IBM Cloud Pak for Business Automation Demos and Labs 2021

IBM Process Mining

Using BPMN Process Diagrams from IBM Blueworks Live in IBM Process Mining

V 2.1

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Latest version: https://ibm.box.com/v/ProcessMiningLab3

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1 Lab Setup

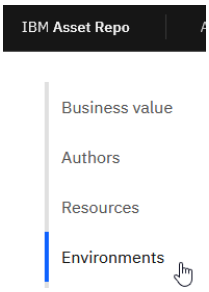
1.1 Reserve IBM Asset Repo Process Mining Asset

If you have already reserved Process Mining Environment on IBM Asset Repo, you can skip this step.

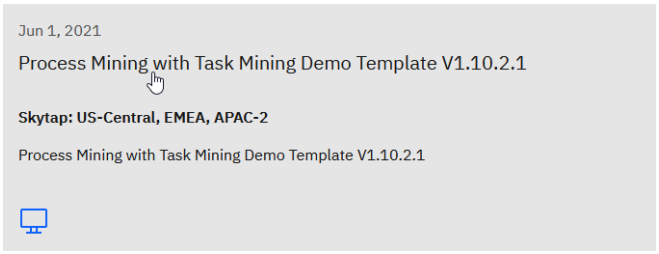
_1. Navigate to https://assetrepo.ibm.com/collection/60afd1b2bd0c01001f47acb1

Note, you may be asked to sign in with you IBM ID. In this case, after you sign in, click the above link again to enter the *Process Mining with Task Mining Demo Template V1.10.2.1* page.

_2. Click **Environments**

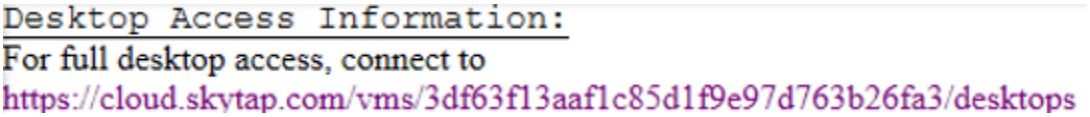


_3. Click **Process Mining with Task Mining Demo Template V1.10.2.1**



_4. Create a reservation.

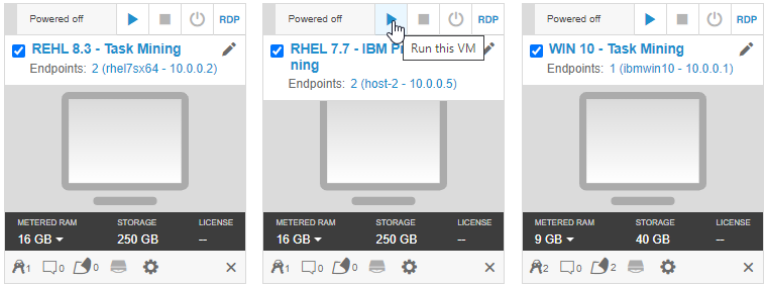
When you receive "Your IBM Demonstration is Ready!" email, click the desktop asset information link included in the email.



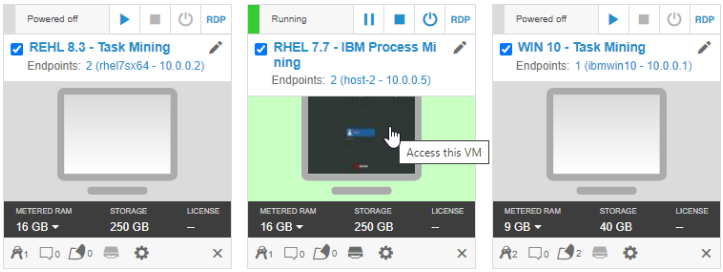
1.2 Start IBM Process Mining VM

If you have started IBM Process Mining VM, you can skip this step.

_1. On *RHEL 7.7 – IBM Process Mining* click **Run tis VM** button



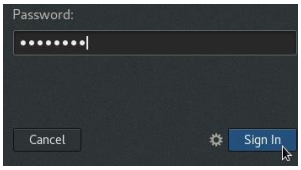
_2. When the VM is Running, click **Access this VM**



_3. Click **Not listed?**

_4. For *Username* enter root and click **Next**

_5. For *Password* enter passw0rd and click **Sign In**



1.3 Start IBM Process Mining Server

If you have started IBM Process Mining Server, you can skip this step.

_6. On the desktop double-click **Terminal**

_7. In Terminal window enter **cd /opt/processmining/bin**

_8. Enter **./start.sh**

_9. Enter **sudo fuser -k 80/tcp**

_10. Enter **service nginx start**

_11. Enter **./start.sh**

You should see output like this:

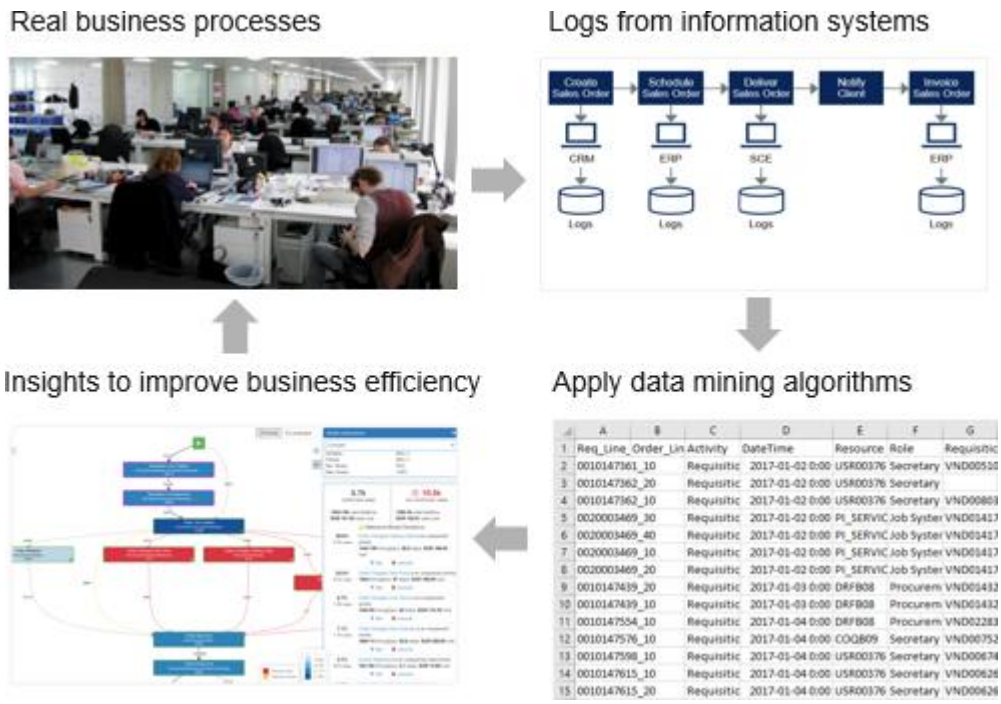
```
[root@client ~]# cd /opt/processmining/bin
[root@client bin]# ./start.sh
Using tmp: /opt/processmining/repository/temp
Starting Jetty: 2021-05-27 08:34:24.184:INFO::main: Logging initialized @1475ms to org.eclipse.jetty.util.log.StdErrLog
2021-05-27 08:34:24.363:WARN:oejx.XmlConfiguration:main: Property 'jetty.secure.port' is deprecated, use 'jetty.httpConf
ig.securePort' instead
2021-05-27 08:34:24.574:INFO::main: Console stderr/stdout captured to /opt/processmining/jetty-web/logs/2021_05_27.jetty
.log
OK Thu May 27 08:34:26 PDT 2021
Using tmp: /opt/processmining/repository/temp
JETTY_ARGS: jetty.host=127.0.0.1 jetty.port=8070 jetty.ssl.port=7443
Starting Jetty: 2021-05-27 08:34:28.684:INFO::main: Logging initialized @1950ms to org.eclipse.jetty.util.log.StdErrLog
2021-05-27 08:34:28.873:INFO::main: Console stderr/stdout captured to /opt/processmining/jetty-engine/logs/2021_05_27.je
tty.log
OK Thu May 27 08:34:30 PDT 2021
Using tmp: /opt/processmining/repository/temp
JETTY_ARGS: jetty.host=127.0.0.1 jetty.port=9070 jetty.ssl.port=9071
Starting Jetty: 2021-05-27 08:34:32.217:INFO::main: Logging initialized @1304ms to org.eclipse.jetty.util.log.StdErrLog
2021-05-27 08:34:32.422:INFO::main: Console stderr/stdout captured to /opt/processmining/jetty-analytics/logs/2021_05_27
.jetty.log
OK Thu May 27 08:34:34 PDT 2021
[root@client bin]# sudo fuser -k 80/tcp
80/tcp:              1862
[root@client bin]# service nginx start
Redirecting to /bin/systemctl start nginx.service
[root@client bin]#
```

_12. **Close** the Terminal Window

2 Introduction

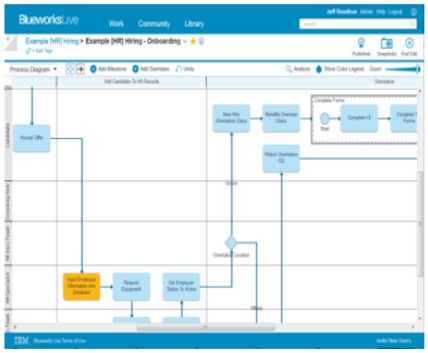
2.1 IBM Process Mining

IBM Process Mining supports the analysis of real business processes based on event logs. During process mining, specialized data mining algorithms are applied to identify trends, patterns, and details contained in event logs recorded by an information system. Process mining aims to improve process efficiency and understanding of processes.



