

# IBM Cloud Pak for Business Automation

## Demos and Labs

### IBM Process Mining

## *From Insight to Action*

IBM Process Mining v1.14.1

Lab Version 1.4

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# 1 Introduction

## 1.1 About Process Mining

Process mining is a family of techniques in process management that support the analysis of actual business processes based on event logs. During process mining, specialized data mining algorithms are applied to identify trends, patterns, and details in event logs recorded by an information system. Process mining aims to improve process efficiency and understanding of processes.

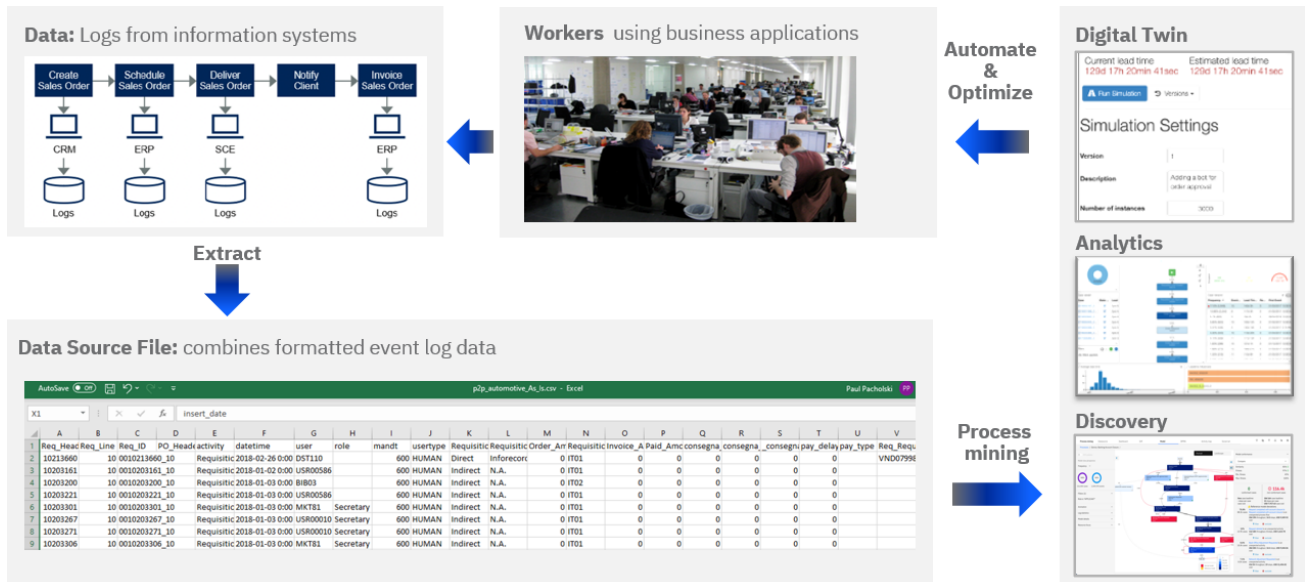


Figure 1. Process Mining

## 1.2 Process Mining Use Case Used in this Lab

### 1.2.1 Procure to Pay (P2P) Process

The Procure to Pay Process connects a company's procurement and supply chain processes through the goods receipt process and the payment issued to the vendor.

In recent years, companies have carefully looked at their Procure to Pay processes to:

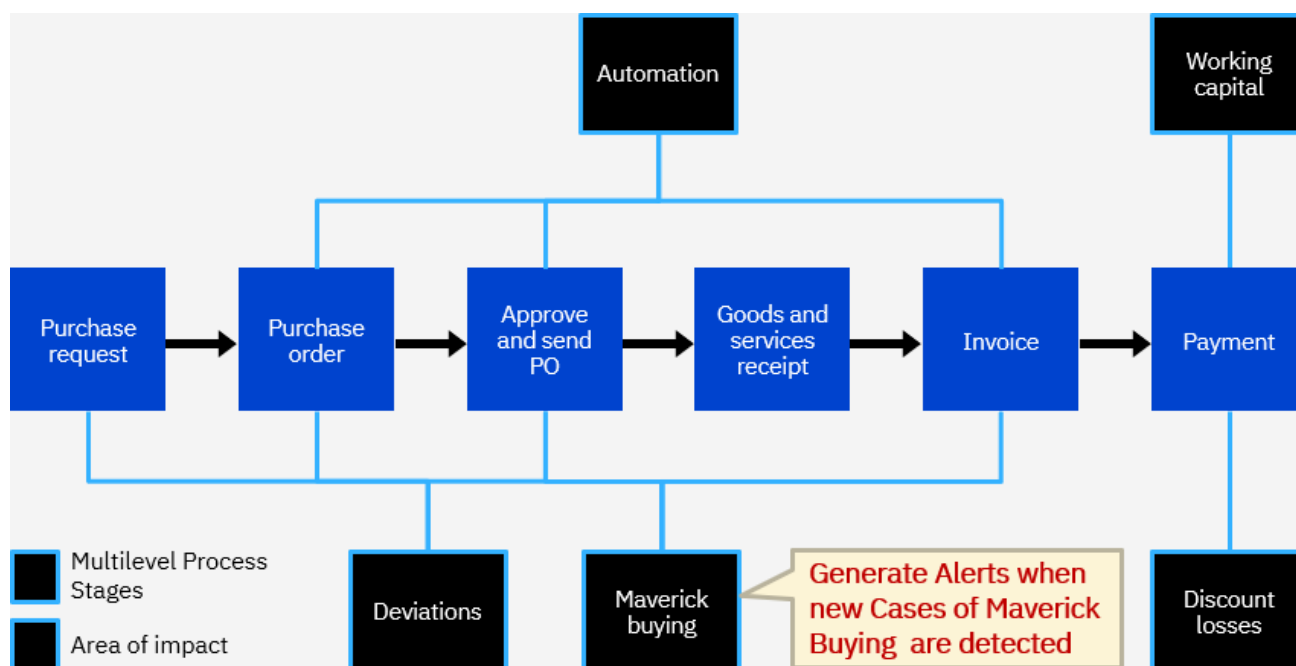
- Reduce overall supply chain and inventory costs
- Free up needed cash
- Improve operational performance
- Make improved financial decisions

In addition to reducing overall supply chain and inventory costs, improving the Procure to Pay Process can add visibility that allows management to better communicate with the vendor about where the items are in the delivery process and payment to the vendor.

### 1.2.2 P2P Process – Process Improvement Areas

This lab is a case study showing the quick wins businesses can get when they apply process mining to the procure-to-pay (P2P) process. IBM Process Mining uses a standard approach with well-defined insights, including a business dashboard for procure-to-pay process analysis.

There are five areas of P2P processes where process analyses can derive the most significant value. The figure below shows a high-level P2P process and highlights critical improvement areas.



**Figure 2. P2P Process Improvement and Automation Opportunities**

In this lab, we will focus on Maverick Buying. We will focus on the type of Maverick Buying when the purchase has been made through pre-approved suppliers but outside the correct purchasing process. The specific process violation we will look for is where a **purchase order is changed after the invoice is registered**.

### 1.3 Lab Overview

In this lab, you will follow these high-level steps:

- **Examine the Dashboard used for Alert Generation.** The Alerts are generated when new Cases that match this criterion, "**purchase order is changed after the invoice is registered**," are added.
- **Create Action Services and Monitors.**
  - **Create Services.** You will create the Action Services, which define what REST endpoints to call when an alert occurs.
  - **Create Monitors.** You will create Monitors that define the criteria for generating an Alert and define what Action Service to call and what parameters to pass to the REST endpoint.
- **Generate New Process Events.** You will simulate the generation of new events in P2P Process by uploading a CVS file with the new events that also include Cases where the "**purchase order is changed after the invoice is registered**,"
- **Examine the Alerts.** You examine the two types of alerts that were generated: (i) a new BPMN process instance and an email. The Alert information will include a link to the Alerts Dashboard.
  - **Examine New Alert Process Instances.** You will use IBM Process Portal to claim and examine the Human Tasks in the Process instance that the Alert started. The Human Task includes a link to the Alert Dashboard. You will use this link to navigate to the Alert Dashboard and examine the new Maverick Buying Cases.
  - **Examine New Alert Email.** You will examine the new Email that includes the Alert information.
- **Implementation Details of the Alert Endpoints.** Optionally, you can examine how the Alert Endpoints were implemented in IBM Business Automation Workflow.

## 2 Lab Setup

### 2.1 Provision Process Mining Environment

\_1. Download [this](#) document and follow the instructions for reserving Tech Zone Environment.

