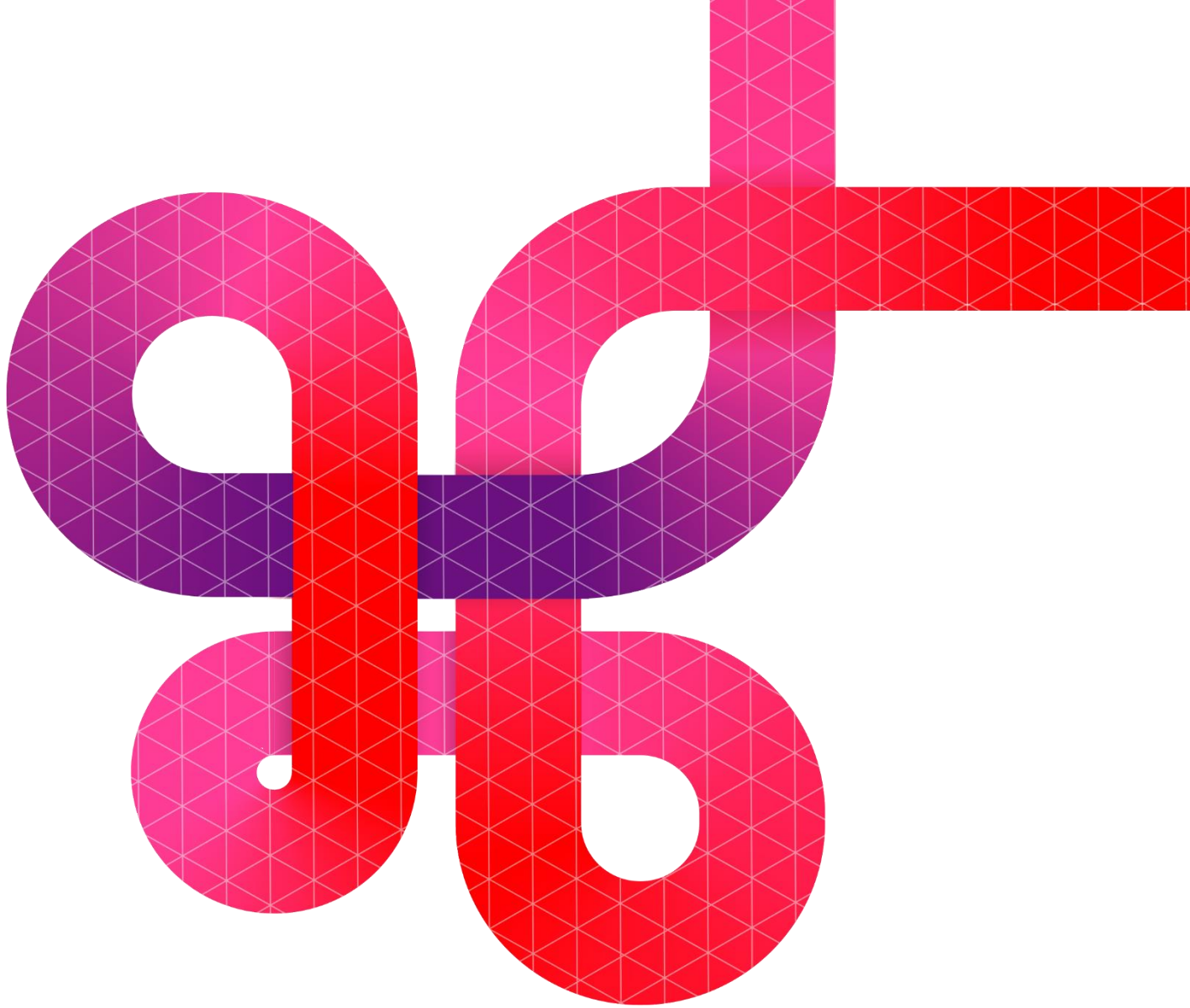

Celonis Academy– AP Case Study

Detailed Answers and Guide

Accounts Payable Case Study

Agenda

1. Connecting to the Source System
2. Setting Up Extraction
3. Filtering and Execute Extraction
4. Creating Activity Table (Transformations)
5. Adding an Activity
6. Setting Up the Initial Data Model
7. Extending the Data Model
8. Finalizing the Data Model
9. Analysis Question Answers

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1

Celonis Intelligent Business Cloud

Connecting to the Source System

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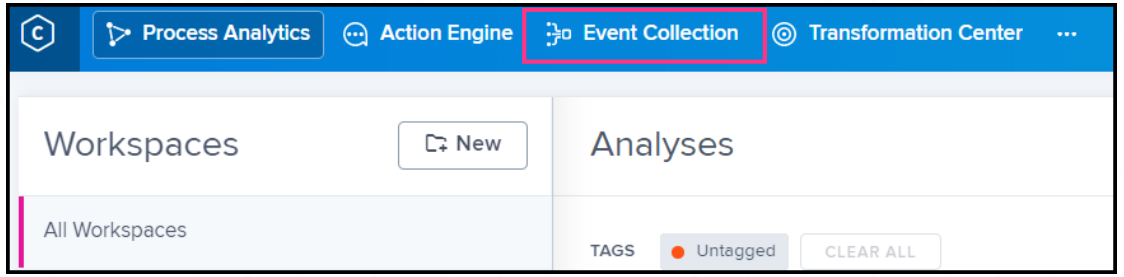
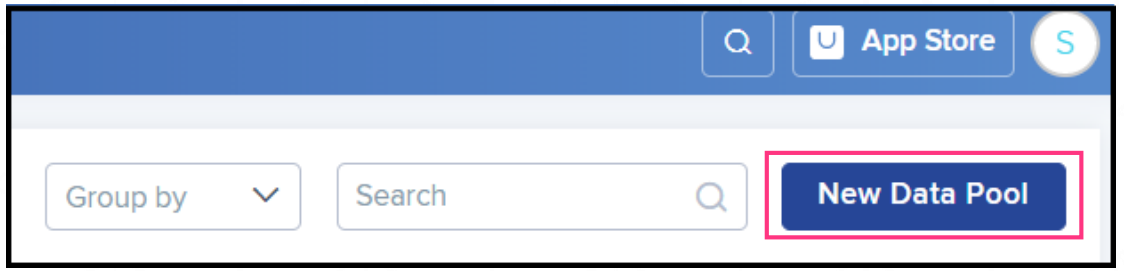
Connecting to the Source System

1 Let's begin by signing into your training workspace.

2 From your IBC Homepage, select **Event Collection**.



3 On the Event Collection page, create a **New Data Pool**.



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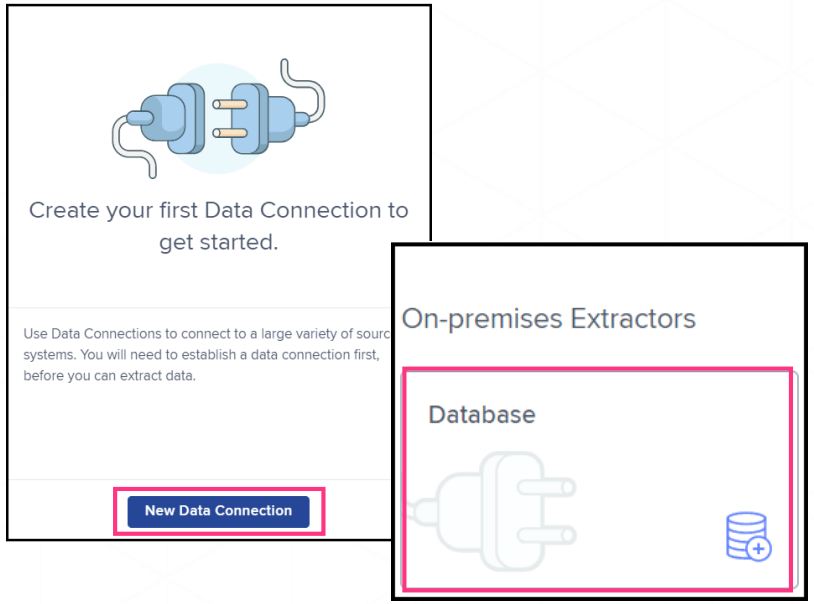
Connecting to the Source System

4 Once a New Data Pool is created, create a **New Data Connection** and select **Database** as the extraction type.

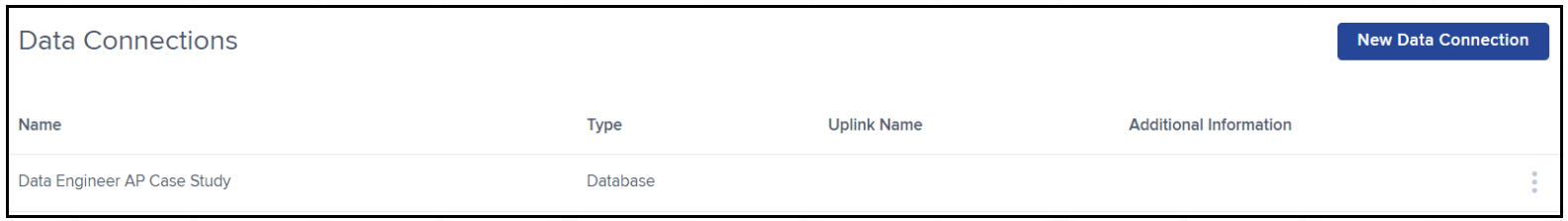


5 Enter the following information for the corresponding fields.
Please do not make any additional changes to other fields..

Credentials

Name: Data Engineer AP Case Study
Connection type: Direct
Type: Microsoft SQL Server (native)
Host: 3.120.99.40
Port: 1433
Database Name: celonis
Schema Name: CASESTUDY
Username: Training_CelonisDataEngineer
Password: Celonis123!

6 Once you select **Done**, the Data Connection will be successfully established like what is shown below:



2

Celonis Intelligent Business Cloud

Setting up an Extraction

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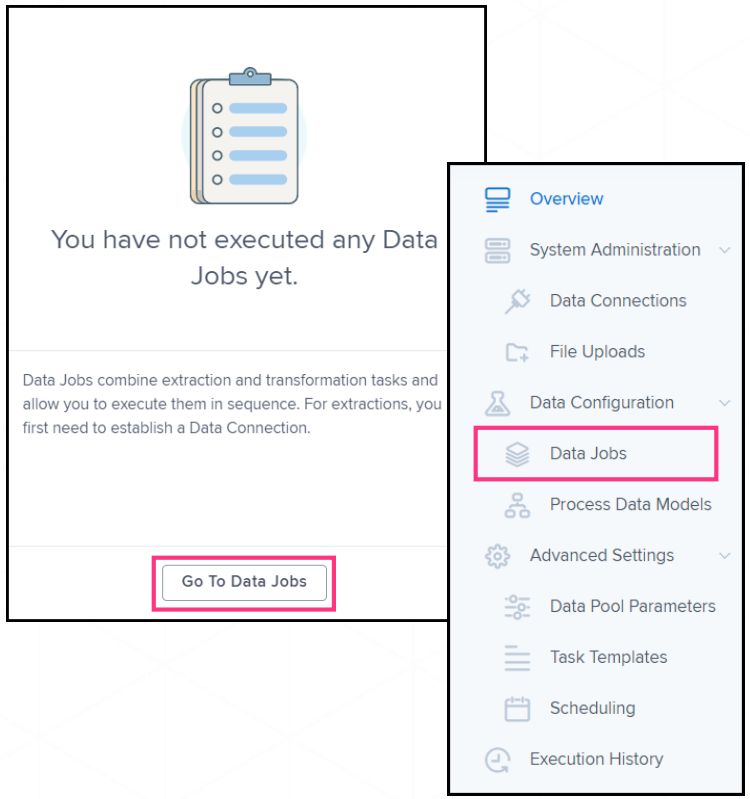
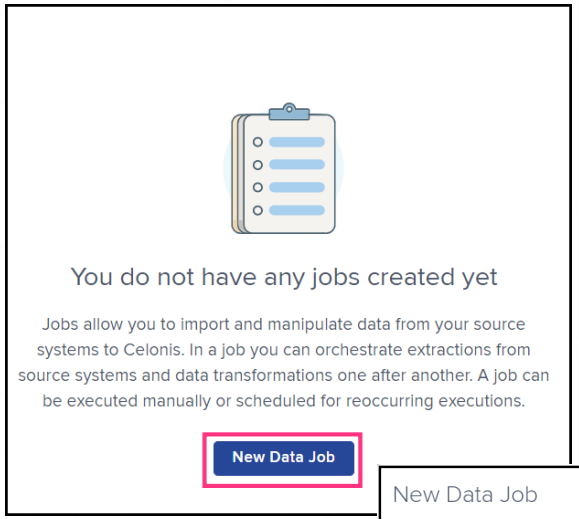
Setting up the Extraction

1 To set up an Extraction, select **Go To Data Jobs** from the Event Collection page *or* by selecting **Data Jobs** from the left-hand side.



