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Ansys optiSLang Updates

October 2024

Highlights from recent releases

Ansys PIDO/MDAO

+partner algorithms

… and some more…

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optiSLang
The chosen platform for PIDO

Integrated in Workbench & AEDT & Fluent
… more is planned …

Full process integration platform
- Orchestrate simulation workflows
- All Ansys tools
- non-Ansys, in-house tools
- App building
- Openness: Extendable & API
- …

Optimetrics & DesignXplorer
- In Ansys Workbench and EDT
- **Legacy products in maintenance mode**
- DoE
- Classical Response surface
- Optimization
- < 10 parameters

Ansys optiSLang

All basic Algorithms
&
Superior Algorithms
- "unlimited" number of parameters
- Advanced Optimizers & DoE
- Automatic Metamodelling
- Advanced AI/ML based metamodeling
- 1D-3D Statistics & metamodels
- Uncertainty Quantification/ Six Sigma
- Algorithmic workflows

Interactive Postprocessing

Easy to use
- wizard-based setup
- Robust default settings
- …

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optiSLang
The chosen platform for PIDO and central provider for "Optimization"

Ansys optiSLang

Integrated in Workbench & AEDT & Fluent
… more is planned …

Full process integration platform
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- Optimetrics
- DesignXplorer
- LS-OPT
- …

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Ansys 2024 R2: AMOP & OCO inside Fluent

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optiSLang inside Discovery

Available on AIS

https://ansyskm.ansys.com/forums/topic/discovery-add-in-optislang
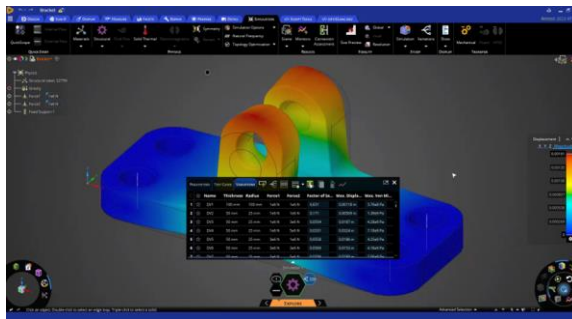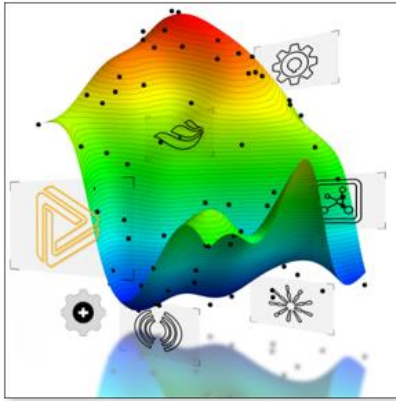
Go to optiSLang

