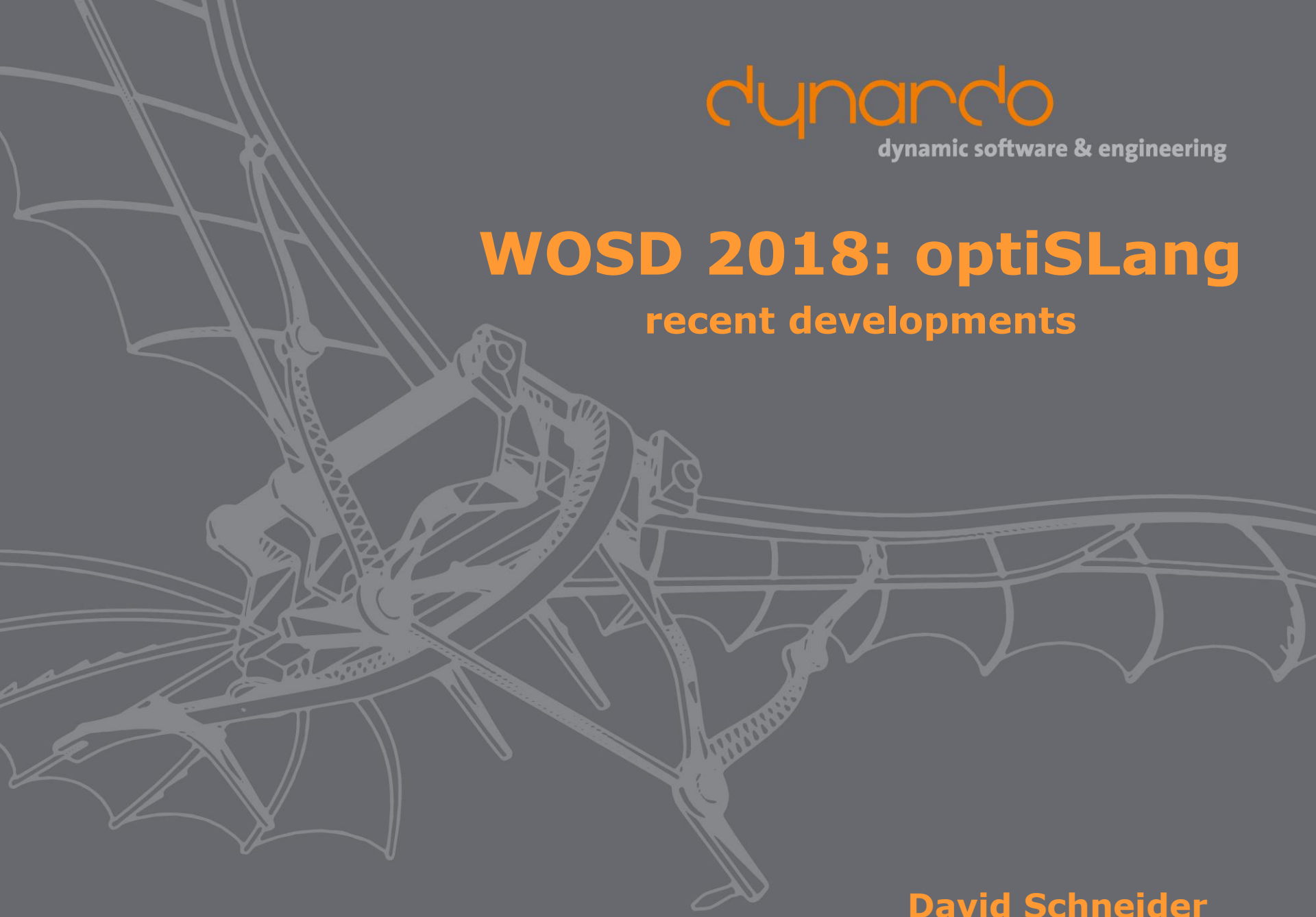
dynardo
dynamic software & engineering

# WOSD 2018: optiSLang

## recent developments



**David Schneider**

**optiSLang product manager**

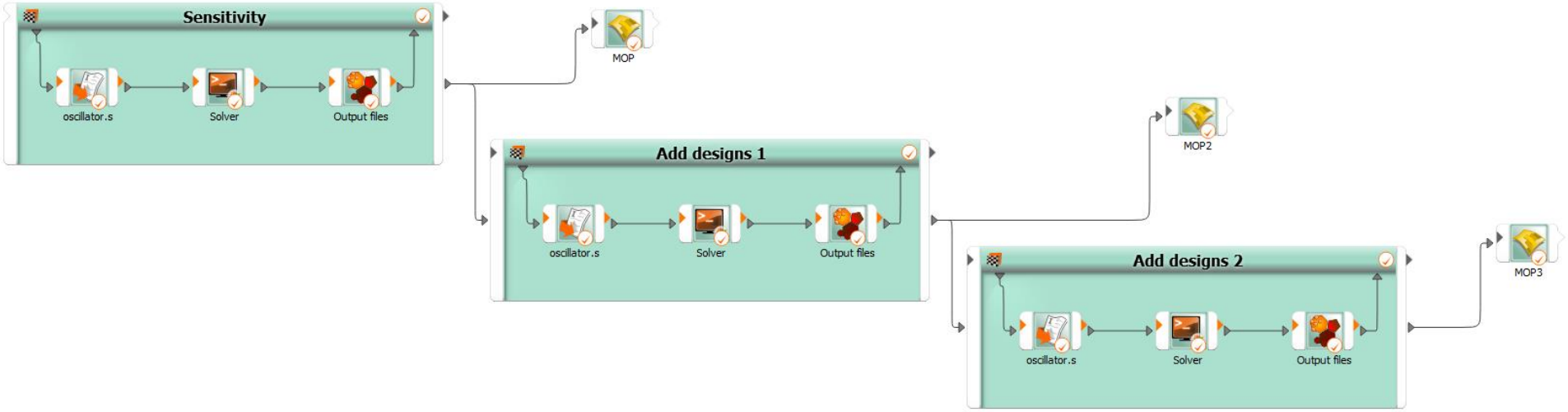
# MOP
## the next generation

# Classical Approach

If CoP's are need improvement after initial DOE:

1. Deactivate outliers
2. ...
3. Add another N Designs
4. Build another MOP and check

➔ Repeat 1-4 until CoP's are good (or max. solver runs reached)



# Adaptive MOP

- Automatic approach – single system

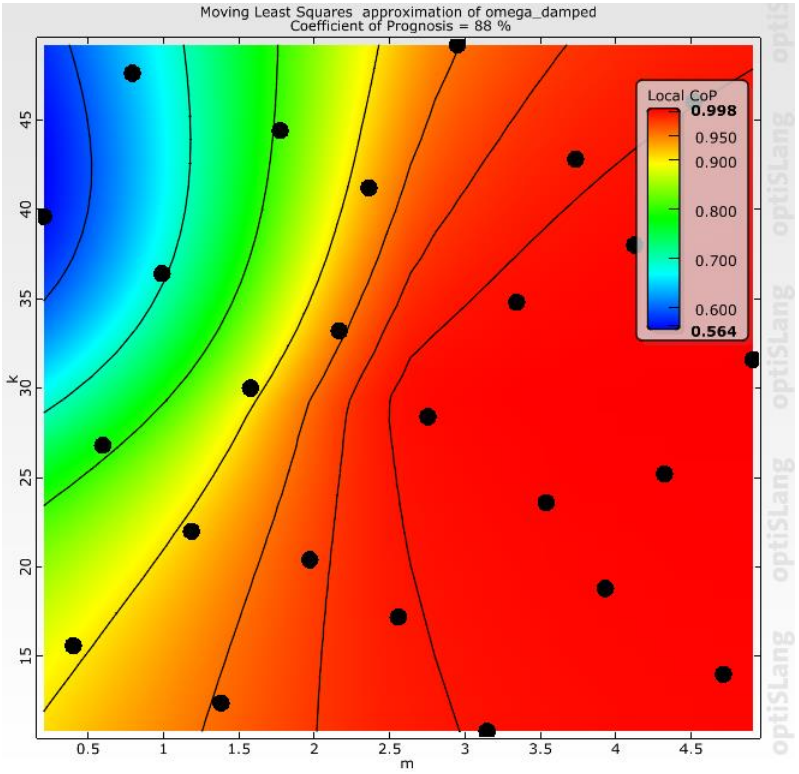
  *"Refine DOE until ..."*

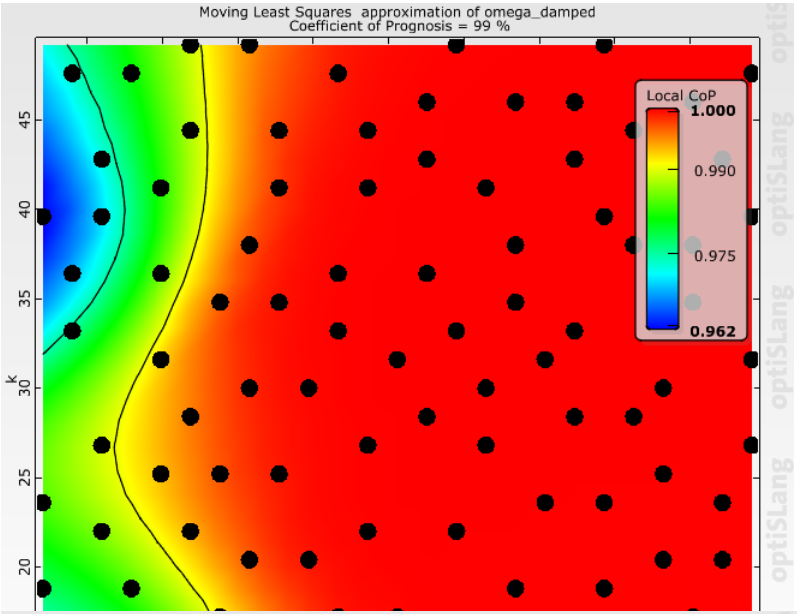
➔ Minimal setting (advanced still allowed)

