



THE PEAK OF DATA  
INTEGRATION  
2 0 2 2 U C

# REST API UC Training Course

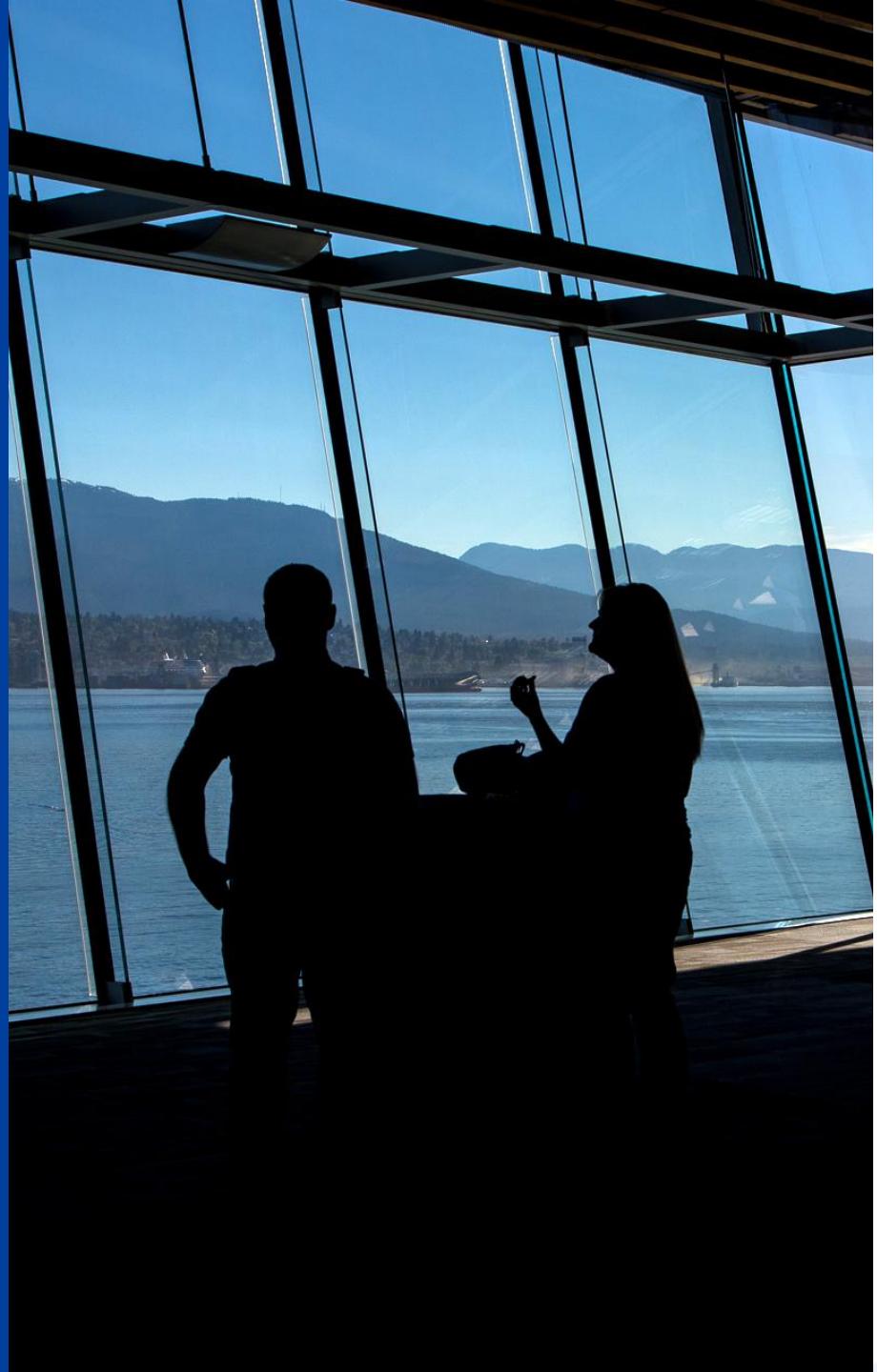
# Presenters



**Sienna Emery**  
Technical Support  
Specialist, Customer  
Solutions

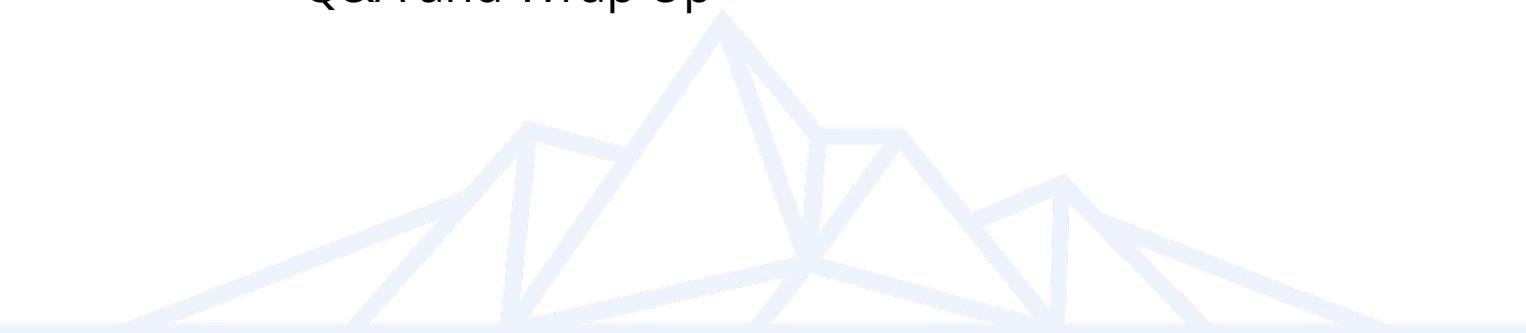


**Jenna Kim**  
Technical Support  
Specialist, FME Desktop



# Agenda

- What is a REST API?
  - Benefits of using APIs
  - Reading API documentation
- FME Overview
  - Using APIs in FME
- Activity 1: Making a GET Request with  
HTTPCaller
- Activity 2: Download Files from a REST API  
Using FME
- Q&A and Wrap Up



# Why use APIs?

Ever needed to download a report from an online service but were tired of manually logging in and fetching the same data over and over again?

Users often want to access APIs so that they can:

- Automate manual processes
- Fetch the most up to date data
- Send data to the web
- Integrate applications



# Components of a API Request

Requests are made through URLs.

Request:

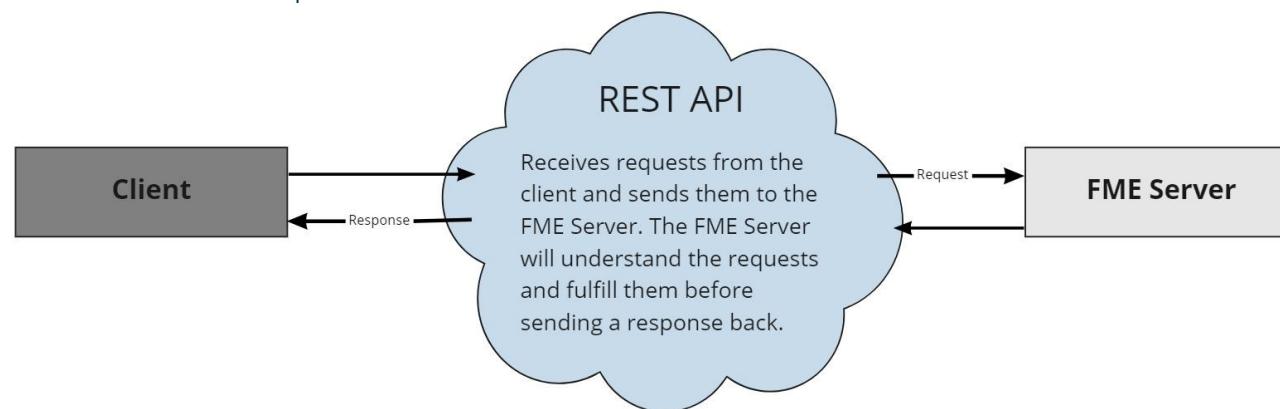
**HTTP METHOD:** GET, POST, PUT, or DELETE

