



PlantPredict Performance API / Python SDK Introduction and Demonstration

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Question: How can the PlantPredict API / SDK help me?

Answer: Increase your productivity

Follow-Up Question: Oh yeah, how?



Answer: Interacting with PlantPredict programmatically allows alternative automation workflows that can be more efficient than working directly in the user interface

Agenda

I. PlantPredict Overview

- I. Architecture
- II. Libraries, Projects and Predictions

II. Introduction to the Performance API

- I. What's an API?
- II. Understanding the Performance API
- III. Accessing the Performance API (using Postman)
- IV. Performance API in action

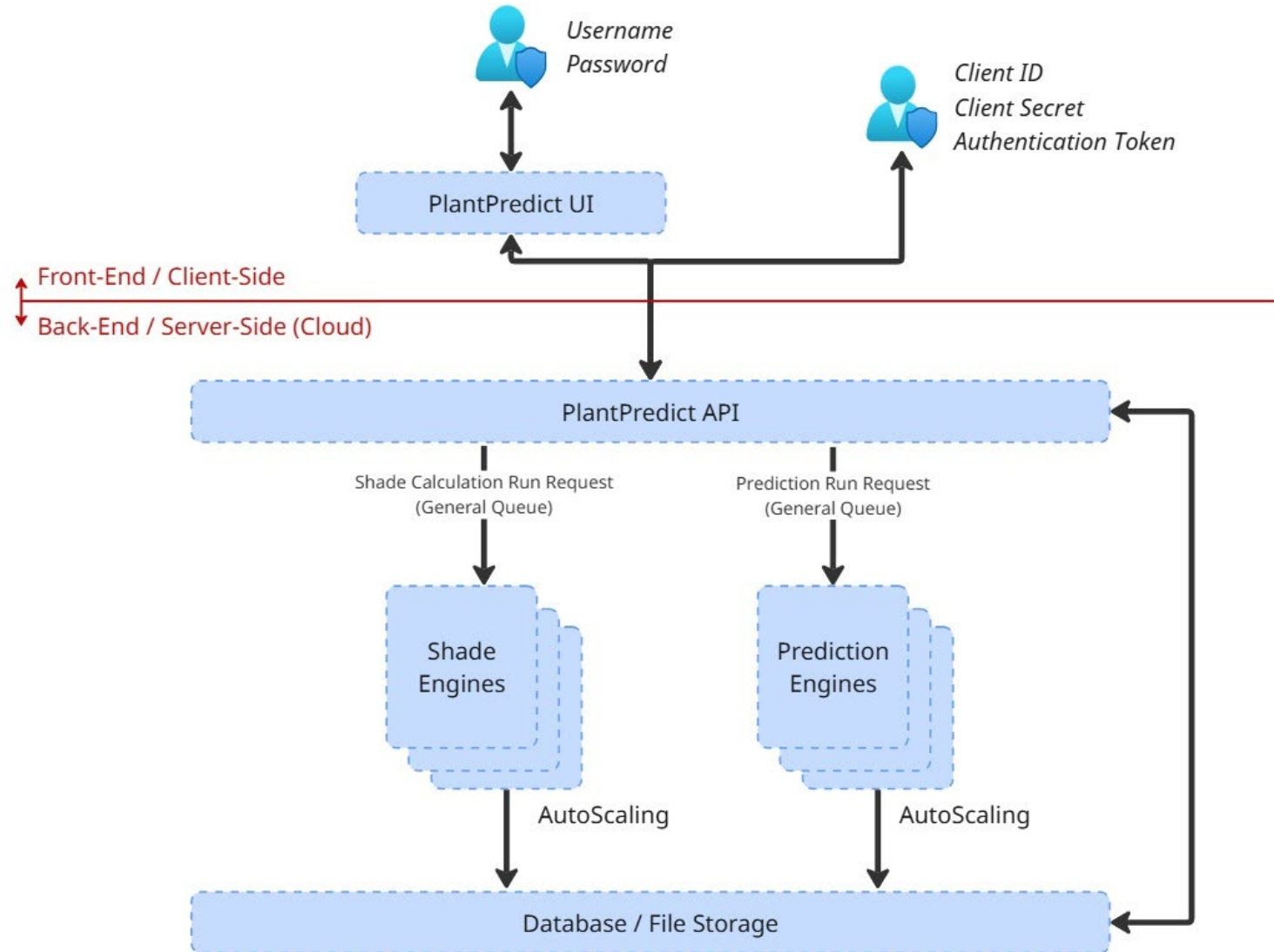
III. Introduction to the Python SDK

- I. What is the PlantPredict Python SDK?
- II. How to access and install the SDK
- III. SDK in action