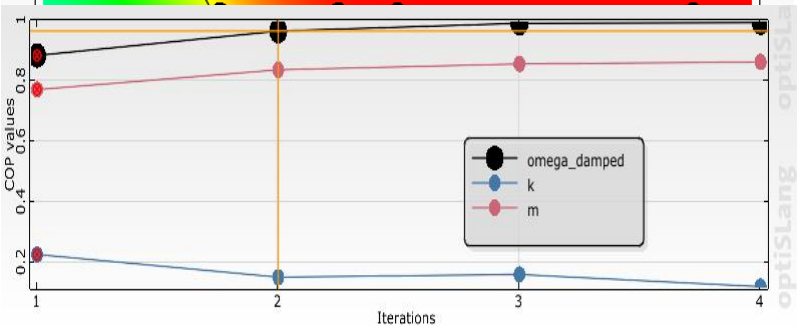
➔ More efficient work with optiSLang

# AMOP – Exploration (global)

- 1st → 4th iteration



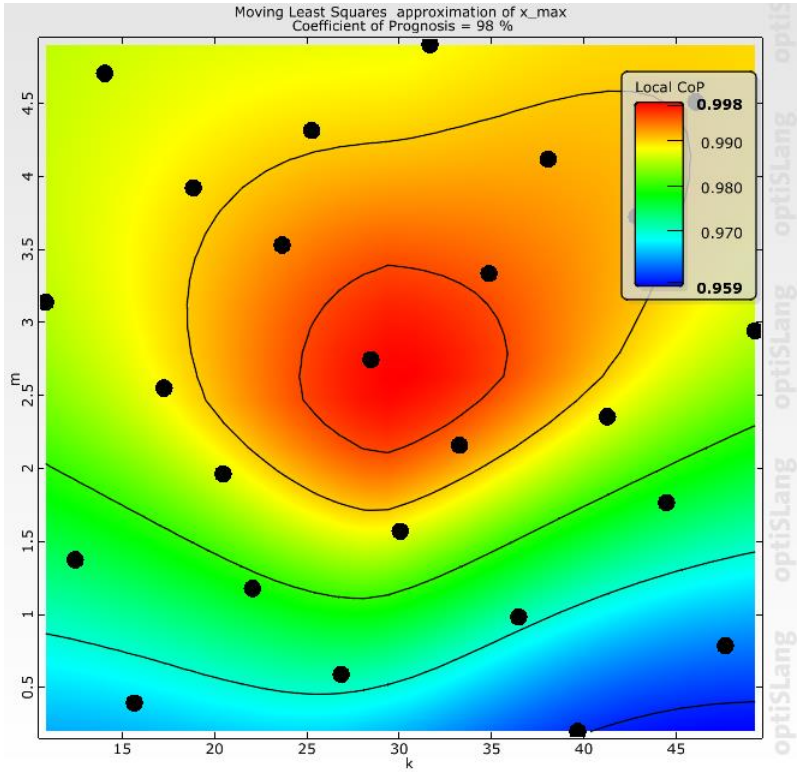



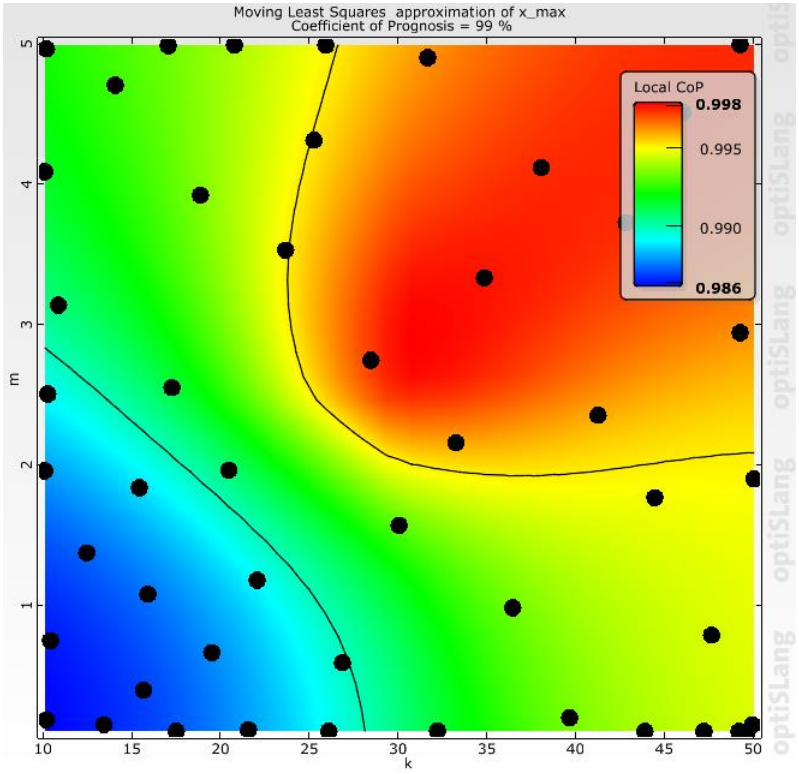




- Global refinement
- Stops on Target CoP or max. Designs

# AMOP – Local CoP

- 1st → 6th iteration

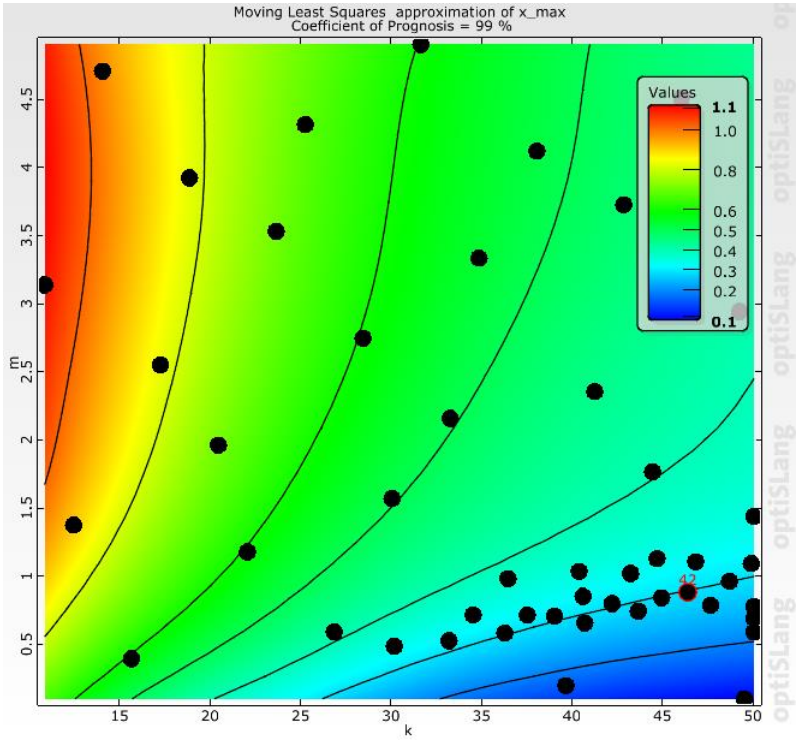


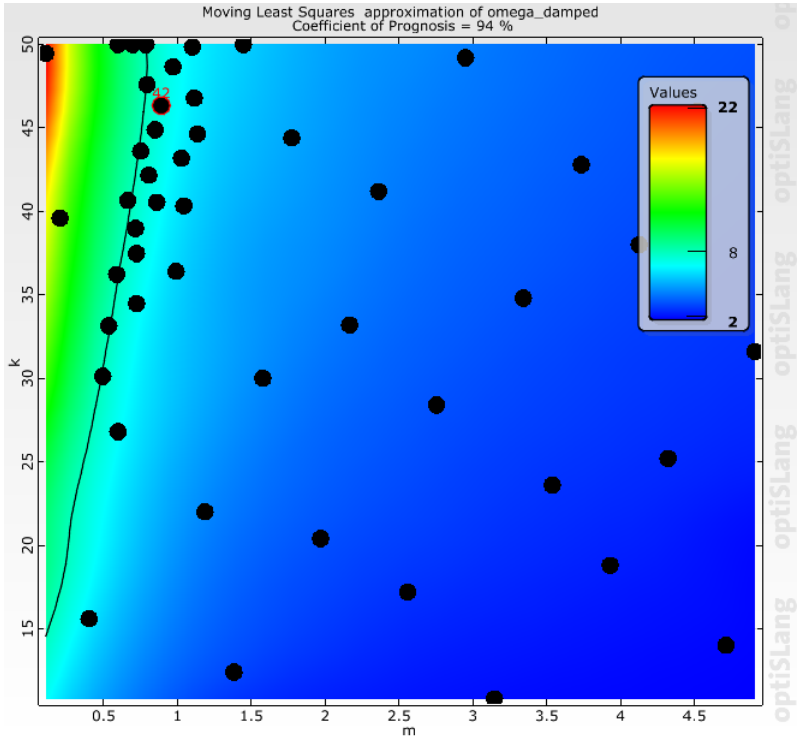




- Local refinement
- Improves quality of metamodel

# AMOP – Criteria based

- Beta Option (Example: oscillator)