**URL:** http://<domain>/endpoint

**Request Header:**

**Request Body:**

Responses are formatted in JSON or XML for SOAP APIs



# REST Terminology

- **REST**- a common type of API, has a uniform structure, uses a URL to call a resource
- **HTTP Method**- determines the action you are using.
- **Request Headers**- gives context to the call. What data type is being sent?
- **Request Body**- specifies the information to be modified, created, or deleted

# API documentation.

## Everything you need to know to build a request.

Method

Parameters

URL

Headers

Body



**POST** /security/accounts

**Implementation Notes**  
Creates an account on the FME Server instance.

**Parameters**

Parameter	Value	Description	Parameter Type	Data Type
email	<input type="text"/>	Email of the account user.	form	string
enabled	true (default) <input type="button" value="▼"/>	Specifies whether the account is enabled or not.	form	boolean
fullName	<input type="text"/>	Full name of the account.	form	string
name	(required) <input type="text"/>	Unique name of the account to create.	form	string
password	<input type="text"/>	Password for the account.	form	string
passwordChangeNeeded	false (default) <input type="button" value="▼"/>	Specifies whether a password is required to be changed on the next login.	form	boolean
roles	<input type="text"/> Add row	Roles to assign to the account.	form	array
sharingEnabled	true (default) <input type="button" value="▼"/>	Specifies whether the account is allowed to share items with other users and roles.	form	boolean

**Response Status Codes**

HTTP Status Code	Reason
409	The specified FME Server account already exists.
422	Some or all of the input parameters are invalid.
201	Success. The account was created. A URI is rendered in the response.

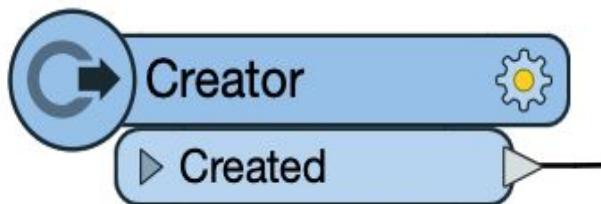
**Try it out!**

**Request URL**  
`http://ap-fmeserv220/fmerest/v3/security/accounts`

**Request Headers**  
`Content-Type: application/x-www-form-urlencoded`  
`Accept: application/json`

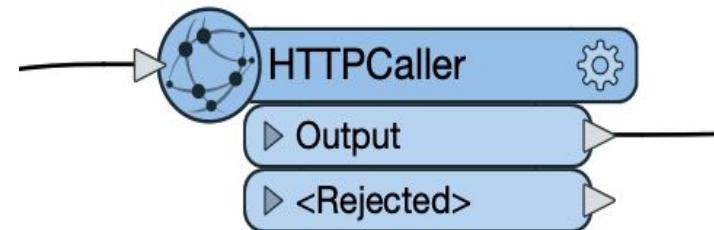
**Request Body**  
`enabled=true&passwordChangeNeeded=false&sharingEnabled=true`

# Powerful API Transformers

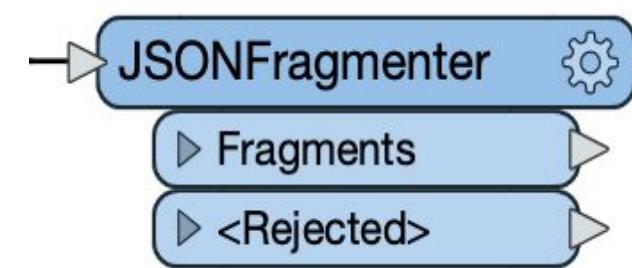


Typically most workflows in FME begin with a Reader that initiates the workflow.

However, since most APIs use the HTTPCaller as the Reader. The Creator is used to kick off the workflow.



The HTTPCaller is where the call to the REST API is handled.

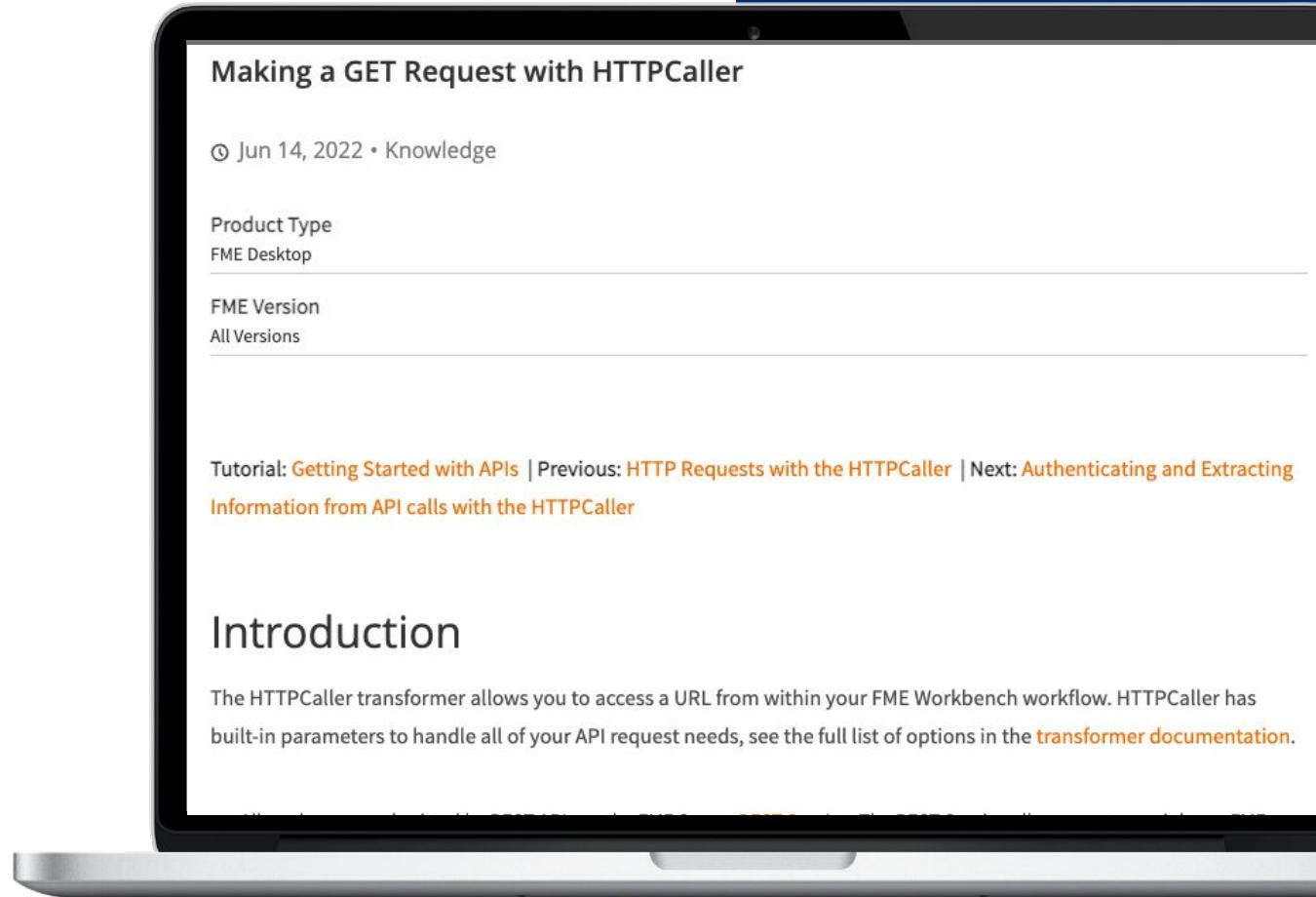


Most REST APIs return JSON. JSON can be parsed in the JSON fragmenter.

# Exercise 1

## Making a GET Request with the HTTPCaller

*Please note: Step 12 (the email step) is optional and does require a Gmail account.*



The image shows a tablet device with a white bezel and a dark blue background. On the screen, there is a white card-like interface for a FME Knowledge article. At the top, the title "Making a GET Request with HTTPCaller" is displayed in bold black font. Below the title, the date "Jun 14, 2022" and category "Knowledge" are shown. There are two sections with dropdown menus: "Product Type" (set to "FME Desktop") and "FME Version" (set to "All Versions"). At the bottom of the card, there is a link to a tutorial: "Tutorial: Getting Started with APIs | Previous: HTTP Requests with the HTTPCaller | Next: Authenticating and Extracting Information from API calls with the HTTPCaller". Below the card, the text "Introduction" is visible, followed by a paragraph about the HTTPCaller transformer and a link to its documentation.

