

# Photos in ArcGIS Online with FME

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# About KiwiRail





# Background

## Cyclone Gabrielle



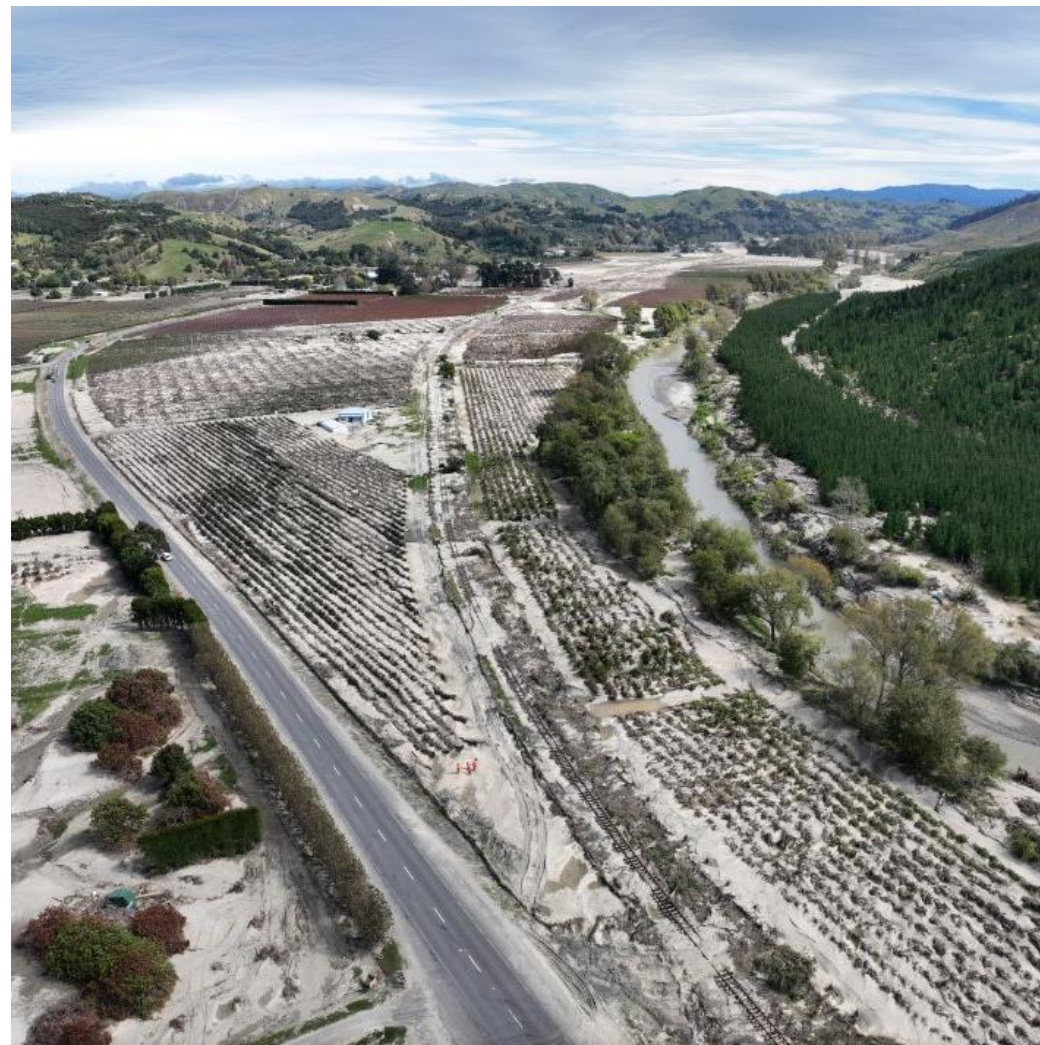


# Background

## Cyclone Gabrielle

687 damage sites across Northland, Auckland, Hawkes Bay

Palmerston North to Gisborne Line (PNGL) & North Auckland Line still partly closed (NAL)





# Background

## Cyclone Gabrielle

Kiwirail Cyclone Gabrielle field assessment template

Description / notes of conditions and problems

Does the culvert interface with third party assets?  
E.g. Council, Waka Kotahi, private etc

Yes  No

Upstream catchment location  
E.g. west of culvert

Description of catchment topography and characteristics  
Low and high points, grass paddocks, forest, urban etc

