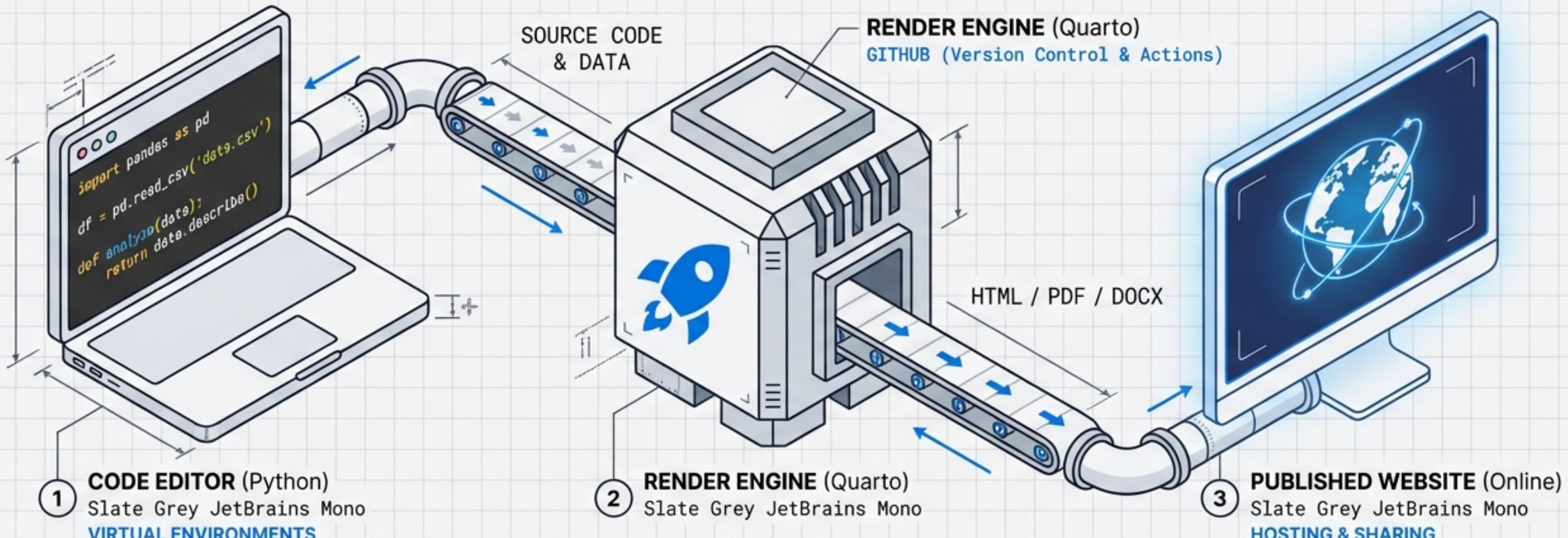


# The Data Science Portfolio Stack

Understanding Why We Use Quarto, GitHub, and Virtual Environments



Goal: Move from following instructions  
to understanding the architecture.

# You Are Building More Than Just a Script

Raw Script



```
1 import pandas as pd
2 import matplotlib.pyplot as plt
3 data = {'A': 25, 'B': 45, 'C': 95, 'D': 78, 'E': 32}
4 df = pd.DataFrame(data, index=[0])
5 plt.bar(data.keys(), data.values())
6 plt.title('Sample Bar Chart')
7 plt.show()
```

