



# Tetras-Lab

One open source platform to write, publish  
and share notebooks

*<https://gitlab.com/tetras-lab/tetras-lab>*

*<https://tetras-lab.io>*



# Summary

1) Why Tetras Lab

2) What is Tetras Lab

3) How to use Tetras Lab



# Jupyter is awesome ...

The screenshot shows the JupyterLab interface. On the left is a file browser with a search bar and a list of files and folders. The main area contains a code editor with Python code, a form for filtering data (Start Date, End Date, activity\_type), and a line chart. The chart displays 'Total - distance (km)' on the y-axis (0 to 300) and time on the x-axis. A red horizontal line is drawn across the chart at approximately 150 km. A large red oval is overlaid on the chart area with the text 'But too complex for Non tech people'.

```
options = raw_type_factory(  
    description = 'Activity type',  
    value='cyclisme'  
)  
)  
)
```

Start Date: 11 / 14 / 2015  
End Date: 05 / 03 / 2023  
activity\_type: cyclisme  
Activité : cyclisme  
enregistrements

Total - distance (km)

et une distance moyenne de 120.65 km / mois en 1483

**But too complex for Non tech people**



# Renderers

- ▼ Simple interface
- ▼ Direct access to notebooks
- ▼ Great for sharing reports to non tech people



## XKCD plots in Matplotlib

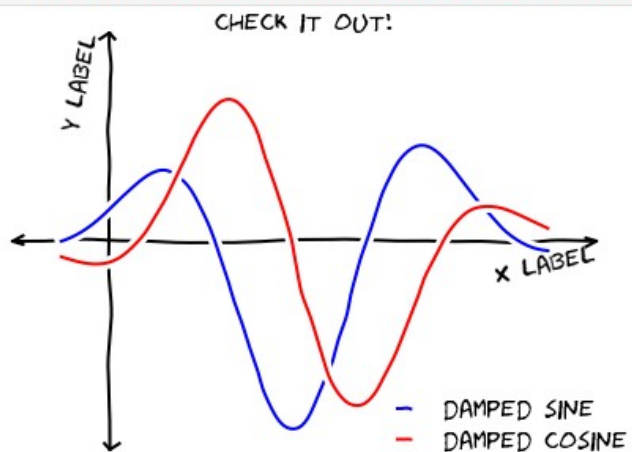
This notebook originally appeared as a blog post at [Pythonic Perambulations](#) by Jake Vanderplas.

*Update: the matplotlib pull request has been merged! See [This post](#) for a description of the XKCD functionality now built-in to matplotlib!*

One of the problems I've had with typical matplotlib figures is that everything in them is so precise, so perfect. For an example of what I mean, take a look at this figure:

```
In [1]: from IPython.display import Image  
Image('http://jakevdp.github.com/figures/xkcd_version.png')
```

