ANALYTICS IGNITION BOOSTER

TECHNICAL LEARNING WEEK 3

POWER BI- PART II

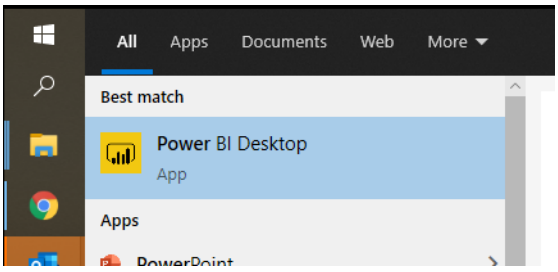
Time to complete: 30 min

Exercise: create a Data Model and a map visualization

Case description: visualization of available stock of part numbers at the DCs on a map

Contents

☑ Open PowerBI desktop.
Then open your Power BI file from last week. File => Open report.
You can start from your own Power BI report from last week (recommended) or download the solution file for last week's exercise ***w2_solution.pbix*** *available here. If you downloaded* ***w2_solution.pbix****, you need to do the steps in "Change data source" part before you can continue.*



Video tutorial: 00:00-03:00

Alternatively, just double click on a Power BI file and it will launch Power BI Desktop (as shown in the video). In the video, I have a folder where I saved both the Power BI report ***w2_solution.pbix*** and the data (two csv files we used in last week's exercise, *ool.csv*, *oc.csv*, and five new files we will be using this week).

Import data

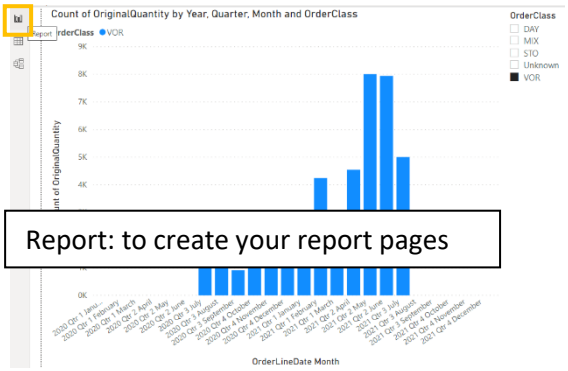
For this week's exercise, we have extracted the data from SML Data Hub for several warehouses. Even though the source systems are different from one warehouse to another, SML Data Hub provides normalized data so it looks the same. Each file is an extraction from a corresponding table in the SML Data Hub. The data are limited to a scope of certain part numbers to limit file size and ease the learning.

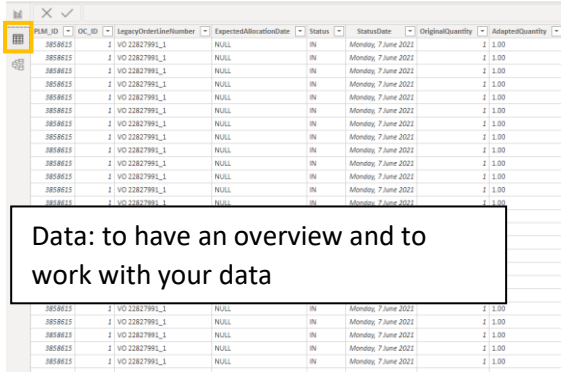
- ***loa (location address)*** *contains geo-coordinates (GPS latitude and longitude) of all LOC_ID (location)*
- ***loc (locations)*** *contains warehouse information identified by a unique LOC_ID key.*
- ***msq (main stock quantities)*** *contains inventory information for each of the PLM_ID (spare part at a location)*
- ***plm (part location master)*** *contains spart information specific to a location. The table is indexed with a PLM_ID unique for each pair (SP_ID, LOC_ID)*
- ***sp (spare part)*** *contains spare part id (e.g. 'VO 674534') correspondence to SP_ID key*

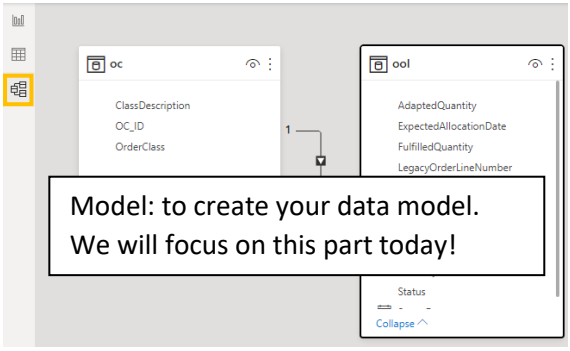
☑ Download all the csv files here.

