FRAUNHOFER INSTITUTE FOR ALGORITHMS AND SCIENTIFIC COMPUTING SCAI

MpCCI 4.5.2 Release Notes

MpCCI 4.5.2 – GUI

- Improve the start and error management of simulation codes in MpCCI GUI.

- Enhanced rules lists function by offering options for generating only one region as a results of combining some rules. This can be used to extend or reduce the components building a region.

- Quantity sets are now automatically named using the selected quantities.

- New user property for automatically saving project data before starting the coupled simulation.

- Unit system SI-mm-t-s has been renamed to mm-t-s

- Removed Jacobi and Broyden methods fro Quasi-Newton relaxation method

- Final output windows for each code are available on demand.

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MpCCI 4.5.2 – Batch system management

Additional handling options for setting up the simulation environment for a batch calculation on a cluster.

- New arguments for the mpcci batch command:

  - Option to change the number of cpus per code (-np)

  - Option to use the local MpCCI installation Path on remote node (-useAbsolutePath)

- Dynamic environment setup for a code via a environment file:

  - Environment file (.env) to define code specific environment variables like PATH, License, etc

  - Supports symbols to set or concatenate a variable

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MpCCI 4.5.2 – Visualizer / Monitor

- Data range can be better adjusted on the current value set or overall value range.

- Option for automatic grouping parts by mesh id.

- Pause button do not jump to the last in Monitor mode.

- Iteration norms are plotted in logarithmic scale.

- Support pattern in the selection field in Settings Panel.

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MpCCI 4.5.2 – CAE Tools latest release

- Abaqus 2018:

  - enable DMP parallelisation for Abaqus Standard

  - New MpCCI abaqus subcommand to help user to construct a restart input deck by displaying the available restart points.

- ANSYS 18.2, 19.0

- FINE/Open 6.2

- FINE/Turbo 11.2, 12.1, 12.2

- FLUENT 18.2, 19.0

  - Additional checks before using the scheme function mpcci-solve to ensure that the case file is initialized.

  - Only double precision is supported.

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MpCCI 4.5.2 – CAE Tools latest release

- JMAG 17.0

- MSC Adams 2018

- MSC Marc 2017.1

- MSC Nastran 2018.0, 2018.1

  - Fixes for iterative coupling:

    - Correct read out of the total time for a NLSTEP.

    - Keep the force load after the coupling converged until the end of the time step.

  - Option to select the MPI vendor to use.

MpCCI 4.5.2 – CAE Tools latest release

- OpenFOAM v1712:
  - Fix for iterative coupling
  - Support OpenFOAM velocity motion solver
  - Improve restart simulation with mesh morphing using the MpCCI Grid morpher.
- Taitherm 12.4.0, 12.4.2, 12.5.1, 12.5.2
  - Fix the MPI bootstrap option for using rsh.
  - Unchanged model with curve setting for the time step size.
  - Fix steady state simulation setup with a tolerance slope value and a coupling iteration start value.
  - Transient simulation setup with a coupling start time ts now includes the calculated solution for the time period ts in the exchanged data.

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MpCCI 4.5.2 – CAE Tools latest release

- Taitherm

    - Enhanced MpCCI command „importCFD"

        - Support relative path to the csp file.

        - Do not handle parts with assigned temperature setting.

    - Enhanced MpCCI command „clean"

        - Reset convection property to none for the parts with assigned temperature.

        - Fix removing functions hooks from the tdf file.

- STAR-CCM+ 12.04, 12.06

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MpCCI 4.5.2 – Coupling Server

- Pre-check mode:
  - Allow to compute the neighborhood search and exits the calculation.
  - Require additional license tokens.

- Additional server log file with information about
  - the job setup
  - Neighborhood calculation
  - Elapsed wall clock time per coupling step

Iterative Coupling
- Relaxation convergence can be used to as criterium.
- Improvement of the AndersonMixing Quasi-Newton method
  - Possible to relax the first iteration by omega value.