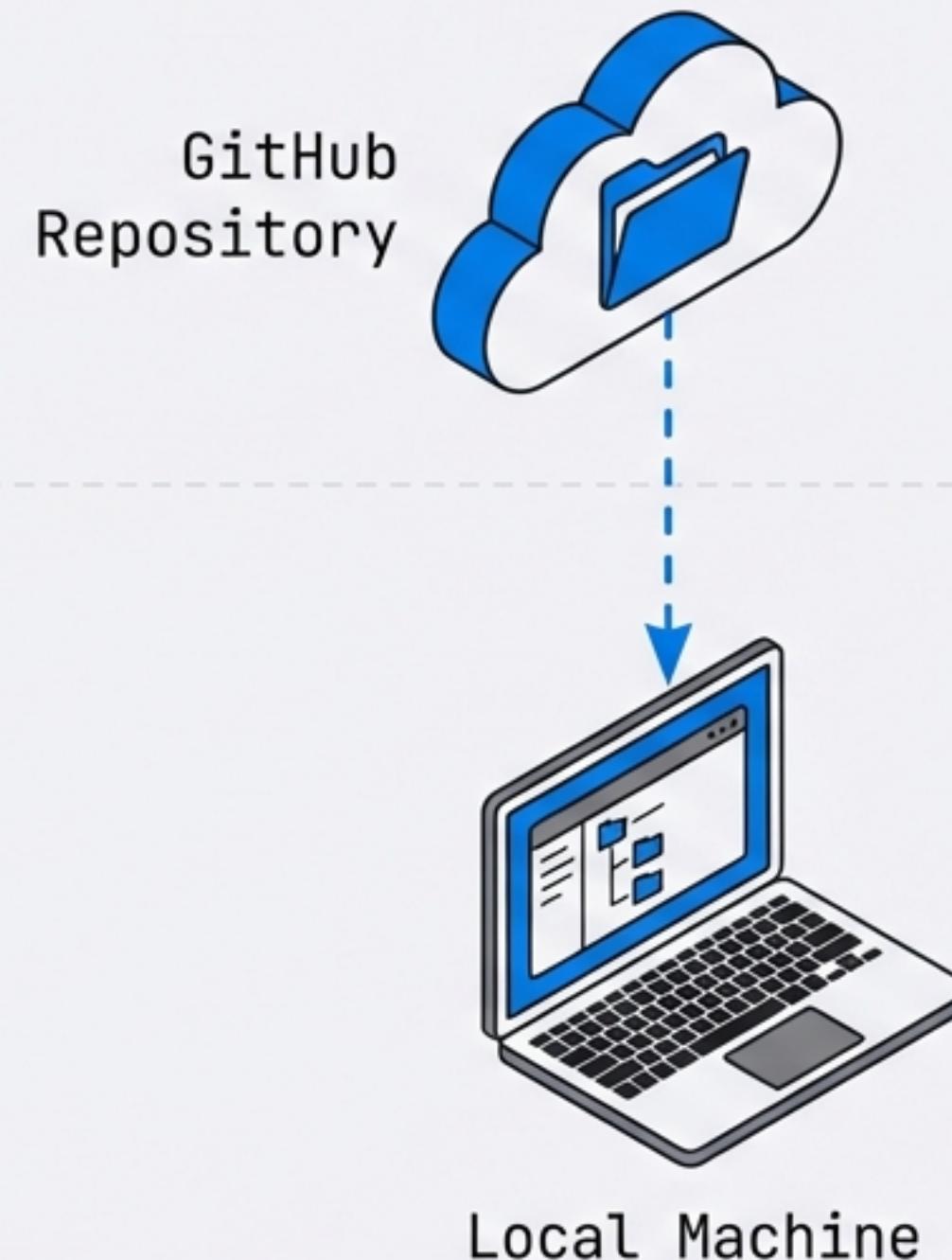
The Quarto Workflow

Professional Portfolio



**The Why:** Business stakeholders need reproducible reports, not raw code. Quarto bridges this gap.

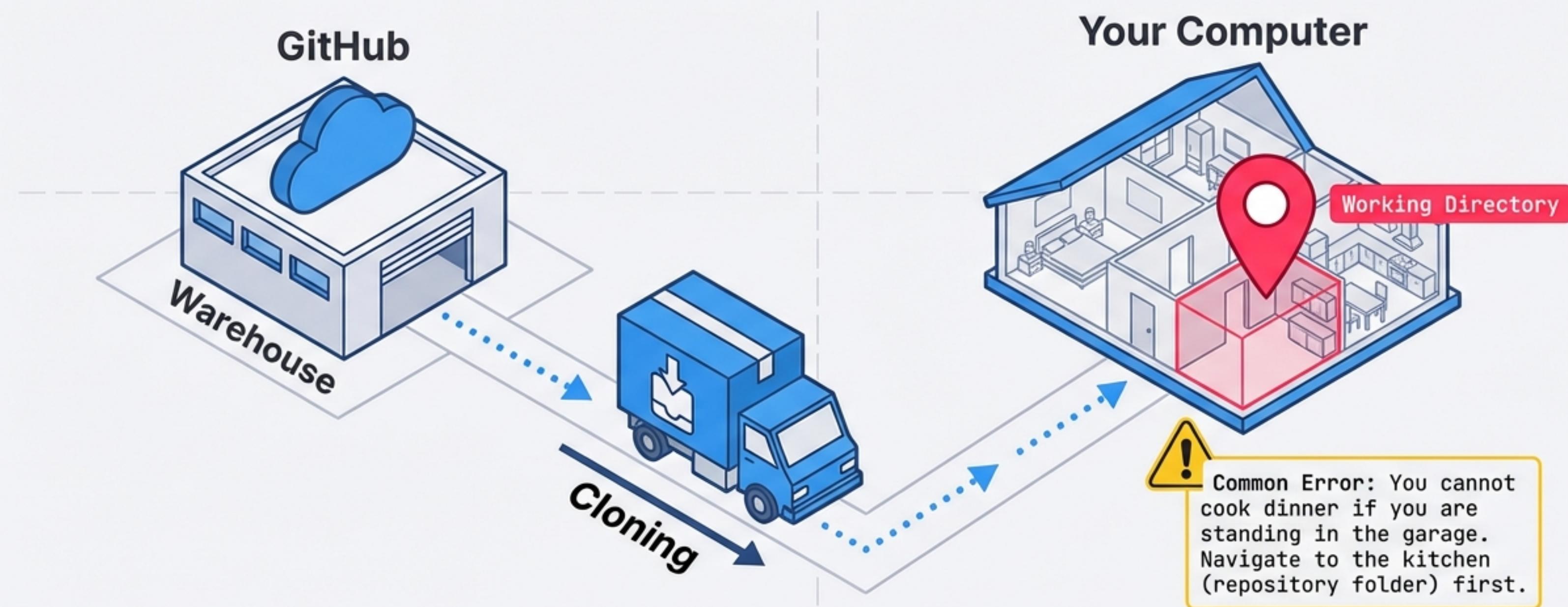
# The Foundation: GitHub & Repositories



## Why use a Repository?

- **Safety:** Cloud backup prevents data loss.
- **Portfolio:** Enables public hosting via GitHub Pages.
- **Organization:** Isolates project files from other coursework.