Video tutorial: 03:00-05:55

☑ Let's start by going through our report from last week, to remember the structure within Power BI Desktop:

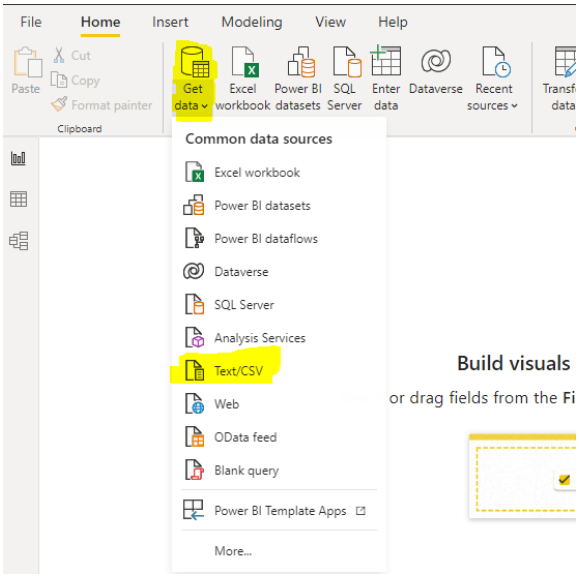






Video tutorial: 05:55-12:30

☑ In Power BI, use the 'Get data' button to import csv files. Import the csv files one by one. When importing files, you can just click "Load" for all the files except ***msq.csv***.



☑ Transform data in ***msq.csv*** file. We need to make sure that values in the field *AvailableStockQuantity* are correctly interpreted as numeric. It is a similar transformation as we did in last week's exercise. So if on your computer the values in this column are in text format, you need to replace dot by comma and then convert data type to number (I selected decimal number). Do you remember how we did it in last week's exercise? If you are unsure, check the video tutorial for this week or last week's tutorials.

