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Someone deleted my database connection!

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Agenda

Introduction

The Problem

The Solution

The Result

ableY

Introduction

Introduction

Todd Davis

Technical Director

- 15+ years FME
- 10+ years FME Server

- Enjoys the flexibility of FME
- Integrating platforms and data
- Identify and solving business problems
- Breaking things (Security, Privacy)

The Problem

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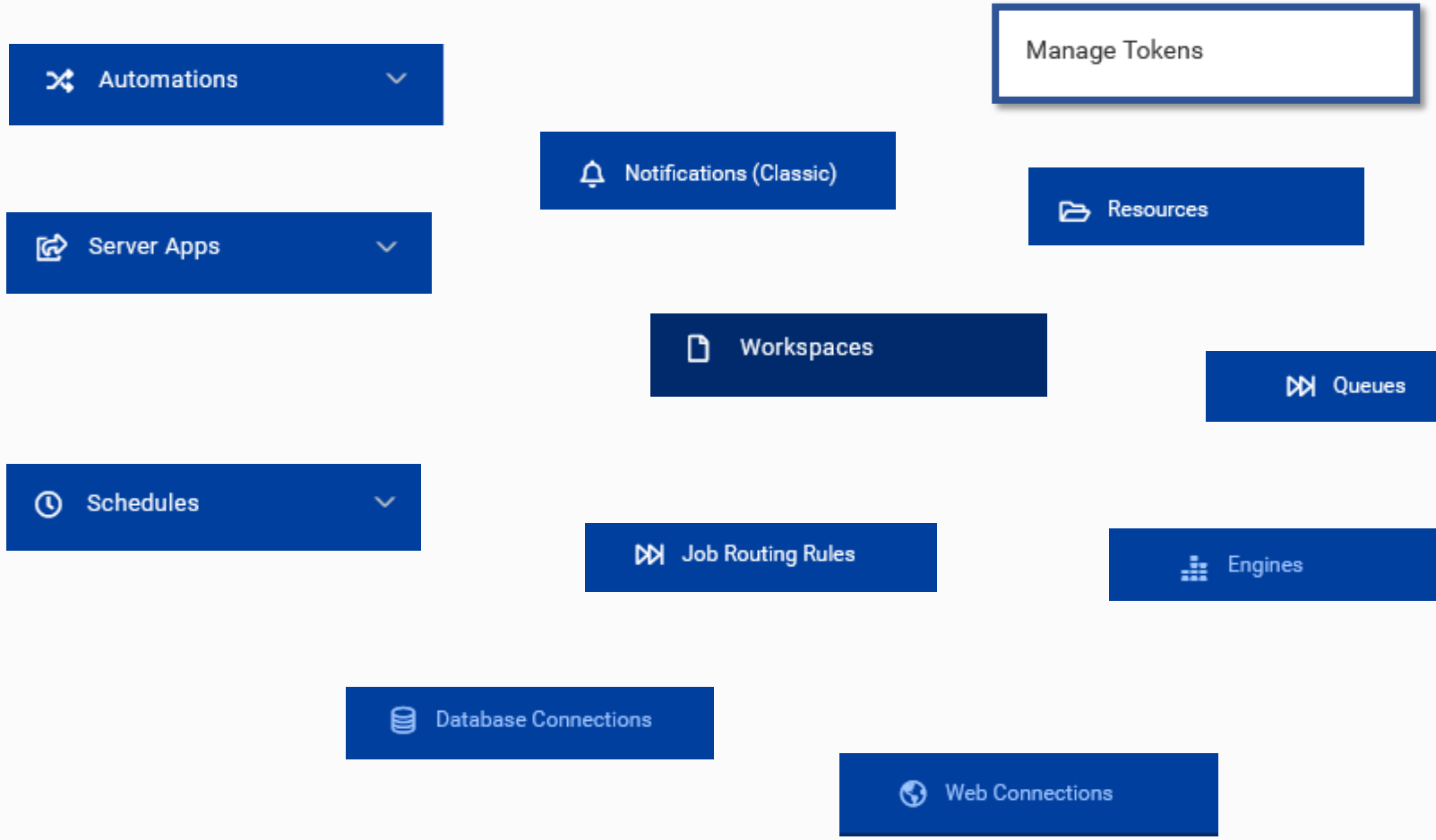
FME Flow has so many interactions



These interactions allow you to do amazing things, but they also any change at one location affects wider processes

