

DESIGNER

DYNAMIC

ADAMS



# MDI CAD Embedded Products Strategy and Future Directions



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Vice President  
Design Technologies Divison*

# Vision



*Provide MDI Virtual Prototyping technology to Designers and Design Engineer through their primary design system - Their CAD System.*



# CAD Embedded Products

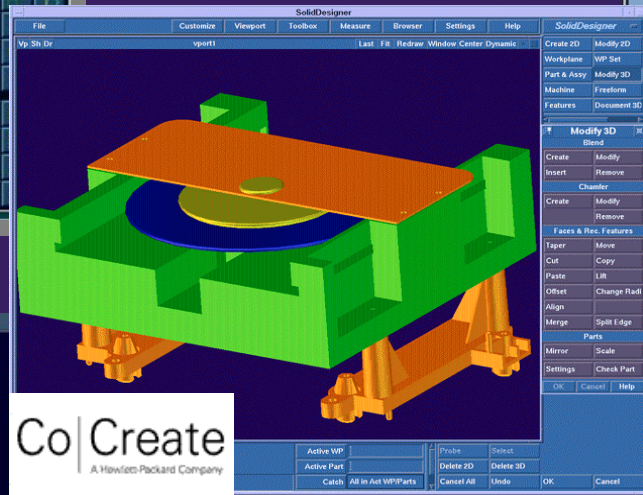
- CAD Embedded products using MDI technology have been available since the beginning of MDI.
  - ◆ 1983 - Bravo Mechanisms 2D using DRAM
- Every major CAD system for the last 20 years has had a mechanism module using MDI Technology.
  - ◆ Applicon, CV, Intergaph, Pro/E, I-Deas, Unigraphics...
- Embedded CAD products bring new users to MDI Technology and allow simulation to be done up front at the conceptual stage.

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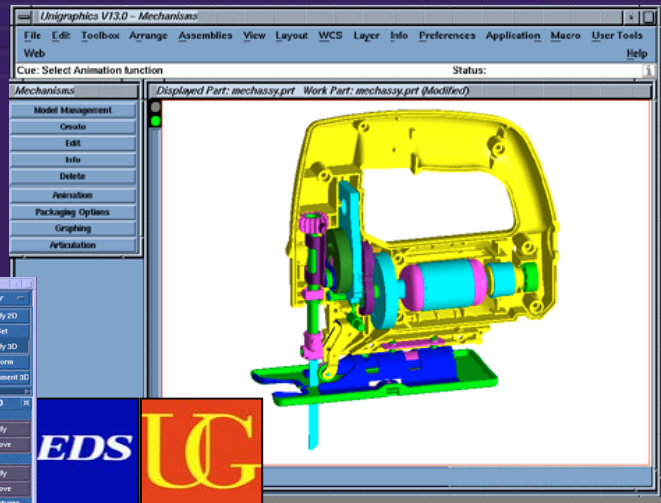
# Support for all the Major Systems