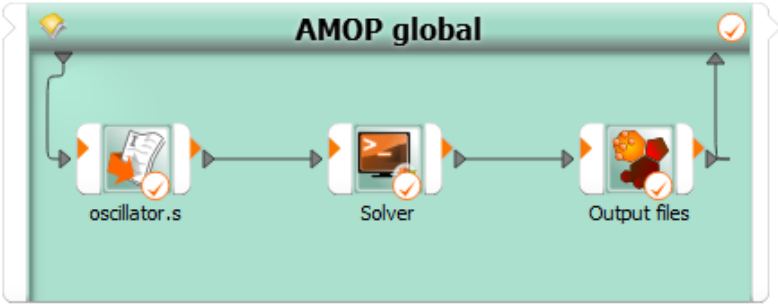




$$|x(t \geq 5\mathrm{s})|_{max} \rightarrow \min \qquad w \leq 8\frac{1}{\mathrm{s}}$$

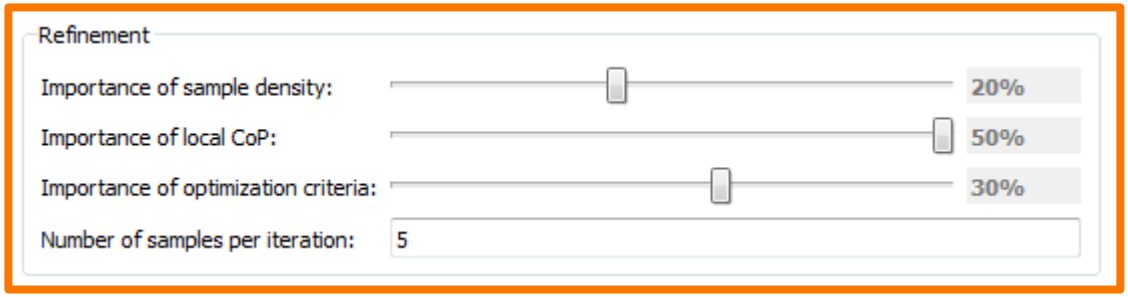
# Adaptive MOP

- Automatic approach – single system

*"Refine DOE until ..."*



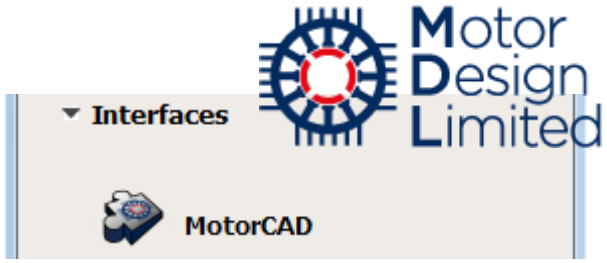

- For advanced users: combine the 3 refinement types



# Integrations

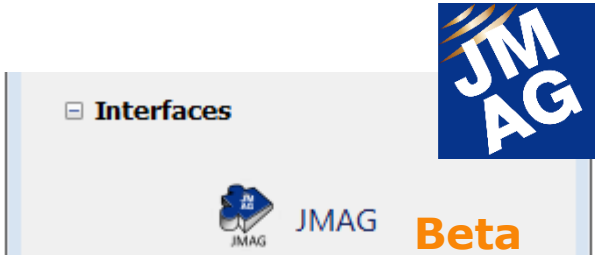
# New Integrations in v7

- 9 New integrations
- 6 New solver wizards




Flux®

ANSYS EKM

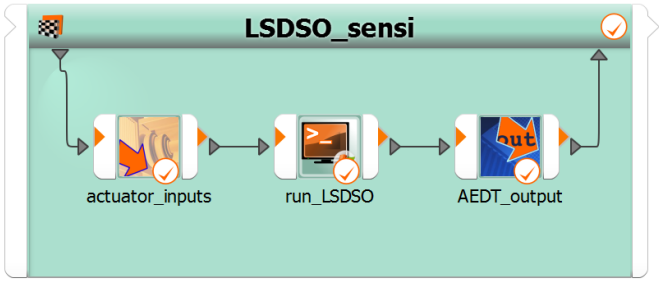


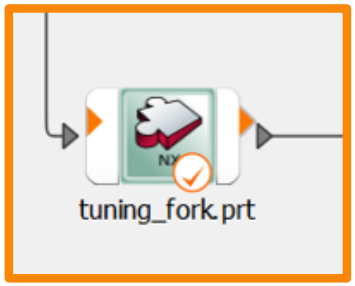
PuTTY
Beta

# Integrations

Other plugins like

- NX
- Catia
- StarCCM
- Git
- CST



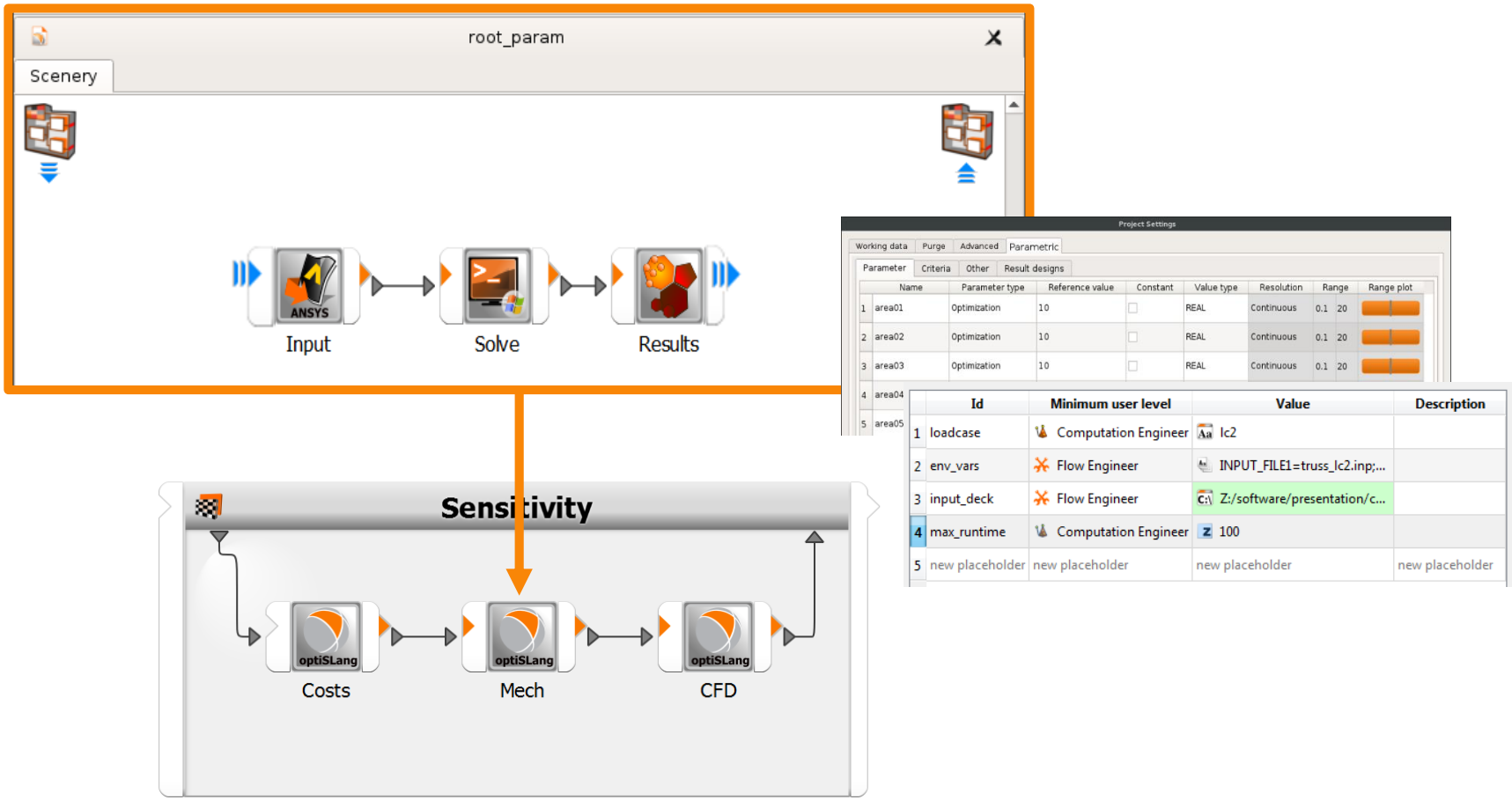
Outlook: Next integrations in optiSLang installer

- ANSYS Electronics Desktop
- ANSA / META
- Kuli

Contact support@dynardo.de if you like to use one of those plugins

# Outlook: Parametrize optiSLang projects

- For Subprojects, collaborative work, ...