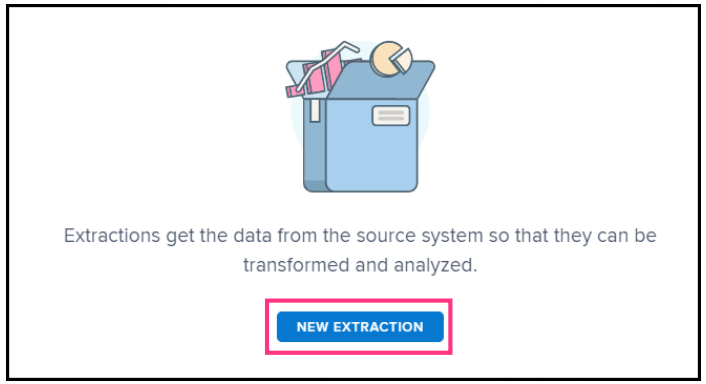
2 When creating a Data Job for the first time, you will need to select **New Data Job** shown in the image below.



***Name**: Accounts Payable*
***Data Connection**: Data Engineer AP Case Study*

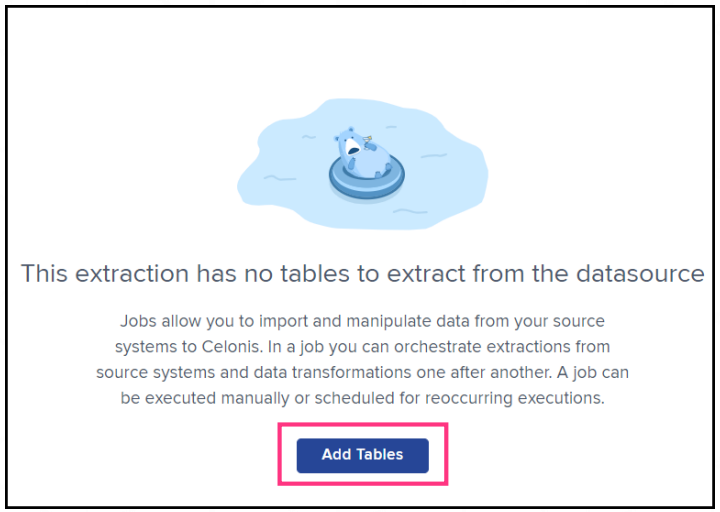
Setting up the Extraction

3 To create the first extraction, select **New Extraction**.



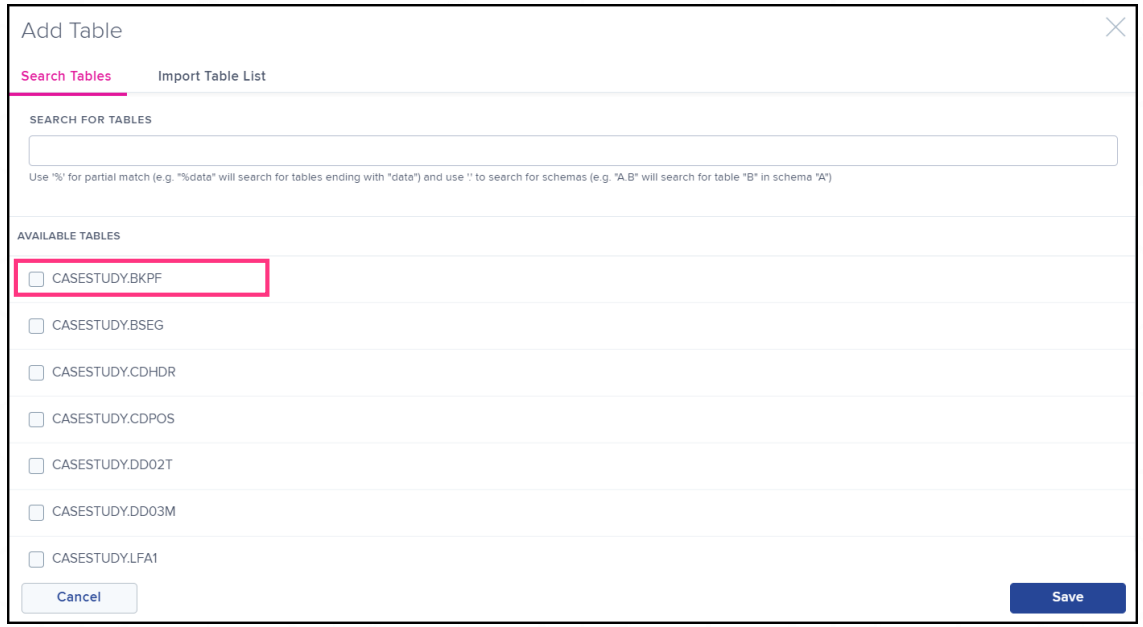
4 Because we're extracting the raw Accounts payable data, lets name the New Extraction **Extract Raw AP Data**.

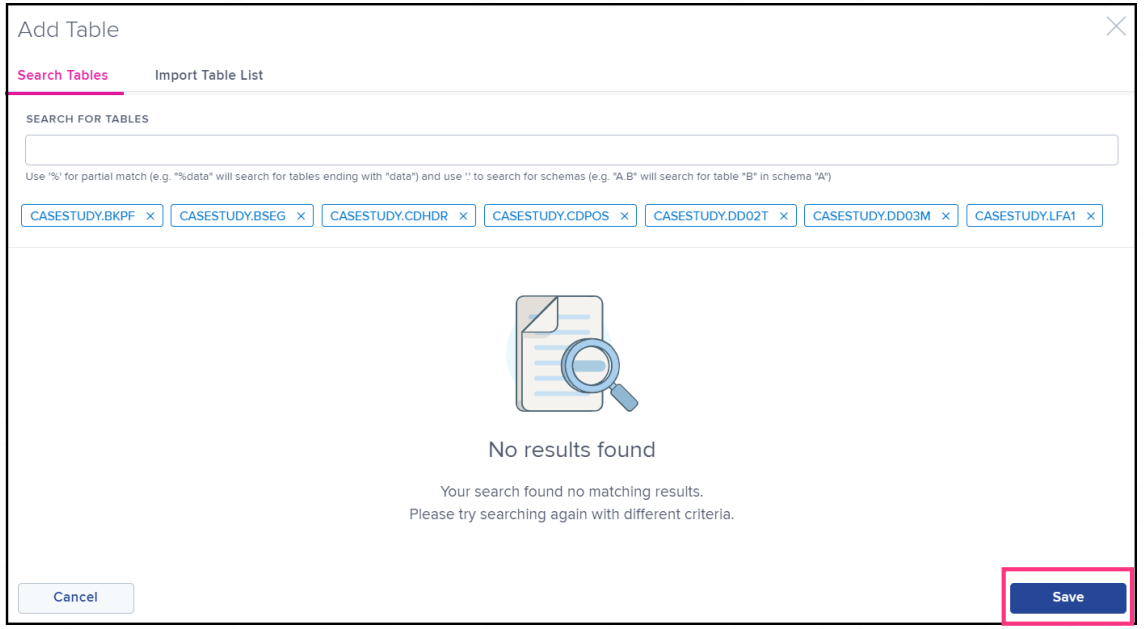
5 Click on **Add Tables** to select which tables to extract from the Raw Accounts Payable Data.



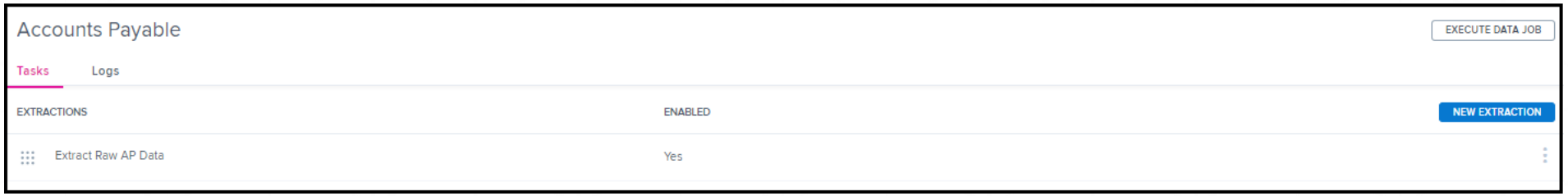
Setting up the Extraction

6 Select all the available tables on the Add Table page and press **Save**.





7 After completing the extraction, you should have a screen like the following:



3

Celonis Intelligent Business Cloud

Filtering and Executing an Extraction

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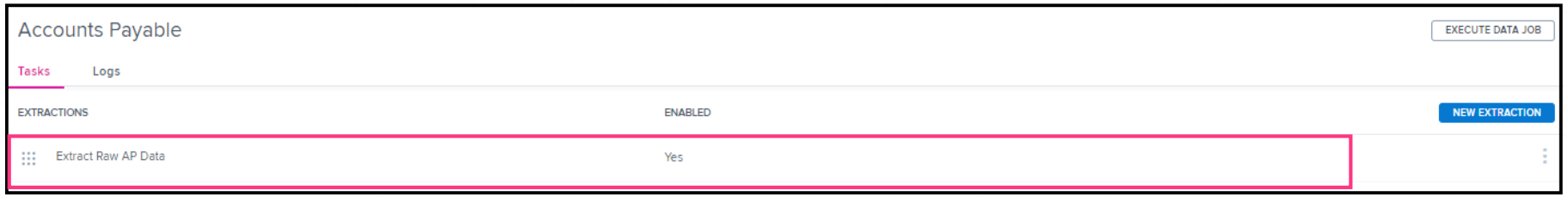
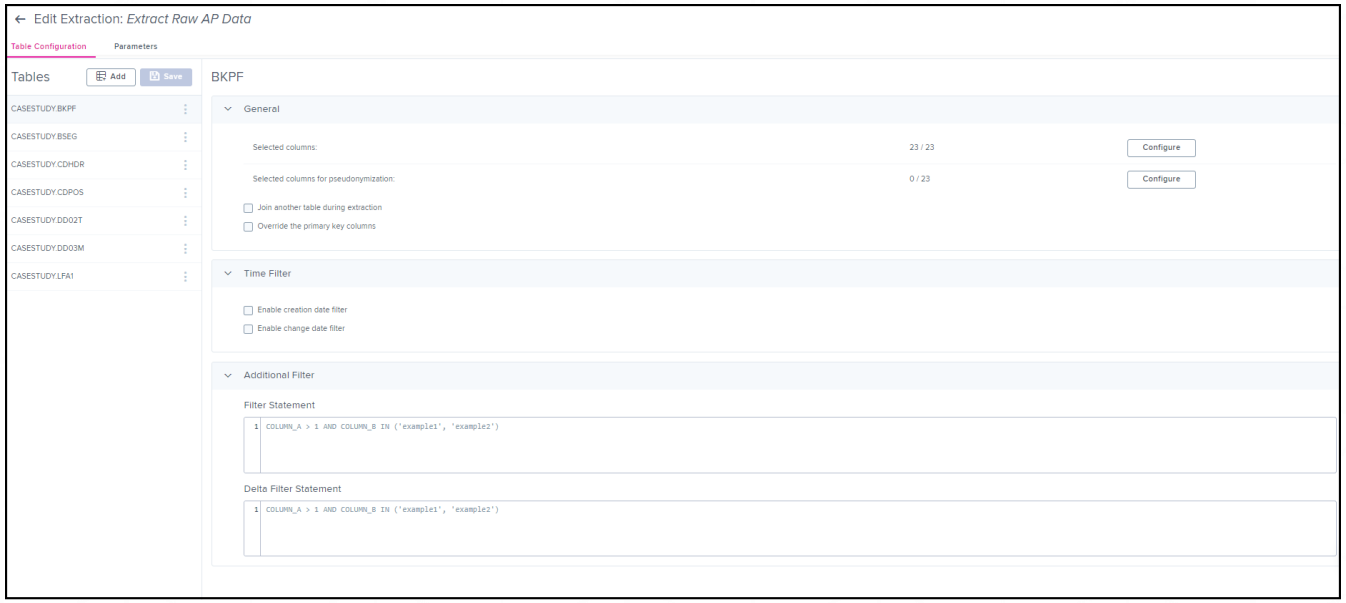
Filtering and Executing an Extraction