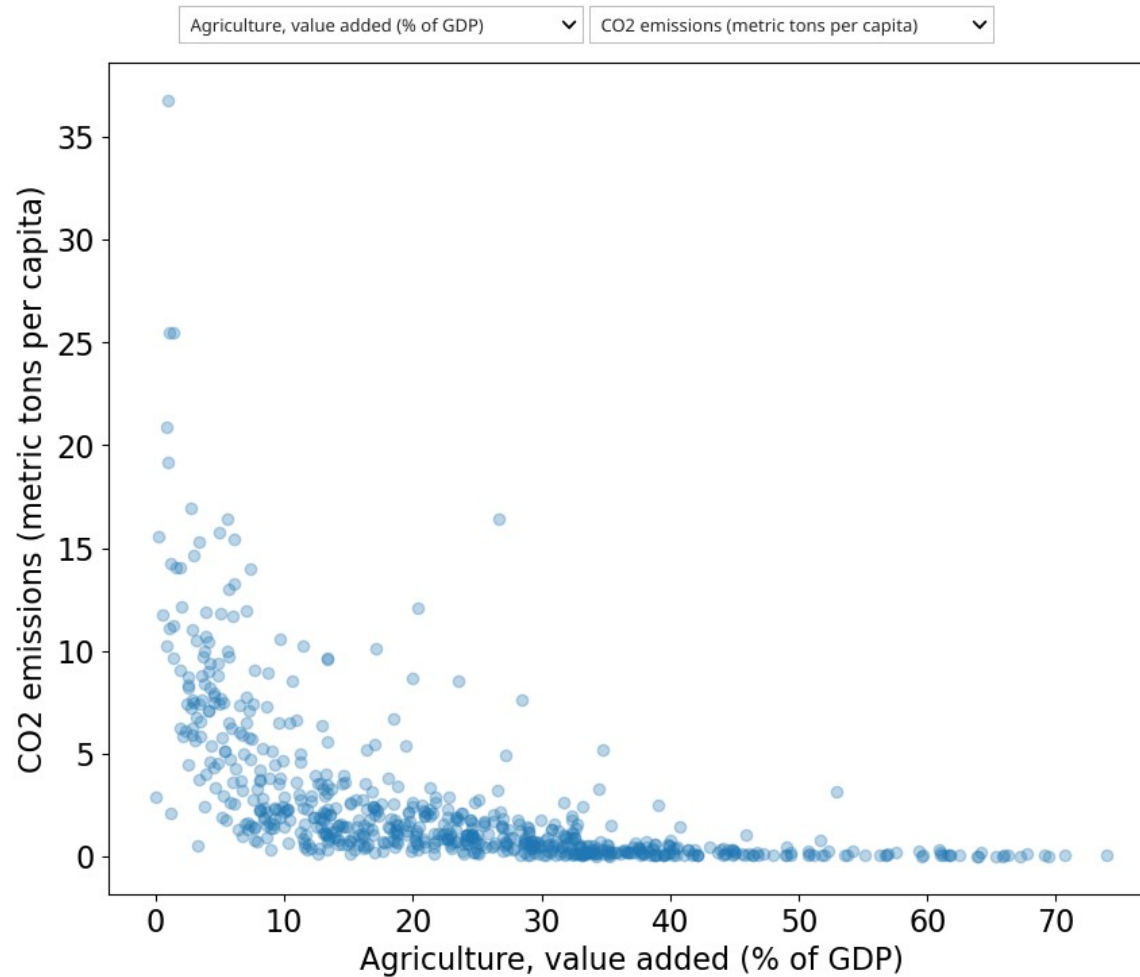
Out[1]:





## Development indicators

[Link to code](#)



*Compare different development indicators.*

Select what indicators to plot in the dropdowns, and use the slider to sub-select a fraction of years to include in the plot.

Data and idea copied from the [Plotly Dash documentation](#).

This example demonstrates combining matplotlib with Jupyter widgets. For more interactive plots, consider using [bqplot](#).



## Renderers limitations

- ▼ No user management
- ▼ No permissions
- ▼ No advanced sharing features



# Data scientists are not system administrators

- ▼ *Managing a data infrastructure*
- ▼ *Deploying notebook to a public server*
- ▼ *Handling assets*
- ▼ ...





