



FME Flow at KiwiRail

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30 / 05 / 2024





FME Flow at KiwiRail



Overview

Examples and Lessons Learned



Extract GIS Data – Automation Self Service Tool



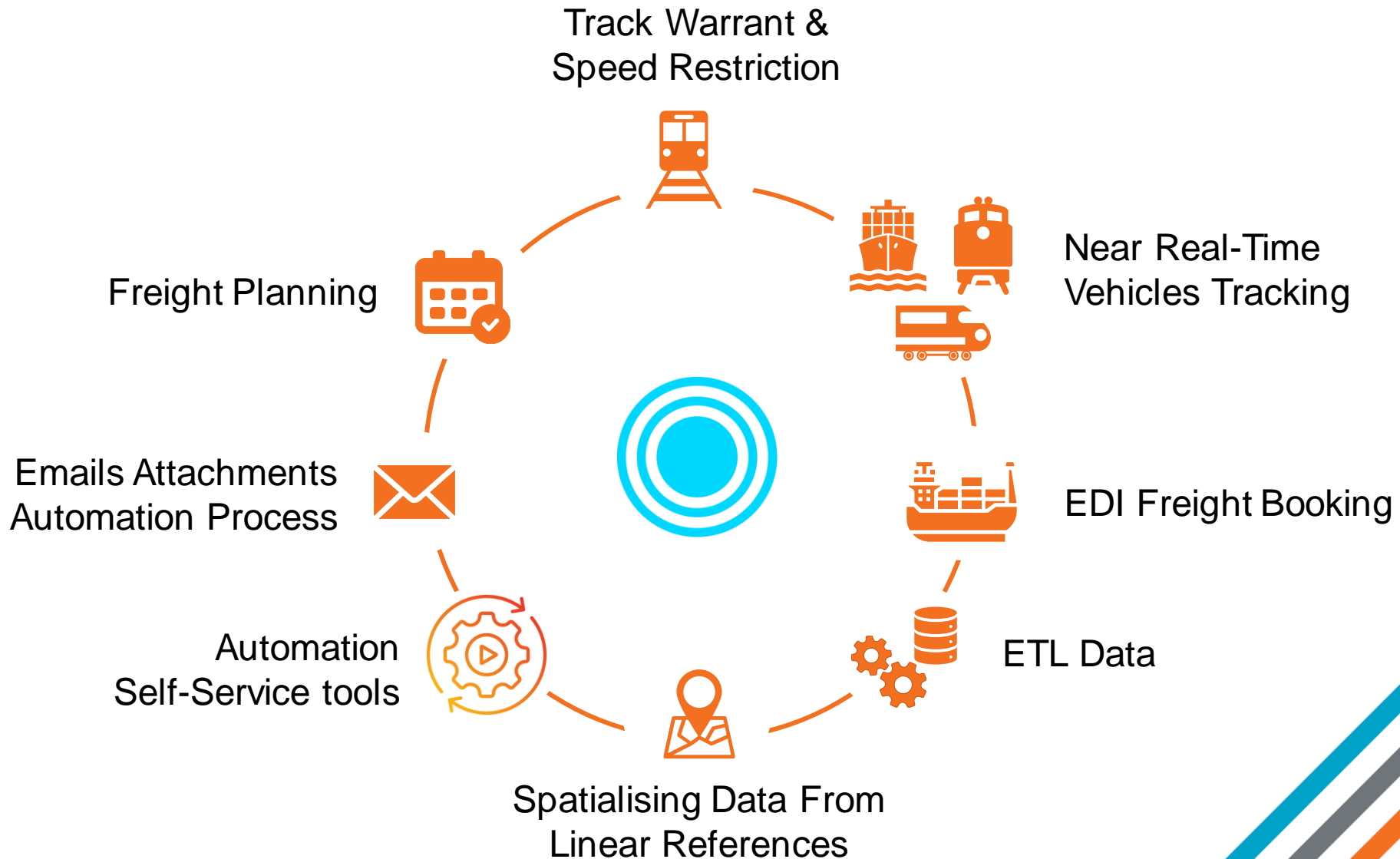
SAP Timesheet – MS Graph API Use Case



Freight Planning – MS Graph & Dataverse Web API Use Case



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Extract KiwiRail GIS Data - Automation Self Service Tool