1 After setting up the Extraction, lets click on **Extract Raw AP Data** to apply an extraction filter.



? **Why do we set filters?**

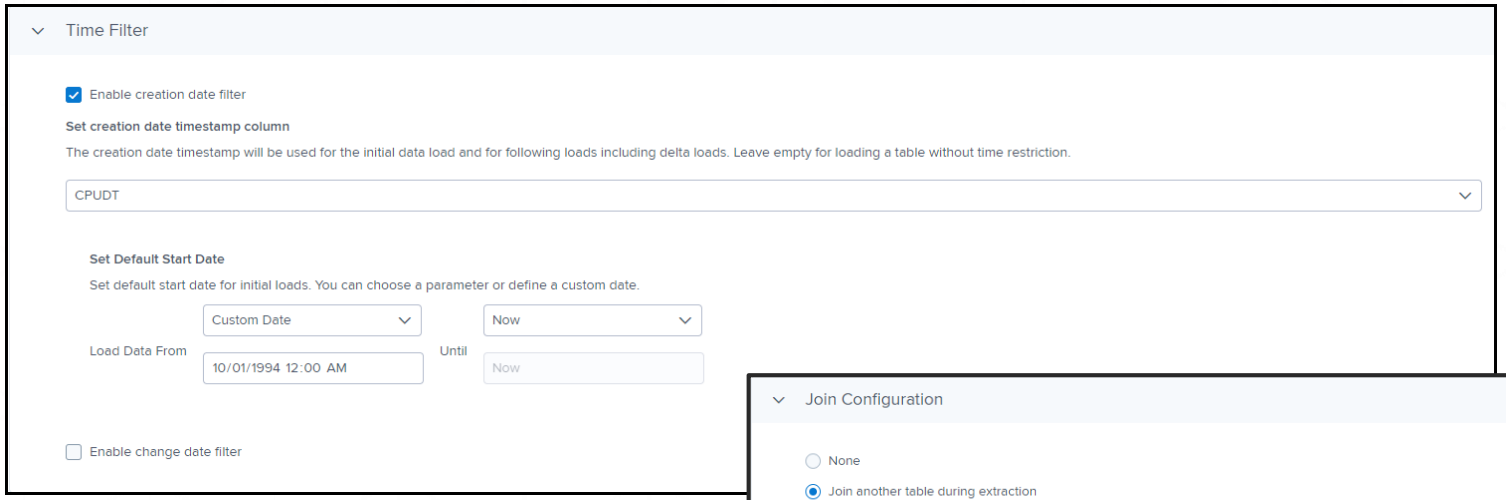
Filters are set because sometimes we don't need all the information in the Data Model. For example, if you want to look at data in the past 10 years, you would filter out data prior to that because it's not required.



! *In most cases, there will be a time filter for CDHDR and CDPOS because tables usually are huge in SAP. However, in this case study no filter is needed for CDHDR or CDPOS.*

Filtering and Executing an Extraction

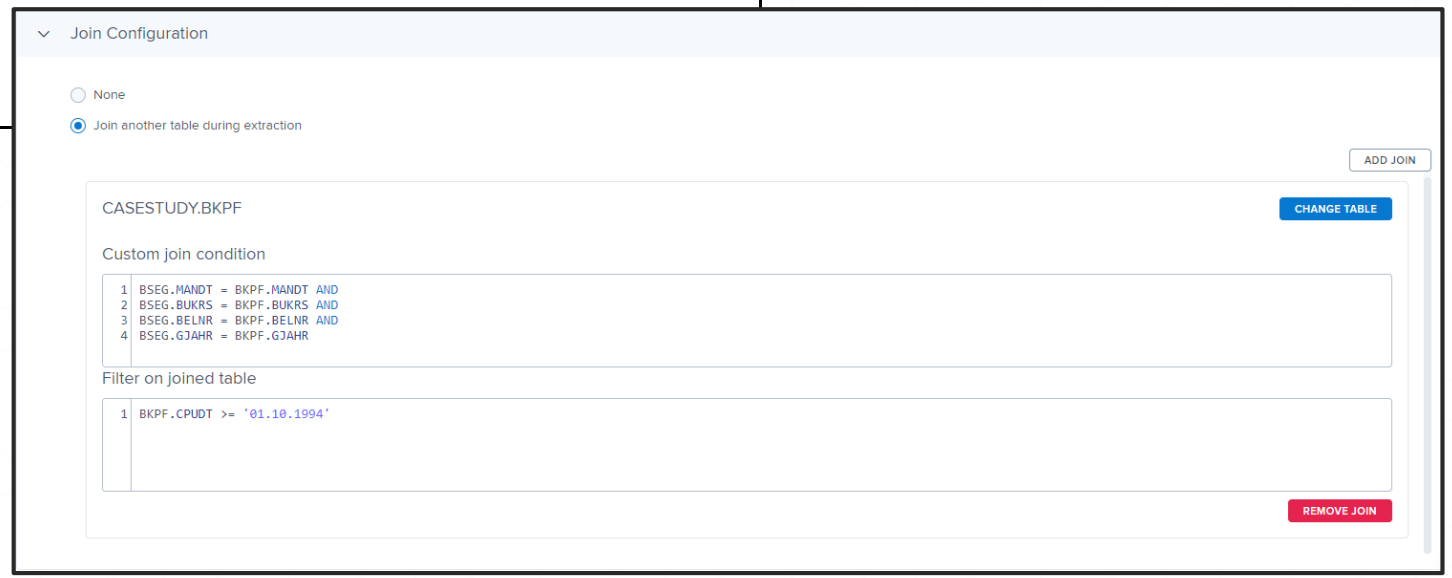
2 From the **CASESTUDY.BKPF** table, enable the creation date filter.



Why do we need to join tables?

Joining tables will establish a relationship between the two. In simpler terms, it's like combining multiple tables into one big table. This join enables us to extract the same time scope of BSEG as from BKPF, because the time is only stored in BKPF.

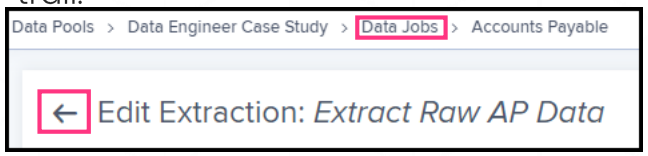
3 From the **CASESTUDY.BSEG** table, **Join another table during extraction** and select **Add Join**. Make sure to join CASESTUDY.BKPF to CASESTUDY.BSEG and set the filter shown.



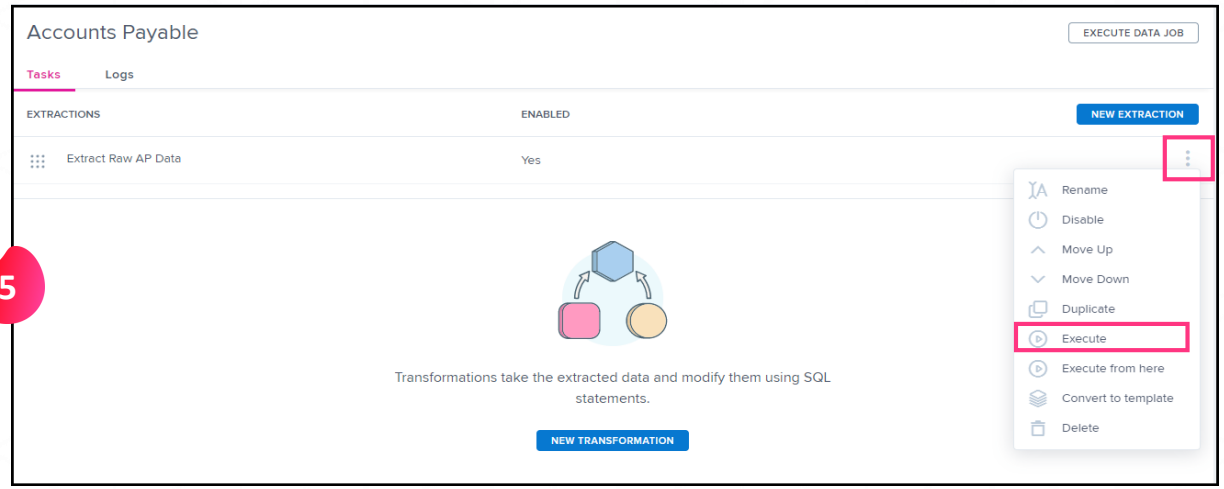
The code for the connections are interchangeable, so there will ne no issues if you have the BSEG.NAME = BKPF.NAME reversed.

Filtering and Executing an Extraction

4 Navigate back to the Extraction page by clicking the **Back Arrow** or the **Data Jobs** trail.



5 Select **Options** from the Extract Raw AP Data Extraction and press **Execute** to refresh the data with the Data Filter.



6 Make sure that you've selected **Full Load** and then **Execute Selection**. You should then receive a **Successful** Status like what is shown below.

Date	Schedule Name	Status
2019-08-09 11:14:21	Manual Execution	Successful

4

Celonis Intelligent Business Cloud

Creating Activity Table (Transformations)

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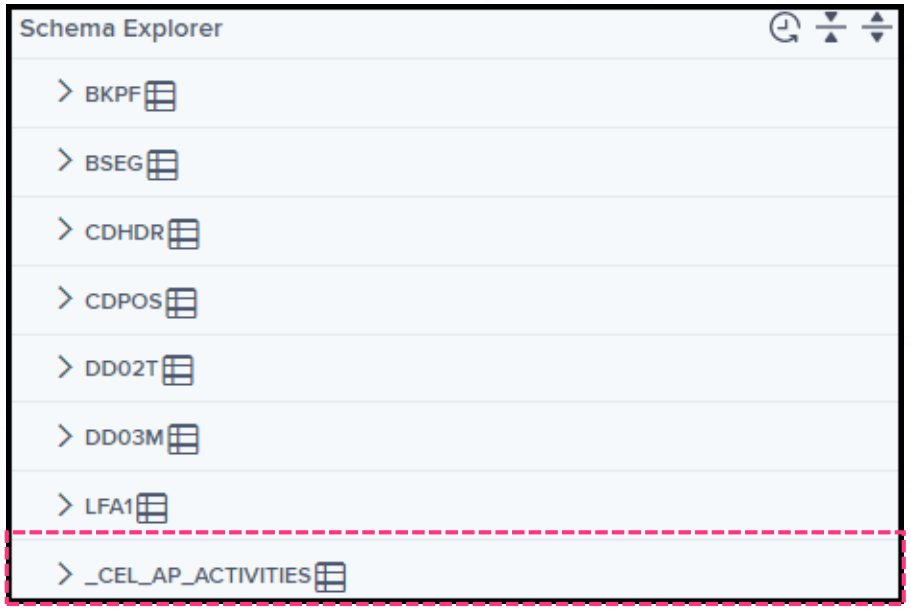
Creating Activity Table (Transformations)

Create Table: Activity Table

1 Create a **New Transformation** to add the activity table.


```
DROP TABLE IF EXISTS _CEL_AP_ACTIVITIES;

CREATE TABLE _CEL_AP_ACTIVITIES(
            "_CASE_KEY" VARCHAR (50),
            "_ACTIVITY" VARCHAR (50),
            "_EVENTTIME" DATETIME,
            "_SORTING" INT)
            ;
```



Once you've created the Activity Table, Save and refresh the Transformation page and the new _CEL_AP_ACTIVITIES table will be added.

