

MaterialCenter™

MSC Software Solution for Materials Lifecycle Management

The screenshot displays the MaterialCenter software interface, which is organized into several functional panels:

- My Executable Projects:** A table listing recently created projects with columns for Name, Count of Objects, and a View All link.
- My Models:** A table listing recently created models with columns for Name, Type, and Count of Revisions.
- My Results:** A table listing recently created results with columns for Name, Type, and Count of Key Results.
- My Work Requests:** A table listing recently created work requests with columns for Name, Status, and a View All link.
- My Pending Tasks:** A table listing recently created tasks with a Name column.
- My Clipboard:** A table listing recently added objects with columns for Name and Type.
- My Studies:** A table listing recently created studies with columns for Name and Count of Scenarios.
- My Scenarios:** A table listing recently created scenarios with columns for Name and Count of Scenarios.

Overlaid on the interface are several material selection cards, each featuring a 3D model of a component and a table of material properties. The cards include:

- 2024-T4 Al
- Ti-6Al-4V
- MAGNESIA
- 7075-T6 Al
- PTFE
- AISI 304
- AIN
- NYLON 11
- AISI 1025
- AISI 4130
- VICI 1130
- VICI 1032
- VICI 304
- VICI 304
- NYLON 11
- 1012-10 VI
- YBC
- 1-650-35-3K PAN
- ABS
- TI-6AL-4V
- AIN
- NYLON 11
- AISI 1025
- AISI 4130
- VICI 1130
- VICI 1032
- VICI 304
- VICI 304
- NYLON 11
- 1012-10 VI
- YBC

MaterialCenter

MaterialCenter is an enterprise-scalable system that manages materials data and processes. The intuitive web-based interface allows engineering organizations to upload materials data or capture it as the by-product of materials or engineering processes and then disseminate it in a secure manner in product design teams. Whether virtualizing material or part behavior, MaterialCenter has the integration framework that enables accurate transmission of materials data to simulation and the auto-capture of results for comparison, confidence and certification - all with complete traceability.

Interactive Tools for Searching, Plotting, and Viewing Material Data

Interactively and visually analyze complex datasets to expedite the material down-selection process for better, smarter, and higher quality decisions. Utilize MaterialCenter's web-based interface for quick and easy access to material information in engineering enterprises.

Integrate with Excel or Third-Party CAE Applications

Manage test data and design data directly through Microsoft Excel using the Excel Add-In, or work with design engineers to directly retrieve material models for downstream analysis using the MaterialCenter Explorer. From test engineers and material experts to design engineers and structural analysts, MaterialCenter's integrations empower users from various disciplines to collaborate in a common virtual environment.

Work Requests and Project Overviews

Issue work requests that can be collated into actionable task lists, assigned to various individuals, and executed in a traceable manner. The statuses of pending and completed tasks are tracked (with degree of completion and quality indicators) and can be displayed in a dashboard view for managerial oversight. Email notifications ensure that responsible parties are up-to-date on the status of the work requests.

The screenshot displays the MaterialCenter software interface. At the top, a navigation bar includes 'My Workspace', 'Navigate', 'Search', 'Configuration', 'Administration', 'Compare', and 'Pedigree'. Below this is a hierarchical tree view showing the structure of a material or test, including nodes like 'MSC_Spec', 'MSC_Test', 'Material', 'Property Set', 'Curve Property', 'Source', and 'Parameter'. A central table lists material specifications with columns for 'Revision', 'Name', 'Owner', 'Library', 'Test Definition', 'Specimen Length', 'Specimen Width', 'Specimen Thickness', and 'Specimen Tab Length'. To the right, a 'Plot' window shows a radar chart with axes for 'Density', 'Compressive Yield Strength', 'Compressive Modulus', and 'Coeff of Linear Thermal Expansion'. The chart displays multiple data series in different colors. Below the plot, there are sections for 'Y-Axes', 'Filters', and 'Specimen Details'.