2.2 IBM Blueworks Live

IBM Blueworks Live is a cloud-based software that provides a dedicated, collaborative anywhere environment to build and improve business processes through process mapping. It enables teams to work together through an intuitive and easily accessible web interface to document and analyze processes to help make them more efficient.



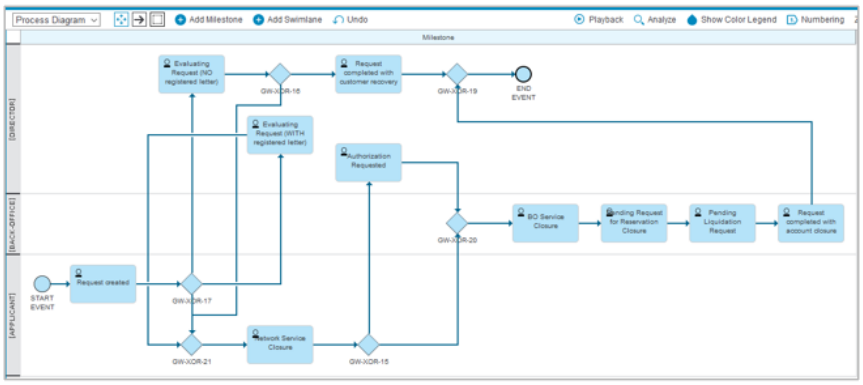
2.3 Lab Introduction

2.3.1 Process Modeling and Process Mining Working Together

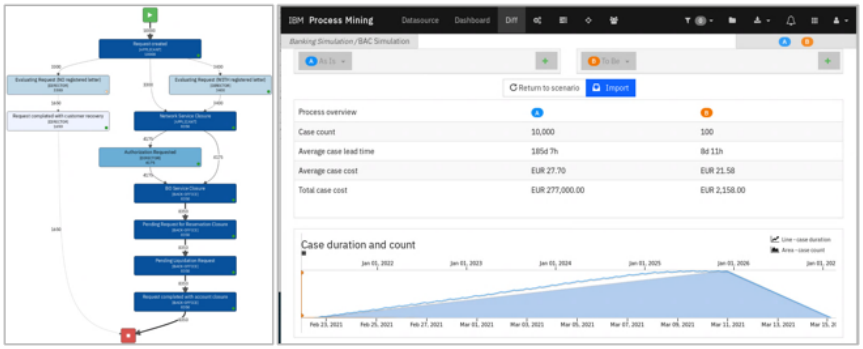
While IBM Blueworks Live supports all aspects of process modeling, it provides no simulation capabilities. On the other hand, IBM Process Mining provides simulation capabilities useful to establish ROI associated with automation initiatives, but it does not provide in process modeling and process discovery capabilities.

In this lab you will learn how to leverage IBM Process Mining to run process simulations of BPMN processes modelled in IBM Blueworks Live.

IBM Blueworks Live – Process Modelling



IBM Process Mining – Process Improvement

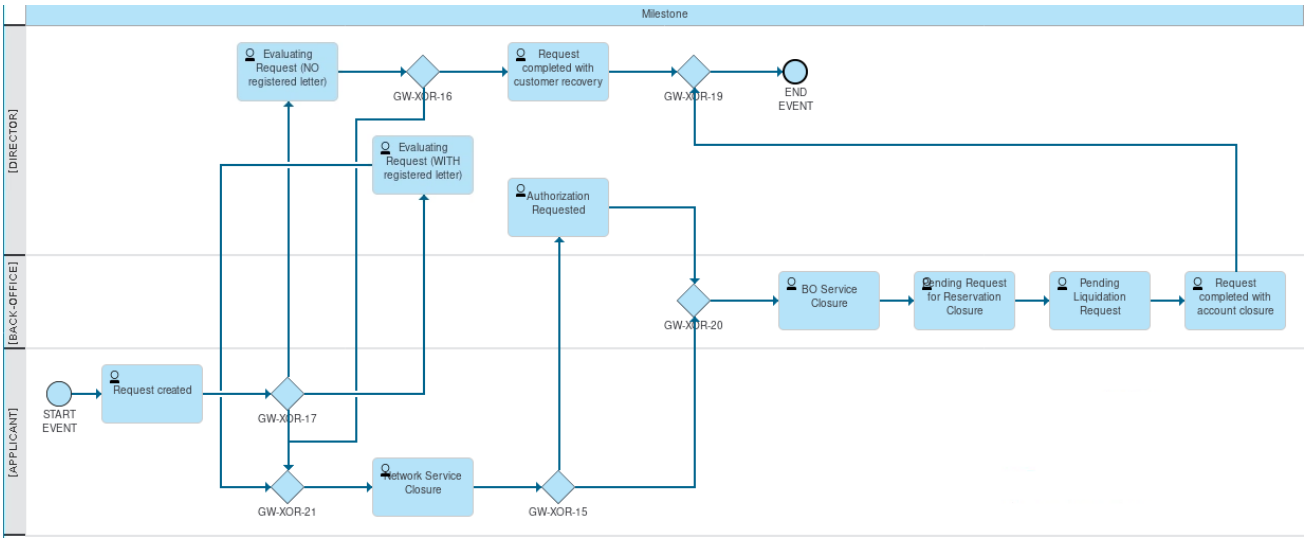


Typically, to engage in process mining activities complete logs from all systems are required. Extraction and preparation of such logs is a costly and time-consuming activity and is a significant entry barrier for organizations to benefit from process mining tools such as IBM Process Mining.

In this lab you will learn how IBM Process Mining tool can generate event data required for most process mining tasks that do not require business data beyond the basic process data such Activity Wait Times, Teams, Users, etc.

2.3.2 Business Scenario

The business scenario used I this lab is a simplified Bank Account Closing scenario. It includes three swim-lanes corresponding to Roles and ten activities.



3 Preparing IBM Blueworks Live Process

The Bank Account Opening process used in this lab was already created for you and exported so you do not need to build it in IBM Blueworks Live. If you want to examine the process you can import it to IBM Blueworks Live using the *BankingAccountClosure.zip* file in this folder: https://ibm.box.com/v/IBM-Process-Mining-Lab-3

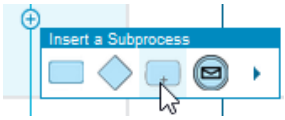
The purpose of this section is to outline the technical requirements and steps needed to generate a well behaved BPMN process diagram that works well with IBM Process Mining.