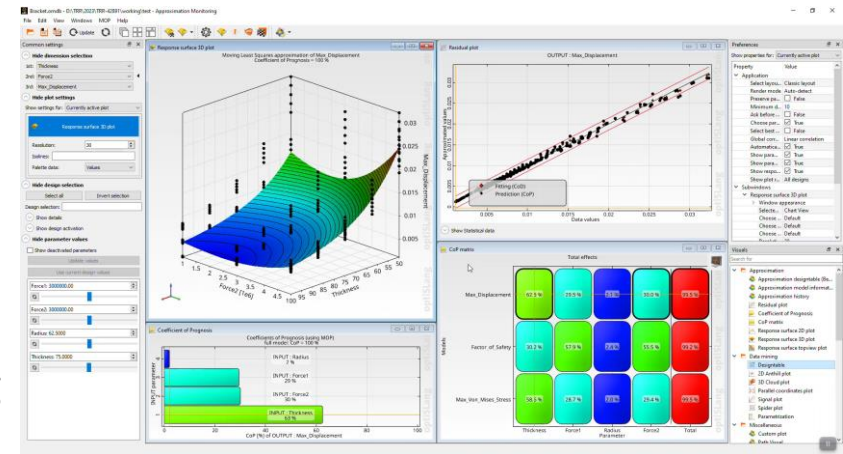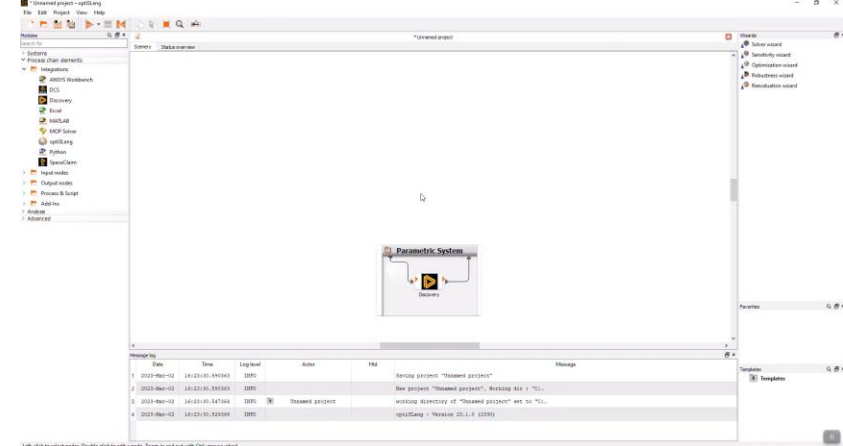Export postprocessing

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…more to come…

The .OPR

We introduce a software supported handling of files, which are used in workflow

Central and standardized location for reference files

NEW: Reference files directory (.opr)

- Strongly embedded in optiSLang program logic

  - placeholder support

  - Use of reference files from all file choosers

- Common handling analog to .opd

  - Next to .opf

  - Can be embedded in project file(.opf)

oscillator.opf   oscillator.py   oscillator_reference.txt
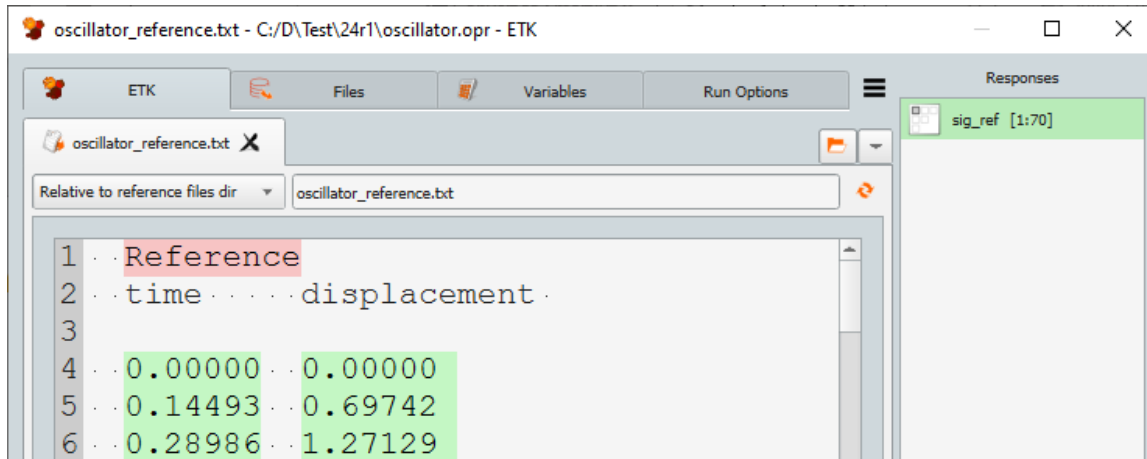
User has to take care
when copy/move project etc…

