Deploying models through web-applications

Efficient and accessible workflows

Creating a custom user interface for a model with **Jupyter** and **Voila**
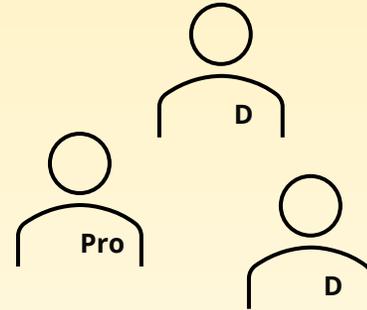
... and sharing it with with others

Use cases

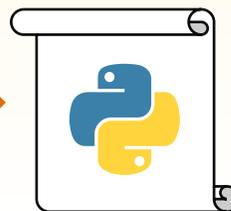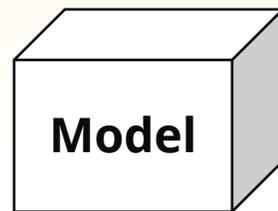**Model creation**
- Systems
- Component variants
- Experiments

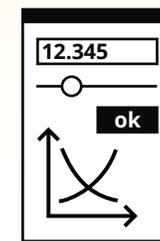**Model usage**
- Simulating various scenarios
- Analyzing results

Licenses
- Pro
- Deployment ("app mode")

Automated workflow

Model

pre- & post-processing (*Python* script)

scenarios
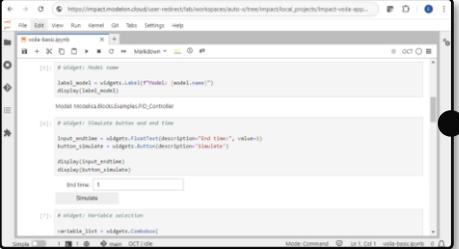
results

12.345

ok

Custom web-app

Framework and workflow

Overview of

a) App-framework in Modelon Impact (based on Jupyter / Voila)
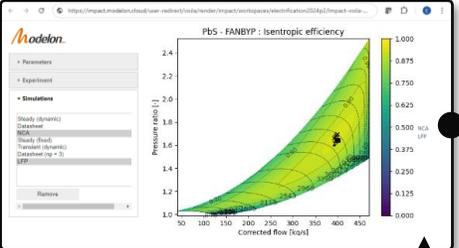
b) Workflow for sharing an app with other users
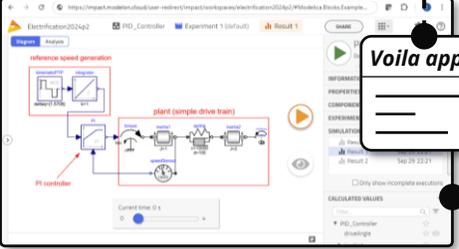
App framework