5

Celonis Intelligent Business Cloud

Adding an Activity

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Adding an Activity

Name Section: *Add Activity: Activity Name*

Please note the following throughout this section:

1. You will have to create a **New Transformation** for each activity. The name can be found as the header of each section.
2. **DO NOT** copy and paste the code as the syntax conversion from PowerPoint/PDF to the IBC is not accurate.
3. Everyone codes differently, so your Vertica SQL may look slightly different. Please make sure the logic is the same.

Adding an Activity

Add Activity: Vendor Creates Invoice

```
INSERT INTO _CEL_AP_ACTIVITIES("_CASE_KEY","_ACTIVITY","_EVENTTIME","_SORTING")

SELECT DISTINCT
          "BSEG"."MANDT"||"BSEG"."BUKRS"||"BSEG"."BELNR"||"BSEG"."GJAHR"||"BSEG"."BUZEI" AS "_CASE_KEY",
          'Vendor creates invoice' AS "_ACTIVITY",
          "BKPF"."BLDAT" AS "_EVENTTIME",
          0 AS "_SORTING"

FROM "BSEG"
JOIN "BKPF" ON
          "BSEG"."MANDT"="BKPF"."MANDT"
          AND "BSEG"."BUKRS"="BKPF"."BUKRS"
          AND "BSEG"."BELNR"="BKPF"."BELNR"
          AND "BSEG"."GJAHR"="BKPF"."GJAHR"

WHERE "BSEG"."BSCHL" = '31'
          AND "BKPF"."BLDAT" IS NOT NULL;
```

Output: 85951 rows affected

Adding an Activity

Add Activity: Enter Invoice in SAP

```
INSERT INTO _CEL_AP_ACTIVITIES("_CASE_KEY","_ACTIVITY","_EVENTTIME","_SORTING")

SELECT DISTINCT
           "BSEG"."MANDT"||"BSEG"."BUKRS"||"BSEG"."BELNR"||"BSEG"."GJAHR"||"BSEG"."BUZEI" AS "_CASE_KEY",
           'Enter invoice in SAP' AS "_ACTIVITY",
           CAST("BKPF"."CPUDT" AS DATE) + CAST("BKPF"."CPUTM" AS TIME) AS "_EVENTTIME",
           10 AS "_SORTING"

FROM "BSEG"
JOIN "BKPF" ON
           "BSEG"."MANDT"="BKPF"."MANDT"
           AND "BSEG"."BUKRS"="BKPF"."BUKRS"
           AND "BSEG"."BELNR"="BKPF"."BELNR"
           AND "BSEG"."GJAHR"="BKPF"."GJAHR"

WHERE "BSEG"."BSCHL" = '31'
           AND "BKPF"."CPUDT" IS NOT NULL
           AND "BKPF"."CPUTM" IS NOT NULL;
```

Output: 85950 rows affected

Adding an Activity

Add Activity: Set or Remove Payment Block

```
INSERT INTO _CEL_AP_ACTIVITIES("_CASE_KEY","_ACTIVITY","_EVENTTIME","_SORTING")

SELECT DISTINCT
                "BSEG"."MANDT"||"BSEG"."BUKRS"||"BSEG"."BELNR"||"BSEG"."GJAHR"||"BSEG"."BUZEI" AS "_CASE_KEY",
                CASE
                                WHEN "CDPOS"."VALUE_NEW" IS NULL THEN 'Remove payment block'
                                WHEN "CDPOS"."VALUE_OLD" IS NULL THEN 'Set payment block'
                END AS "_ACTIVITY",
                CAST("CDHDR"."UDATE" AS DATE) + CAST("CDHDR"."UTIME" AS TIME) AS "_EVENTTIME",
                CASE
                                WHEN "CDPOS"."VALUE_NEW" IS NULL THEN 30
                                WHEN "CDPOS"."VALUE_OLD" IS NULL THEN 20
                END AS "_SORTING"

FROM "BSEG"
JOIN "BKPF" ON
                "BSEG"."MANDT"="BKPF"."MANDT"
                AND "BSEG"."BUKRS"="BKPF"."BUKRS"
                AND "BSEG"."BELNR"="BKPF"."BELNR"
                AND "BSEG"."GJAHR"="BKPF"."GJAHR"

JOIN "CDPOS" ON
                "CDPOS"."TABKEY" = "BSEG"."MANDT"||"BSEG"."BUKRS"||"BSEG"."BELNR"||"BSEG"."GJAHR"||"BSEG"."BUZEI"
                AND "CDPOS"."TABNAME"='BSEG'

JOIN "CDHDR" ON
                "CDPOS"."MANDANT"="CDHDR"."MANDANT"
                AND "CDPOS"."OBJECTCLAS"="CDHDR"."OBJECTCLAS"
                AND "CDPOS"."OBJECTID"="CDHDR"."OBJECTID"
                AND "CDPOS"."CHANGENR"="CDHDR"."CHANGENR"

WHERE BSEG.BSCHL = '31'
    AND (CDPOS.VALUE_NEW IS NULL OR CDPOS.VALUE_OLD IS NULL)
    AND CDPOS.FNAME = 'ZLSPR' ;
```

Output: 1653 rows affected

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Adding an Activity

Add Activity: Clear Invoice

```
INSERT INTO _CEL_AP_ACTIVITIES("_CASE_KEY","_ACTIVITY","_EVENTTIME","_SORTING")

SELECT DISTINCT
          "BSEG"."MANDT"||"BSEG"."BUKRS"||"BSEG"."BELNR"||"BSEG"."GJAHR"||"BSEG"."BUZEI" AS "_CASE_KEY",
          'Clear Invoice' AS "_ACTIVITY",
          "BSEG"."AUGDT" AS "_EVENTTIME",
          40 AS "_SORTING"

FROM "BSEG"
JOIN "BKPF" ON
          "BSEG"."MANDT"="BKPF"."MANDT"
          AND "BSEG"."BUKRS"="BKPF"."BUKRS"
          AND "BSEG"."BELNR"="BKPF"."BELNR"
AND "BSEG"."GJAHR"="BKPF"."GJAHR"

WHERE "BSEG"."BSCHL" = '31'
     AND "BSEG"."AUGDT" IS NOT NULL;
```

Output: 59865 rows affected

Adding an Activity

Add Activity: Due Date Expired

```
INSERT INTO _CEL_AP_ACTIVITIES("_CASE_KEY","_ACTIVITY","_EVENTTIME","_SORTING")

SELECT DISTINCT
          "BSEG"."MANDT"||"BSEG"."BUKRS"||"BSEG"."BELNR"||"BSEG"."GJAHR"||"BSEG"."BUZEI" AS "_CASE_KEY",
          'Due date expired' AS "_ACTIVITY",
          CASE
          WHEN "BSEG"."ZBD3T" > 0 THEN "BSEG"."ZBD3T" + "BSEG"."ZFBDT"
          WHEN "BSEG"."ZBD2T" > 0 THEN "BSEG"."ZBD2T" + "BSEG"."ZFBDT"
          WHEN "BSEG"."ZBD1T" > 0 THEN "BSEG"."ZBD1T" + "BSEG"."ZFBDT"
          ELSE "BSEG"."ZFBDT" END AS "_EVENTTIME",
          50 AS "_SORTING"

FROM "BSEG"
JOIN "BKPF" ON
          "BSEG"."MANDT"="BKPF"."MANDT"
          AND "BSEG"."BUKRS"="BKPF"."BUKRS"
          AND "BSEG"."BELNR"="BKPF"."BELNR"
          AND "BSEG"."GJAHR"="BKPF"."GJAHR"

WHERE "BSEG"."BSCHL" = '31'
          AND "BSEG"."ZFBDT" IS NOT NULL;
```

Output: 85914 rows affected

6

Celonis Intelligent Business Cloud

Setting Up the Initial Data Model

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Setting up the Initial Data Model

1 Once you have created all the new activities, you should have something like the following:

TRANSFORMATIONS	INFO	ENABLED	PUBLISHED
Creating Table: Activity Table		Yes	No
Add Activity: Clear Invoice		Yes	No
Add Activity: Enter invoice in SAP		Yes	No
Add Activity: Vendor Creates Invoice		Yes	No
Add Activity: Set or Remove Payment Block		Yes	No
Add Activity: Due Date Expired		Yes	No

2 Press the **Execute Data Job** button on the top right. Make sure to select **Full Load** before clicking **Execute Selection**.

3 The Data job will now run. Please be patient until the **Status** changes to Successful

Date	Schedule Name	Status
2019-08-13 09:38:38	Manual Execution	Running

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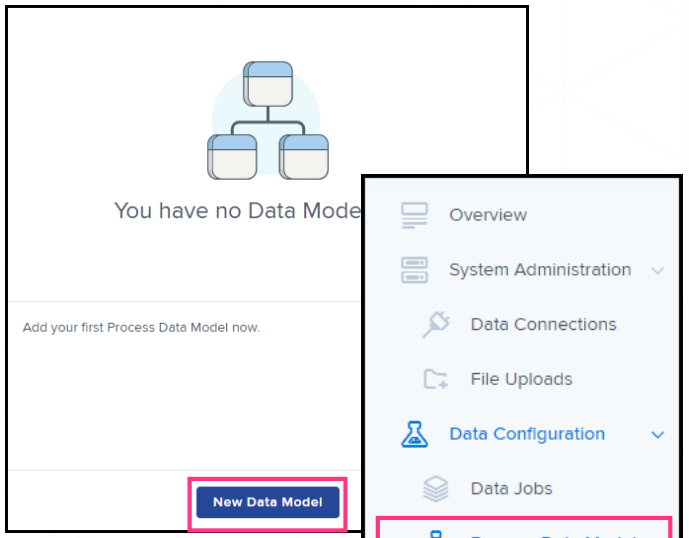
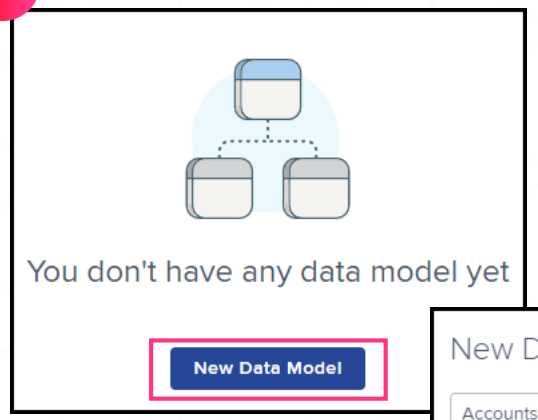
Setting up the Initial Data Model

4 To create the Data Model, you can click **New Data Model** from the Overview page *or* click on **Process Data Models** on the left-hand side.