### 2.2 Set RDP Session to DBA VM

#### 2.2.1 Option 1

Use the IP address of the DBA VM provided by VPN.

\_1. Follow the instructions in "**3.3 Using VM's IP via VPN**" to set up the VPN

\_2. Follow the instructions in "**3.3.2 VPN - Accessing TM Client and DBA VM Using Remote desktop**" to create RDP access for the DBA VM.

#### 2.2.2 Option 2

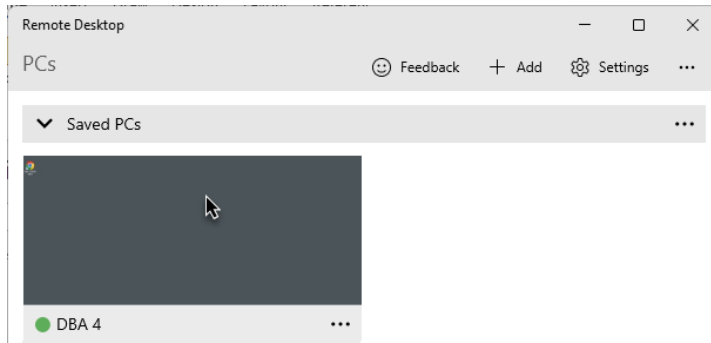
Use the RPD endpoint provided by the Published Services

\_1. Follow the instructions in "**3.4.2 3.4.2 Accessing Task Mining Client VM Using RDP**"

## 3 Lab Instructions

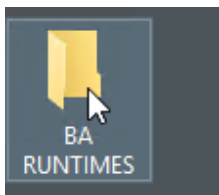
### 3.1 Access DBA VM

\_1. Start DBA VM RDP session.

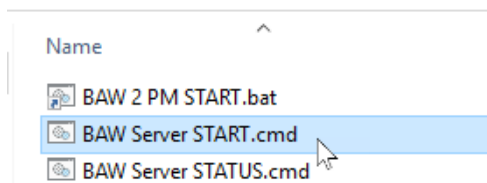


### 3.2 Start Business Automation Workflow Process Center Server

\_1. Open **BA RUNTIMES** Desktop folder



\_2. Double click **BAW Server Start.cmd**

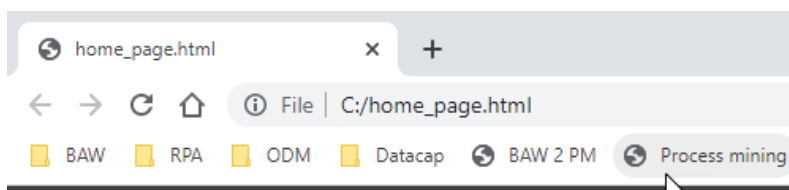


### 3.3 Open Procure to Pay Process

\_1. Start **Google Chrome** web browser

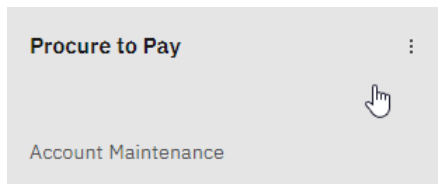


\_2. Click **Process mining** bookmark.



\_3. Login with **maintenance.admin / IBMDem0s!**

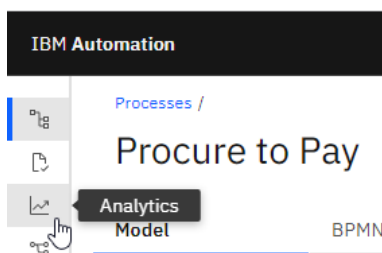
\_4. Click the **Procure to Pay** tile



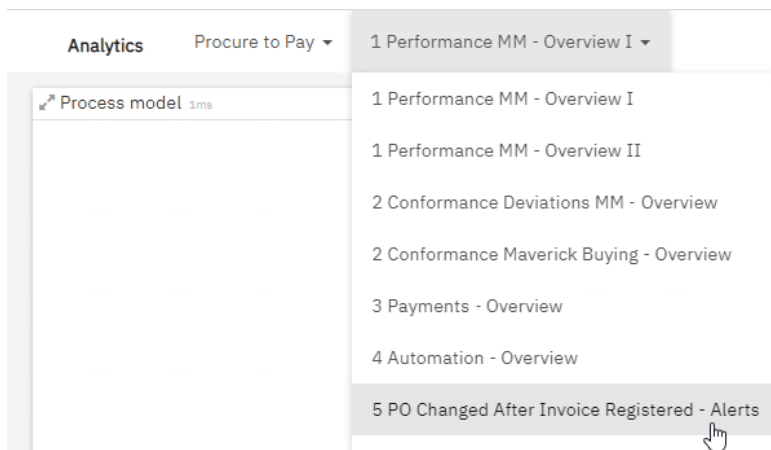
### 3.4 Examine the Dashboard used for Alert Generation

This Dashboard shows the cases that represent the Maverick Buying deviations. Later on, in this lab, we will create a Monitor that monitors changes to the data in this Dashboard. If new cases representing Maverick Buying are added, the Monitor will create alert actions such as email notifications and new BAW process instances.

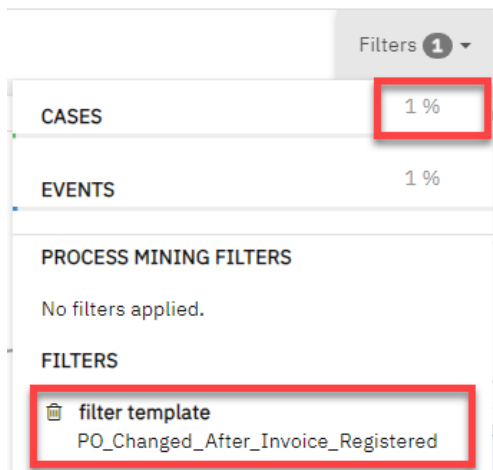
\_1. Click **Analytics**



\_2. Select **5 PO Changed After Invoice Registered – Alerts** dashboard



\_3. Open **Filters** and note that a Filter that was applied to this dashboard (do not click on it, if you do it will get deleted)



This is the Maverick Buying filter. Note that 1% of the cases involve Maverick Buying! Note that only 1% of the cases involve Maverick Buying.

Let's examine the dashboard filter. The PO\_Changed\_After\_Invoice\_Registered was created in Process View. It is a composite filter (it includes several sub-filters).

PO\_Changed\_After\_Invoice\_Registered

maintenance.admin (you)

Included filters 4

1

Activity is not "Invoice Cleared"

2

Activity is "Invoice Registered"

3

PO\_Changed

4

Last Activity is not "Invoice Registered"

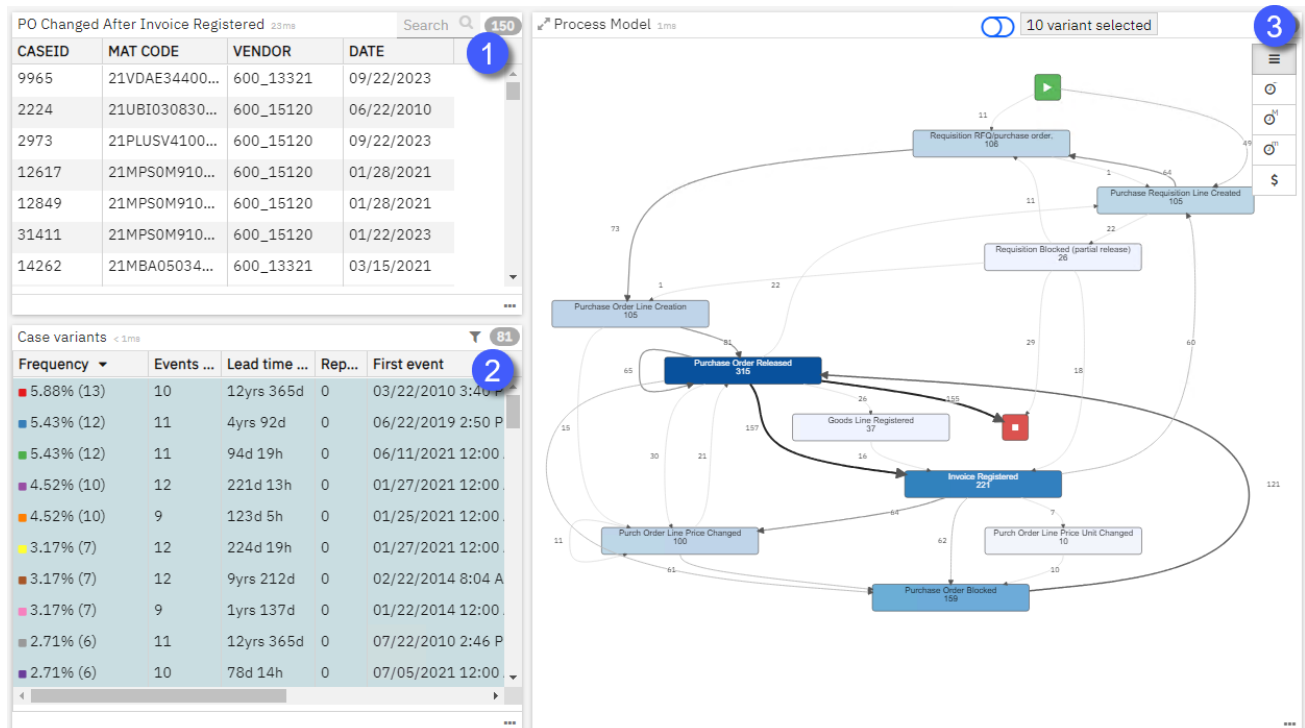
This composite Filter includes 4 filters.