**Making a GET Request with HTTPCaller**

Jun 14, 2022 • Knowledge

Product Type

FME Desktop

FME Version

All Versions

Tutorial: [Getting Started with APIs](#) | Previous: [HTTP Requests with the HTTPCaller](#) | Next: [Authenticating and Extracting Information from API calls with the HTTPCaller](#)

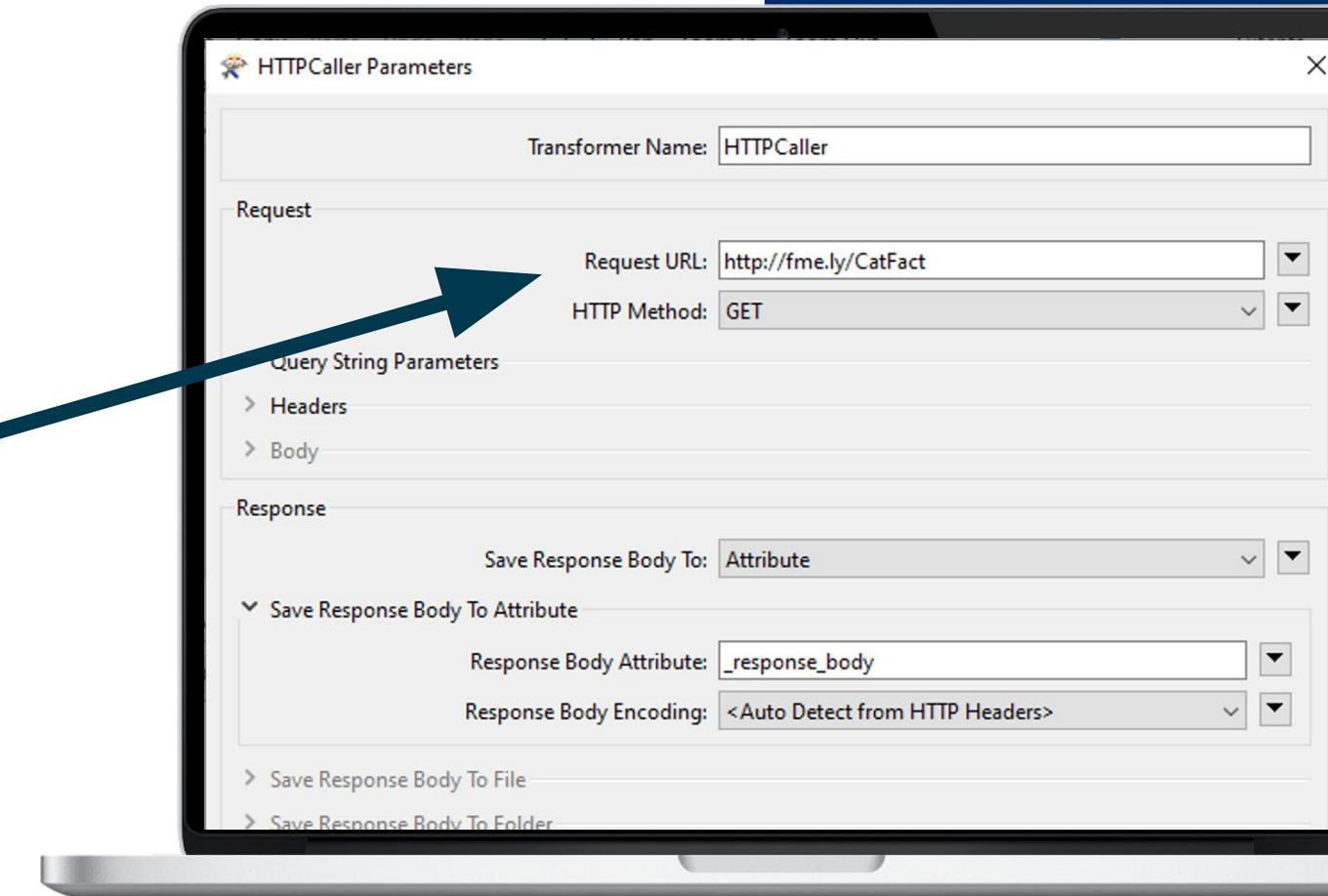
## Introduction

The HTTPCaller transformer allows you to access a URL from within your FME Workbench workflow. HTTPCaller has built-in parameters to handle all of your API request needs, see the full list of options in the [transformer documentation](#).

<https://community.safe.com/s/article/Making-a-GET-Request-with-HTTPCaller>

In Step 5.

Use  
<http://fme.ly/CatFact>  
as the Request URL in  
the HTTPCaller



<https://community.safe.com/s/article/how-to-access-an-api-using-the-httpcaller>

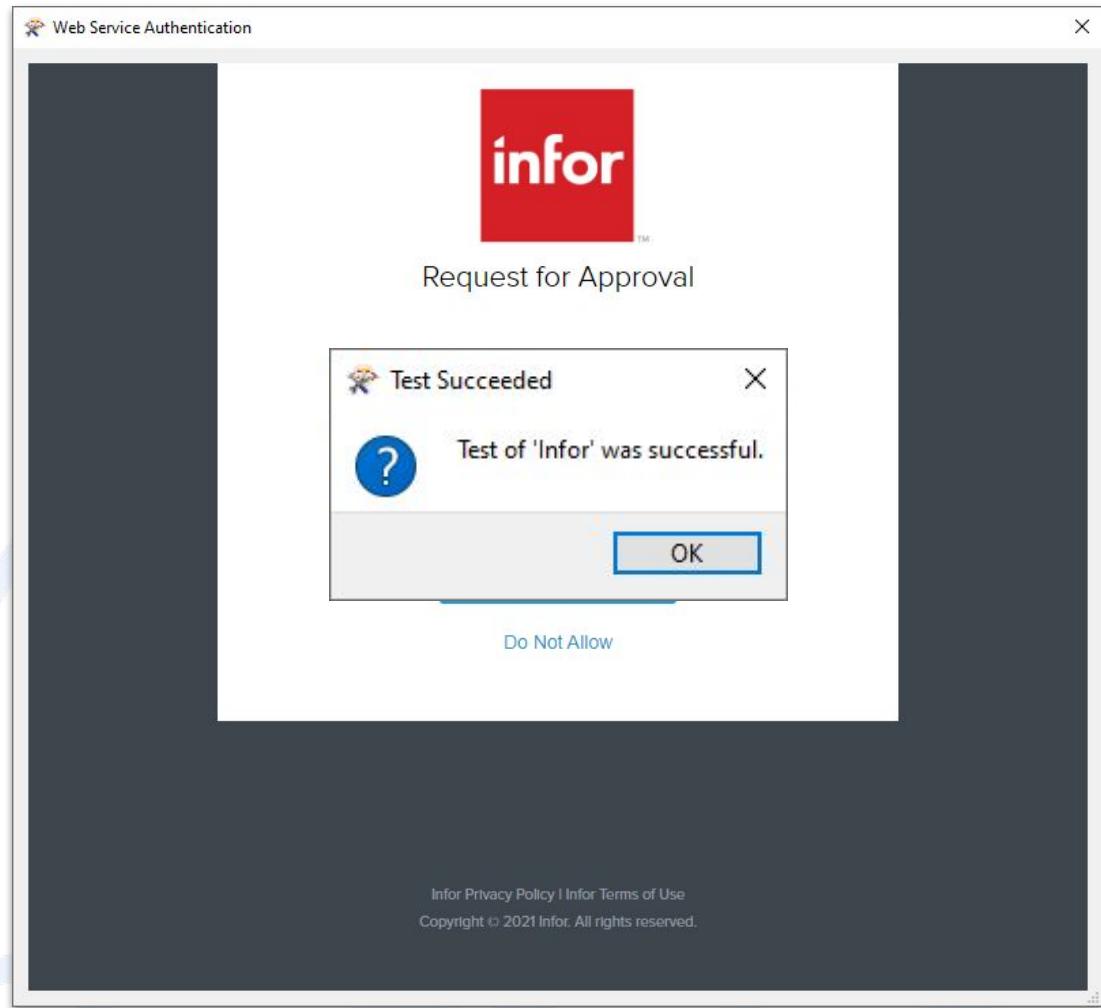
# Authentication Types

**OAuth 2.0:** An open-standard protocol where an application can authenticate a user and access their information through a third-party application without the user's credentials.