3.1 Basic Requirements

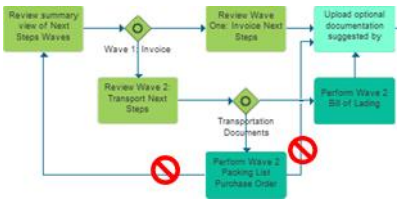
The process model must **not** include the following BPMN Modelling Elements

- Message Events

- Subprocesses



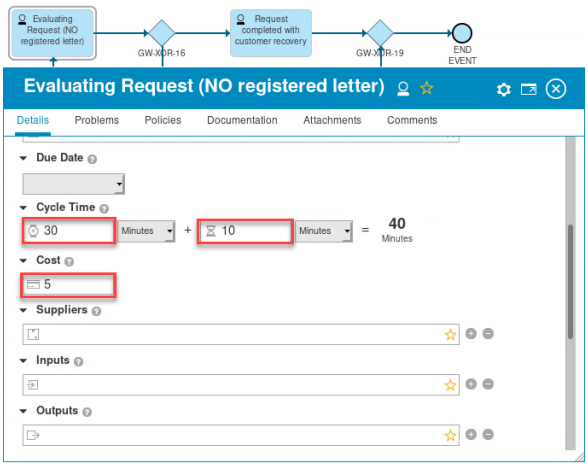
- Multiple links lead out an activity



The following Details settings, when defines, will be used by Simulation feature in IBM Process Mining

3.2 Process Mining Simulation Parameters

For each activity in the process there are three attributes that can be set for use in IBM Process Mining simulations: (i) Work time, (ii) Wait time, (iii) Cost

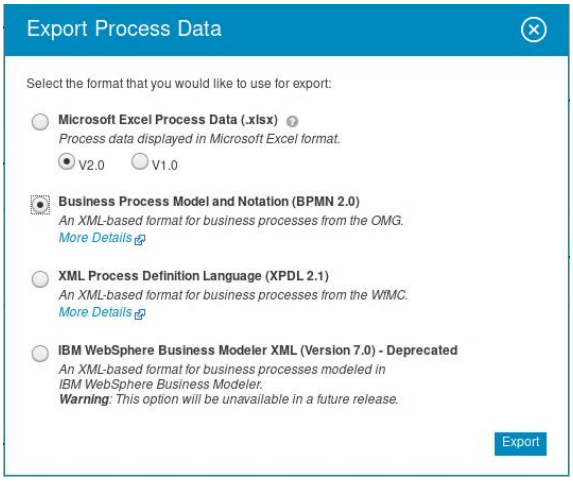


3.3 Exporting Process from IBM Blueworks Live

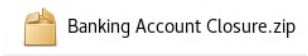
Note that you do not need to pe4from these steps. The exported BPMN file is included with the lab files: : https://ibm.box.com/v/IBM-Process-Mining-Lab-3

_1. Use standard BWL Process Export.

_2. Select **BPMN 2.0**

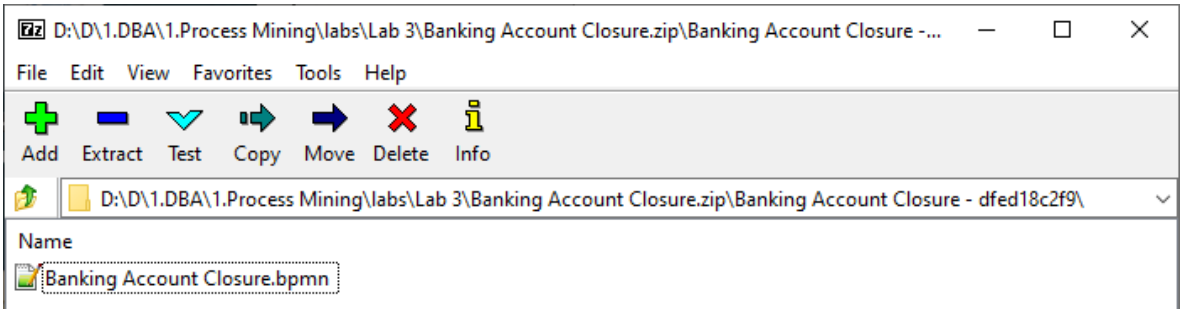


This will create a zip file.



> Note you will not be able to import this zip file directly to IBM Process Mining. You will need to extract the .bpmn file first.

_3. To extract the .bpmn file, open the exported zip file, navigate to the .bpmn file and extract it from the zip file.

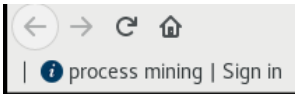


4 Lab Instructions

4.1 Open IBM Process Mining Application

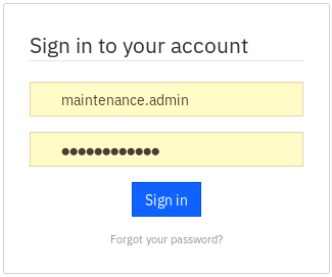
_1. On the Linux desktop double-click **Firefox**

_2. If you do not see the login page, click on **process mining | Sign in**



> Note: if you get an error, please wait for few minutes for the IBM Process Mining runtime to start and try again.
>
> Unable to connect

_3. For *user type* **maintenance.admin** and for *password* enter **TM/admin1** and click **Sign in**

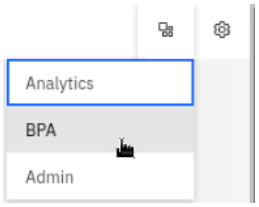


4.2 Create BPMN Process

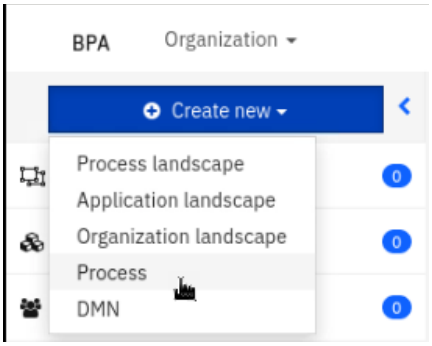
You will now use the .bpmn file extracted from the IBM Blueworks Live process export file to create BPMN process in IBM Process Mining.

_1. Download **Banking Account Closure.bpmn** form this box folder: https://ibm.box.com/v/PROCESS-TASK-MINING-ENV-LABS

_2. Click in **3-3 grid** and then select **BPA**

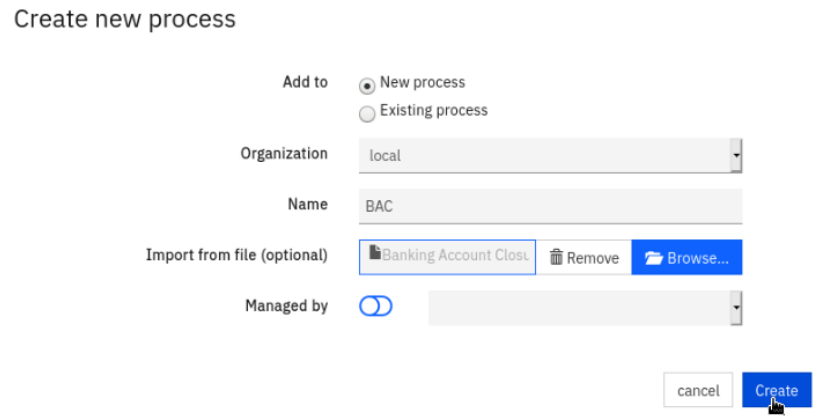


_3. Select **+ Create New > Process**



_4. Enter the following and then click **Create**

Add to - select **New Process**
Organization - select **local**
Name - enter **BAC**
Import from file (optional) - select **Banking Account Closure.bpmn** file