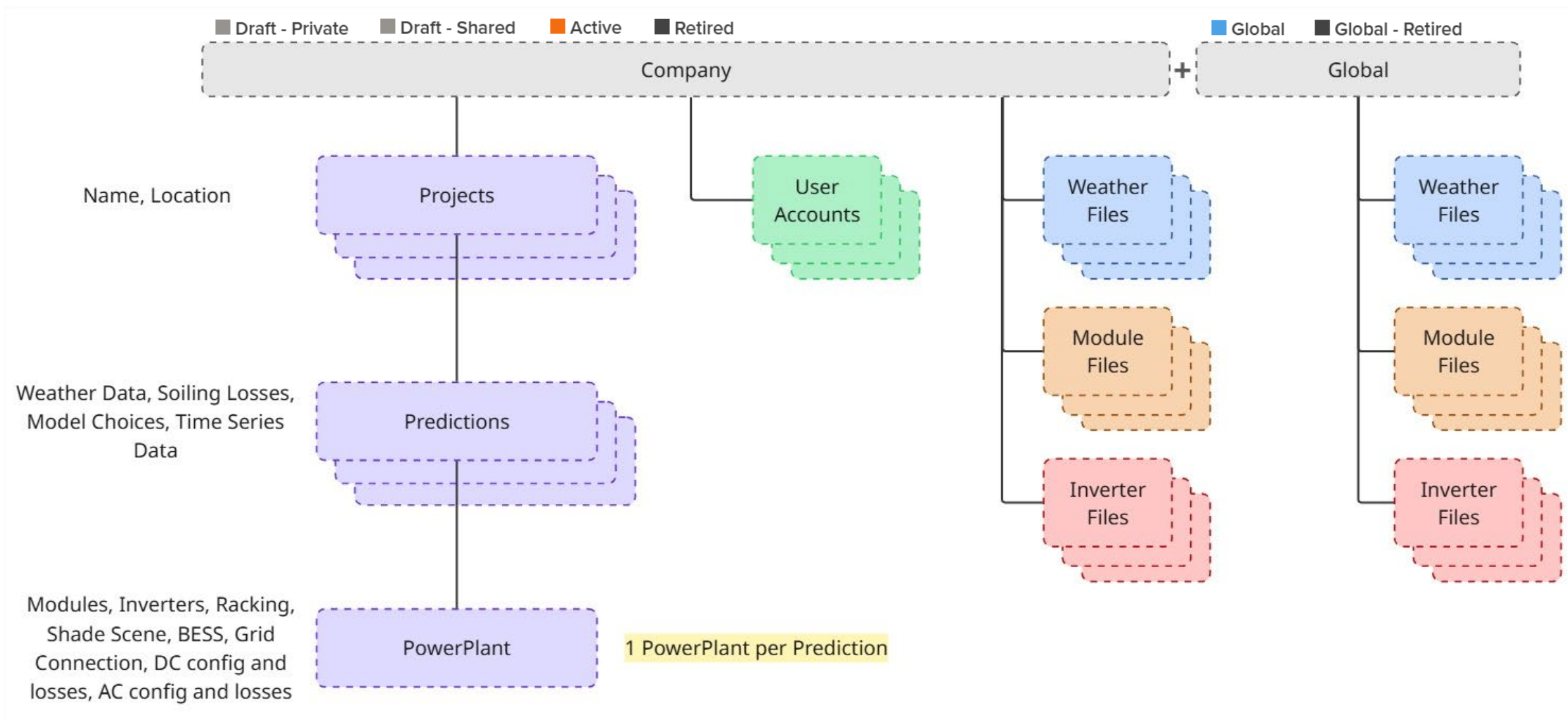
IV. Industry Use Cases

PlantPredict Overview