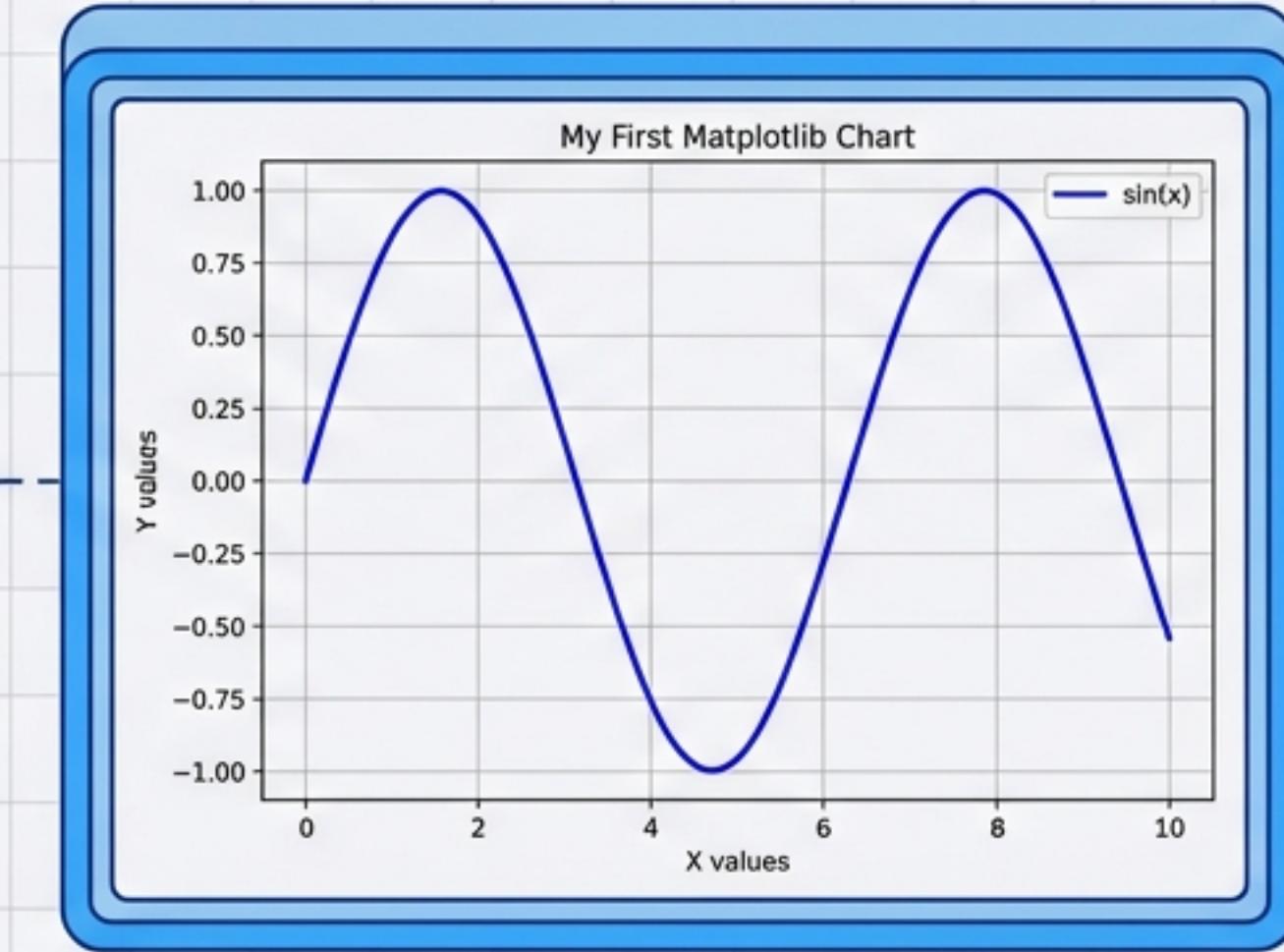
# Concept Check: Cloning & The Working Directory