1. The Case must not include the "Invoice Cleared" Activity
2. The Case must include the "Invoice Registered" Activity
3. The Case must include one of the activities that change a Purchase order. This is a custom filter (implemented using Java Script).
4. The PO change activities occur before the "Invoice Registered" Activity

This Filter has the effect of including only the cases where a Purchase Order has changed after the Invoice Registered Activity was invoked.



#### \_4. Let's examine the dashboard

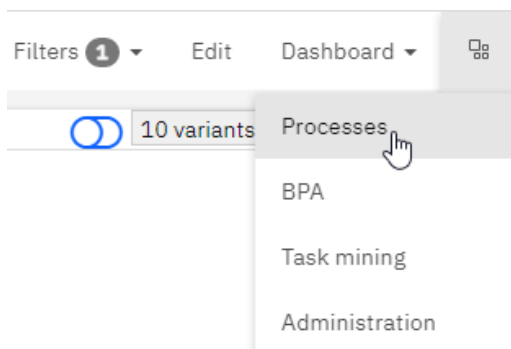


1. The **PO Changed After Invoice Registered** widget includes all Cases representing Maverick Buying based on the PO\_Changed\_After\_Invoice\_Registered Filter. This widget is linked to the other two widgets. Selecting a row representing a Case in this widget will update the other two widgets. We will use this feature later on in this lab after we upload new Cases and receive an alert.
2. The **Case variants** widget shows the variants.
3. The **Process model** widget shows the combined flows based on the selection in the **Case variants** widget

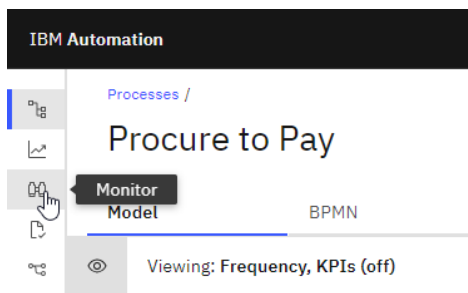
### 3.5 Create Action Services and Monitors

You will now create the Action Services: Email and start a business Automation Workflow process. Next, you will develop Monitors to monitor the Alert dashboard you just examined and associate Action Services with the Monitors.

\_1. Click **Processes** to switch back to the Model View.



## \_2. Click **Monitor**

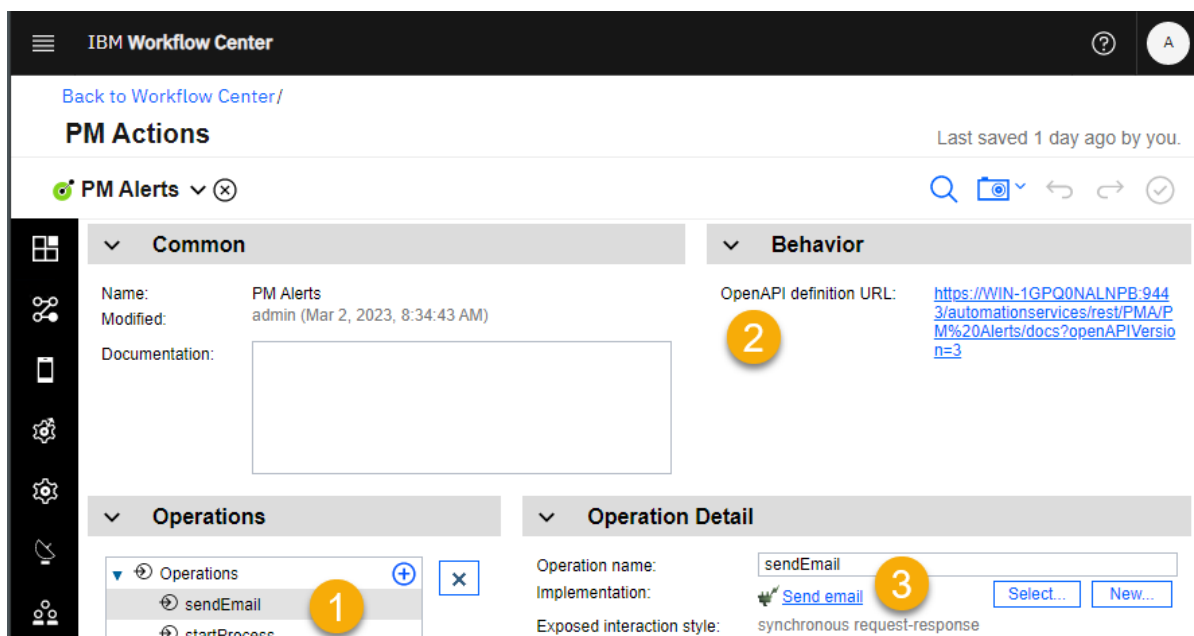


### 3.5.1 Create Services

Before creating a Monitor for a process, we must create a Service. In IBM Process Mining, Service is an API. Monitors invoke Services when they detect an actionable insight. In this lab, actionable insights are new Cases that are classified as Marick Buying.

We have created the two OpenAPI service operations for you: sendEmail and startPorcess.

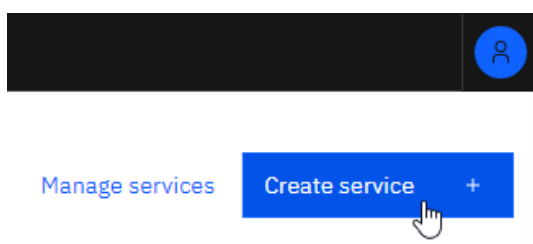
As shown below, we have used IBM Business Automation Workflow to implement these Service operations.



1. The PM Alerts REST Service provides two operations; sendEmail and startProcess.
2. The OpenAPI definition URL contains the endpoint we will use to define an Action Service in Process Mining.
3. The PM Alerts REST services operations were implemented as Service Flows. We will examine the details of the implementation later on in this lab.

#### 3.5.1.1 Create sendEmail Service

##### \_1. Click **Crete services +**



\_2. In the *Create a new service* window, enter the following:

- Service title: **Send Email**
- Url: <https://10.0.0.6:9443/automationservices/rest/PMA/PM%20Alerts/sendEmail>
- Allow self-signed certificates (option): **True**
- Authentication type: **Basic Auth**
- Username: **admin**
- Password: **admin**

## Create a new service

The screenshot shows the 'Create a new service' window with two main sections: 'Connection' and 'Authentication'.

**Connection Section:**

- Service title:** A text input field containing 'Send Email'.
- Description:** A text area with the placeholder text 'Describe your service'.
- Url:** A text input field containing 'https://10.0.0.6:9443/automationservices/rest/PMA/PM%20Alerts/sendEmail'.
- Allow self-signed certificates (optional):** A toggle switch set to 'True'.
- Share with others:** A toggle switch set to 'False'.

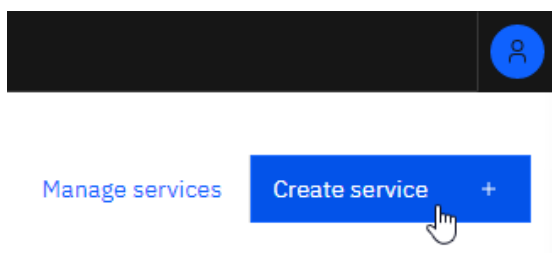
**Authentication Section:**

- Authentication type:** Three radio buttons: 'API key' (unselected), 'Basic Auth' (selected), and 'No Auth' (unselected).
- Username:** A text input field containing 'admin'.
- Password:** A text input field with masked characters '.....'.

