Pro/ENGINEER Users:
Take Control of Multi-Solver Assembly Simulations with CoMeT™

BI-DIRECTIONAL ASSOCIATIVITY BETWEEN PRO/ENGINEER® WILDFIRE AND MULTIPLE CAE SYSTEMS

Moving Pro/ENGINEER Wildfire assembly models and data to/from analysis systems such as ABAQUS, MSC.Adams, ANSYS, and MSC.NASTRAN has often been tedious, time-consuming, and fraught with errors. Automating engineering processes using those systems together has been just as difficult.

Until now.

Now, there's CoMeT, a unique work environment for the simulation-driven engineering of complex assemblies. CoMeT helps you get more work out of your analysis tools (as well as Pro/ENGINEER), capture product knowledge, create and automate processes, and even use simulation results to drive your Pro/ENGINEER models. CoMeT ensures bi-directional associativity between Pro/ENGINEER and CAE data from a variety of vendors. CoMeT's groundbreaking Abstract Modeling capabilities significantly reduce the amount of engineering data entry and reentry, even across huge changes to the CAD design.

LEVERAGE YOUR INVESTMENT IN ANALYSIS TOOLS

With CoMeT, you may leverage the various analysis codes you use appropriately – using the right CAE system for the task. For example, you may use MSC.Adams to perform a rigid body analysis of an assembly built in Pro/ENGINEER. You may also perform flexible body dynamics with MSC.Adams, using ANSYS to create the flexible body MNF files required for the analysis. This, normally complex, multi-vendor CAE process, is accomplished rapidly and easily within CoMeT. You may then mesh any sub-assembly, easily transfer the loads from the MSC.Adams analysis, and then perform a dynamics

FEA analysis with ANSYS, to obtain more detailed stress and displacement assessments.

In any of these scenarios, your engineering team may capture and visualize the results of the various analyses they perform within the CoMeT environment. Those results are saved and integrated into the overall project, for visualization and also for reuse by other downstream applications.

Without CoMeT, all of that data would be trapped, stored solely inside the independent CAD and CAE point tools. *With CoMeT*, all of that data is readily accessible with the CoMeT Project structure. You may specify and execute various processes, view different analysis runs, annotate all your d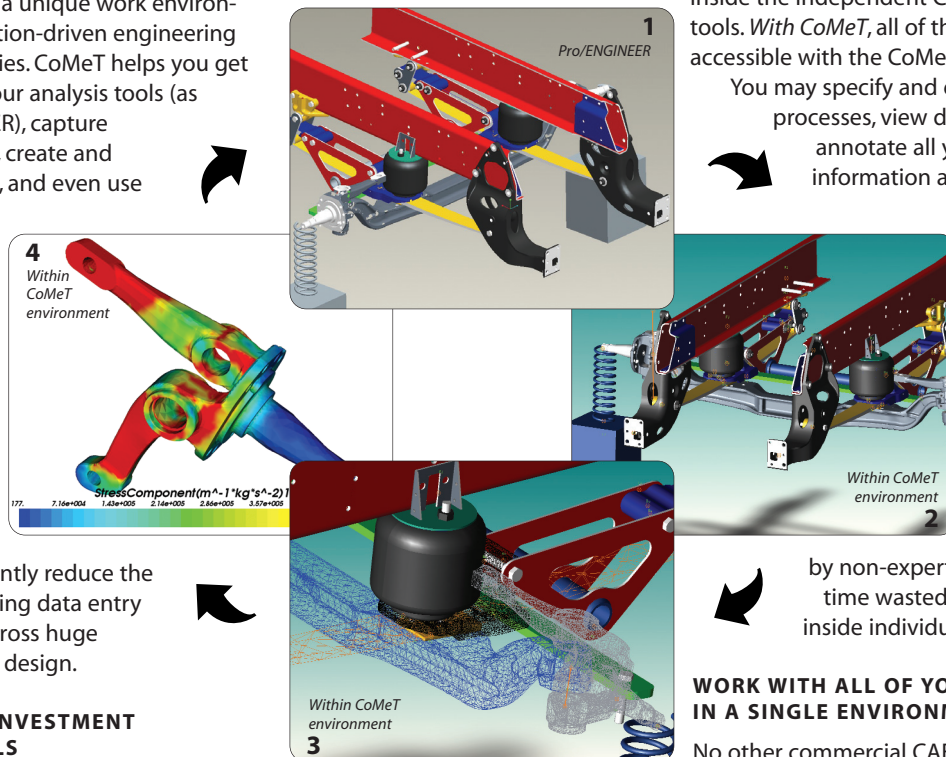ata, gather information across analysis runs, and more, all within a single environment supported by CoMeT's Universal Engineering Model (UEM(™)). You may reuse the data and even develop automated processes – Design Templates – that may even be run by non-experts. There'll be no more time wasted trying to find data inside individual CAE tools.

WORK WITH ALL OF YOUR DATA IN A SINGLE ENVIRONMENT

No other commercial CAE environment brings together Pro/ENGINEER along with **all** your CAE tools under a single roof, while integrating all this data using a common engineering data model. CoMeT's UEM ensures that your valuable corporate product knowledge (including all simulations that lead to design decisions) is easily accessible, reused and managed – even if the raw data was generated by dozens of applications, data formats, and machines. Upfront analysis and simulation-driven engineering can now be achieved. The results are lower costs as well as faster and better product design.