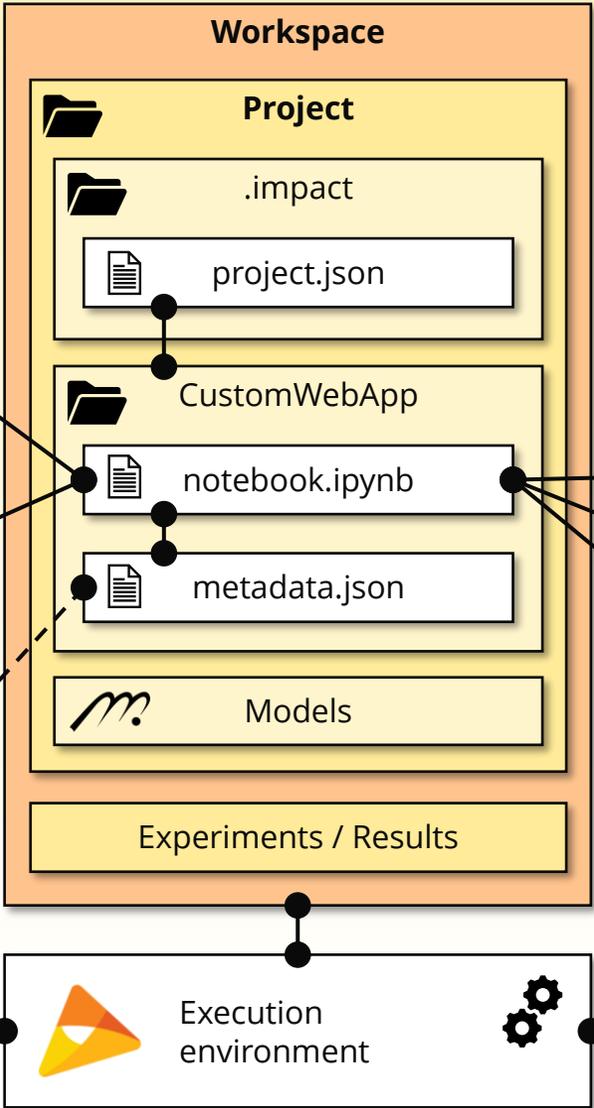Python notebook via Jupyter Lab

Custom web-app rendered via Voilà

Modelon Impact UX

Link to app

Workspace

Project

.impact

project.json

CustomWebApp

notebook.ipynb

metadata.json

Models

Experiments / Results

Python packages

Jupyter Widgets

Plotly

Modelon Impact Client

Execution environment

REST API
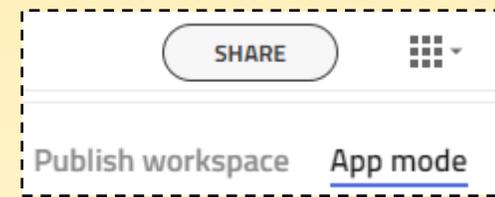
Deploy an app via a shared workspace