**Token:** An alpha-numeric string used to authenticate and identify an application to an API as opposed to defining a user.

## HTTP Authentication Services:

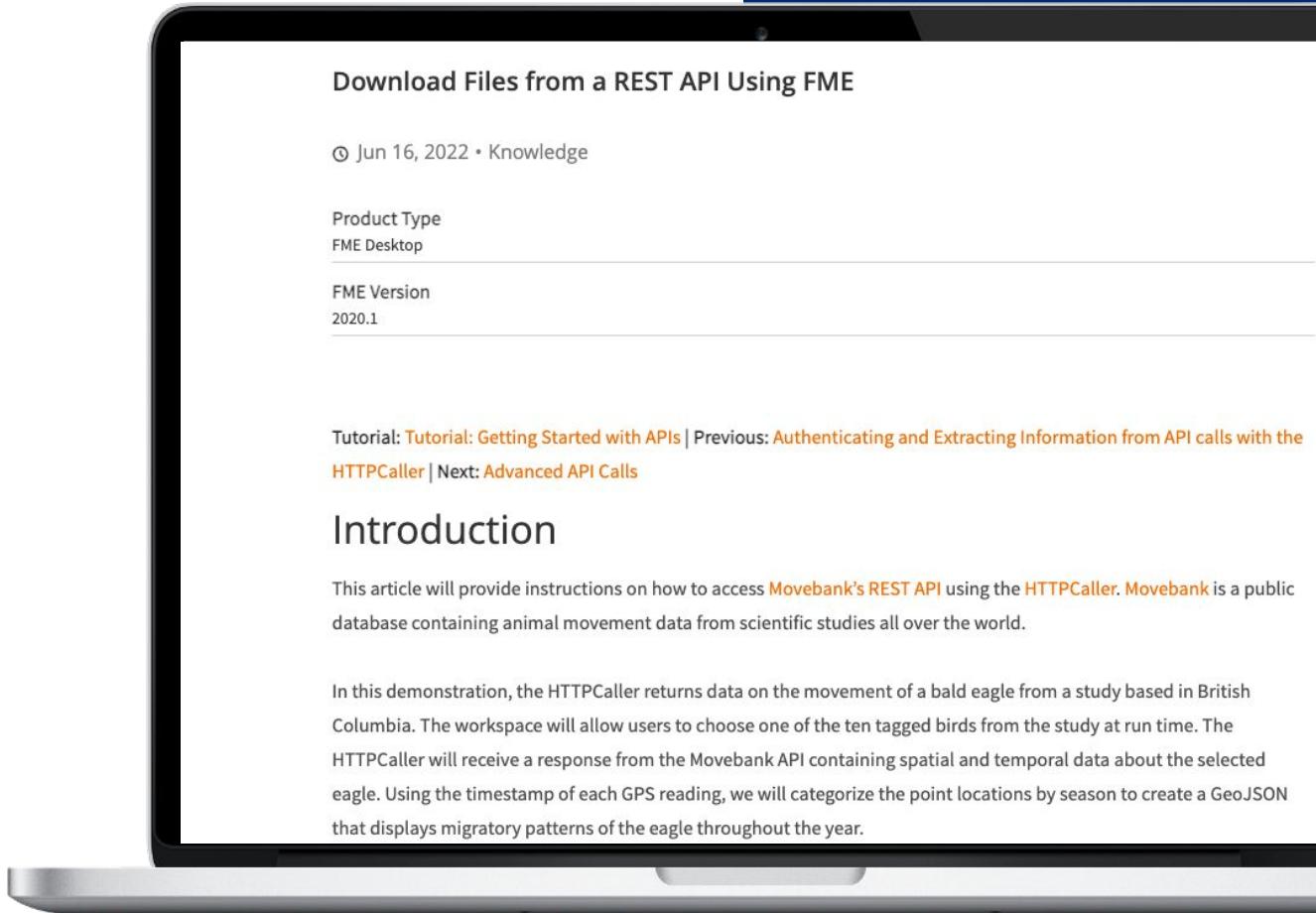
- **Basic:** Username/password (Base64)
- **Digest:** Username/password (MD5)
- **NTLM:** Windows NT LAN Manager (SSO)
- Dynamic: session tokens



# Exercise 2

## Download Files from a REST API Using FME

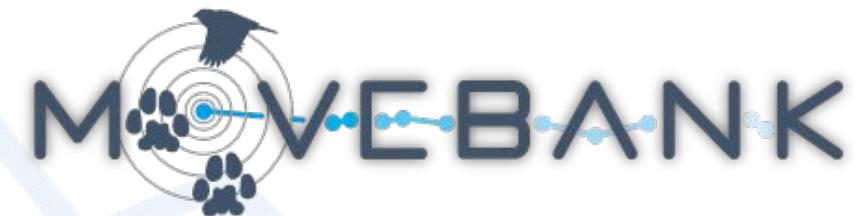
<https://community.safe.com/s/article/how-to-access-an-api-using-the-httpcaller>



# Access Movebank API

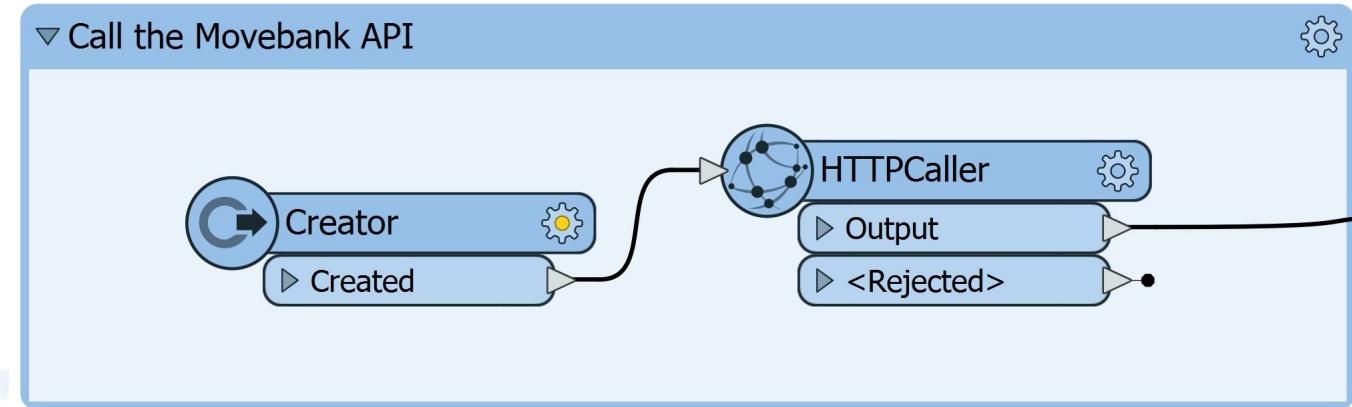
*Movebank is a free, online database of animal tracking data hosted by the Max Planck Institute of Animal Behavior. They help animal tracking researchers to manage, share, protect, analyze and archive their data.*

1. Create a Movebank account to gain permissions for animal tracking data
2. View the metadata for the bald eagle study
3. View Movebank's API Documentation