# Summary

## 1) Why Tetras Lab

## 2) What is Tetras Lab

1) Quick peek

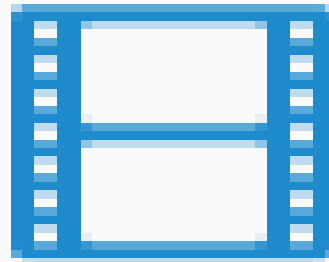
2) Behind the scenes

3) Key features by user roles

## 3) How to use Tetras Lab



## Quick peek





# Summary

## 1) Why Tetras Lab

## 2) What is Tetras Lab

1) Quick peek

2) Behind the scenes

3) Key features by user roles

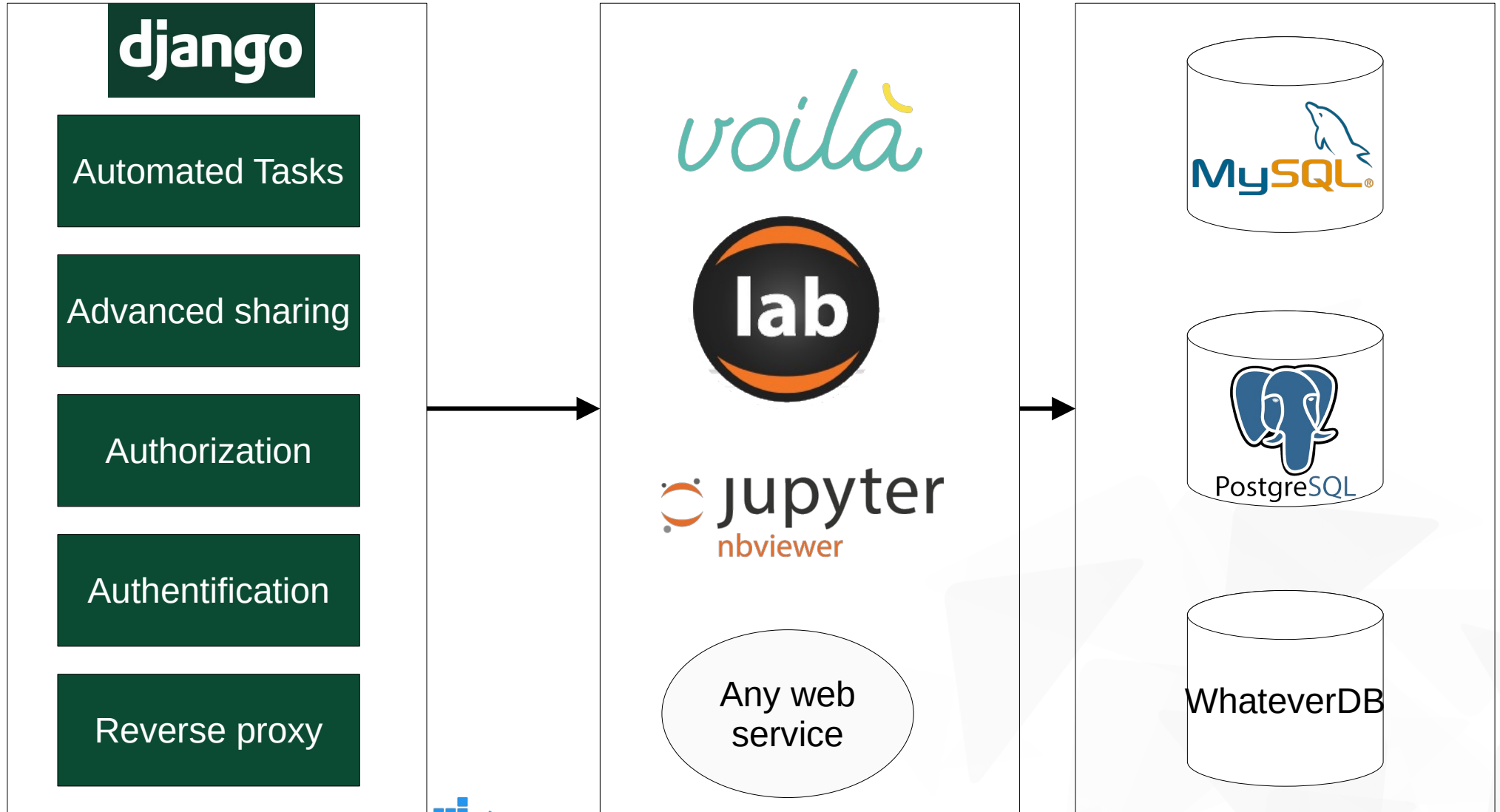
## 3) How to use Tetras Lab



# What is Tetras Lab ?

Front end

Back end





# Summary

## 1) Why Tetras Lab

## 2) What is Tetras Lab

1) Quick peek

2) Behind the scenes

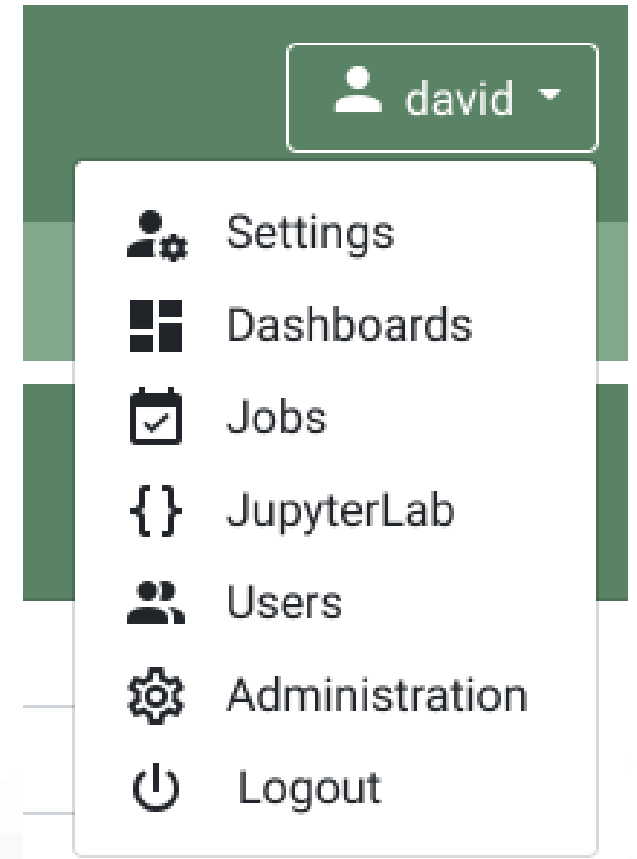
3) Key features by user roles

## 3) How to use Tetras Lab



# Data scientists : Everything in one place

- ▼ Use the same platform to
  - ▼ Manage your users
  - ▼ Write notebooks in jupyter lab
  - ▼ Deploy them as dashboard or automated jobs
  - ▼ Share them





# Data scientists : Dashboard abstraction

Tétrás Lab  
Data intelligence platform

sebreb

Dashboards

Chart →

Shared 5

Voilà

Energy consumption

Share Edit

Curve plot →

Shared with

NbViewer

Evolution of wastage

Share Edit

Data →

Shared with

Toggable

Voilà

Aggregate data

Share Edit

Histogram →

Shared 1

NbViewer

Satisfaction index

Share Edit

Map dashboard →

Shared with