Model data

Video tutorial: 12:30-16:50

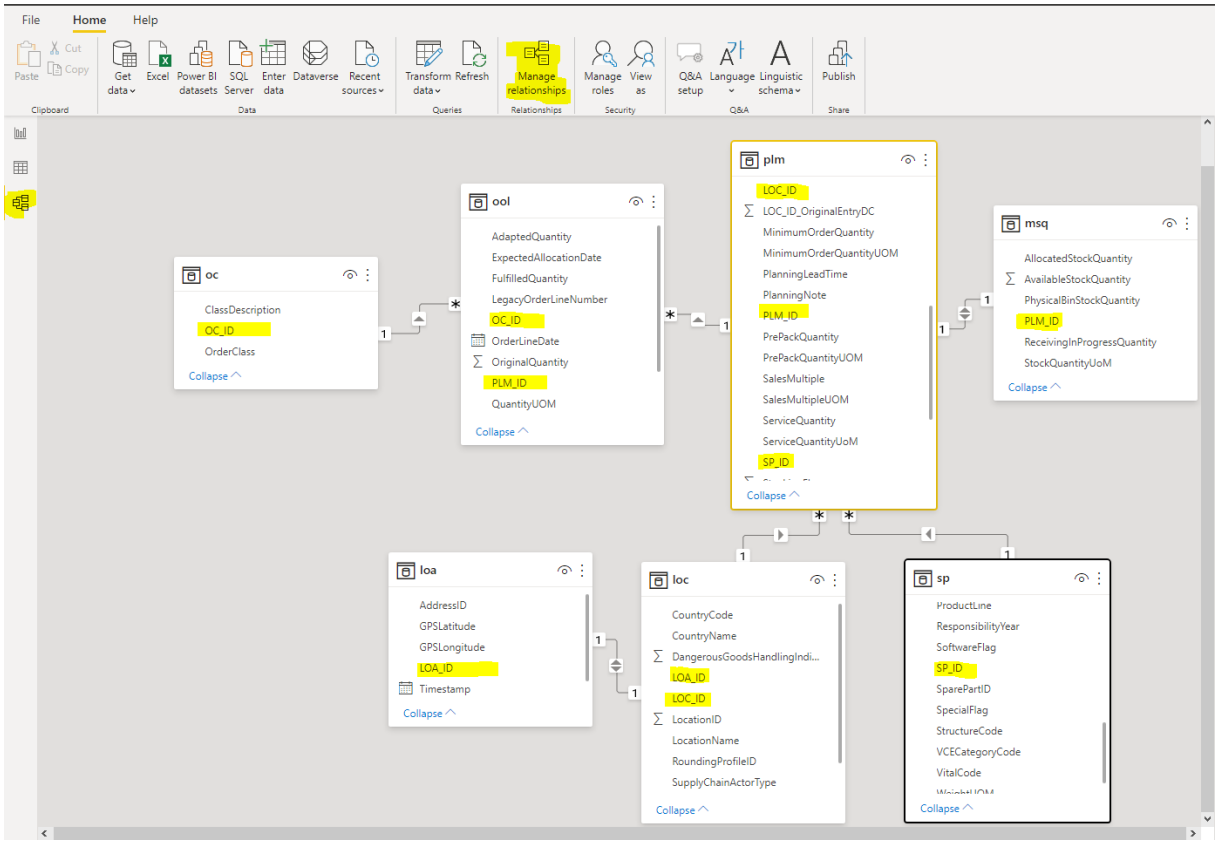
Getting the Data Model right is the most important part for your Power BI report! Depending on how your data is structured, it can be quite tricky at times. In this exercise it will be very straight forward, and the model will be created automatically. This is because the data tables we are using contains so-called "keys", columns with the id's that can be used to connect the data from different tables (it Power BI language it is called "create relationships" between tables). If you intend to keep learning Power BI further, we recommend investing some time into understanding relationships in Power BI. Some good sources:

- ✓ *Video : https://www.youtube.com/watch?v=-4ybWQSRcOY*
- ✓ *Docs : https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-create-and-manage-relationships*

Back to our tutorial! This part is a key step of your Power BI report to make the data visualization correct.

- ☑ Click on the *'Model'* view button (third button of the vertical task bar on the left) and build correct relationships between your table. In this case, Power BI will create them automatically (and all of them will be correct!) using the common column names. Spend a few minutes to investigate your Data Model. Hover over the relationships to see which key were used. You can also see the symbols that indicate the type of relationships, it is called cardinality (one to many, many to one, one to one, many to many). Watch the video mentioned previoulsy during 04:18-05:36 to learn about cardinality. You can edit relationships by either:
  - use the button *'Manager relationships'*…or
  - …Double-click on the links between table

2021-10-04 update: if your Model view does not show all the tables you have loaded, try to restart your Power BI Desktop application: close it and turn it back on. It is a bug in Power BI that some users encounter.



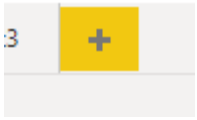
Please note that ool table (Outbound Order Lines) here only contains data for CDC Gent. It is the data we used in last week's exersise. We are not using order lines data this week's task, but wanted to give you heads up in case you want to explore the data on your own. Next week we will provide the ool table for all warehouses, please be patient ☺

