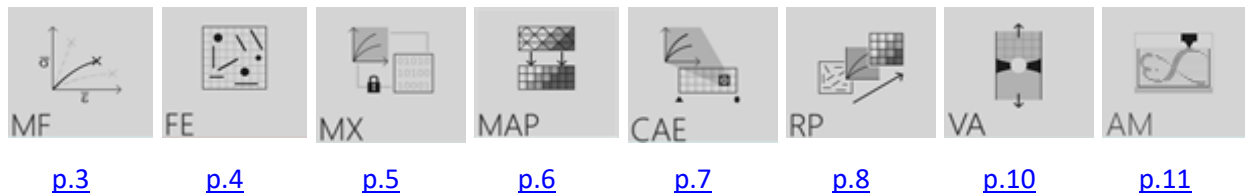
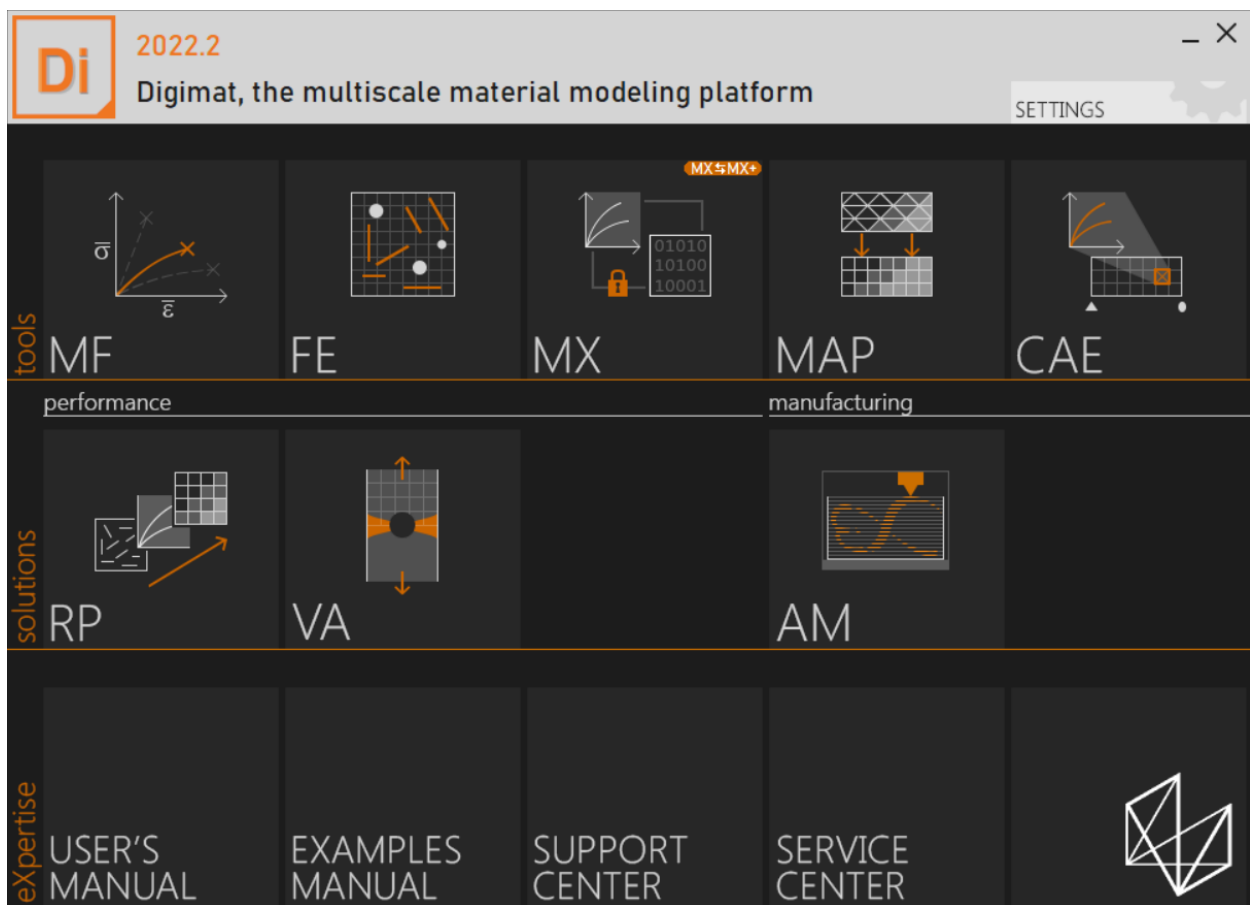