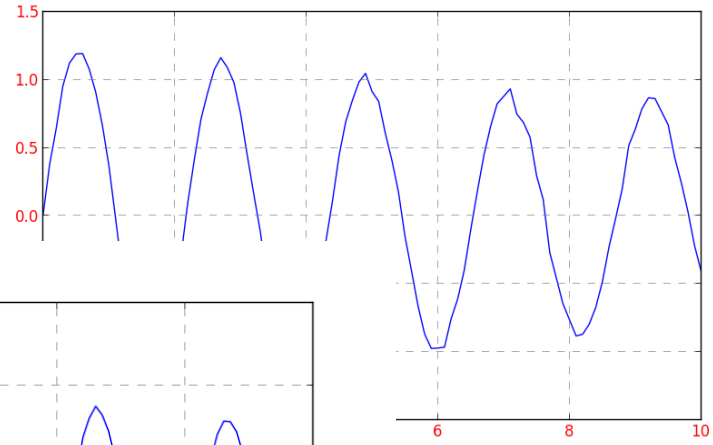


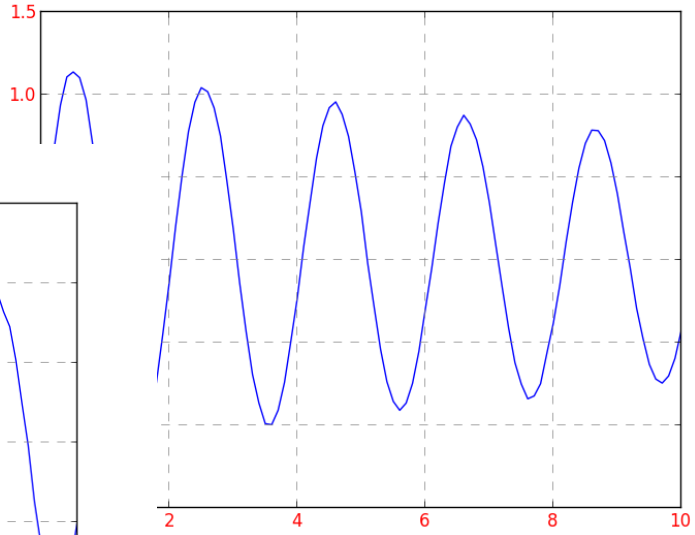
# Digital Twin

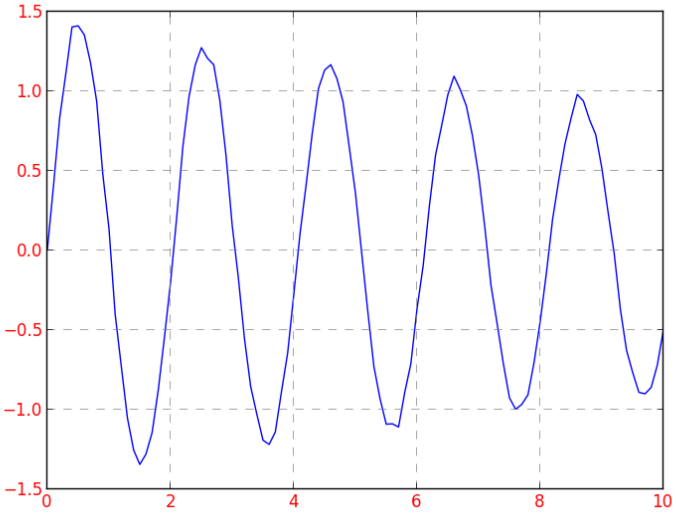
**“combine sensor data with detailed product simulation”**

# Sensor data

- Measurement of a time-dependent oscillation



# Motivation

Customer or Customer of customer ...

→ Look into the product (simulation shows what can not be measured)

→ Manage maintenance

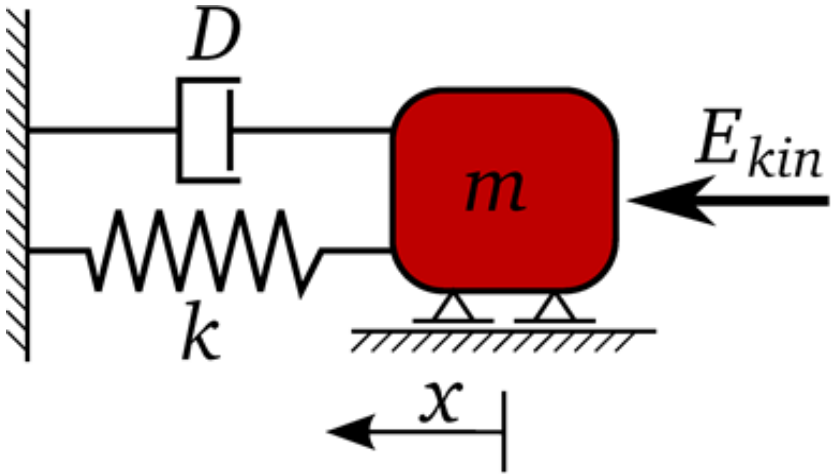
→ Find optimal operating parameters

→ ...

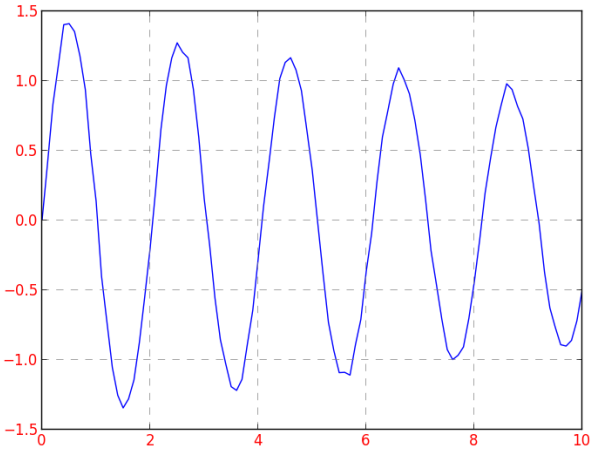
→ Traceable processes & results

→ Web-based (everywhere, everytime)

→ ...



# Identify the parameters

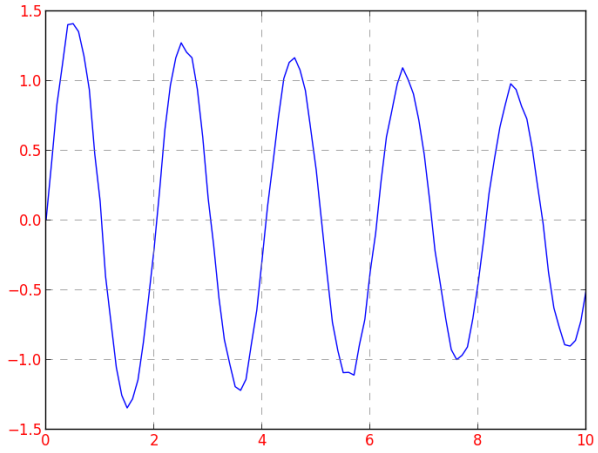


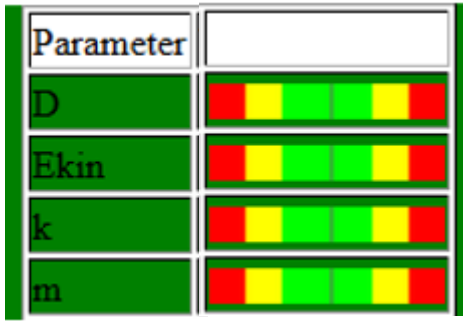

…Simulation…

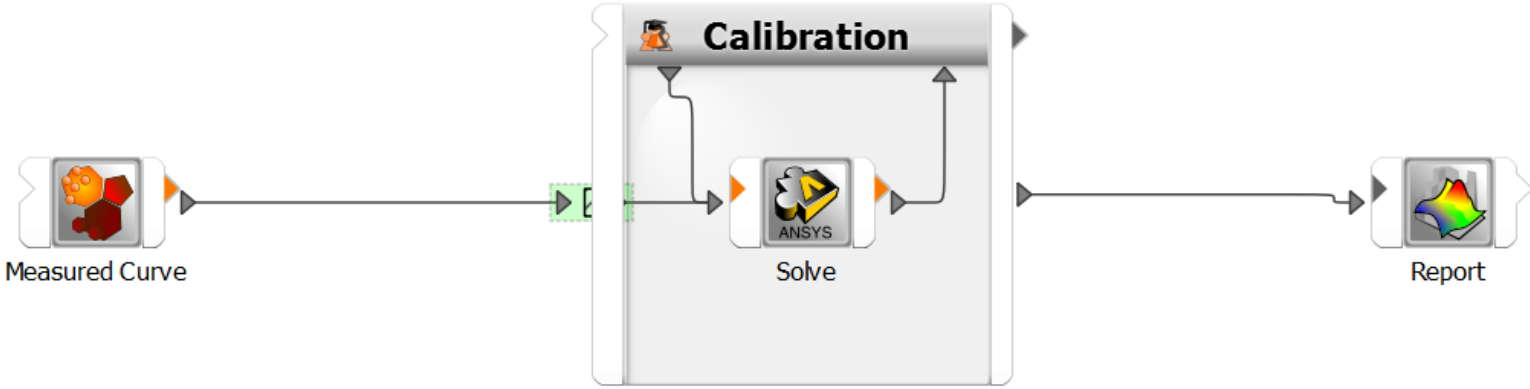
| Parameter | |
|---|---|
| D | |
| Ekin | |
| k | |
| m | |