Water flow direction

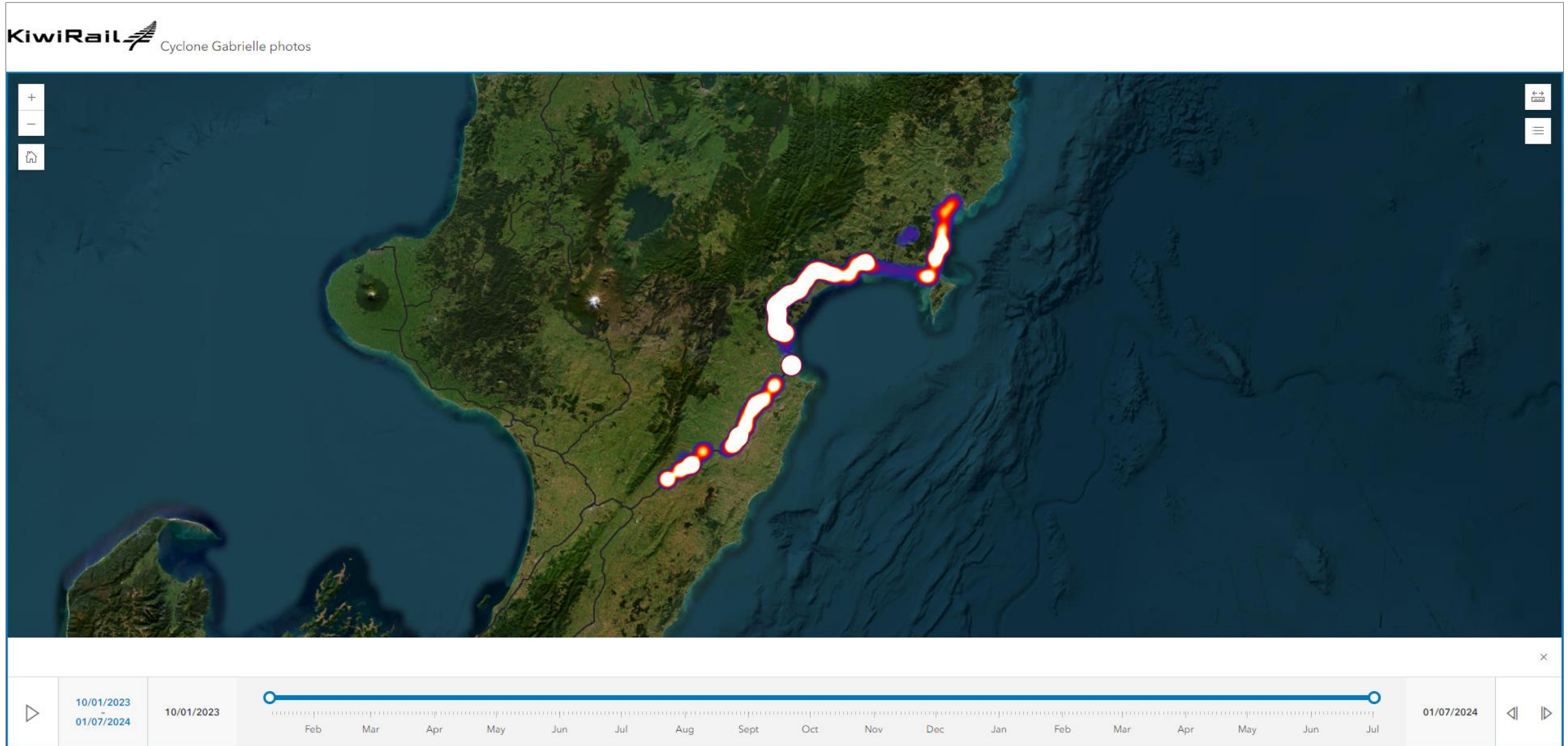
Channel / stream characteristics  
E.g. width, depth, alignment to track, location.