Architecture

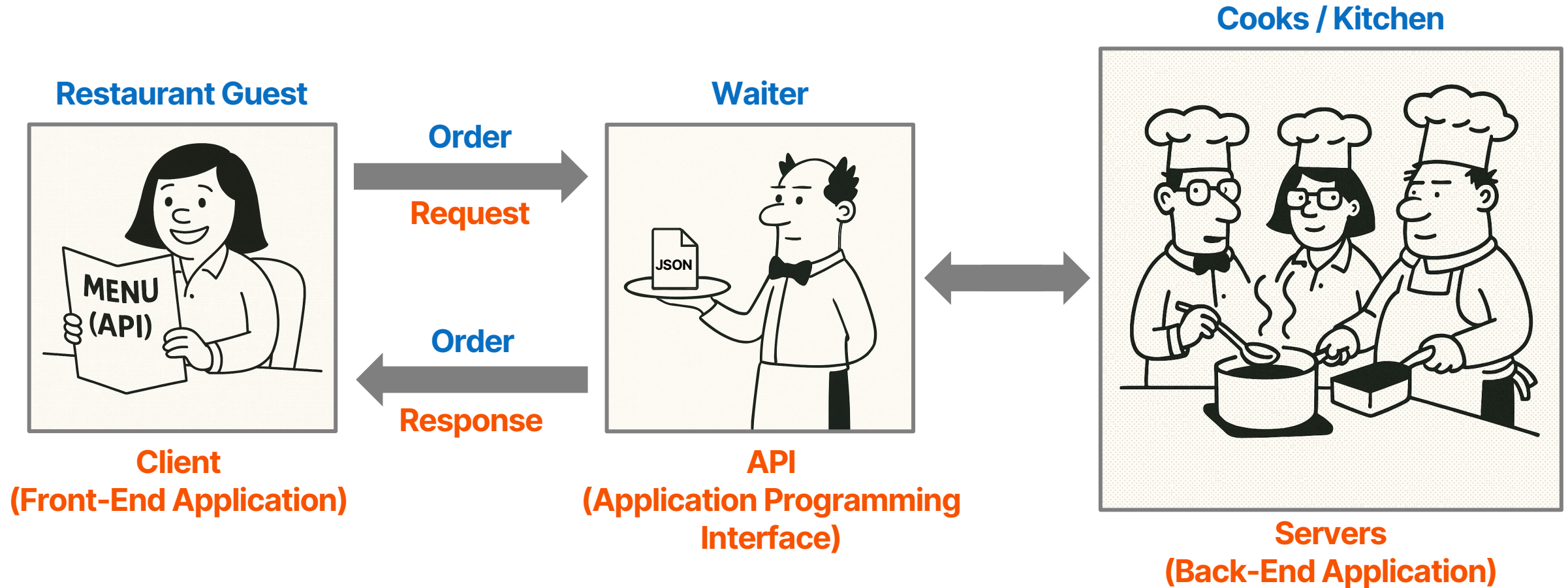


Libraries, Projects and Predictions