# Machine condition calibration flow

- Generate an identification flow in optiSLang

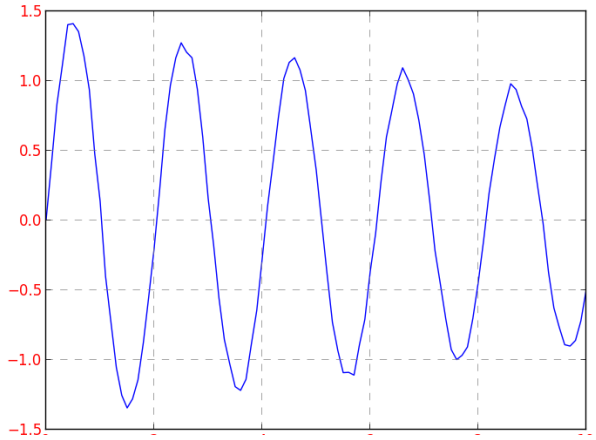


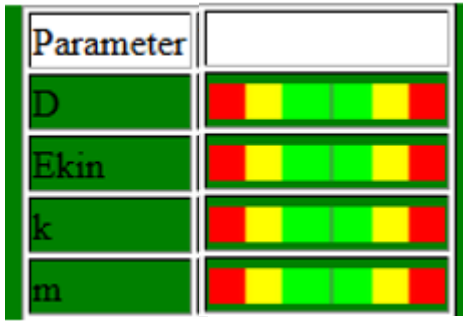



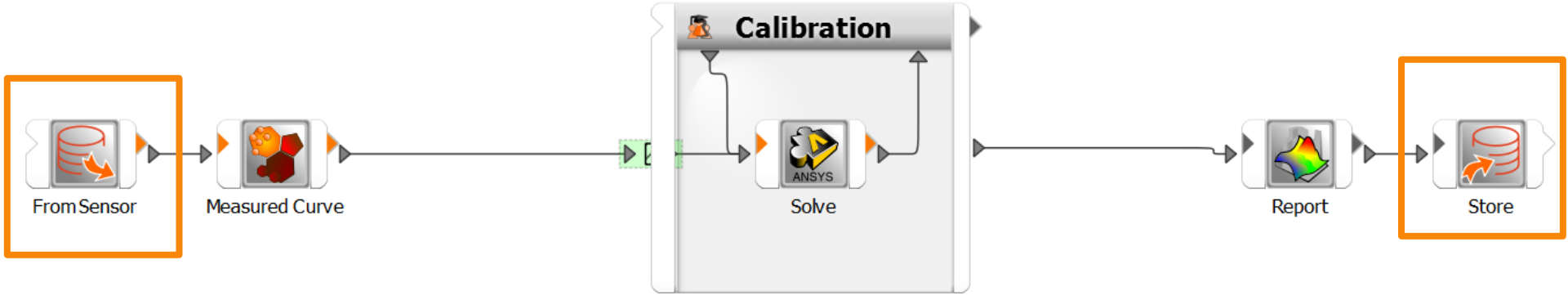



# Connect to database

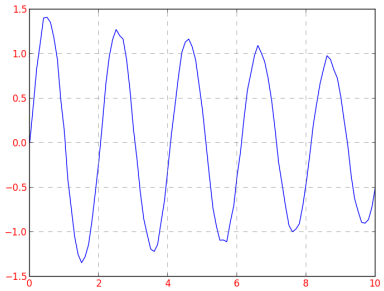
- Automatically receive sensor data & store results ➔ Traceablity

