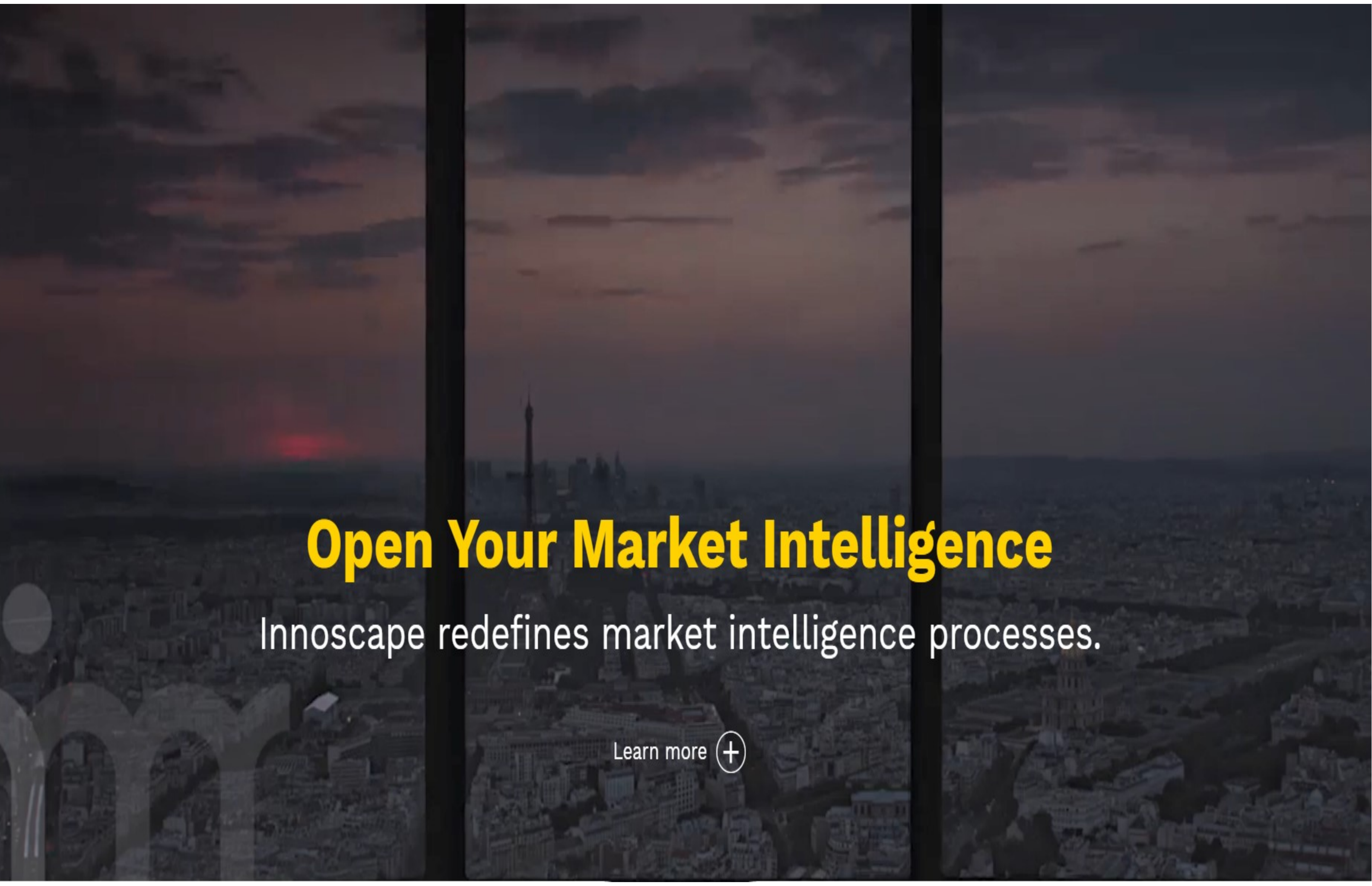


Internship Report

Student: Zeliang YAO
Tutor: Walid Gaaloul
Company: INNOSCAPE SAS
Period: 07/03/2018 – 14/09/2018

Acknowledgement

I have experienced a 6-month internship at INNOSCAPE SAS from March to September, with profession and passion. I want to thank them, who provided me this valuable internship opportunity, from which I learned not only solid professional skills, but also excellent qualities as a developer.

In this internship, firstly I want to thank CEO and my tutor of internship, Dimitar Draganov. His talent of leadership and humor left me a very deep impression. It’s also very rare for a CEO showing such an engineering professionalism. He is accessible, considerate and obliging for all the team members. I just remembered his patient guide when I began this internship. Without his teaching and guiding, I couldn’t get the essential knowledge for adapting the daily tasks and making progress rapidly. His careful concern and patient response also helped me a lot when I met problems.

I also want to thank the other teammates, LIU NA, SIDOINE KAKEUH FOSSO, ANTOAN HRISTOV, CAROLE PORTUGAL, JAMILA REJEB, PHILIPPE DE LAFAYE, they always give me a global view from structure and helps me a lot during my internship.

This internship not only allowed me to learn a lot of professional knowledge, but also gave me a preliminary understanding of my career.

I. Introduction

I.1 Introduction of the company

In the second year of Master in EFREI, all students are required to finish an internship of 6 months to combine theoretical knowledge with practical work, also, the internship allows us to broaden our horizons and it's an important step towards the career.

This year, I chose to join the company INNOSCAPE to finish my internship, I started my internship on March 7 and it finishes on September 14.

Founded two years ago, INNOSCAPE provides business intelligence services to our customers. From detailed and customized market monitoring at your fingertips to direct interaction with market experts worldwide, INNOSCAPE offers clients a variety of technologies and solutions that enable them to boost their market intelligence processes and innovate faster.

Team Members:

Some team members with me

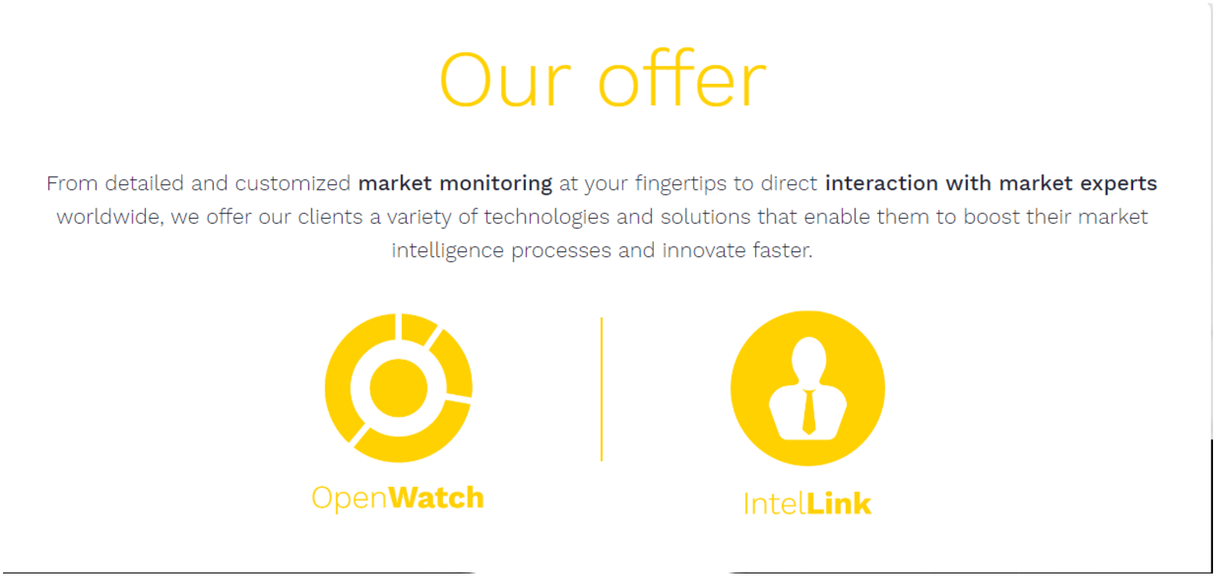
At present, we are 12, but then more people will join. Everyone was very friendly and enthusiastic. I was warmly welcomed on the first day of work. During this month, I have asked them so many questions about work, they all answered me with patience.

Working Environment:

Our office is located at 37-39 Rue Dareau, 75014, Paris

In a word, the working environment is comfortable, everyone will discuss together, solve the problem, the atmosphere is relaxed.

I.2 The service provided by INNOSCAPE



There are 2 type of service that INNOSCAPE offers:

Open Watch

Keep a constant watch on your market environment with customized open-data dashboards consultable online 24/7.

Our Data as a Service – DaaS solution is integrating the best available technologies for web data scraping, secured data storage and attractive and efficient graphical interface for dashboard design.
All data is vetted through consistency filters and by our team of analysts as needed.
We bring automation in a domain previously managed manually in most organizations. We bring standardization of KPIs storage and distribution methods.

It is then up to you to initiate the actions based on insights transparently shared across teams and geographies.

IntelLink

Reduce your time to market with critical insights from subject matter experts worldwide.

IntelLink is designed to fill a defined market knowledge gap with a fast turn-around time. Use cases cover: concept & idea test, application scoping, value proposition & market validation, branding, “voice of customer”, and geographical expansion projects.

I.3 My mission during the internship

My mission during the internship is:

- Data capture and data cleaning (Web Scraping tool Octoparse and Python Code)
- Assist colleagues in making reports with Power BI
- Build a MySQL schema and data tables, add relations and maintain the DB
- Developing a User Self – Service web application with Power Apps
- Create different permissions for application and add features that meet our needs

My main internship task is to build 2 applications (for user and for admin) with PowerApps, integrating them into the client's interface so that users can perform basic operations on their own data, add, delete, modify, query, etc. At the same time, I will also participate in the database construction and help colleagues to extract some valuable data from Internet by using Octoparse and Python.

II. The Tools and technology used

II.1 Power BI

II.1.1 What is power BI

Power BI is Microsoft's interactive data visualization and analytics tool for business intelligence. You can use it to pull data from a wide range of systems in the cloud and on premises and create dashboards that track the metrics you care about the most, or drill in and

(literally) ask questions about your data. You can create rich reports or embed dashboards and reports into reporting portals you already use. The dashboards, reports and visualizations you can create go far beyond bar and pie charts, but you don't need to be a designer to use them

II.1.2 Main features of Power BI

Visualize the services you use

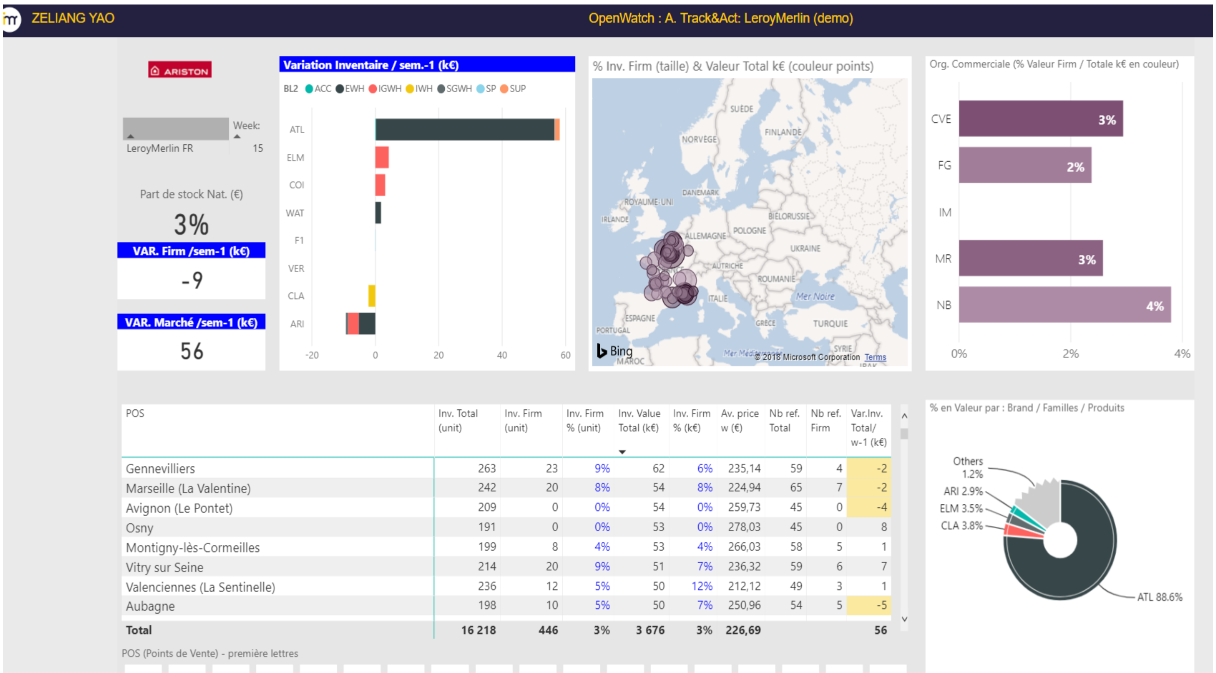
Power BI has hundreds of content packs, templates and integrations for hundreds of data services, apps and services that include pre-set reports and visualizations — and not just Microsoft ones like Dynamics 365 and SQL Server. If you use Xerox for accounting, or K2 Cloud to build business processes, or Adobe Marketing Cloud, SAP HANA, Salesforce, MailChimp, Market or Google Analytics, or even GitHub, you can use Power BI to visualize the data you have in those services, create reports against them and bring them together in a custom dashboard.

Explore ‘What-ifs’

You can compare different scenarios in Excel, but Power BI lets you do it by dragging a slider bar to show changes. Add a calculated measure for a figure such as revenue and you can use the New Parameter button in Power BI Desktop to add parameters that change in your What-if scenario – setting the data type, minimum, maximum and increments. That creates a calculated measure that you can reference in other calculated measures; so if you create a What-if parameter for the number of customers who respond to a particular promotion you can plug that into a formula that you create to show how many customer support tickets you can expect to have to deal with. Tick “Add slider to this page” in the What-if parameter dialog to add a slider bar that you can drag to show the difference when the number of customer responses is higher or lower.

Custom visualizations

Power BI includes a good range of visualizations, and you can add more, either by downloading them from the Office Store or by creating your own with the open source Power BI Custom Visual Tool (which uses CSS, TypeScript and NodeJS). The Office Store includes visualizations from Microsoft, like word clouds, a correlation plot based on R script, chord charts to show interrelationships in a circular matrix, the “box and whisker plot” that highlights outliers, clusters and percentiles to show data that might otherwise get lost in summarized figures like averages, as well as visualizations created by other Power BI customers.



Example: One page of report of our client TTI FR

II.2 The PowerApps

II.2.1 What is PowerApps

PowerApps is a service for building and using custom business apps that connect to your data and work across the web and mobile - without the time and expense of custom software development.