RL	Revision	Name	Owner	Library	Test Definition	Specimen Length	Specimen Width	Specimen Thickness	Specimen Tab Length
0	1	Brass Annealed 10 min	MaterialCenter Root	[]	Test---	2.04094 in	0.498421 in	0.128740 in	3.99961 in
0	1	Brass Annealed 15 min	MaterialCenter Root	[]	Test---	2.03268 in	0.499213 in	0.125984 in	4.00000 in
0	1	Brass Annealed 20 min	MaterialCenter Root	[]	Test---	1.99016 in	0.498425 in	0.128772 in	4.00000 in

Approval Workflows

In addition to work requests, further enforce best practices in an organization through built-in approval features in MaterialCenter. Organizations typically rely on manual approval processes or external applications to manage data quality. MaterialCenter supports approval activities that requires expert review of material data to determine its readiness for use in projects and applications. Configurable approval workflows enable composite logic such as multiple approvers and mandatory or optional approvers.

Advanced Security Configuration and Application

Protect proprietary engineering data with multi-level security mechanisms. Ensure that data can be shared on an as-needed basis with customers and suppliers, across projects or divisions, without fear of integrity loss, corruption, or breach of confidentiality. Properties and individual instances of information may be secured for discreet control on access and visibility.

Navigate

Navigate through material data using the interactive web-based interface

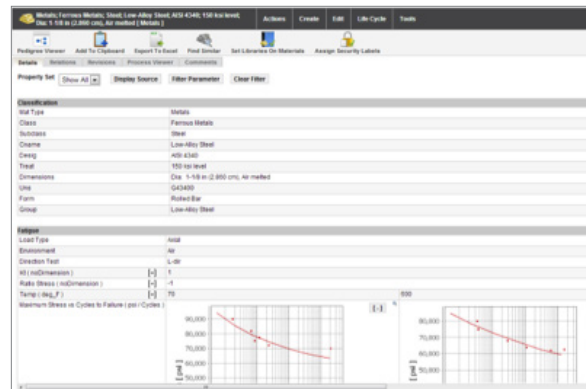
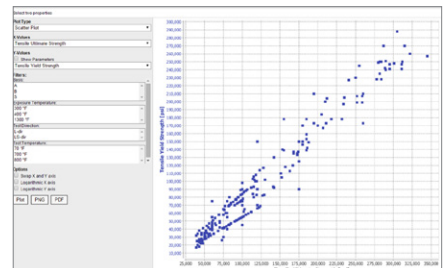
“MaterialCenter allows users to quickly and easily navigate through complex collections of material data for design and analysis.”

Material and Property Detailed Views

- Use tree selection to navigate easily through tables of information
- Sort and filter the data to narrow down to specific classes of materials
- Create and save private views catered to various users
- View source and parameter details of individual properties
- Export selected tables of data directly to Excel
- Quickly change the displayed unit system across the entire database
- Manage all revisions made to a specified property or material record
- Compare multiple records of data by simply right-clicking your selections

Enhanced 2D Plotting

- Plot hundreds of material records on various plot types for visual comparison
- Evaluate complex graphical and functional data using integrated curve tools
- Apply mathematical operations of sets of curve data for further analysis
- Collapse or expand curves to superimpose multiple sets of curves or to view curves individually



Search

Use graphical, interactive search capabilities to quickly extract key information