You should now see the BPMN diagram equivalent to the BWL process diagram

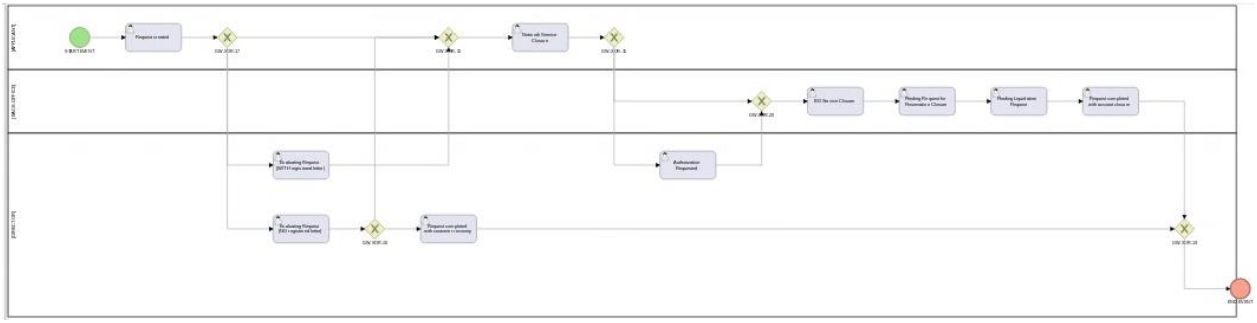


Figure 1. IBM Process Mining

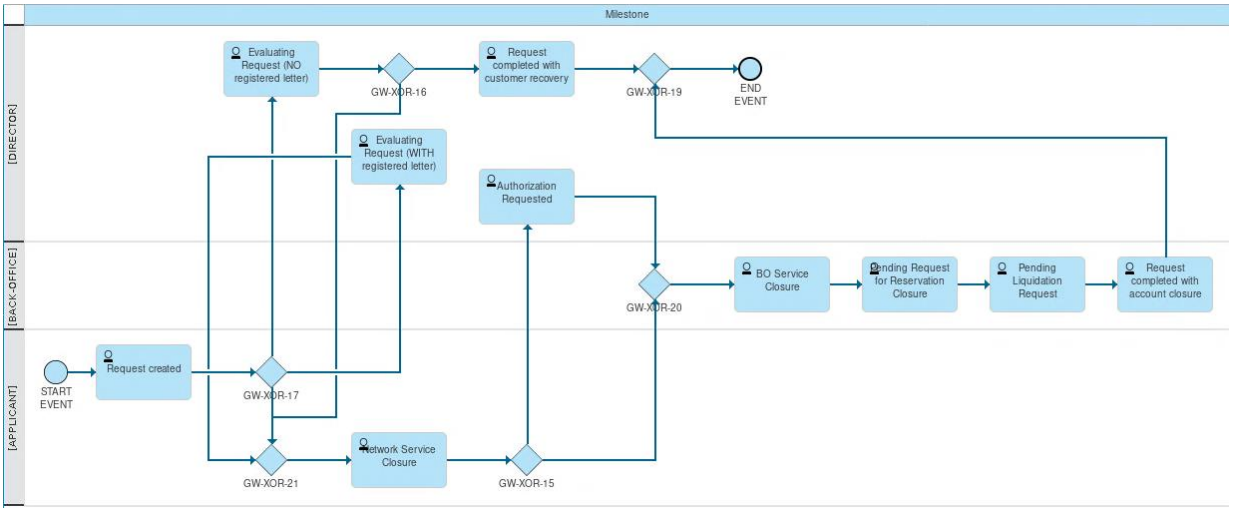


Figure 2. IBM Blueworks Live

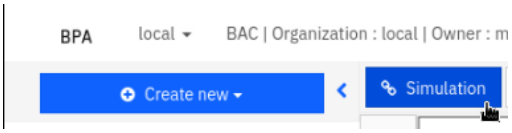
4.3 Initialize and Run Simulation

In this part of the lab you will review and initialize missing simulation parameters. Then you will run a simulation to generate Process events used by IBM Process Mining to create a Project.

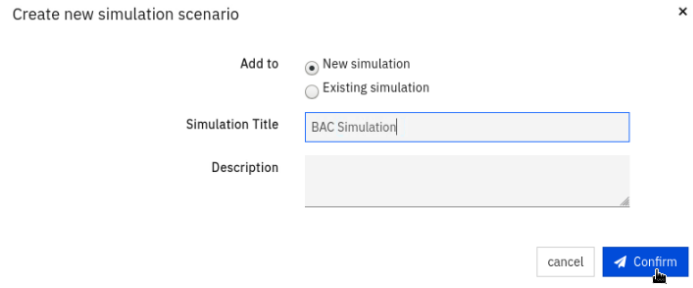
The Project created form the simulated events can be used to gain business insights and to discover automation opportunities for improvement of the process you modeled in IBM Blueworks Live.

4.3.1 Create a Simulation

_1. Click **Simulation** button

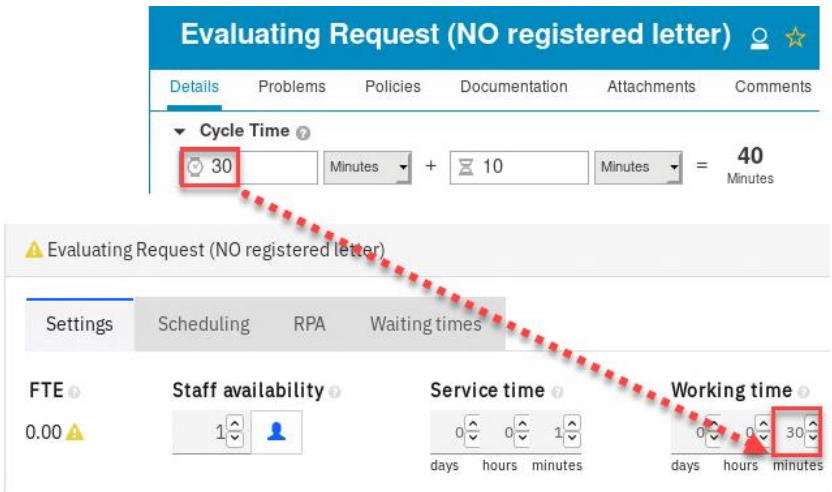


_2. On Create new simulation scenario window for Simulation Title enter **BAC Simulation** and then click **Confirm**

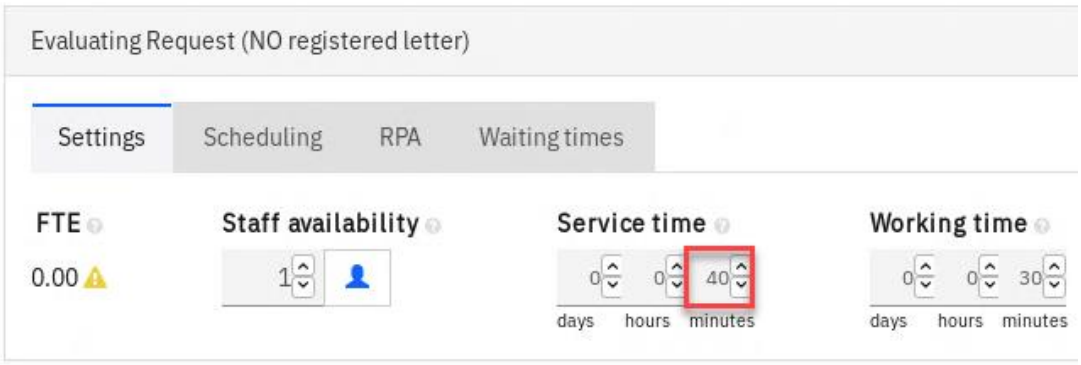


4.3.2 Initialize Simulation Parameters – Service Time

The BPMN import transformation maps the **Work Time (30)** to **Working time (30)** but does not use **Wait time (10).**



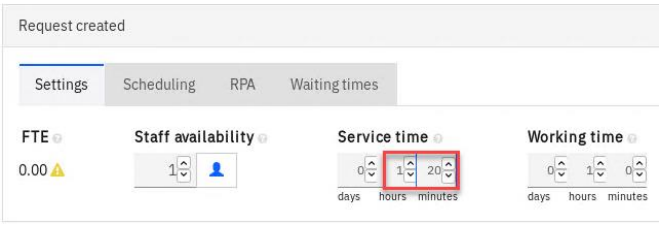
To make the simulation more accurate you will need to set **Service time** (in IBM Process Mining) to the sum of **Work Time** and **Wait Time** (from IBM Blueworks Live) as shown below:



Use the table below to set **Service time** for all activities:

Activity	Service time
Request created	1 hour 20 min
Evaluating Request (NO registered letter)	40 min
Evaluating Request (WITH registered letter)	47 min
Request completed with customer recovery	15 min
Network Service Closure	1 hour 33 min
Authorization Requested	23 min
BO Service Closure	52 min
Pending Request for Reservation Closure	22 min
Pending Liquidation Request	11 min
Request completed with account closure	14 min

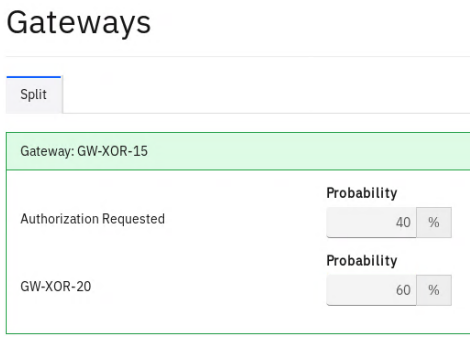
For example, enter **1 hour 20** for **Request created**



4.3.3 Initialize Simulation Parameters – Gateway

Optionally you can also change the gateway flow distribution ratios.

_1. For example for the first Gateway, you can change the default from 50/50 to **40/60**

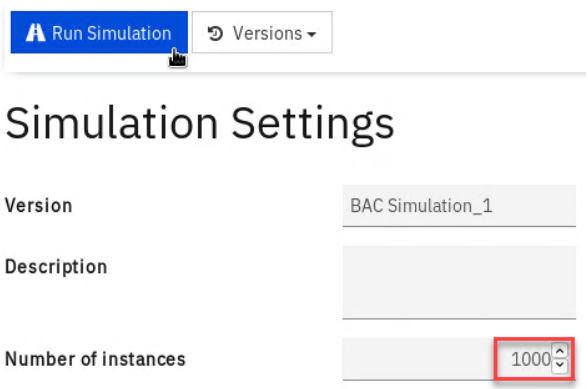


4.3.4 Run Simulation and Create a Project

The Simulation Settings section contains nine parameters which you can adjust as required. In this lab we will accept all the defaults except for Number of instances parameter.