Why

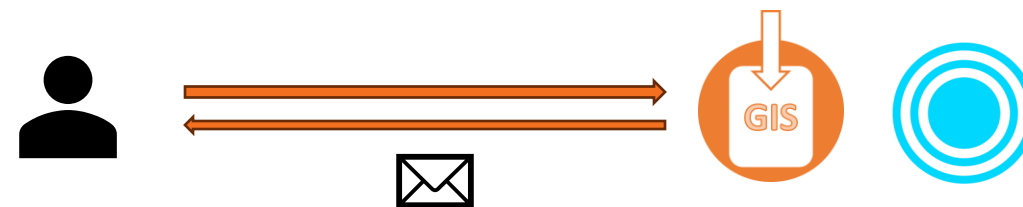
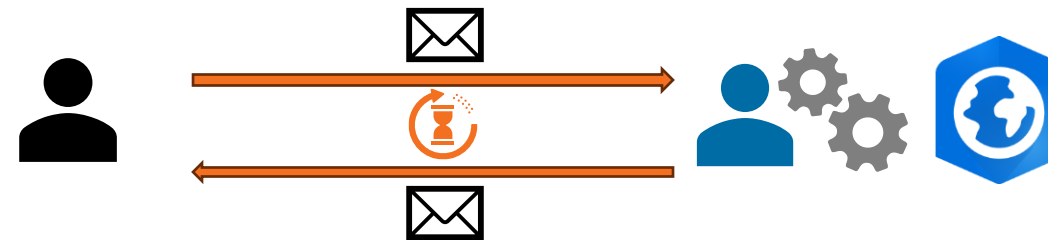
- Users requested for an extraction of KiwiRail GIS data
- KiwiRail GIS viewers are hosted by Geocortex with limited built-in functions for extracting and converting GIS data

Benefits

- **Free up** our team and other GIS specialist's time
- **Quick turnaround** for the business:
 - Self-service, no wait time
 - Getting the right data at the right time
 - Being proactive

Lessons

- Customer central focus
- Email results to customer's mailbox
- XML metadata auto updated
- Provide different options to extract & convert (coordinate system, output file types)
- Error handling & reporting directly back to users



JOB STATUS: COMPLETED

Job ID 1447442 from Extract KiwiRail GIS Data tool has been completed successfully.
Please find result file [here](#).
Alternatively, an email will also be sent to the email address(es) that you've provided in the previous step.
[Click here to go back to Extract KiwiRail GIS data tool.](#)
Still have questions? Contact [PME - GIS Admin team](#).

A fatal error has occurred - The selected area is too large

Job 2138594 has failed.
The area you've selected is 1915692 km2. The maximum area can be selected for 2 layers is 30,000 km2; from 3 layers is 10,000 km2.
[Click here to go back to Extract KiwiRail GIS data tool.](#)
Still have questions? Contact [PME - GIS Admin team](#).

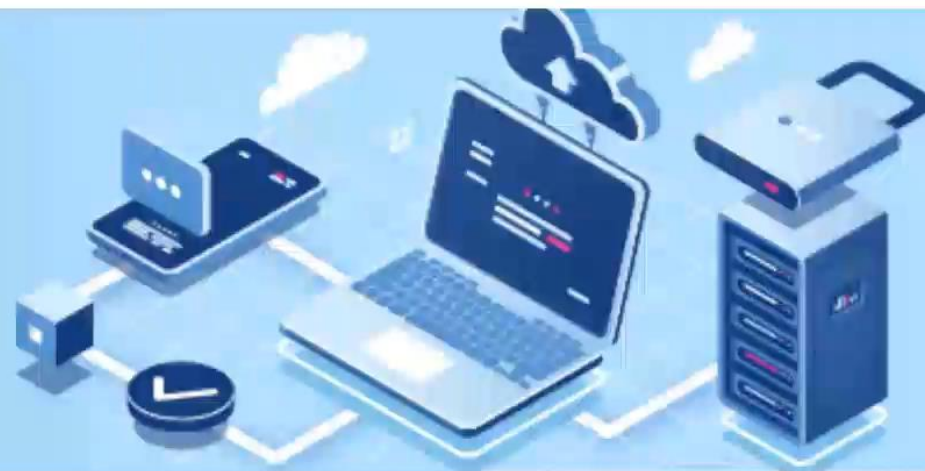
A fatal error has occurred - No data in the selected area