Files used in workflows – 24R1

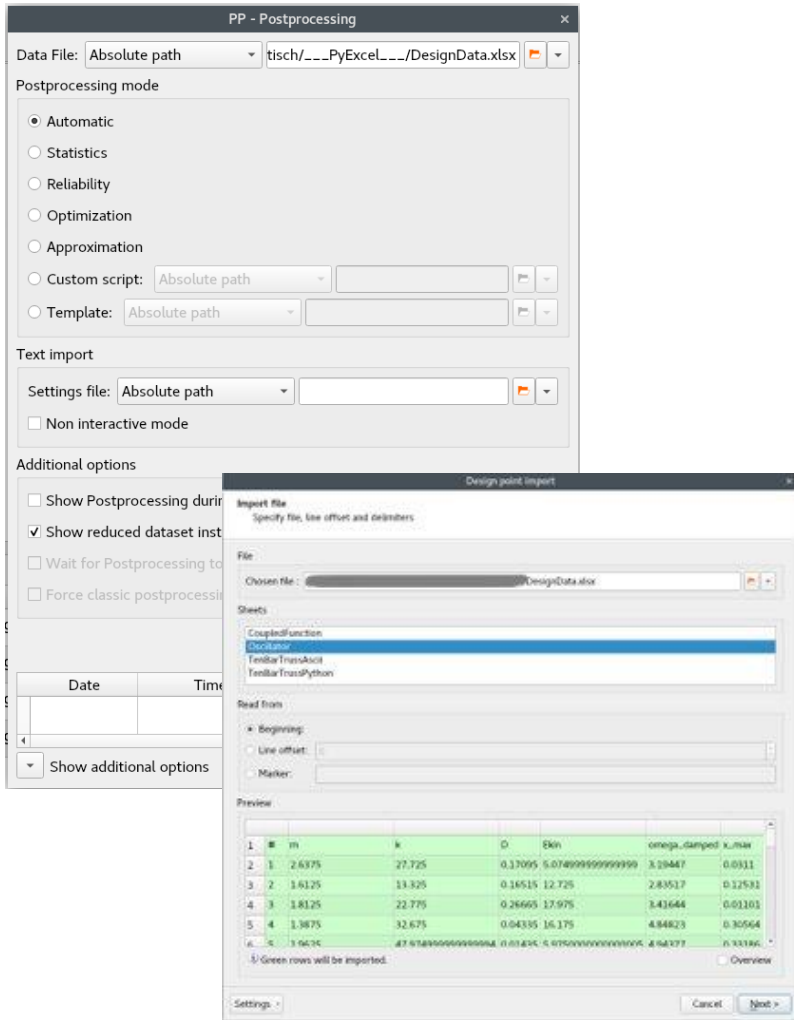
oscillator.opr   oscillator.opf

optiSLang (.opr) takes care

After 20 years of putting reference files
- Next to optiSLang project
- In "ref_dir" or "reference_dir" or "files" directories

The functionality replaces the "Store in project" functionality/option of the "File Registration" module, too.

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Postprocessing: Import data from spreadsheets
*Direct import from Excel or OpenDocument files*

- Extended "Text-import" to support now also *.xlsx, *.xls and *.ods

- Use "Design point import" Wizard

- Access via
  - Postprocessing menu
    "File" -> "Import" -> "From file..."