Culvert photos





# Photos app





# Photos app

KiwiRail Cyclone Gabrielle photos

The interface displays an aerial map of a coastal area with a road and forest. Numerous camera location icons are scattered across the map, with a cluster of yellow icons in the upper right. A timeline at the bottom shows a period from February to May 2023, with a play button on the left and a date range of 10/01/2023 to 28/04/2023. A photo preview window on the right shows a photo of a fallen tree and provides the following data:

29 Mar 2023, 12:17 pm

Zoom to

DJI\_20230329121742\_0207\_V\_reduced\_quality

Approx location:	-39.25452 S, 176.79969 E
Speed:	0Km/h
Approx altitude:	269m



# Photos app

KiwiRail Cyclone Gabrielle photos

The image shows a screenshot of a web application interface for viewing photos of Cyclone Gabrielle. At the top left, the KiwiRail logo and the text "Cyclone Gabrielle photos" are displayed. The main area is a satellite map of New Zealand with a red and white path indicating the cyclone's trajectory. A white dot is located on the North Island. The bottom of the interface features a timeline slider with a blue bar and a white circle. The timeline is labeled with months from February to July. On the left side of the timeline, the dates "10/01/2023" and "1/07/2024" are shown. On the right side, the date "1/07/2024" is displayed. Navigation icons for zooming in (+), zooming out (-), and a home icon are on the left. On the right, there are icons for full screen and a menu.