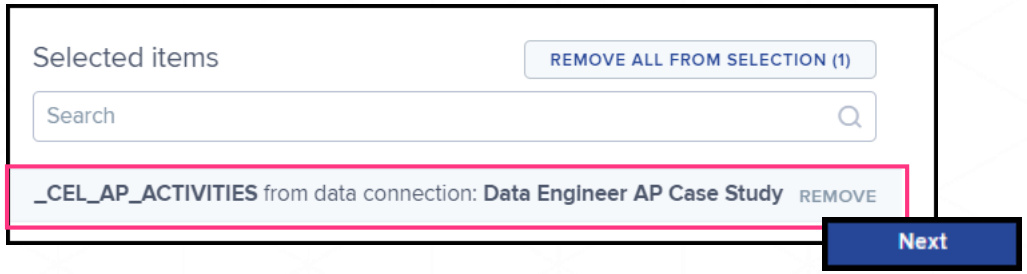


5 Create a **New Data** Model, name it Accounts **Payable,** and press **Save.**

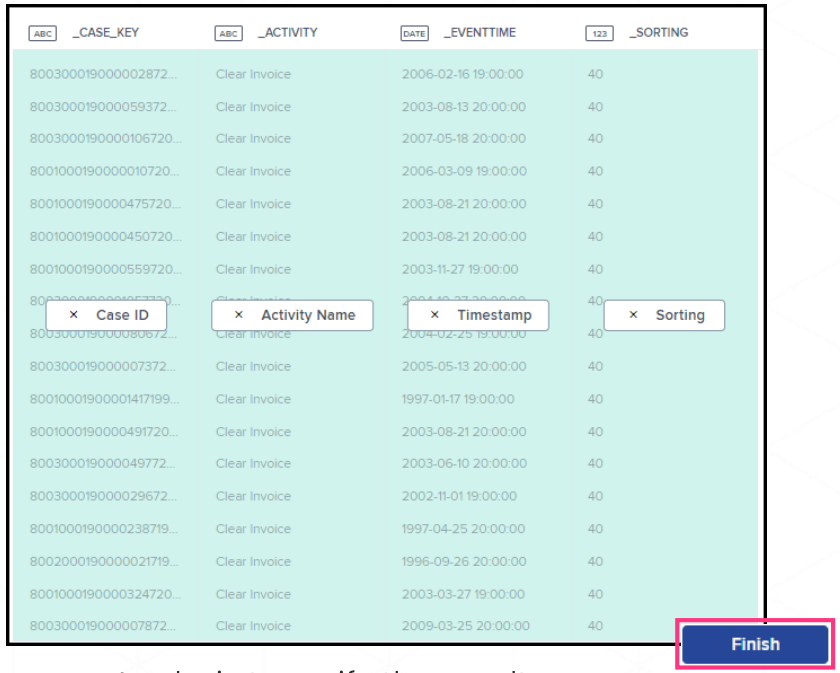


Setting up the Initial Data Model

6 Select Activity Table and press **Next**.



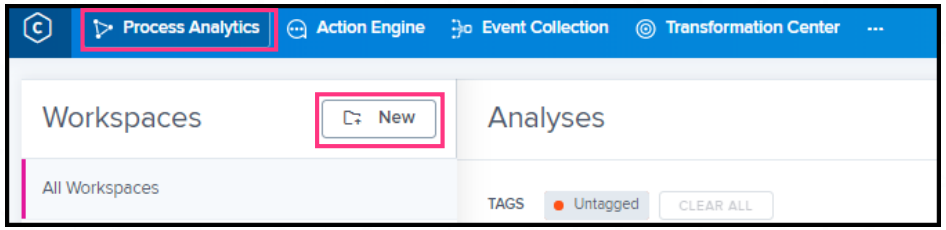
7 Select the _CEL_AP_ACTIVITES as the Activity Table and follow the instructions in the IBC and configure the **Activities Table**.



8 **Force Complete Reload** your data model and proceed to create a new Analysis to verify the results.

Setting up the Initial Data Model

8 Once the Activity Table has been configured, create a new Analysis by clicking on the **Process Analytics** tab, and **New** next to Workspaces.



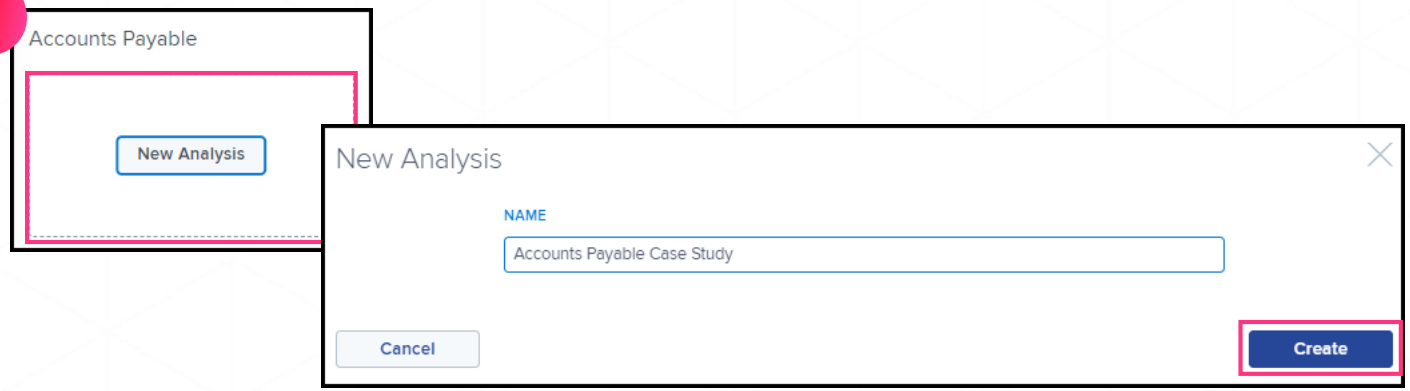
9 Select the **Accounts Payable** Data Model and press **Connect.**

Setting up the Initial Data Model

6 Name the new Workspace “Accounts Payable” and click **Create.**

Create a **New Analysis** within the Workspace you created. Name the New Analysis “Accounts payable Case Study and click **Create.**

7



8 Open the new Analysis and Create a new **Process Explorer.**
*You can also create a **New App** and drag a Process Explorer onto it.*

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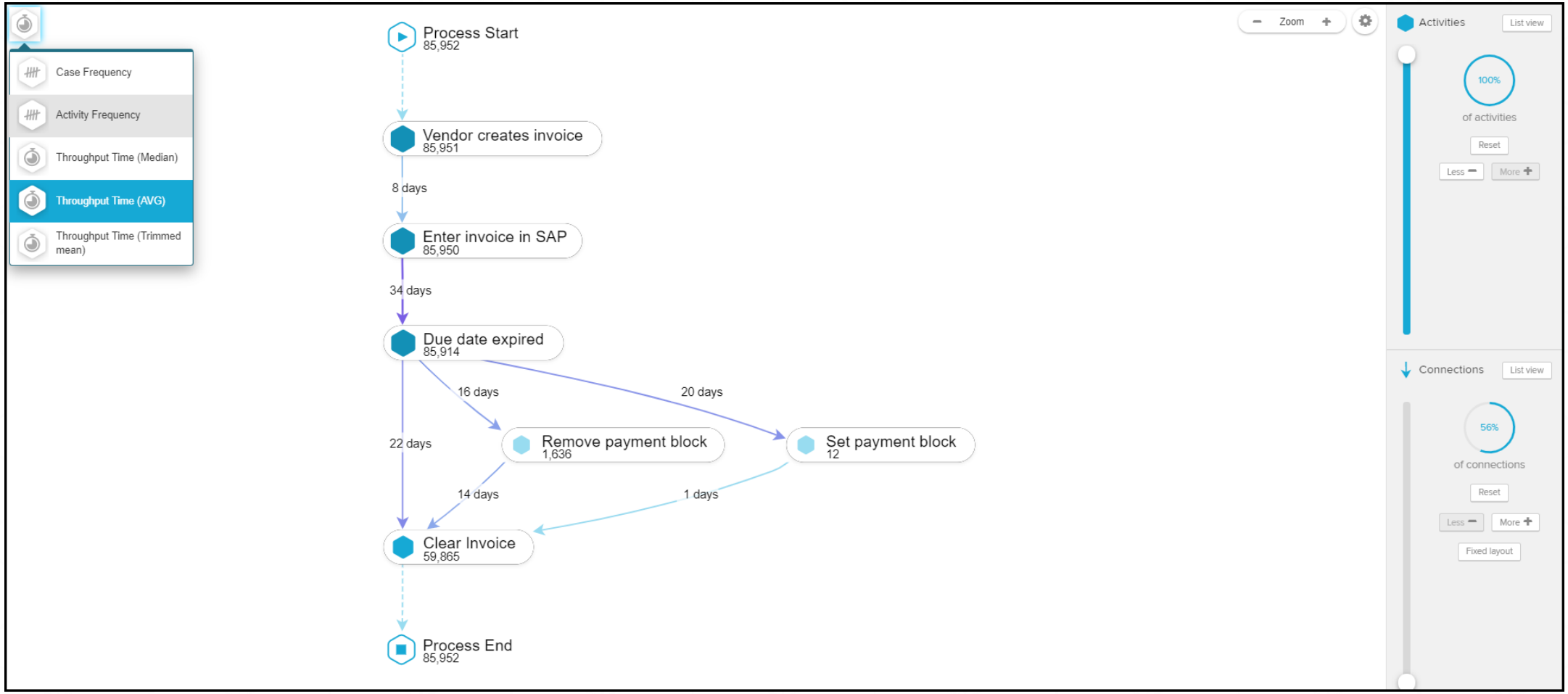
Setting up the Initial Data Model



9 Your Process Explorer should be the same as the one above. Remember, the KPI of the explorer can be changed on the top left-hand side.

7

Celonis Intelligent Business Cloud

Extending the Data Model

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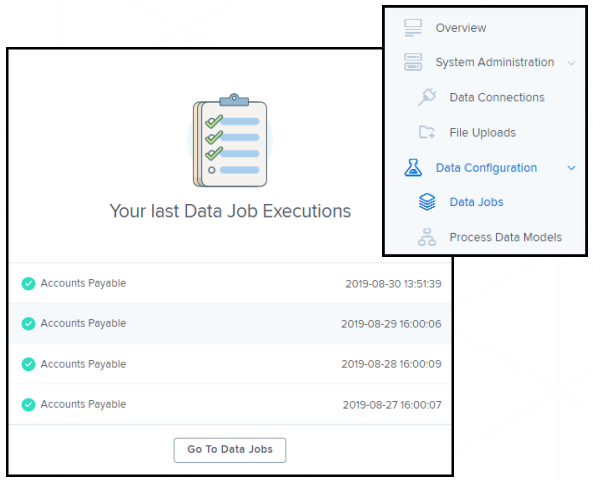
Extending the Data Model

1 Like adding an activity, you will have to create new views using the code shown on the next slides.



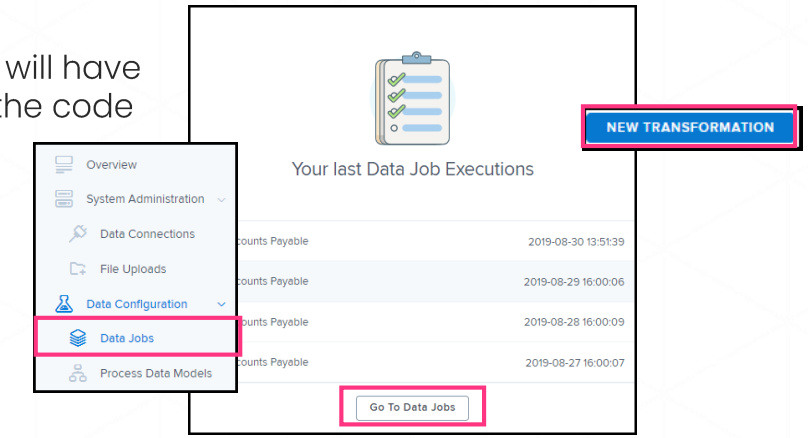
2 Press the **Execute Data Job** button on the top right. Make sure to select **Full Load** before clicking **Execute Selection**.

3 The Data job will now run. Please be patient until the **Status** changes to Successful

Date	Schedule Name	Status
2019-08-13 09:38:38	Manual Execution	Running

Extending the Data Model

1. Like adding an activity, you will have to create new views using the code provided.



Create Table: AP_BSEG

```
DROP TABLE IF EXISTS "AP_BSEG";
CREATE TABLE "AP_BSEG" AS
SELECT DISTINCT
          "BSEG".*, "BSEG"."MANDT"||"BSEG"."BUKRS"||"BSEG"."BELNR"||"BSEG"."GJAHR"||"BSEG"."BUZEI" AS "_CASE_KEY"
FROM "BSEG"
JOIN "BKPF" ON
          "BSEG"."MANDT"="BKPF"."MANDT"
          AND "BSEG"."BUKRS"="BKPF"."BUKRS"
          AND "BSEG"."BELNR"="BKPF"."BELNR"
          AND "BSEG"."GJAHR"="BKPF"."GJAHR"
WHERE "BSEG"."BSCHL" = '31';
```

Extending the Data Model

Create Table: AP_BKPF

```
DROP TABLE IF EXISTS "AP_BKPF";
CREATE TABLE"AP_BKPF" AS
SELECT DISTINCT
           BKPF.*
FROM "BKPF"
JOIN "BSEG" ON
           "BSEG"."MANDT"="BKPF"."MANDT"
           AND "BSEG"."BUKRS"="BKPF"."BUKRS"
           AND "BSEG"."BELNR"="BKPF"."BELNR"
           AND "BSEG"."GJAHR"="BKPF"."GJAHR"
WHERE "BSEG"."BSCHL" = '31';
```

Create Table: AP_LFA1

```
DROP TABLE IF EXISTS "AP_LFA1";
CREATE TABLE "AP_LFA1" AS
SELECT DISTINCT
           LFA1.*
FROM "LFA1"
JOIN "BSEG" ON
           "BSEG"."MANDT"="LFA1"."MANDT"
           AND "BSEG"."LIFNR"="LFA1"."LIFNR"
WHERE "BSEG"."BSCHL" = '31';
```

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Extending the Data Model

?