\_3. Click **Create**

### 3.5.1.2 Create startProcess Service

\_1. Click **Crete services +**



\_2. In the *Create a new service* window, enter the following:

- Service title: **Start Process**
- Url: <https://10.0.0.6:9443/automationservices/rest/PMA/PM%20Alerts/startProcess>
- Allow self-signed certificates (option): **True**
- Authentication type: **Basic Auth**
- Username: **admin**
- Password: **admin**

## Create a new service

**Connection**

Service title

Start Process

Give your service a unique title to easily identify it.

Description

Describe your service

Url

<https://10.0.0.6:9443/automationservices/rest/PMA/PM%20Alerts/startProcess>

Allow self-signed certificates (optional)

Share with others

☒ True

☐ False

**Authentication**

Authentication type

☐ API key ☒ Basic Auth ☐ No Auth

Username

admin

Password

.....

\_3. Click **Create**

\_4. Click **Close** to close the *Manage services* window

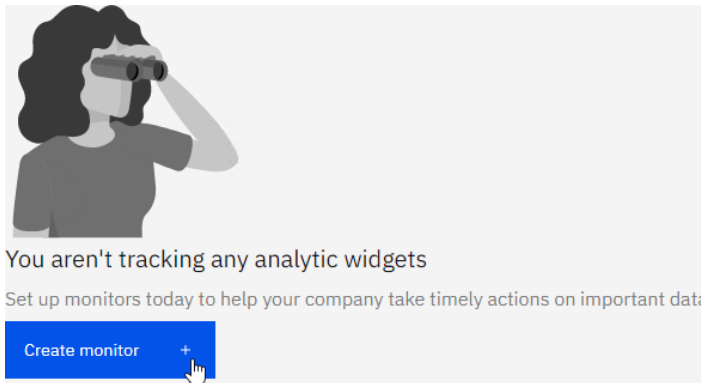
### 3.5.2 Create Monitors

Monitors in IBM Process Mining help you monitor a business process using custom criteria that can give insights into the Process's changes: Key Performance Indicators (KPIs), activity KPIs, analytic widgets, process activities, and transitions. In this lab, we will monitor changes in the Analytics Widget **PO Changed After Invoice Registered**. Specifically, when new cases classified as instances of maverick Buying arrive, the Monitor will generate alerts, send emails, and start a BPMN process.

PO Changed After Invoice Registered 14ms			
CASEID	MAT CODE	VENDOR	DATE
61	21UBI030830...	600_15120	06/15/2021
3447	21MPS0M910...	600_15120	01/28/2021
3679	21MPS0M910...	600_15120	01/28/2021
5017	21MBA05034...	600_13321	03/15/2021
5298	21MBA05034...	600_13321	03/15/2021
15434	21ISPDV7100...	600_15120	07/13/2021
1864	21ISPDV7100...	600_15120	07/13/2021

### 3.5.2.1 Create a Monitor to Send Email

\_1. Click **Crete monitor +**



\_2. In Details, for *Title*, enter **PO Changed After Invoice Registered - Send Email** and click **Next**

A screenshot of a web form titled "Create Analytics widget monitor". Below the title is a subtitle: "Set up an automatic action that triggers an alert when an analytics widget generates results." On the left side of the form is a vertical sidebar with five radio button options: "Details" (which is selected), "Monitor", "Schedule", "Service", and "Parameters". The main area of the form contains two input fields. The first is labeled "Title" and contains the text "PO Changed After Invoice Registered - Send Email". Below this field is a hint: "Give your monitor a unique title to easily identify it." The second field is labeled "Description" and contains the placeholder text "Describe your monitor and the automatic action you have set". At the bottom of the form are three buttons: "Cancel" on the left, "Back" in the center, and "Next" on the right. The "Next" button is blue and has a mouse cursor pointing at it. There is also a faint watermark in the bottom right corner that says "Goto Settings to activate Windows."

\_3. On the *Monitor* page, enter the following and then click **Next**:

- Selected dashboard: **5 PO Changed After Invoice Registered - Alerts**
- Select what widget to monitor: **PO Changed After Invoice Registered**
- Recurring outputs: **Send all results every execution.**

\_4. On the *Schedule* page, leave **Data Upload** (we will generate alerts when a new data set is uploaded) and click **Next**

\_5. On *Service*, enter the following and then click **Next**:

- **Basic Auth**
- Select **Send Email** Service tile

\_6. On *Parameters*, expand *Body parameters* dropdown and select **Customized Body**.

Body parameters

☐ Default Body ☒ Customised Body

\_7. For *Customised Body* enter:

```
{ "subject": "Alert: PO Changed After Invoice Registered", "messageText": " <body><p>1. Click <a href=\"https://10.0.0.4/analytics/index.html#!/0/procure-to-pay/dashboard/6480e6d344afb856678d59eb/\">link</a> to open the <b>PO Changed After Invoice Registered - Alerts</b> <p>2. To locate the cases that caused this alert use the <b>DATE </b>column in the <b>PO Changed After Invoice Registered</b> widget.</body>", "importance": "high" }
```

☐ Default Body ☒ Customised Body

```
{ "subject": "Alert: PO Changed After Invoice Registered",  
  "messageText": " <body><p>1. Click <a  
href=\"https://10.0.0.4/analytics/index.html#!/0/procure-to-  
pay/dashboard/6480e6d344afb856678d59eb /\">link</a> to  
open the <b>PO Changed After Invoice Registered - Alerts</b>  
<p>2. To locate the cases that caused this alert use the <b>DATE  
</b>column in the <b>PO Changed After Invoice Registered</b>  
widget.</body>", "importance": "high" }
```

Tags

\$\_organization\_\_

\$\_project\_\_

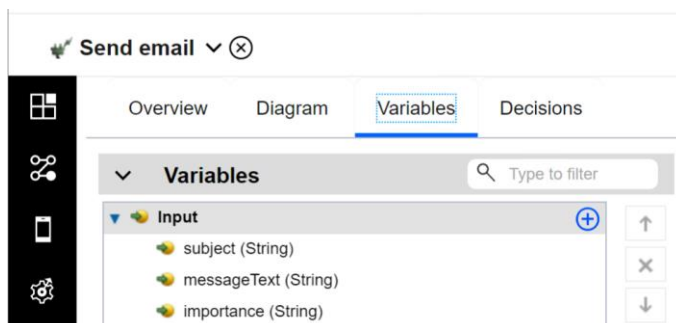
\$\_insight\_name\_\_

\$\_insight\_description\_\_

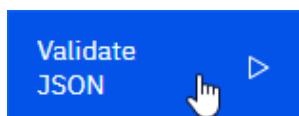
\$\_execution\_date\_time\_\_

\$\_widget\_\_

The body parameter in JSON format represents the input to the Send email Service Flow.

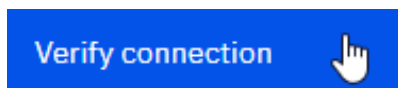


\_8. Click **Validate JSON** and make sure you see "Valid JSON body".



✓ Valid JSON body

\_9. Click **Verify Connection** and make sure you see "Connected successfully".

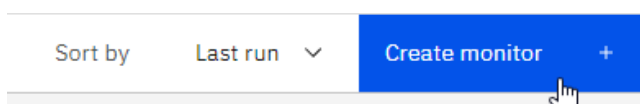


✓ Connected successfully

\_10. Click **Create**

### 3.5.2.2 Create a Monitor to Start a Process

\_1. Click **Create monitor +**



\_2. In *Details*, for *Title*, enter **PO Changed After Invoice Registered – Start Process** and click **Next**.

The screenshot shows the 'Create Analytics widget monitor' form with the 'Details' tab selected. The 'Title' field contains 'PO Changed After Invoice Registered - Send Email'. The 'Description' field is empty. The 'Next' button is highlighted in blue.

Create Analytics widget monitor

Set up an automatic action that triggers an alert when an analytics widget generates results.

Details

Monitor

Schedule

Service

Parameters

Title

PO Changed After Invoice Registered - Send Email

Give your monitor a unique title to easily identify it.

Description

Describe your monitor and the automatic action you have set

Cancel

Back

Go to Settings to activate Windows. Next

\_3. On *Monitor*, enter the following and then click **Next**:

- Selected dashboard: **5 PO Changed After Invoice Registered - Alerts**
- Select what widget to monitor: **PO Changed After Invoice Registered**
- Recurring outputs: **Send all results every execution.**

The screenshot shows the 'Create Analytics widget monitor' form with the 'Monitor' tab selected. The 'Define monitor' section shows '5 PO Changed After Invoice Registered - Alerts' selected for the dashboard and 'PO Changed After Invoice Registered' for the widget. The 'Filter monitor' section has an 'Add filter template' button. The 'Recurring outputs' section has 'Send all results every execution' selected. The 'Next' button is highlighted in blue.