  - Choose file in postprocessing node
    → "Show postprocessing" button

- "Design point import" can be used in the same way as for text files
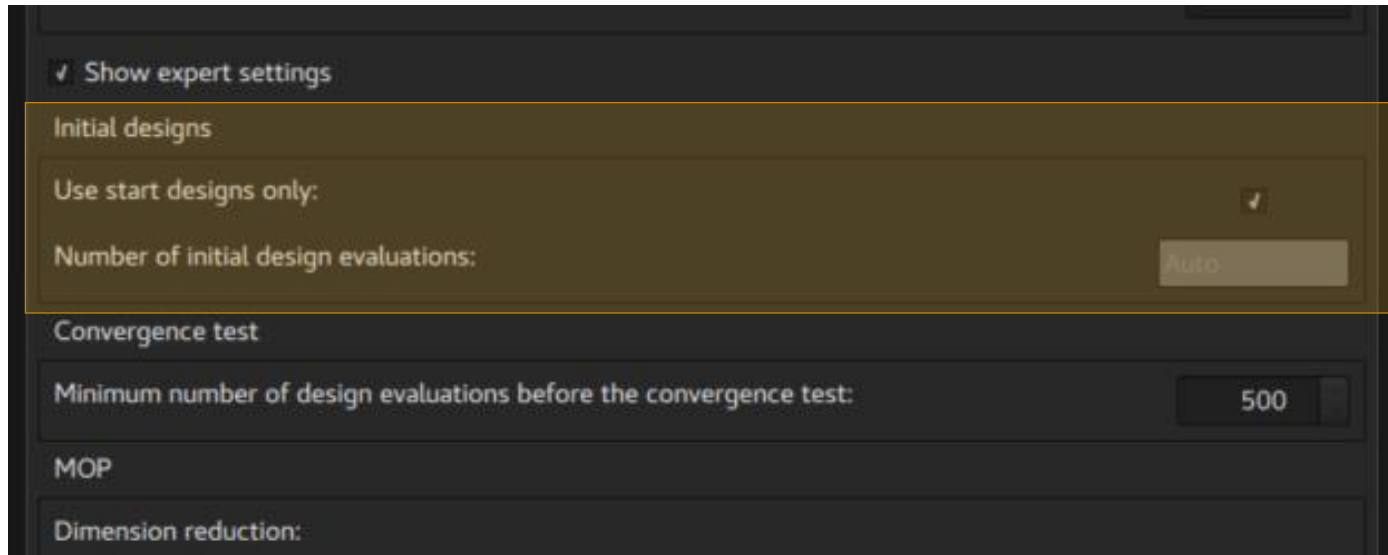 Only the delimiter section is replaced by selection of the sheet name
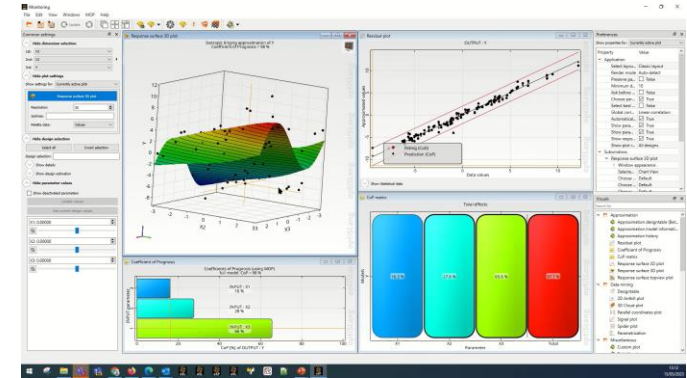
Remind: Settings can be exported for re-use and automation → Design Import node