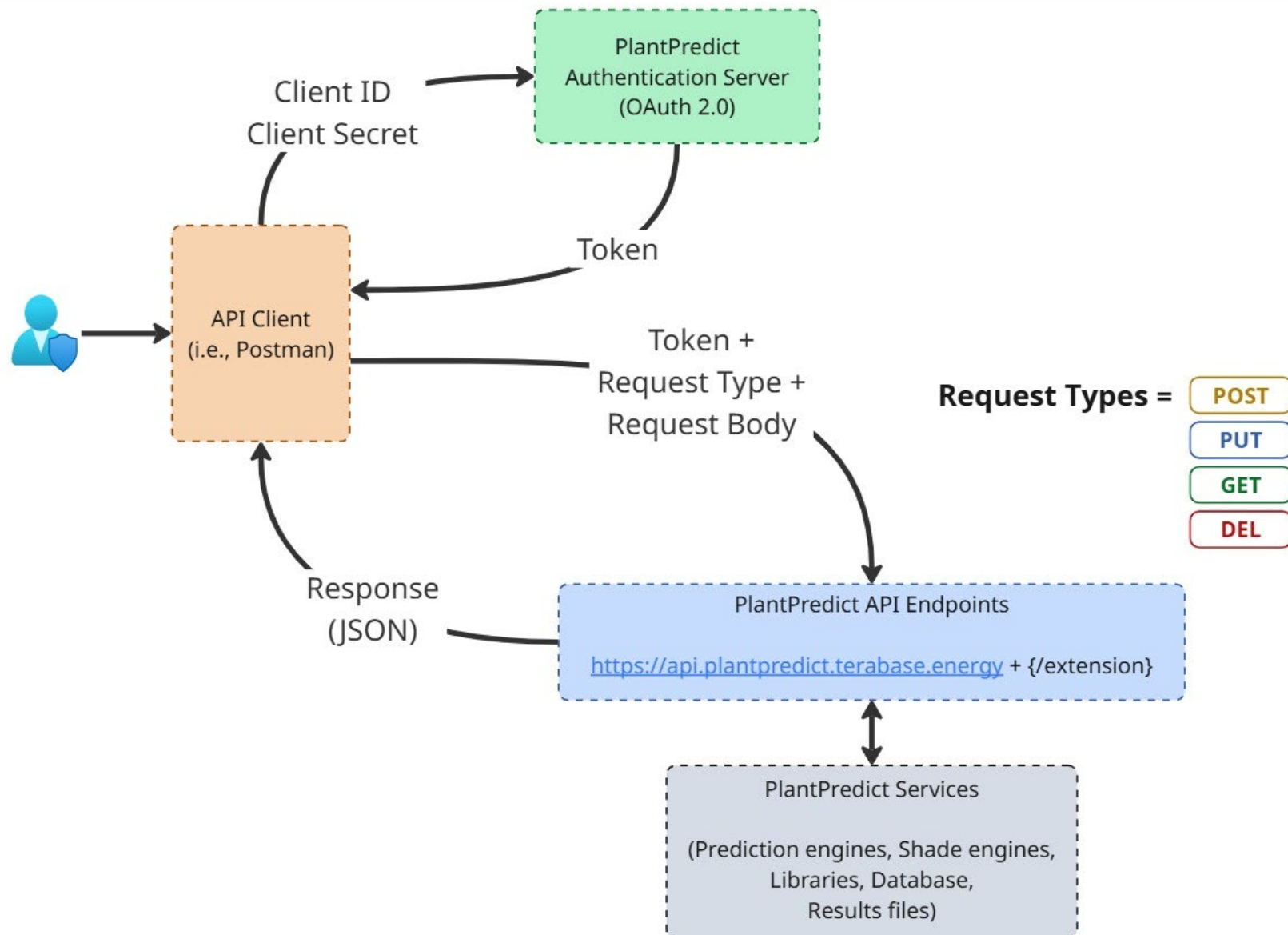


Introduction to the Performance API

What's an API?