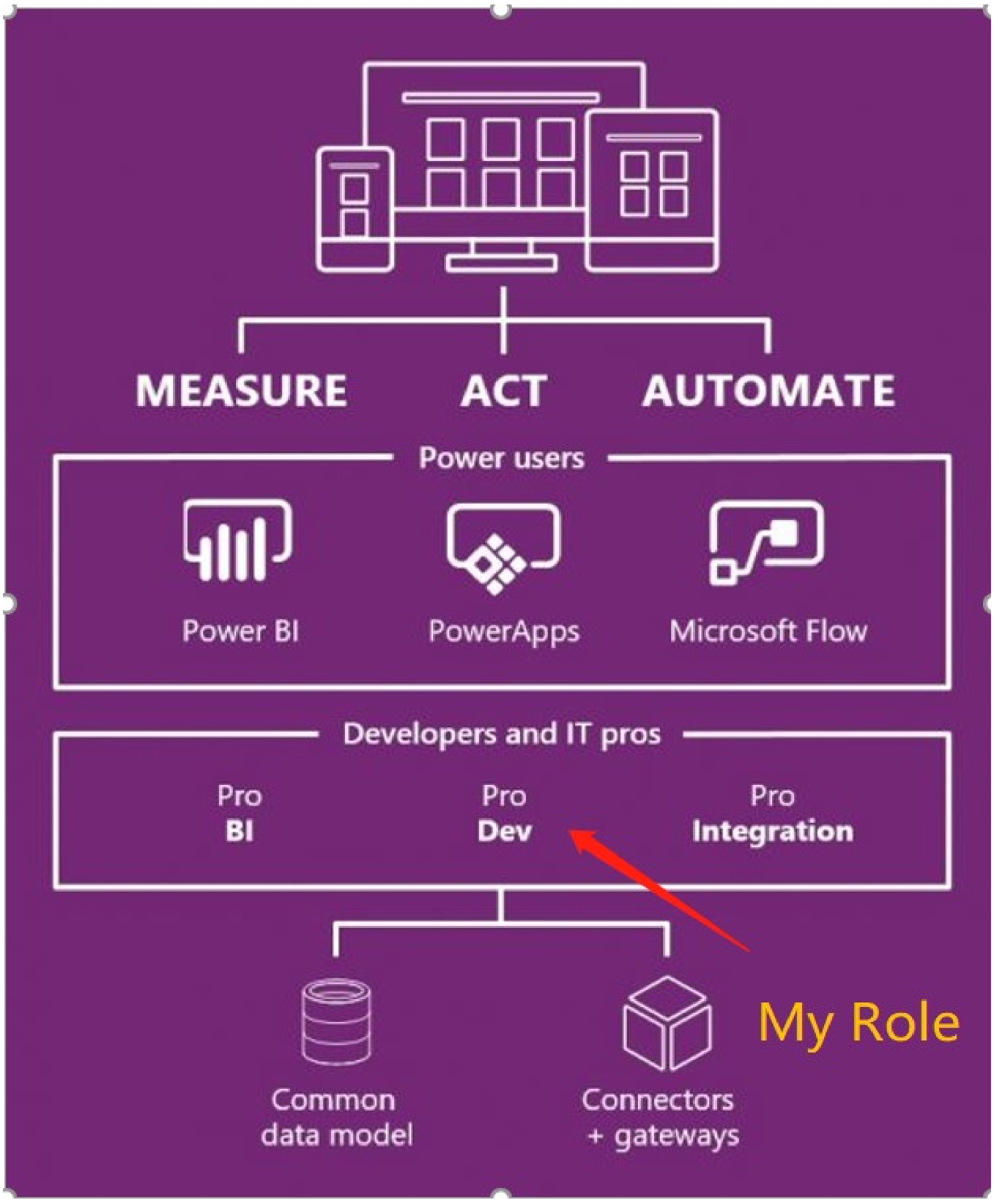
It is a collection of software services and apps that work together to fundamentally transform and accelerate how you build and share custom line of business applications

Some of the features of PowerApps are:

- ✓ Cloud-Based Services Integration
- ✓ App Sharing via AppSource
- ✓ Environments & User Policies Setting
- ✓ Company Policies Support
- ✓ Different data sources.
- ✓ Workflow Automation, connect other services of MS like Power BI, Office 365

II.2.2 Why we choose PowerApps?

The image below shows how we use PowerApps inside the company and what's my role during my internship.



As can be seen from the graph, my role is the PowerApps Developer, the application I develop will connect our service of Power BI and integrate to our Flow, for example, if a client performs some actions in the application, the results will be reflected directly in the Power BI report, and will also trigger our workflow to execute next related operations.

In addition, there are some advantages of PowerApps we like most:

- ✓ Mobile-First.
- ✓ Cost Savings
- ✓ No previous coding knowledge required, easy to understand and learn

Therefore, considering our actual project needs and other considerations, we decided to use PowerApps to finish my mission.

II.3 Solution for Data Extraction & Data Storage

II.3.1 Data Extraction

To develop PowerApps， first I need to collect and extract useful data from websites, normally, we have two ways to do it at INNOSCAPE

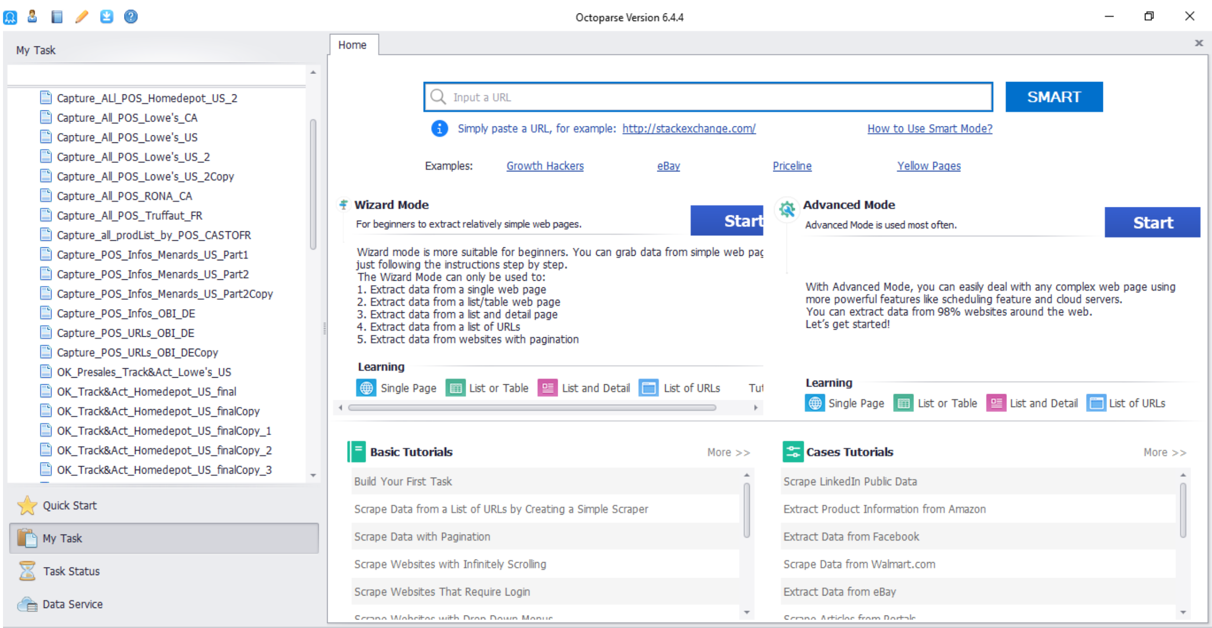
Octoparse

Octoparse

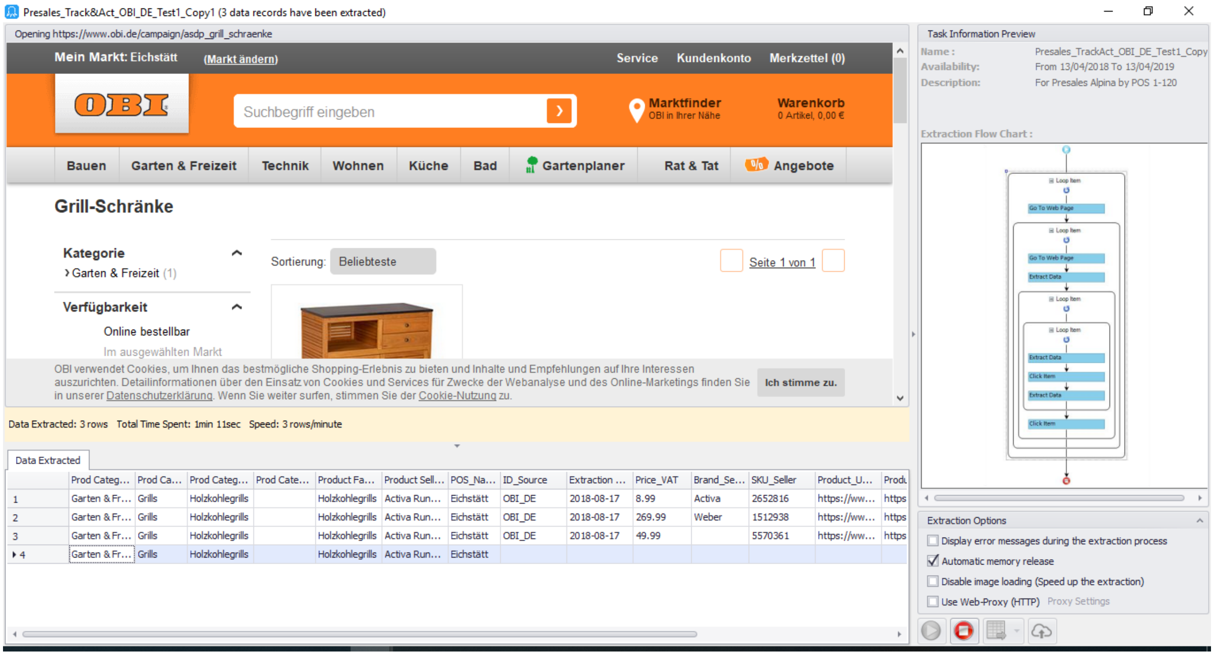
Octoparse is a free and powerful website crawler used for extracting almost all kind of data you need from the website. You can use Octoparse to rip a website with its extensive functionalities and capabilities. There are two kinds of learning mode - Wizard Mode and Advanced Mode - for non-programmers to quickly get used to Octoparse. After downloading the freeware, its point-and-click UI allows you to grab all the text from the website and thus you can download almost all the website content and save it as a structured format like EXCEL, TXT, HTML or your databases.

We created almost all our extraction missions with Octoparse, the cloud platform runs our extraction tasks 24/7. Data is scraped and stored in the cloud and accessible from any machine, then we can directly store the collected data into our database.

For the rest tough missions, I use python to handle the difficult problems.



Main Menu of Octoparse



Running a task in Octoparse, the rules for extraction is on the right side

II.3.2 Data Storage

MySQL

MySQL is a fast, easy-to-use RDBMS being used for many small and big businesses. MySQL is developed, marketed and supported by MySQL AB, which is a Swedish company. I choose it as the database for my applications because it has advantages below:

- ✓ MySQL is released under an open-source license. So, you have nothing to pay to use it
- ✓ MySQL works very quickly and works well even with large data sets
- ✓ MySQL uses a standard form of the well-known SQL data language.

We chose to use MySQL database as data source for the PowerApps because it's easy to operate and it's compatible with other Microsoft services.

III. Database Design

III.1 Build a Database

III.1.1 Overview

First, the main goal of this part is to create the appropriate data structure in the database based on our current needs.

I need to design different tables to store our data and consider the logical relationship between them. The design of the structure and schema is very important, because as the data source of PowerApps. If there is a design flaw at the beginning, it will bring the terrible impact during the development process.

So, I spent about a week communicating with my colleagues, and I learned the details of needs as much as possible. Through continuous analysis of many current excel files, I repeatedly designed and finalized the design.

III.1.2 Requirements Analysis

Since there are two versions of the final PowerApps, the client and the administrator, I analyze them from the perspective of administrators and clients.

Admin

First, I analyzed the company's basic business model, we provide BI service to enterprises, through real-time big data analysis, they can make decisions faster according to market changes and adapt to market changes.

For example, if you are a manufacturer of chairs, we can help you track the sales of your products, user feedback, inventory… on Amazon, IKEA, Conforma and other e-commerce platforms in real time. You can also get all the details of your competitors. By analyzing from different dimensions and consumer preferences, you can improve your product rapidly to adapt the market.

So, for us, we need to store all the customer's data, as well as the data of all resources (e-commerce platforms), each e-commerce platform will have a lot of sales organizations (offline stores), each store has a different name, all the information of these physical stores need to be stored. For every client of us, he will assign different salesperson for different sales organizations, so another table is needed to store the salesperson's data.

We also need to know who the last person was to modify the data and last modified time, therefore for almost every table I designed, I added two extra fields: modify_by, Updated_at

As an administrator, we need to monitor, add, modify, delete the above data in real time.

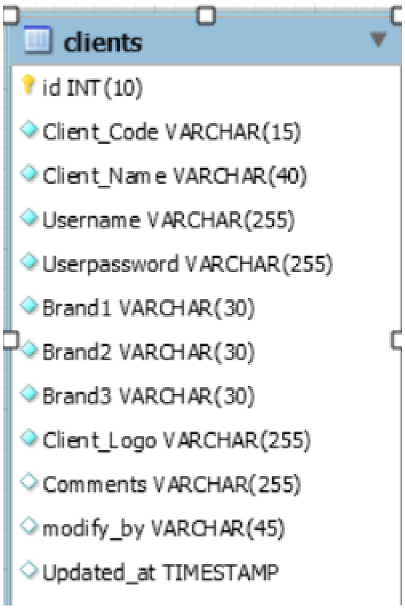
Client

Client needs to know all the details of his salespersons, and he can assign any salesperson to any sales organizations or add, modify, delete one of his salespersons.

In summary, we need to create different tables to meet the needs, and some table is shared by customers and administrators like salespersons and sales organizations.

III.1.3 Tables and Relations

Table clients (Interface of Admin)

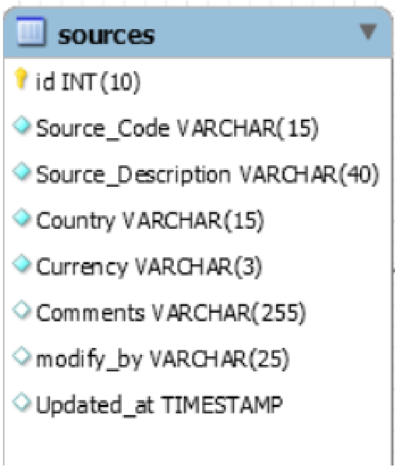


Data Fields:

Field Name	DataType
id	PK INT(10)
Client_Code	VARCHAR (15)
Client_Name	VARCHAR (40)
Username	VARCHAR (255)
Userpassword	VARCHAR (255)
Brand1	VARCHAR (30)
Brand2	VARCHAR (30)
Brand3	VARCHAR (30)
Client_Logo	VARCHAR (255)
modify_by	VARCHAR (255)
Updated_at	TIMESTAMP ON CURRENT_TIME

As can be seen in the picture, this table contains basic information of our clients, the field Username / Userpassword is used for login, and it's also important to recognize who is In the system， about this part， I will explain in the next chapter.

Table sources (Interface of Admin)

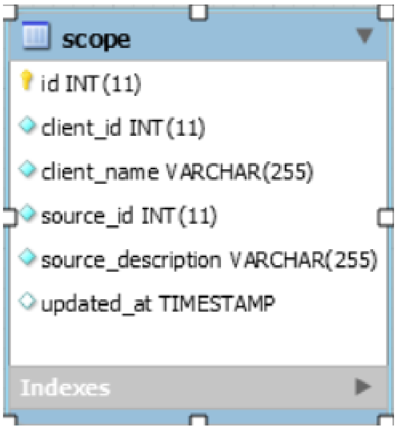


Data Fields:

Field Name	DataType
id	PK INT(10)
Source_Code	VARCHAR (15)
Source_Description	VARCHAR (40)
Country	VARCHAR (15)
Currency	VARCHAR (3)
Comments	VARCHAR (255)
modify_by	VARCHAR (25)
Updated_at	TIMESTAMP ON CURRENT_TIME

Table sources contains all the websites we have already extracted data, like amazon france, LeroyMerlin, PointP…etc. Source_Code is the abbreviation of the source.