Job 470413 has failed.
The area where you selected doesn't contain any KiwiRail GIS data.
[Click here to go back to Extract KiwiRail GIS data tool.](#)
Still have questions? Contact [PME - GIS Admin team](#).



Extract KiwiRail GIS Data - Automation Self Service Tool

Automation Tools



KiwiRail Automation Tools



Conversion
and Extract
Tools



Block of Line
Tools

For any questions or requests, please contact gis.support@kiwirail.co.nz



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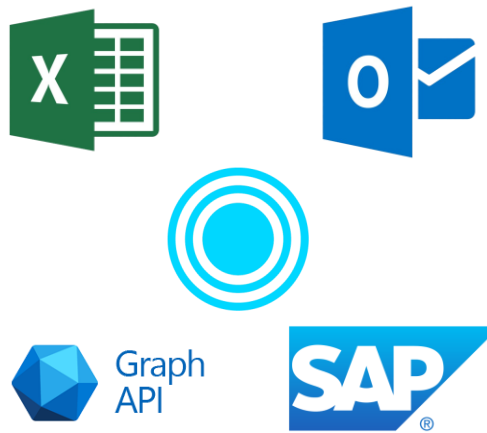
Examples and Lessons Learned



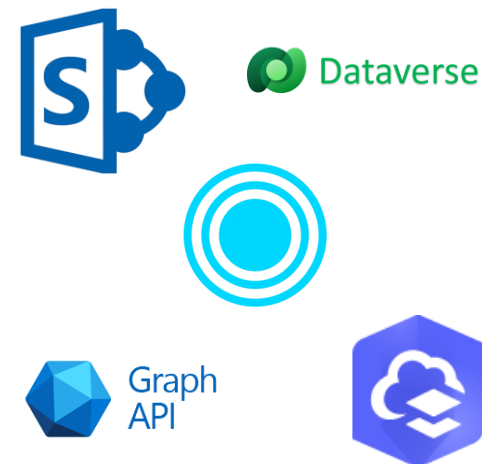
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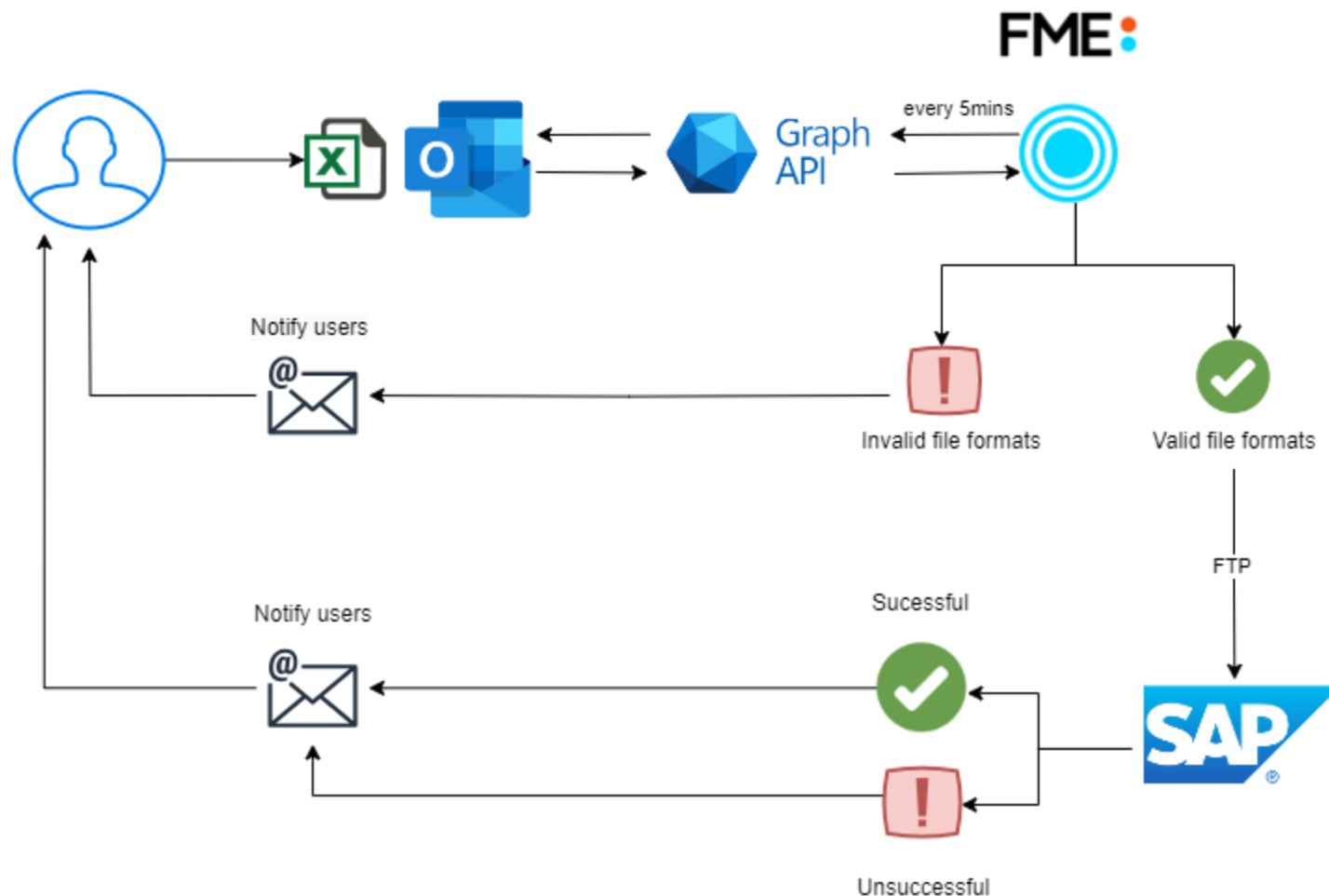
FME - SAP Timesheet

