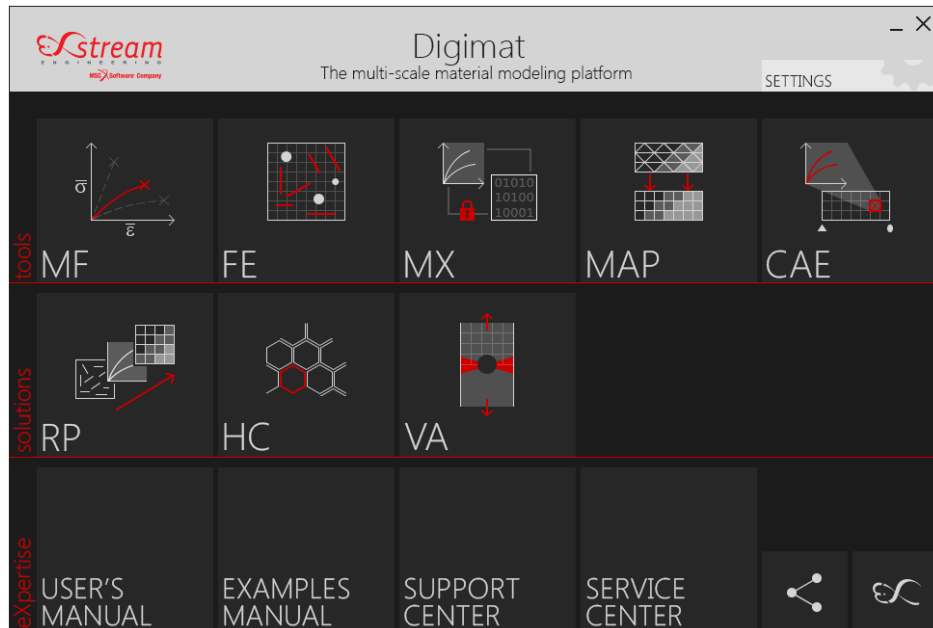






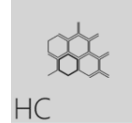
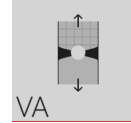

Digimat

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New Capabilities

- Multi-layer failure controls for SFRP
 - Multilayer RVE failure can be controlled based on
 - First layer failure
 - All layers failure
 - Given thickness fraction of failed layers
 - Average value of failure indicator across thickness
 - Specific layer failure
 - Improved failure description of skin/core microstructures

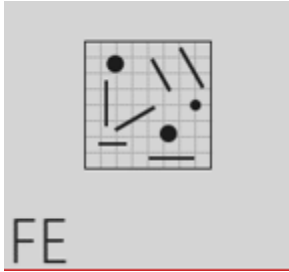
- Progressive failure of woven composites
 - Available for 2D woven composites

- 3D woven
 - Available predefined weaving patterns
 - 3D orthogonal
 - Interlock woven
 - Material performance
 - Elasticity

- Improved user workflow for woven/braided model creation
 - Single fabric item instead of woven or braided definition
 - Automatic creation of fabric RVE if required

- Carpet plot generation
 - Available for UD and woven composites
 - Explore layup design space with

- Stiffness carpet plot
 - First ply failure carpet plot
- Failure envelope generation
 - Visualization of the failure model predictions for biaxial loads
 - Stress or strain envelopes
 - Available for SFRP, UD and woven composites
- Fatigue mean-stress correction
 - Scope of application of the pseudo grain fatigue model enhanced to varying load ratios
 - Definition of Haigh like diagram at pseudo grain level to predict R-ratio sensitivity of SN curves of SFRP



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New Capabilities

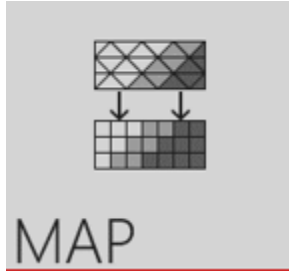
- Support of thermo-elastoplastic material model
 - Analyze non-linear thermo-mechanical response of any microstructure
 - Capability available for
 - FE solver, Marc, Abaqus
- Improved user workflow for woven/braided model creation
 - Single fabric item instead of woven or braided definition
 - Automatic creation of fabric RVE if required
- Definition of multi-layer 2D woven microstructure
 - Periodic RVE implies restrictions on
 - Layer dimensions
 - Yarn orientation
 - Support of multimaterial for multilayer definition
 - Homogeneous material, UD, woven, SFRP, ...
- Definition of multi-phase microstructures involving woven
 - Support of inclusions in matrix phase of woven microstructure
- New periodic boundary conditions
 - In-plane periodic boundary conditions with stress free boundary conditions through thickness
 - Recommended for multilayer microstructures
- 3D woven
 - Available predefined weaving patterns
 - 3D orthogonal
 - Interlock woven



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New Capabilities

- Automatic update of MXDB
 - 1-click update of MXDB to 2016.0 database structure
- Addition of NCAMP & AGATE data in public database
 - Ready-to-use progressive failure model
 - Tensile calibrated stiffness with asymmetric failure
 - Compression calibrated stiffness with asymmetric failure
 - Available for various conditions: CTD, RTD, ETW, ...
 - AGATE
 - NCT321 G150 / Unidirectional
 - G30-500 7740 / Unidirectional
 - T700GC 2510 / Unidirectional
 - T700 E765 / Unidirectional
 - 7781GF-8HS 2515 / Woven
 - T650-8H 7740 / Woven
 - T650-PW 7740 / Woven
 - T700-PW 2510 / Woven
 - T300-5HS E765 / Woven
 - NCAMP
 - AS4 8552 / Unidirectional
 - 6781 S2 MTM45-1 / Unidirectional
 - IM7 8552 / Unidirectional
 - AS4 8552 / Woven
 - T650 5320-1 / Woven
 - NCT4708 MR60H / Woven
 - G30-500 MTM45-1 / Woven