Table scope

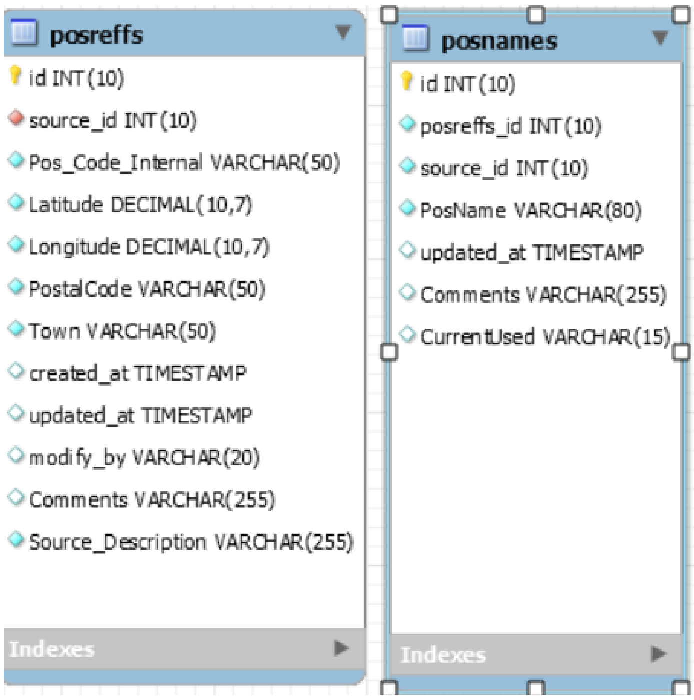


Data Fields:

Field Name	DataType
id	PK
client_id INT	INT(11)
client_name	VARCHAR (255)
source_id	INT(11)
source_description	VARCHAR (255)
Updated_at	TIMESTAMP ON CURRENT_TIME

The main function of this table is to connect the clients table and the sources table, which can reflect the relationship between the client and the sources he ordered from us, it won't be used in the PowerApps Client Version, so no need the field modify_by, because it's only the administrator who has the right to modify on this table.

Table posreffs and posnames (Interface of Admin)



Data Fields of Table posreffs:

Field Name	DataType
id	PK
source_id	FK INT(10)
Source_Description	VARCHAR (255)
Pos_Code_Internal	VARCHAR (50)
Latitude	DECIMAL(10,7)
Longitude	DECIMAL(10,7)
PostalCode	VARCHAR (50)
Town	VARCHAR (50)
created_at	TIMESTAMP
update_at	TIMESTAMP ON CURRENT_TIME
modify_by	VARCHAR (20)
Comments	VARCHAR (255)

This table stores the offline stores for all e-commerce platforms (source). For example, for the online platform LeroyMerlin, it has 138 sales organizations in France. The information of these sales organizations is stored in this table with detailed location information. Including zip code, city, latitude and longitude…etc.

Data Fields of Table posnames:

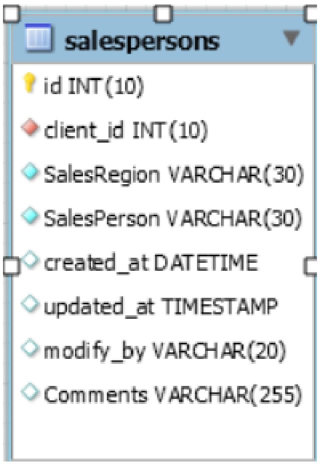
Field Name	DataType
id	PK INT(10)
posreffs_id	INT(10)
source_id	INT(10)
PosName	VARCHAR (80)
update_at	TIMESTAMP ON CURRENT_TIME
Comments	VARCHAR (255)
CurrentUsed	VARCHAR (15)

This table is mainly used to store different names of the same sales organization.

In real life, the same sales organization often has different names. The last table will always store the latest name. When a sales organization changes its name, we will operate directly on this table and choose which one to use.

Field "CurrentUsed" is the indicator, it has only two values "Yes" or "No". "Yes" means the using name for a sales organization. Table "posreffs" and the table "posnames" name is one to many relationship, it's easy to understand because one sales organization can have many names, while these names point to the same sales organization.

Table salespersons (Interface of Client and Admin)

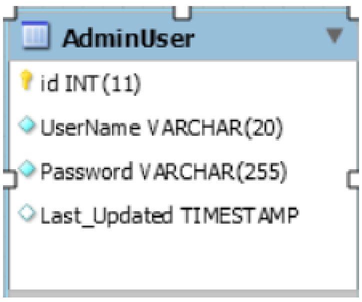


Data Fields of Table posnames:

Field Name	DataType
id	PK INT(10)
client_id	Fk INT(10)
SalesRegion	INT(10)
SalesPerson	VARCHAR (80)
created_at	TIMESTAMP
updated_at	TIMESTAMP ON CURRENT_TIME
modify_by	VARCHAR (20)
Commments	VARCHAR (255)

The salespersons table is very important. This is a table shared by our clients and us (administrators). Clients can add, modify or delete salespersons according to their needs. Administrators can see these changes in real time.

Table AdminUser (Interface of Admin)

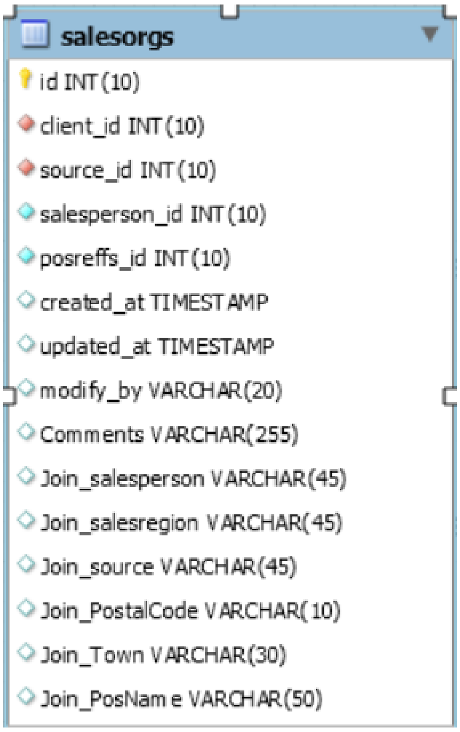


Data Fields of Table posnames:

Field Name	DataType
id	PK INT(10)
UserName	VARCHAR (20)
Password	VARCHAR (255)
Last_Updated	TIMESTAMP ON CURRENT_TIME

This table contains the information of everyone in the INNOSCAPE, so that when someone in the company logs in as an administrator, PowerApps can distinguish who is the user. The Clients 's login will directly check the Username and UserPassword fields in the Clients table.

Table salesorgs (Interface of Client)



Data Fields of Table posnames:

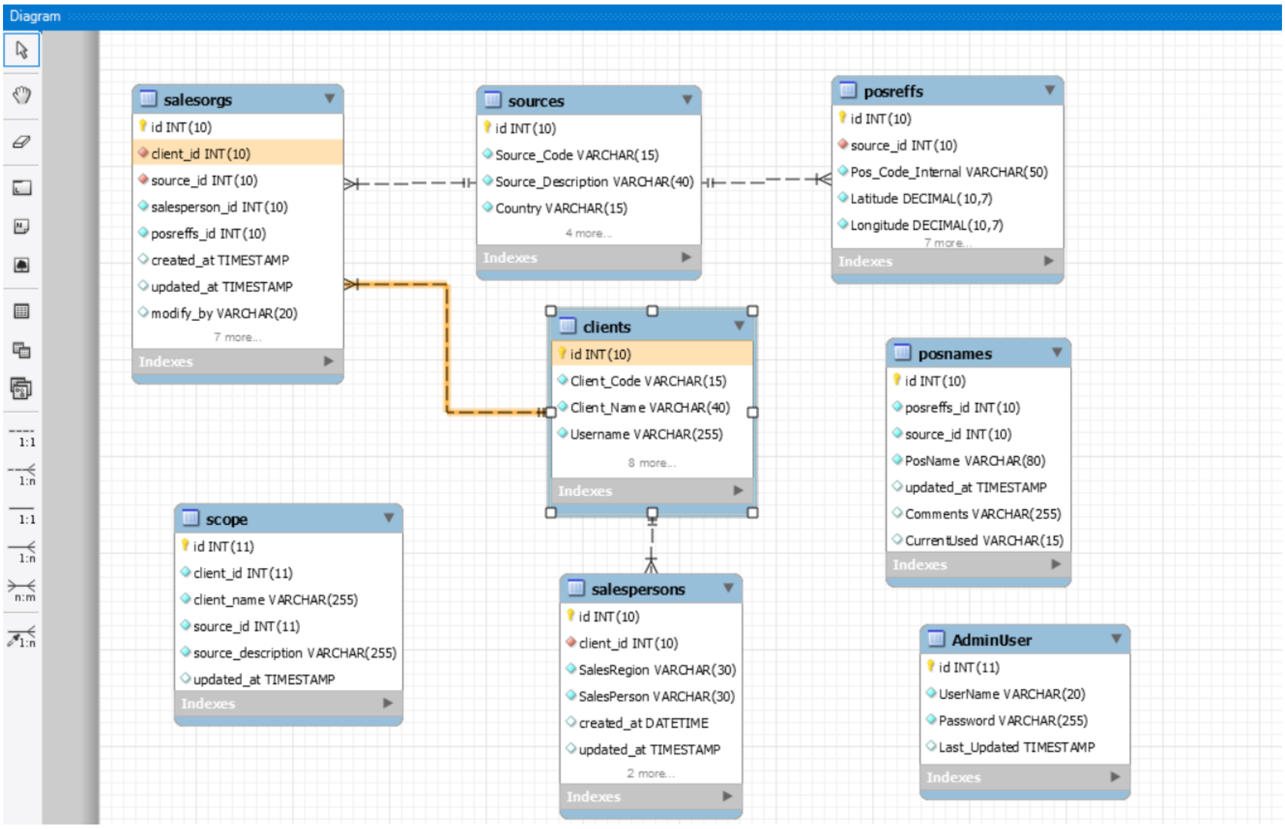
Field Name	DataType
id	PK INT(10)
client_id	FK INT(10)
source_id	FK INT(10)
salesperson_id	INT(10)
posreffs_id	INT(10)
created_at	TIMESTAMP
updated_at	TIMESTAMP ON CURRENT_TIME
modify_by	VARCHAR(20)
Comments	VARCHAR(255)
Join_salesperson	VARCHAR(45)
Join_salesregion	VARCHAR(45)
Join_source	VARCHAR(45)
Join_PostalCode	VARCHAR(10)
Join_Town	VARCHAR(30)
Join_PosName	VARCHAR(50)

This is the result of a combination of several tables, because there are many fields, cleints can easily find any record by different condition of filter. This is also one of the main interface of the PowerApps (Client Version).

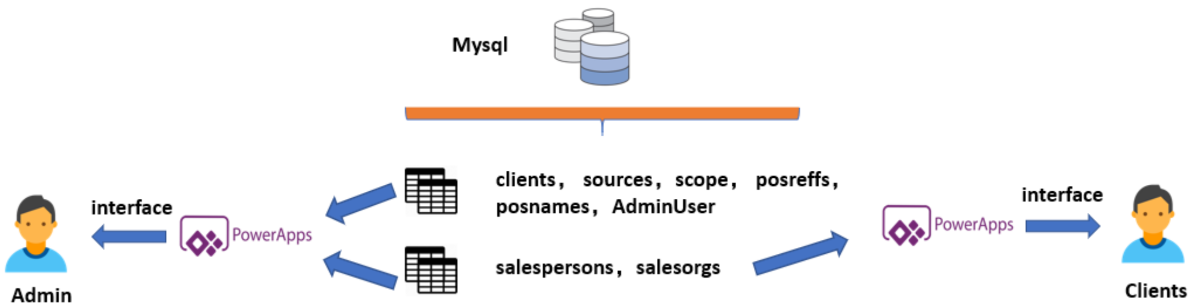
III.1.4 Final Structure

After two weeks of design, this is the final structure, and I have been discussing it with my colleagues for a long time to confirm whether this structure can meet our needs.

It's not easy to judge without real data testing, so I immediately started preparing for PowerApps development after basically determining the structure below:



Shema and table's structure in MySQL



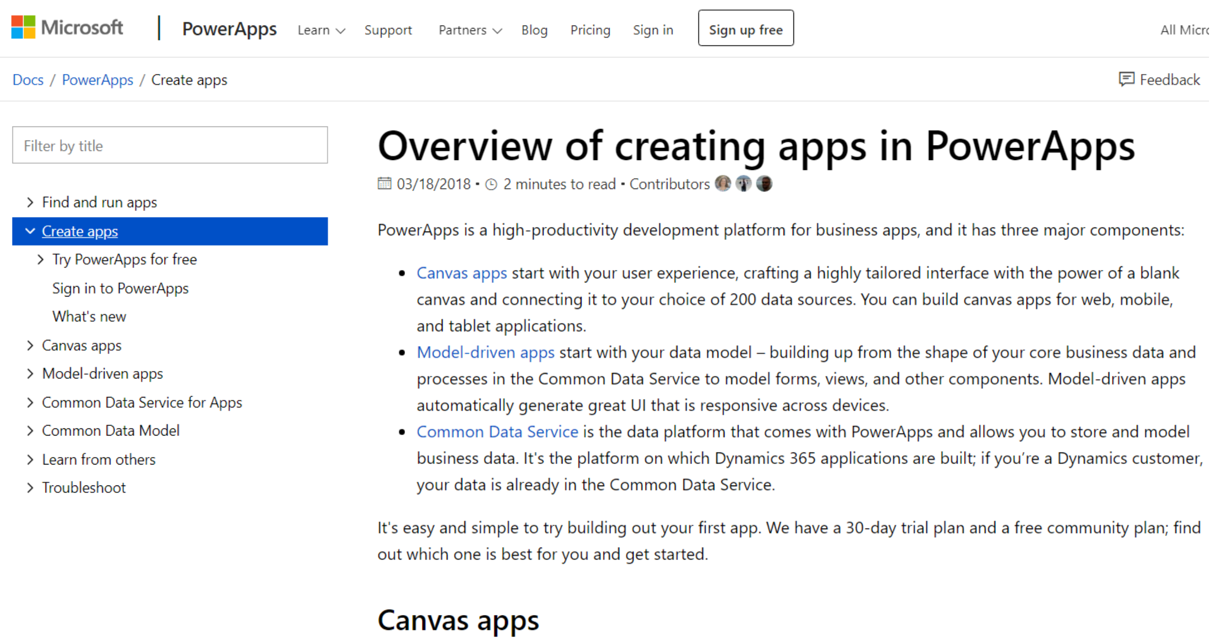
Data source assignment strategy

IV. Development PowerApps – Version Client

IV.1 Getting started

Since I have never used PowerApps before, so the first thing I did was to go to the official website to understand the design pattern, usage, and how should I get started.

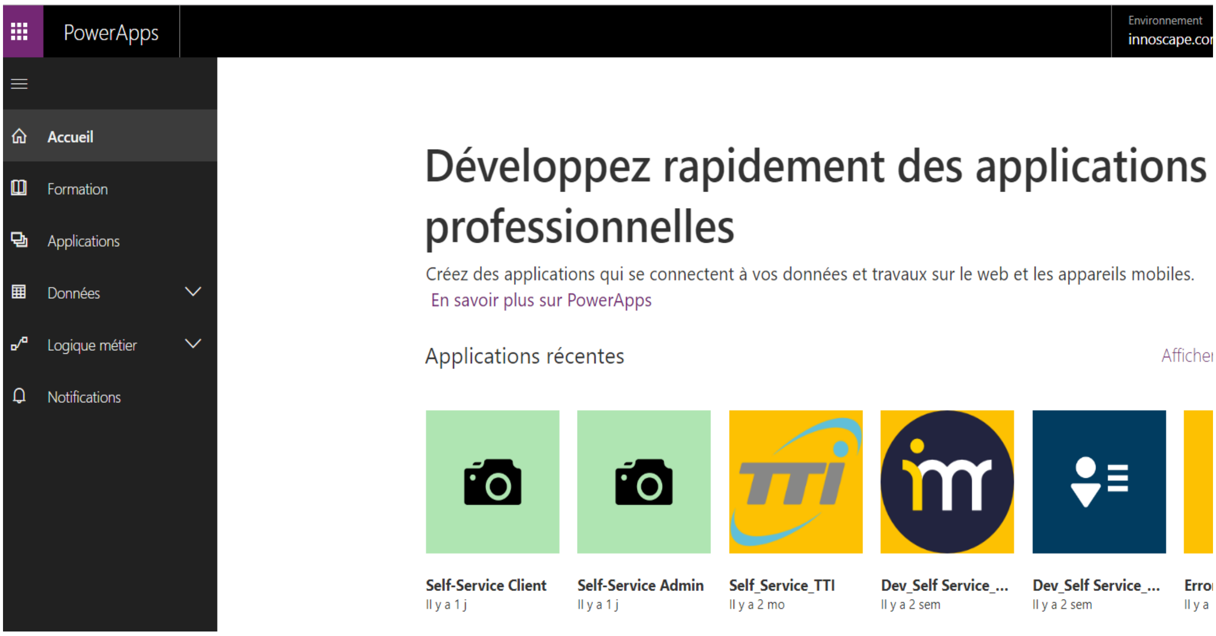
I am very fortunate, because of Microsoft's technical and service support for Apple, I can find a detailed tutorial on the PowerApps official website, which greatly reduces the energy and time of learning.