# The Engine: Python & Matplotlib

```
x = np.linspace(0, 10, 100)
y = np.sin(x)
plt.plot(x, y)
```

Automated  
Visualization

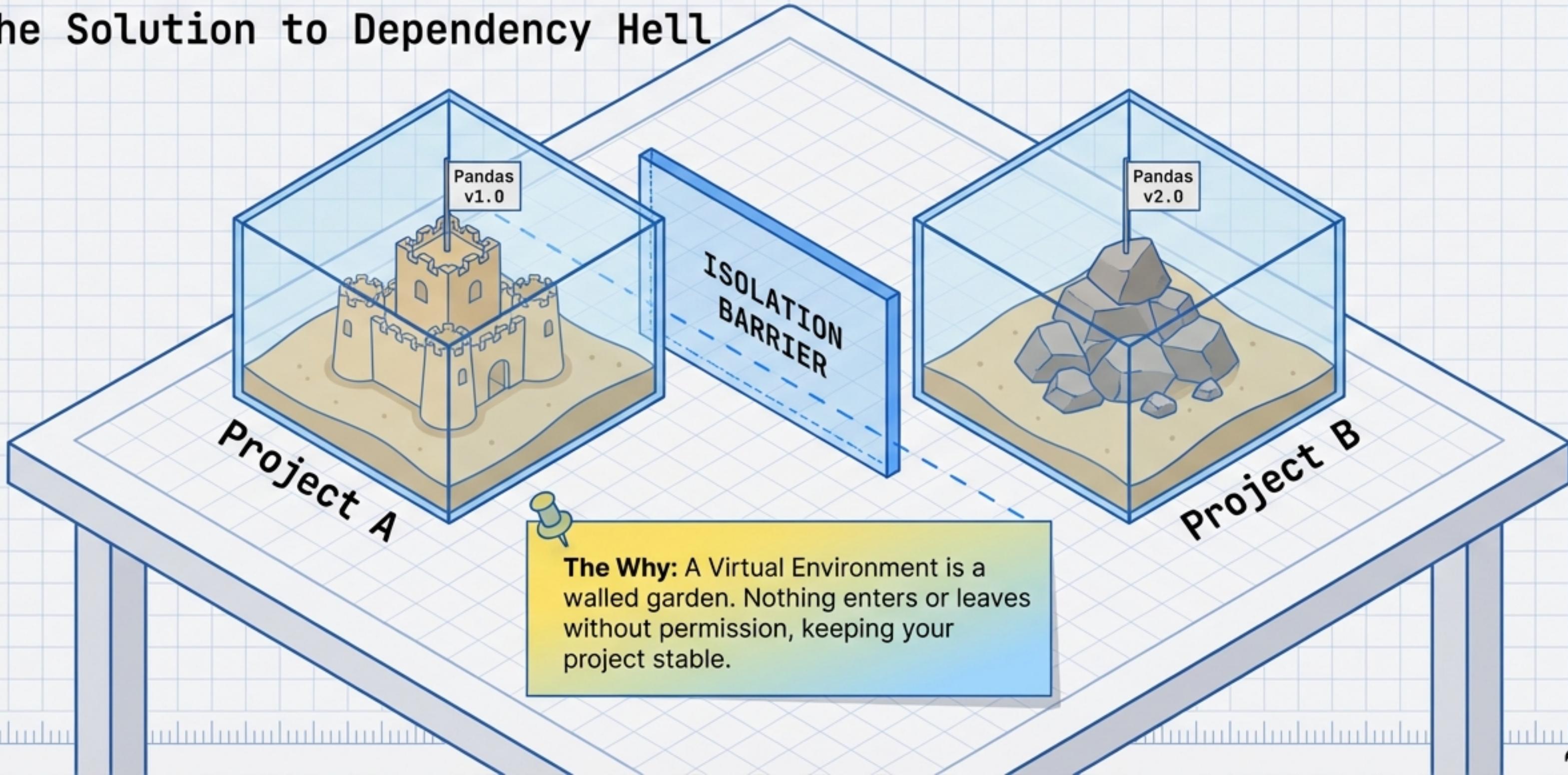


**The Why:** We script charts so they are reproducible.  
If data changes, the chart updates instantly.