NbViewer

Distribution of customers

Share Edit



# Data scientist : Advanced sharing

Shared with: [ ] No viewer

### Share the dashboard Curve plot

Public link  No

Allow public link creation  Yes

All users  Yes

Some users

Shared with guest users  No

Cancel Save →





# Data scientist : Job automation



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Jobs definitions



## A random CRON job

▶ Running

Jobs outputs

! Last failed job 2023-04-25 11:36:05

✓ Last completed job 2023-04-25 11:37:06

**Input filename** hazard.ipynb  
**Schedule** Every minute  
**Creation time** 2023-04-25 11:29:47  
**Update time** 2023-04-25 11:29:47

Edit Run now

## A successfull CRON job

|| Paused

Jobs outputs

! Last failed job None

✓ Last completed job 2023-04-25 11:32:06

**Input filename** cronTest.ipynb  
**Schedule** At 12:19, on the first Tuesday of the month, every 3 months  
**Creation time** 2023-04-25 11:29:34  
**Update time** 2023-04-25 11:35:22

Edit Run now

## A faild CRON job

|| Paused

Jobs outputs

! Last failed job 2023-04-25 11:37:05

✓ Last completed job None

**Input filename** failedCron.ipynb  
**Schedule** At 05:10, every 5 days  
**Creation time** 2023-04-25 11:29:14  
**Update time** 2023-04-25 11:37:55