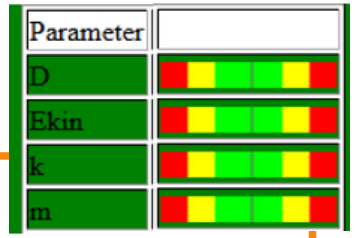


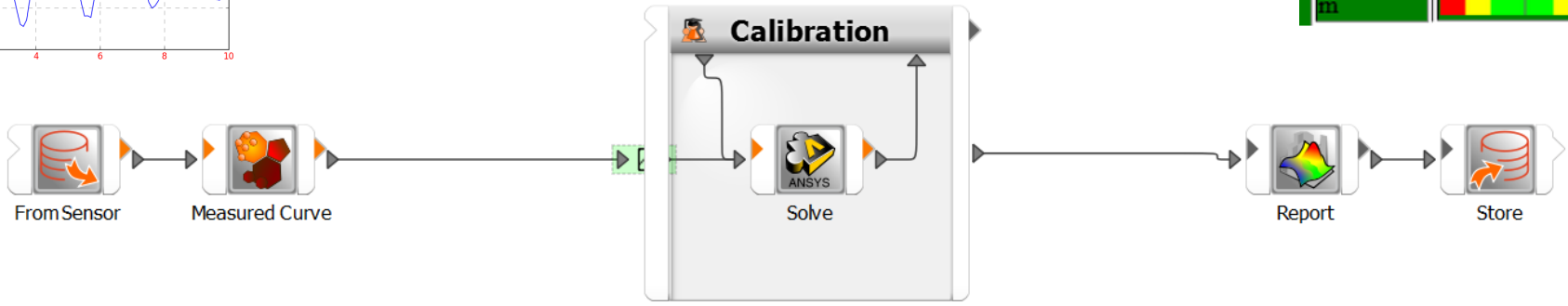



# To „The Cloud“



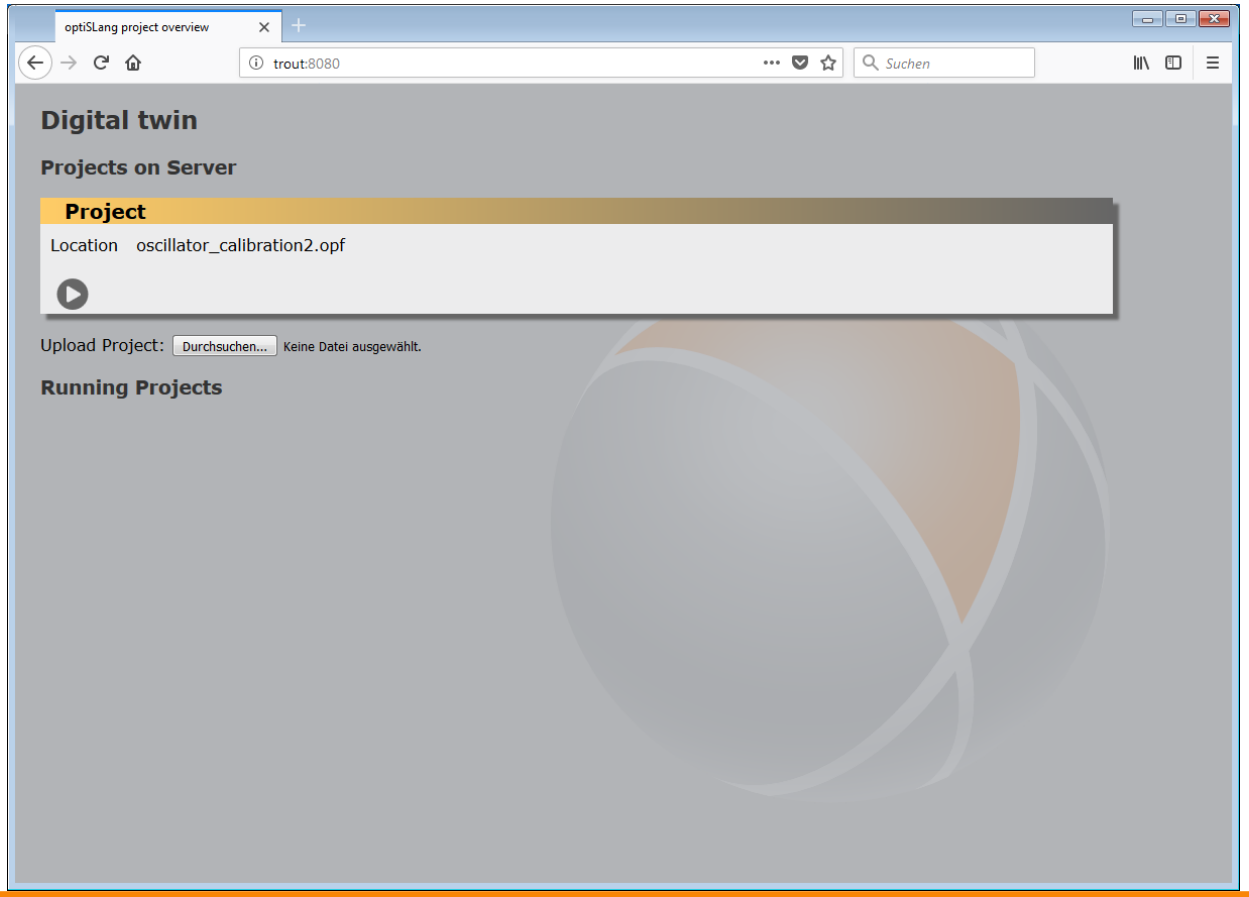



publish workflow

# Start, monitor and control in Web-browser

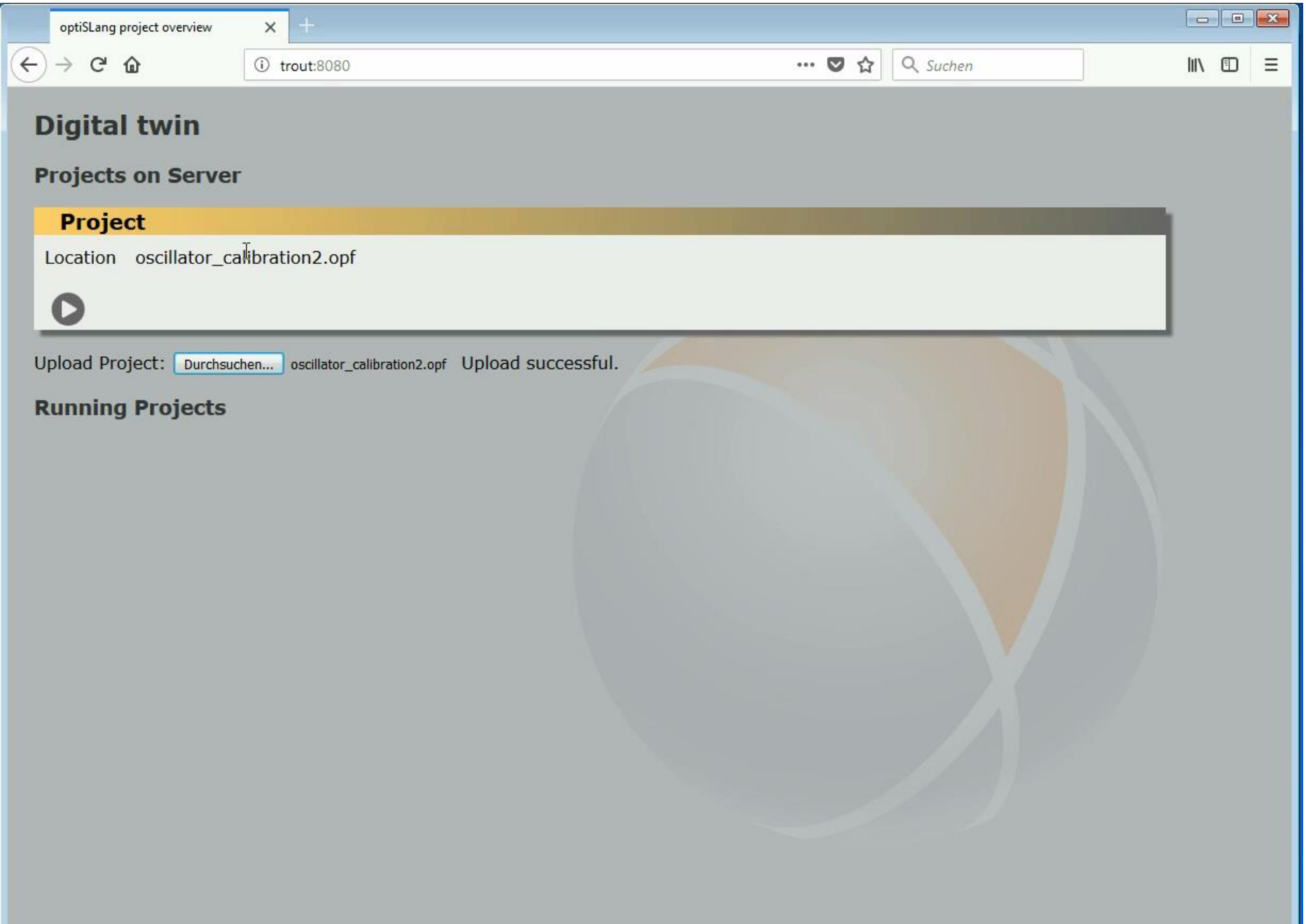
- No installation needed
- No need to know algorithms, solver, optiSLang, databases, HPC, …





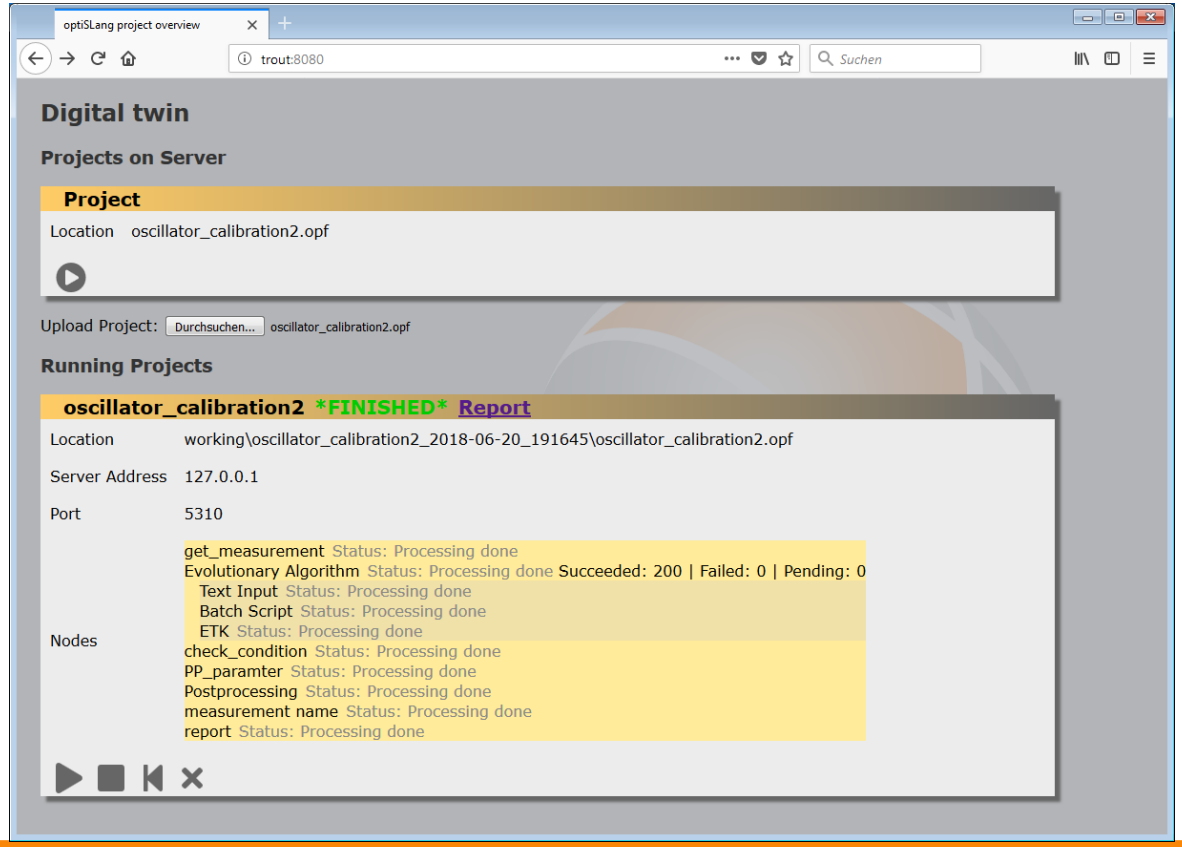

http://10.253.252.116:8082/

Server 2


optiSLang project overview
trout:8080
Suchen
Digital twin
Projects on Server
Project
Location oscillator_calibration2.opf
Upload Project:
Durchsuchen...
oscillator_calibration2.opf
Upload successful.
Running Projects

# Start, monitor and control in Web-browser

- No installation needed
- No need to know algorithms, solver, optiSLang, databases, HPC, …