Path   Design Import   Data Mining   MOP   Postprocessing
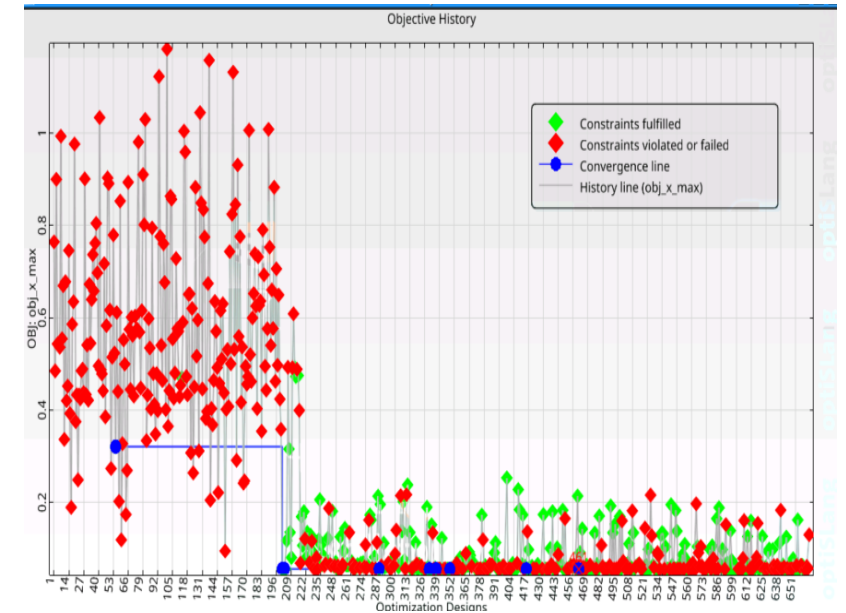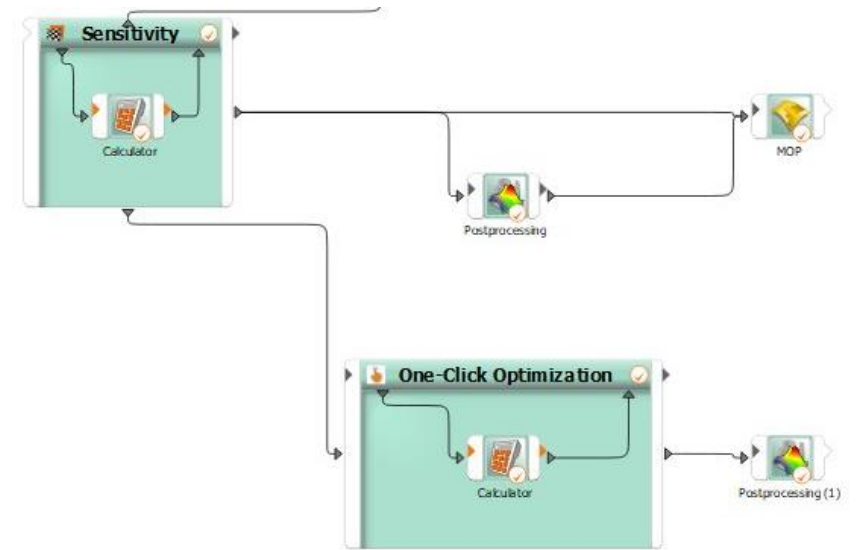
OCO start design handling

- Skip initialization by means of creating initial DOE

- Expert settings exposed (disabled by default)