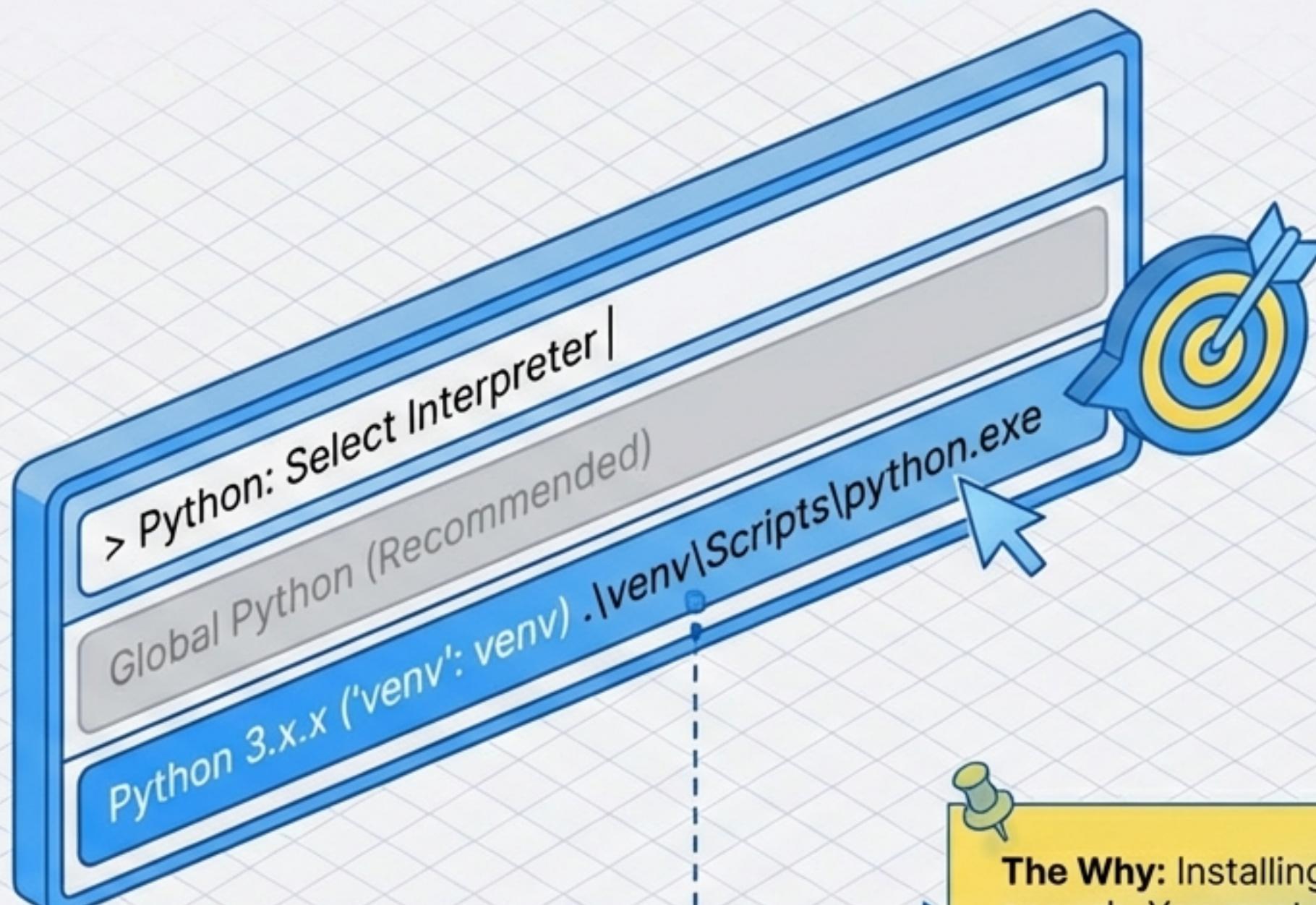


# The Protection: Virtual Environments (venv)

## The Solution to Dependency Hell



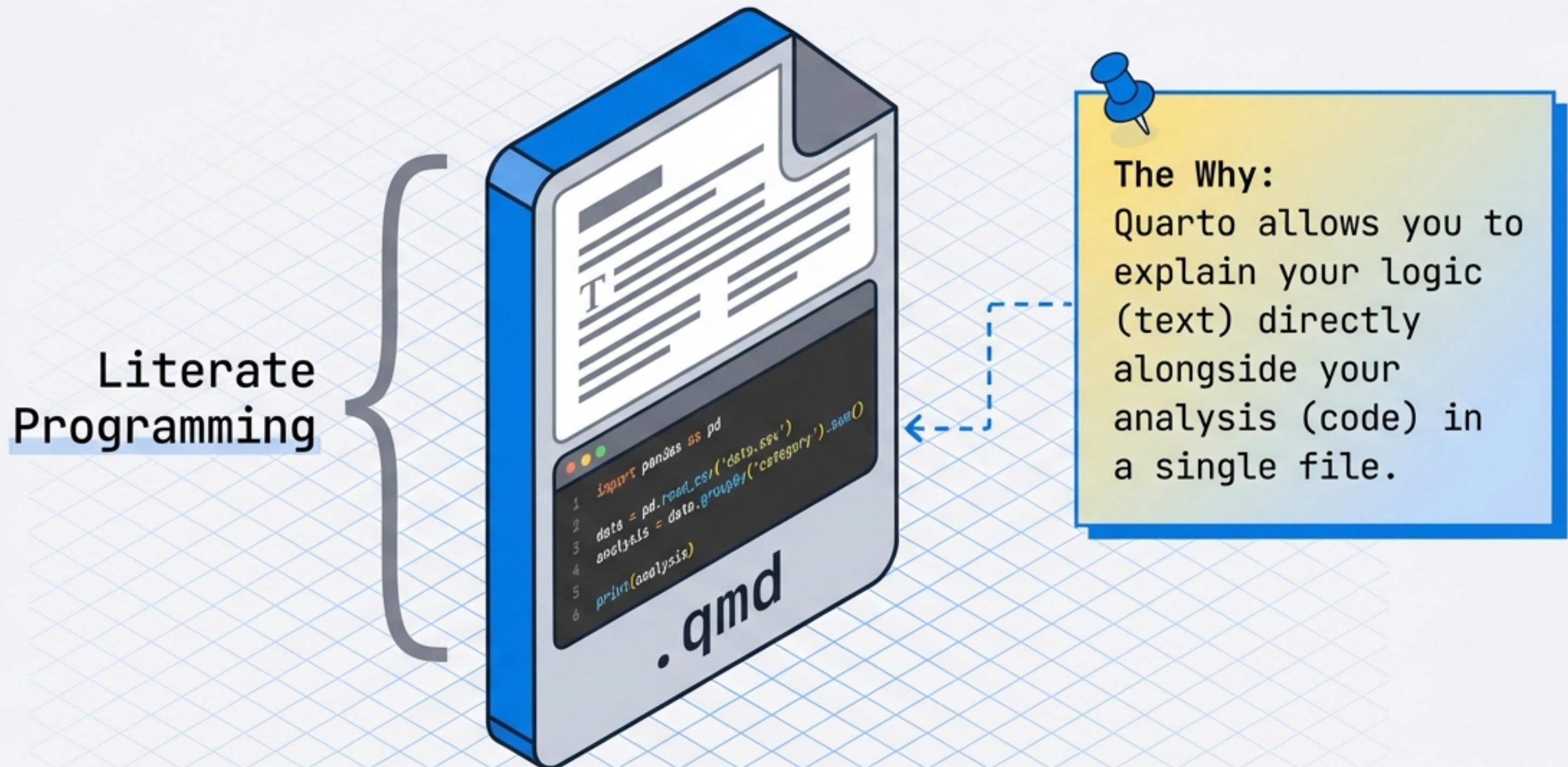
# The Connection: Selecting the Interpreter