1 *Pro/ENGINEER*

4 *Within CoMeT environment*

StressComponent(m^-1*kg*s^-2)1
177.   7.16e+004   1.43e+005   2.14e+005   2.86e+005   3.57e+005

2 *Within CoMeT environment*

3 *Within CoMeT environment*

1-2: Import a Pro/ENGINEER assembly into CoMeT, and automatically create joints, springs, bushings, dampers, etc. for analysis using MSC.Adams for rigid and flex body analysis.

2-3: Create meshes for flex body analysis with MSC.Adams and FEA analysis with ABAQUS, ANSYS or MSC.NASTRAN.

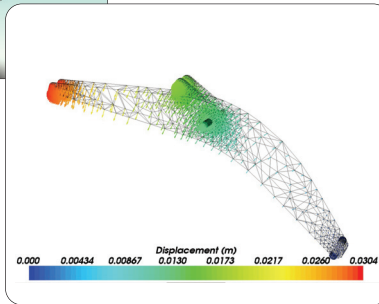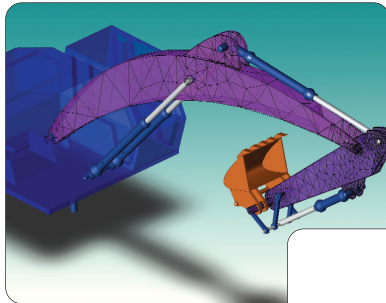*3-4: Visualize results of MSC.Adams and FEA analysis within CoMeT.*

4–1: Based on the results, modify the Pro/ENGINEER assembly directly within CoMeT and rerun analyses within CoMeT.

CoMeT Solutions, Inc.

ENABLING SIMULATION-DRIVEN ENGINEERING

ABSTRACT MODELING: MAPPING THE PROCESSES AND CAPTURING WORKFLOW

CoMeT's unique Abstract Modeling capabilities help you model entire processes – before you create any geometry. You will optimize engineering workflows abstractly step-by-step, and capture that information in Design Templates for subsequent use by non-experts. Multiple versions of the CAD design become the inputs that drive the Abstract Model and the resulting automatically generated CAE models are analyzed with little additional work by the analysts. This provides huge productivity gains and frees up resources to explore the design space more thoroughly.

You can, for example, specify in the Abstract Model that a mesh be refined following the application of loads and boundary conditions on an abstractly specified group of surfaces such as the "Front Faces." *Without CoMeT,* changes to the CAD geometry often requires manual reapplication of those loads and boundary conditions. *With CoMeT,* the engineering analysis data is reapplied to the model when the geometry changes, and you will easily rerun multiple analyses, resulting in huge productivity gains.

TAKE CONTROL OF CAE WITH COMET

Use your choice of CAE codes in concert with Pro/ENGINEER, which allows you to use these applications at all levels of model fidelity in a single environment—distributed across your computing network as needed—giving you a single, coherent view of all your engineering analysis data.

Define your engineering analysis processes for reuse, automation and repeatability. You will easily define multiple engineering analysis tasks for your models. You will reuse previously defined tasks by adding them to your model within CoMeT. Process and task interfaces give you a complete, traceable view of the models, the simulation processes to be run on them, and the analysis results—all in one place.

Define an Abstract Model to significantly reduce the amount of engineering data entry and reentry as your CAD model evolves. The Abstract Model specification also allows non-experts to easily perform complex analyses without deviating from the specified process.

Run simulations iteratively to explore the design space and find optimized product designs. Each process will simulate various physical phenomena using multiple CAE codes. Analysis results are automatically organized, making it easy to examine results produced by the CAE programs, and to compare results between process runs, regardless of the codes that produced the results. CoMeT also lends itself to data mining across simulation runs, regardless of the underlying formats of the analysis results.

Keep track of the entire simulation project, annotating the data in CoMeT. The central organization CoMeT provides helps you to track all model and environment variations explored and all analyses performed. It also allows you to annotate any data for traceability and quality assurance. *CoMeT's UEM brings all the data together semantically, enabling you to make better design decisions.*

Displacement (m)
0.000 0.00434 0.00867 0.0130 0.0173 0.0217 0.0260 0.0304

With CoMeT's unique Abstract Modeling, you capture your processes and rerun analyses according to your company's best practices. Radically different assemblies with different topologies can be reanalyzed automatically with no manual reworking of the engineering model.

SUPPORTED SOFTWARE SYSTEMS

- Pro/ENGINEER Wildfire 2.0
- ANSYS 9 or 10
- ABAQUS/Standard
- MSC.Adams 2005
- MSC.NASTRAN
- Microsoft Excel 2003
- DAKOTA (Parameter Studies & Optimization)

RECOMMENDED SYSTEM REQUIREMENTS

- Operating System: Windows 2000 or XP
- Processor: Intel Pentium 4 3 GHz or AMD Athlon 3000+ processor or equivalent (dual processor machines are recommended)
- Memory: 2-3 GB RAM
- Hard Disk: 3-4 GB Free
- Video: ATI Radeon 9800 Pro or NVidia GeForce FX 5900 or equivalent

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