

## 1. MATCHID GRABBER

### 1.1. FEATURES

- A frames per second (FPS) reduction scheme is introduced. Accordingly, the user can now set a varying frame rate reducing w.r.t. an initial set maximum frame rate.
- Inclusion of VDI/VDE 2626 procedure and reporting. Interface hints the user to the compulsory steps involved.
- Option to crop the image but when storing the data to the harddrive the image is completed with black values to restore to its original size. Accordingly, the calibration that was performed under non-cropped conditions remains valid and there is no need to adjust the location of the principal point of the parameters. Secondly, different cropping dimensions can be imposed for different cameras. Downside is that the data transfer from RAM to HDD might be slowed down.
- Inclusion of ISO6892-1 for direct reporting of uniaxial stress-strain data.
- Sigma and epipolar statistics are now default variables for live tracking.

### 1.2. OPTIMIZATIONS

- Improve syncing between live tracking data and daq data.
- RS 232 allows now for multiple data format.
- The default daq signal selection is more intuitive.

### 1.3. BUGS

- DAQ channels with identical names are now automatically detected.
- Store strain data to \*.dat file when snapshot is taken.

## 2. MATCHID HS-GRABBER

### 2.1. BUGS

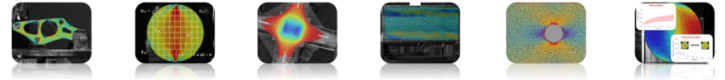
- Font size issue when windows was set in 125% configuration.

## 3. DIC ALGORITHM

### 3.1. FEATURES

- Display a warning when the specimen moves out of the field of view or in case correlation fails. Accordingly the user can anticipate.

### 3.2. OPTIMIZATIONS



- Complete Guess with full guess parameters adjusted per load step and cross camera matching. More robust.
- The initial guess algorithm has been improved, in particular for cross-camera matching, so that faster convergence will be reached.

## 3.3. BUGS

- Missing data compensation combined with extensometers: keep track of ROI. Accordingly no overlap can occur nor missing data compensation to extensometer result.
- When a standard spatial analysis was performed after doing a spatial + update reference an error occurred. This is now resolved.

## 4. RESULTS VIEWER AND POST-PROCESSING

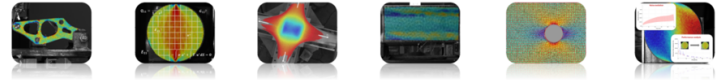
### 4.1. FEATURES

- All packages involve now templates when exporting from a 2D view.
- Standard reporting extended to PDF format.
- Scripting now supports more complex dataset names involving special characters.
- Transformations can now succeedingly be imposed and stacked without the need of generating a new dataset after each transformation. Afterwards, the user can always reconsult the order of the imposed transformations.
- A more intuitive interface for dataset selection pops up when multiple datasets are available. Accordingly, the hierarchy of datasets is more clear.
- Allow video export for LEF license.
- When exporting data to a \*.csv file, the user can now save its settings of preference to a template file and reload later on.
- Possibility to display the coordinate system in the actual origin of the object next to the the 3D system that is by default shown in the top-right corner.
- User can now extract data based on data point value filters (range/inclusion/exclusion) on top of geometrical shapes.
- Option to exclude/include local systems (1,2,n) and deformation gradient information from strain calculations. Accordingly, when not needed, the user saves RAM.
- Transformations: can be imposed based on direct rotation and translation value input.
- Transformations: allow rotations along three axis.
- Transformations: Polar coordinates implemented and available as new transformation.
- Transformations: For cylindrical coordinates with 3D measurements the user can now indicate whether he wants to fit to a cylinder or only transform the data to a cylindrical frame.
- Add or exclude timestep and external data to the legend info panel.

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- Mathematical calculator tool allows now to assign units to the calculated value.
- Mathematical calculator allows now the usage of external data.
- "When selecting ""AddXYCOLUMNS"" for exporting now also pixel coordinates are by default exported, even if a mm conversion has been set."
- Allow users to add and store custom made colormap themes.
- In 2D, reference points do no longer need to be bounded to exact data point locations.

## 4.2. OPTIMIZATIONS

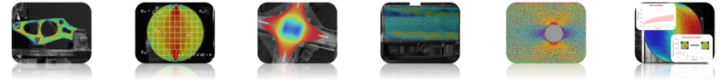
- Number of timesteps displayed in a single chart view by default limited to 25. User can overrule via the default settings.
- Improvement in the UI when loading scripts and macros.
- Improvement of the extensometer UI.
- Improved extensometer chart display when extracting extensometer data.
- Dark theme export improvements.
- Start up position of cylindrical coordinates for 2D DIC measurement.
- Only allow strain and stress calculation on relevant datasets.
- Avoid saving of \*.mext (matchid extraction file) when still drawing to avoid confusion.