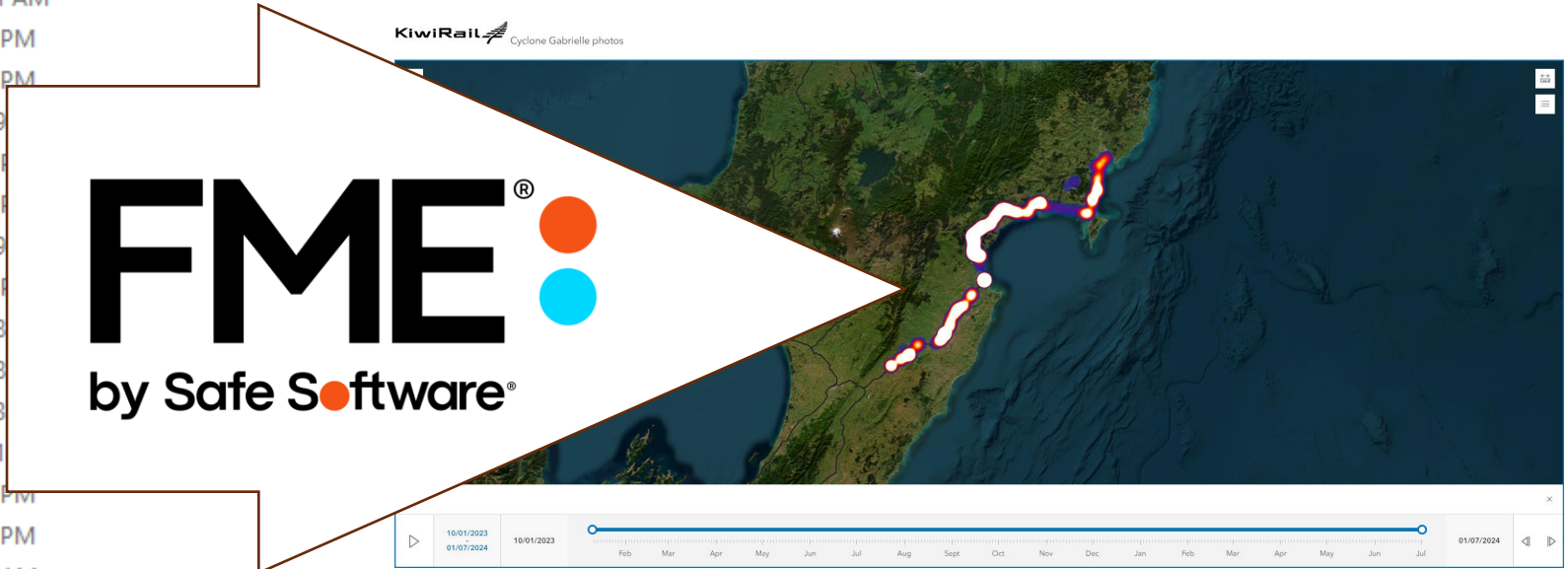
# Loading the photos

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# Loading the photos

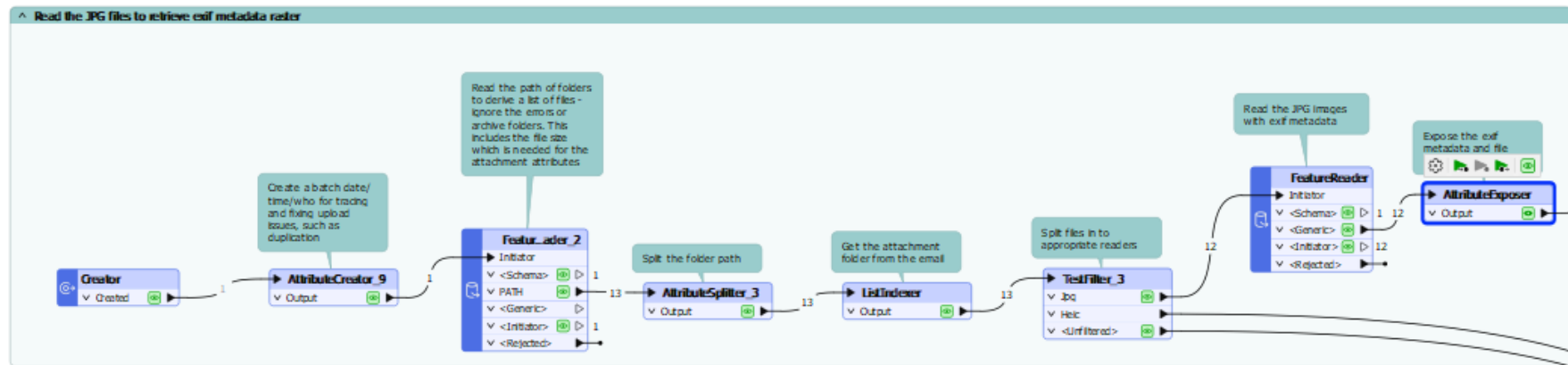
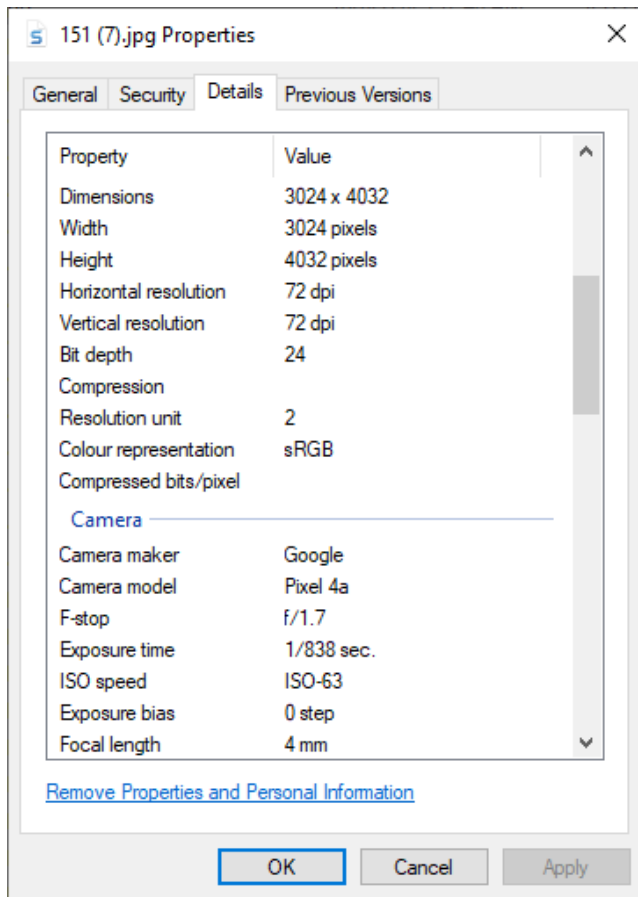
2023-03-28 Eskdale Drone photos and 360 (A Putra)	22/12/2023 3:21 AM
2023-03-28to29 (A Putra)	2/06/2023 1:40 PM
17052023_Tunnel_Inspections Sarah L	2/06/2023 1:45 PM
20230228	31/01/2024 8:39
20230301	7/03/2023 5:00
Aurecon Photos	2/06/2023 2:02
B McDowell Tonkin Taylor 29June2023 helicopter W...	31/01/2024 8:39
Br 176 PNGL Drone	2/06/2023 2:05
Bridge234 - Putorino Civil projects Drone	11/05/2023 1:28
Hastings south	4/07/2023 12:48
kiwirail 28 feb 2023	15/03/2023 5:23
March 10-11 heli D Molnar	22/12/2023 3:21
NAL 85.9km and Tahekeroa Rd Slip Recovery Projec...	2/06/2023 2:05 PM
NAL 86km and Tahekeroa Rd Slip Recovery Project	7/03/2023 4:10 PM
Structures Team Photos	2/05/2023 8:13 AM