Create Analytics widget monitor

Set up an automatic action that triggers an alert when an analytics widget generates results.

Details

Monitor

Schedule

Service

Parameters

Define monitor

Select dashboard

5 PO Changed After Invoice Registered - Alerts

Select what widget to monitor

PO Changed After Invoice Registered

Filter monitor

Apply a filter template to narrow the scope of your monitor

Add filter template +

Recurring outputs

Filter recurring outputs

☒ Send all results every execution

☐ Avoid sending duplicate results

☐ Avoid sending duplicate results within interval

Cancel

Back

Go to Settings to activate Windows. Next

\_4. On *Schedule*, leave **Data Upload** (we will generate alerts when a new data set is uploaded) and click **Next**.

The screenshot shows the 'Select schedule type' section with three radio buttons: 'Data Upload' (selected), 'Frequency', and 'Calendar'.

Select schedule type

☒ Data Upload ☐ Frequency ☐ Calendar



\_5. On *Service*, enter the following and then click **Next**:

- **Basic Auth**
- Select the **Start Process** Service tile

Select a service you wish to assign to this monitor

Search previously created services

Basic Auth

Send Email

Description  
Not yet specified

URL  
https://10.0.0.6:9443/automationservices/rest/PMA/PM%20Alerts/sendEmail

Authentication  
Basic Auth

Package  
Default package

Start Process

Description  
Not yet specified

URL  
https://10.0.0.6:9443/automationservices/rest/PMA/PM%20Alerts/startProcess

Authentication  
Basic Auth

Package  
Default package

Cancel

Back

Go to Settings to activate Windows.

Next

\_6. On *Parameters*, expand the **Body parameters** dropdown and select **Customized Body**.

Body parameters

☐ Default Body

☒ Customised Body

\_7. For *Customised Body*, enter:

```
{ "alertInformation" : "<body><p>1. Click <a href=\"https://10.0.0.4/analytics/index.html#!/0/procure-to-pay/dashboard/63e6577e13afec065ed80897/\">link</a> to open the <b>PO Changed After Invoice Registered - Alerts</b><p>2. To locate the cases that caused this alert use the <b>DATE </b>column in the <b>PO Changed After Invoice Registered</b> table.</body>" }
```

☐ Default Body

☒ Customised Body

```
{ "alertInformation" : "<body><p>1. Click <a href=\"https://10.0.0.4/analytics/index.html#!/0/procure-to-pay/dashboard/63e6577e13afec065ed80897/\">link</a> to open the <b>PO Changed After Invoice Registered - Alerts</b><p>2. To locate the cases that caused this alert use the <b>DATE </b>column in the <b>PO Changed After Invoice Registered</b> table.</body>" }
```

The body parameter in JSON format represents the input to the startProcess Service Flow.

startProcess

Overview

Diagram

Variables

Decisions

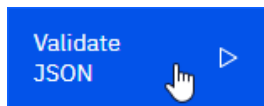
Variables

Type to filter

Input

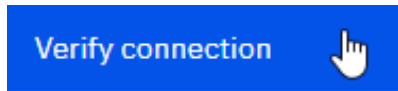
alertInformation (String)

\_8. Click **Validate JSON** and make sure you see "Valid JSON body".



✓ Valid JSON body

\_9. Click **Verify Connection** and make sure you see "Connected successfully."



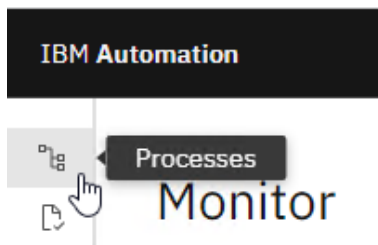
✓ Connected successfully

\_10. Click **Create**

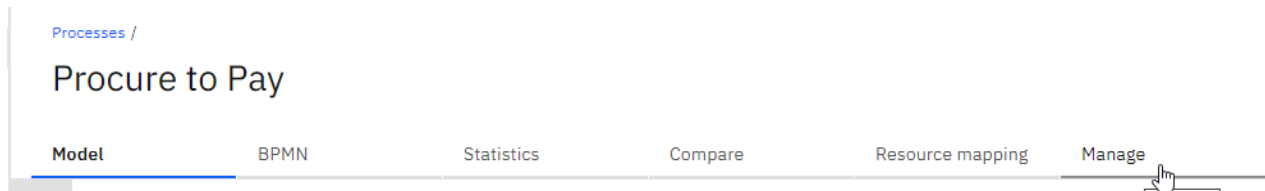
### 3.6 Generate New Process Events

We will now import a dataset that contains new cases containing instances of Maverick Buying. This will result in the Monitors generating alerts that send emails and start BPMN processes.

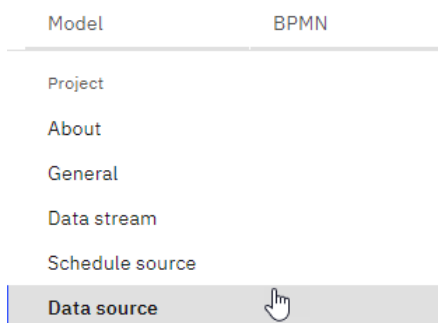
\_1. Click **Processes** to switch back to the Model View.



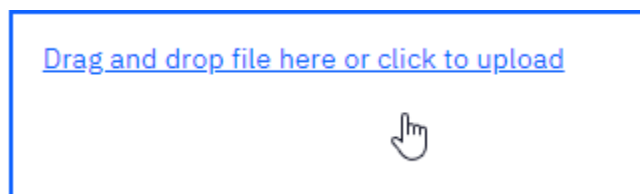
\_2. Click **Manage** tab



\_3. Click the **Data source** tab.

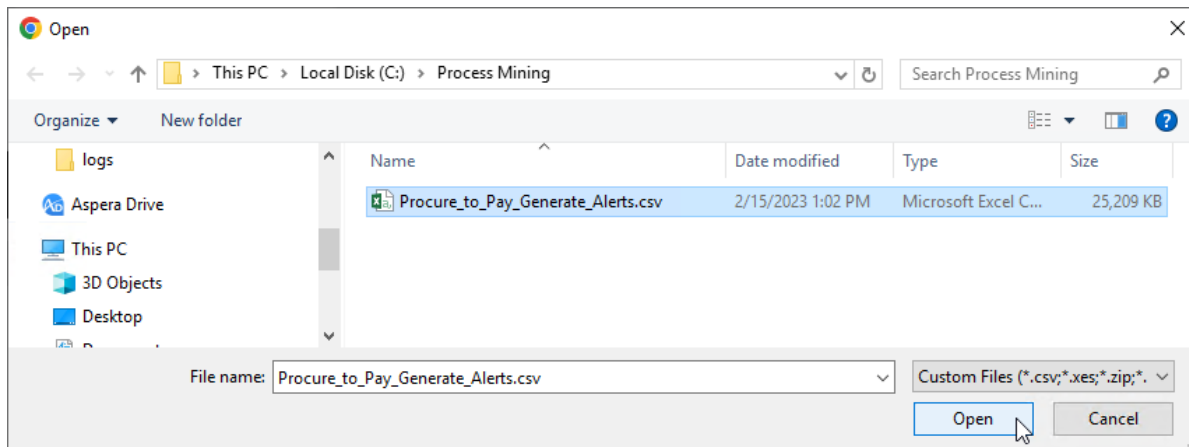


\_4. Click **Drag and drop file here or click to upload.**

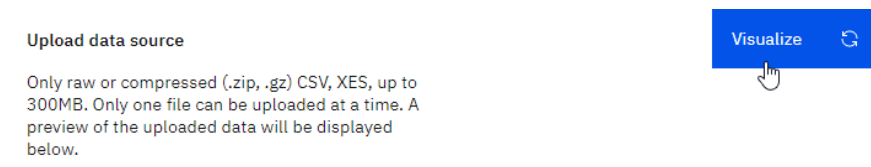


\_5. Navigate to **C:\Process Mining** directory.

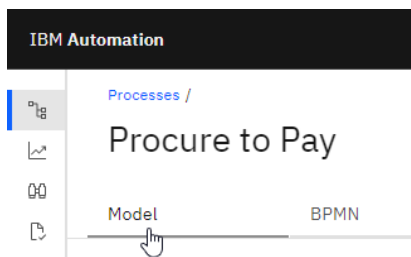
\_6. Select **Procure\_to\_Pay\_Generate\_Alerts.csv** and click **Open**.