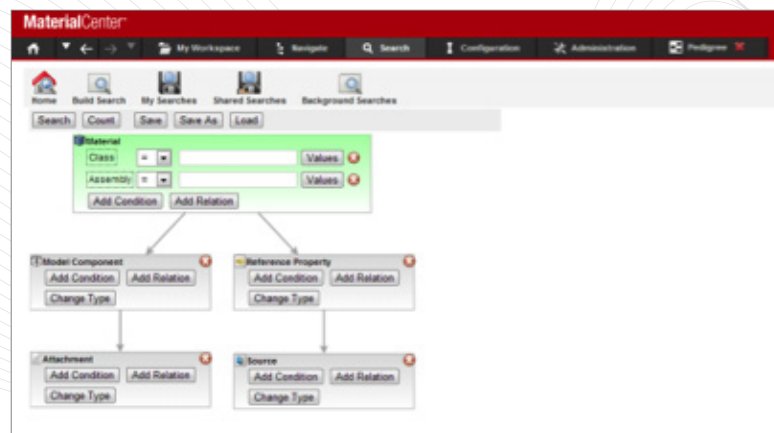
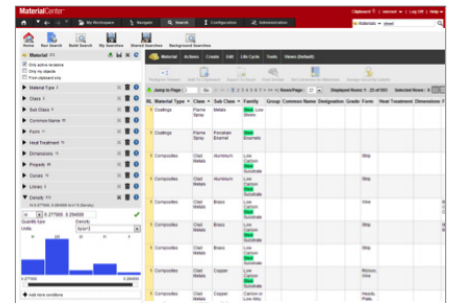
“MaterialCenter enables users to quickly find the information they need and when they need it with an easy-to-use interface.”

Basic Search

- Find materials or properties by keywords, data types, or relationships to other materials
- Use any of the following methods to find the information you need
 - Easy search by text string or wild cards
 - Category search, including materials, properties, approval request, source etc.
 - Build a search template with specific criteria
- Locate records with predefined conditions
- Apply filters to narrow the results to a specific class of materials

Advanced Searches

- Construct detailed, complex queries and save them for later use
- Apply conditions and relationships to other objects
- Share your search templates with other users
- Save any search the search template for future use



Configuration and Administration

Control accessibility and user permissions on material libraries or individual properties

Role Based Administration

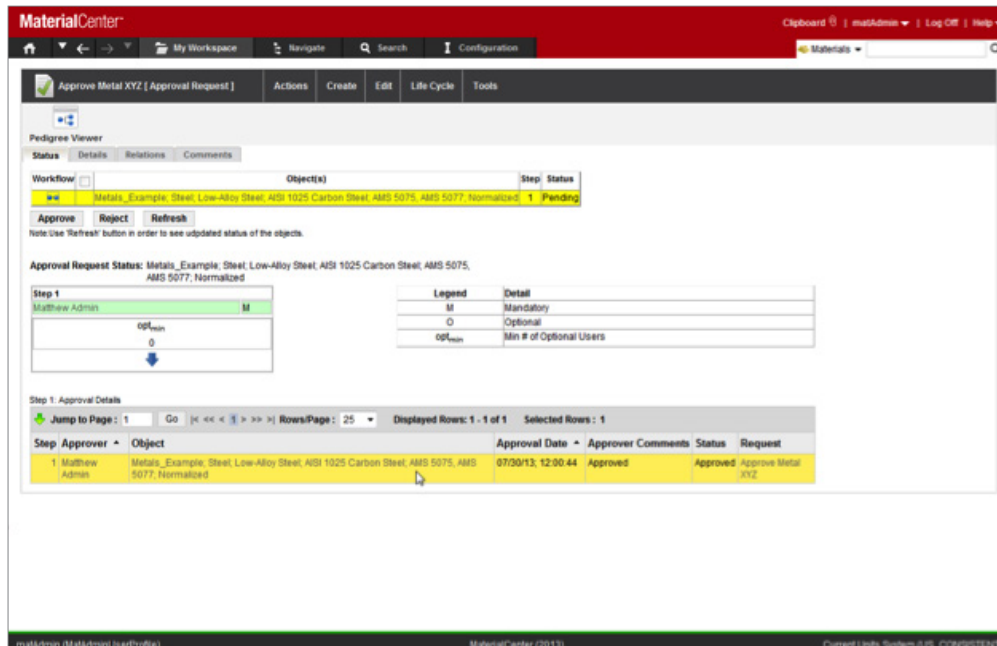
- Utilize project hierarchies to provide organizational structure to material libraries
- Assign groups of users to individual projects for access and visibility
- Grant users roles and profiles with access to certain features
- Track user statistics, login sessions, and database activity in the Administration workspace
- Edit or create material records through the web-interface