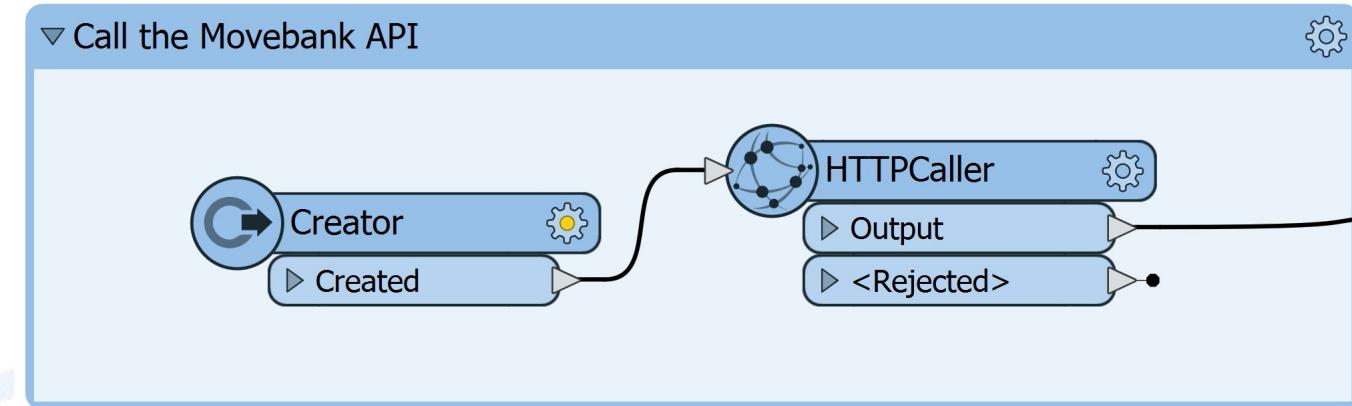
# Set up the first call to Movebank

1. Add a Creator as a trigger for your workspace
2. Add an HTTPCaller to set up the first call to Movebank
3. Run the workspace to ensure that the CSV file is saved in the correct directory



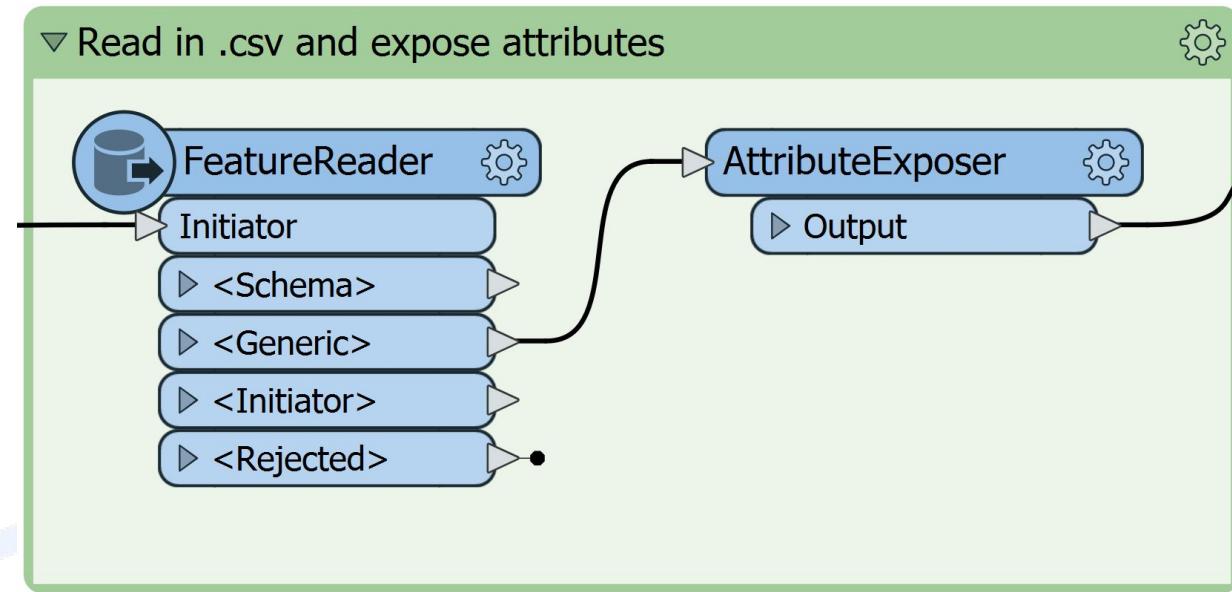
# Set up the next call to the Movebank API

1. Create a User Parameter to select an individual eagle at run time
2. Go back into the HTTPCaller to make another call to the Movebank API
3. Run the workspace to make sure the HTTPCaller is working



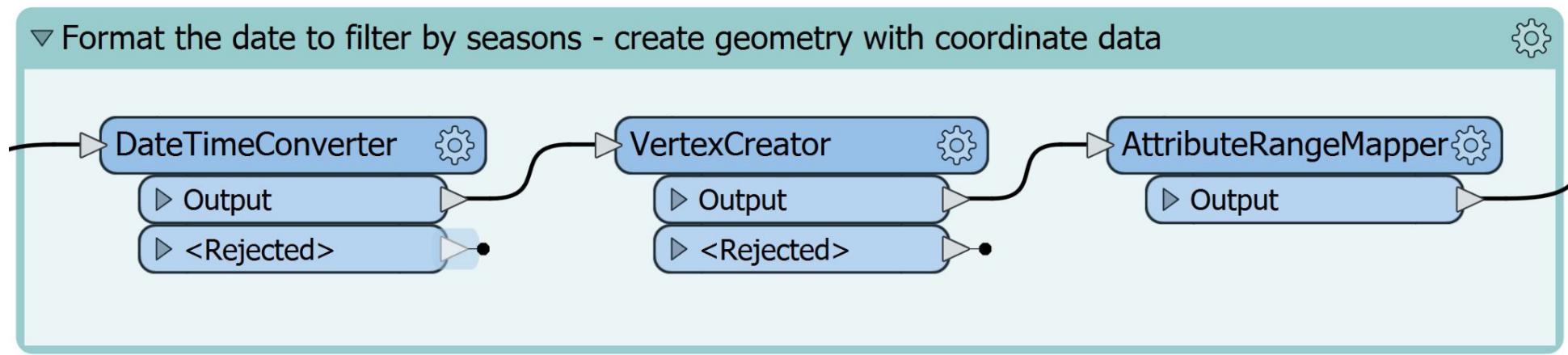
# Read in .csv and expose attributes

1. Add a FeatureReader to read in your CSV file
2. Add an AttributeExposer to reveal hidden attributes



# Format to filter and create geometry

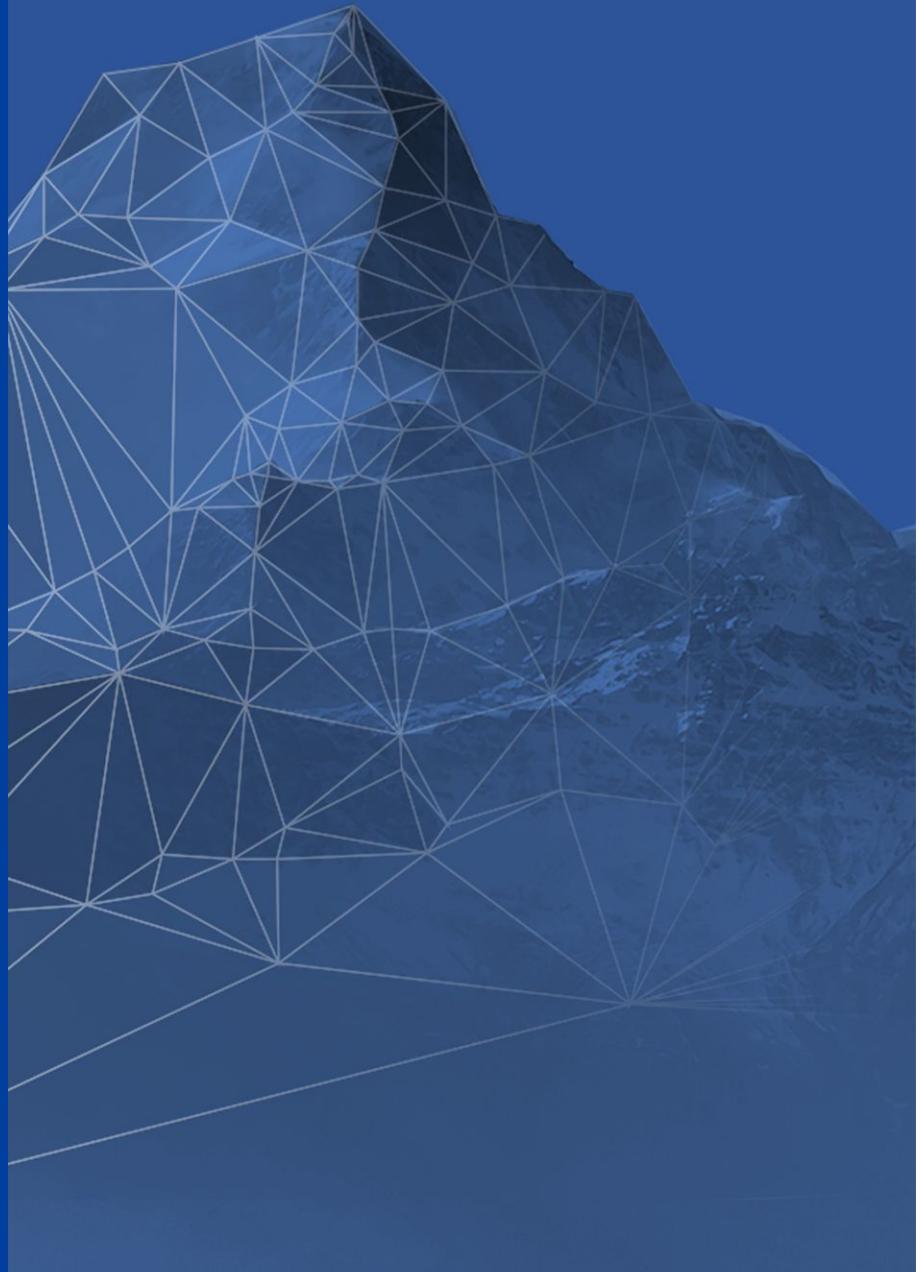
1. Add a DateTimeConverter to reformat the timestamp attribute
2. Add a VertexCreator to create point geometry
3. Add an AttributeRangeMapper to categorize dates into seasons