5300 photos



# 1. Let's get nerdy: exif metadata



Visual Preview X Translation Log

Table

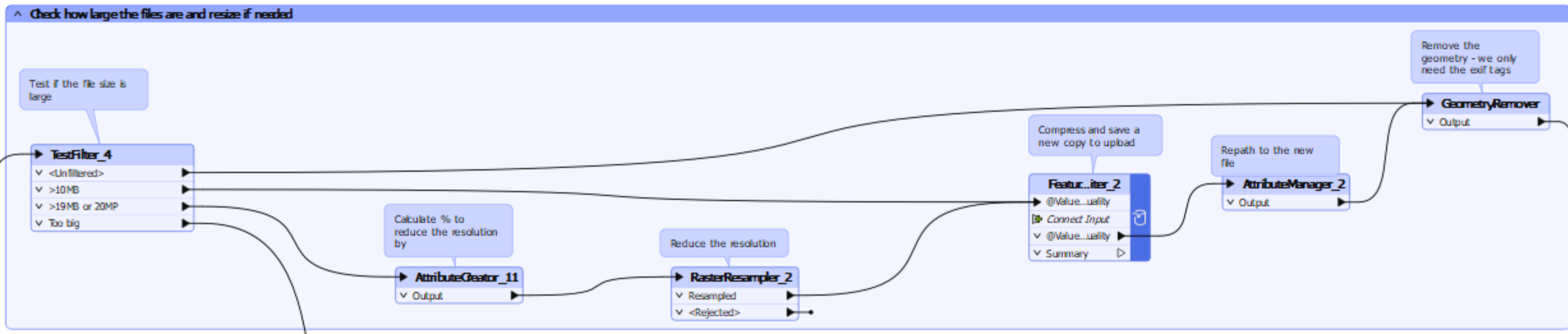
AttributeExposer: Output

	jpeg_exif_datetime	jpeg_exif_gpsaltitude	jpeg_exif_gpsimgdirection	jpeg_exif_gpsspeed	jpeg_exif_gpslatitude
1	2023:03:02 12:32:53	(35.6953)	(283.372)	(0)	(36) (32) (19.84)
2	2023:03:02 12:32:57	(33.9405)	(288.478)	(0)	(36) (32) (19.84)
3	2023:03:02 12:34:05	(38.1227)	(252.202)	(0)	(36) (32) (19.62)
4	2023:03:02 12:34:10	(37.8061)	(275.226)	(0.21)	(36) (32) (19.62)
5	2023:03:02 12:34:23	(38.1807)	(355.295)	(0)	(36) (32) (19.6)
6	2023:03:02 12:35:07	(37.7162)	(100.345)	(0)	(36) (32) (19.7)
7	2023:03:02 12:35:12	(37.5663)	(103.808)	(0)	(36) (32) (19.7)
8	2023:03:02 13:12:16	(44.0718)	(136.148)	(0.26)	(36) (32) (20.61)
9	2023:03:02 13:12:25	(39.8536)	(22.4987)	(0.3)	(36) (32) (20.78)
10	2023:03:02 13:05:20	(51.0010)	(11.225)	(0.10)	(36) (32) (21.41)

