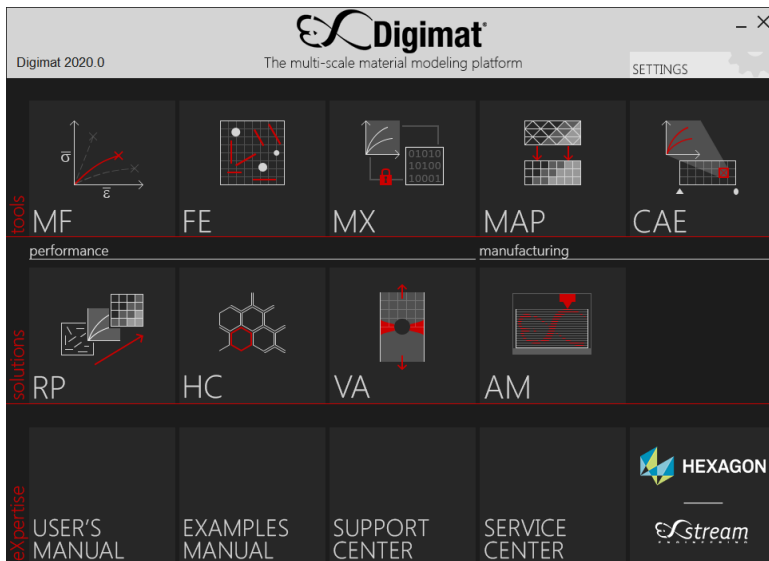




Release Notes Digimat 2020.0 – May 2020



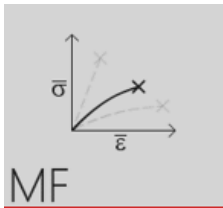
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Licensing and installation

- Digimat 2020.0 configuration in scripts or command line usage requires the definition of two environment variables:
 - DIGIMAT_BIN_20200: points to installation directory
 - MSC_LICENSE_FILE: point to license file or license server

More details on the configuration is available in the Digimat documentation.

- Since Digimat 2019.1, Digimat requires an updated MSC Licensing server, MSC Licensing Helium, which is available from the MSC Software Download Center. Previous license files do not require an update. If this updated in the scope of Digimat 2019.1 installation, you don't need to repeat this operation.
- For Digimat-CAE/LS-DYNA user, a new procedure to build executables under Windows must be achieved. Details are described in Digimat documentation (installation section).



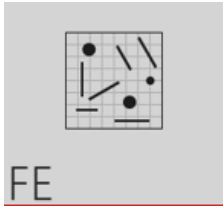
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New Capabilities

- None for this release

Improvements

- **Consolidation of transversally isotropic fiber response with thermo-dependent and viscous matrix**
 - Corrected phase results with TE matrix model (without impact on composite response)
 - Corrected response with TEP matrix model
 - Extended TE matrix model to orientation tensor and thermo-dependent transversally isotropic fiber
 - Supported with TVE matrix model



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New Capabilities

- **New external geometry microstructure definition**
 - Supported .stl geometry import to distinguish two phases
- **More robust and efficient modeling workflow for UD stiffness and strength prediction**
 - Accumulated plastic strain failure indicator with thermo-mechanical analysis
 - Element deletion post failure and damage
 - Pressure dependent matrix hardening behavior
 - Friction post-debonding for breaking glue
- **Widen cemented metal modeling capabilities**
 - New phases are inclusion, void, prismatic grain and core-rim inclusion
 - Binder instead of matrix (labeling only)
 - Enriched microstructure post-processing
 - Intercept distribution
 - Equivalent diameter distribution
 - Available with FE/Solver (FEA and FFT approach)

Improvements

- **Consolidation of the FFT solver**
 - Supported EVP matrix model
 - Supported curved sphero-cylinder inclusions
 - Supported theta and phi input for loading



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New Capabilities

- **New filtering experience**
 - New interface highlighting material supplier's presence
 - Efficient browsing capabilities relying material type, manufacturing, microstructure, part performance or process, model behavior and conditioning
 - Import to grade and eased navigation capabilities
- **Material card information export**
 - On export, material cards now contain numerous valuable information
 - Digimat-MX database version it comes from
 - Performance tags
 - When applicable, conditioning and dependent information such as moisture, temperature, strain rate, frequency, load ration, etc.