# View the migratory patterns of your select bald eagle

1. Add a GeoJSON writer for your output
2. Run the workspace and ensure that the GeoJSON file is saved in the correct directory
3. View the migratory patterns of your select bald eagle





# What did we learn today?

- Authentication methods
- How to make a request to an API using the HTTPCaller
- How to download content from an API
- How to wrangle your JSON body



# Resources

- [Tutorial: Getting Started with APIs](#)
- [Webinar: How to Build Complex Calls to APIs](#)
- [Webinar: How to Connect to Any REST API](#)



# Q&A



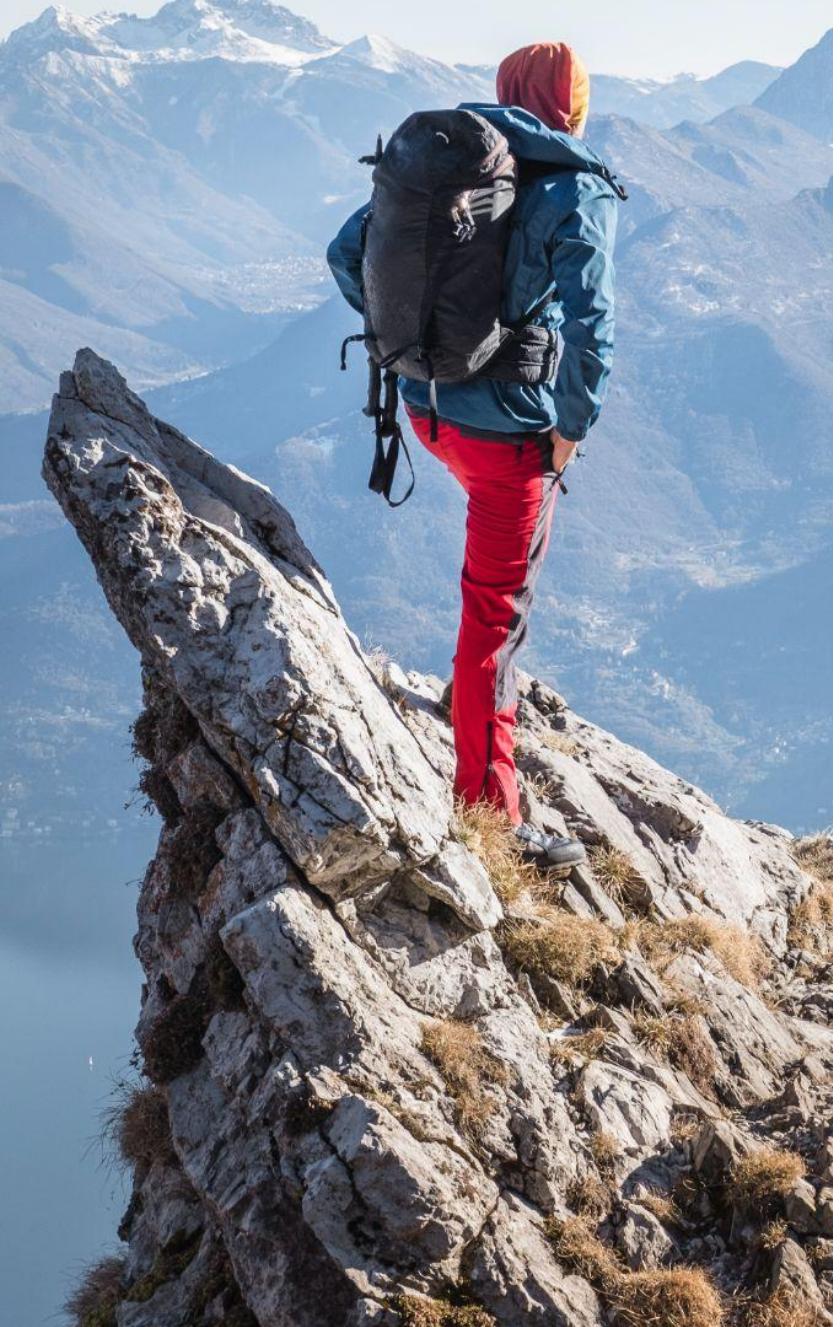


# Thank You!

[info@safe.com](mailto:info@safe.com)



# Extra Slides Below



## Option 2

This is where you can provide a sentence that states your belief about the subject.





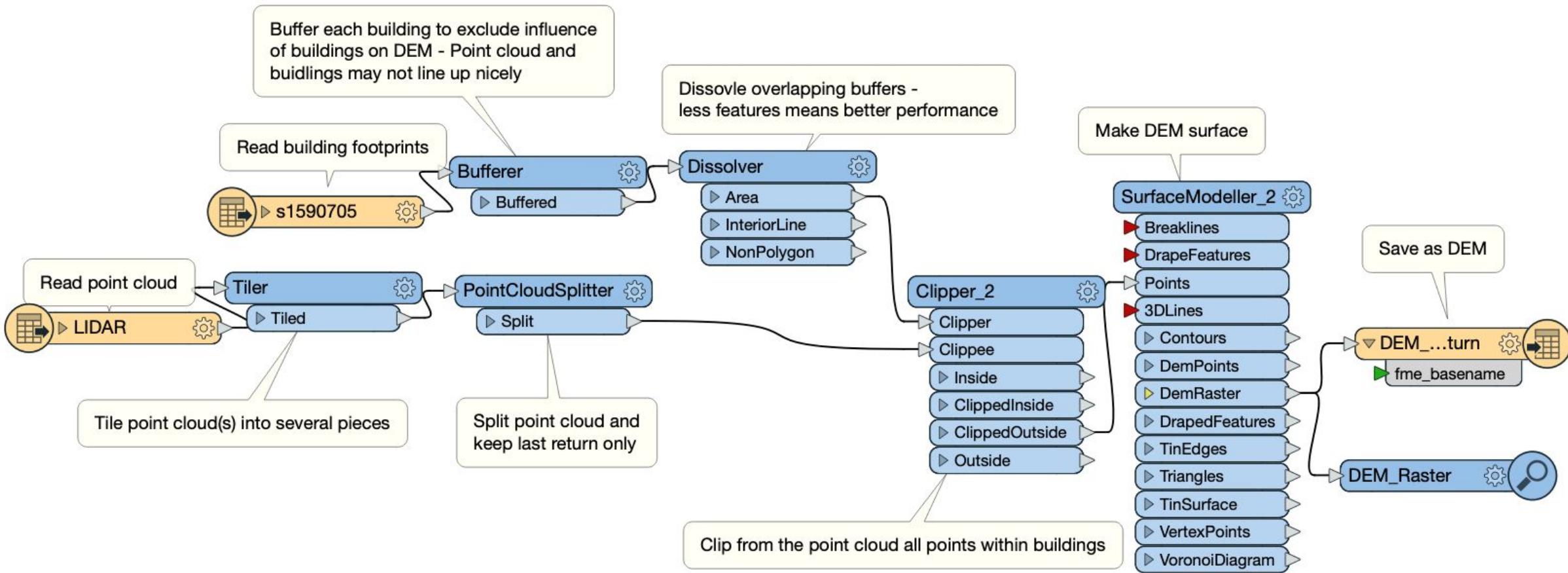
*Transition Slide Option 1*



*Transition Slide Option 2*

**This will solve the problem.**

Replace this picture with your workspace image.