Digimat

Digimat 2022.2 – July 2022

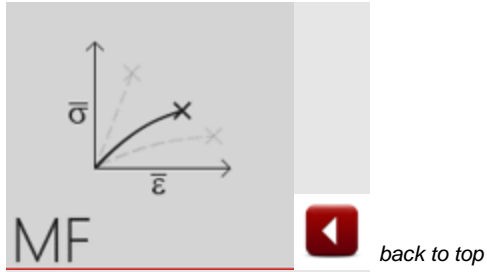


Licensing, installation, and transversal functionalities

- Digimat has introduced a Customer Experience Improvement Program (CEIP) which enables in-product usage data to be reported back to Hexagon. The data returned anonymizes personally identifiable information, and recorded data is used to make decisions on how to improve Digimat. Users can opt-out or opt-in the CEIP during the installation of Digimat or at anytime through the Settings drop-down in the Digimat platform.

Known issues

- Pasting data to input tables in Digimat Platform, Digimat-MF, Digimat-FE, Digimat-MAP, Digimat-MX, and Digimat-CAE graphical user interfaces may lead to abnormal termination of these products.

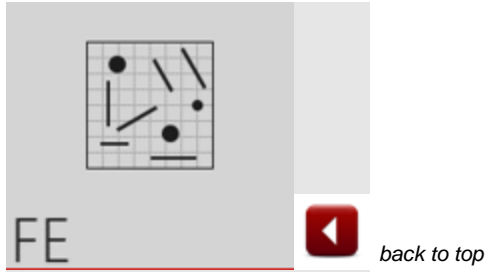


New Capabilities

- **Support Fatigue with elasto-plastic material for the matrix**
 - The user can now define a fatigue failure criterion with an elasto-plastic material at the matrix level.
 - In Digimat-MF, Digimat-MX and Digimat-RP, the solver will downgrade the elasto-plastic material into an elastic one. The elasto-plastic material will only be used in Digimat-CAE to nCode interface when using plasticity correction.

Known issues

- When using a multilayer microstructure containing a layer modelled as a homogeneous material, the results in the results file associated with the matrix of the corresponding layer are not correct. A possible workaround is to define a fake reinforcing inclusion with a negligible volume fraction.

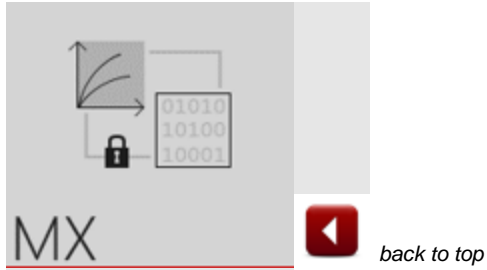


New Capabilities

- **Improved Foam Microstructure generation**
 - Digimat-FE now supports defining gradients on cell size and wall thickness within foam microstructures, as well as defining multilayer RVEs. These enhancements will allow to more accurately model and analyze many foam and foam-like structures.
 - Digimat-FE is now able to simulate the large deformation under compression of foam microstructures, considering the self-contact between walls or struts.
- **Frequency-dependent stiffness computation**
 - Digimat-FE now supports the definition of visco-elastic constituents and the computation of harmonic response of any microstructure under harmonic loads, or the computation of frequency-dependent macroscopic properties (real and imaginary engineering constant, stiffness and compliance matrices) suitable for NVH or acoustic analysis.
- **Support of Abaqus/Explicit as external FE solver**
 - Finite element models can be exported to Abaqus/Explicit when considering porous materials (i.e. generic microstructures with voids) and foam materials.

Improvements

- **Addition of Marlow law**
 - The Marlow law has been added to Digimat-FE for modeling of rubber and other hyperelastic materials.