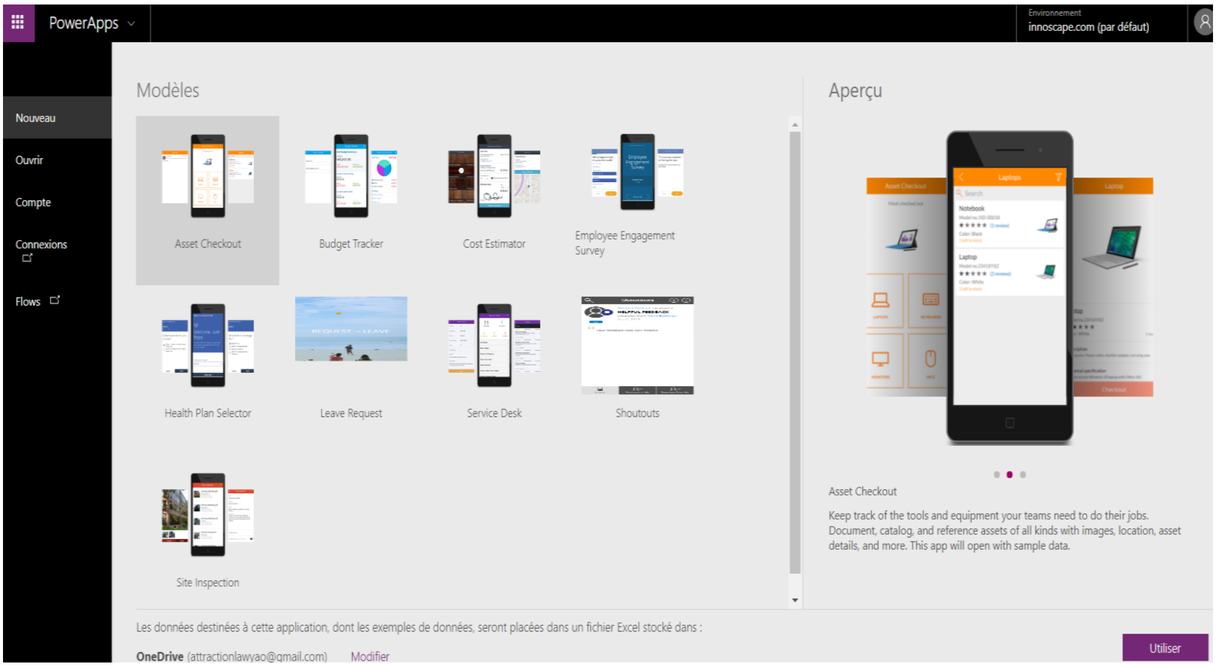
A detailed tutorial from official site

So, in the first week, by browsing the online tutorials, I had a comprehensive impression of PowerApps development.

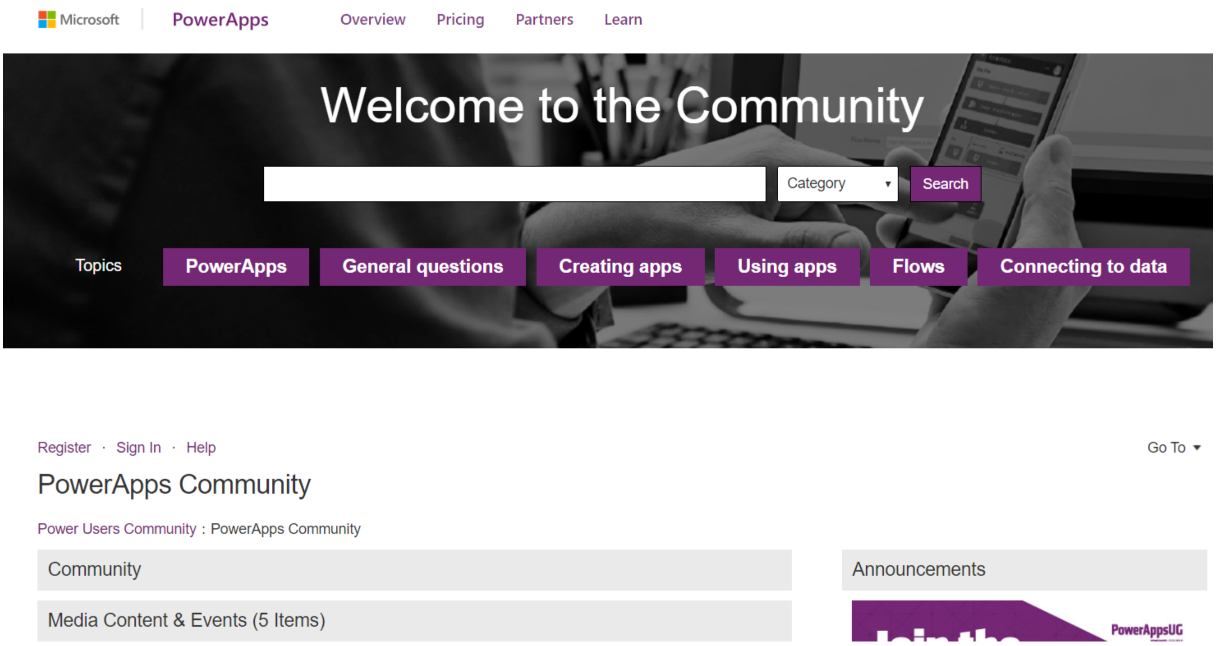
After learning about the overall architecture, I immediately started developing my first program. It's already stored a lot of templates in PowerApps. So, I chose different templates for testing and learned the code through reverse derivation. I also found PowerApps. Community and YouTube teaching videos, which helped me a lot in the beginning of my study.



Main page of PowerApps Studio



Embedded template in PowerApps



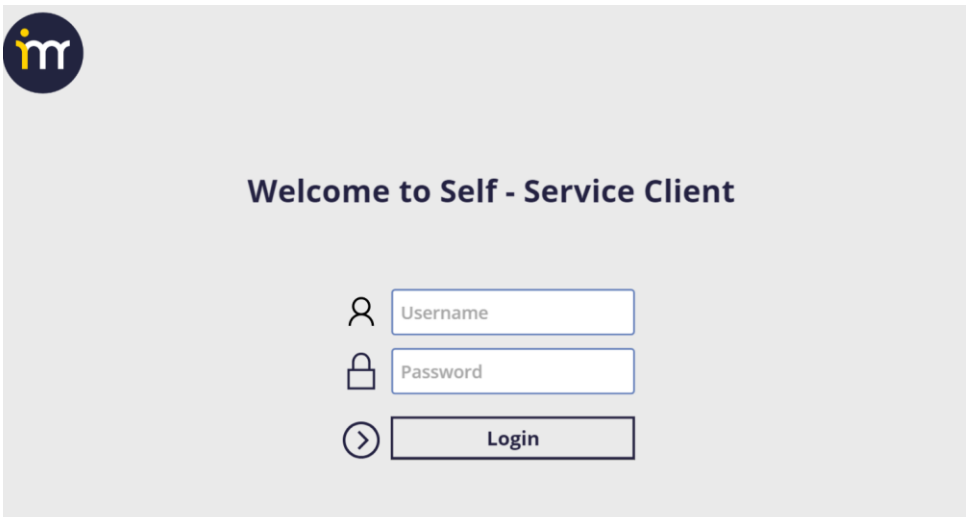
PowerApps Community

IV.2 Development

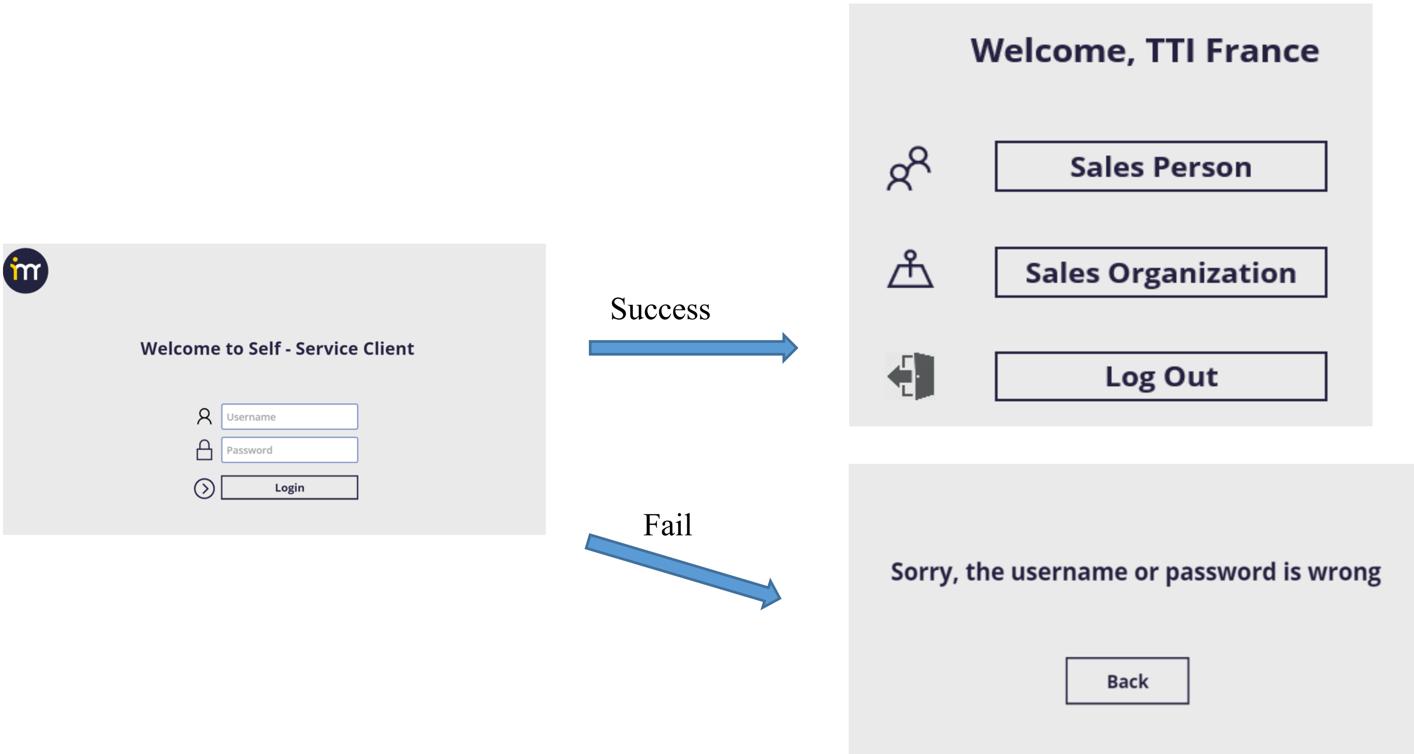
I chose to start developing the client version first because there are less functions and interfaces compared to the administrator version. The core interactive pages are salespersons and sales organizations （Mentioned in the last chapter， see the data source assignment strategy） , which allows our clients to manage their salespersons and assign them to different sales organizations. In general, there are four main functions to consider:

- ✓ Login
- ✓ Navigation Menu
- ✓ Salesperson management
- ✓ Salesperson assignment

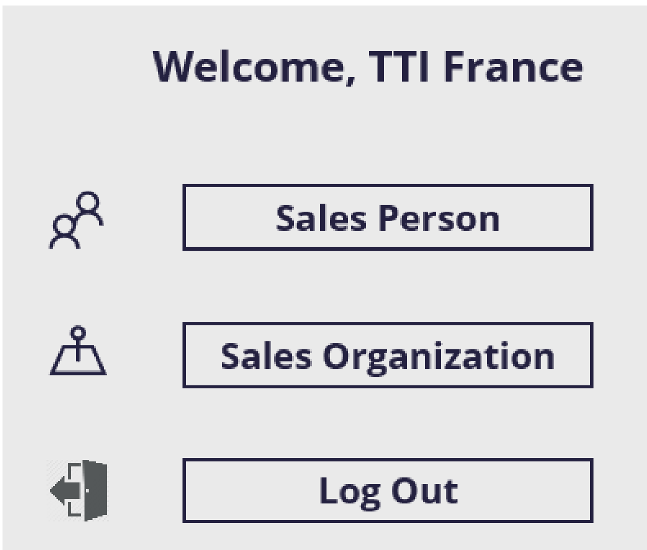
Login



The main function here is to judge that if the UserName and UserPassword entered by the clients match the information stored in the clients table, then the client will be navigated to the main menu. If not, it will prompt the UserName or UserPassword is incorrect, you need to log in again.



Navigation Menu



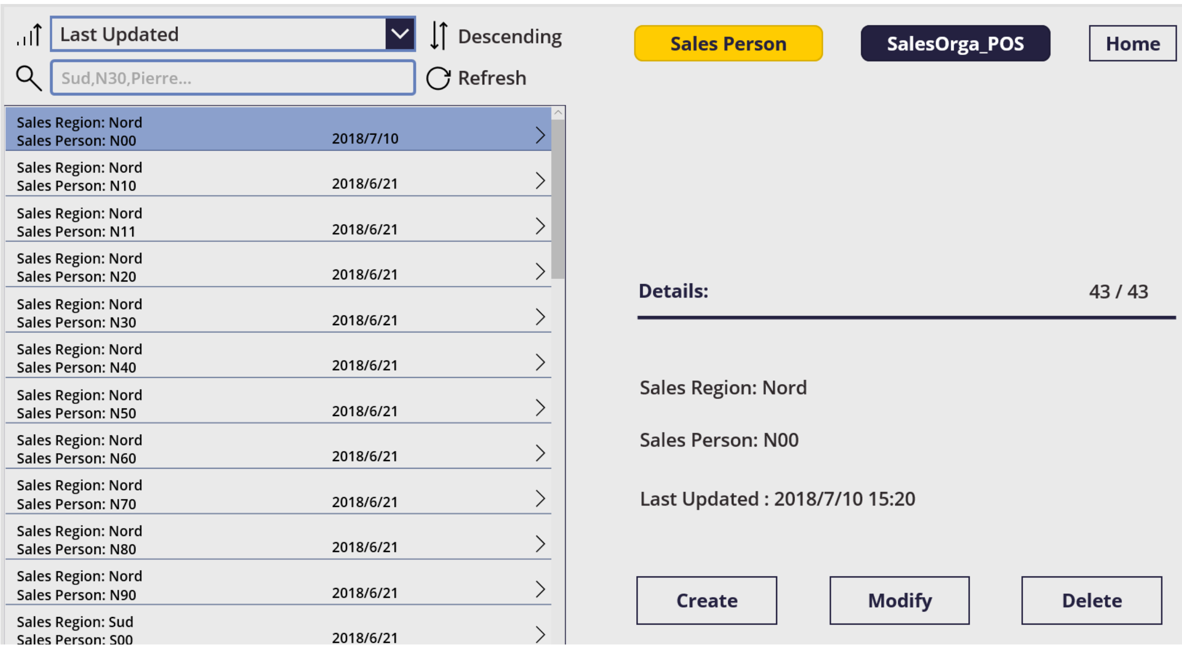
This page is easy for the guest to understand and will not be confused. Here I used a variable “CurrentClientId” as the indicator to identity which client has logged in.

Once the client arrives to this page， it will find the relevant record in scope table, set CurrentClientId= client.id. Then it’s easy for me to extract all the salespersons for client by the data field “client_id” in the salespersons table.