Use cases:
- retrieving all start designs from slot
- import / manually create start designs
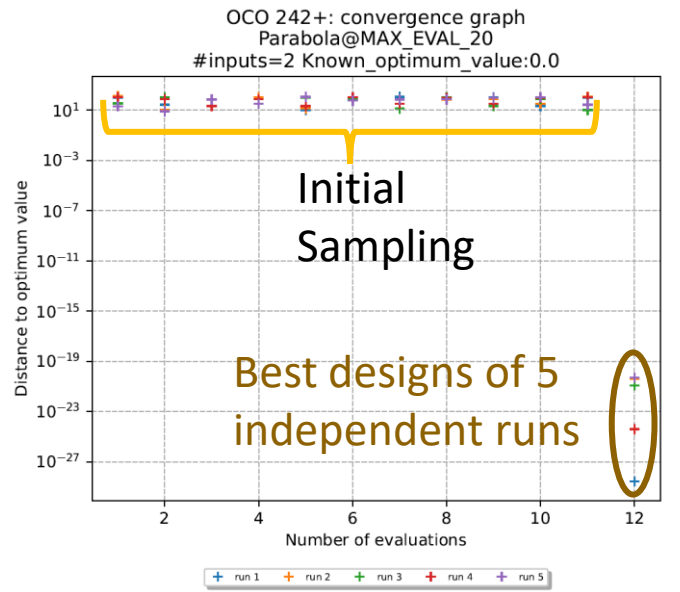- start directly from reference design (start internal MOP build once sufficient designs are created)
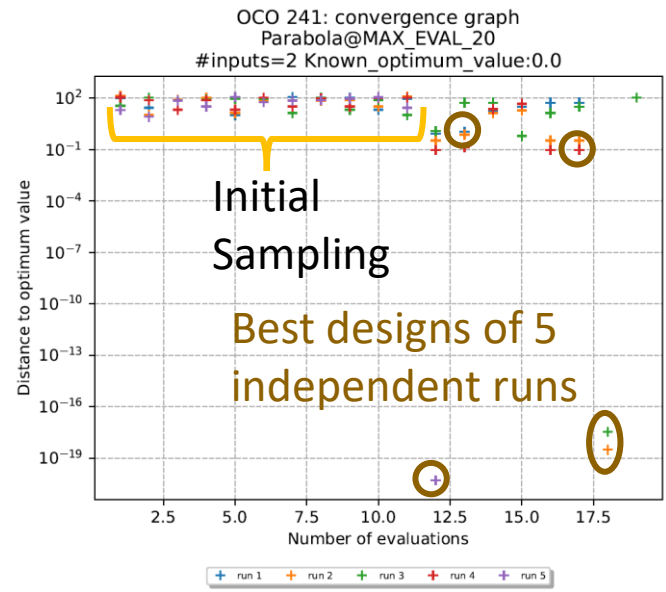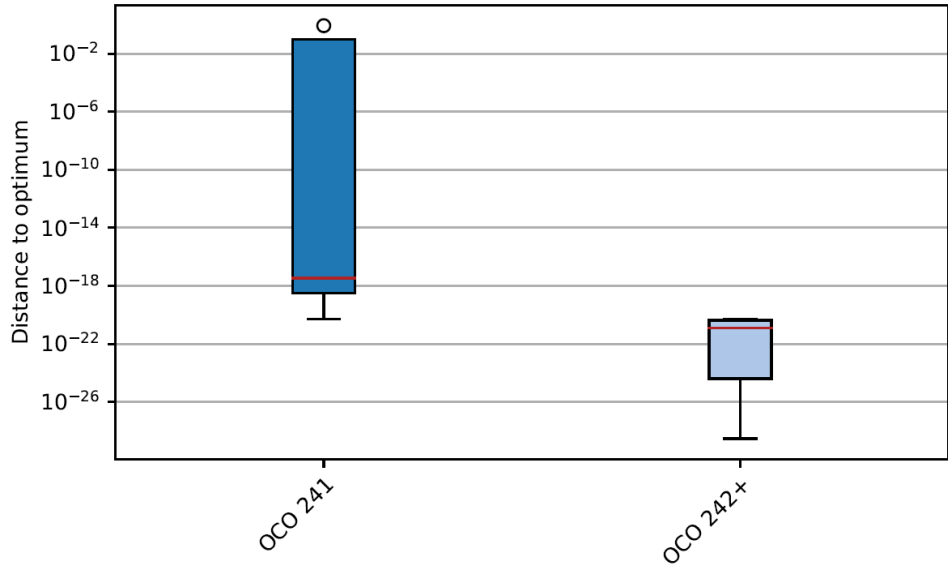
Enhance OCO: Speed up the convergence

- Improvement of OCO heuristic:
  - More use on "Optimization on MOP"
  - Many small improvements