_1. For Number of instances enter **1000**

This will generate 1000 instances and for each instance a variable number of Activity Events (enough events to complete a process instance).



_2. Click **Run Simulation**

Note, the Simulation Engine generated 1000 process instances; generated Activity events for each Process instance and sued the Execution and Wait time we set for each Activity.

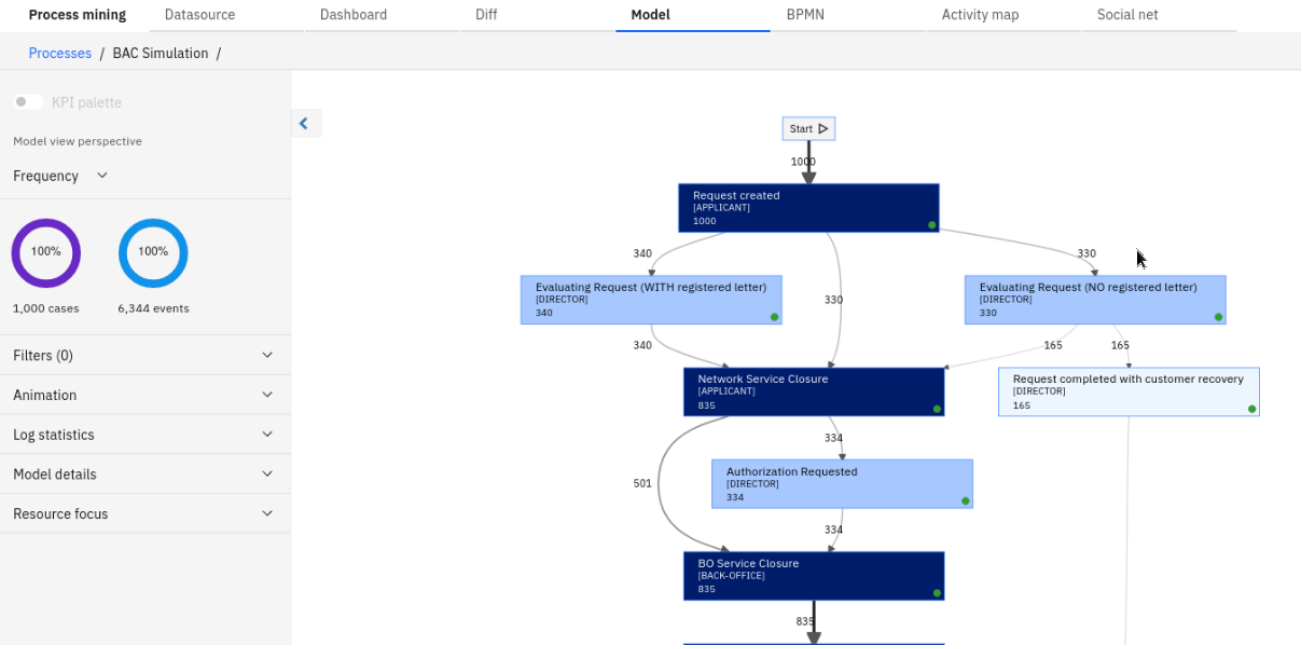
Activity instances

Name	Count	Avg Execution time	Avg Wait time
Authorization Requested	334	23min	3min
BO Service Closure	835	52min	7min
Evaluating Request (NO registered letter)	330	40min	10min
Evaluating Request (WITH registered letter)	330	47min	7min
Network Service Closure	835	1h 33min	125h 56min
Pending Liquidation Request	835	11min	1min
Pending Request for Reservation Closure	835	22min	12min
Request completed with account closure	835	14min	4min
Request completed with customer recovery	165	15min	5min
Request created	1000	1h 20min	491h 30min

_3. Click **Create Project**

_4. Click **Confirm**

This will open BAC Simulation Project in IBM Process Mining tool in the Model View.



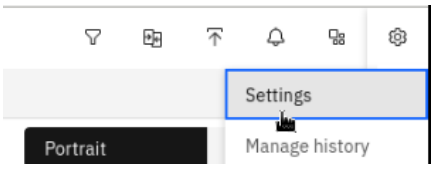
4.4 Examine Generated Process Data

In this part of the lab we will examine what data was generated by the simulation engine.
You will find that there is enough data to conduct meaningful process mining activities!

> Note: If you want to learn how to IBM Process Mining capabilities try these labs:
> https://ibm.box.com/v/PROCESS-TASK-MINING-ENV-LABS