Why do we have to replicate the tables?

Because sometimes the database is messy, we want to make sure we're extracting the Distinct data from each of required tables so that we can produce clean and accurate information.

Can we create Views instead of Tables?

Yes, you can create Views instead of Tables. For additional practice, try creating both!

2 Press the **Execute Data Job** button on the top right. Make sure to select **Full Load** before clicking **Execute Selection**.

3 The Data job will now run. Please be patient until the **Status** changes to Successful

Date	Schedule Name	Status
2019-08-13 09:38:38	Manual Execution	Running

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8

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Finalizing the Data Model

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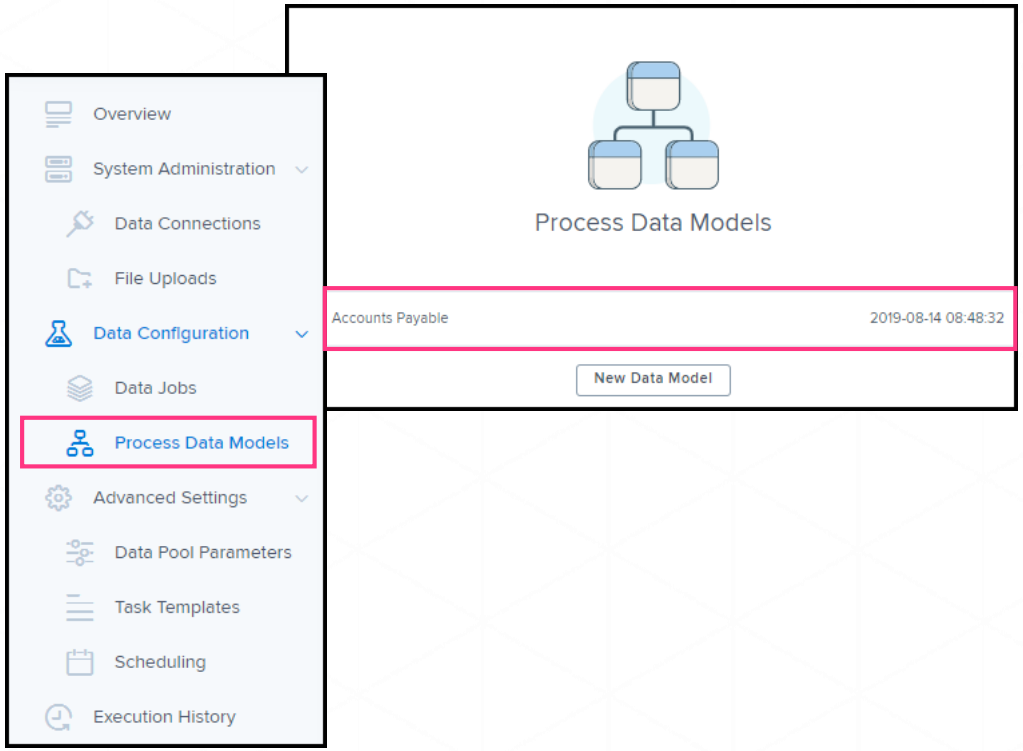
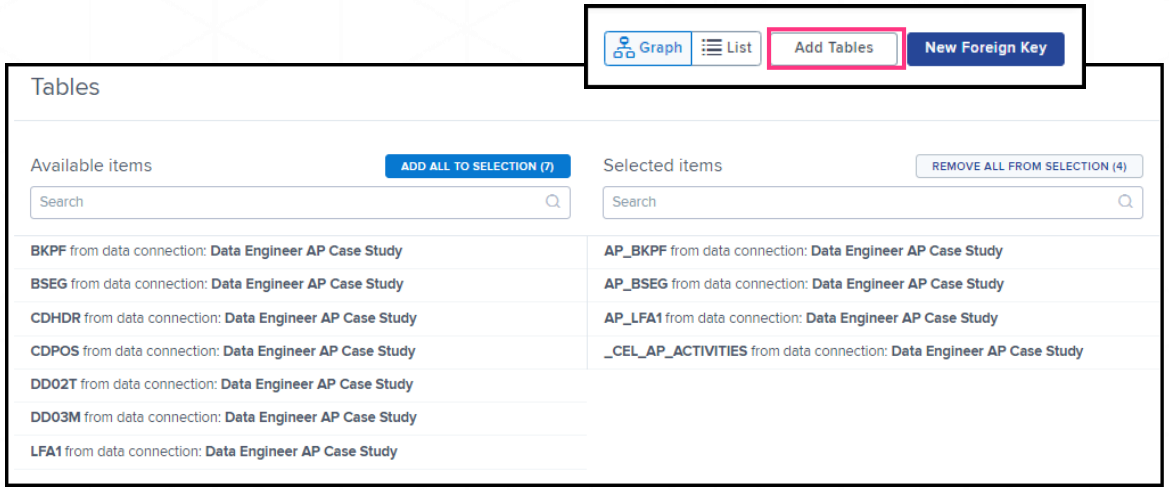
Finalizing the Data Model

1 Revisit the **Accounts** Payable data model that was created earlier by going to the Overview page *or* click on **Process Data Models** on the left-hand side.



2 Click on **Add Tables** and add the newly created views onto the model.



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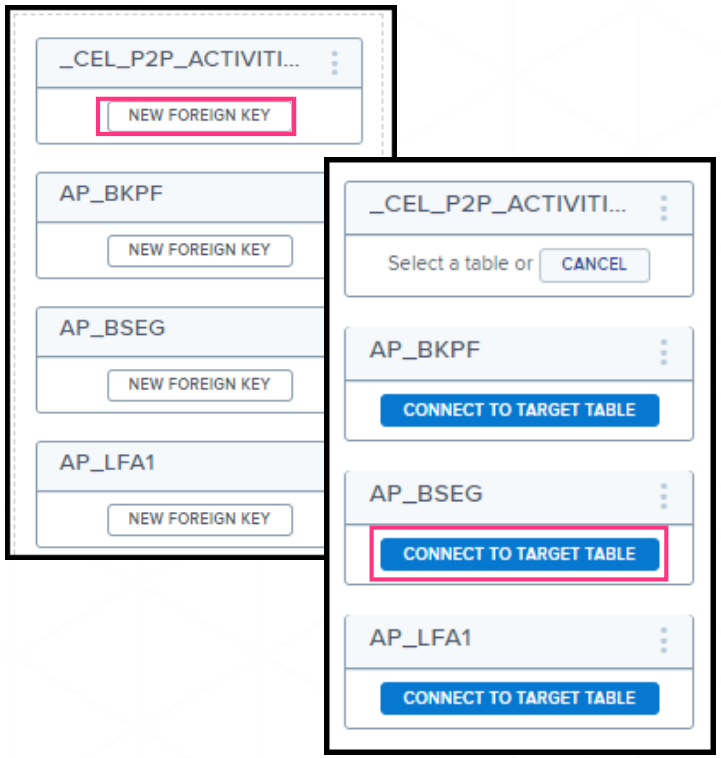
Finalizing the Data Model

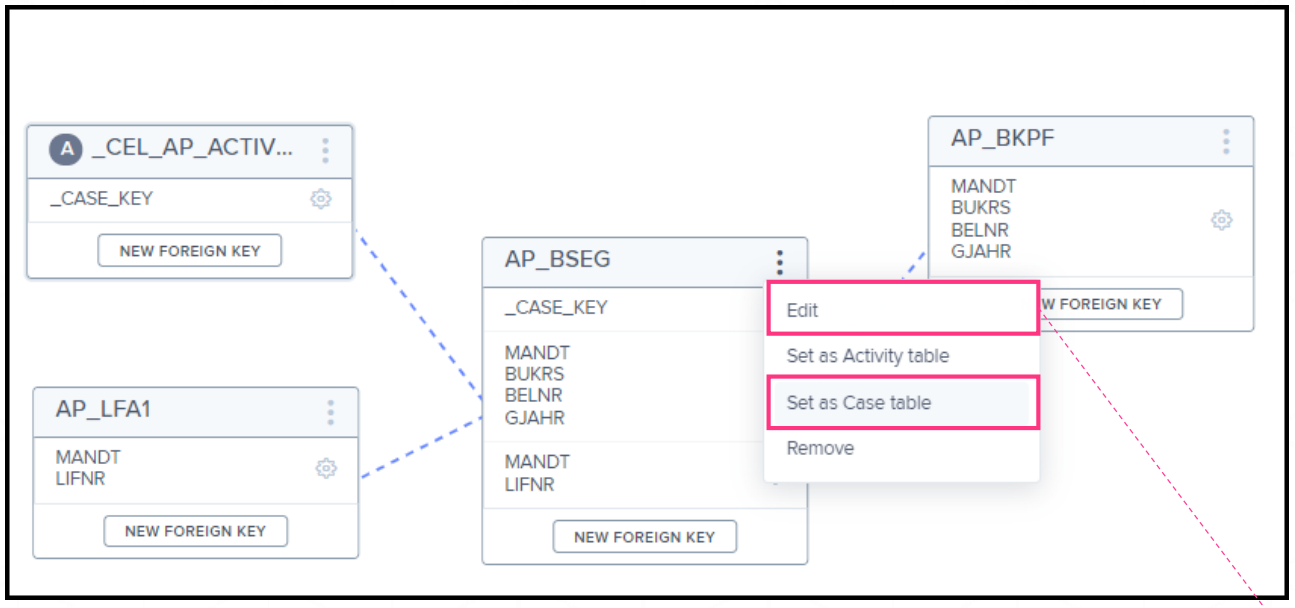
3 Once the new tables are added, establish the relationships between the tables by setting and connecting the foreign keys.



! You will need to establish a relationship between all the tables. Continue to the next page to see the fully connected model. You can use http://leanx.eu/en/sap/table/search as a resource.