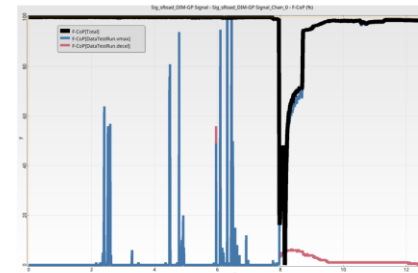Powering Innovation That Drives Human Advancement
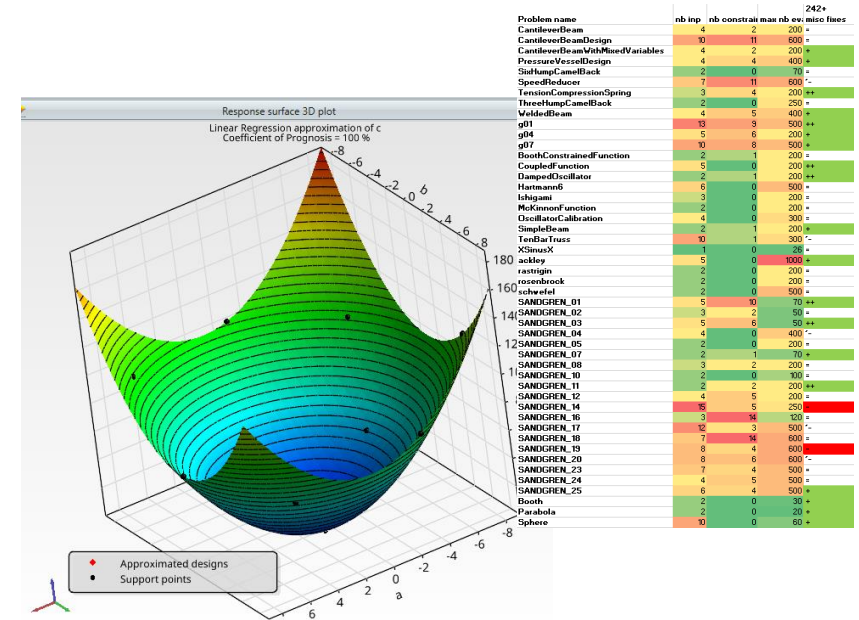
DIM-GP signal model
Out of beta and available next to classic SignalMOP

- Full signal model functionality

- Post-processing like classic SignalMOP

- Critical bugs from 23R1 have been resolved

- Unified deep learning python environment
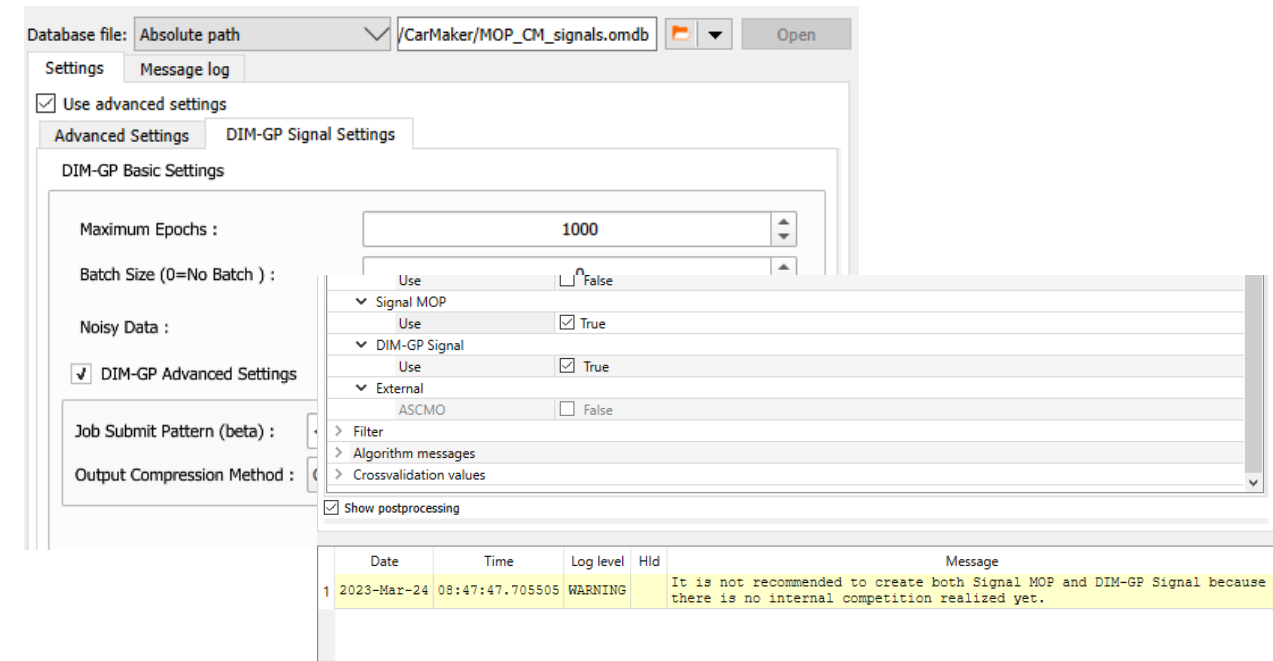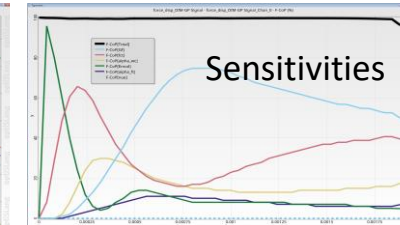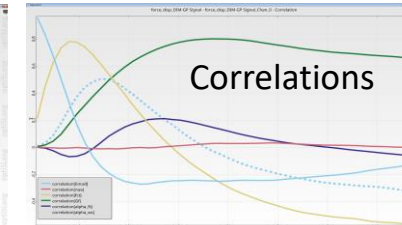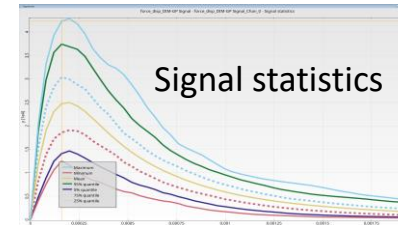 *All AI/ML based methods using the same python environment*

