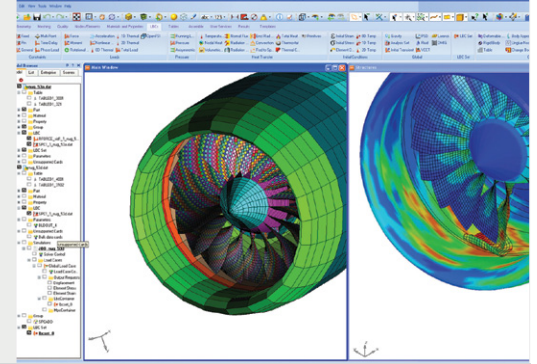


# SimXpert®

## Integrated Multidiscipline Simulation Solution for Engineers



### Overview

SimXpert is the next generation Computer Aided Engineering environment for product simulation. It brings together end-to-end multidiscipline simulation capabilities and best practice methodology capture and deployment technologies in a single unified environment. This approach closes the collaboration gap that exists between analysts and designers, enabling them to share critical information across disciplines without duplicating work and allows them to deploy their best practices to the extended enterprise. This radical change to the traditional analysis process enables manufacturers to accelerate the speed and accuracy of simulation, increase design productivity, and bring better products to market faster.

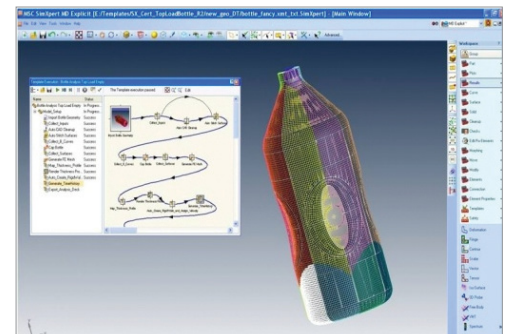
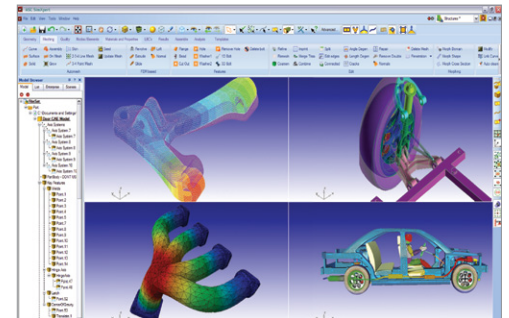
### Accurate, Robust Analysis for Diverse Applications

SimXpert provides the best platform for expert analysts to complete all stages of the simulation process – from pre-processing and modeling, solving, to post-processing, results manipulation and reporting – within one integrated workspace environment. These workspaces allow the analyst to easily move from one area of expertise to another while sharing data models and results.

- **Structures Workspace** - Perform linear and advanced non-linear, static and dynamic structural analyses based on the very best solutions available in MSC Nastran.
- **Motion Workspace** - Predict loads and analyze system motion based on MSC's leading Adams capabilities. Bring in flexible bodies, and pass through nodal loads seamlessly.
- **Explicit Workspace** - Use MSC Nastran to perform large deformation, highly nonlinear, short duration transient dynamic analyses for both structural impact and coupled fluid-structure interaction problems.
- **New Systems and Controls Workspace** - Accurate, reliable multi-domain modeling and simulation of dynamic physical systems including control systems, electrical, thermal, hydraulic, gas dynamics etc. Access full capability of Easy5 within SimXpert and integration with Simulink®.
- **Crash Workspace** - A complete pre- and post- processing environment for vehicle crash and impact analysis based on LS-DYNA™, the most widely used crash solver in the market.
- **Thermal Workspace** - Evaluate and analyze the thermal performance of designs by using the linear and non-linear, steady state and transient analysis capabilities of MSC Nastran.
- **Advanced Solution Extensions** - SimXpert is an open platform enabling easy integration with third party tools as well as the creation of customized workspaces.

### Enabling Capabilities

- Intuitive object based user interface with contextual actions
- View, manipulate, and organize your model with advanced browser functionality
- Native bi-directional CAD access for CATIA, Pro/ENGINEER, and NX
- Import IGES, Parasolid, CATIA V4, CATIA V5, Pro/ENGINEER, ACIS, STEP and STL data for FE modeling
- Interactive CAD cleaning and healing with auto curve, shell, and solid meshing
- Define simulation properties using engineering terms for use across all workspaces
- Contact creation and setup through easy to use and intuitive contact tables
- Visualize and manipulate all CAE entities
- User configurable toolsets and menus to streamline the modeling process



Best Practice capture in SimXpert



Dummy positioning and seat belt routing

## Multi-Discipline Examples

- Coupled Motion-Structures-Controls Integration to carry out a diverse set of virtual tests
- Coupled Structures and Motion analysis to perform flexible body analyses
- Coupled Thermal and Structures analysis to seamlessly apply thermal loading to structural analysis
- Coupled linear and non-linear structural analysis to get high accuracy and fast solutions

## Features

- Surface Meshing algorithms: paver, mapped, minimal, quad-dominant
- Mesh seeding: uniform/bias
- Assembly meshing
- Virtual geometry / topological simplification
- Composite modeling and verification
- Connections: Adhesive, bolt, seam weld
- Check and correct contact penetrations
- Import and export of solver input files
- Create control cards and parameterspert is an open platform enabling easy integration with third party tools as well as the creation of customized workspaces.

## Post-processing

- View model, state plots and x-y charts and graphs simultaneously using multiple windows
- Animate displacements, stresses, strains and vectors
- Supports time and frequency domain data
- Multi-file attachment
- Report generation

## Process Capture and Automation

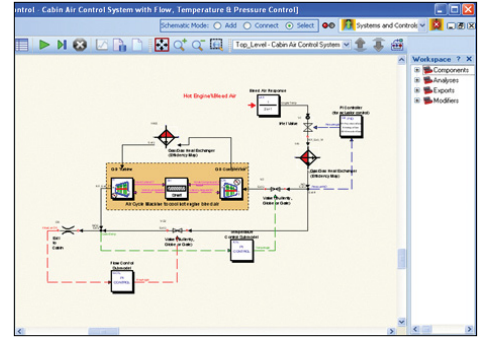
- Export models as python scripts and record/replay
- Capture and record specific processing tasks as action macros
- Directly integrate macros to create highly complex SimTemplate™ CAE processes
- Build complex SimTemplate CAE processes based on SimXpert macros and SimXpert scripting to standardize and automate complete end-to-end analyses.
- Perform batch processing of SimTemplates

## SimManager Integration

- “Out of the box” integration with SimManager delivers a true Enterprise Simulation solution
- Manage and control simulation processes, templates, analysis data and results
- Deploy best practices throughout the extended enterprise
- Supported by MSC Enterprise Advantage Licensing Program

## System Requirements

SimXpert is supported on Intel and AMD x86 and x86-64 based systems running Microsoft Windows XP (Professional), Microsoft Windows Vista (Ultimate and Enterprise), Windows 7 (Ultimate and Enterprise) and Red Hat Enterprise Linux (4 and 5)



New Systems and Controls Workspace