New Capabilities

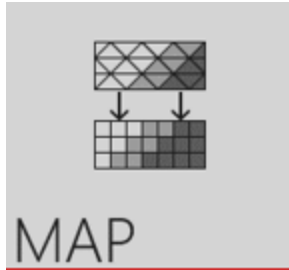
- **Support for Reverse Engineering for Thermo-Viscoelastic (TVE) material models**
 - Amongst other, this new workflow is suitable for generating material cards for polymer AM process simulation.
- **New and Updated Materials**
 - New grades have been added from DuPont, RadiciGroup High Performance Polymers, Solvay Specialty Polymers, TEREZ, Covestro, SABIC's Petrochemicals portfolio, UBE, Celanese, Addiparts, Stratasys Inc., DOMO Engineering Plastics.
 - Generic SLS PEEK has been replaced with Generic SLS PEKK.
 - Grades have been removed from Celanese (i.e. Fortron 6165 and 4332).
- **Support Fatigue with elasto-plastic material for the matrix**
 - The user can now define a fatigue failure criterion with an elasto-plastic material at the matrix level.
 - In Digimat-MF, Digimat-MX and Digimat-RP, the solver will downgrade the elasto-plastic material into an elastic one. The elasto-plastic material will only be used in Digimat-CAE to nCode interface when using plasticity correction.

Improvements

- **Data Supplier Column**
 - A new column has been added for data supplier to allow users to understand better the pedigree of where material data is originating from.
- **Inclusion of Ageing information in On-Demand requests**
 - When sending a request to Material Suppliers for data, this request will now contain information on ageing if it is available for that material grade.

Known issues

- When loading .dsg files, the geometry name is not properly imported and need to be re-defined by the user.



back to top

New Capabilities

- **Support mapping of 3DTimon Light3D data to 2D mid-plane shell meshes**
 - Users can now map data originating from 3DTimon Light3D to 2D mid-plane shell meshes that would be suitable for automotive crash simulations.

Improvements

- **Extended support of extruding draping meshes to PAM-Form and Digimat-XML input data**
 - Users will now be able to extrude 2D meshes being imported from draping analysis to generate a 3D mesh made of continuum elements.
- **Improved support for Nastran elements**
 - Digimat-MAP now supports mapping to CPYRAM, CPENTA, CQUAD8, CQUADR, CTRIA6, CTRIAR elements for Nastran input decks.
- **Improved 3D mapping for 3DTimon Light3D**
 - Improvements have been made to the algorithm when mapping 3DTimon Light3D results to 3D continuum meshes, enabling more accurate mapping of orientation data.

Known issues

- Digimat-MAP doesn't support weld line files that are exported from Moldflow software using other language than English (file must contain the keyword 'Time').



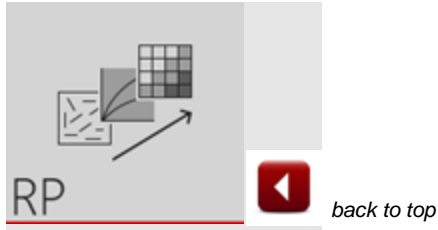
back to top

New Capabilities

- **Updated support of the existing interfaces with CAE software:**
 - Addition of CAE software
 - Marc 2022.1
 - nCode 2022.1
 - nCode is now also supported under Linux.
 - PAM-Crash 2021
- **Support Fatigue with elasto-plastic material for the matrix**
 - The user can now define a fatigue failure criterion with an elasto-plastic material at the matrix level.
 - In Digimat-MF, Digimat-MX and Digimat-RP, the solver will downgrade the elasto-plastic material into an elastic one. The elasto-plastic material will only be used in Digimat-CAE to nCode interface when using plasticity correction.

Known issues

- Digimat-CAE/SAMCEF interface is not supported in this version.



New Capabilities

- **Support for thermal analysis**
 - Digimat-RP now supports running thermal analyses for SFRP, CFRP, and LFRP components to understand the influence of thermal conductivity (only available for Digimat-CAE/Abaqus Standard and Digimat-CAE/Marc interfaces).
- **Support for coupled thermal mechanical analysis**
 - Digimat-RP now supports running coupled thermal mechanical analyses for CFRP components to understand the influence of thermal conductivity on the mechanical behavior in a single simulation (only available for Digimat-CAE/ Marc interface).
 - Digimat-RP now supports the material model coupled with a crystallinity kinetic law that is used in a coupled thermal thermomechanical analysis type (only available for Digimat-CAE/ Marc interface). This new type of law allows the simulation of the effect of temperature change on thermoplastic composite structure, considering the evolution of the crystallinity.
- **Support Fatigue with elasto-plastic material for the matrix**
 - The user can now define a fatigue failure criterion with an elasto-plastic material at the matrix level.
 - In Digimat-MF, Digimat-MX and Digimat-RP, the solver will downgrade the elasto-plastic material into an elastic one. The elasto-plastic material will only be used in Digimat-CAE to nCode interface when using plasticity correction.