New material data in public database

○ New models

- Ascend Performance Materials
- SOLVAY engineering Plastics is now DOMO Engineering Plastics
- DSM
- Dupont Transportation and Industrial
- KOLON PLASTICS
- Kuraray co. Ltd.
- LG Chemicals
- MarkForged
- PolyOne
- SABIC Specialties
- SABIC Petrochemicals
- Solvay Specialty Polymers
- SUMIKA Polymer Compounds
- Toray

○ New material suppliers

- Ascend Performance Materials
- DOMO Engineering Plastics
- KOLON PLASTICS
- LG Chemicals
- PolyOne
- Toray

○ Leaving material suppliers

- Lanxess

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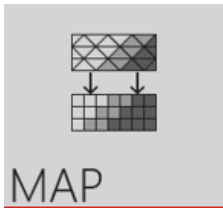
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New material data in public database

○ New models

- Ascend Performance Materials

-
- DSM
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 - PolyOne
 - Toray
- Leaving material suppliers
 - Lanxess



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New Capabilities

- **New mesh extrusion capability**
 - Post mapping, possibility to extrude receiver mesh
 - Supported for Aniform donor and Abaqus receiver meshes
- **New partial infill field mapping**
 - For FFF and FDM based on toolpath input
 - For solid receiver mesh only
 - Local infill per element or average partial infill over domain
- **Supported CFF process**
 - Support of Markforged toolpath format
 - Save element sets of Onyx and CFF materials
- **Extended data support for existing interfaces**
 - PAM-Form orientation .erfh5 format



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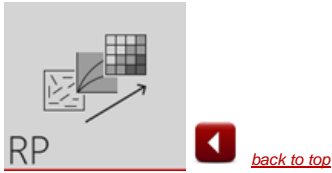
New Capabilities

- **Updated support of the existing interfaces for user subroutines for Windows (7 and 10) & Linux (Red Hat 7 and Suse 12)**
 - Abaqus (GA release only)
 - 2018 / 2019 / 2020
 - ANSYS
 - 19R1 / 19R3 / 20R1
 - LS-DYNA
 - R9.3 / R10.2 / R11.1
 - Marc
 - 2018.1 / 2019 / 2019FP1
 - PAM-CRASH
 - 2017 / 2018 / 2019
 - Samcef
 - V16.3 / V17.2
 - nCode
 - 2018.1 / 2020
- **Supported thermo-mechanical analysis for LS-DYNA/Implicit**
 - Hybrid coupling only
- **Supported advance PFA for structural analysis**
 - Available for UD material only using Camanho model failure indicator
 - Supported for Abaqus/Explicit, LS-DYNA/Explicit and Marc
- **Supported structural curing analysis**
 - Available for UD material only
 - Prescribed temperature field only
 - Supported for Abaqus/Standard, ANSYS, LS-DYNA/Implicit and Marc

Important notice

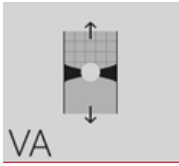
- **Red Hat support**

Red Hat 6 is supported for the interfaces to Abaqus, LS-DYNA and PAM-CRASH. Dedicated installers are available on the MSC Software Download Center.



New Capabilities

- **Extended Digimat-RP/Moldex3D solver to valve gate control**
 - Accessible from orientation tensor process settings with multiple gates
 - Available for shell and solid mesh
- **Supported in command-line**
 - Accessible once analysis is ready to run (very last step prior submission)
 - Compatible with orientation tensor mapping, Digimat-RP/Moldex3D estimator and new valve gate control feature
- **Extended SFRP fatigue post-processing capabilities**
 - FEA support extended to Permas on top of Marc, Abaqus and ANSYS
- **Supported partial infill**
 - For FFF and FDM manufacturing process, based on toolpath input
 - For solid receiver mesh only
 - Local infill per element or average partial infill over domain
- **Supported CFF process**
 - New manufacturing process for continuous fiber fabrication (CFF) and associated material type for continuous fiber-reinforced polymer
 - Support of Markforged toolpath format
- **Extended macro solution capabilities**
 - FEA support extended to ANSYS for E, TE, EP and TEP models
 - Restricted encryption to encrypted Digimat material cards
- **Updated solver for Digimat-RP/Moldex3D solver**
 - Upgrade from Moldex3D R16.1 to R16.2



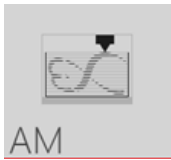
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New Capabilities

- **Extended effect of defects workflow**
 - New defect
 - AFP gaps

Improvements

- **Extended usage of advanced PFA to effect of defect workflow**



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New capabilities

- **Improved usability for results post-processing**
 - [Automated superposition](#) and reference plane [positioning](#) for warpage evaluation
 - Scan dimensional comparison
 - New post-processing output: Shape tolerance
 - Per part post-processing [for multi-part build](#)
- **Supported FFF and FDM partial infill**
 - Thermo-mechanical solver only
 - Unfilled and reinforced materials
 - New result output: Porosity
- **Supported full SLS build simulation**
 - Thermal solver only
- **Printer database update**
 - FFF
 - New Roboze Argo 500
 - New MarkForged X7
- **Support of Stratasys toolpath v2.2**
 - Available from Insight 14.4 or GrabCAD Print 1.41



The Material Modeling Company

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