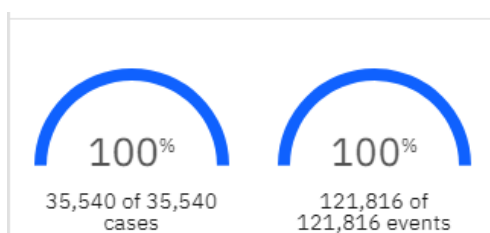
\_7. Click **Visualize** to analyze the new data set.



\_8. Click the **Model** tab



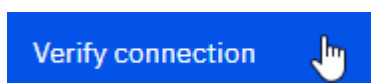
You should now see more Cases and Events!



### 3.7 Examine the Alerts

You will now examine the generated Alerts. You should now see two Email Alerts and two Process Instances.

The first set of alerts was generated when you clicked the Verify Connection button while creating the Alert Monitors.



The Monitors generated the second set of alerts when you uploaded a new data set containing Cases (Maverick Buying instances). The new cases included instances where the PO was changed after an invoice was registered. As a result, they were added to the **PO Changed After Invoice Registered** widget.

PO Changed After Invoice Registered 14ms			
CASEID	MAT CODE	VENDOR	DATE
61	21UBI030830...	600_15120	06/15/2021
3447	21MPS0M910...	600_15120	01/28/2021
3679	21MPS0M910...	600_15120	01/28/2021
5017	21MBA05034...	600_13321	03/15/2021
5298	21MBA05034...	600_13321	03/15/2021
15434	21ISPDV7100...	600_15120	07/13/2021
1864	21ISPDV7100...	600_15120	07/13/2021

Recall that the Monitors you have created were designed to monitor this widget for changes.

### Create Analytics widget monitor

Set up an automatic action that triggers an alert when an analytics widget generates results.

☒ Details
 ☒ **Monitor**
☐ Schedule
 ☐ Service

#### Define monitor

Select dashboard

5 PO Changed After Invoice Registered - Alerts

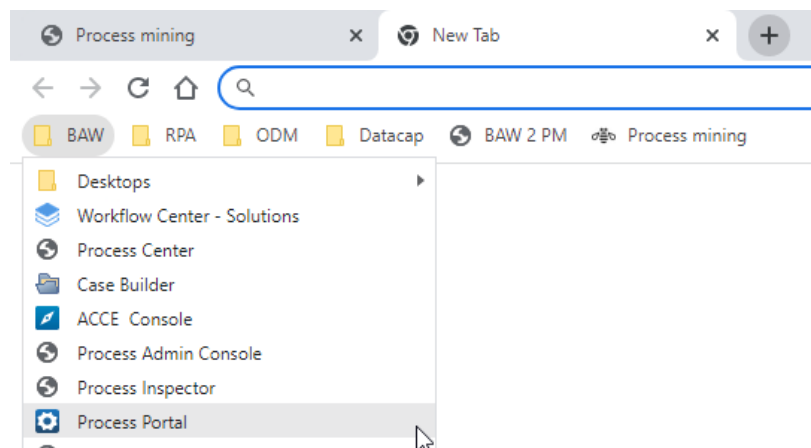
Select what widget to monitor

PO Changed After Invoice Registered

## 3.7.1 Examine New Alert Process Instances


### 3.7.1.1 Open Handle Alert Task

\_1. In the Chrome Web Browser, **add a new tab**, and from the Bookmarks, select **BAW > Process Portal**




\_1. In the Sign in page, enter **admin / admin** and click **Continue**


You should now see two Tasks



Enter search text...




**Step: Handle Alert**  
Process:153  
All Users  
Due: Mar 6, 2023, 11:39:24 AM




**Step: Handle Alert**  
Process:154  
All Users  
Due: Mar 6, 2023, 12:24:52 PM


\_2. Click **Task Details**



**Step: Handle Alert**  
Process:153  
All Users  
Due: Mar 6, 2023, 11:39:24 AM




**Step: Handle Alert**  
Process:154  
All Users  
Due: Mar 6, 2023, 12:24:52 PM




Task Details

\_3. Click **View Process Diagram**



**Step: Handle Alert**  
Process:154  
All Users  
Due: Mar 6, 2023, 12:24:52 PM



**Task status:** Received **Priority:** Medium

View Instance

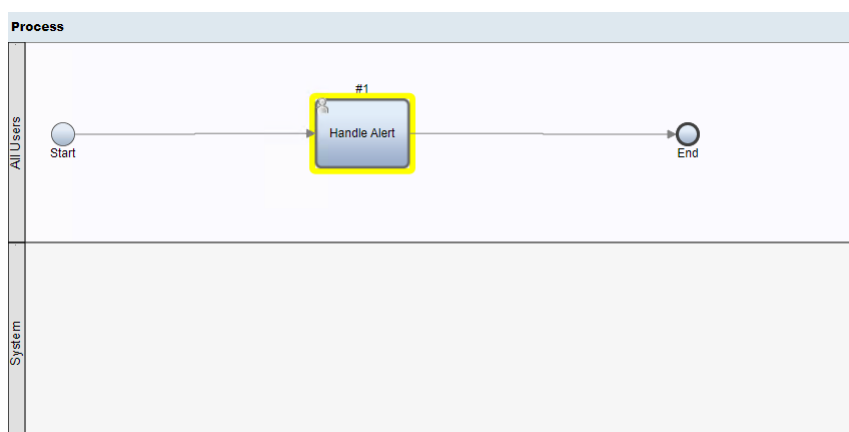
Modify Instance

Audit History

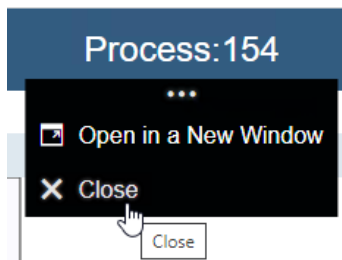
View Process Diagram

View Process Diagram.

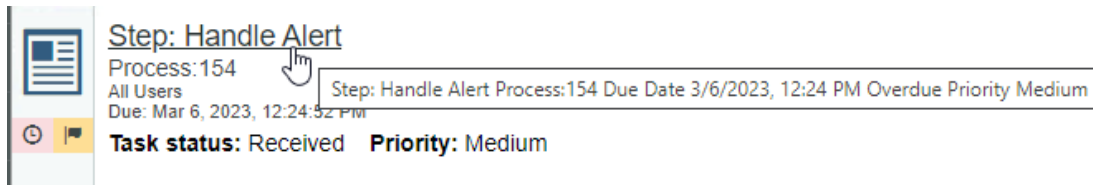
Note that the process instance contains one Human Task ready to be claimed. This Task includes information about the Process Mining Alert.



\_4. Click ... > **Close**



\_5. Click **Step: Handle Alert**



Note that the Task includes

1. The link to the Process Mining Alert Dashboard and
2. The instructions on what to do to investigate the Maverik Buying cases



@IBM 2023

**\_6. Right-click the link, and from the pop-up menu, select **Open link in a new tab****

Procude to Pay Process Alert from Process Mining

1. Click [link](#) to open the **PO Changed After Invoice Registered - Alerts**

2. To locate the **PO Changed After Invoice Registered** table, use the **DATE** column in the **PO Changed After Invoice Registered** table.

OK

@IBM 20

Open link in new tab

Open link in new window

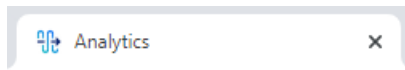
Open link in incognito window

Save link as...

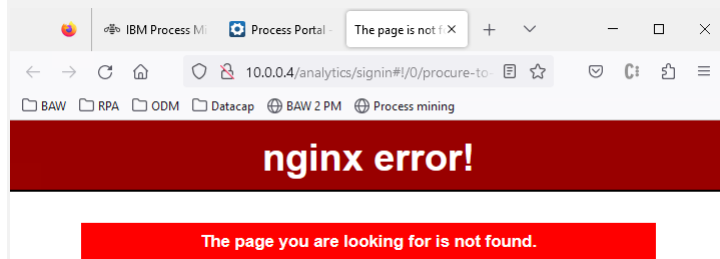
Copy link address

Inspect

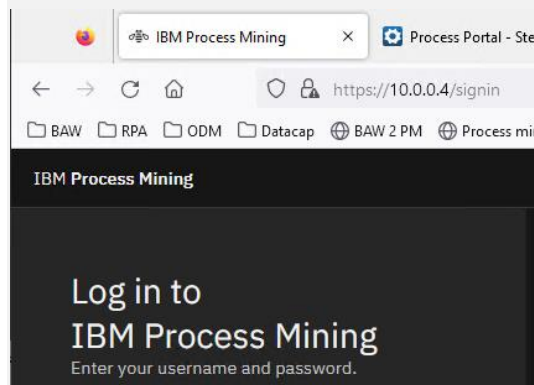
A New Analytics tab should now appear in the Chrome Web Browser.