in any column



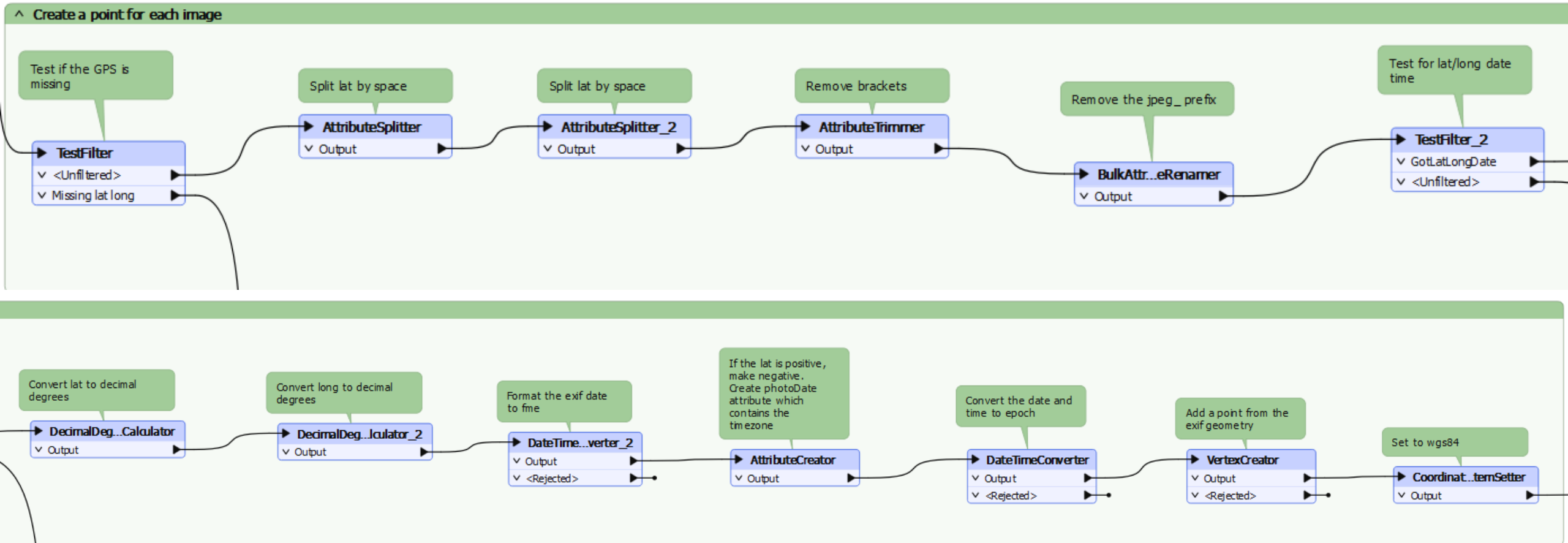
## 2. Images that need to diet



- 10-19Mb: use JPG compression on the writer
- >19Mb: resample then compress to a % of original size
- Feature writer: save a copy: `_reduced_quality` (filename suffix)
- Remove the geometry (image) from the workflow after that to improve performance
  - we only need the JPG metadata



### 3. FME can generate geometry blindfolded

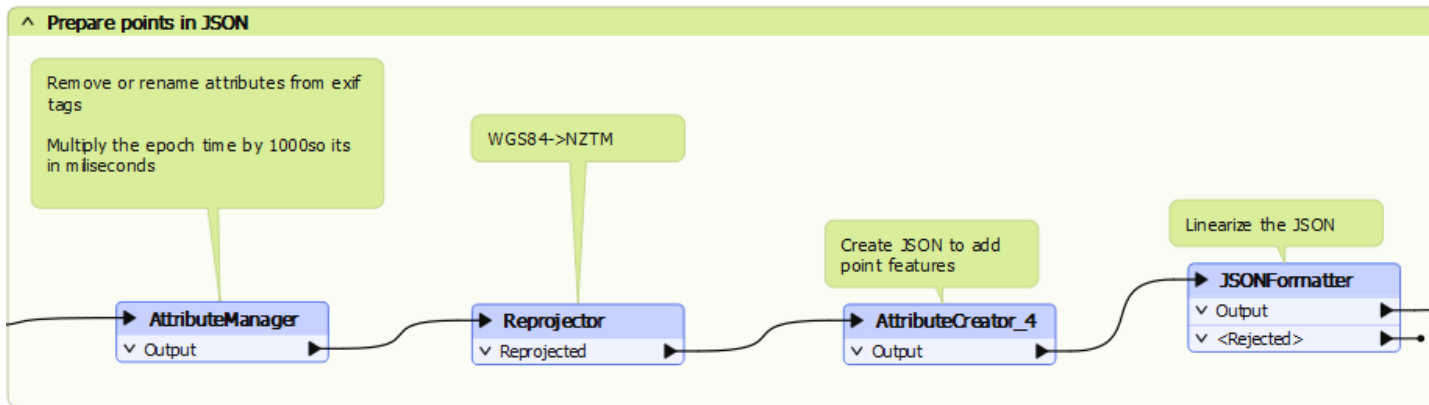


- Kindly ask your photographers to check their images before you process them
- Use FME to filter remaining data errors
- Format the dates from local into UTC. Epoch format worked best (in milliseconds).