Users do all sorts of things

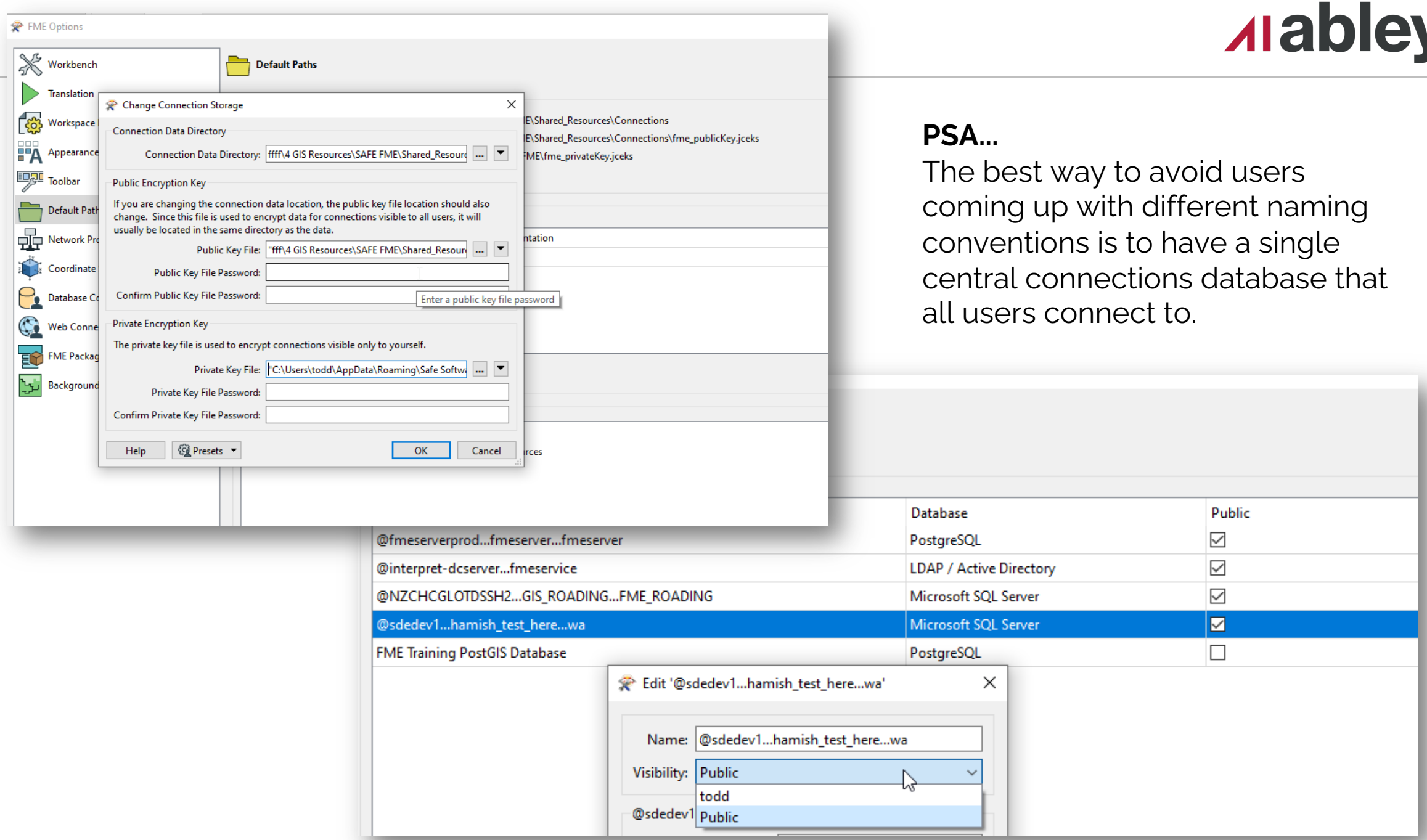
☐	@ProdServer...database...username	Microsoft SQL Server
☐	@ProdServer...Database...username	Microsoft SQL Server
☐	@ProdServer...Database...Username	Microsoft SQL Server

As an example, users can create mutliple connections to the same database.

And each of these could be tied to one or multiple processes.

I can quickly delete the connections!

What is the effect of tidying this up?