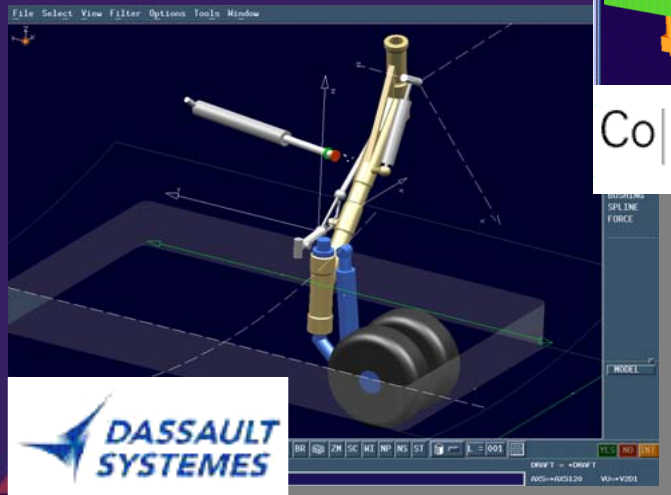
**SDRC**



**Co|Create**  
A Hewlett-Packard Company

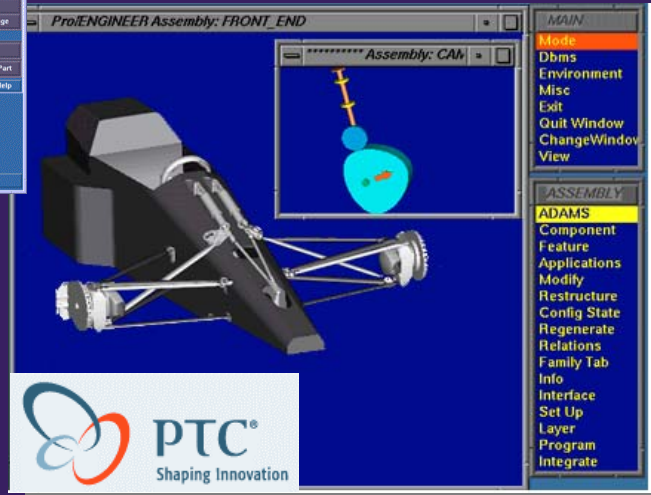


**EDS UG**



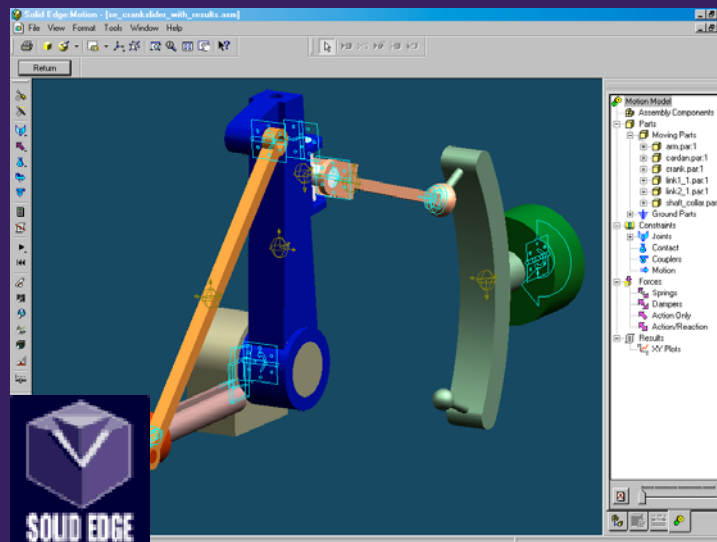
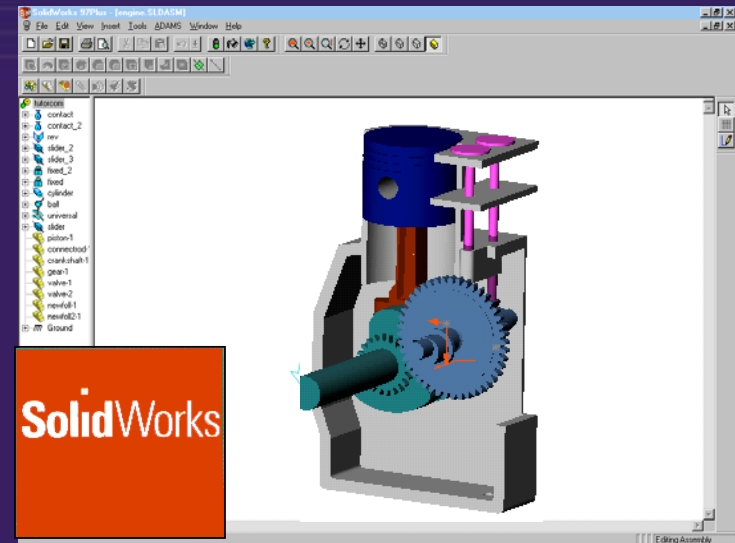
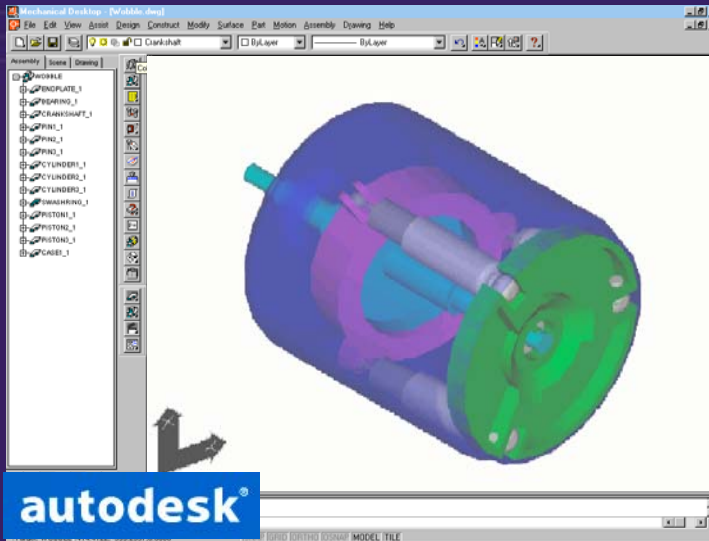
**DASSAULT SYSTEMES**

**Mechanical Dynamics**



**PTC**  
Shaping Innovation

# Support for All the Major Systems





# Virtual Prototyping



**3D  
CAD**

**Digital  
Mock-up**

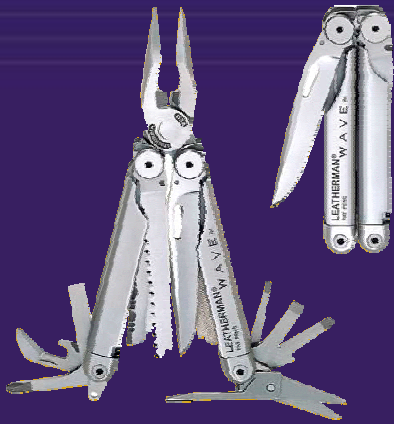








# Companies Need Both Tools



**ADAMS**

***Dynamic Designer***



***Designers***

***Engineers***

***Analysts***

***Managers***



# Dynamic Designer and ADAMS

## ADAMS

Full Simulation, plug-ins,  
and industry-specific

## DESIGNER

**DYNAMIC** An easy-to-use,  
fully-embedded,  
affordable motion  
simulation tool.

# Dynamic Designer Characteristics



- Solves a broad class of problems.
  - ◆ Only need ADAMS for advanced functionality and vertical products.
- Tightly embedded with the host CAD system.
- User interface built for designers and conforms to the host CAD system.
- Reuse of existing CAD information wherever possible.
  - ◆ Mass properties, constraints, parametrics