Build interactive map

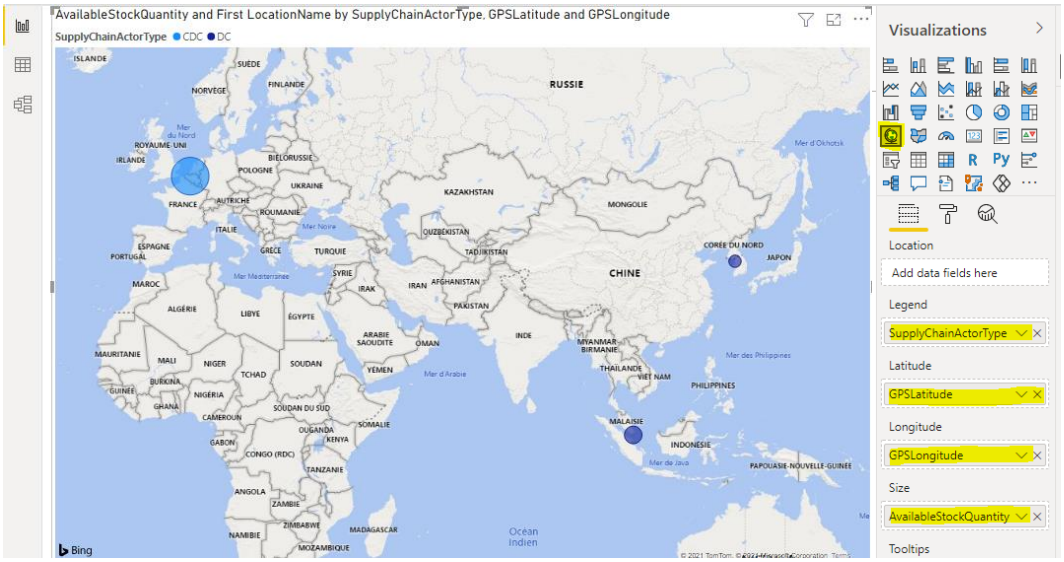
Video tutorial: from 16:50

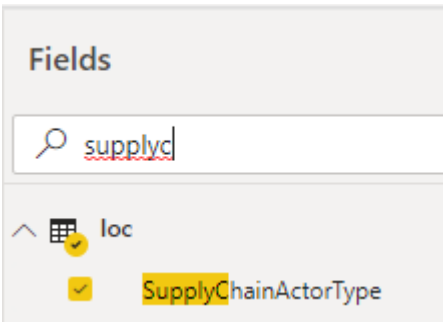
We would like to visualize on a map available stock for part numbers at all locations (currently available in SML Data Hub)

☑ Let's swith from Model part to Report part inPower BI. If needed, create a new sheet by clicking on the *'+'* button on the bottom left. You can rename it afterward with a right click on it.

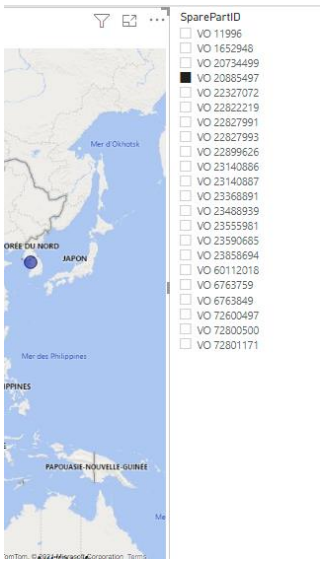


☑ Add the map visual into a new sheet and drag and drop fields as shown in picture below.
You might need to select "Don't summarize" option for GPS Latitude and Longitude.
TIPS! Since you know what fields are used in the visualization, the most efficient way to look for them among all the fields is by using serach functionality.

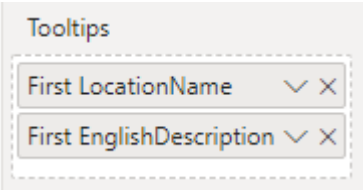




☑ Add a slicer for the *sparePartID* field so we can have interactivity on the map when we select a part. See the video tutorial for this or last week's tutorials for more details on how to add a slicer.



☑ In the Tooltips, you can add some fields to display more information when going over a marker of the map with the mouse.



When you change spart part ID selection, the map circle size and map zoom should change accordingly. If not, the relationships between the tables are not correct.

You are done with the exercise! Don't forget to submit your answers to the questions on the Booster page!

Change data source

If you downloaded *w2_solution.pbix* do the following before you start. If you work with your Power BI file from last week, you do not need to change data source!

- Make sure you have *oc.csv* and *ool.csv* files saved on your computer (link), see last week's tutorial
- Open *w2_solution.pbix*
- Go to Transform data (1) => Data source settings (2)
- Change Source (3) to location of *oc.csv* and *ool.csv* on your computer
- Refresh (4)