Finalizing the Data Model

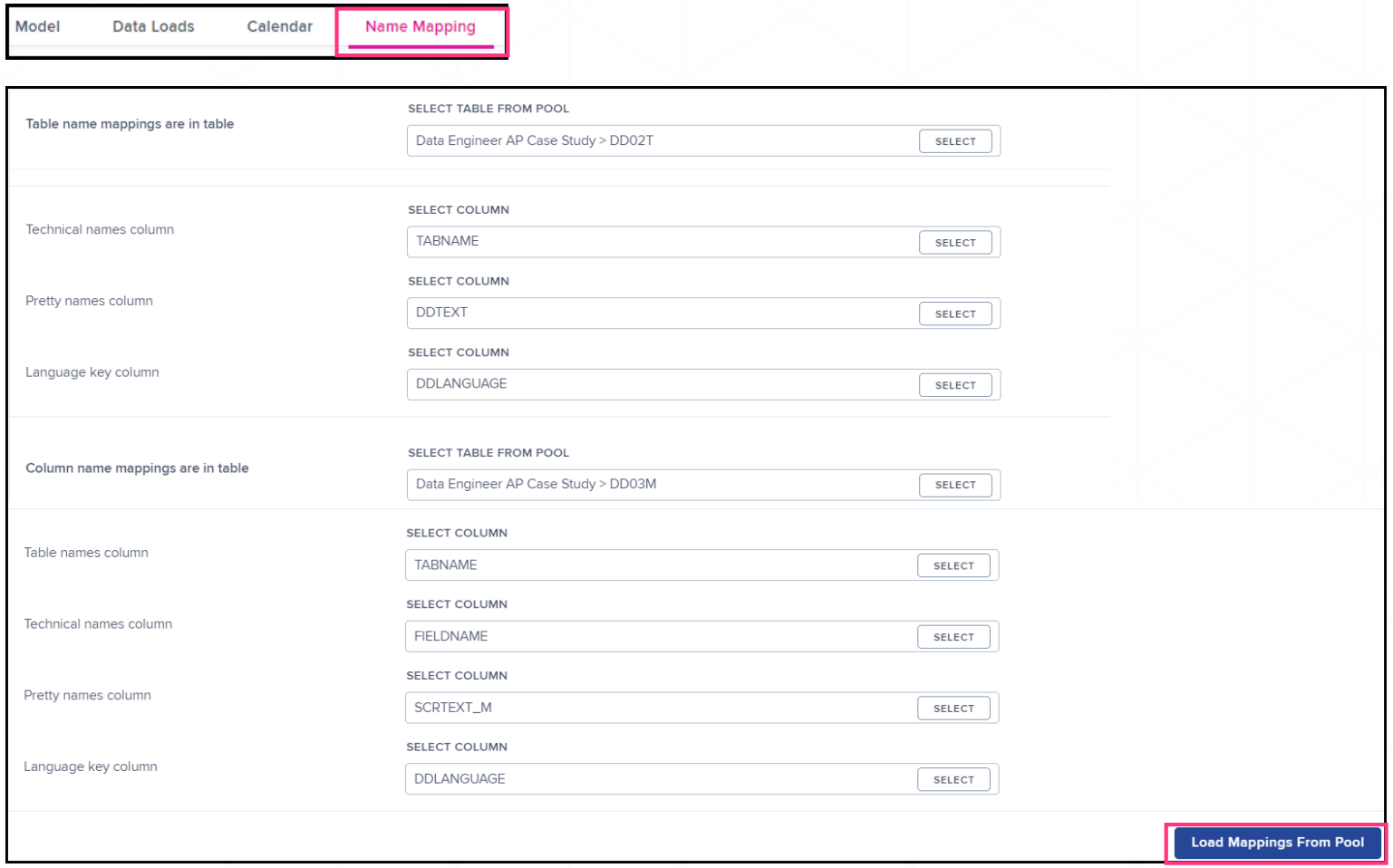
4 Your finalized Data Model should be like the one below. Remember to set your **Case Table**.



5 Edit your **Alias** by clicking **Edit**.

Finalizing the Data Model

6 Access **Name Mapping** and configure the fields with the information provided. After the fields are filled out, **Load Mappings From Pool**.



Finalizing the Data Model

7 Your Name Mapping results should match was is shown below.

Table name mappings

LANGUAGE KEY	NUMBER OF NAME MAPPINGS
DE	3 / 4
EN	3 / 4

Column name mappings

LANGUAGE KEY	NUMBER OF NAME MAPPINGS
DE	174 / 185
EN	177 / 185

8 **Force Complete Reload** your data model and proceed to the Analysis to verify the results.

9

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Analysis Question Answers

Note: There are multiple ways to produce the same answers!

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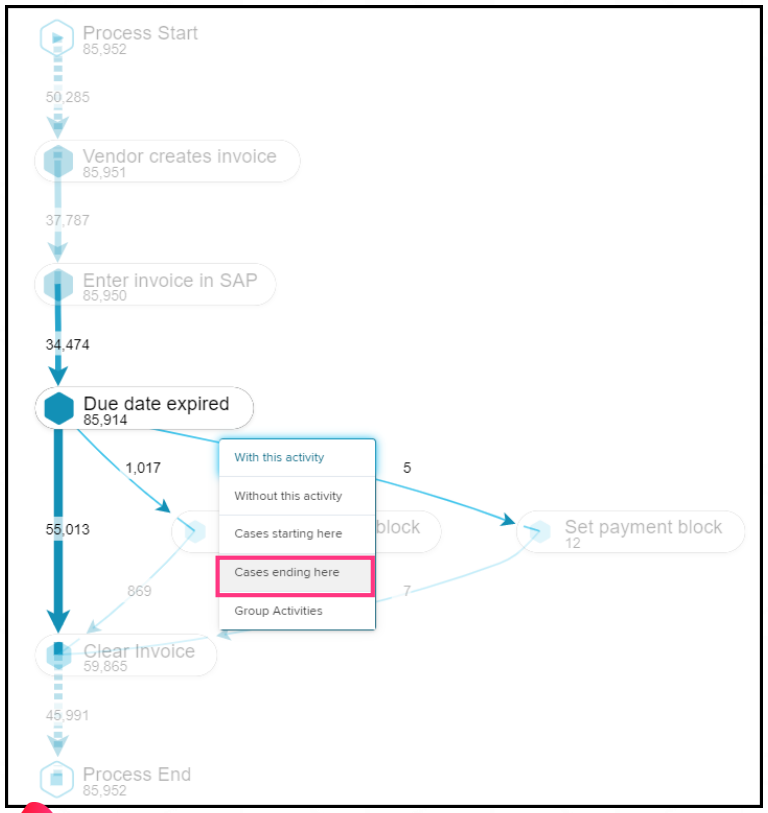
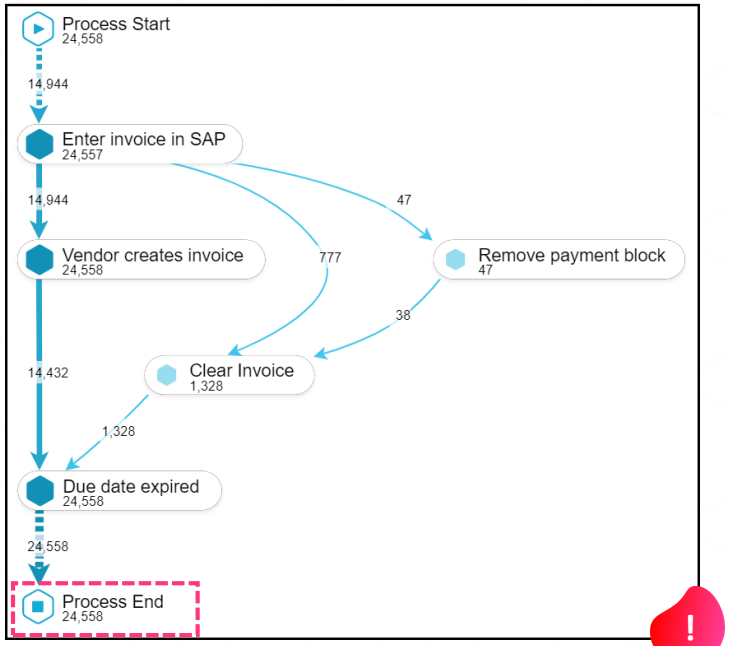
Analysis Questions

Determine the % and number of cases where the process ends with “Due date expired”.
Answer: 29%, 24,558 Cases



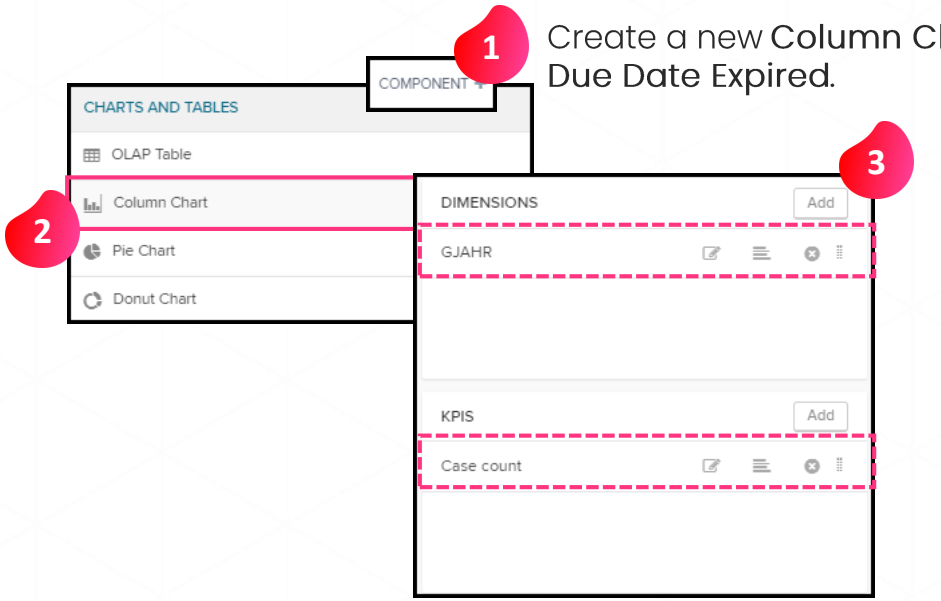
1 Right-click on the **Due date expired** and select **Case ending here**.



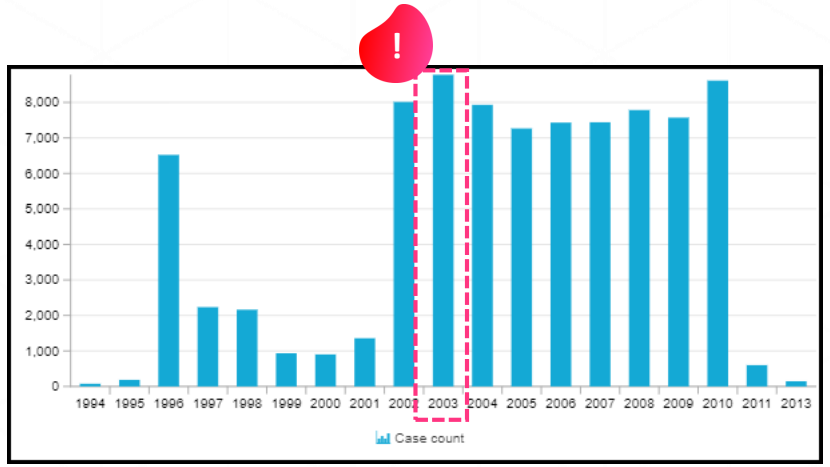
The number of cases can be found in the filtered process explorer. The % can be found on the top toolbar.

Analysis Questions

How many invoice items (cases) have been booked in per fiscal year (BKPF.GJAHR)? What is the year with the highest number of invoice items?
Answer: 2003