# Browsers, Wizards, and Agents



# Capabilities

- Parts
- Mass
- Joints/Jprims
- 2D and 3D Contact
- Couplers and Gears
- Material Interaction Library
- Action/Only Force/Moment
- Action/Reaction Force/Moment
- Linear/Torsion Springs
- Linear/Torsion Dampers
- Motion on Parts
- Motion on Joints
- Animation
- Clash Detection
- Result Objects
- Plotting



# Reuse of CAD Data

- Mass Properties
  - ◆ Automatically obtained from Solid Parts
- Constraint Mapping
  - ◆ Automatically mapped to Motion Joints
- Associativity
  - ◆ Updates to geometry are immediately reflected in Motion model
- Parametrics
  - ◆ Can be assigned to motion values producing parametric simulation model



# DDM Products

- Autodesk
  - ◆ DDM for Mechanical Desktop, AutoCAD/Mechanical and Inventor
- DDM for SolidWorks
- DDM for Solid Edge
- SDRC
  - ◆ Mechanism Design and Mechanism Simulation for MS9
- CATIA
  - ◆ DDM on CAAV5



# 2001 Products

- I-Deas Master Series V9
  - ◆ Mechanism Design and Mechanism Simulation products provide significant usability enhancements
  
- DDM on CATIA V5
  - ◆ New product
  
- DDM for Autodesk Inventor
  - ◆ New product
  
- DDM Autodesk, SolidWorks, and Solid Edge
  - ◆ Continuing enhancements.



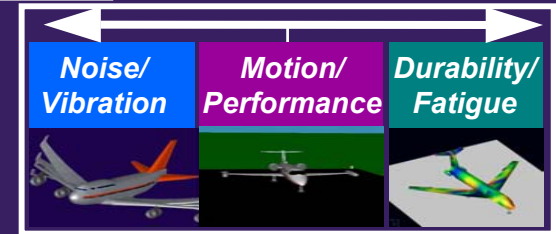
# Future Directions



High Value  
Virtual Prototyping Solutions



Expanded Virtual Prototyping  
Application Areas



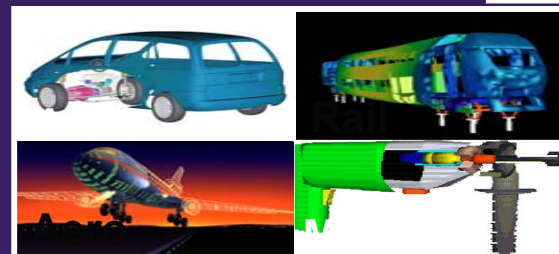
Web-based  
Functional Collaboration



Integrated Virtual  
and Physical Testing



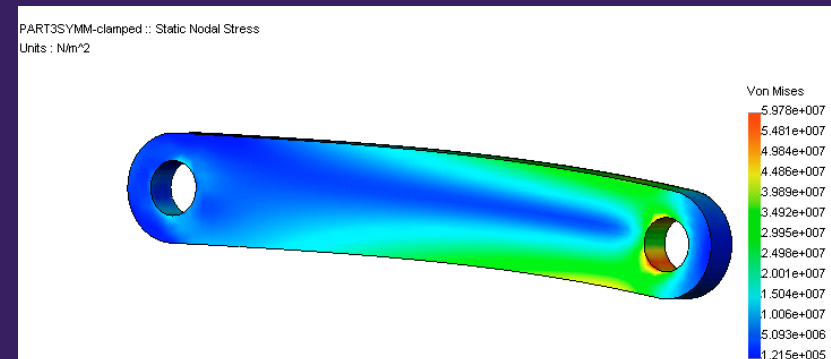
Industry-specific  
Solutions





# Expanded Application Areas

- Stress Recovery
  - ◆ Interfaces with CosmosWorks and DesignSpace
  - ◆ Include interface to V5 FEA in DDM on CAAV5
  
- Flexibility
  - ◆ Start to bring flexibility capabilities into DDM
  - ◆ Bushings (Flexible Joints)
  - ◆ Beams
  - ◆ General Flex bodies





# Industry Specific Solutions

- Suspension modules for DDM on CAAV5





# Summary

- Many users of CAD can also benefit from Motion Simulation
- MDI is the only MBD company with products for **ALL** of the leading CAD systems.
- MDI is aggressively updating their products to be more usable by CAD users and to solve a wide class of problems.