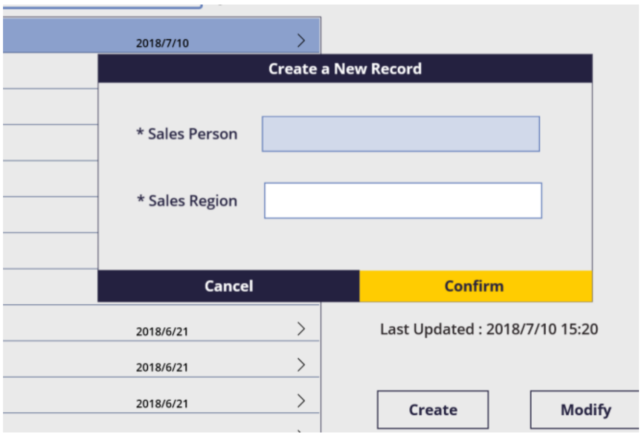
```
If(!IsBlank(username.Text) And !IsBlank(password.Text),
 If(LookUp('[selfservice].[clients]',Username=username.Text).Userpassword=password.Text,Set(CurrentClientId,LookUp('[selfservice].[clients]',
Username=username.Text,id))-Navigate(HomePage,ScreenTransition.Fade),Navigate(LoginFail,ScreenTransition.Fade)),Navigate(LoginFail,
ScreenTransition.Fade))
```

Main code to get the client’ identification

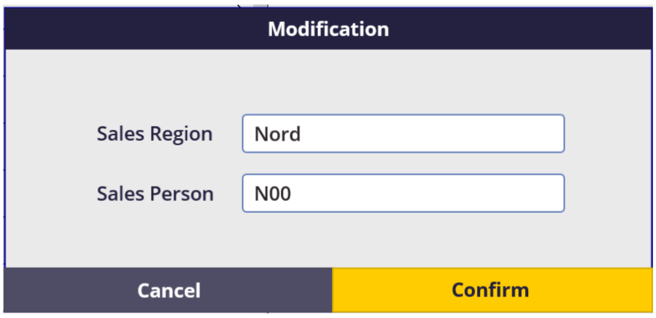
Salesperson management



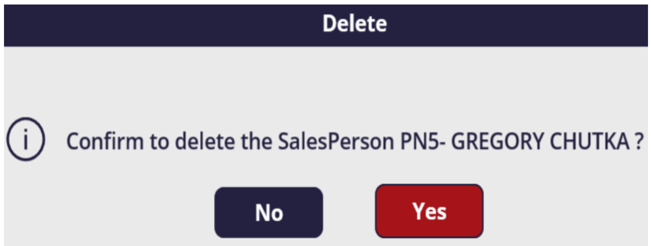
According to the variable "CurrentClientId", I can extract all the salespersons belonging to the currently logged in client. The client can add new salesperson, modify any salesperson In the list or delete a selected salesperson easily.



Add New salesperson

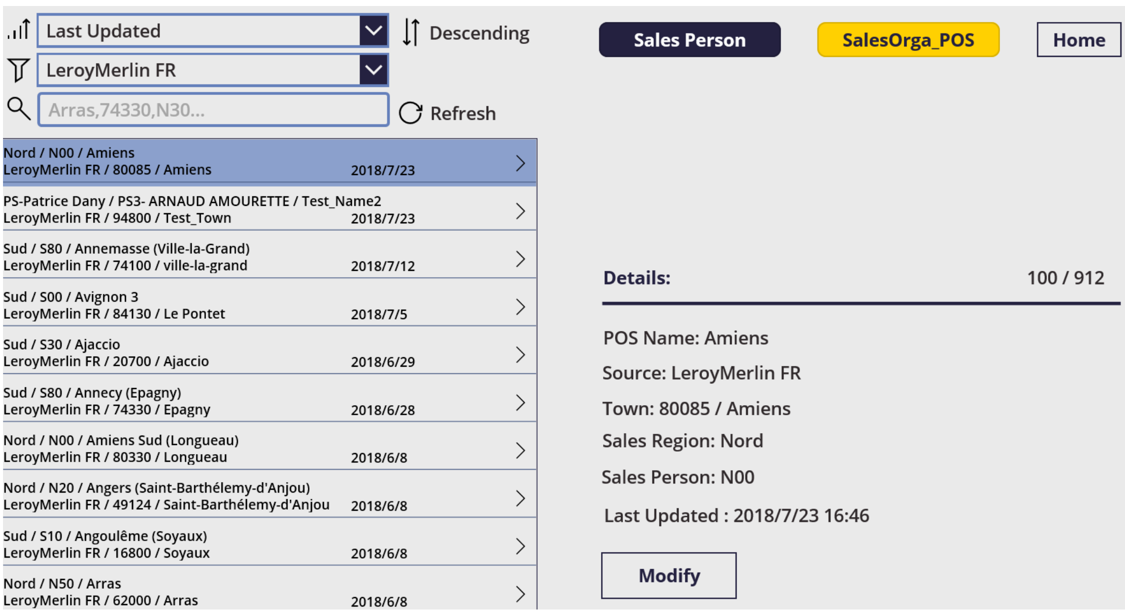


Modify a salesperson

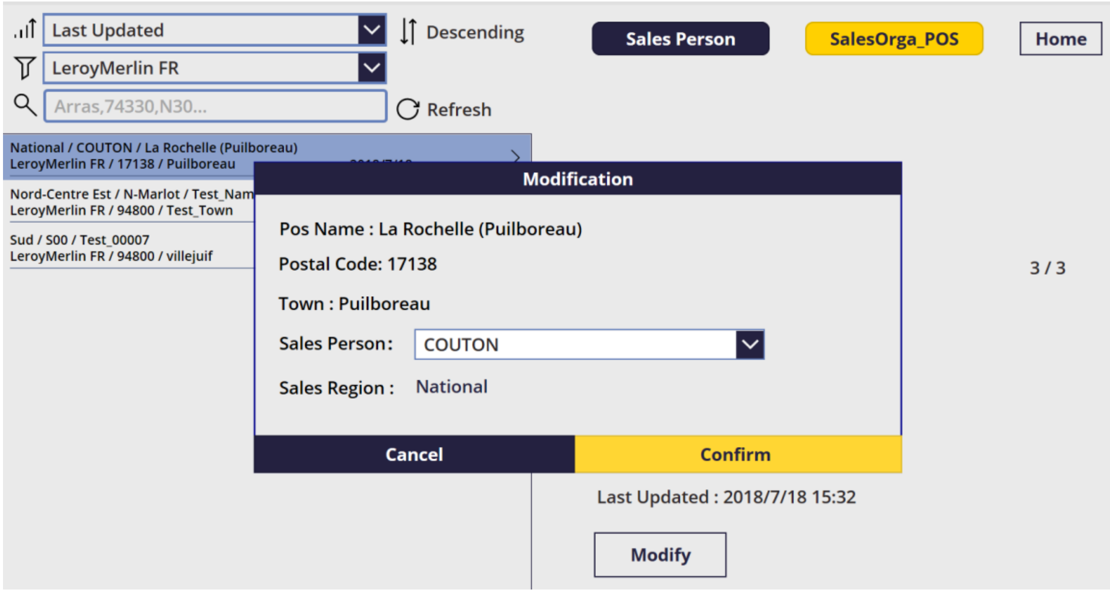


Ask twice before delete

Salesperson assignment



Here is the page for clients to manage their sales organizations, filter by source, sort by order, if the client click on the button Modify， he can assign one of his salespersons to the selected sales organization.



Assign a new salesperson for selected sales organization

```
Patch('[selfservice].[salesorgs]';GallerySalesOrgas_1.Selected;
    {salesperson_id:LookUp(CachedSalesPersons;SalesPerson=SalesOrg_SP_2.Selected.Value And client_id=CurrentClientId;id);
    Join_salesperson:SalesOrg_SP_2.Selected.Value;
    Join_salesregion:SalesRegionChange_1.Text;
    modify_by:LookUp('[selfservice].[clients]';id=CurrentClientId;Client_Name)});;
    UpdateContext({modifypos:!modifypos})
```

Code behind the interface when click button “Confirm”

Summary

Overall, the development for client version gave me the first development experience of PowerApps, because there aren’t so many logical relationships and functions, after repeated debugging of the code and testing for several weeks, I had basically mastered the development skills, and became more confident for the next step.

V. Development PowerApps – Version Admin

V.1 Differences between Version Administrator and Version Client

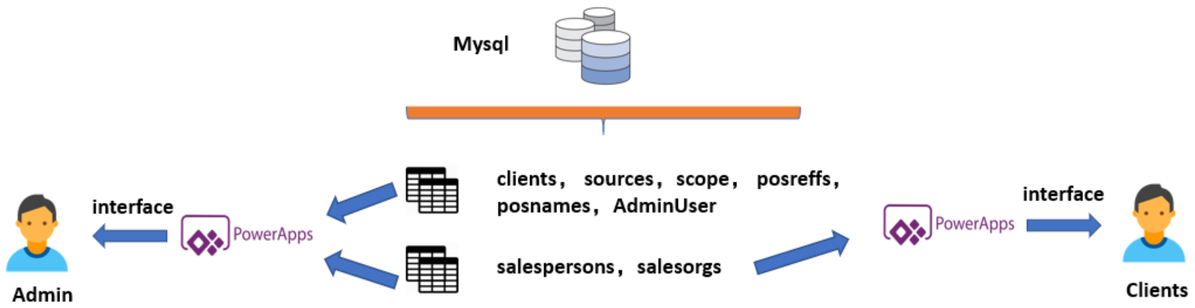
The differences between the administrator version and the client version are the following points:

- ✓ Large amounts of data
- ✓ Complex logical relationships
- ✓ More functions needed
- ✓ Real time monitoring the client version

On the client side, each client only sees his own part of data while in the administrator version, we need to control all the data of all clients. As the result, the amount of data that needs to be imported in the administrator version is much larger than the client version. Considering that PowerApps is a light-weight framework, this poses a challenge to the performance of the program. I will give my optimization solution in the next section.

On the design side, since administrator version has more complex relationships and functions. It’s hard to modify the structure once the design is done. To avoid possible modifications in the later stage, I designed the structure very carefully.

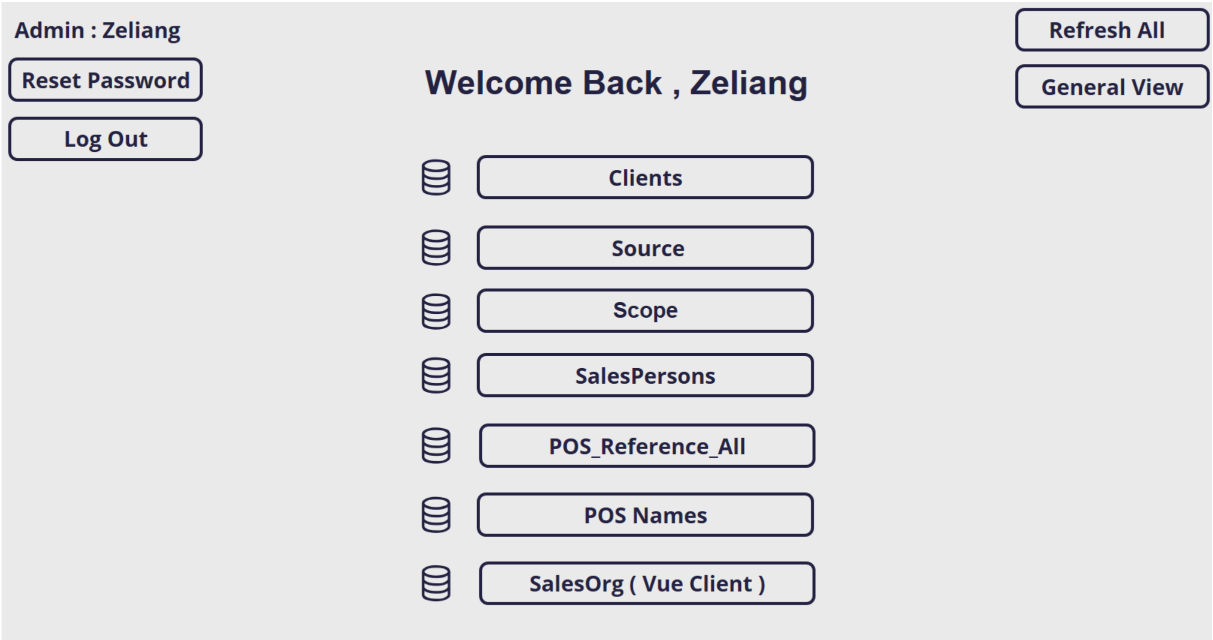
V.2 Main interfaces



If we see the Data Source assignment we mentioned in the last chapter, we can clearly find out that there are two tables shared with the Admin & Clients, so the rest tables in MySQL are the main interfaces of administrator version:

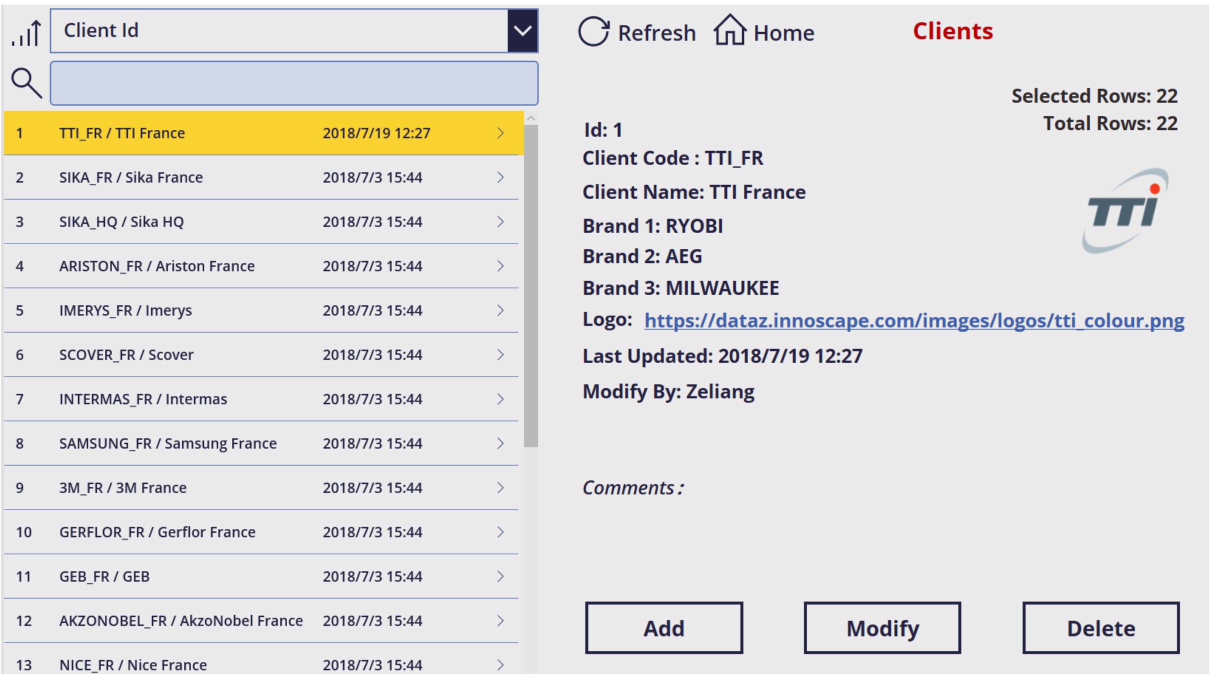
- ✓ Management of Clients
- ✓ Management of Source
- ✓ Management of all the salespersons of all clients

- ✓ Management of sales organizations of all sources
- ✓ Management of all administrators （Only for super admin, I'll explain in V.3）