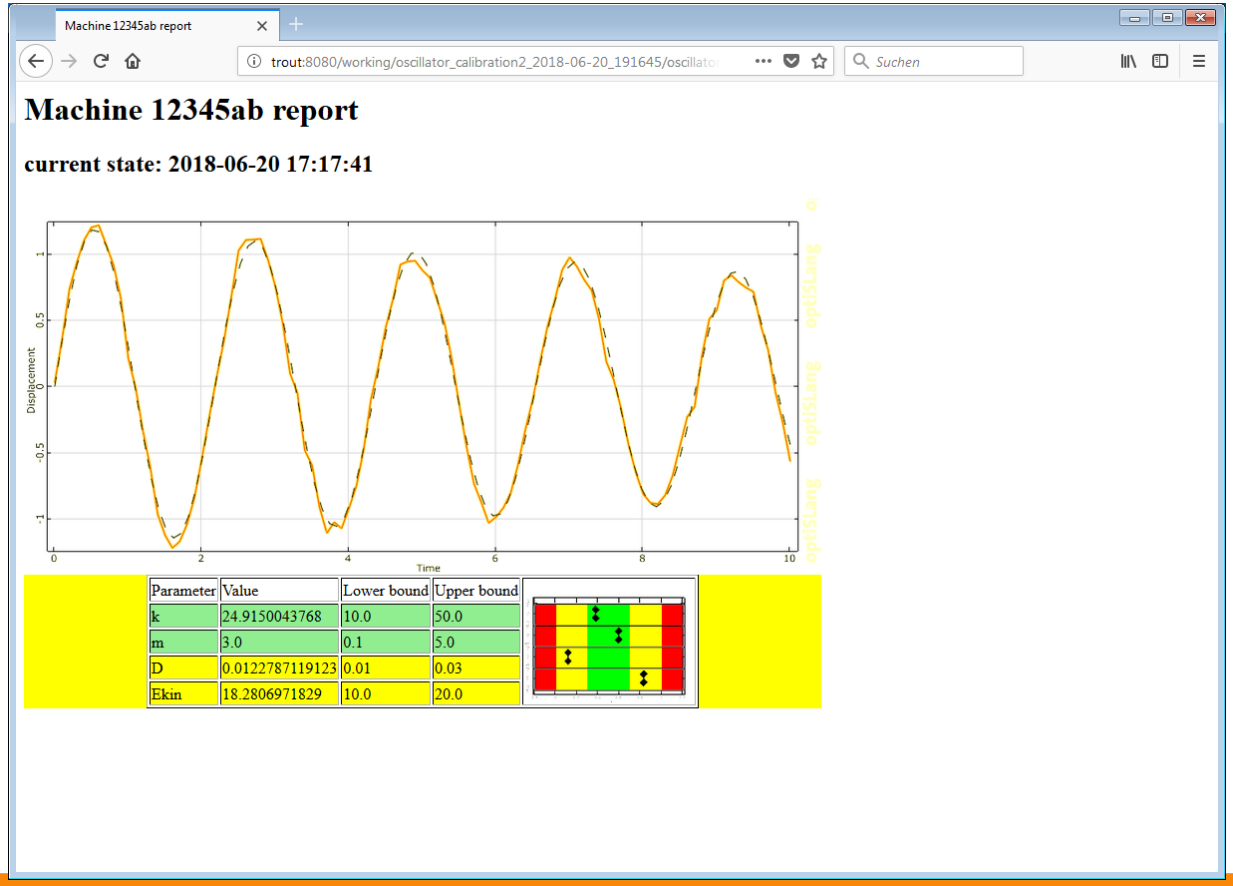





Server 1 Server 2

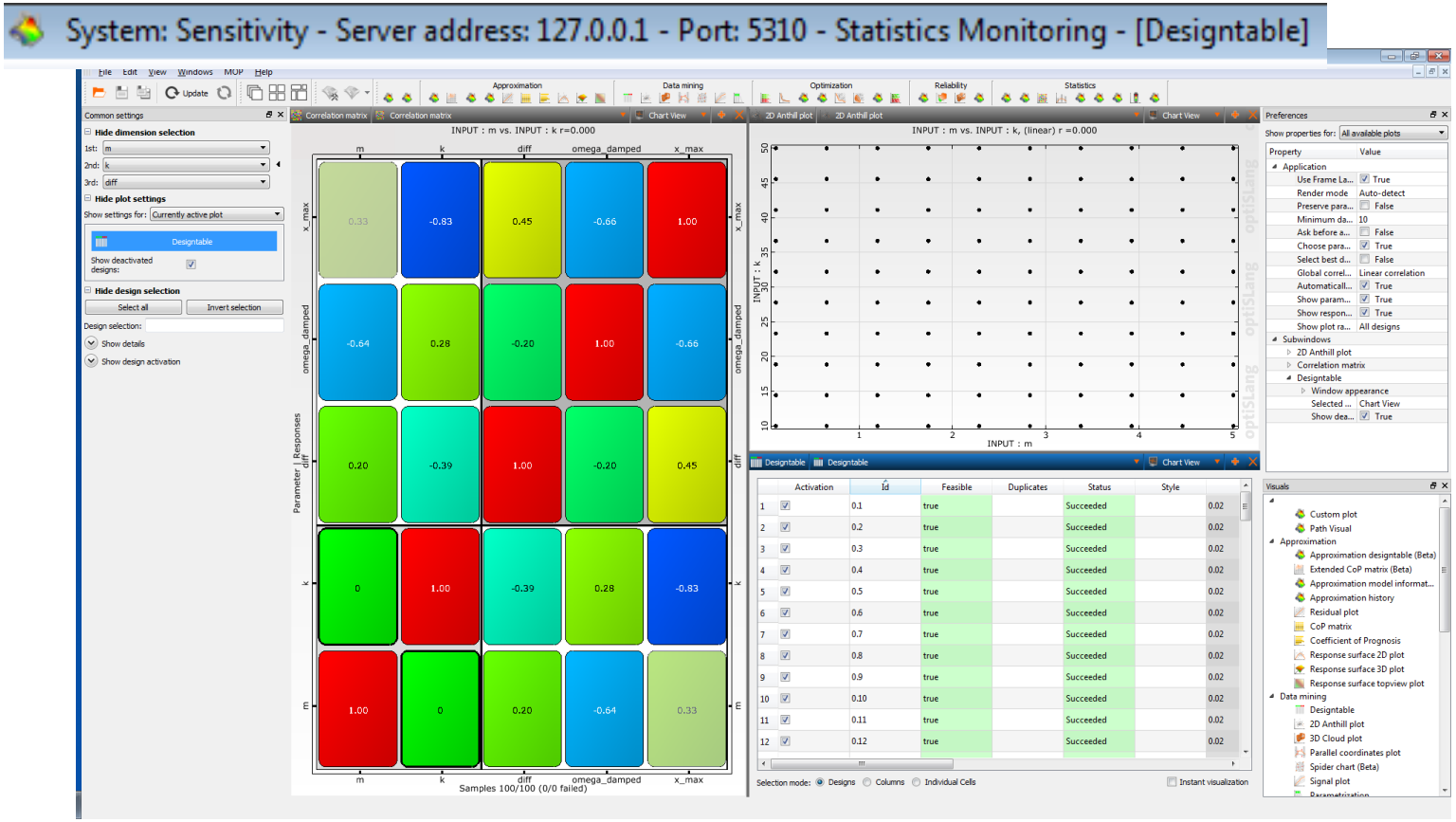
# Start, monitor and control in Web-browser

- No installation needed
- No need to know algorithms, solver, optiSLang, databases, HPC, …