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New Capabilities

- Support of FEA input files including include commands
 - Available for all FEA codes supported by Digimat
 - Transformation commands (translation, rotation) are supported for Abaqus and LS-Dyna
 - Details on support of commands is available in the documentation
- Iterative mapping for 1-click mapping
 - Improved efficiency of mapping process for dissimilar meshes
 - Automatic progressive increase of mapping tolerance
- Support of 3D Timon/shell data
 - Fiber orientation only
 - 3D Timon/shell 3 layers data structure requires usage of a 3 layers shell definition
 - 1D mapping available for FEA codes which require constant thickness layers (5 layers enforced)
 - RADIOSS
 - PAM-CRASH
- Support of Moldflow 3D weldline
- Support of ProCAST porosity file



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New Capabilities

- Improved Hybrid solution accuracy
 - Plasticity model is closer to Micro solution (affects EP model and EVP)
 - Improved stress based failure surface
 - Higher preprocessing time for Hybrid parameters generation
 - x2 for EP and EVP model
 - Parallel computation for Hybrid parameters generation is recommended
- Reduced memory consumption in implicit FEA when using Hybrid solution
 - Gain is proportional to orientation file size and number of processors used for parallel computation
- Improved user workflow for Hybrid parameters generation
 - No user interaction (settings definition) required to generate Hybrid parameters
 - Automatic temperature discretization for thermo-mechanical models
 - Improved discretization for strain-rate dependent models
- Progressive failure analysis of 2D woven
 - Support of basic and advanced 2D woven
 - Orthogonal woven only
 - Link to draping process is not supported
 - Support of optimized algorithm for explicit FEA/shell elements configurations
- 3D woven
 - Elastic model only

- Link to the draping process is not supported

- NVH analysis
 - Improve predictivity of composite NVH analysis with frequency dependent stiffness and frequency dependent anisotropic damping
 - Supported materials: SFRP, UD, woven
 - Support of mechanical small strain models: E, EP, EVP, VEVP, VE
 - Available for Marc and Abaqus
 - Marc
 - Frequency dependent stiffness
 - Abaqus 6.14
 - Frequency dependent stiffness
 - Anisotropic and frequency dependent damping tensor
 - Abaqus 6.13 and previous
 - Frequency dependent stiffness

- Support of 3D Timon/shell data
 - 3 layers data by default
 - Uniform thickness data (5 layers only) available with 1D mapping in Digimat-MAP for the required FEA codes
 - PAM-CRASH
 - RADIOSS

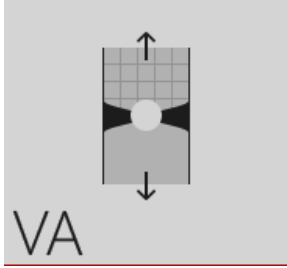
- FEA interface maintenance
 - PAM-CRASH 2014.0
 - RADIOSS/Optistruct/Hypermesh 13.0



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New Capabilities

- Support of FEA input files including include commands
 - Available for all FEA codes supported by Digimat
 - Transformation commands (translation, rotation) are supported for Abaqus and LS-Dyna
 - Details on support of commands is available in the documentation
- Access to NVH analysis with Abaqus & Marc
- NVH analysis with MSC Nastran SOL1XX
 - Dynamic analysis (MSC Nastran SOL108 & SOL111) with Digimat viscoelastic model
 - Perform MSC Nastran computations with anisotropic elastic and damping properties corresponding to VE properties at a given frequency
 - Perform MSC Nastran computation accounting for full frequency dependency of VE properties
 - Static analysis (MSC Nastran SOL101 & SOL 103) with Digimat viscoelastic model
 - Perform Nastran computations with elastic properties corresponding to VE properties at a given frequency.
- Support of 3D Timon/shell orientation file



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New capabilities

- Support of 2D woven material
 - Definition of woven material
 - On-the-fly Digimat model calibration based on datasheet input
 - Progressive failure analysis of UNT/C and OHT/C tests
- Effect of environmental conditions
 - Predict ply properties at a given environmental conditions (T° , humidity) based on existing data at another environmental condition
 - Available for UD material
- Carpet plot generation
 - Available for UD and woven composites
 - Explore layup design space with
 - Stiffness carpet plot
 - Strength carpet plot
- Per-layer visualization of FEA results

Additional info

- Support of Windows 8.1
 - Graphical user interfaces in Tools and Solutions
 - Solvers
 - Except for LS-Dyna 7 interface

- Support of MSC One licensing
 - Token based licensing scheme providing access to MSC Software's simulation portfolio
 - Based on pool of tokens
 - Each individual feature requires a certain number of tokens to run
 - Tokens are checked out once a feature is called
 - Tokens are returned to the pool after each feature use
 - All Digimat products are available in MSC One except Digimat-RP/Moldex3D
 - User can choose between classical licensing (EXLM) or MSC One
 - During installation of Digimat product
 - After installation, via the Digimat platform in Settings/License



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