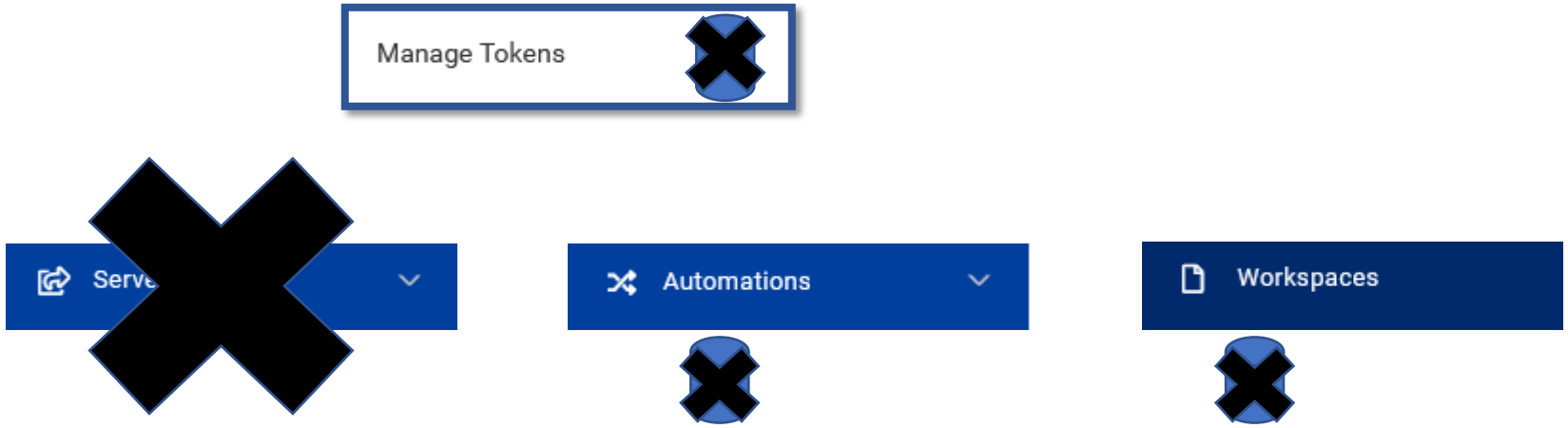


PSA...

The best way to avoid users coming up with different naming conventions is to have a single central connections database that all users connect to.

A simple example

A user has created an Automation App. The automation app has multiple workspaces and reads and writes to one of those SQL database connections that we want to get rid of. Some of the workspaces parameterise the SQL connection, others have hardcoded the connection. Where are all the thing we are going to need to change?



And this is just an example of a single database connection, but it applies to nearly every aspect of FME Flow.

What else can go wrong?

Python versions

SQL injection

Permission assignment to user

Hardcoded username/password

Disabled process

Hardcoded locations on Server

Token Permissions

Public access to private data

Something is deleted

Processes that could give access to wider realm

Expired schedules/automations

And they do go wrong...

“My server app keeps returning a permission error and the users need it back up immediately”

“Turns out someone had disabled the process”

“The token that was created for the webhook has been given all the possible permissions”

The Solution

Use FME to monitor FME

FME API

FME uses the FME API for everything, therefore every option is avaliable via the API

Using version 3 and version 4 of FME API

Most API calls are not documented, but developer tools is the answer

First process is to get all the details:

Lots of endpoint and lots of calls

410 transformers (my biggest workspace since introducing of dynamic process in 2013)

60+ tables

Up to 9000 records in a table currently

Second phase

Built process to create dashboards

Workbenches that have Python

Last run 24/02/2022

Workbench	Python Version
ProcessSpreadsheetForLinks_Terminator.fmw	27
sedimentLoss.fmw	ArcGISDesktop
LASTools Filtering with HSL annd Intensity.fmw	27
pcl filtering experiments.fmw	27
Model Build to ifc (Trimble SiteVision).fmw	2or3
MainPower_Pole_Crash_Analysis.fmw	37

Built processes to highlight real issues and potential issues

Second phase

It worked really well:

- Tidy up issues
- Ensure security
- Ensure process
- Understand risks
- Supports migration
- Support and Educate

Clients where happy and knowledge was growing.

Lets do a case study with a client....

“They tell us what's good, bad, and ugly, and make sure our system is resilient and secure.**”**
“We'd rather be proactive than reactive because if the FME server dies, we've got an issue.**”**

Sean Smith, Group IT GIS Manager, Fulton Hogan

We asked a question

Are you happy with the information you get about the issues?
(hoping that he didn't mention monthly reports)

It would be great to monthly/bi-monthly reports that can be shared up to show what has been found. Also having details of metric over time will inform future decisions.