# Remote Postprocessing (Beta)

- … and for those who want to use full post processing …



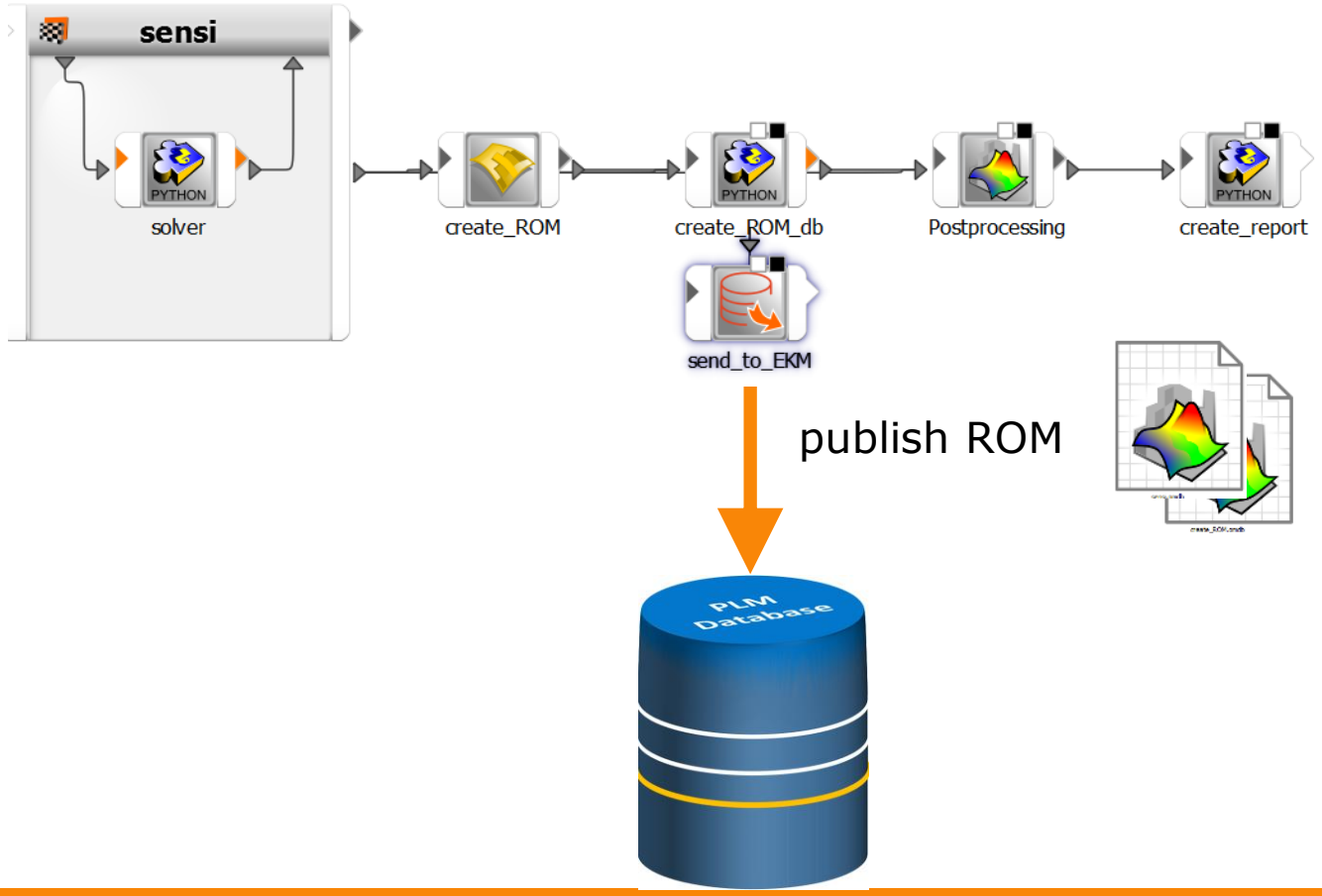

*optislang -b --start-monitoring --connect-tcp --system-name Sensitivity*

# Operation

**“We need operating parameters immediately”**

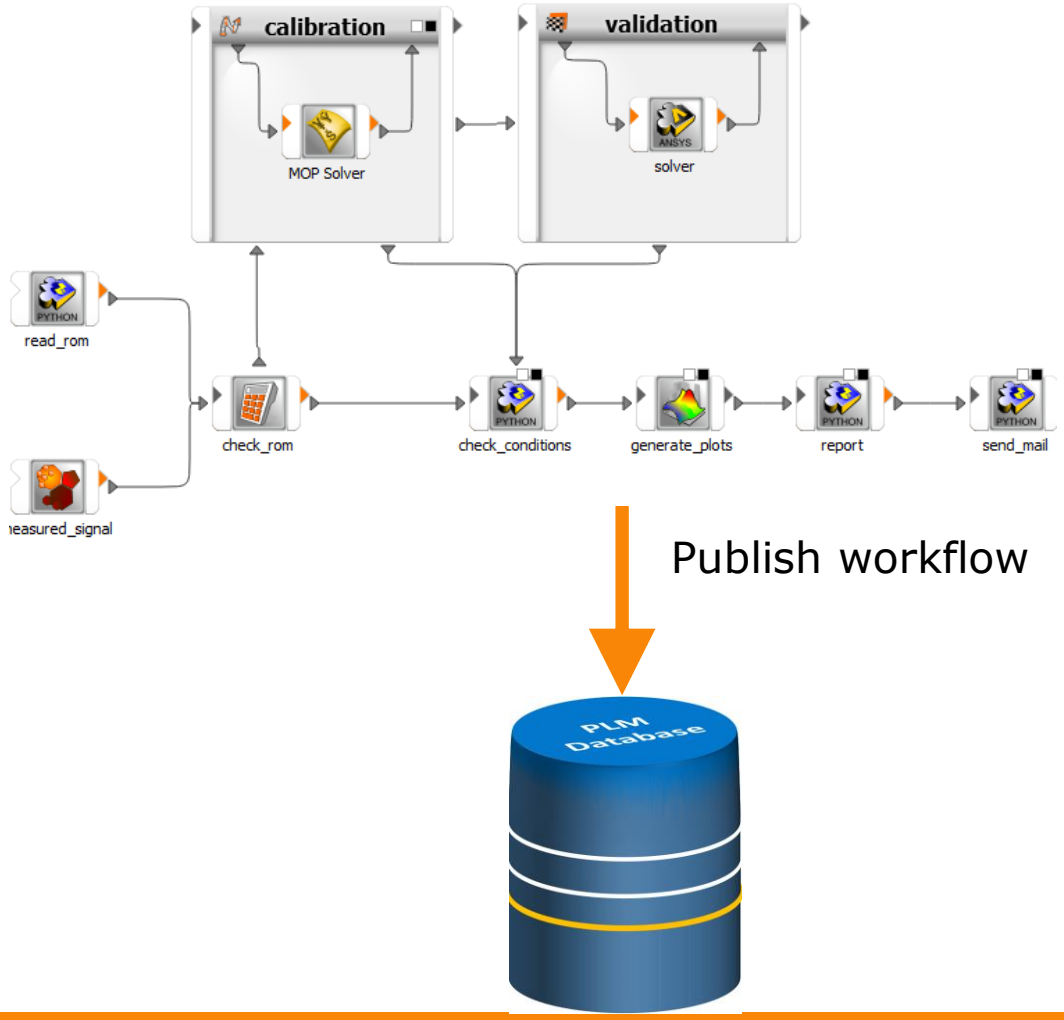
# Generate and publish ROM's

- Workflow in optiSLang including MOP algorithm
- Creates fully automatic the data-based ROM (MOP) based on up-front simulations within a predefined variation space



# Use ROM's for calibration

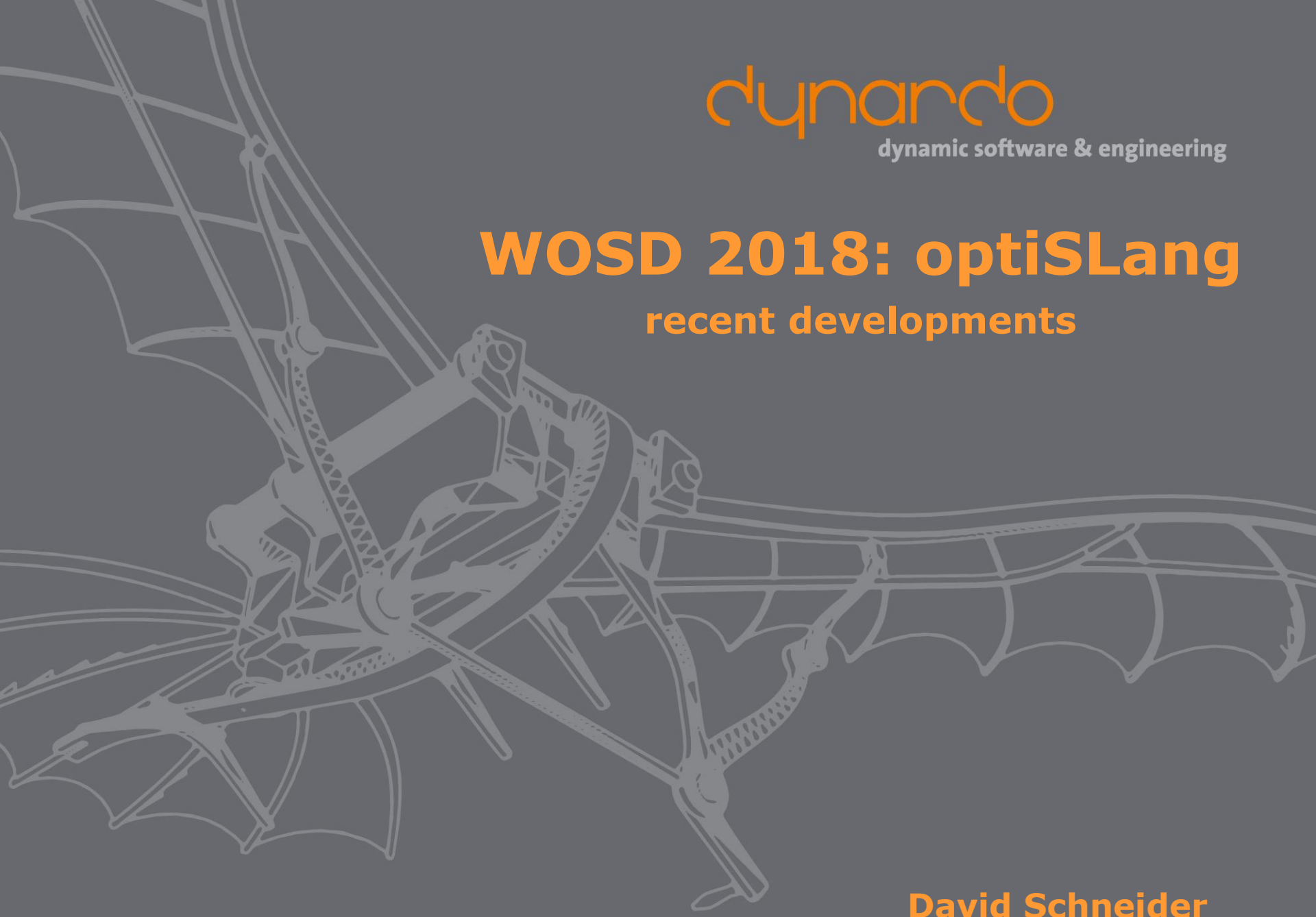
➔ Calibration workflow in optiSLang



dynardo
dynamic software & engineering

# WOSD 2018: optiSLang

## recent developments



**David Schneider**

**optiSLang product manager**