## 4.3. BUGS

- Issue of displaying 2.5D and 3D dataset simultaneously now resolved.
- When the FEVAL module is called from within the results viewer and multiple strain datasets exists, the user is asked which one to transfer to the FEVAL module. Automatically, the \*.dat file will be overwritten containing the selected strain conventions.
- Display issue when extensometer data was lost is now resolved.
- Bug in displaying local coordinate systems for 2D measurements without calibration informatin.
- Local coordinates are now automatically converted into metric units when applicable.
- Update unit when loading external force data.
- 3D system plot for 2D data in 3D view.
- Solved issues when syncing 2D views to 3D views.
- Display message when file for external data is opened in another application.
- Overlaying multiple series in a chart display of a merged dataset now possible.
- Displacement magnitude now also in pixels available.

## 5. STANDARDS

### 5.1. FEATURES



- VDI/VDE 2626 supported with dedicated report generation
- ISO6892-1: analysis and fitting of the uniaxial stress-strain curves with basic material properties. Dedicated report generation according to the standard included. Possibility to analyse multiple extensometer data at once.

## 6. PA MODULE

### 6.1. FEATURES

- The image coordinates of a selected point in the field of view are highlighted in the charts and in the exports.
- The configuration and size of the virtual strain gauge is highlighted in the view.

### 6.2. OPTIMIZATIONS

- The impose VSG settings and return to the main package button appears now much more prominent in the main ribbon.
- The static image can now also read packed image file formats, like \*.cine, \*.cihx, \*.sequence.

## 7. FEDEF MODULE

### 7.1. FEATURES

- When the orientation is fully lost, the user can now auto-reposition to the initial conditions.
- Allow the user to delete elements from the mesh. These will accordingly not be taken into account for the numerical deformation process.
- The user can restore the mesh in case he has deleted some elements.
- The user can, instead of uploading an FEA mesh, define now an analytical varying displacement fields. Next, automatically a mesh will be generated connected to this analytical function.
- The FEA coordinate system is now shown in the 2D mesh view.
- Undo and redo buttons for mesh alignment are introduced.

### 7.2. OPTIMIZATIONS

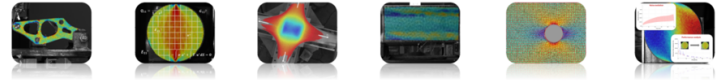
- Based on the optical rays, a more robust initial orientation of the mesh on the camera image is established.
- The logics for saving a project has been improved.

### 7.3. BUGS

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- An error in the derivatives of T6 shape functions has been resolved.

## 8. FEVAL MODULE

### 8.1. FEATURES

- The displacement magnitude has been added as a default consultable variable.
- Report error message of Simcenter conversion so that the user knows why Simcenter does not launch.

### 8.2. BUGS

- Identical limits FEA and DIC are by default imposed.
- Spaces in path of \*.odb and \*.op2 files now allowed.
- More generic conversion of Ansys displacement file for various bit conventions.

## 9. VFM MODULE

### 9.1. FEATURES

- Selective update of the sensitivity-based virtual fields. These are only updated once the solution approaches a minimum. Hence, the algorithm is much faster.
- Data discretization functionality for all non-linear VFM models. Accordingly, a coarse search of the parameters can be made with a reduced amount of data. This can be succeeded by a refinement procedure based on the entire dataset. As such, the procedure can be made much faster.

### 9.2. BUGS

- Bug in saving isotropic plasticity and hyperelastic VFM project solved.

## 10. THERMAL INTEGRATION

### 10.1. BUGS

- Thermal file path indication hints now to the right directory.

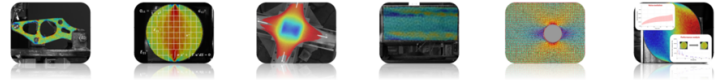
## 11. MISCELLANEOUS

### 11.1. FEATURES

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- The speckle generation UI has been made more intuitive. Optimized lens and camera distance is now proposed.

## 11.2. BUGS

- Issue of regional settings influencing best-plane fit results resolved.
- Working directory cmd for launching python scripts resolved.
- Crash when empty dat files were loaded and exported is handled.