# Option 1: Describe the Solution

The Problem



The solution  
(often includes FME)

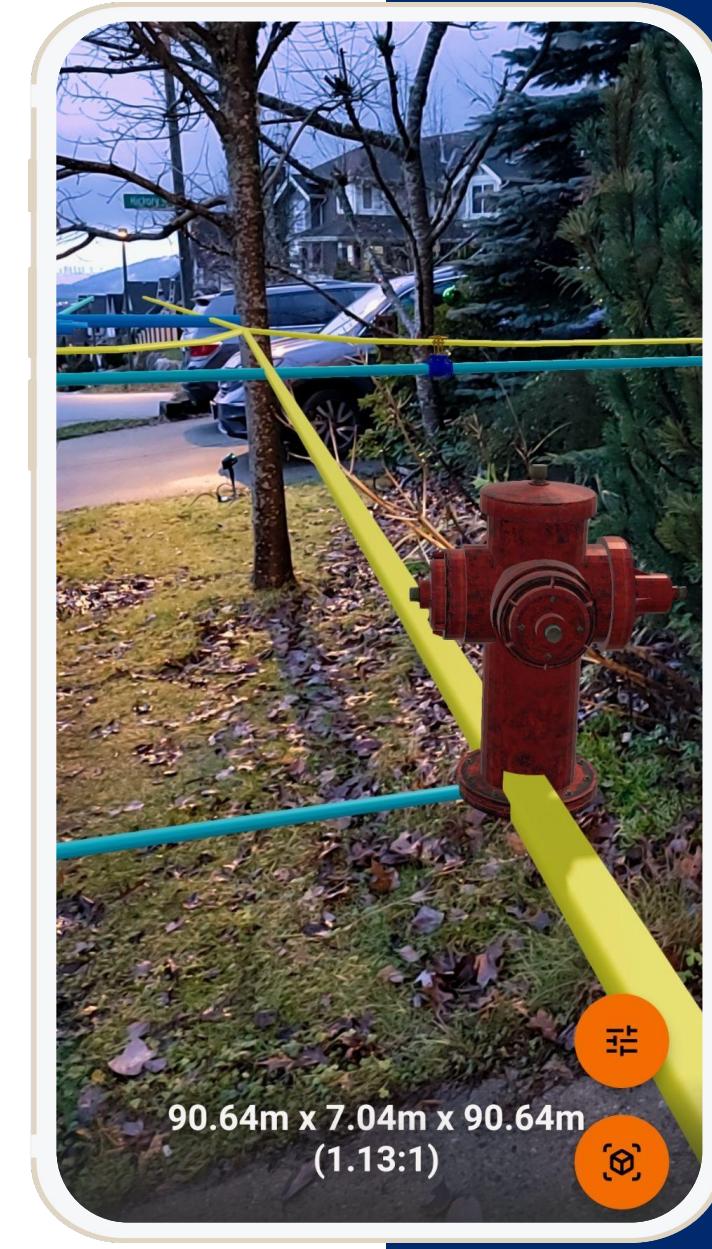
The result is  
something amazing!

## Option 2: The Output

We solved the problem. Add your image by right clicking the placeholder image, then select "Replace image".



*Caption: Lorem ipsum  
dolor sit amet consectetur.*

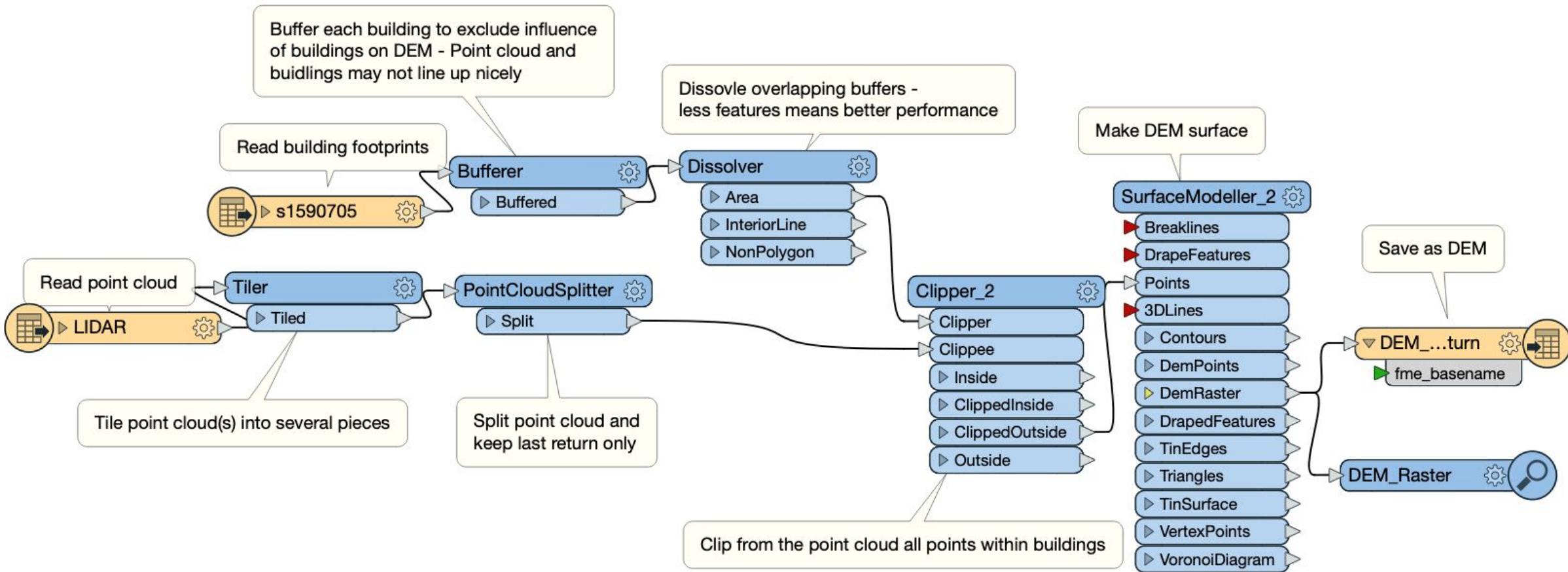


*Transition Slide Option 3*

*Transition Slide Option 4*

**This will solve the problem.**

Replace this picture with your workspace image.