Reduce

- The **number of SAP licenses**, enable timesheet logging without logging into SAP
- The number of tickets for **password resets, account unlocks, and security maintenance**

Improve

- User's **experience and productivity**:
 - Allowing sending an email with an excel/ csv attachment to upload timesheet
 - Removing the need for password resets if their license has been revoked
- Better **error handling and troubleshooting abilities**, keeping logs and QA, notifying users and support teams
- MS Graph API for other MS products: **Outlook, SharePoint, Entra ID.**



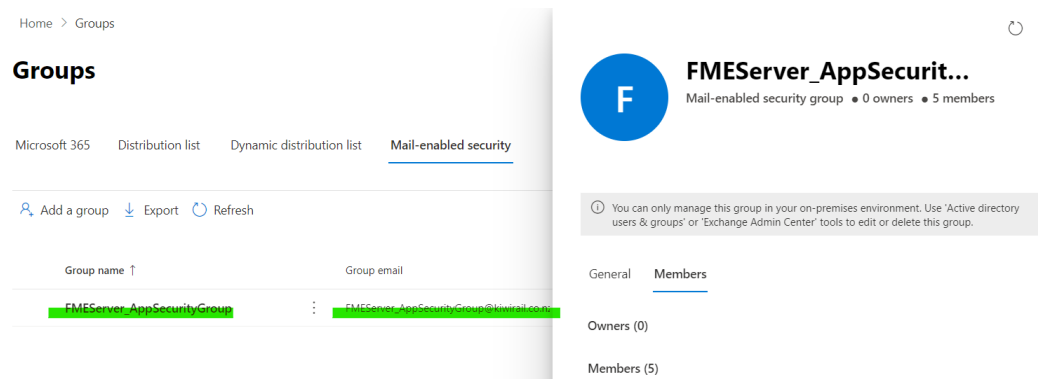


FME - SAP Timesheet

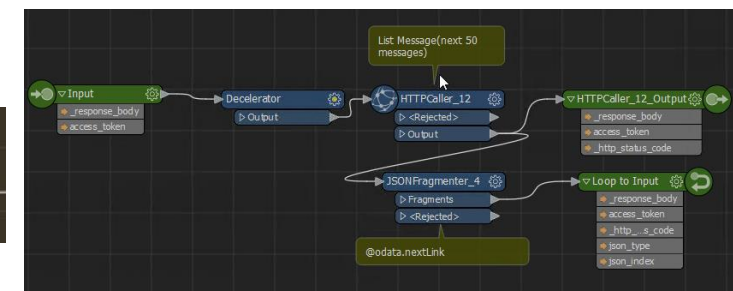
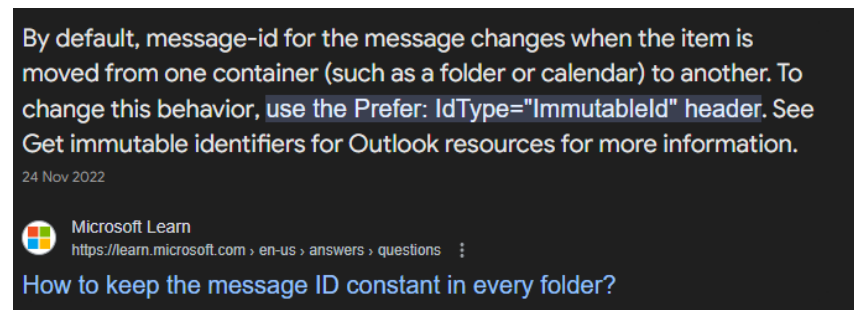
Lessons

- **Choose OAuth2 Client Credential flow**
 - Use App Identity + Secret/Certificate to authenticate
- **Set up a security group**
 - Restrict permissions to access certain mailboxes
 - Ease of use in the future – just need to add new mailboxes to the security group
 - Less resistance from Cloud and Security teams
- **Request using combination of filter & contains/equal**
 - Needed to add a dummy date
- **Message_id**
 - Changed when moving from one folder to another
 - Outlook assigns the same message_id to a new email