Security Labels

- Control access to data in MaterialCenter with key words and “lock and key” security labels
- Set control to several different data types, including material schemas, databanks, materials, properties, and libraries
- Assign security labels to materials and/or related properties
- Assign one or more security labels to a user

Flexible Database Support

- Compatible with Oracle, PostgreSQL or Microsoft SQL servers
- Deploy from a local computer or in enterprise environment, including private or public cloud
- Supports additional authentication mechanisms such as LDAP and SSO to satisfy security requirements



Import and Export Material Data

Import and export materials data in various formats

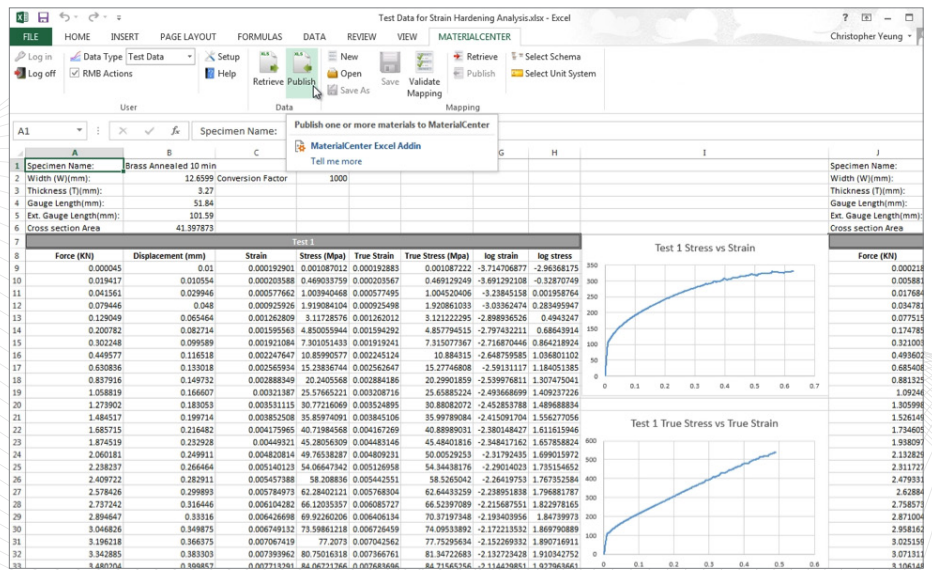
“By publishing and retrieving material data within Microsoft Excel, engineers can leverage the tools in Excel alongside MaterialCenter’s data processing capabilities.”

Bi-directional Data Migration

- Import Mvision Databanks for seamless access to legacy data
- Export Library to Enterprise Mvision for organization-wide access
- Define custom Excel mapping templates to publish or retrieve material records
- Bi-directional support for XML and text formats

Excel Add-in

- Publish and retrieve material directly within Microsoft Excel
- Interactively create mapping templates to translate cell values to schema attributes
- Validate Excel files against mapping templates prior to publishing data to ensure data integrity



Workflow Tools

Manage workflow in engineering teams for improved efficiency

“With MaterialCenter, organizations can implement traceable mechanisms to manage the complete lifecycle of material systems and protect intellectual data.”

Work Requests

- Initiate, assign, and track tasks in MaterialCenter with complete traceability
- Create and assign Work Requests directly to team members
- Update the status of tasks and work requests and send automatic email notifications

Approval Process

- Maintain traceable mechanism for releasing materials to the engineering community
- Define required and optional approvers in a single or multiple step approval process
- Gain insight into the status of the approval process
- Capture the interchange of discussions and comments in the approval process

The screenshot displays the MaterialCenter web application interface. At the top, there is a navigation bar with options like 'My Workspace', 'Navigate', 'Search', 'Configuration', 'Administration', and 'Process Input'. Below this, a breadcrumb trail shows 'Test Data Management (Generate Design Data) | Work Request Template'. A toolbar contains icons for 'Pedigree Viewer', 'Create Template', 'Edit Template', 'Copy Template', 'Import Template', and 'Create Work Request'. The main content area is divided into several sections:

- Info:** A table with fields for Release Level (0), Name (Test Data Management (Generate Design Data)), Type (Work Request Template), Project (/Data), and Owner (MaterialCenter Root).
- Files:** A table with columns for Role, Name, and Size, showing a file named 'WorkRequestTemplate.xml' of size 3395 b.
- Tasks:** A flowchart showing a sequence of tasks: 'referenceMaterialForTestData' (input) leads to 'Export Test Data to Excel' and 'Import Design Data'. 'Export Test Data to Excel' leads to 'referenceMaterialForTestData' and 'Import Design Data'. 'Import Design Data' leads to 'materialForDesignData revisedMaterial', which then leads to 'Compare Latest Revision' and 'Promote Revision'.
- Template Details:** A table with columns for Label and Action, listing tasks like 'Export Test Data to Excel', 'Import Design Data', 'Compare Latest Revision to Previous Revision', and 'Promote Revision' with their corresponding actions.
- Inputs:** A table with columns for Name, Type, Label, Object Type, Required, and Multiple, showing an input named 'referenceMaterialForTestData' of type 'DcObject'.

Integration and Scalability

Achieve efficiency through integrations with external applications

“Our goal is to blur the boundary between material engineering and structural engineering, allowing for more pervasive use of advanced materials while helping manufacturers to dramatically reduce the cost of physical testing needed to validate a new material system.”

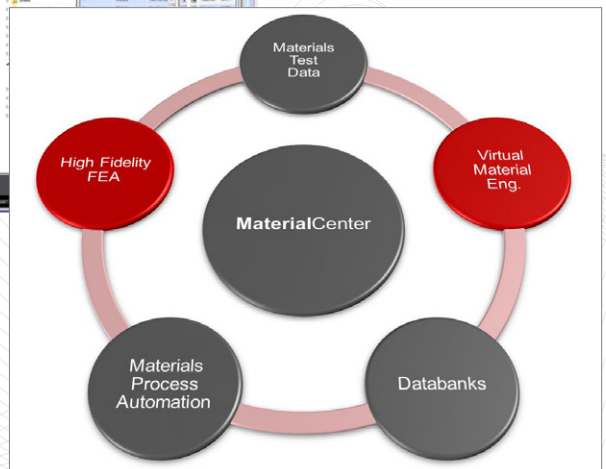
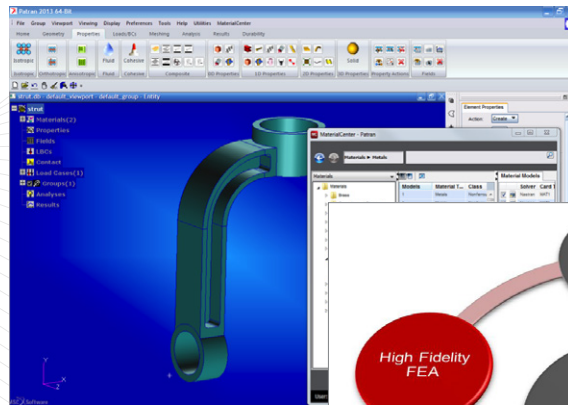
Dominic Gallelo, President & CEO,
MSC Software Corporation

Integration

- Improve communication between MaterialCenter and other MSC applications, and 3rd party application with bi-directional API
- Achieve more efficient materials data processing with deep integration with Microsoft Excel
- Capture all data transactions automatically
- Gain higher productivity with proven rapid deployment methodologies

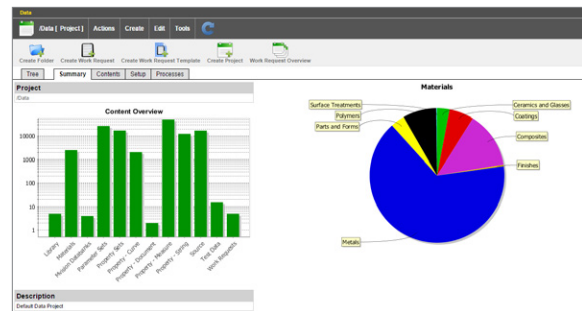
Scalability

- Achieve very high scalability with Integrated Computational Materials Engineering (ICME) capable framework adopted by industry leaders in automotive, aerospace, consumer goods, electronics, shipbuilding and other industries
- Support thousands of users globally with proven performance
- Integrate with queuing and HPC (High Performance Computing) for demanding ICME needs



