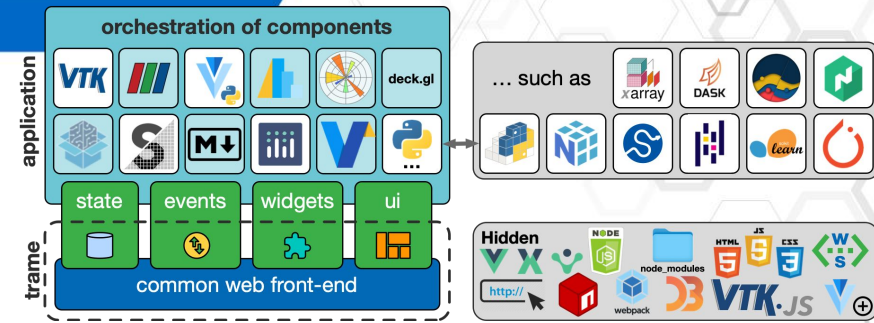


# Trame - the basics

Sebastien Jourdain

# What is trame?



- Simple

All the logic and UI definition can be done in plain Python

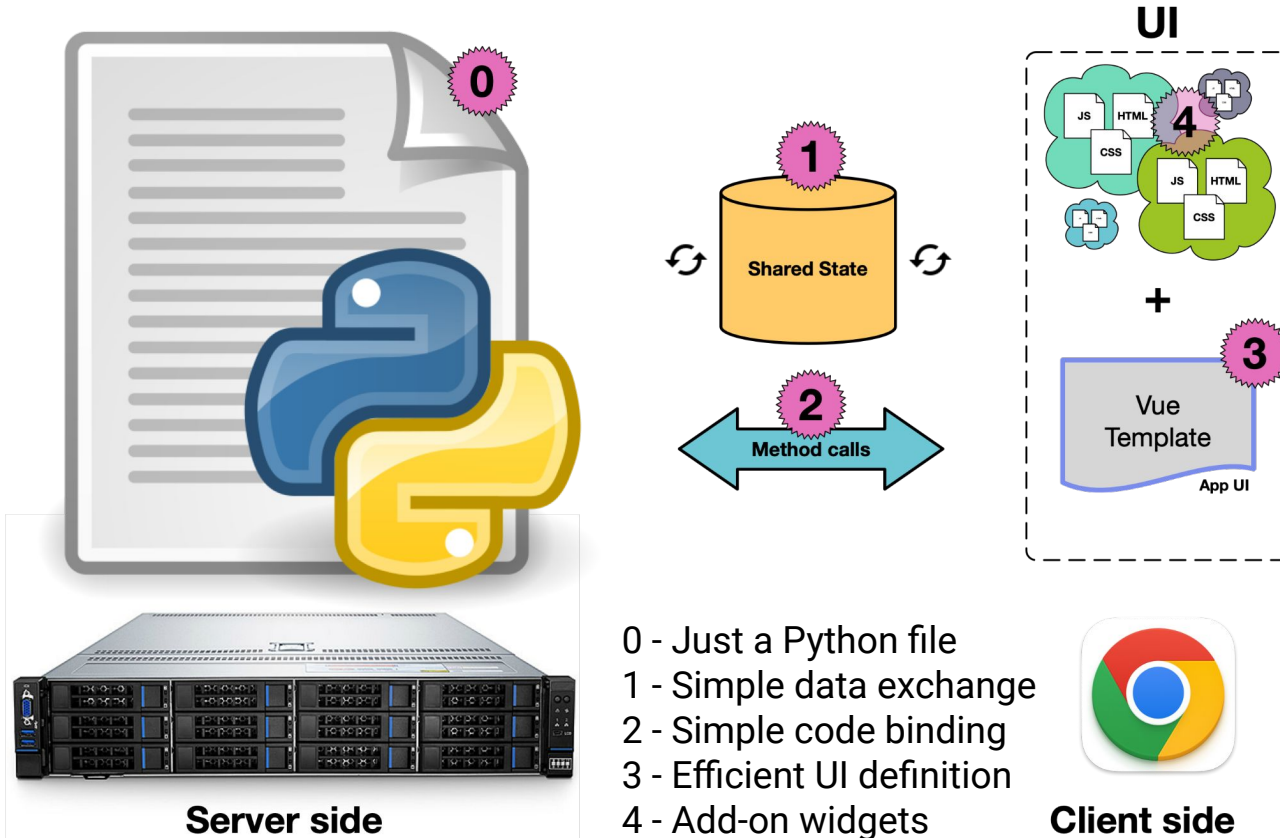
- Powerful

Python offer scientific and information data visualization with capable data processing (numpy, Plotly, Matplotlib, VTK, ParaView...)

- Ubiquitous

Runs on laptops, desktops, clusters, and the cloud while displaying everywhere (phone, tablet, laptop, workstation)

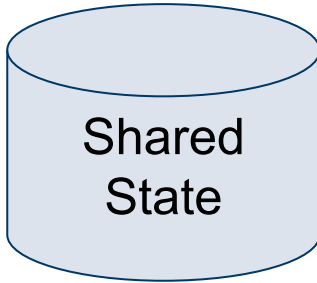
# How trame works?



**Client side**

# State handling

```
from trame.app import get_server
server = get_server()
state = server.state
```



```
@state.change("a", "b", "c")
def change_detected(a, b, c, d, **kwargs):
    pass

state.a = 10
print(f"a={state.a}")

def update_var(name, value)
    print(f"Before: {name}={state[name]}")
    state[name] = value
    print(f"After: {name}={state[name]}")
```

JS

```
Widget(key="welcome") : Use string 'welcome'
Widget(key=("welcome",)) : Evaluate expression 'welcome'
Widget(key=("welcome","Hello")) : Evaluate expression 'welcome' and initialize it to "Hello"
```

# Method handling and controller helper

```
from trame.app import get_server
server = get_server()
ctrl = server.controller
```



JS

```
# @ctrl.set("hello_alias")
def hello(*args, **kwargs):
    print(args, kwargs)
```

```
@ctrl.add("hello_alias")
def hello2(*args, **kwargs):