# 4. JSON does the hard work so you can REST



Test	Value
If exif_gpsspeed ATTRIBUTE_HAS_A_VALUE	<< exif_gpsspeed
Else If	
Else <All Other Conditions>	<input type="checkbox"/> 0

```

features=[
  {
    "attributes": {
      "CameraAltitude": @Value(CameraAltitude),
      "latDD": @Value(latDD),
      "longDD": @Value(longDD),
      "photoDate": @Value(photoDate),
      "PhotoDirection": @Value(PhotoDirection),
      "photoName": @Value(photoName),
      "SpeedKmph": @Value(SpeedKmph),
      "uploadbatch": @Value(uploadbatch),
      "CapturePosition": @Value(CapturePosition)
    },
    "geometry": {
      "x": @XValue(),
      "y": @YValue()
    }
  }
]

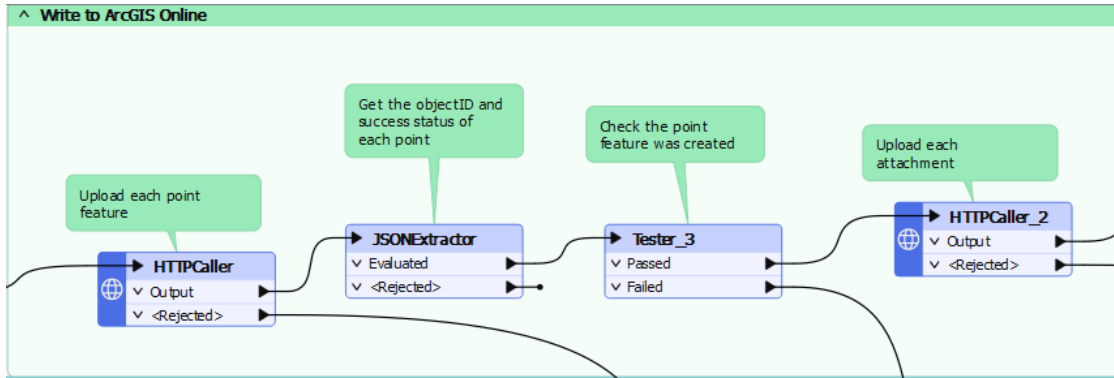
```



- Use a HTTPCaller with the esri REST api
- But there are other ways:
  - ArcGIS Online Feature Service writer
  - but doesn't support attachments (yet ?) so still need to REST
- Pretty JSON: easier to understand, then linearise with a JSONFormatter



## 5. Finally: add the points and upload the attachments



- Use an ArcGIS Online Web Connection to authenticate the HTTPCaller
- With a Multipart / Form Data upload type
- Set the MIME type using a “less than well known” parameter in the HTTPCaller



Name	Value
<input type="checkbox"/> f	<input type="checkbox"/> json



# More about MIME types

ArcGIS REST Services Directory

[Home](#) > [services](#) > [Cyclone Gabrielle](#)

### Attachment Infos (Feature)

# attachments: 1

ID:	974
Parent GlobalId:	
Name:	<a href="#">IMG_6273.JPG</a>
Content Type:	image/jpeg
Size:	9672104
Keywords:	

Format:



- Set the MIME type to image/jpeg using the dropdown menu & Edit Parameters
- The content\_type attribute is ignored

HTTPCaller Parameters

Web Connection: ADMIN ESRI ArcGIS Online Geodocs

HTTP Authentication Username:

HTTP Authentication Password:

Query String Parameters

Name	Value
f	json

Headers

Body

Upload Data: Multipart / Form Data

Upload Body:

Upload File:

Content Type:

Multipart Upload

Name	Upload Type	Value
fileobj	File Upload	<< FilePath
<del>content_type</del>	<del>String Upload</del>	<del>image/jpeg</del>

