports Connectivity at a terminal level
- Can incorporate non-spatial objects in the export
- Export can be customized to include other asset attributes like model make, operational voltage, etc


1-Export Subnetwork
2-Download JSON result
EsriPortalTokenGetter
Output
EsriPortalTokenGetter downloaded from FME Hub
Export...etwork
Output
<Rejected>
JSONFlattener_2
Output
<Rejected>
AttributeManager_3
Output
Export Subnetwork
downloadJson
Output
<Rejected>
JSONFragmenter
Fragments
<Rejected>
AttributeManager
Output
1
1
1
1
1
7
7

HTTPCaller Parameters

Transformer Name: ExportSubnetwork

Request

Request URL: https://map.networkwaitaki.co.nz/server/rest/services/UN_Service/Prod_UN_Service_2/UtilityNetworkServer/exportSubnetwork

HTTP Method: GET

Use Authentication

Query String Parameters

Name	Value
token	_token
subnetworkName	$(SubnetworkName)
f	pjson
gdbVersion	
sessionId	

Headers

Body

Request Preview

Method: GET

Full URL: https://map.networkwaitaki.co.nz/server/rest/services/UN_Service/Prod_UN_Service_2/UtilityNetworkServer/exportSubnetwork?domainNetworkName=Electric&exportAcknowledgement=<not specified>&f=pjson&gdbVersion=<not specified>&moment=<not specified>&resultTypes=[{ "type": "features", "includeGeometry": true, "includeDomainDescriptions" : true, "includePropagatedValues": false, "networkAttributeNames": [], "diagramTemplateName": "", "resultTypeFields": [{"networkSourceId":9,"fieldName":"asset_id"}] }, { "type": "connectivity", "includeGeometry": true, "includeDomainDescriptions" : true,

Send Test Request

Network Waitaki

	_jsonOutput	json_type	json_array	SubnetworkName	_token
1	[{"networkSourc...	array	featureElements	CB403 West Belt	CFkenYn3Q2Ba...
2	[{"viaNetworkSc...	array	connectivity	CB403 West Belt	CFkenYn3Q2Ba...
3	[{"associationTyp...	array	associations	CB403 West Belt	CFkenYn3Q2Ba...
4	[{"networkSourc...	array	controllers	CB403 West Belt	CFkenYn3Q2Ba...
5	{"1":"UN_6_Asso...	object	sourceMapping	CB403 West Belt	CFkenYn3Q2Ba...
6	[{"type":"feature...	array	resultTypes	CB403 West Belt	CFkenYn3Q2Ba...
7	{"wkid":2193,"lat...	object	spatialReference	CB403 West Belt	CFkenYn3Q2Ba...


```
{
    "fromGeometry": {
    "fromGlobalId": "{7349D190-CB83-4254-86FD-92547CDEC7F8}",
    "fromNetworkSourceId": 12,
    "fromNetworkSourceName": "ElectricJunction",
    "fromObjectId": 10926,
    "fromTerminalId": 1,
    "fromTerminalName": "Single Terminal",
    "toGeometry": {
    "toGlobalId": "{0161AB17-BAFE-4E9A-BE8F-EEAF5B9337B7}",
    "toNetworkSourceId": 12,
    "toNetworkSourceName": "ElectricJunction",
    "toObjectId": 6859,
    "toTerminalId": 1,
    "toTerminalName": "Single Terminal",
    "viaGeometry": {
    "viaGlobalId": "{1FDB2B1B-CA2A-4954-809C-1F3511C1841E}",
    "viaNetworkSourceId": 10,
    "viaNetworkSourceName": "ElectricLine",
    "viaObjectId": 1683,
    "viaPositionFrom": 0,
    "viaPositionTo": 1
  },
  {
    "fromGeometry": {
      "m": null,
      "x": 1439226.5039999997,
      "y": 5004352.0131,
      "z": 0
    },
    "fromGlobalId": "{56A40EB4-0CED-4B66-AE24-8643D8CD3C39}"
```

THANK YOU