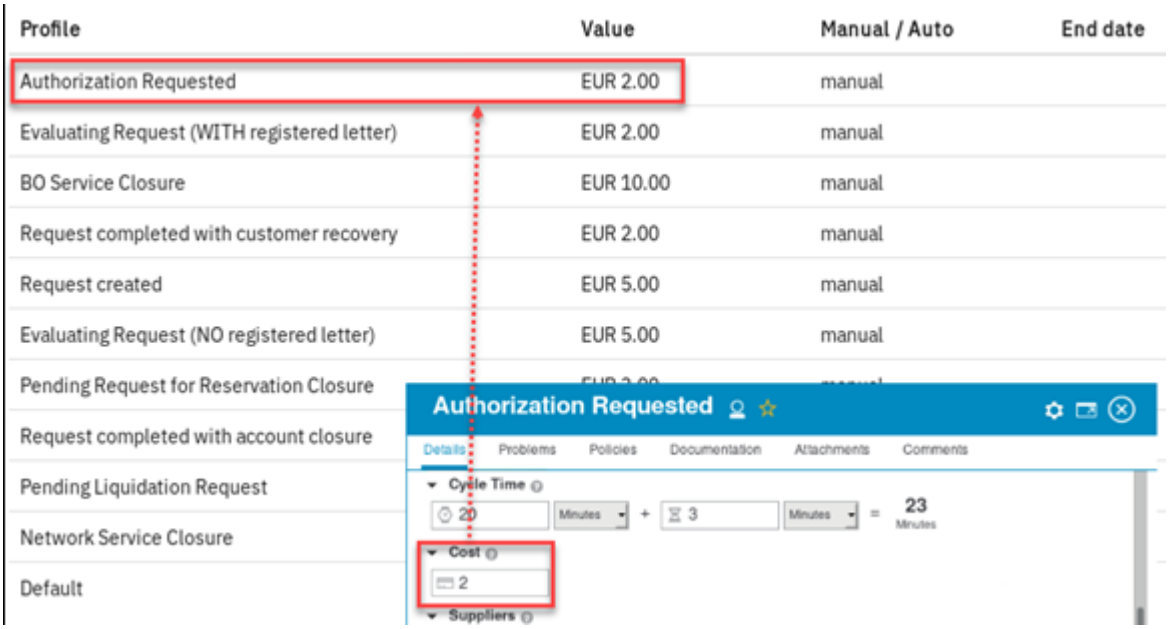
4.4.1 Activity cost

_1. Click **Settings**



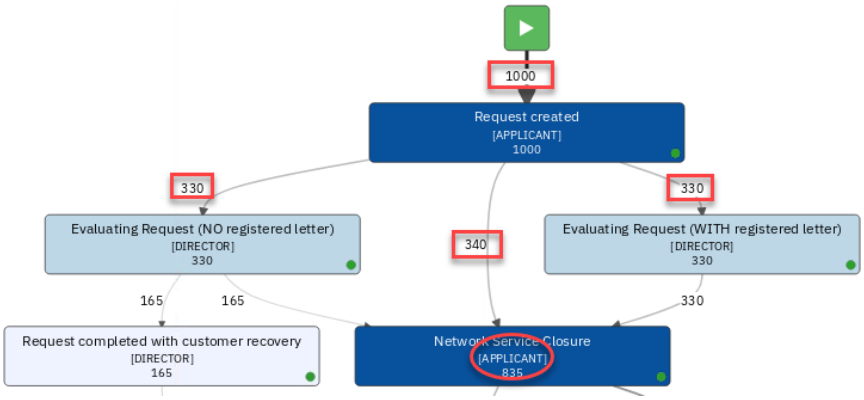
_2. Click **Activity costs** tab

Note that the cost values came from the Activity Settings in IBM Blueworks Live



_3. On Settings window click **Cancel**

4.4.2 Frequency View

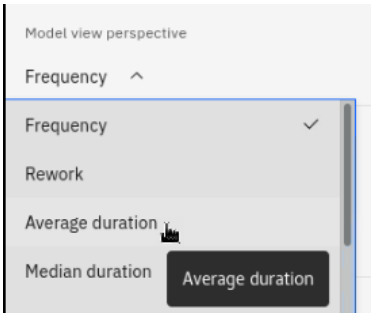


Note

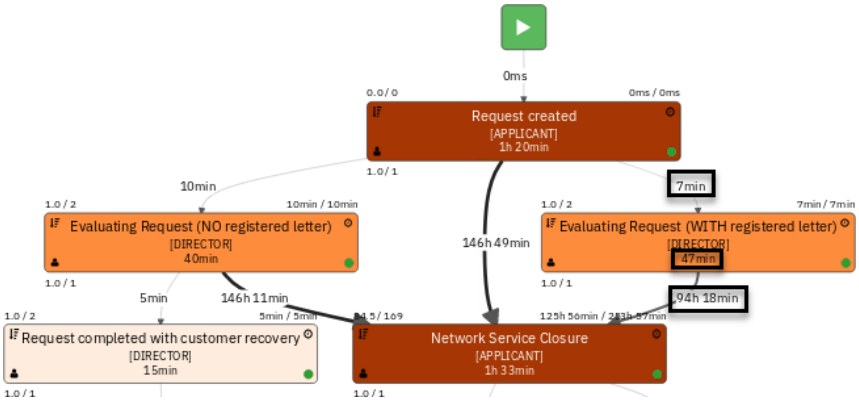
- The event frequency is shown on the links. Recall that we set the summation count to 1000 and the first gateway was set by default to be split evenly at 33%, 33%, 34%. Hence the even path distribution leading out of the first activity: 330, 340 and 330.
- The Role (.i.e. [APPLICANT]) is shown.! It comes from the swim-lane definitions in IBM Blueworks Live.

4.4.3 Duration View

_1. Click **Average duration**

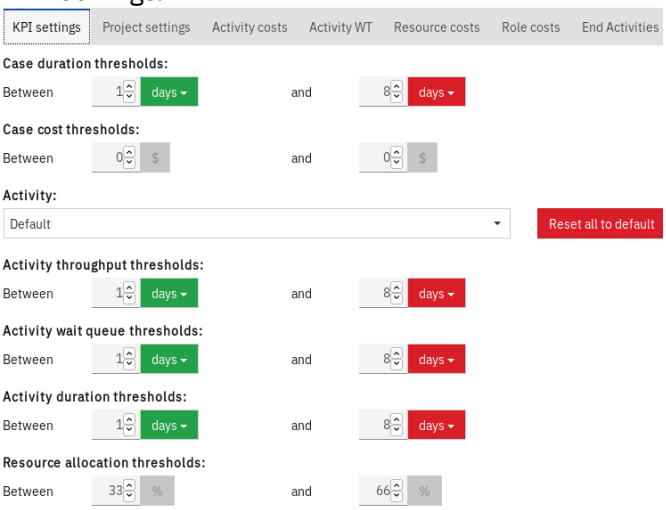


You should now see the Duration View.



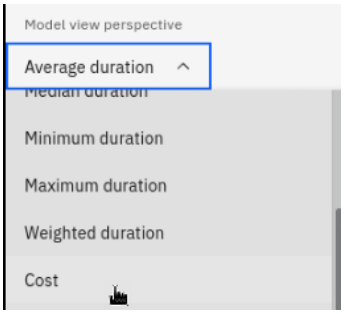
Note:

- Activity duration
- Wait times leading to activities
- Visual cues (arrow width and activity coloring) which are based on the KPI settings in project Settings.

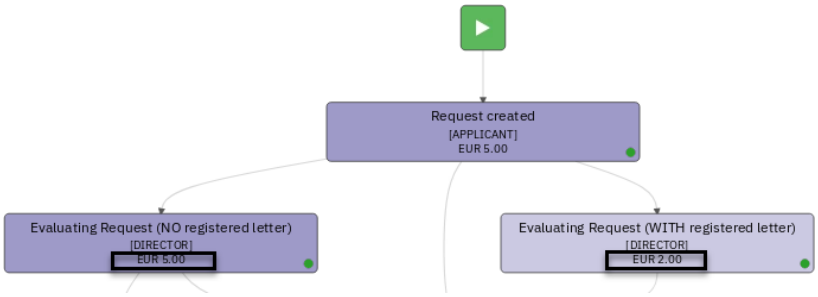


4.4.4 Cost View

_1. Click **Cost**

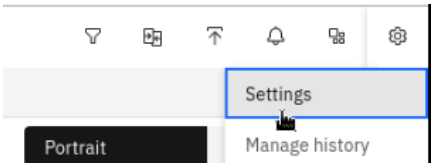


You should now see the Cost View

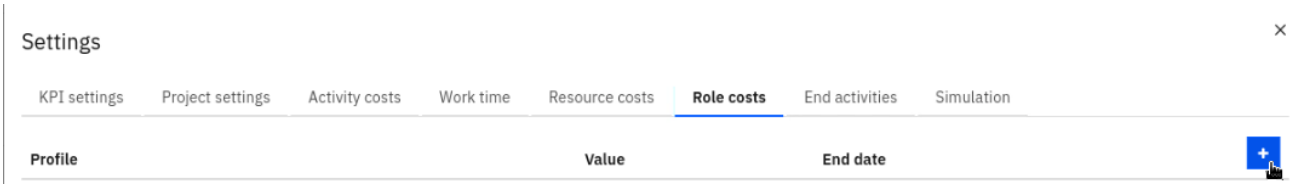


Notice that the role cost is not reflected.

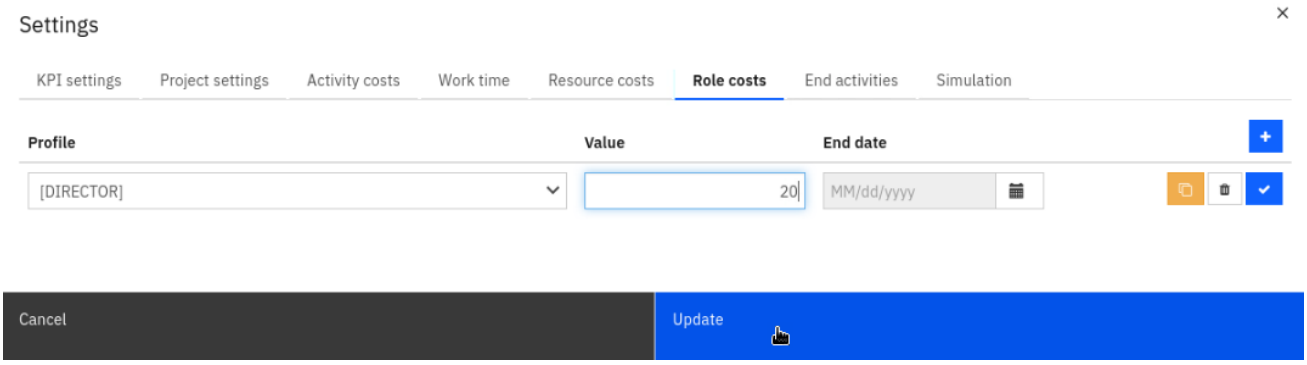
_2. Click **Settings**



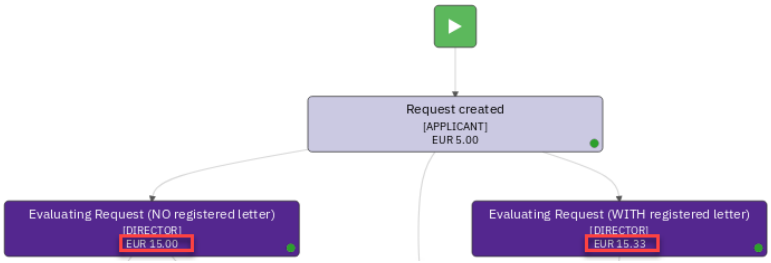
_3. Click **Role cost** tab and click **+**



_4. For Profile select **[DIRECTOR],** for Value select **20** and then click **Update** button



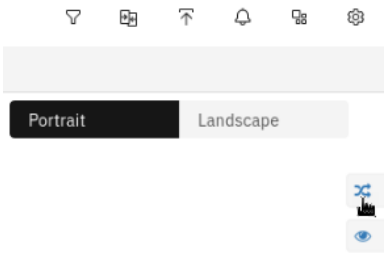
Note the changes of the [Director] role activities.