Edit Run now



# Regular user : simple interface



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ijoliotcurie ▾

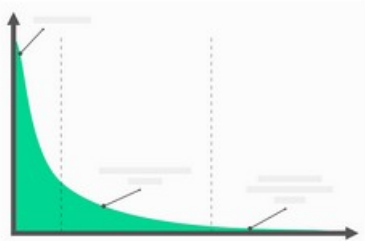


Tableaux de bord



Curve plot →

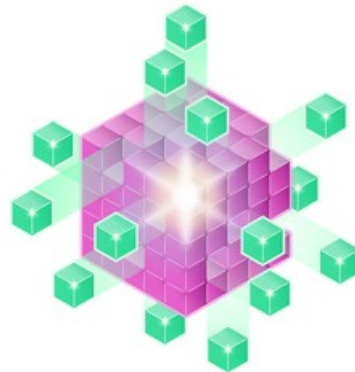
Evolution of wastage



Partager

Data →

Aggregate data



Map dashboard →

Distribution of customers



Partager



# Administrators : User management



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Users



| Username     | First name | Last name    | Email                  | Roles                         | Actions   |
|--------------|------------|--------------|------------------------|-------------------------------|---|
| alovelace    | Ada        | Lovelace     | ada@lovelace.com       | Administrator, Data Scientist | <a href="#">Edit</a><br><a href="#">Impersonate</a><br><a href="#">Reset password</a> |
| bpascal      | Blaise     | Pascal       | blaise@pascal.com      | Regular user                  | <a href="#">Edit</a><br><a href="#">Impersonate</a><br><a href="#">Reset password</a> |
| educhatelet  | Emilie     | du Châtelet  | emilie@duchatelet.net  | Data Scientist                | <a href="#">Edit</a><br><a href="#">Impersonate</a><br><a href="#">Reset password</a> |
| guest_zisulb |            |              |                        | shared account, Guest         | <a href="#">Edit</a><br><a href="#">Impersonate</a>                                   |
| hpoincare    | Henri      | Poincaré     | henri@poincare.com     | Regular user                  | <a href="#">Edit</a><br><a href="#">Impersonate</a><br><a href="#">Reset password</a> |
| ijoliotcurie | Irène      | Joliot-Curie | irene@joliot-curie.com | Regular user                  | <a href="#">Edit</a><br><a href="#">Impersonate</a>                                   |



# Administrators : Highly customizable

- ▼ Add any (data) backend
- ▼ Pre-defined flavors (geo, java)
- ▼ Install your own packages
- ▼ Add a web service with only 2 lines of code
- ▼ Write your own theme

The screenshot shows a 'Theme' configuration panel with a dark green header. It contains several rows of settings, each with a label, a color swatch, and a text input field. The settings are:

- Background primary: #5A8264
- Background secondary: #84998F
- Background danger: #822C2C
- Foreground: #FFFFFF
- Grey: #DCDAD1
- Curve: #4D4D4D
- Bar chart #1: #00B1D8
- Bar chart #2: #AD1579
- Bar chart #3: #B7CE20

Below the color settings are four file selection options, each with a 'Choose file' button and a 'Browse' button:

- Favicon (.ico)
- Logo (.png)
- Loading\_logo (.png)
- Default\_dashboard (.svg)

At the bottom of the panel are three buttons: 'Reset' (red), 'Cancel' (grey), and 'Save' (green with a right arrow).



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# Use case : Dash applications with geo data