## Option 2: Describe the Solution

The Problem

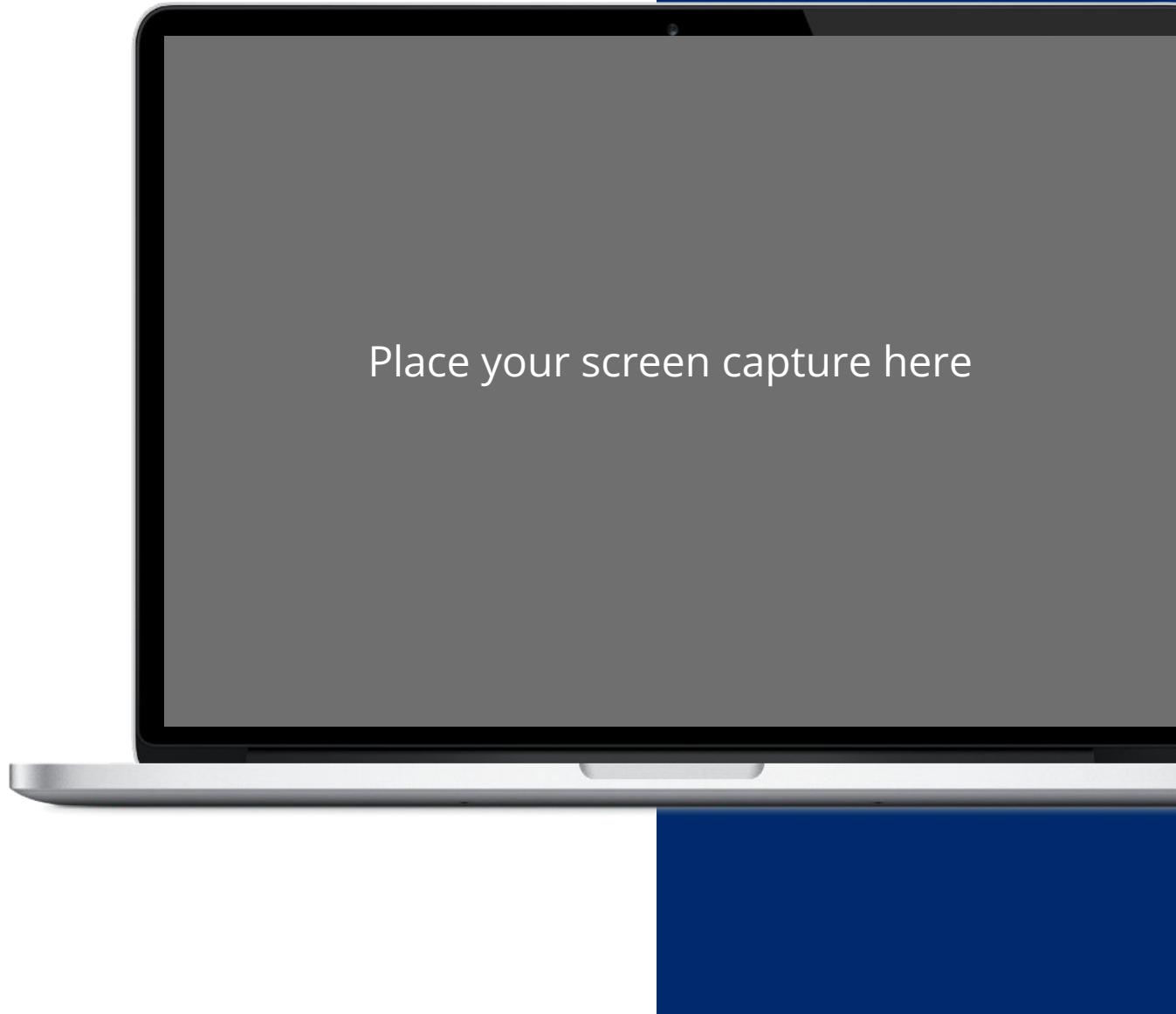


The solution  
(often includes FME)

The result is  
something amazing!

# Option 3: The Output

We solved the problem. Add your image by right clicking the placeholder, then select “Replace image”.





# Resources

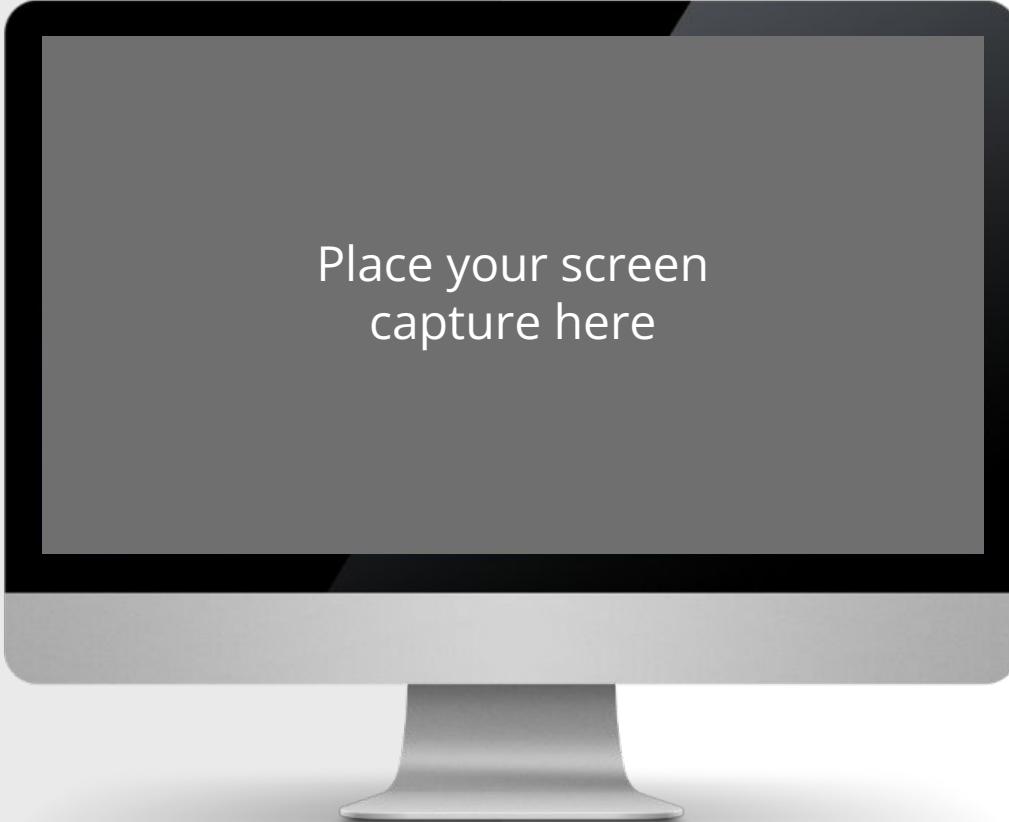
Share additional resources to help attendees get started.

# Call to Action

This is a concrete, time-sensitive and assignable next step that you ask your audience to take.

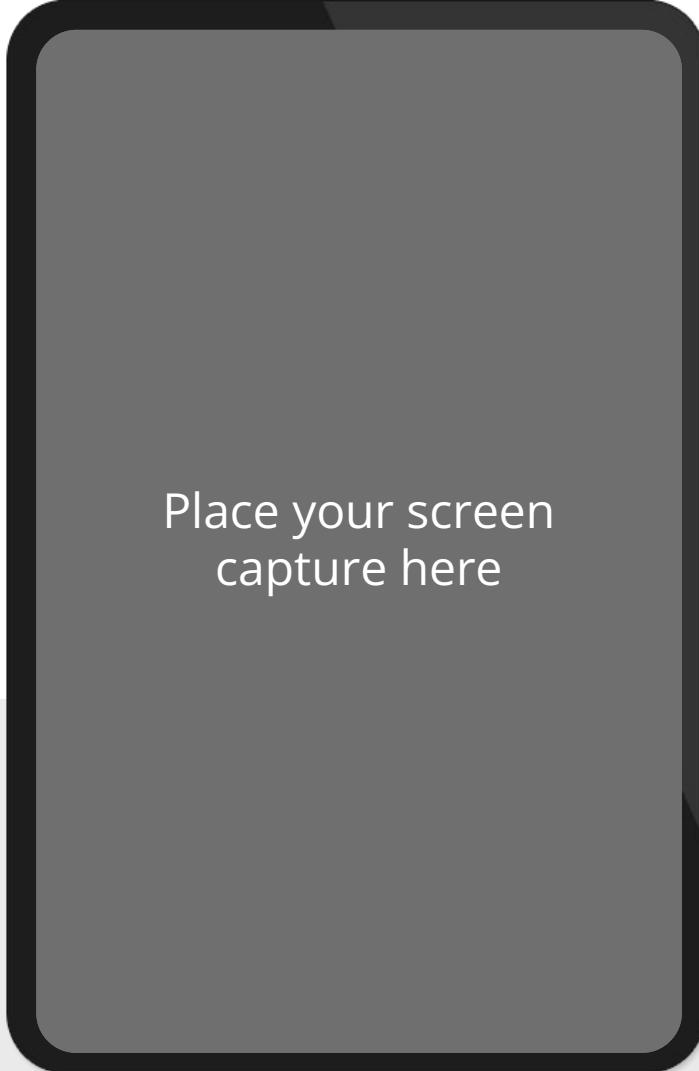


The slides below are extras, which you can pull from if you like to change it up or add an extra slide or two.



## Title To Go Here

Add your image by right clicking the placeholder, then select "Replace image".



Place your screen  
capture here

# Title To Go Here

Add your image by right clicking the  
placeholder, then select “Replace image”.

## Subheading To Go Here



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