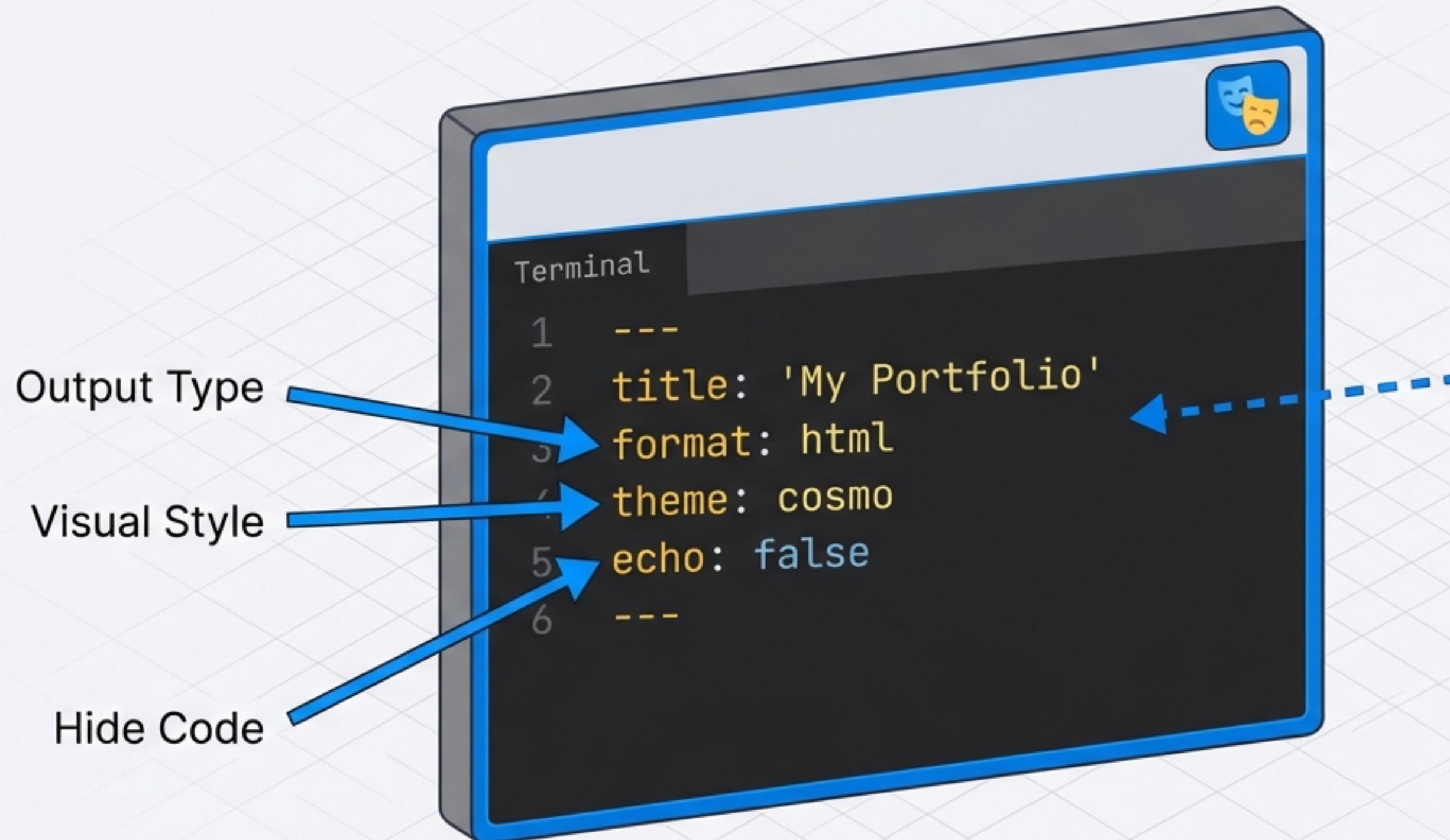
**The Why:** Installing the environment is not enough. You must tell your editor to **\*use\*** the specific tools inside the venv folder.

Why Quarto?