    print("v2:", args, kwargs)
```

```
ctrl.hello_alias = hello
ctrl.hello_alias('arg_0', key='yes')
```

```
VBtn(click=fn) : Call the function with no args
VBtn(click=(fn, "[1, $event, 'hello']")) : Call the function like fn(1, event, "hello")
VBtn(click=(fn, "[$event]", "{ x: 5 }")) : Call the function like fn(event, x=5)
```

# From JavaScript to Python

```
<v-tooltip bottom>
  <template v-slot:activator="{ on, attrs }">
    <v-btn
      color="primary"
      dark
      v-bind="attrs"
      v-on="on"
    >
      Button
    </v-btn>
  </template>
  <span>Tooltip</span>
</v-tooltip>
```

@click=...

```
from trame.widgets import html, vuetify

with vuetify.VTooltip(bottom=True) as debug:
    with vuetify.Template(v_slot_activator="{on, attrs}"):
        vuetify.VBtn(
            "Button",
            color="primary",
            dark=True,
            v_bind="attrs",
            v_on="on",
        )
    html.Span("Tooltip")

print(debug.html) # To validate that the template match
```

click=...

Any invalid Python character become “\_” for any given attribute key.

# Additional materials

## • Trame

- <https://kitware.github.io/trame/>

## • Course video

- <https://vimeo.com/761096621/af2287747f>

## • Course examples

- [https://drive.google.com/file/d/1jU1lCi8\\_ts99C2U3sk\\_EmiTA015U84kf/view?usp=sharing](https://drive.google.com/file/d/1jU1lCi8_ts99C2U3sk_EmiTA015U84kf/view?usp=sharing)