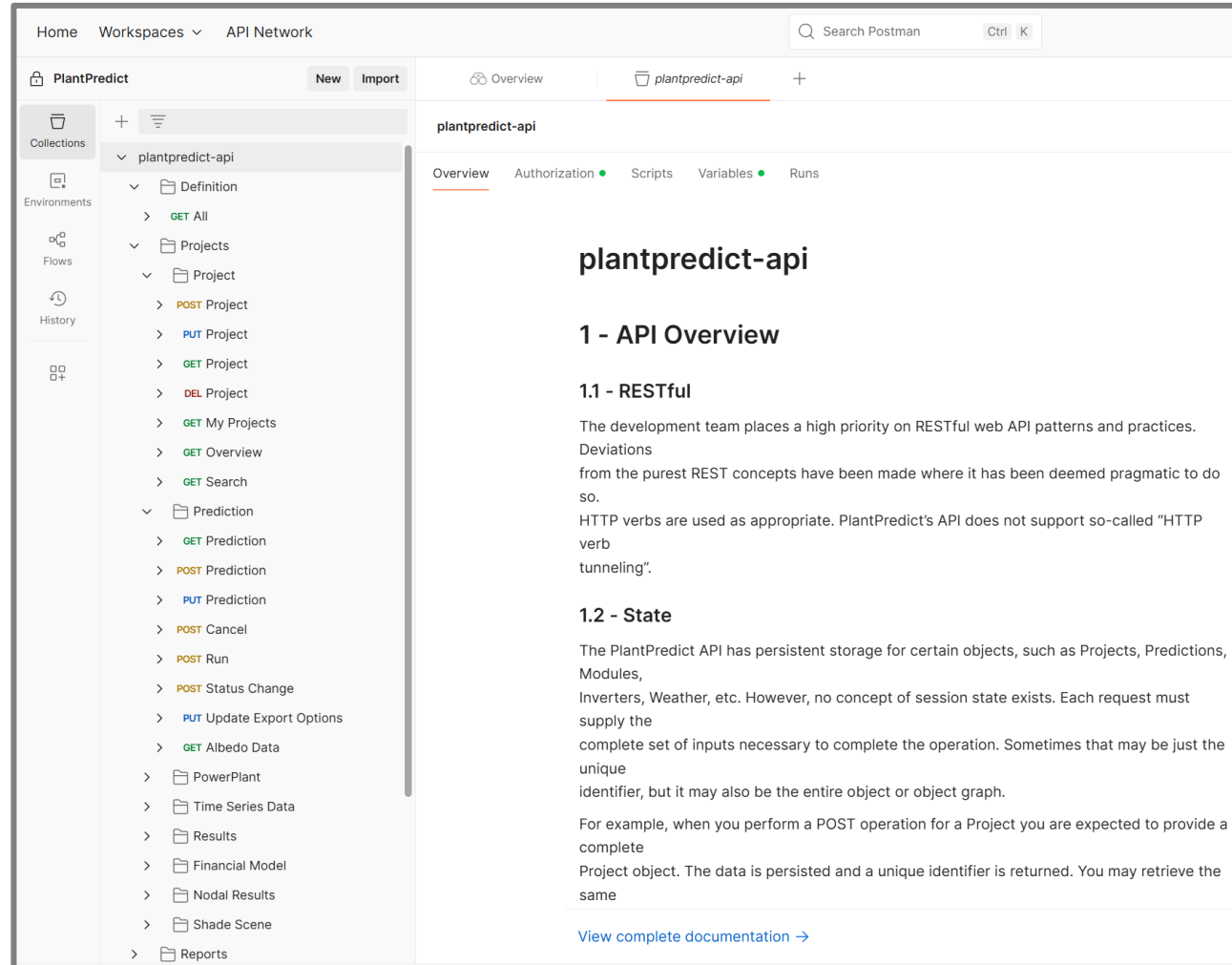


Understanding the Performance API



Accessing the Performance API

Import API Collection into Postman



Quick Start Guide

<https://static.plantpredict.terabase.energy/publicstatic/PlantPredict%20Performance%20API%20Quick%20Start%20Guide.pdf>

API Documentation

<https://documenter.getpostman.com/view/3855302/UVsHUoHa>

Helpful Config Settings

Base URL: <https://api.plantpredict.terabase.energy>

Access Token URL: <https://terabase-prd.auth.us-west-2.amazoncognito.com/oauth2/token>

Scope: transactions/post transactions/get

Introduction to the Python SDK

What is the PlantPredict Python SDK?

- The SDK (Software Development Kit) is an open-source Python package that functions as a wrapper for the Performance API.
- It simplifies and abstracts the process of communicating with the remote API.
- It allows you to interact with API resources using native Python classes and methods instead of writing raw HTTP requests manually.

What is the PlantPredict Python SDK?