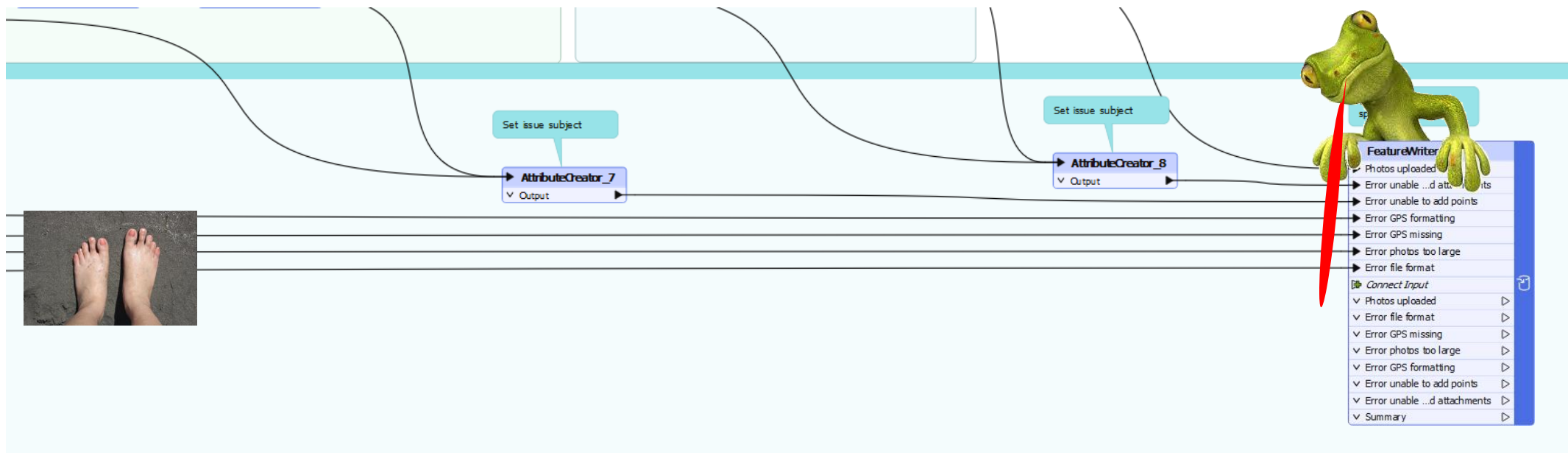
**Ignored by the API**

Help Presets Import from OpenAPI OK Cancel





# Error handling



- Consider using a UAT duplicate of your app, map & feature service
- Give errors a meaningful subject then write to a spreadsheet
- To preserve one's sanity, run with 'Rejected Feature Handling' set to 'Continue Translation'
- Then use the spreadsheet to sort through the results
- Switch off feature caching before you process loads of images.

# Where to from here?

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# Next steps



## Mobile app for capturing photos

Mandatory GPS  
(exceptions: tunnels)  
Photos upload to  
Sharepoint then ArcGIS.

Capturing simple photos



## esri mobile apps for first responders

Quickcapture  
Survey123

Gathering data –  
Damage assessments



## FME Flow

Publish workspace to  
Flow - app.  
Self-service for users to  
upload images

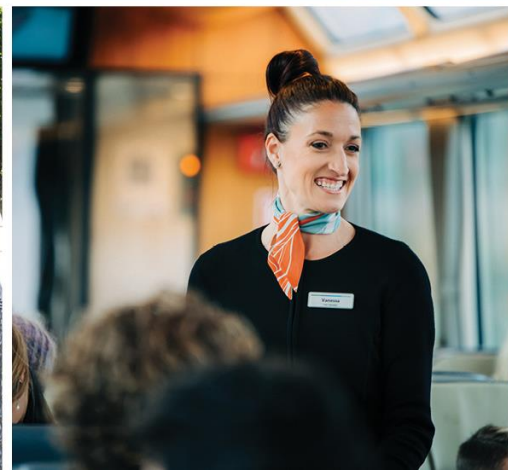
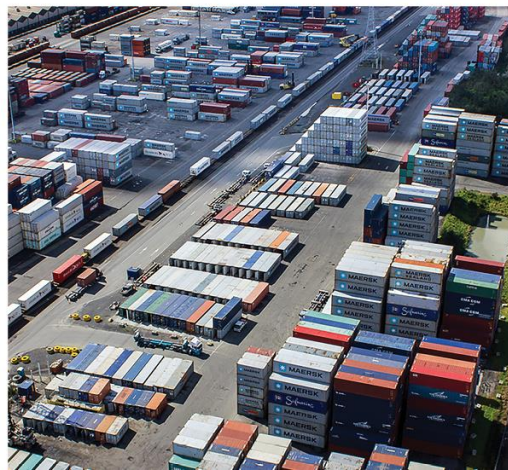
Maybe?  
Still reactive though



## Another image repository

Low-res preview, high-res  
somewhere else  
(Azure?) – cheaper  
storage

Optimise storage &  
access



# Thank you

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