You may encounter the "The page is not found" issue.

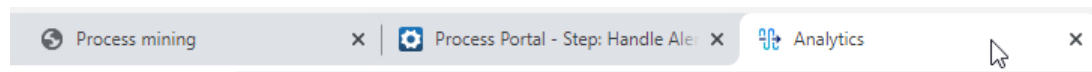


This error occurs when the Process Mining session expires. You will need to log in. Please switch to the IBM Process Mining tab and log in to fix it.

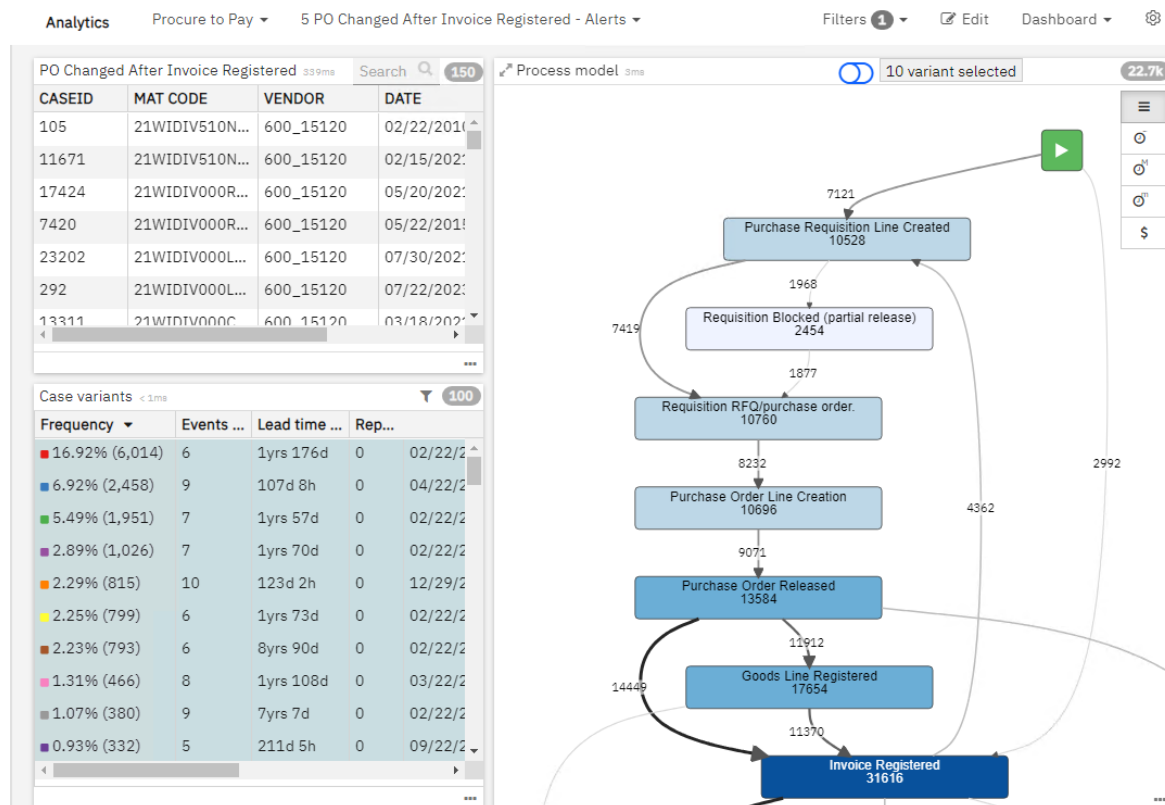


### 3.7.1.2 Analyze the New Maverick Buying Cases

\_1. Click the **Analytics** tab



You should now see the **5 PO Changed After Invoice Registered – Alerts** dashboard



\_2. Click the **DATE** column **twice** to sort the Cases in the *PO Changed After Invoice Registered* widget by date

PO Changed After Invoice Registered 339ms			
CASEID	MAT CODE	VENDOR	DATE
105	21WIDIV510N...	600_15120	02/22/2010
11671	21WIDIV510N...	600_15120	02/15/2021

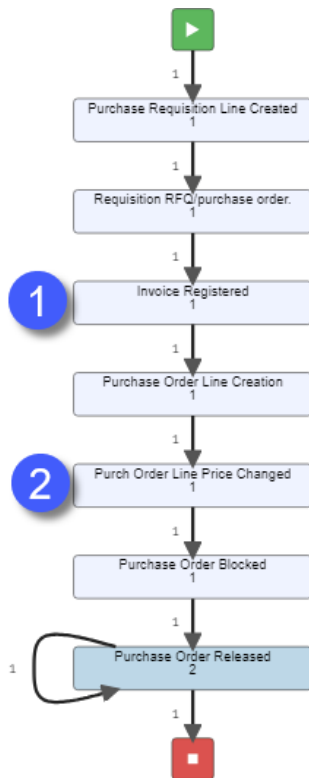
Note that the DATE column now shows new cases. The new cases have the date with the year set to 2023.



\_3. Click the row with the CASEID **9965**

PO Changed After Invoice Registered 291ms			
CASEID	MAT CODE	VENDOR	DATE ▾
9965	21VDAE34400...	600_13321	09/22/2023
9964	21VDAE34400...	600_13321	09/22/2023

Note that the Dashboard now contains the Case Variant information for your selected Case.



You can now see the Maverick Buying violation:

- (2) the purchase order was changed after
- (1) the invoice was registered.

\_4. Click **Filters 2 > case** to remove the selection.

Filters 2 ▾ Edit Dashboard ▾ ⚙

CASES 0 %  1

EVENTS 0 %

PROCESS MINING FILTERS

No filters applied.

FILTERS

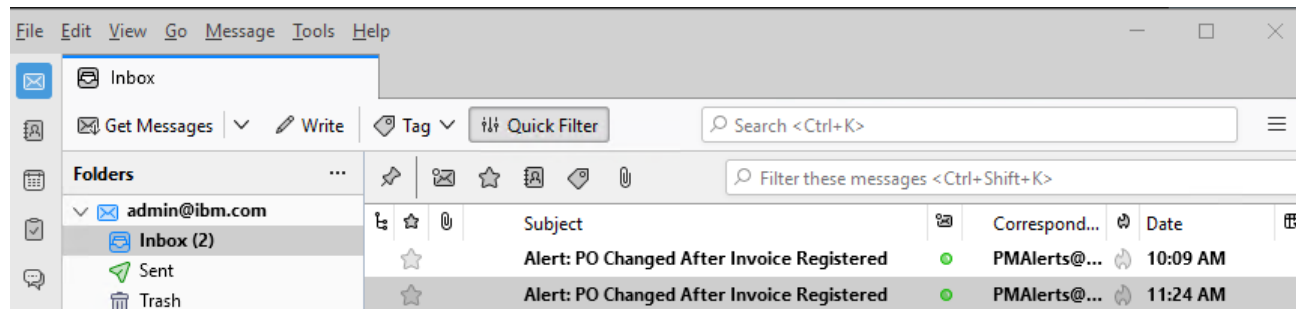
case 9965

### 3.7.2 Examine New Alert Email

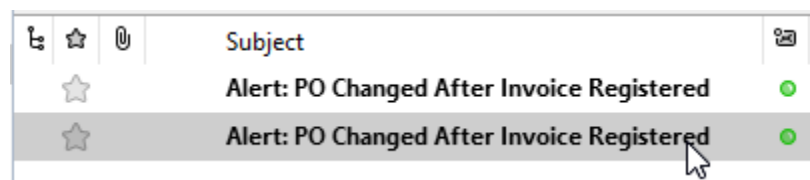
\_1. In the Taskbar, click **Thunderbird**



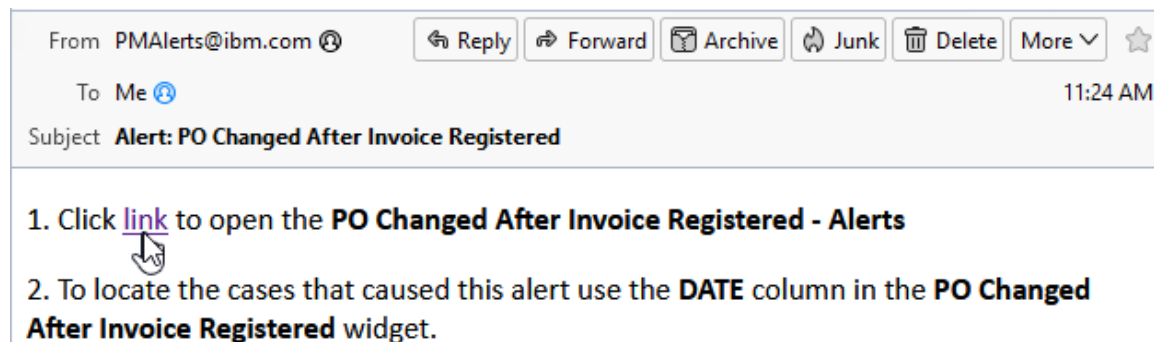
You should now see two new emails with the Subject Alert: PO Changed After Invoice Registered



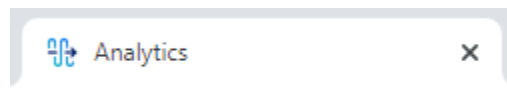
\_2. In the Taskbar, click **the second email**



\_3. Click the **link**.