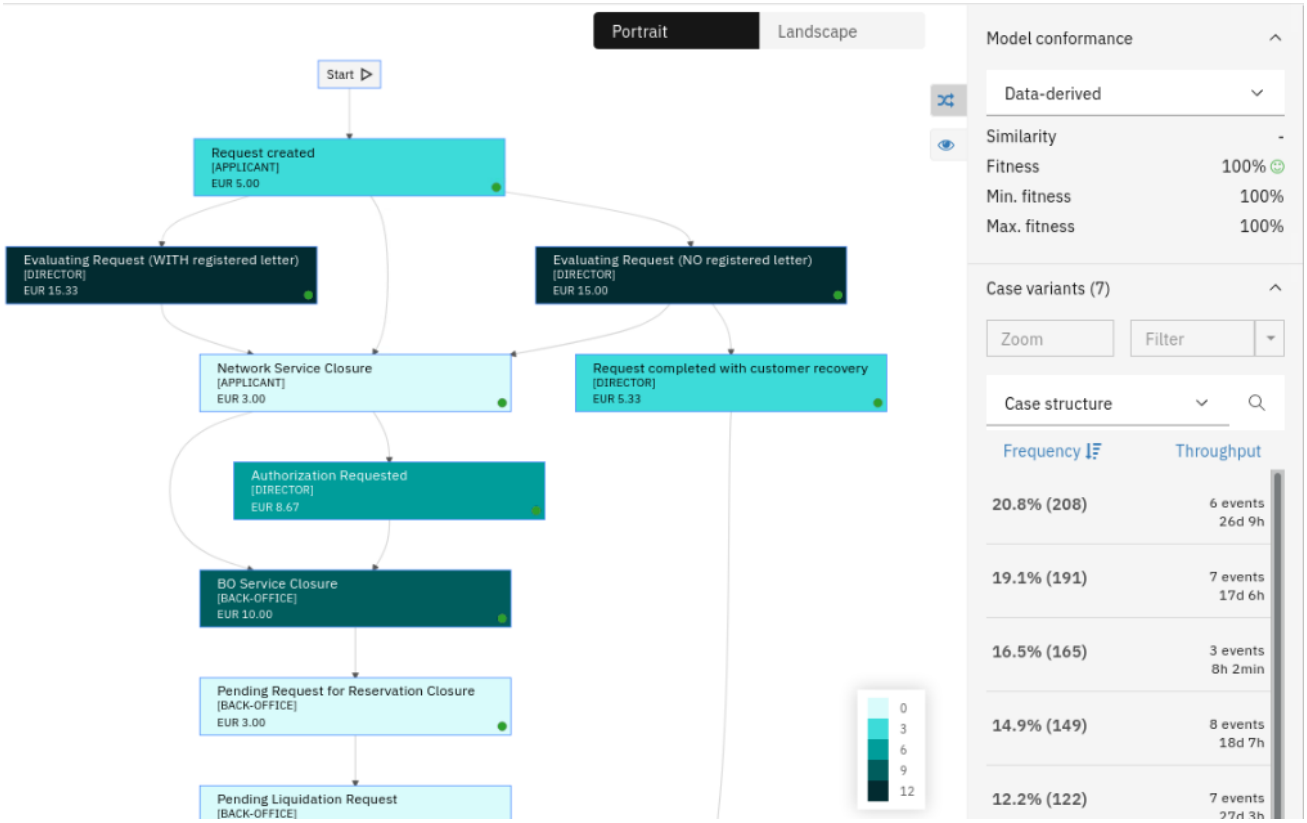
The cost is now more realistic, and the color has darkened to reflect cost values exceeding EUR 12.0.

4.4.5 Variants

_1. Click **TWISTED-ARROWS** button



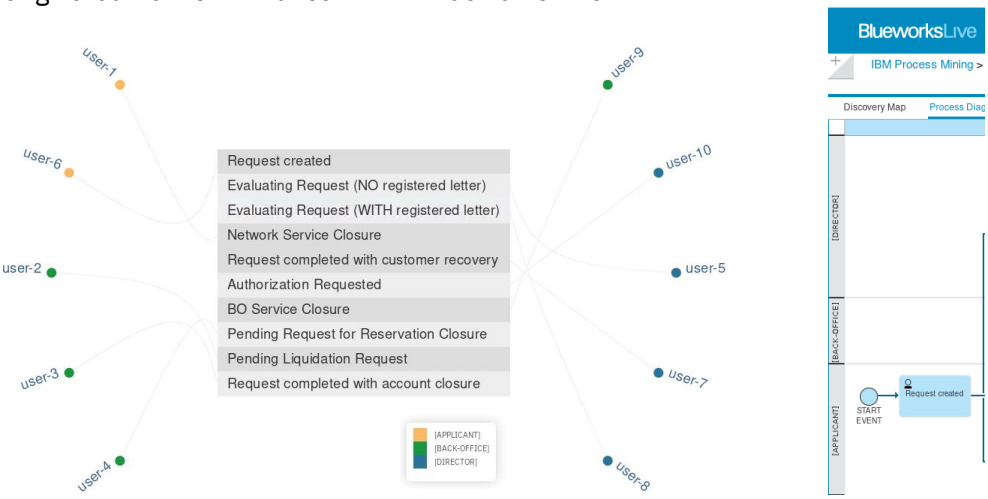
Notice that the simulation generated event data that resulted in distinct process path variants.



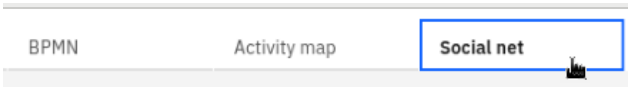
4.4.6 Social discovery capabilities

_1. Click **Activity map** button

Note that the simulation engine created 10 users and associated them with the Roles. Recall that the Roles originated from swim-lanes in IBM Blueworks Live



_2. Click **Social net** button



Note the user distribution in the social model.

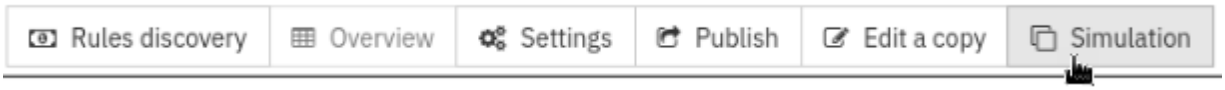
4.5 Create Additional Events Using New Simulation Scenarios

In this part of the lab you will learn how to add more data using different simulation settings.

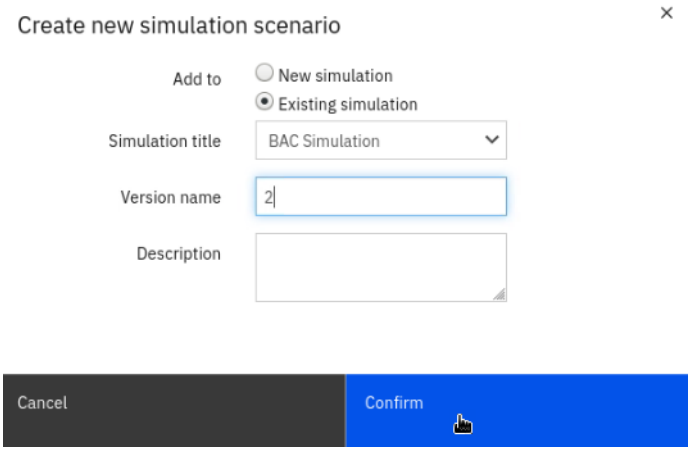
4.5.1 Create new Simulation Scenario

_1. Click **BPMN** button

_2. Click **Simulation** button



_3. For Add to select **Exiting simulation**; for Simulation Title select **BAC Simulation**; for Version Name enter **2**; and then click **Confirm** button.

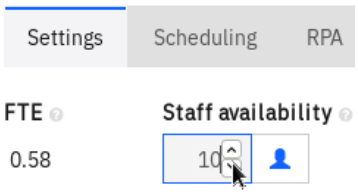


4.5.2 Change Simulation Scenario Parameters

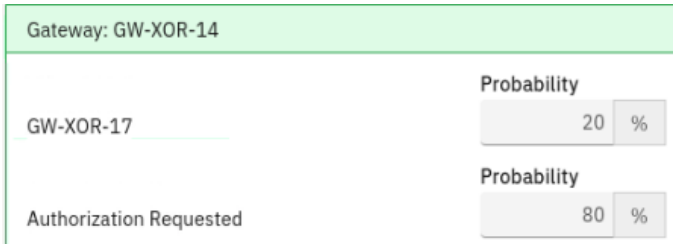
Let's change some simulation parameters.