Financement :  R&D :  Tétrás Lab  
Data intelligence platform

user

Tableaux de bord

1 - Vigilance glissements SIGALE →



Lien public

2 - Vigilance chutes de blocs SIGALE →



Lien public

3 - Historique d'événements SIGALE →



Créer un lien public

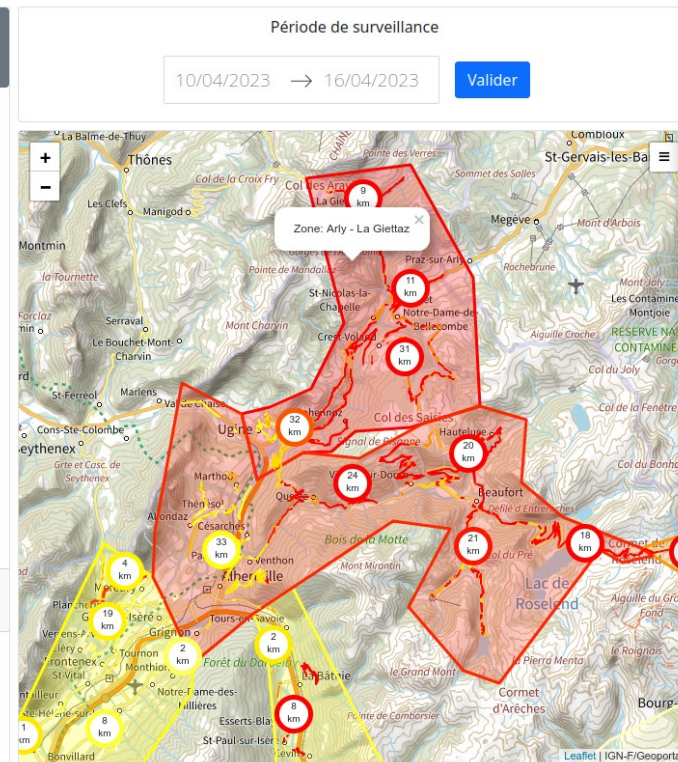




# Use case : Dash application with geo data

Financement: La Région Savoie, R&D: Tétrás Lab Data intelligence platform

1 - Vigilance glissements SIGALE





# Use case : Additional web service : webvowl

Demo : Tetras MARS

Browse ontology

You can click a class to see its instances in the right panel, they are not shown in the graph.  
[Open ontology browser in separate tab.](#)

WebVOWL  
1.1.7

Search

Ontology Export Filter Options Modes Reset Pause About





# Use case Business intelligence

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Tableaux de bord

1 - Suivi AO-ADJ-CMD-FAC →

2 - Exports données mini... →

3 - Scoring clients ADJ →

4 - Prévisionnels CMD & ... →



# Use case Business intelligence

Tétrás Lab  
Data intelligence platform

daxid

## 3 - Scoring clients ADJ

Télécharger le fichier xlsx source

Entrez votre sélection ci dessous, par exemple : le nom du client «  », le code client « 127174 », les préfixes « DIRCO\_ » pour une direction commerciale, « EQU\_ » pour une équipe, le nom d'un commercial «  »

Total

Total / nan / nan

Score global :



| Année | Nbr. d'affaires |        |        | Vol. équ. prédalles |        |        |
|-------|-----------------|--------|--------|---------------------|--------|--------|
|       | cmd             | perdu  | score  | cmd                 | perdu  | score  |
| 2019  | 5,100           | 6,000  | 11,100 | 11,100              | 11,100 | 11,100 |
| 2020  | 4,000           | 4,200  | 8,200  | 8,200               | 8,200  | 8,200  |
| 2021  | 5,500           | 6,000  | 11,500 | 11,500              | 11,500 | 11,500 |
| 2022  | 4,600           | 7,000  | 11,600 | 11,600              | 11,600 | 11,600 |
| Total | 19,200          | 20,800 | 40,000 | 40,000              | 40,000 | 40,000 |



## Conclusion

- ▼ One platform to write, publish and Share
- ▼ AGPL V3 + <https://gitlab.com/tetras-lab/tetras-lab>
- ▼ Easy deployment (docker)
- ▼ Built on top of standard tools
  - ▼ Jupyter lab
  - ▼ NbViewer
  - ▼ Voilà
  - ▼ Django



# Thanks for your attention

- ▼ Contact us : [contact@tetras-lab.io](mailto:contact@tetras-lab.io) -- <https://tetras-lab.io>
  - ▼ Installation (SaaS or on premises)
  - ▼ Adaptation
  - ▼ Advises
  - ▼ Data science
  
- ▼ Sources : <https://gitlab.com/tetras-lab/tetras-lab>

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