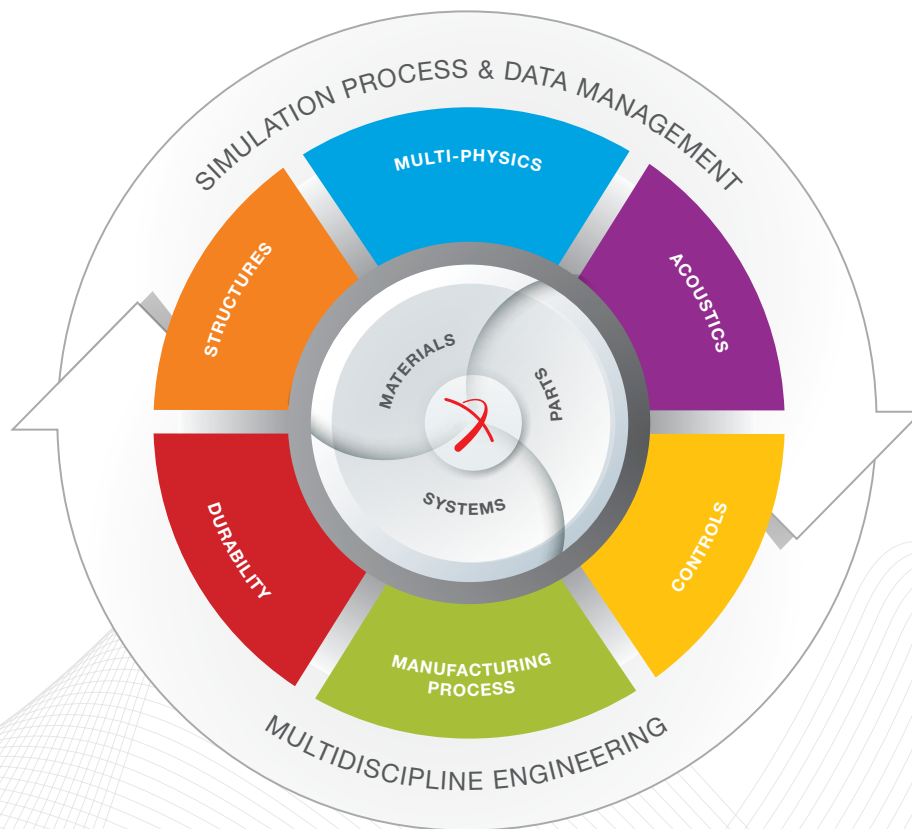
MaterialCenter Key Benefits

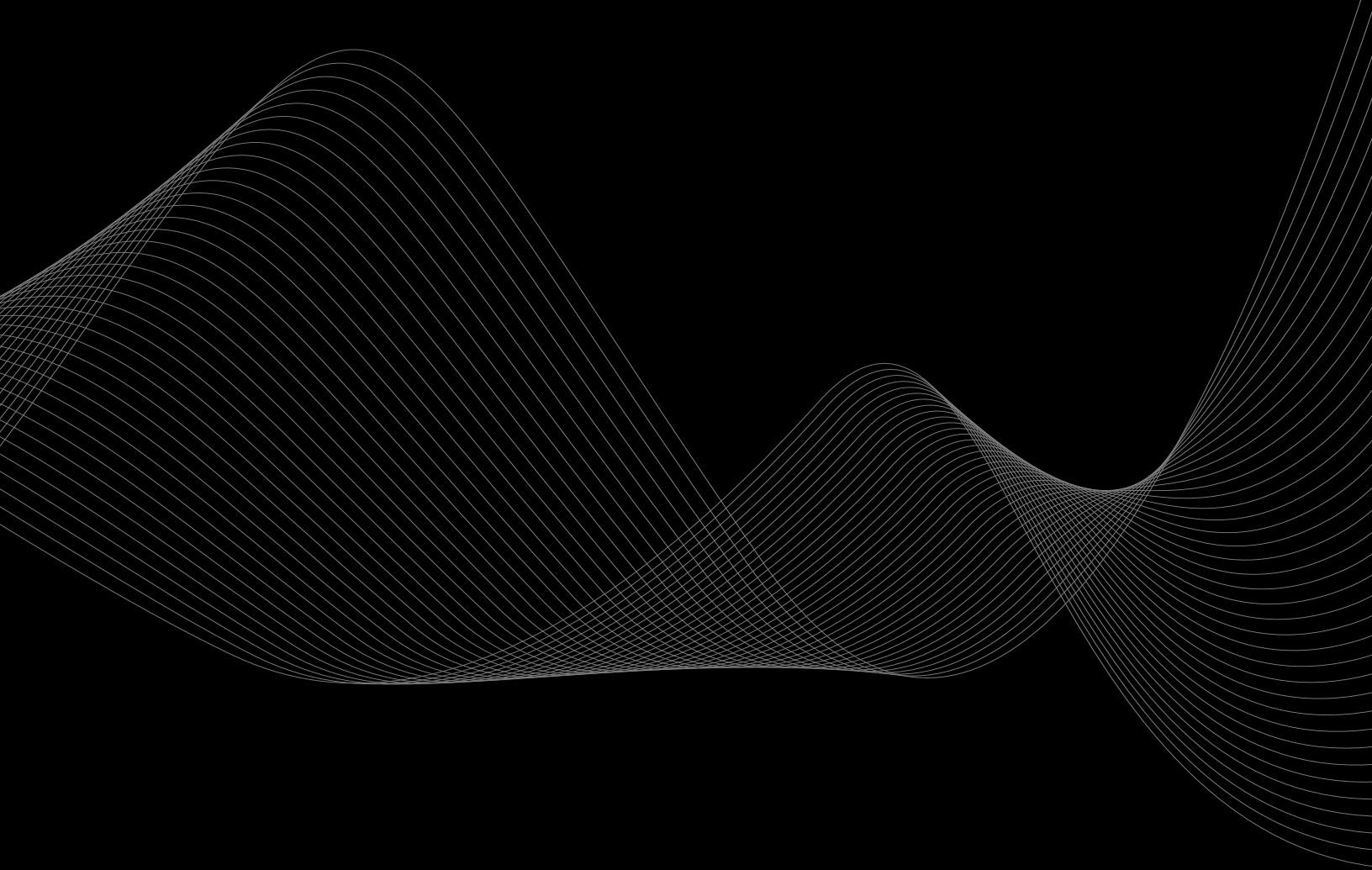
- Manage large amounts of materials data from a central location
- Find the information you need fast, with traceability and accountability
- Improve communication
- Streamline the product development process
- Increase productivity
- Standardize on best practices
- Collaborate effectively
- Reduce product development times
- Accelerate process and product innovation
- Improve consistency and reliability
- Improve efficiency of materials related workflow
- Secure confidential data with controlled access
- Reduce errors and improve compliance



Product Overview

MSC Software makes products that enable engineers to validate and optimize their designs using virtual prototypes. Customers in almost every part of manufacturing use our software to complement, and in some cases even replace the physical prototype “build and test” process that has traditionally been used in product design.





MaterialCenter™

MSC Software Solution for Materials Lifecycle Management

MSC Software is one of the ten original software companies and the worldwide leader in multidiscipline simulation. As a trusted partner, MSC Software helps companies improve quality, save time and reduce costs associated with design and test of manufactured products. Academic institutions, researchers, and students employ MSC technology to expand individual knowledge as well as expand the horizon of simulation. MSC Software employs professionals in 20 countries.

For additional information about MSC Software's products and services, please visit: www.mscsoftware.com.



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