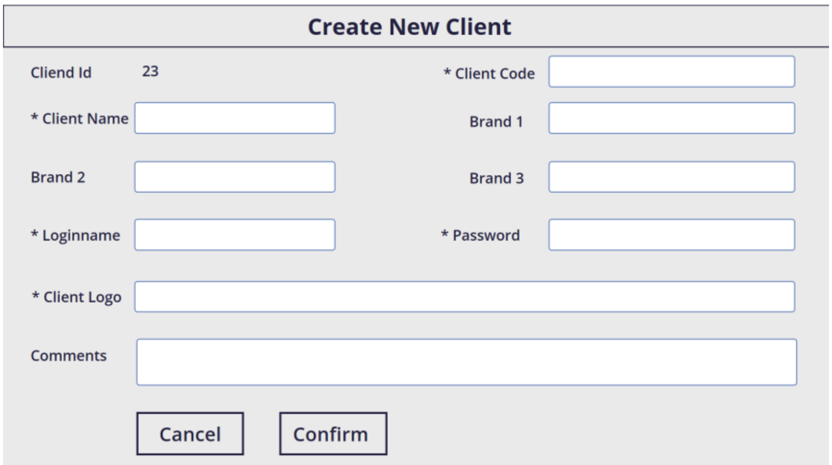


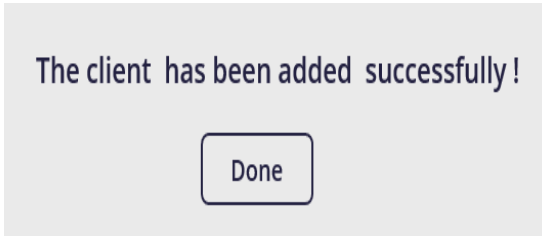
The main menu after logging in

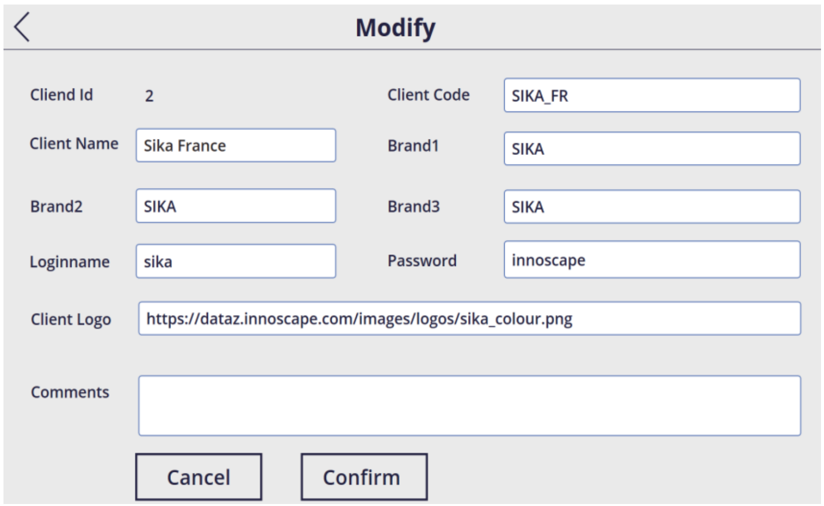
Management of clients

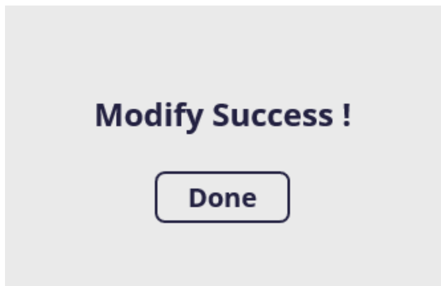


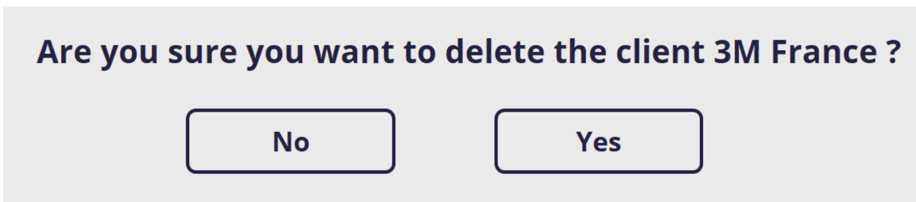
We can find all the company's clients in the gallery on the left, search any client and filter the dataset by the data field.

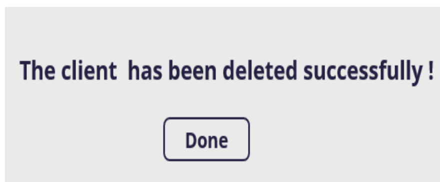






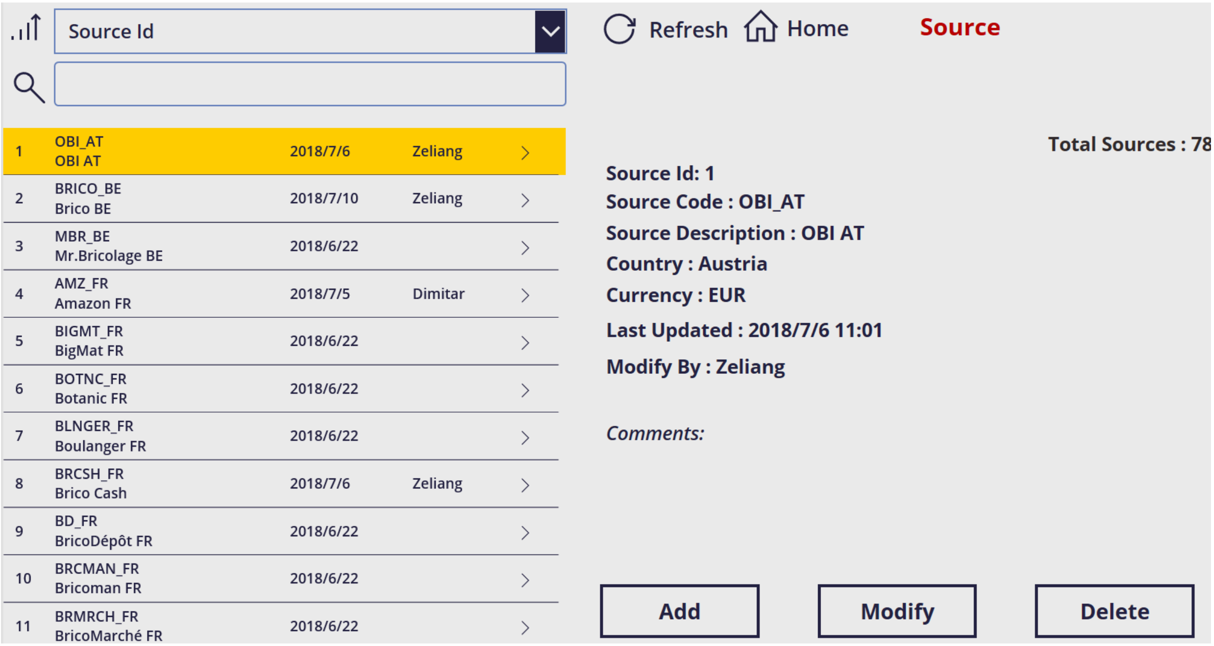






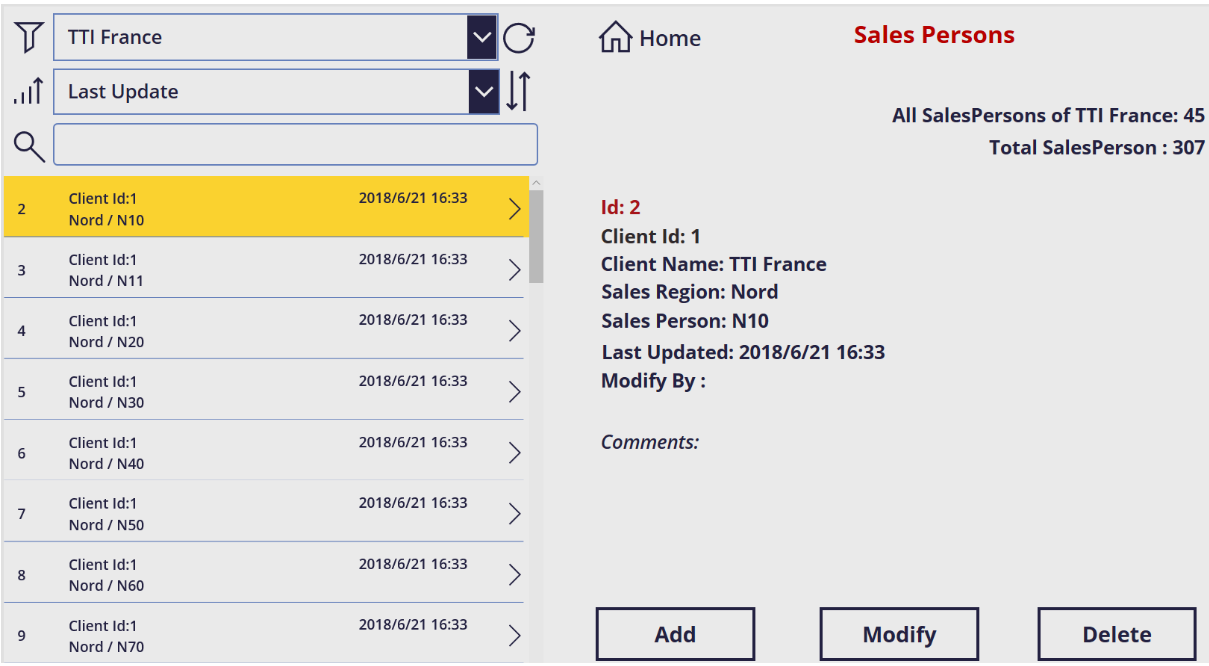
In this interface, we can add new client and give this new client his login name and password for client version, modify client's information, or delete any client. I also added many interactive pages to improve the user's experience.

Management of sources

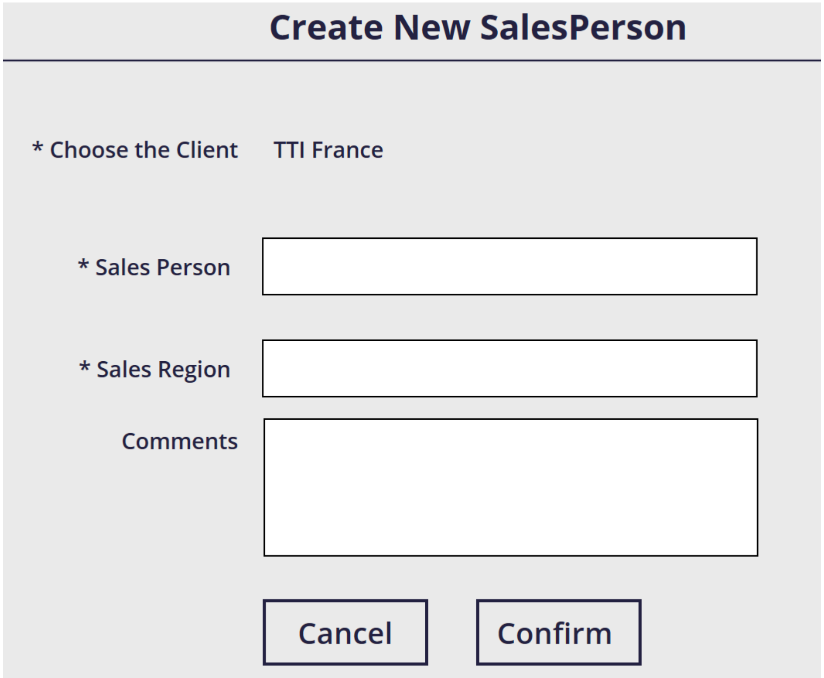


Like the last interface, we can add, modify, delete all the existing resources, all the modifications are carried out in the database, no need to use SQL statement to operate.

Management of all the salespersons of all clients

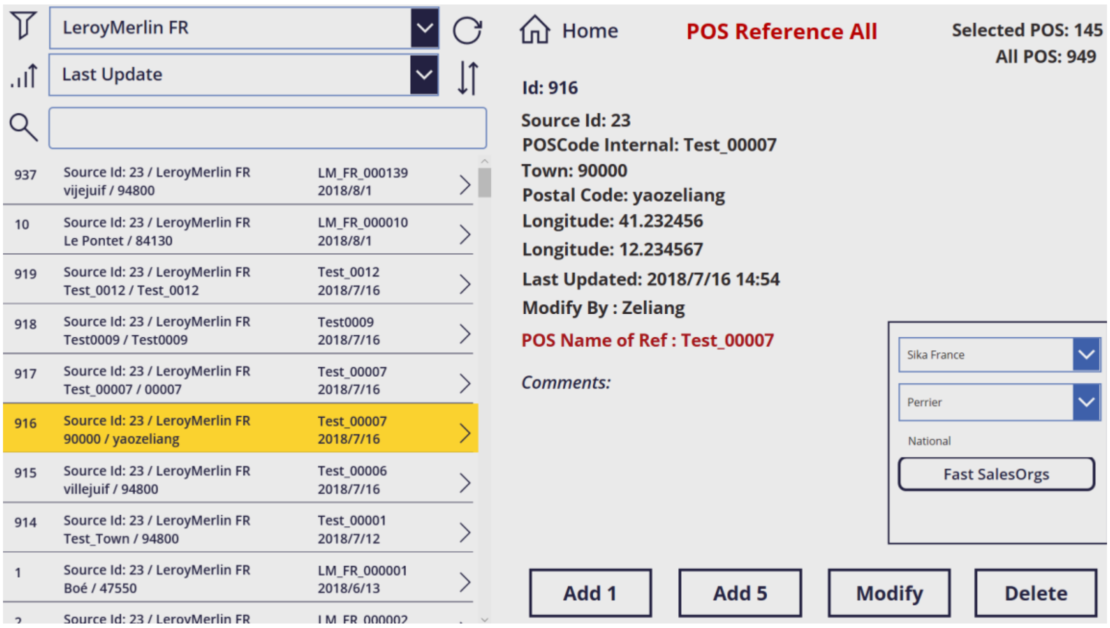


This is different from the interface we saw on the client side, because each client can only see their salespersons after logging in. Here we can extract the corresponding salespersons of any client we choose in the filter bar. The rest functions like add, modify and delete are the same.



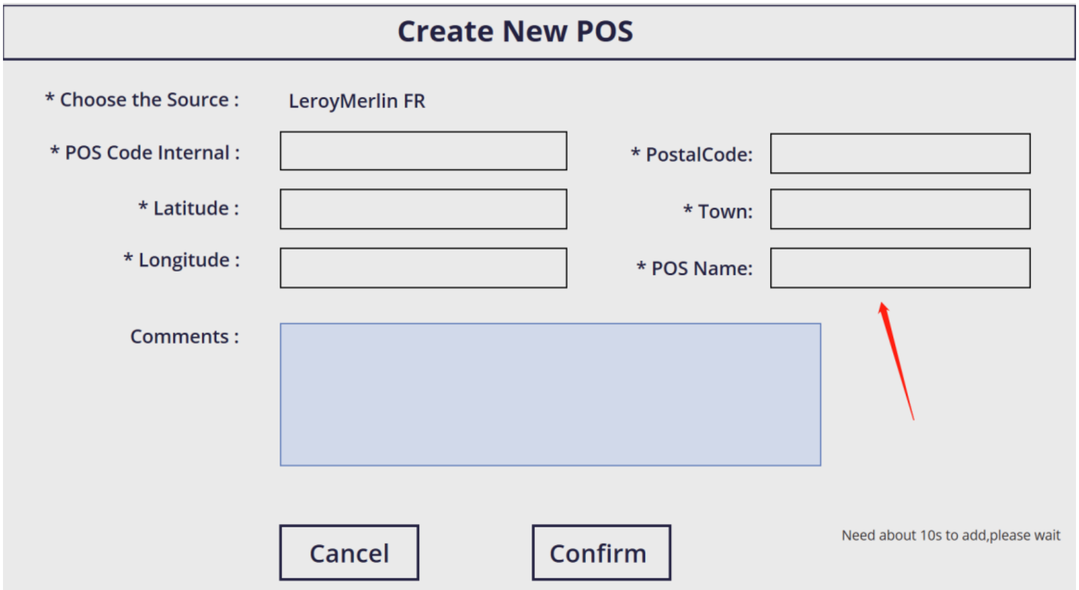
If we want to add a new salesperson, it will automatically be added under the currently selected client. In the last picture， we can browse all the salesperson of TTI France, so now if we click button “Add”， it will add a new salesperson of TTI France.