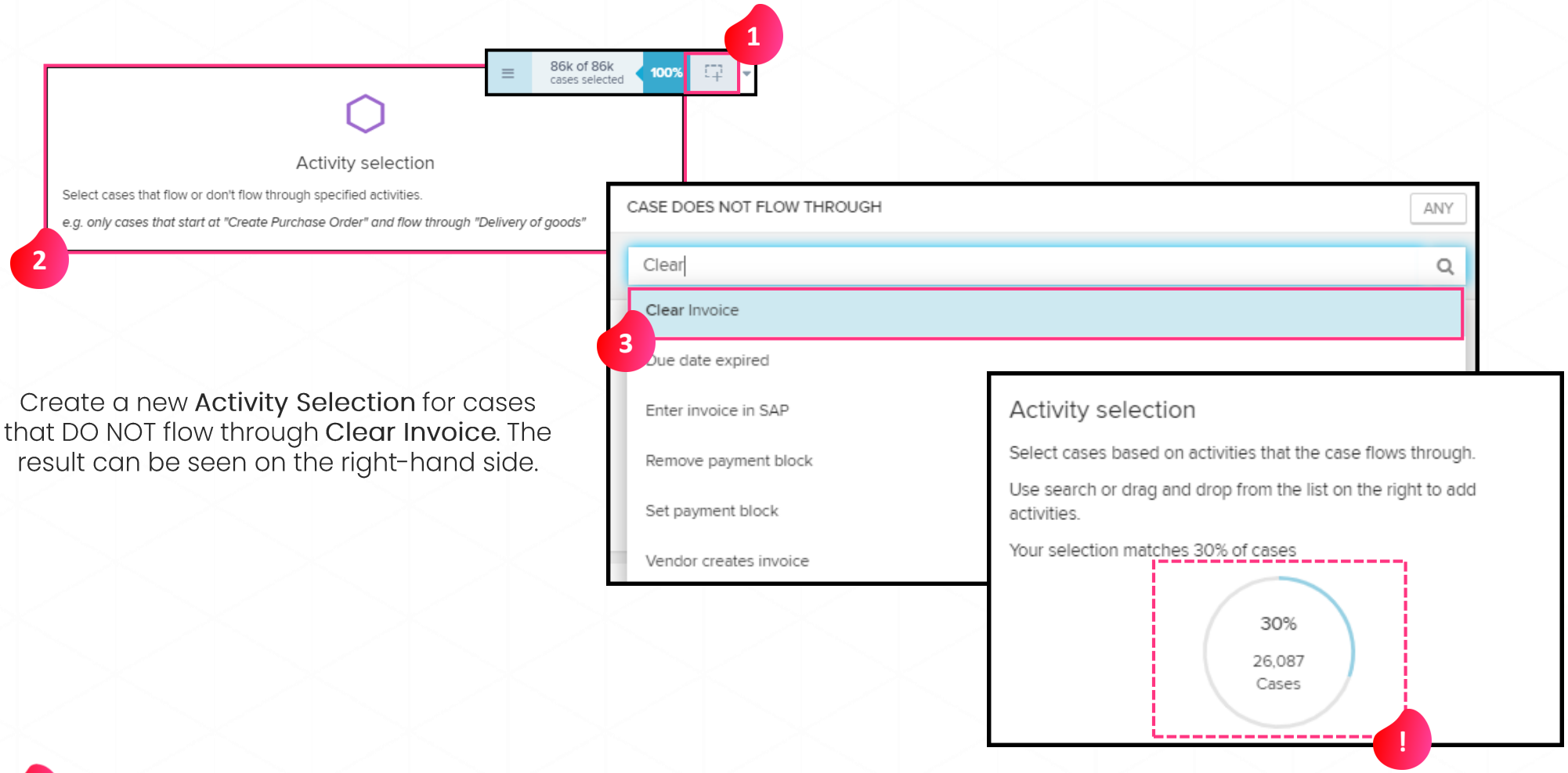


Create a new **Column Chart**, configure the correct **DIMENSIONS** and **KPIS**, and filter by the Activity **Due Date Expired**.



Analysis Questions

Calculate the percentage of cases that have not been cleared yet.
Answer: 30%



Create a new **Activity Selection** for cases that DO NOT flow through **Clear Invoice**. The result can be seen on the right-hand side.

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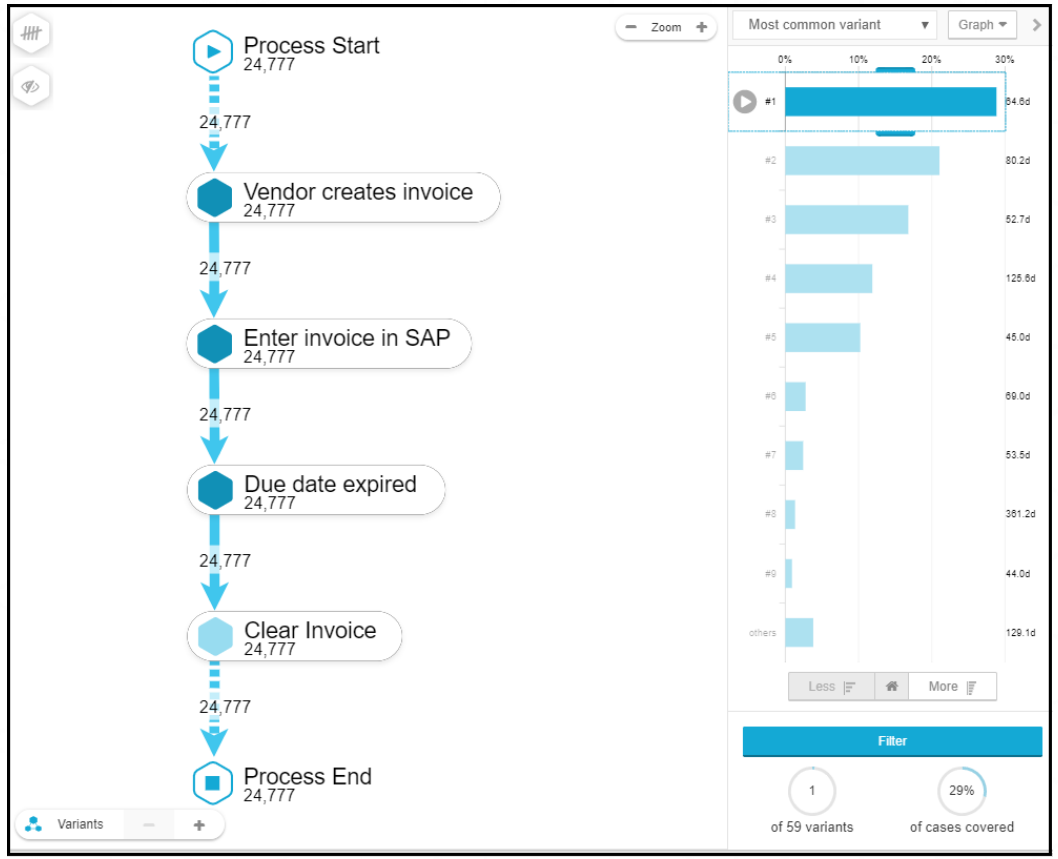
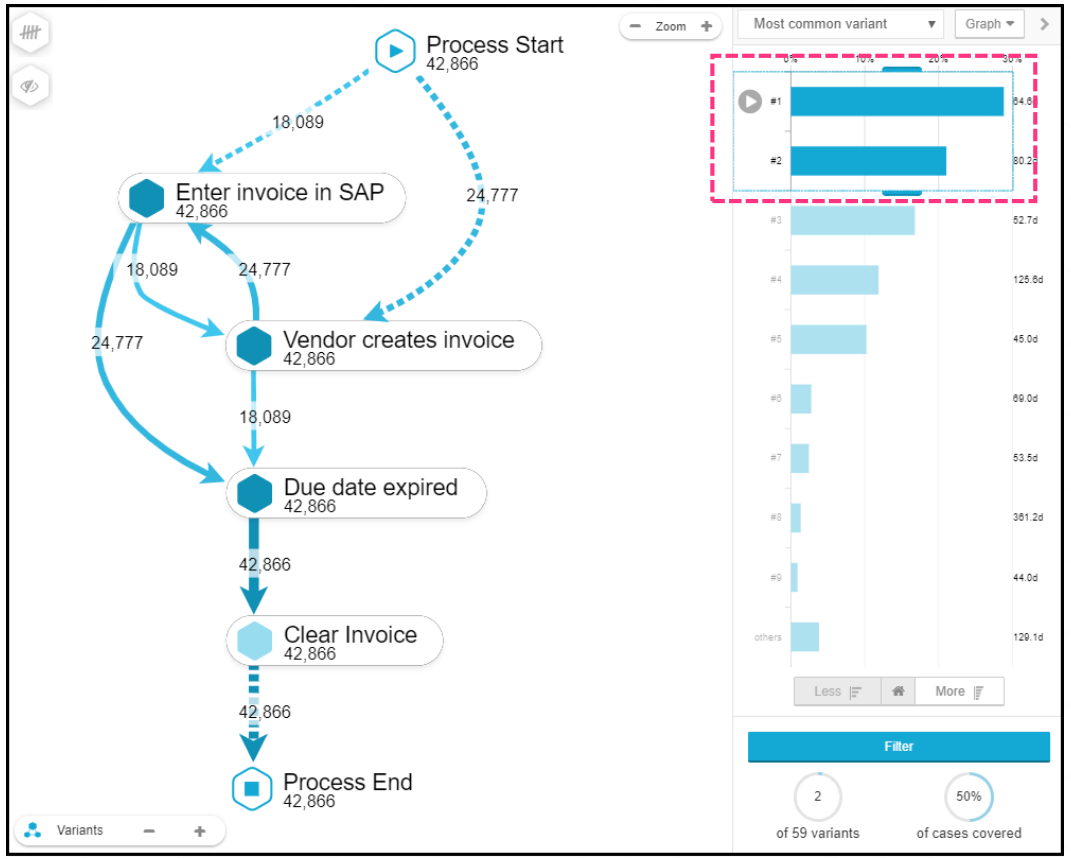
Analysis Questions

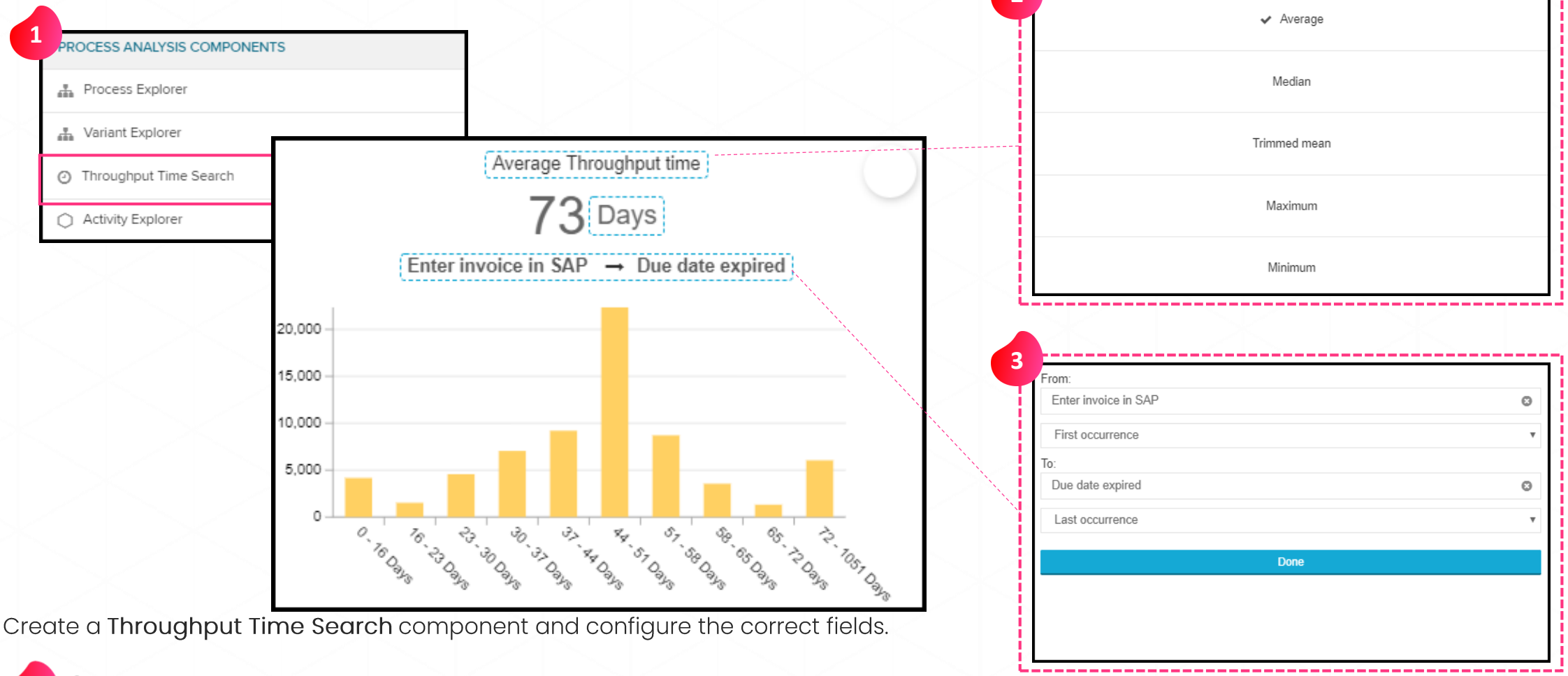
Select the first two variants on the Variant Explorer. What do you notice changes on the process flow?
Answer: The second variant shows that “Enter invoice in SAP” occurs before the “Vendor creates invoice”.





Analysis Questions

What is the average throughput time between Entering Invoice in SAP and Due Date Expired?
Answer: 73 Days



Create a **Throughput Time Search** component and configure the correct fields.