A new Analytics tab should now appear in the Chrome Web Browser



### 3.8 Lab Summary

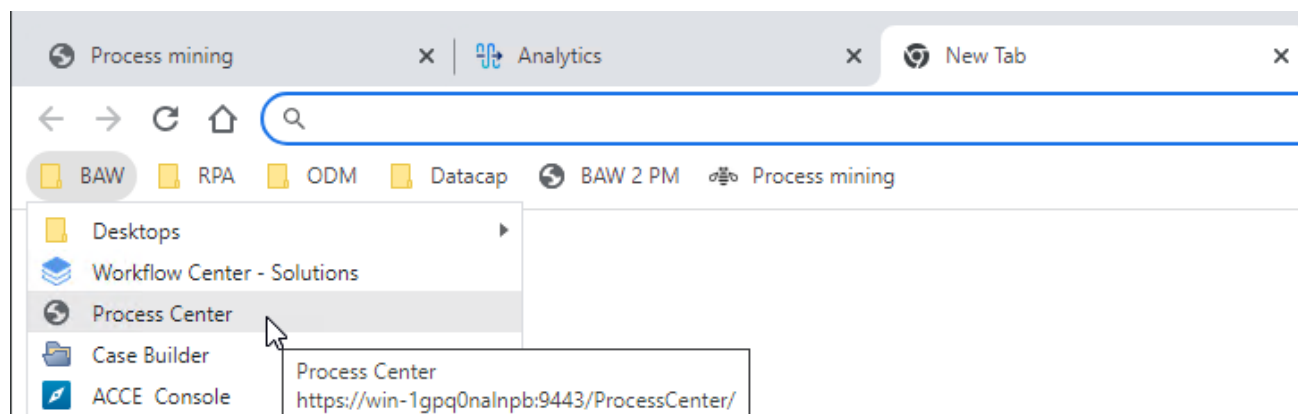
In this lab, you completed these high-level steps:

- **Examine the Dashboard used for Alert Generation.** The Alerts are generated when new Cases that match this criterion, "**purchase order is changed after the invoice is registered**," are added.
- **Create Action Services and Monitors.**
  - **Create Services.** You will create the Action Services, which define what REST endpoints to call when an alert occurs.

- **Create Monitors.** You will create Monitors which define the criteria for generating an Alert and define what Action Service to call and what parameters to pass to the REST endpoint.
- **Generate New Process Events.** You will simulate the generation of new events in P2P Process by uploading a CVS file with the new events that also include Cases where the "**purchase order is changed after the invoice is registered,**"
- **Examine the Alerts.** You examine the two types of alerts that were generated: (i) a new BPMN process instance and an email. The Alert information will include a link to the Alerts Dashboard.
  - **Examine New Alert Process Instances.** You will use IBM Process Portal to claim and examine the Human Tasks in the Process instance that the Alert started. The Human Task includes a link to the Alert Dashboard. You will use this link to navigate to the Alert Dashboard and examine the new Maverick Buying Cases.
  - **Examine New Alert Email.** You will examine the new Email that includes the Alert information.
- **Implementation Details of the Alert Endpoints.** Optionally, you can examine how the Alert Endpoints were implemented in IBM Business Automation Workflow. See Appendix A at the end of this document.

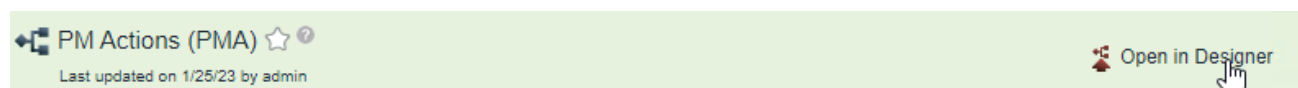
## Appendix A. Implementation Details of the Alert Endpoints

\_1. Add a **new tab** in the Chrome Web Browser, and select **BAW > Process Center** from the Bookmarks.



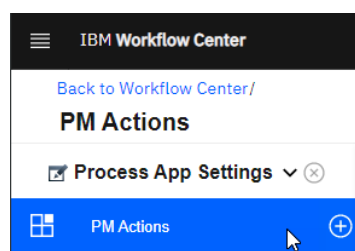
\_2. Enter credentials of **admin / admin** and click **Log In**

\_3. For *PM Actions (PMA)*, click **Open in Designer**



PM Actions is the Process App where the Action Services are implemented and exposed as Open API REST endpoints.

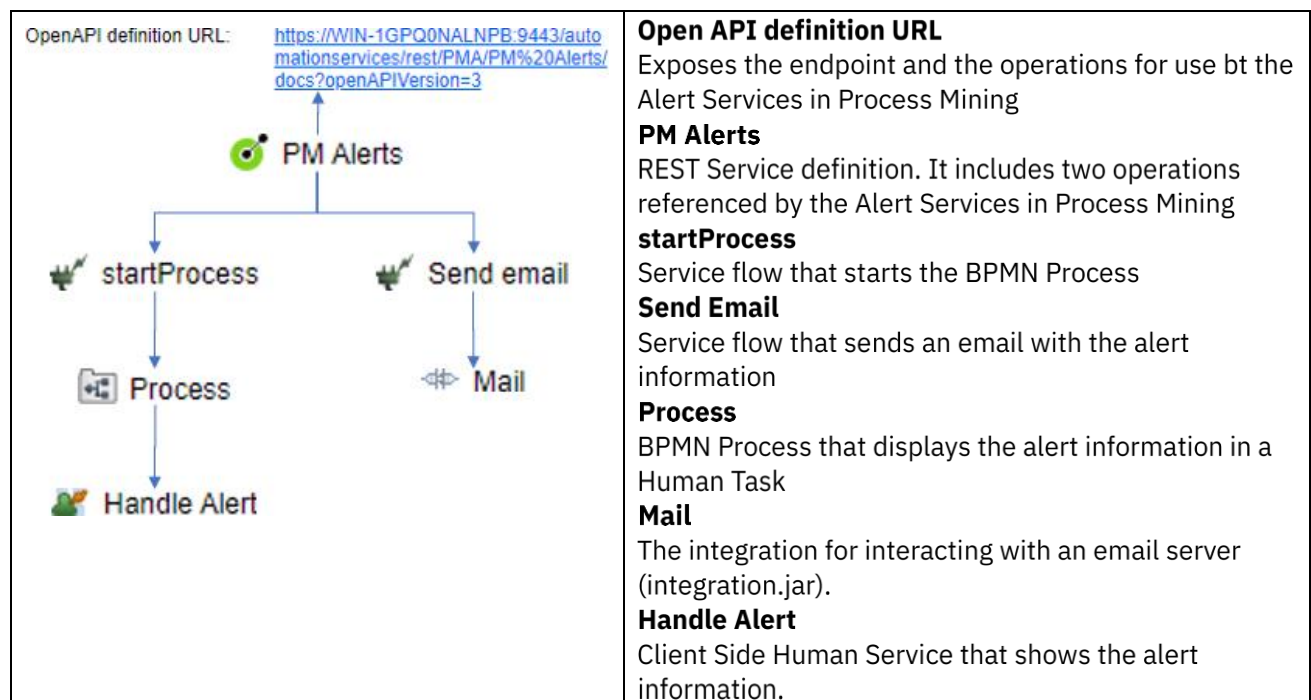
\_4. Click **PM Actions** to get a list of all artifacts in the Process App.



You should now see the list of the artifacts.

Type	All	
<input type="text"/>		
Process		1
Process		
Client-Side Human Service		1
Handle Alert		
Deployment Service Flow		1
Deployment Service Flow		
External Service		1
Mail		
REST Service		1
PM Alerts		
Service Flow		2
Send email		
startProcess		

Let's examine the artifacts' dependency



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