Management of sales organizations of all sources

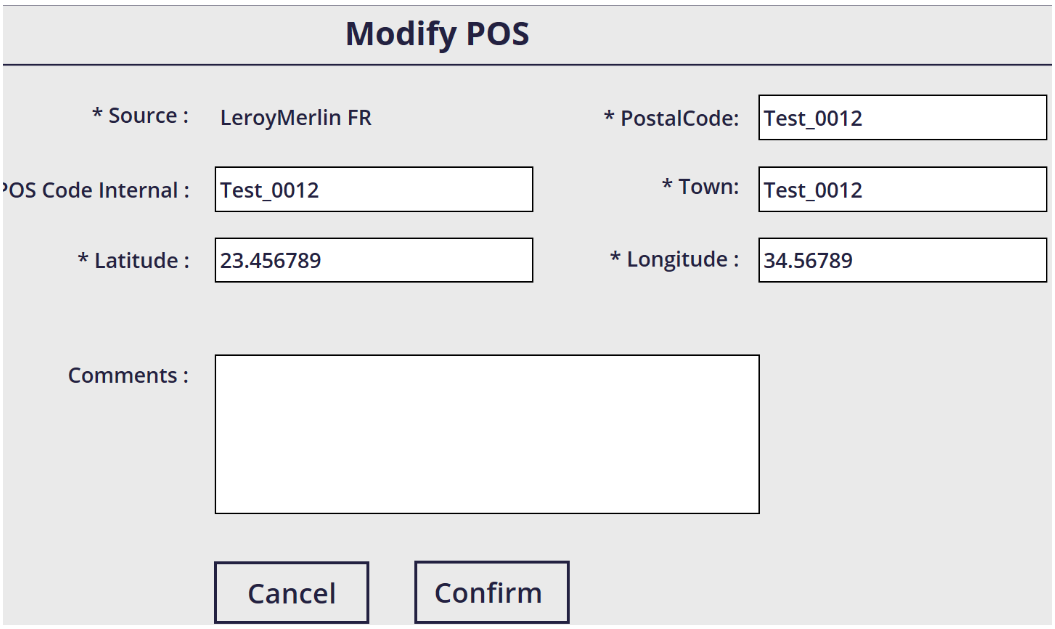


This interface contains the details of the sales organizations of all sources (E-commerce platforms like amazon.fr, LeroyMerlin…), We can select the source we want in the drop-down menu, and the list below will automatically change the content according to the selection. Of course, we can also search in search box for the sales organizations we want to see of a specific source.

There is function I designed here is that when we add a sales organization, after we click the "Confirm" button, behind the apps, the code executes two commands, first it will store the sales organization's information in the posreffs table in MySQL except the name, then store the name in table posnames in MySQL.

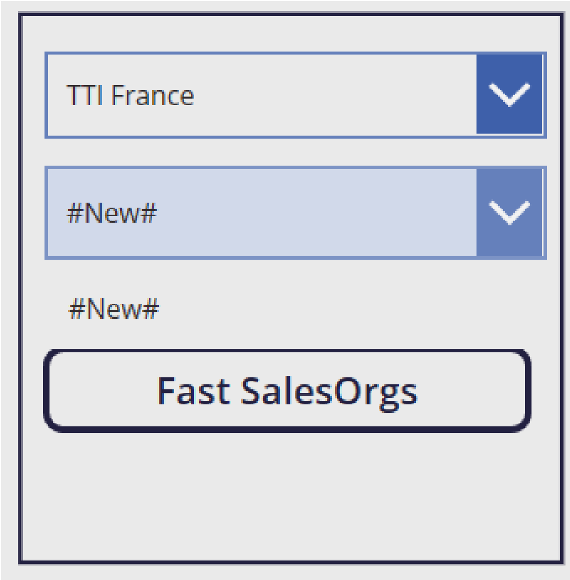


Add a new Sales Organization of source LeroyMerlin FR



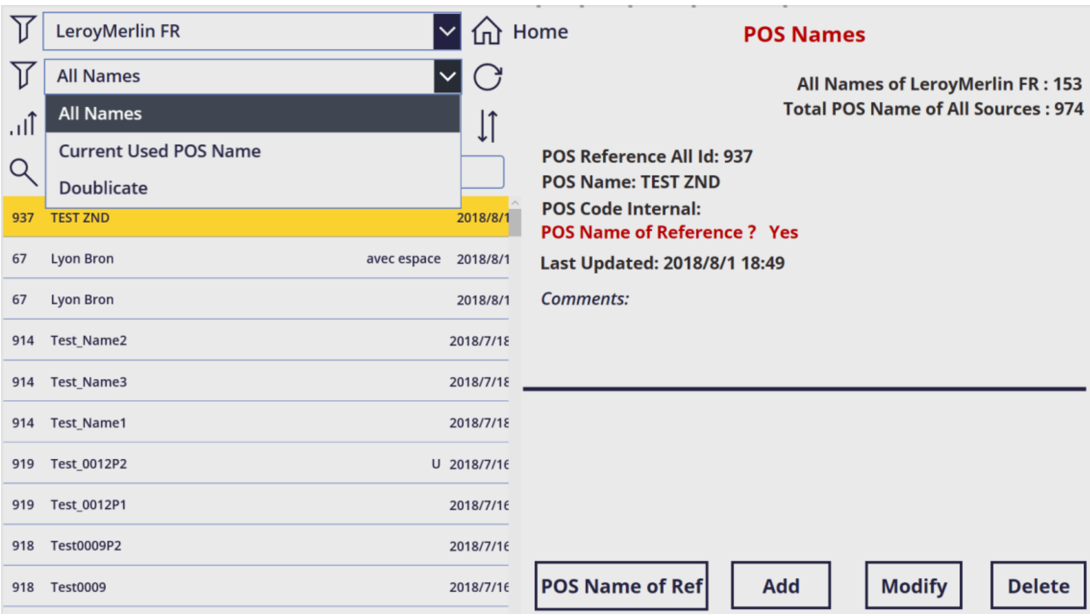
Modify a Sales Organization of source LeroyMerlin FR

There is a very handy function that I designed which is called "Fast salesorg". Whenever after we add a new offline sales organization to a resource, we can click on the button "fast salesorgs" to automatically add a new line of record to the client 's sales organization interface for those who own the resource, as we are not sure which salesperson will be assigned to this store, so the default salesperson and sales region are both "#NEW#".

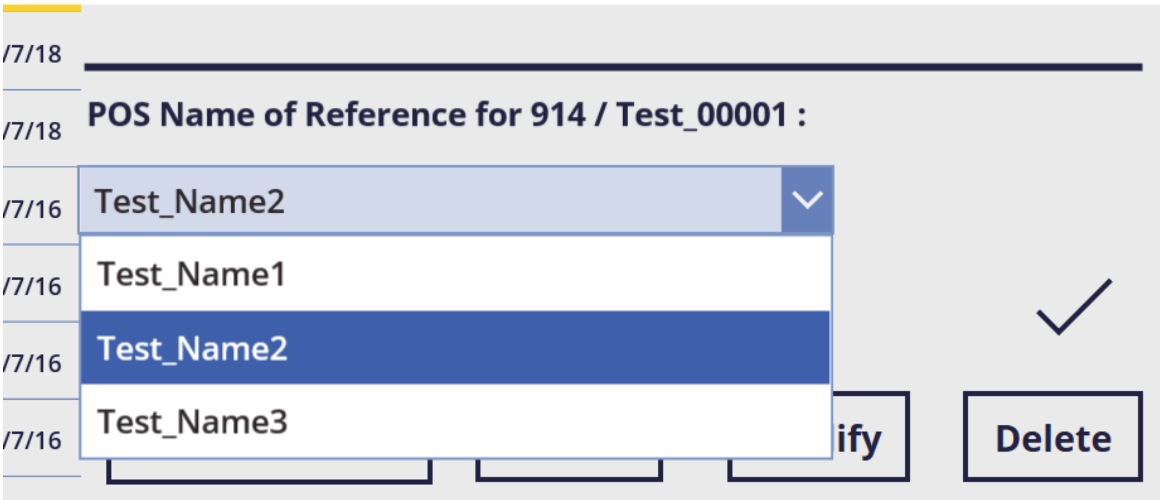


The advantage of this is that there is no need to inform the client, he will find a new sales organization when he logs in our app next time. He has not assigned a salesperson, he will assign the salesperson himself.

Management of different names for the same sales organization



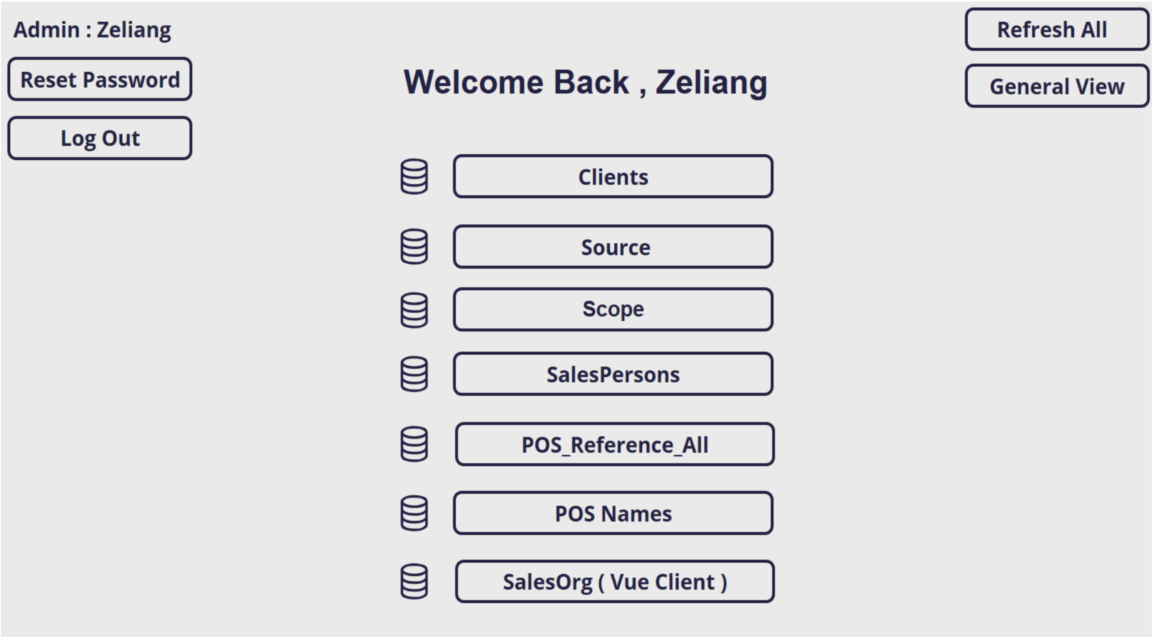
Add another sales organization name



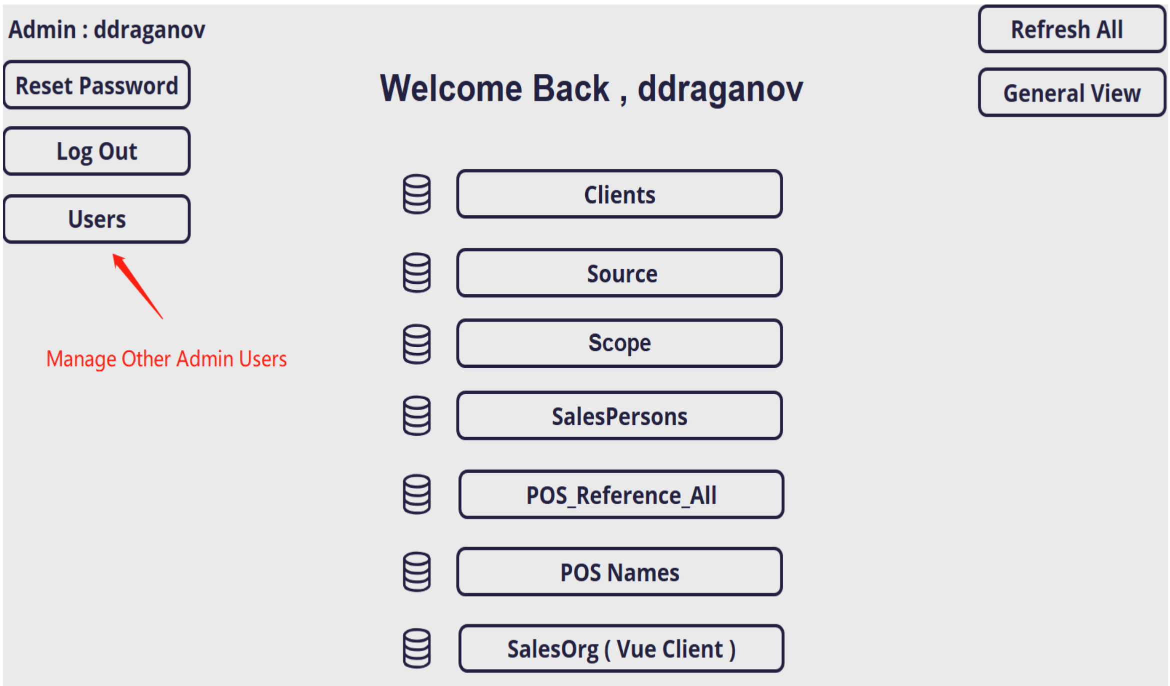
Choose which sales organization name to use

This interface stores the current using name of all sales organizations. If one of the sales organizations changes the name one day, we can add it here, and choose which name is using now.

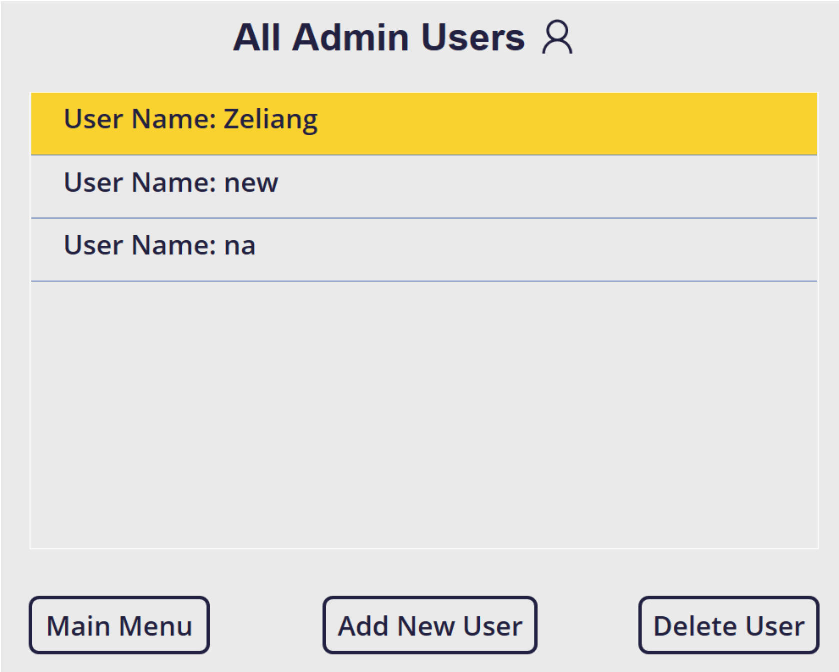
V.3 Authentication inside of the company



Normal admin user login interface



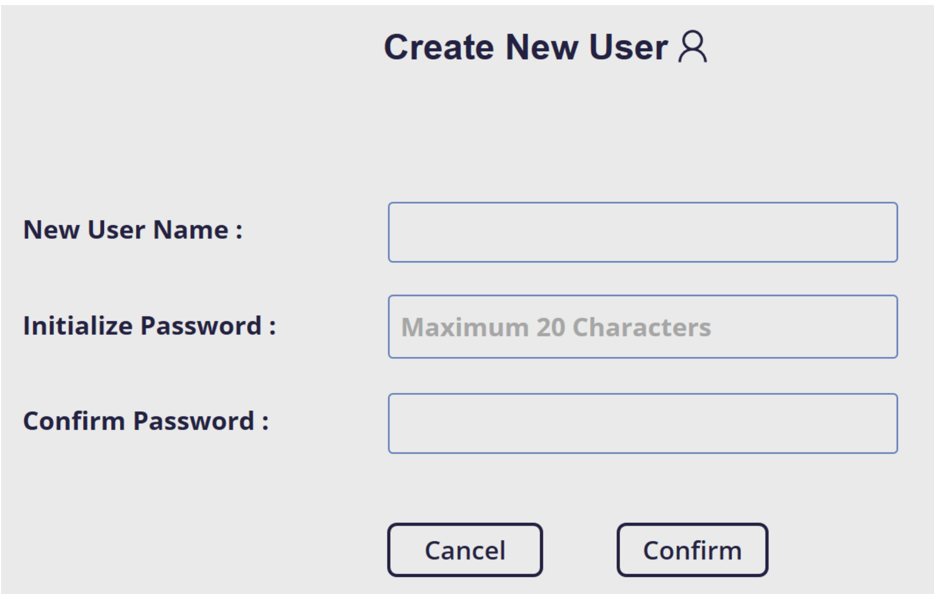
Super admin user login interface



Super admin manages admin users

Currently set Dimitar (CEO) as the super administrator， he can add admin users or delete them， the code behind it will check if the current login user is Dimitar (Super Administrator) if yes， it will Appear button “Users”, if not, nothing happened.