2023R1

2023R2

Signal statistics

Correlations

Sensitivities

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New generation of autogenerated apps from an optiSLang

Capabilities included:
- Autogenerated web app with Pre/Post and Run capabilities
- Provided in the oSL installer
- It can be deployed and ran in desktop, on-premises or cloud-based platforms.
- User can modify the UI using python (Plotly Dash)

Migration from OWA:
- Unzip OWA
- Open project.opf with newest optiSLang version
- Run "Generate App" wizard in oSL GUI or via command line option
- Modify UI of autogenerated App if needed

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New horizons

Farewell to OWS

OWS has been a cornerstone of our technological landscape for nearly 10 years.

It enabled countless customers to achieve remarkable success.

Known for its efficiency and direct return on investment.

Embracing New Horizons

We are transitioning to newer, unified technologies:
SAF and **Minerva**.

These new platforms will integrate a broader range of tools, extending beyond just optiSLang.

A larger development team will support these technologies, enhancing our capacity to deliver even better solutions.
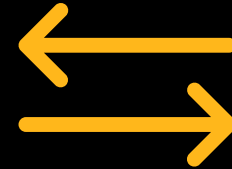
Customer Guidance

We will continue to maintain OWS for next releases.

We encourage customers to consider migrating.

Customers should contact us for assistance with the transition.

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optiSLang's AI/ML journey
Ansys' ongoing investment in critical simulation capabilities

2002
Metamodels for Optimization

2003
ARSM

2007
Metamodels for UQ

2009
MOP

2014
Extensibility

Custom Models Kriging

optiSLang inside Workbench

2015
Field MOP

2019
AMOP

Signal MOP

Deep Learning Ext.
DX GARS
DX SVR
++

optiSLang inside AEDT Dynardo acquisition

2021
DIM-GP scalars

2023
OCO

DIM-GP Signal

optiSLang inside Fluent

Next gen. MOP

MLOps

optiSLang inside ...

Next gen Apps

Connect SimAI & others

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