A SOURCE

Workspace

Project

📁 .impact

📄 project.json

📁 CustomWebApp

📄 notebook.ipynb

📄 metadata.json

𝓶 Models

Experiments / Results

Share →

☁ SNAPSHOT

Workspace

Project

📁 CustomWebApp

𝓶 Models

Experiments / Results

Link to snapshot

🔗

Receive →

B LOCAL COPY

Workspace

Project

📁 CustomWebApp

𝓶 Models

Experiments / Results
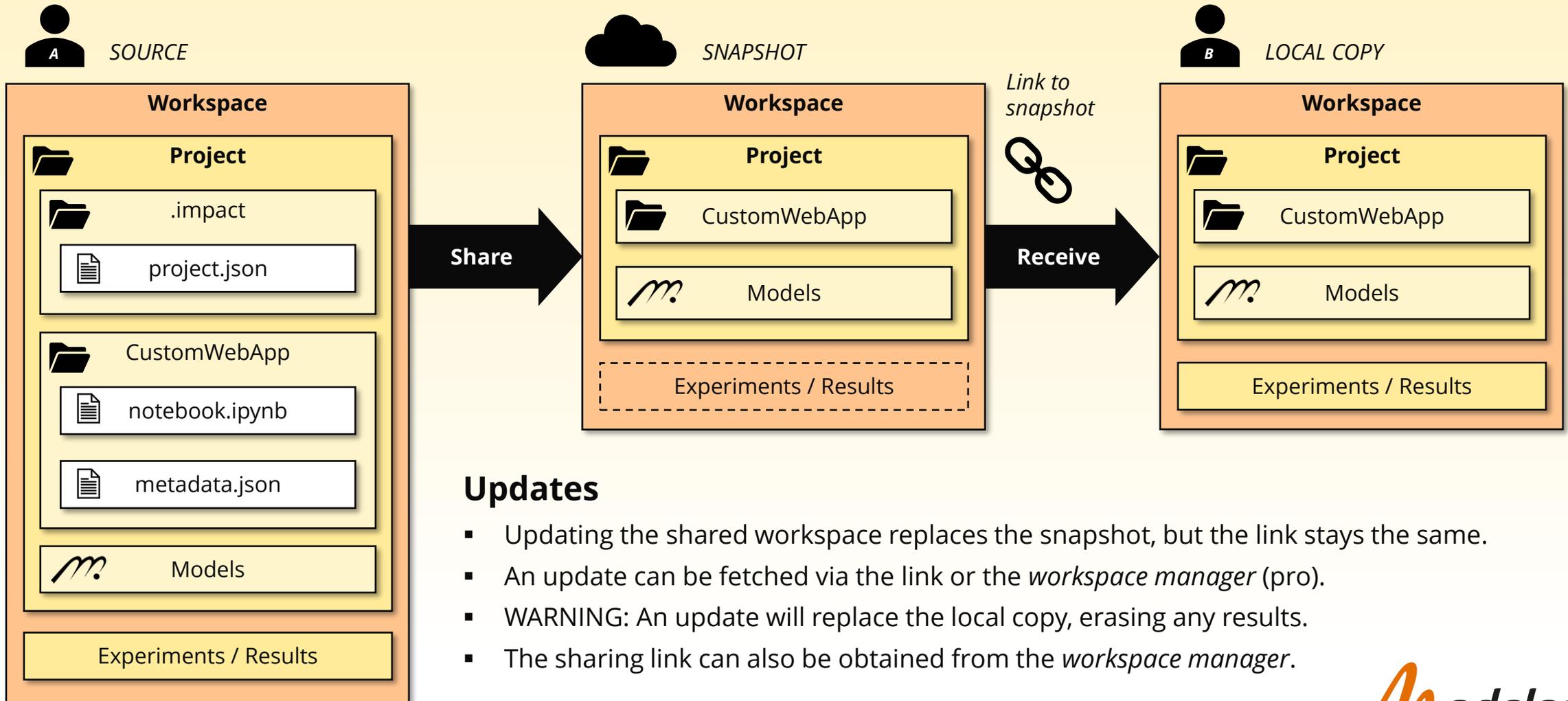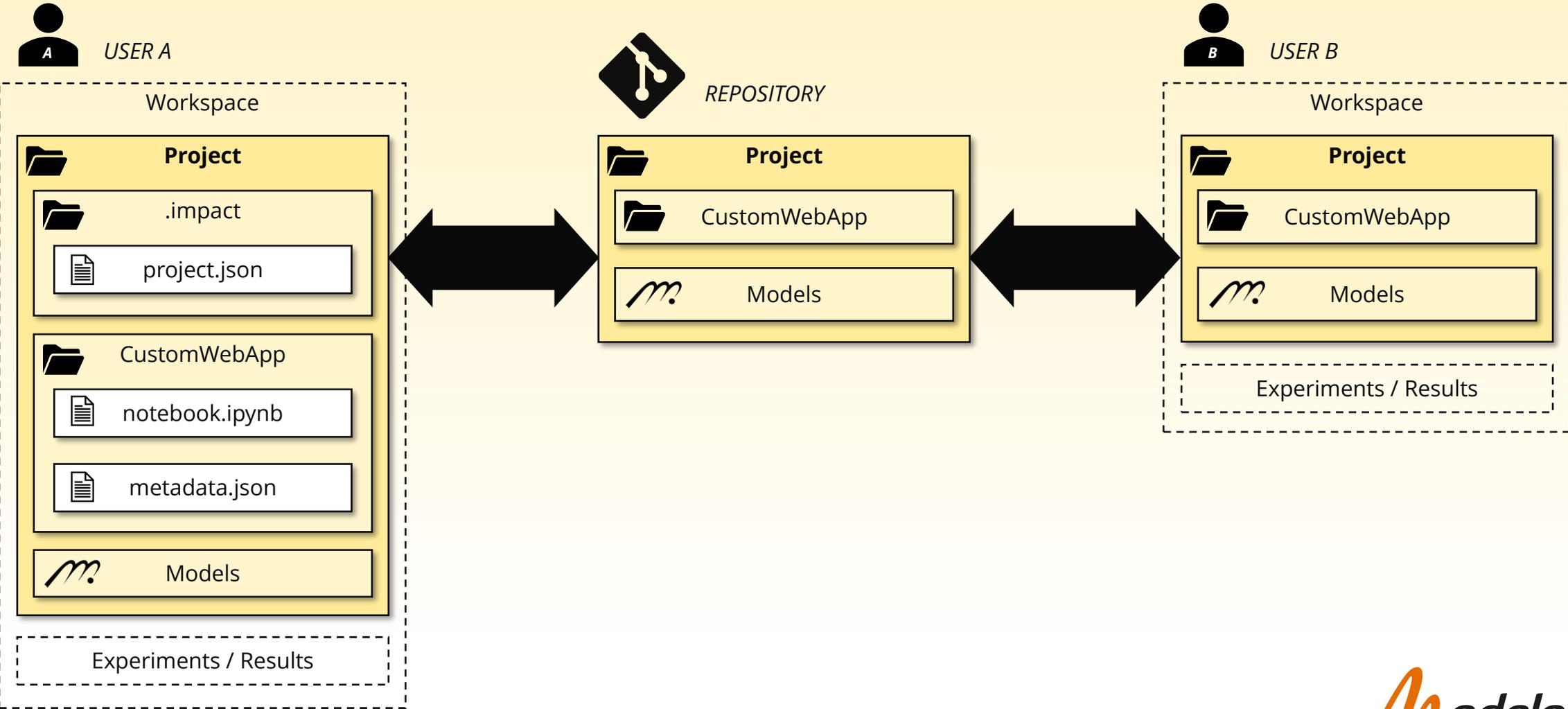
Updates