- **Paging through emails using custom transformer**
 - Limitation of top 50 mails per request
 - In case smtp or reporting servers are down → backlogging & send through hundreds of emails at once

Reference: <https://learn.microsoft.com/en-us/azure/active-directory/develop/v2-oauth2-client-creds-grant-flow>



[https://graph.microsoft.com/v1.0/users/\\$\(Mailbox\)/messages?\\$filter=receivedDateTime ge 1900-02-26T14:41:09Z and contains\(subject, 'timesheet'\)&\\$orderby=receivedDateTime desc&\\$top=2](https://graph.microsoft.com/v1.0/users/$(Mailbox)/messages?$filter=receivedDateTime ge 1900-02-26T14:41:09Z and contains(subject, 'timesheet')&$orderby=receivedDateTime desc&$top=2)





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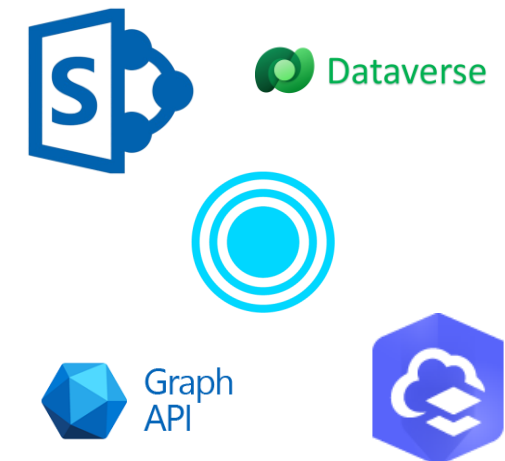
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SAP timesheet – MS Graph API Use Case



Freight Planning – MS Graph & Dataverse Web API Use Case



FME - Freight Planning (Tracks and Ferries)

Challenges

- Customers don't have a good view of the future schedule and capacity which makes it **hard for them to plan appropriately**
- KiwiRail and Interislander customer services teams have lots of **overhead** to communicate and plan with customers