_1. Change Number of instances to **1500**

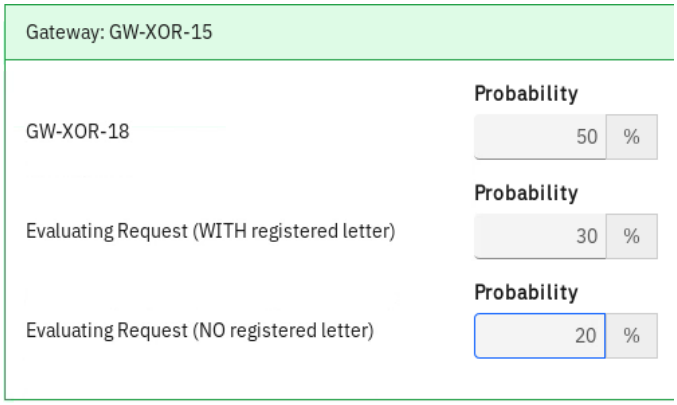
_2. For all activities, change Staff availability from 1 to **10**



_3. Change Gateway: GW-XOR-14 Probability to **20 and 80**



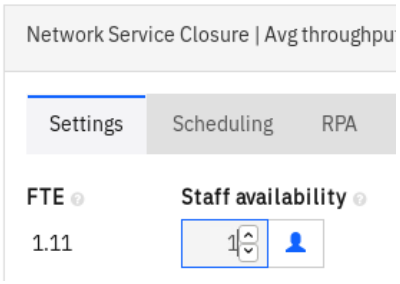
_4. Change Gateway: GW-XOR-15 Probability to **50, 30 and 20**



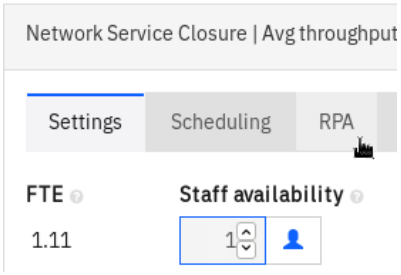
4.5.3 Introduce Automation

One of the activities will be partially automated by RPA bots. We will reduce the number of people available and add RPA Bots.

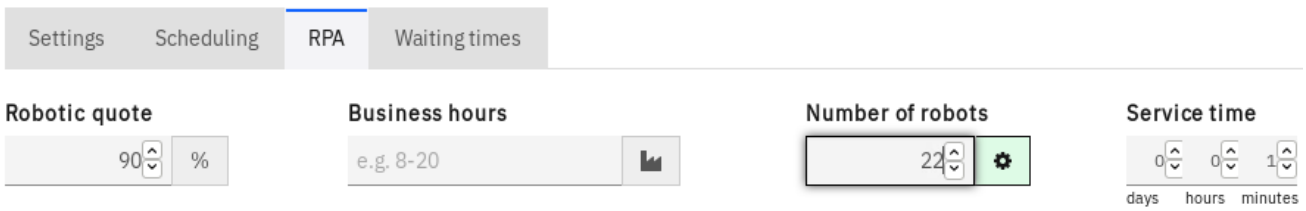
_1. For Network Service Closure, change the Staff Availability to **1**



_2. Click **RPA tab**



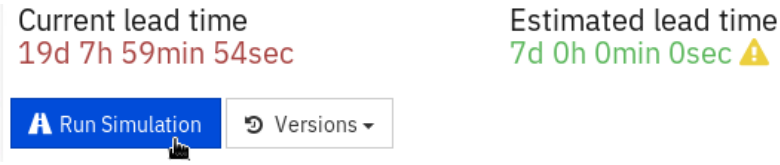
_3. For Robotic quote enter **90**, and for Number of robots enter **22**



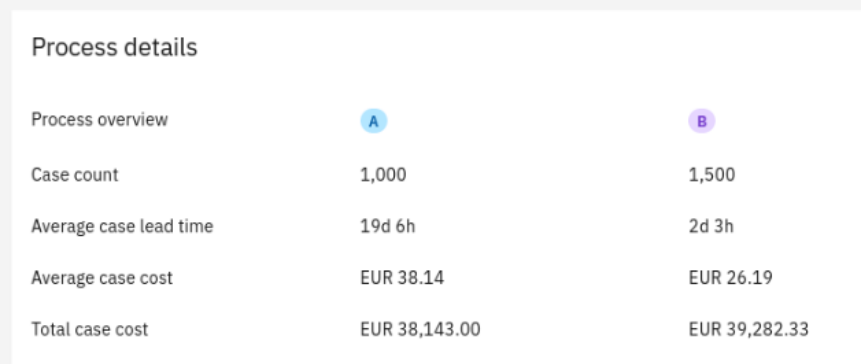
4.5.4 Run the Simulation ad Import Simulation Data

We will now run the new simulation scenario to generate new events and conditionally import the new events to the main model.

_1. Click **Run Simulation**



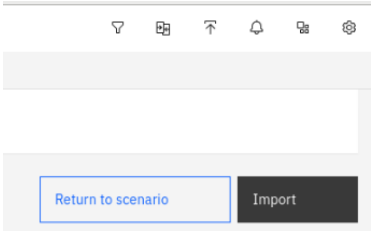
This action generated the comparison between the original (A) and new simulation scenario (B).



Note the screenshot tm y differ slightly

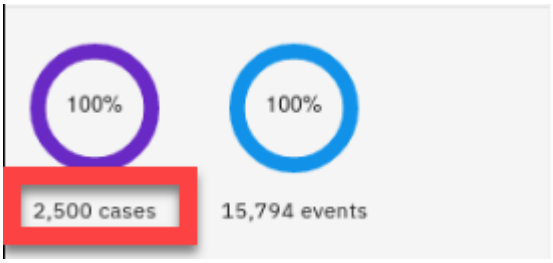
We now have two choices:

1) If we are not satisfied with the generated data, we can click the *Return to scenario* button and make desired simulation parameter changes.
2) If we are satisfied with the results, we can click the *Import* button to add the generated events to our main model.



_2. Click **Import**

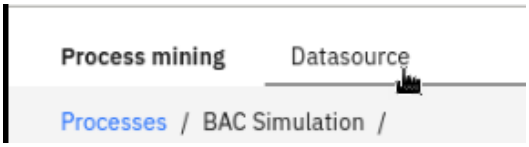
Note that now see 1500 more cases!



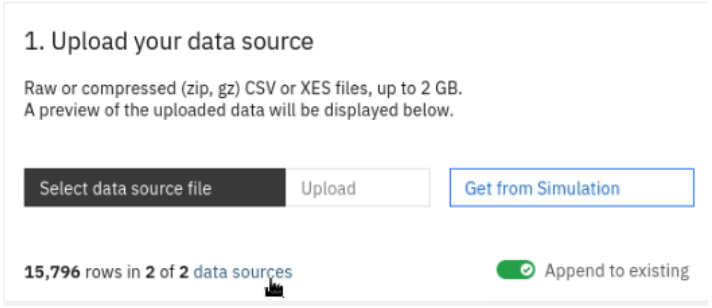
4.5.5 Managing Event Data

You can use the above technique to incrementally generate as many events as you need. Let's learn how manage the generated events.

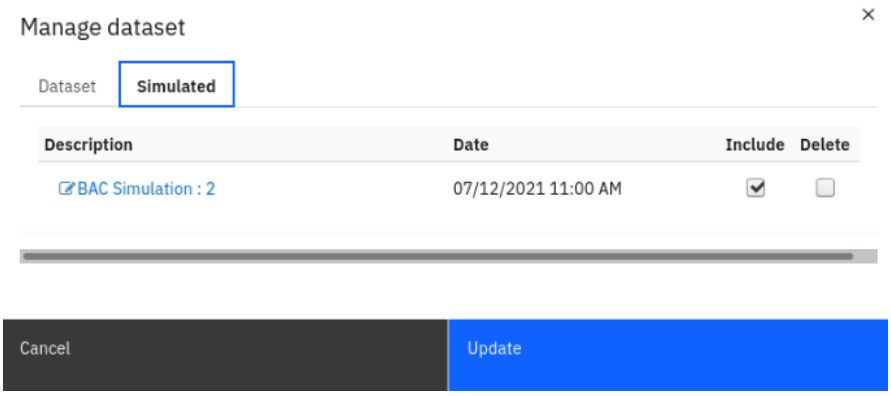
_1. Click **Datasource**



_2. Click **data sources**



_3. Click **Simulated** tab



Notice the *BAC Simulation : 2* (version 20 data set. This is the data set you generated when running the simulation for the second time. You can either include of exclude this data set in the Process Model. For example to get back to the original 1000 cases data set simply unselect the Include checkbox.
Also if you like you can also Delete this data set permanently.

_4. Click **Cancel**

4.6 Lab Summary

In this lab you have learned how to leverage IBM Process Mining to run process simulations of BPMN processes modelled in IBM Blueworks Live, and how IBM Process Mining tool can generate event data required for most process mining tasks that do not require business data beyond the basic process data such Activity Wait Times, Teams, Users, etc.

Congratulations, you have successfully completed Using BPMN Process Diagrams from IBM Blueworks Live in IBM Process Mining Lab

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