So let get metrics

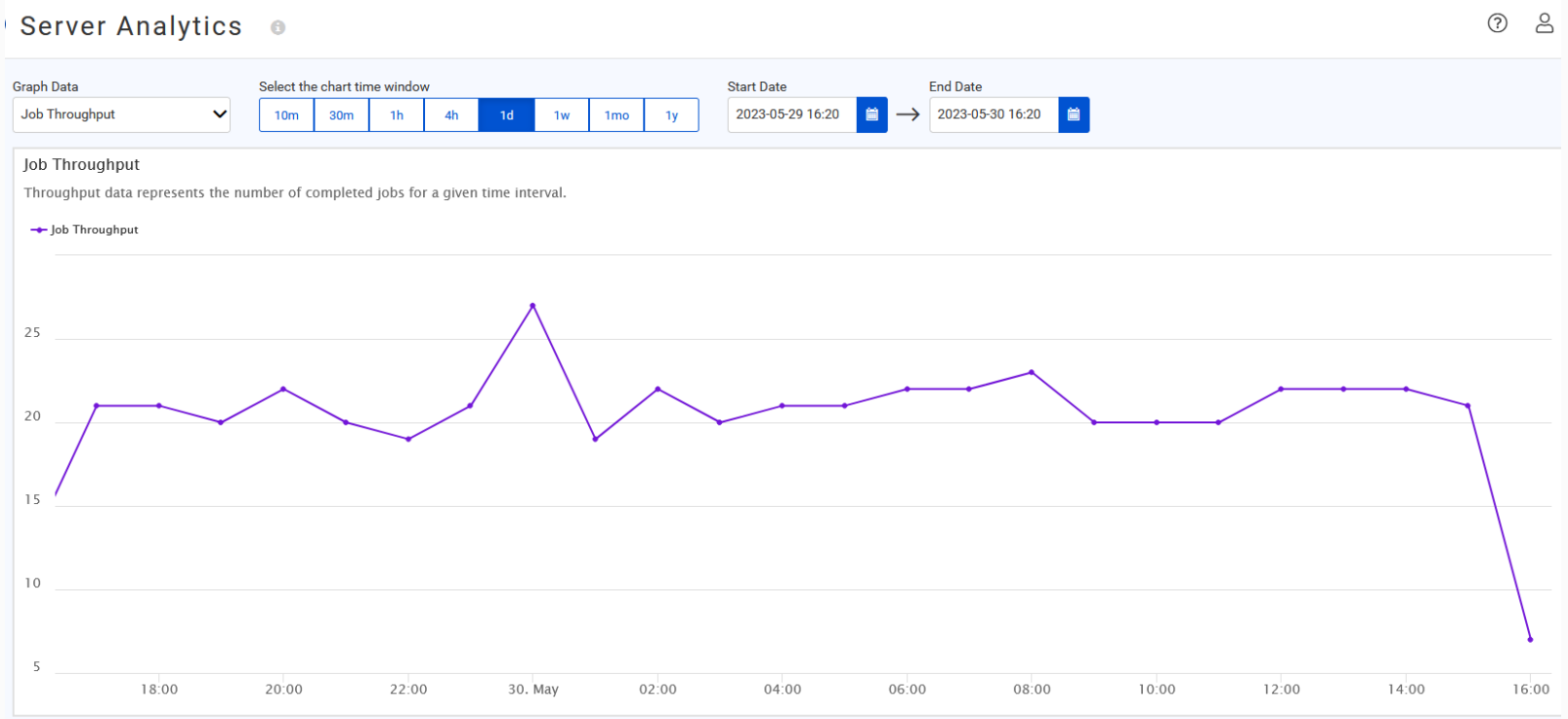
Engine use

Queued time

Idle Server

Resource consumption

Queue/Engine Assignment



I will write a report once

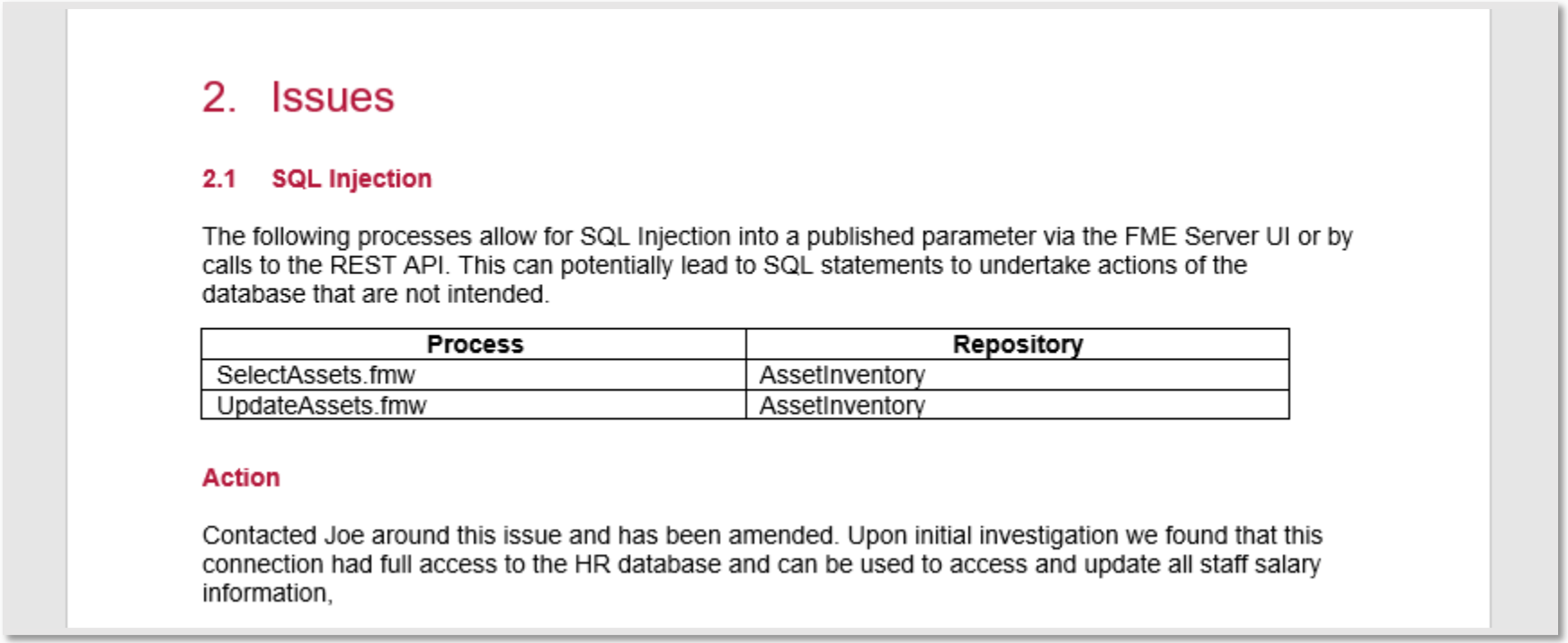
Using FME

Word document

Utilise Ableyy Word template to keep it professional

“Can” the creation of each section. But if it related to audit, only show if issue found

Create “Action” and that will be the only manual writing we need.



2. Issues

2.1 SQL Injection

The following processes allow for SQL Injection into a published parameter via the FME Server UI or by calls to the REST API. This can potentially lead to SQL statements to undertake actions of the database that are not intended.

Process	Repository
SelectAssets.fmw	AssetInventory
UpdateAssets.fmw	AssetInventory

Action

Contacted Joe around this issue and has been amended. Upon initial investigation we found that this connection had full access to the HR database and can be used to access and update all staff salary information,

And Metrics

We can create a range of metrics including these below:

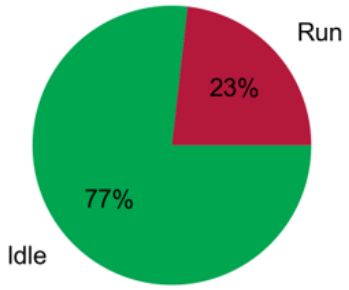
- Use of Engine during specifc timeframes.
- When FME Flow is idle every day in the last month.
- When its best to schedule a process on a specific weekday.

1.1 Engine Run Percentages

Percentage engine use for each engine over set timeframes during the day, over the past month

Engine 1

8am to 5pm



1.4 Processing Capacity

This section outlines times when the FME Flow has capacity for any specific time in the previous month. Times are only included if the exceed 20 minutes.

Minutes	Window Open	Window Close
21	23:39	00:00
21	23:12	23:33

This table outlines times when the FME Server has capacity for each day of the week over the previous month. Times are only included if the exceed 20 minutes and only the longest 5 times for each day are shown. This show times whem schedules and automations are not running. Processes enacted from Server Apps or via the UI are not included as part of this analysis.

Minutes	Day	Window Open
124	Monday	09:39
61	Monday	07:01
59	Monday	05:01

The Results

Proactive rather than Reactive

Improve everyone's understanding

Ensure security and privacy

The unknowns are being looked after

Details can be shared with Executive

In Summary

- Quick to run and by anyone
- Simplifying the complexities
- Benefits the entire company

Thank You!

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Questions