# The Integrator: What is Quarto?

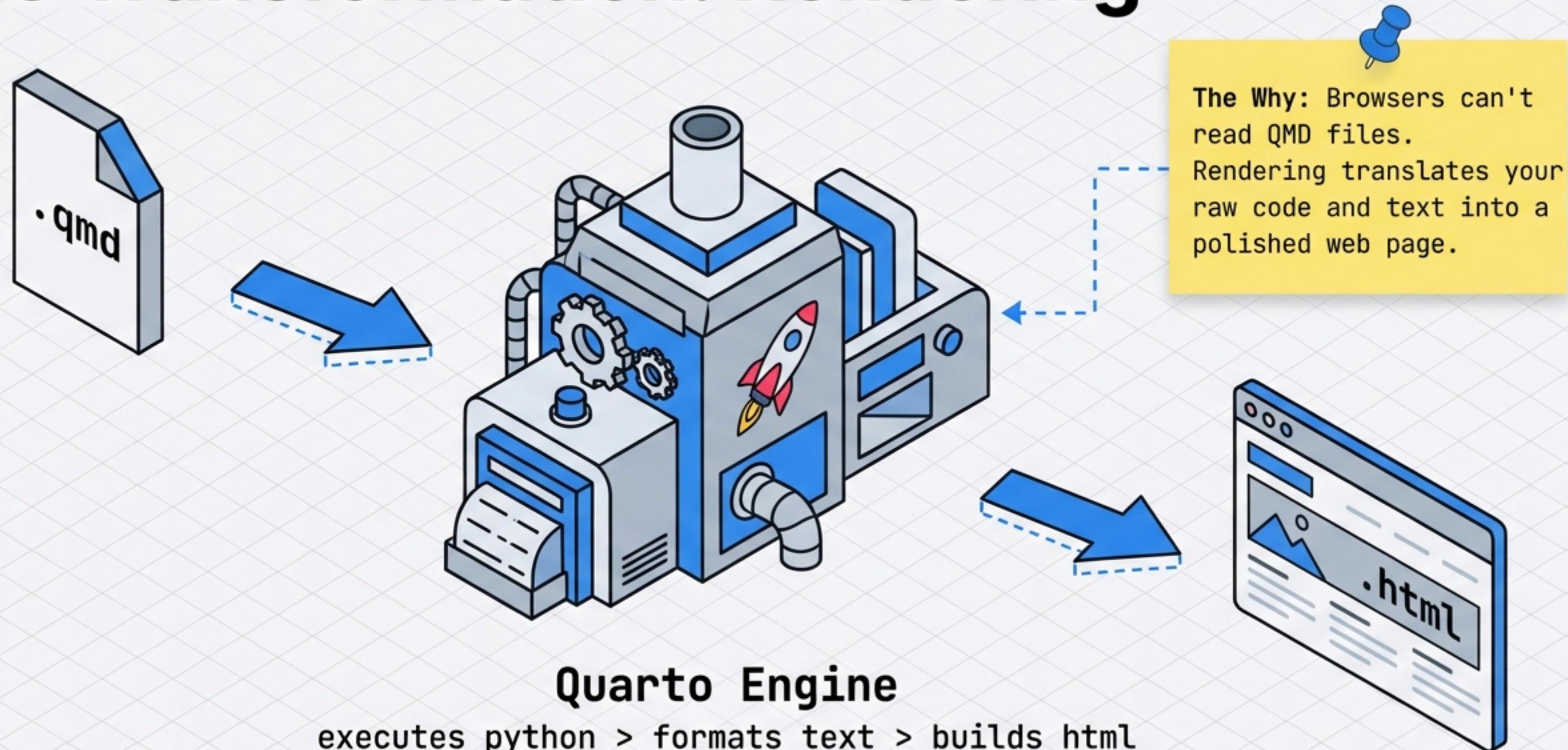


# The Control Panel: YAML Front-Matter

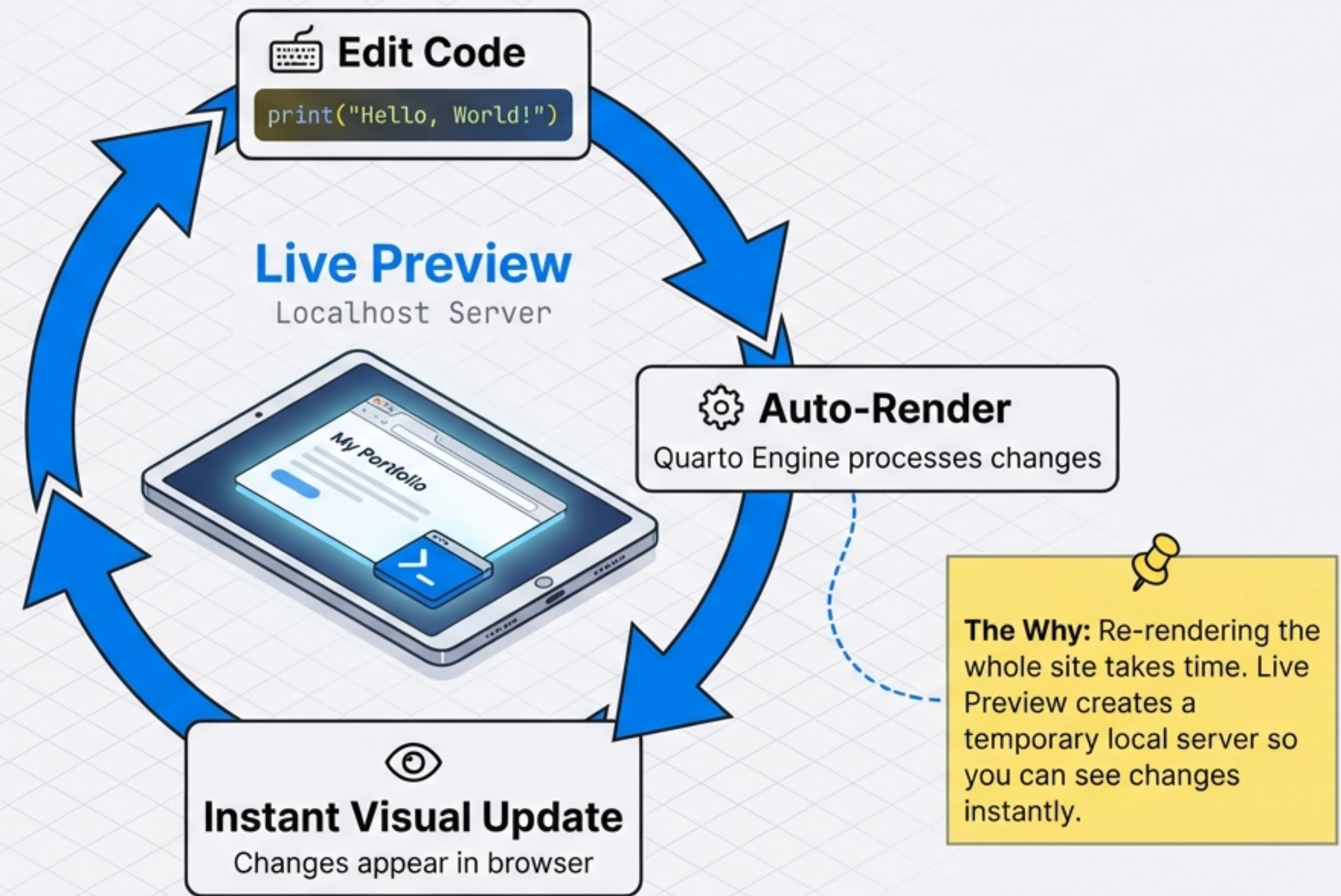


**The Why:** The text between the dashes is the settings menu. It tells Quarto how to build your website.

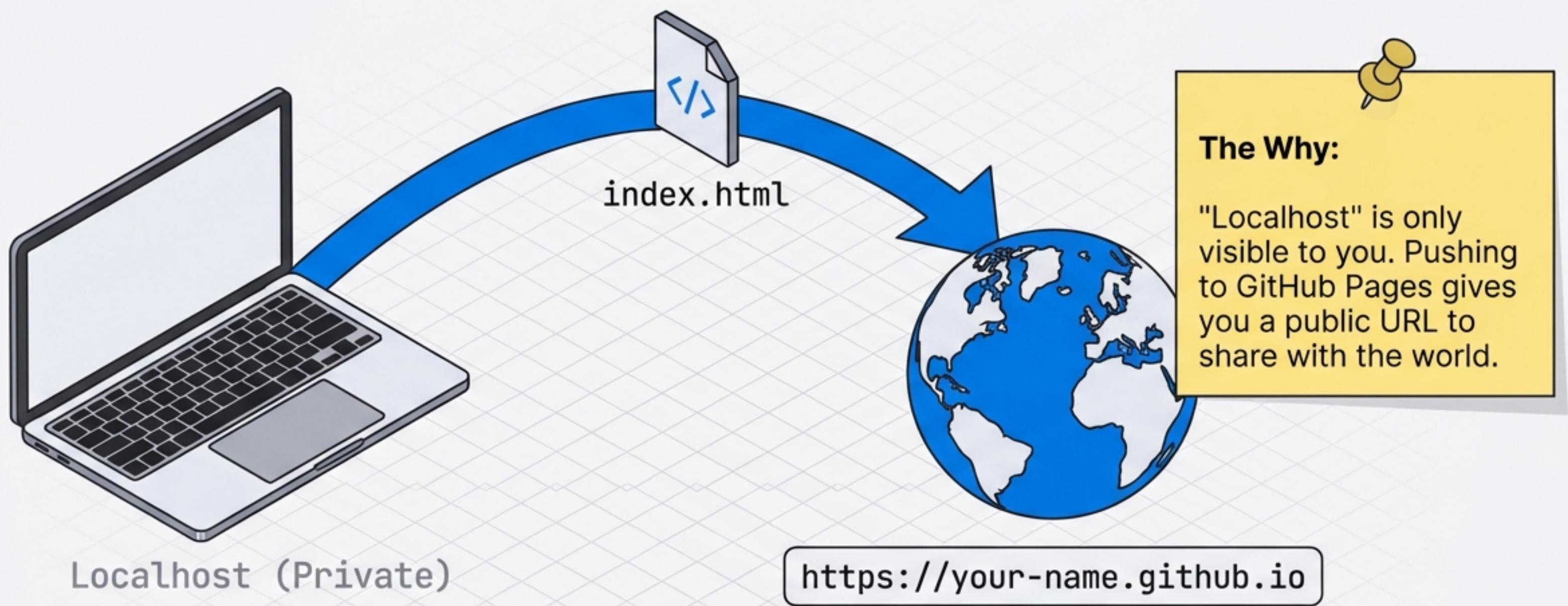