Objectives

- Interactive Schedule Dashboard for KiwiRail Freight and Interislander Commercial Vehicle Customers - **visualise spatially and temporally**

Line	Detail	Update
North Island Main Trunk Line (NIMT)	<ul style="list-style-type: none"> The line from Auckland to Palmerston North opened as planned last night. Palmerston North to Waikanae unfortunately remains closed due to swollen rivers. Water levels are expected to subside and a further inspection will take place this afternoon. 	Auckland to Palmerston North is OPEN Palmerston North to Wellington CLOSED
North Auckland Line (NAL) Auckland to Whangarei	<ul style="list-style-type: none"> Closed due to a large slip north of Helensville, following the 27 January extreme rainfall event. Inspections are now underway to assess further damage caused from Cyclone Gabrielle. 	This line is CLOSED to all freight.

docking & layby schedule (subject to change)



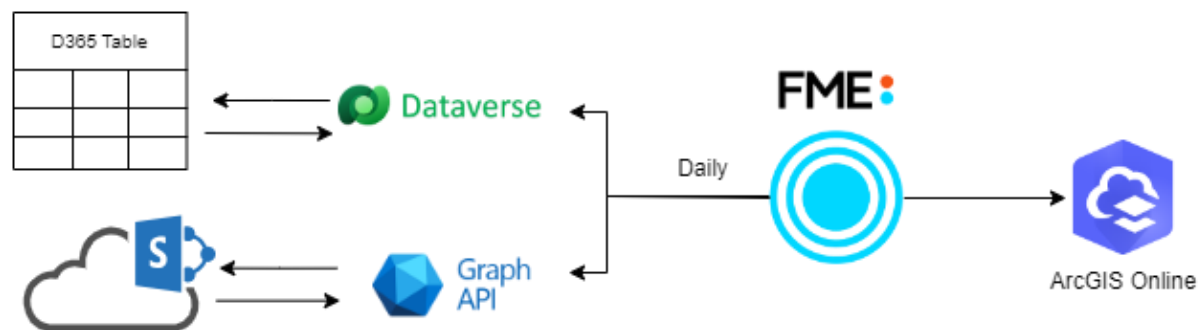
Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23
			PSSC Open	Layby 6-9 May	Lifeboats and davits 5-yearly survey due this year Layby 24-26 Jun
				Layby 28-31 May	Lifeboats and davits 5-yearly survey due this year PSSC Open
	Operating as freight ship through Feb Layby 16 Feb	Unplanned Outage Out: 4 Mar In: 12 April		Wet Dock Last: 15* 0040EX PCT RTS: 29* 2030EX WGT Location: Pictou	Wet Dock Last: 9* 1800 EX PCT RTS: 23* 0130 EX WGT Location: TBC
Layby 11-13 Jan	CSSC due		Wet Dock Out: 22 April In: TBC Location: Dunedin		
	Waitangi Weekend 4 - 6 Feb		Term 1 school holidays 7 - 23 Apr Anzac day Tuesday 25th		King's birthday weekend 3 - 5 June



FME - Freight Planning (Track and Ferries)

Benefits

- **An interactive map/dashboard**
 - Displays timely and accurate schedule planning information
- **Improving user experience & satisfaction**
 - Ease of use for our customers and internal stakeholders
- **Self-service, easy to be maintained** by Customer Delivery team
- **Minimal effort overhead** for GIS team



KiwiRail Freight lines - Linear conversion to GPS

Freight Line Status columns and data

fromstation	toystation	LineAbbrev	FreightSta...	StartDate	EstimatedE...	Cause
PALMERSTON NORTH	Wellington	NIMT	Outage	11/16/2023	3/27/2024	Large slip north of Helensville
SWANSON	NEW MARKET	NAL	Outage	1/7/2024	12/26/2023	City Rail Link work
WHANGAREI	BRITOMART	NAL	Outage	12/20/2023	11/27/2023	Swollen rivers