When the Super Administrator presses the button, he will see a list which has all the admin users, then he can decide whether to add a new admin user or delete someone.

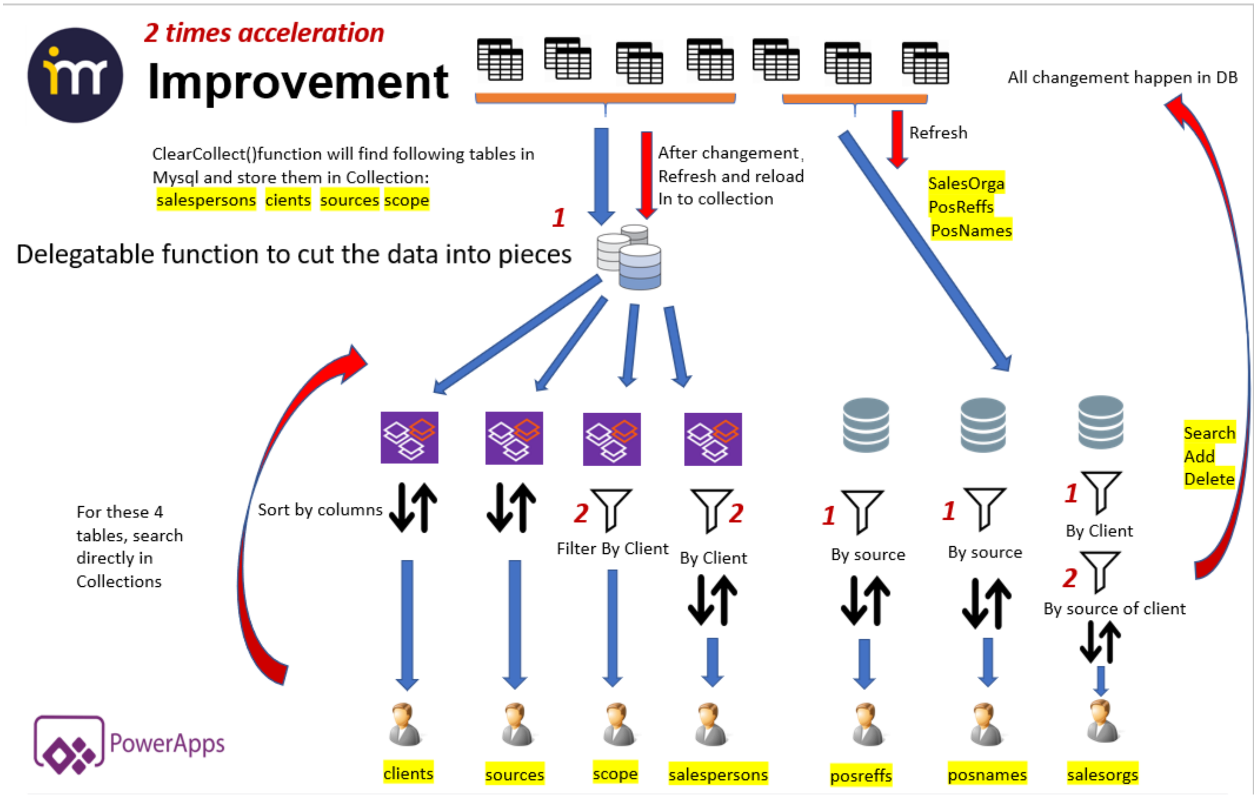


Super admin creates a admin user and gives a password

V.4 Performance improvement

As I mentioned before, because the administrator version needs to import a lot of data, but PowerApps itself is a lightweight framework, so if there is no performance optimization, sometimes it will take a long time to wait for the data to load.

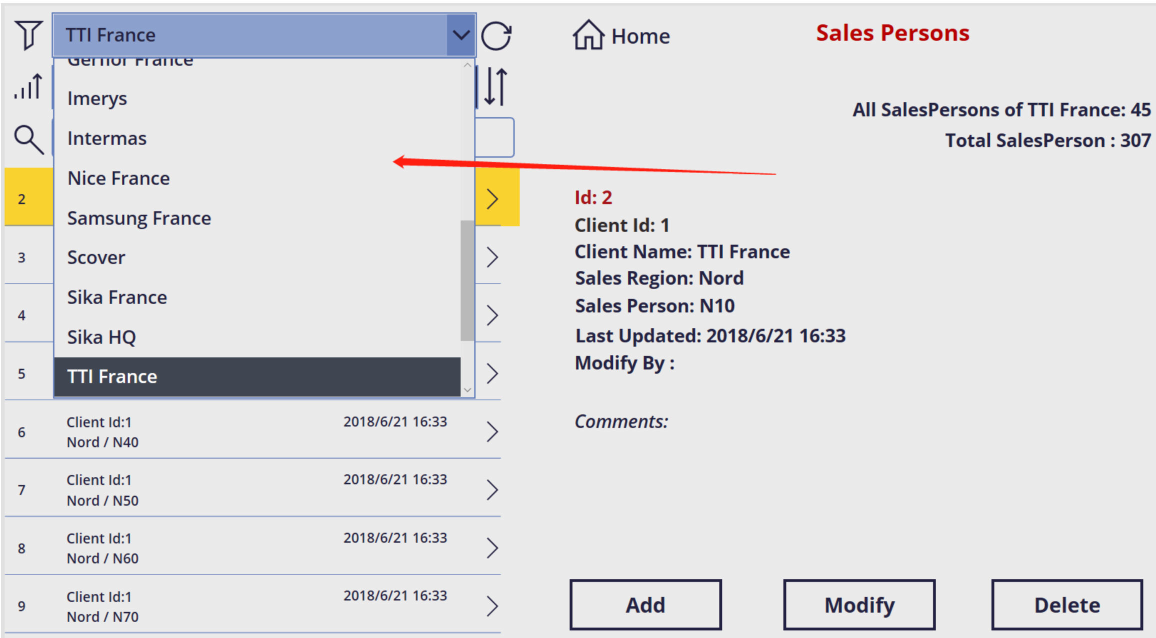
So, I designed A two-times acceleration solution that basically solves the problem and reduces waiting time.



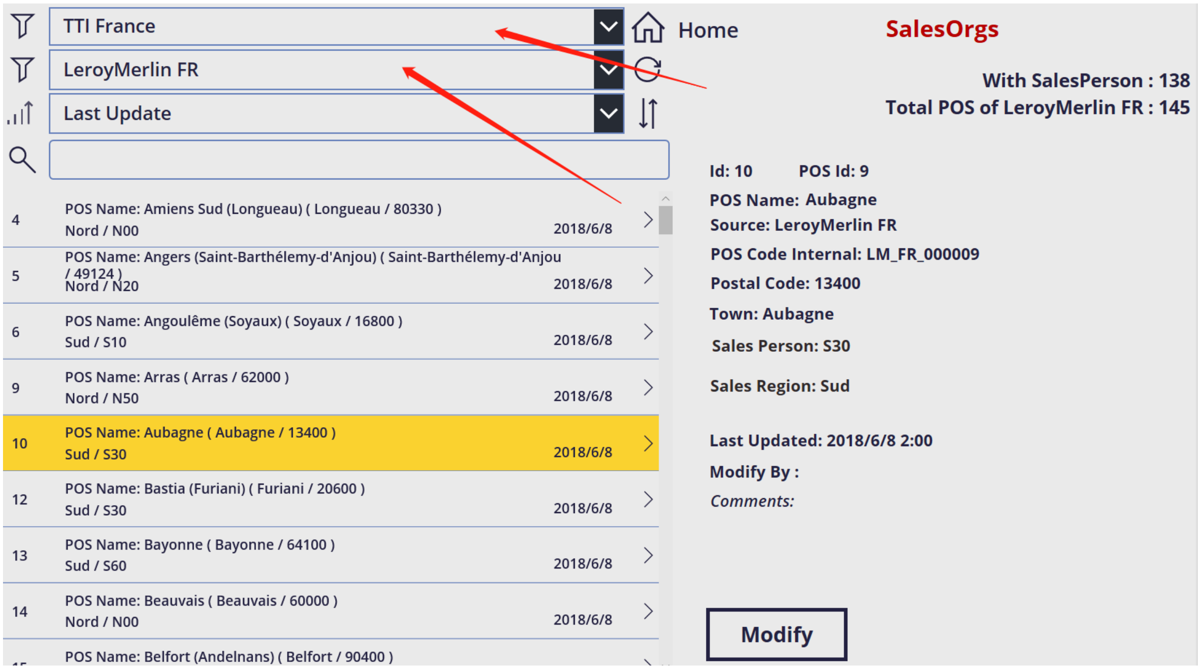
General Structure

The main idea is to cut the data and manage it separately. There is a method called **collection ()** in PowerApps. It can store the data extracted from the database in the local storage, thus speeding up the query, but this method can only be used with a data set less than 5000 rows.

Therefore, the table whose total number of rows less than 5000 rows, such as the table clients, source, we do not have 5000 clients or 5000 sources yet, we can use this method to speed up, but for other tables, I can filter them once, or twice by different data fields, so that only one tenth of the data is extracted at a time, also I added the function Forward sort / Reverse sort, we can search the target data from 2 sides of data set, with all these solutions, I optimized performance significantly.



Exampe1. Interface salespersons filtered by client



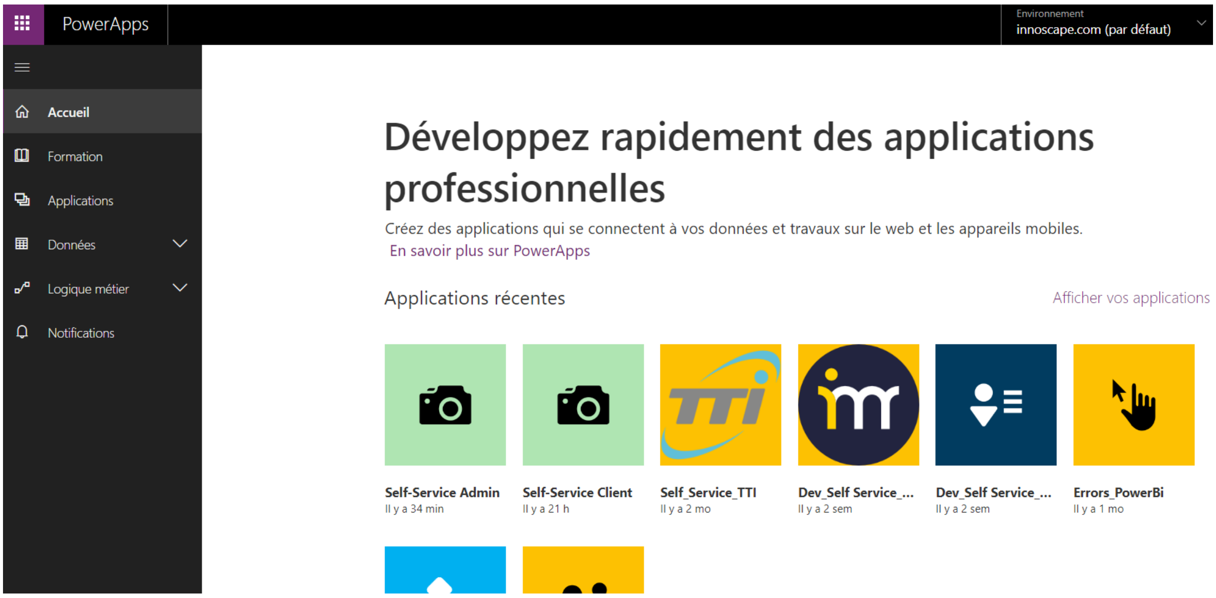
Exampe2. Interface sales organizations filtered by client and source 2 times

Summary of Development

So far, I have completed all the development tasks, and I have gained a lot of expertise from this development process.

It is very important to do the analysis first, because if there are some missing functions, it is basically impossible to start from the zero after the development process, and every time a small change will make many places to be changed.

Secondly, in the development process, we should always think of using simpler code. It is convenient to modify in the future. Also, we should always consider the impact of data volume when testing.



Final 2 versions of PowerApps are done.

VI. Gains and my career plan

VI.1 Summary of Internship

The company has developed rapidly since its establishment two years ago. After six months of internship, I really enjoyed the free and comfortable working environment here. The company's CEO Dimitar has a keen business sense and leadership. As a manager, he has extensive technical experiences.

The rest staffs of the company are experts with many years of work experience. During my internship, they gave me a lot of help and encouragement. I want to thank all of you so much for your patience and great help.

Through this internship, I deeply felt the gap between what I learned from school and the actual needs in real life. I also understood the basic workflow of a small company and gained valuable experience before I started my career. It is different from doing internship in a big company. At INNOSCAPE, I had the opportunity to experience many types of work independently, and I have improved my personal ability while broadening my horizons.

VI.2 Technical gains & Personal Qualities

What I gained most is the improvement of my technical ability and a more comprehensive understanding of the Business model of our company.

From the perspective of technology growth, I have a basic understanding and experience of PowerApps development and Python data collection. I can independently develop a complete program through practice, and sometimes I helped my colleagues to collect data from Internet, So now I'm more familiar with Python programming and the extraction tool Octoparse.

On the other hand, during my internship, we successfully found several new customers, so I had the opportunity to understand our profit model and the needs of customers in the market and have a deeper understanding of the field of Business Intelligence.

When I really became one of the staffs working at INNOSCAPE, I realized lots of necessary qualities to be a professional programmer. The first one is responsibility, which is the fundamental requirement for all the employees to finish tasks and to make effort to the development of company. Like every Monday morning， we have the regular meeting, At the meeting, everyone tries his best to give a piece of advice for the company's development.

Another important quality is the sense of cooperation, especially in a start – up company like us that everyone has a lot of tasks to finish every day. Increasing productivity in the workplace is the principal driver to success in business. We can improve work efficiency significantly through cooperation.

VI.4 My career plan

After this 6-month internship at INNOSCAPE, I realize there is still a very big potential market in the field of Business Intelligence. At present, the world generates huge amounts of data every day. If we can collect, analyze and apply data based on our needs, we can use data to create value in various sectors.

Besides, I am very interested in data mining and data analysis, so I hope in the future I will have the chance to learn more about the knowledge of data mining & analysis.

Currently I want to find a job of Bigdata develop or data analysis after leaving school. After accumulating several years of experience, I will make the next career plan.

VII. References

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