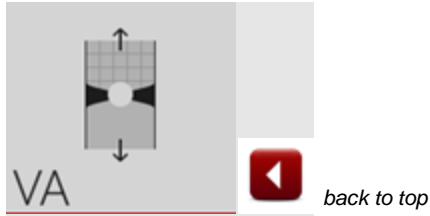
Improvements

- **Improved support for Nastran elements**
 - Digimat-RP now supports mapping to CPYRAM, CPENTA, CQUAD8, CQUADR, CTRIA6, CTRIAR elements for Nastran input decks.

Known issues

- When exporting an animation or screenshot one may experience issue when using a transparent background, it is recommended in this case to use an opaque background.
- Digimat-RP doesn't support weld line data that are exported from Moldflow software using other language than English (file must contain the keyword 'Time').
- When using 3D TIMON injection files with shell elements, there is a discrepancy between strong coupling and macro solution:
 - When using strong coupling solution, thicknesses of shell elements will be the one of structural mesh.
 - When using macro solution, thicknesses of shell elements will be the one of injection mesh.

This can lead to differences in results in case of important differences between thicknesses defined for injection mesh and thicknesses defined for structural mesh.



New Capabilities

- **Addition of double cantilever beam (DCB) test in the Digimat-VA tests database**
 - A new double cantilever beam test for fracture toughness computation has been added to the test database, this test is supported with the Digimat-VA internal solver only for the standard progressive failure model.

Improvements

- **Friction settings for Curved Beam Strength (CBS) test**
 - Digimat-VA will now allow for the addition of a friction coefficient between the rollers and the component.

Known issues

- In case of errors during the porous material properties calibration process (using Digimat-FE from Digimat-VA, when performing defect study with intra-ply or inter-ply porosities), all errors are not correctly reported in the Digimat-VA log file.



New capabilities

- **New materials for Stratasys printers**
 - A large number of materials have been added to the material database for Stratasys printers. These materials are available as on-demand and need to be requested from Stratasys through the product. Due to the schedule of our material testing campaign, data for some materials may not be available initially.
- **FDM Wizard Mode**
 - Users will be prompted on product start to enter an FDM wizard mode, this mode is only suitable for users of Stratasys printers. In the wizard, the workflow has been greatly simplified and allows users to get to simulation results with a minimum number of inputs and selections.
- **Improved usability**
 - The material model dialog has been updated with a simplified layout to improve the user experience.
 - The build job height can now be defined in SLS. In order to differentiate the printer Z dimension and the build job height, two parameters have been introduced to define the powder-based thickness and the top insulating thickness.
 - The geometry tessellation can now be refined during the post-processing. It will provide the user with an accurate post-processing of the results even if the tessellation was not refined before submitting the job.
- **New crystallization law**
 - The Hoffman-Lauritzen crystallization model is now available in Digimat-AM GUI.

Improvements

- **Performance improvement with large STL files**
 - The performance to load and save Digimat-AM projects with large STL files has been largely improved.
- **Batch mode extension**
 - Batch mode supports the definition of variability profiles, like when modeling variable printing chamber temperature or convection coefficient.



The Material Modeling Company

VISIT

<http://www.hexagonmi.com/e-xstream>

INFO REQUEST

digmat.support@mscsoftware.com

TECHNICAL SUPPORT

digmat.support@mscsoftware.com

Support hotline: +32 10 81 40 82

The Hexagon logo, Hexagon, e-Xstream and eXdigmat logos, e-Xstream engineering, eX, eXdigmat and Digmat are registered trademarks or trademarks of Hexagon AB and/or its subsidiaries. All other brand, product, feature names or trademarks are the property of their respective owners.