Interislander Ferries - Fixed points locations

Layby Schedule

Title	Ship	Event	Start	End	Comment	Status	Days
Kaitaki 2023-05 Wet Dock	Kaitaki	Maintenance window	14/05/2023 17:45	29/05/2023 20:30	Location: Picton Key areas of work: - Economiser and thermal oil heater survey and pressure test - Install new chilled water	Archive	15
Kaiarahi 2023-06 Wet Dock	Kaiarahi	Maintenance window	9/06/2023 10:30	23/06/2023 02:00	Location: Picton, (crew swing change location will be Picton on 14th and 21st) Key areas of work: - Passenger Ship Safety	Archive	14



FME - Freight Planning (Track and Ferries)

KiwiRail and Interislander Schedule Plan

Select a date
5/22/2024

Select Freight Rail Customer
Mainfreight

Ferries Status

-  Sailing
-  Layby
-  Dry Dock
-  Wet Dock
-  Disruption

Freight Status

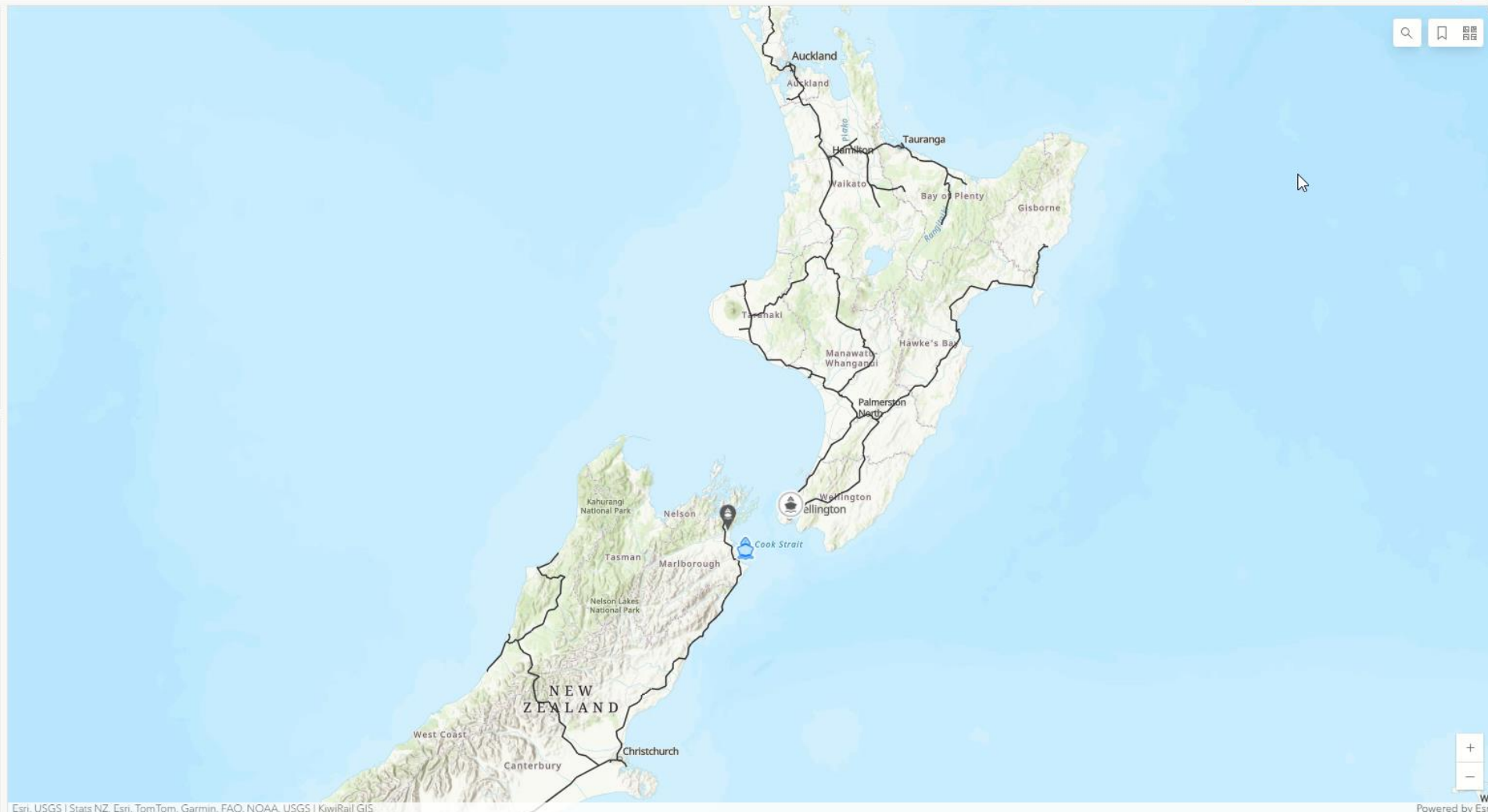
-  Live
-  Outage
-  Non-operational

Guide to our maintenance schedule

Layby - takes the ship out of service for 12 to 48 hours. It can be restocked and refueled and some minor maintenance will be undertaken.

Wet dock - the ship is tied up at a New Zealand port and more complicated maintenance work can be completed.

Dry dock - the ship is taken out of the water allowing access to all parts of the ship. We need to send the ship to a specialised dry dock facility in either Sydney or Singapore.





FME - Freight Planning (Track and Ferries)

Lessons

- D365 table is using Dataverse Web API not Graph API!
- Register S2S apps > New Apps User within Dataverse for FME app
- Make good use of Microsoft Graph Postman collection