Example:
Creating a New
Module in
PlantPredict Using
a PAN file

With SDK

Without SDK

```
module_upload_SDK.py x
1 import plantpredict
2
3 api = plantpredict.Api(
4     client_id="YOUR_CLIENT_ID",
5     client_secret="YOUR_CLIENT_SECRET"
6 )
7
8 module = api.module()
9
10 module.upload_pan_file(
11     file_path="Files/FS-7565A-TR1 CdTe Jul2023_v7210.PAN"
12 )
```

```
module_upload.py x
1 import requests
2 import json
3
4 base_url = "https://api.plantpredict.terabase.energy"
5 auth_url = "https://terabase-prd.auth.us-west-2.amazonaws.com/oauth2/token"
6
7 client_id = "YOUR_CLIENT_ID"
8 client_secret = "YOUR_CLIENT_SECRET"
9
10 headers_auth = {"content-type": "application/x-www-form-urlencoded"}
11 params_auth = {"grant_type": "client_credentials",
12               "scope": "transactions/post transactions/get",
13               "client_id": client_id,
14               "client_secret": client_secret}
15 response_auth = requests.post(url=auth_url, headers=headers_auth, params=params_auth)
16
17 access_token = response_auth.json()['access_token']
18 headers = {"Authorization": "Bearer " + access_token}
19
20 file_name = "FS-7565A-TR1 CdTe Jul2023_v7210"
21 file_path = "Files/FS-7565A-TR1 CdTe Jul2023_v7210.PAN"
22 json_parse = requests.post(
23     url=base_url + "/Module/ImportPANFile",
24     files=[(file_name, (file_name, open(file_path, 'rb'), 'application/octet-stream'))],
25     headers=headers,
26 )
27
28 print(json_parse.status_code)
29
30 create_request = requests.post(
31     url=base_url + "/Module/CreatePANFileModule",
32     headers=headers,
33     json=json.loads(json_parse.content),
34 )
35
36 print(create_request.status_code)
```

How to Access and Install the Python SDK

Local IDE

Install Python
<https://www.python.org/>

Select / Install an IDE:
(i.e., IDLE, Pycharm, VSCode)

Create a virtual environment
for your project
(Recommended)

Web IDE

Select / Open a web-based
python IDE:

pythononline.net
github.com/codespaces
replit.com

Use IDE package installer or use 'pip' to install from
command prompt:

```
pip install plantpredict
```

SDK Quick Start Guide

<https://static.plantpredict.terabase.energy/publicstatic/PlantPredict%20Python%20SDK%20Quick%20Start%20Guide.pdf>

SDK Repository and Documentation

<https://github.com/plantpredict/python-sdk/>

SDK Community Discussions

<https://github.com/plantpredict/python-sdk/discussions>

Python SDK in action

Live Demonstration:

- Verify Access Token
- Automate predictions
 - Clone a base prediction x 5
 - Update the DC/AC Ratio
 - Run the prediction
 - Get the Total Energy and Inverter Limitation Loss
 - Delete the Prediction
 - Plot the results

Industry Use Cases

Basic (Utility Scripts)

- Remove duplicate modules / inverters / weather files
- Compare inputs or outputs across two (or more) predictions
- Find [projects / predictions / modules / inverter / weather files] that meet certain criteria
- Reassign ownership of assets projects / predictions / modules / inverter / weather files to different users

Intermediate (Modeling Automation)

- Run project sensitivity analysis using design and product variations
- Compare product performance across design and geographic variations
- Run Monte Carlo simulations for uncertainty analysis
- Visualize prediction results in custom ways

Advanced (Software Integration)

- Embed PlantPredict within existing business software and workflows, Including:
 - Automate prediction creation from other software applications used in the design and project management process (i.e., CAD, Excel, Salesforce, Procore)
 - Automate the creation of contract exhibits or specs using PlantPredict data
 - Retrieve PlantPredict data for up-to-date development pipeline metrics
- Real-time operational asset performance modeling and analytics

Reference

Quick Start Guides

PlantPredict API Guide



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PlantPredict SDK Guide



<https://static.plantpredict.terabase.energy/publicstatic/PlantPredict%20Python%20SDK%20Quick%20Start%20Guide.pdf>



Terabase