- Updating the shared workspace replaces the snapshot, but the link stays the same.
- An update can be fetched via the link or the *workspace manager* (pro).
- WARNING: An update will replace the local copy, erasing any results.
- The sharing link can also be obtained from the *workspace manager*.

Modelon

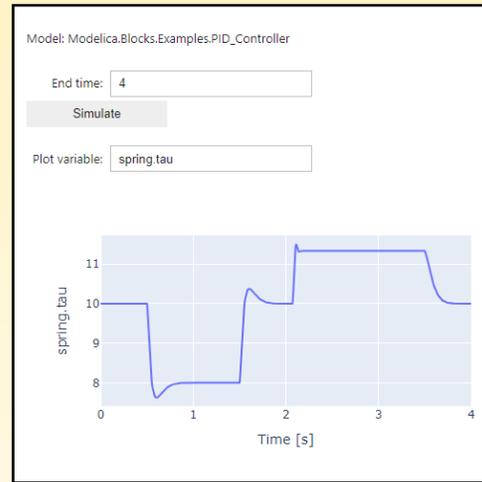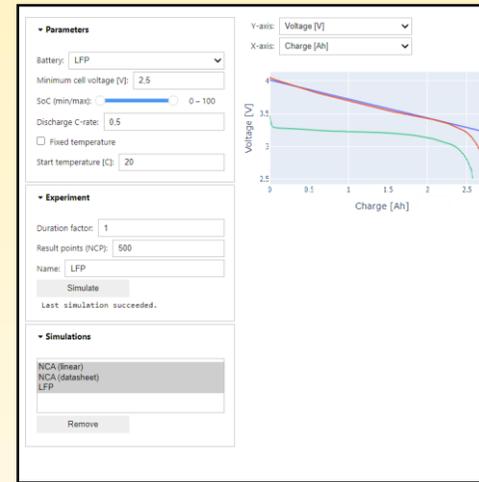# Sharing an app via a project (pro license)