# The Transformation: Rendering



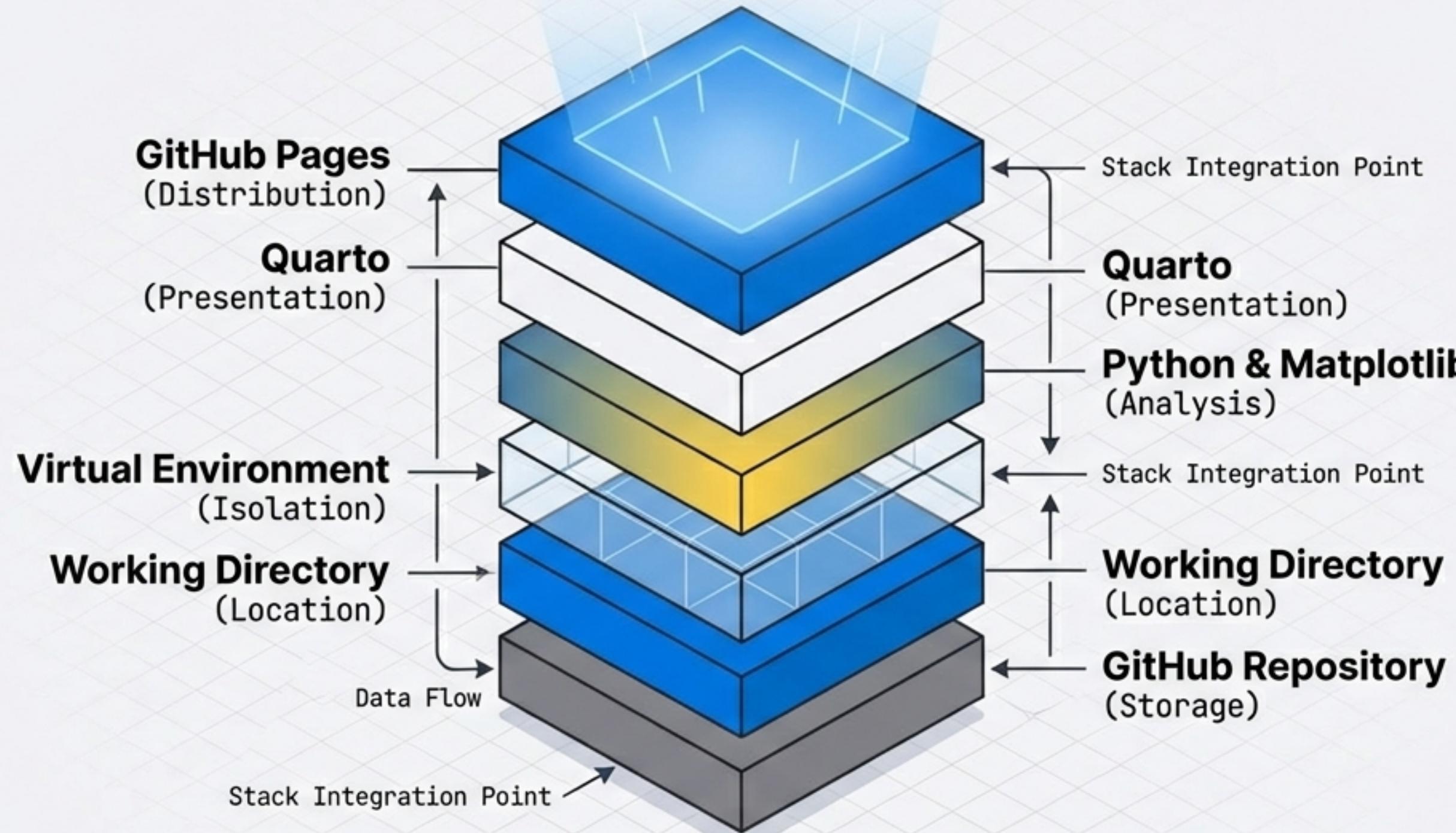
# The Feedback Loop: Live Preview



# The Grand Finale: Publishing with GitHub Pages



# Your Full Data Science Stack



Now that you know the *Why*, go build the *What*.