- “Cheating” by using SQL within FME to generate date data for date picker – quick & a bonus point is manipulating the data in one place!

Next steps

- WebSocket for near-real-time change notifications for SharePoint list

Power Platform admin center

Environments > Lina Le's DEV Environment > Settings > Application users

Manage the non-interactive users in this environment so your apps can access Dataverse data. [Learn more](#)

Name	App ID	State	App type	Security roles	Business unit
Power Apps Checker Application	c9299480-c13a-49db-a7ae-cdfe54fe0313	Active	Custom	3	orgf2642274
FME Dataverse	26dd2eca-76fd-4e6b-b682-716380a5dbce	Active	Custom	1	orgf2642274

<https://learn.microsoft.com/en-us/graph/use-postman>

```
-- define initial date range
DECLARE @MinDate DATETIME = DATEADD(YEAR, -1, GETDATE())
DECLARE @MaxDate DATETIME = DATEADD(YEAR, 1, GETDATE())

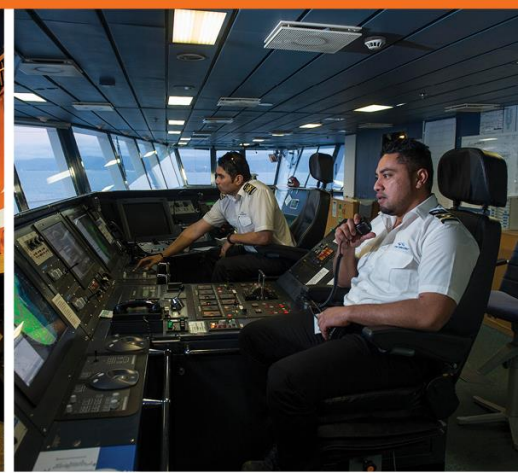
-- remove time component
SET @MinDate = DATEADD(dd, DATEDIFF(dd, 0, @MinDate), 0)
SET @MaxDate = DATEADD(dd, DATEDIFF(dd, 0, @MaxDate), 0)
```

```
-- create one entry per day within the range
TRUNCATE TABLE GISDEV.[dbo].[interislanderFerriesStatusWithDate];

WITH Dates AS (
    SELECT DateEntry
    FROM @Dates
    UNION ALL
    SELECT DATEADD(DAY, 1, DateEntry)
    FROM Dates
    WHERE DATEADD(DAY, 1, DateEntry) <= @MaxDate
)

INSERT INTO [dbo].[interislanderFerriesStatusWithDate]
```

```
HTTP
GET /me/drive/root/subscriptions/socketIo
GET /drives/{driveId}/root/subscriptions/socketIo
GET /drives/{driveId}/list/subscriptions/socketIo
GET /groups/{groupId}/drive/root/subscriptions/socketIo
GET /sites/{siteId}/lists/{listId}/drive/root/subscriptions/socketIo
```



Thank you