Demo

1. A basic **Jupyter notebook** with interactive **widgets**

2. Rendering the notebook as a **Voila** app

3. The **app menu**

4. A more **advanced example**

5. **Sharing** an app via a published workspace
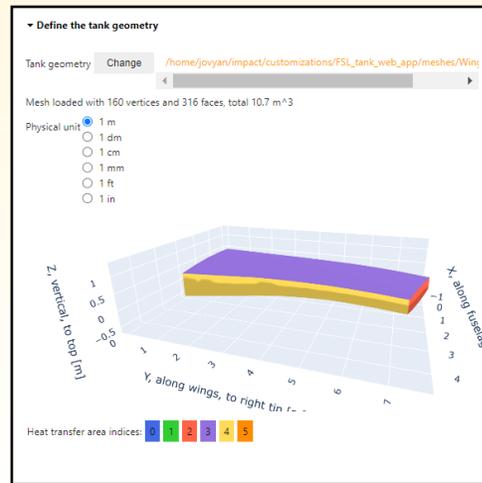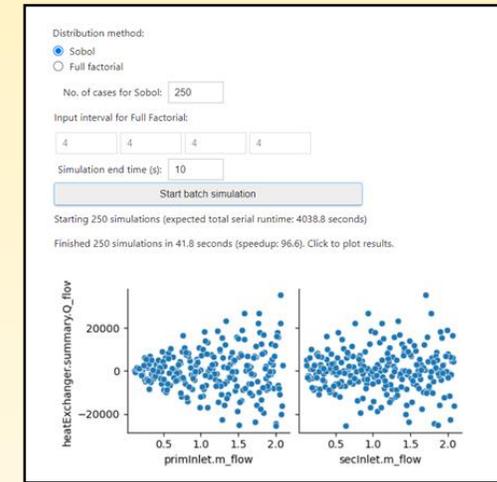
6. **Updating** a published app
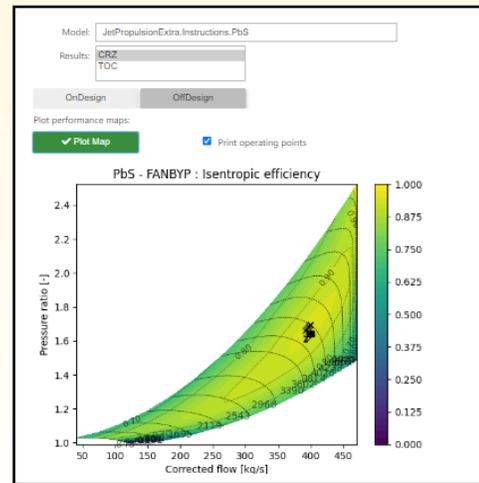
Examples

Basic voila example

Battery characteristics
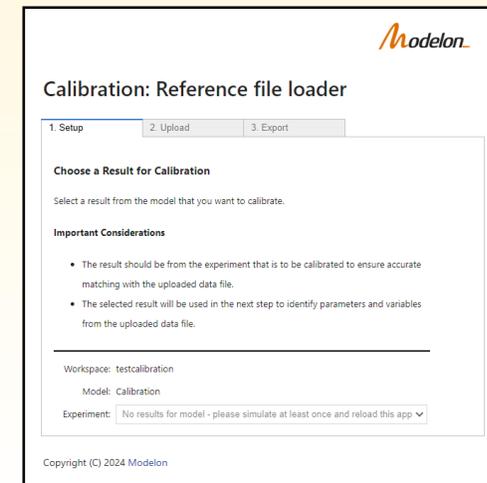

Reduced order modeling with neural networks

Tank pre-processing for
Fuel System Library

Performance map visualizer for
Jet Propulsion Library

Calibration

References

Modelon Impact Python Client   https://modelon-impact-client.readthedocs.io/en/latest/

Voilà   https://voila.readthedocs.io/en/stable/

Jupyter Lab   https://jupyterlab.readthedocs.io/en/stable/

Jupyter Widgets   https://ipywidgets.readthedocs.io/en/stable/

Plotly   https://plotly.com/python/

Accurate Simulations. Better Decisions.