



# DPM Envision/Assembly<sup>®</sup>



# DPM Envision/Assembly®

Total  
Design  
Lifecycle  
Human  
Modeling

## General Introduction Headline

Creating and developing products based on the capabilities and limitations of people is not a new concept. Human Factors (HF) Engineering has proven that every stage of a product lifecycle has a common component—People. People who manufacture, people who install, people who operate, people who maintain.

## The DPM Envision/Assembly Advantage

By linking product and process design, improvements are implemented up front, in the design stage, reducing product launch time and cost.

As a Design For Assembly tool (DFA), ENVISION/ASSEMBLY facilitates development of multilevel assemblies, sequences, part paths and process documentation. Design and manufacturing engineers analyze various scenarios to determine the best assembly process and disassembly/reassembly of the product for maintenance. Then, the simulations are recorded and used for shop floor instructions, maintenance instructions and training. Tremendous cost savings are realized from early troubleshooting, DFA and fewer product and process design changes during product launch.

• Accelerate time to market

## Rapidly Generates Assembly Sequences and Capture Part Motion

ENVISION/ASSEMBLY's simple graphical programming interface allows the user to specify instructions in the Gantt chart for each part without having to memorize special language syntax, and enables task synchronization between assemblies, tools, robots and human models. Once defined, the sequence is coupled to the model. As changes are made, the model is automatically updated.

ENVISION/ASSEMBLY's part motion trajectory generation technology allows the user to simply place a part in a desired location and the position is automatically "captured." Both simple and

complex part motions are reproduced in the simulation exactly as defined in the original motion.

## Automatically Generate Collision-free Paths

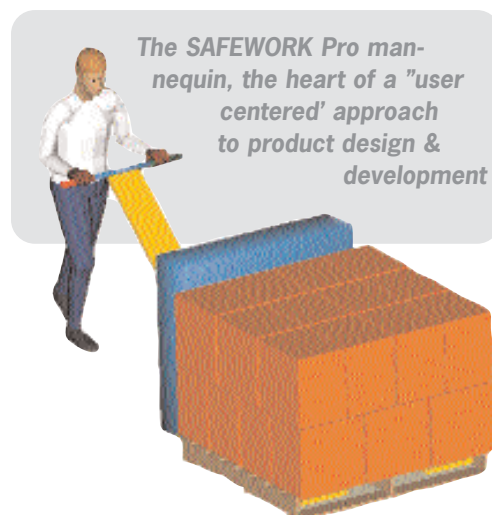
ENVISION/ASSEMBLY easily defines a collision-free path for those difficult to remove/insert parts. A function is provided to automatically generate part paths that avoid collisions with the remainder of the data in the model.

## Inspect Internal Parts and Clearances

Using dynamic cross sectioning, a flat plane can be moved through 3D space and cut through an assembled part to allow inspection of internal details. ENVISION/ASSEMBLY also automatically generates a "swept volume" (the 3D shape of a part trajectory) to visualize clearances. The generated swept volume is created as a part, allowing it to be measured, exported to CAD and used in a collision clearance evaluation.

## Simulate Cables and Wire Harnesses

Soft, flexible, tubular-shaped items may be incorporated into your assembly simulation with ENVISION/ASSEMBLY's cabling option. These objects change shape in real time to reflect the geometric constraints imposed upon them.





### Large Scale Visualization, Virtual Reality Environment and Collaboration

ENVISION/ASSEMBLY enables users to visualize large data sets with multiple levels of detail. Optional Virtual Reality drivers provide immersive fly-thru capabilities for ultimate visualization. The Virtual Collaborative Engineering (VCE) option enables multiple users at remote locations to interact with the same model.

### Seamless Integration

ENVISION/ASSEMBLY is part of DELMIA's Enterprise-wide Digital Manufacturing Solution. Used in conjunction with IGRIP, Virtual NC, QUEST, or ENVISION/ERGO, assembly sequences are easily combined with robots and other automated mechanisms within the same physics-based environment. Also, all workcells are easily linked to resource and process planning models, and process flow analysis products to provide one seamless Digital Manufacturing solution.

### Maintenance, Training and Shop Floor Instructions

All DELMIA simulations can be easily recorded for play back throughout the entire organization for training and maintenance applications. Using DELMIA's Digital Manufacturing ReView, a low-cost simulation player, anyone throughout your organization can easily play back recording files without needing the original authoring software or advanced training.



### DPM Envision/Assembly

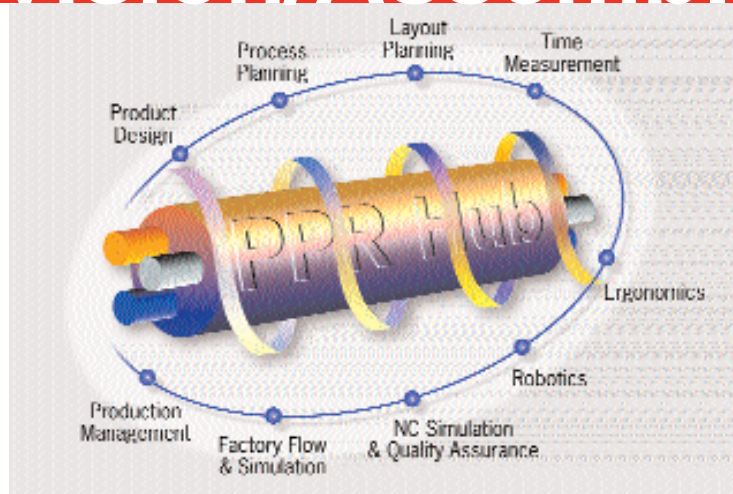


**Input your own variables to create mannequins that replicate your target population**

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## The DPM Envision/Assembly Advantage

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## PPR Hub

The PPR model is the heart of the Dassault Systems 3D Product Lifecycle Management (PLM) solutions. This Product-Process-Resource data collaboration system, is a unique data model for the digital factory that provides storage and management of all product, process and resource information required for production system design – from product concept through manufacturing implementation.

## Technical Specifications

### Mannequin

- 104 Anthropometric Variables
- 100 Independent Links
- 148 Degrees of Freedom.
- Morphological Profiles
- Fully Articulated Hand Model
- Fully Articulated Spine Model
- Fully Articulated Shoulder Model
- Limits of Joint Mobility
- Coupled Range of Motion

### Tools

- Vision Analysis
- Animation
- Postural Analysis
- Comfort Angle Analysis
- Reach Analysis
- Lifting, lowering and carrying analysis
- Pushing and pulling analysis
- Collision Detection
- Virtual Reality
- Task Simulation
- Functional Clothing Analysis
- Library support
- Anthropometry definition and analysis

### Manipulation

- Real Time Simulation
- Animation
- Whole Body Inverse Kinematics
- Direct Kinematics

### Anthropometry Data Support

Comprehensive set of anthropometric surveys are available such as US Army Natick and KRIS 1997. Support for all available population databases as requested by client.

### CAD Interface

- IGES
- STEP
- DXF
- COOR
- STL
- OBJ
- SAT
- SWX

### System Requirements

SAFEWORK<sup>®</sup> Pro<sup>™</sup>/PRO is available for the following platforms and configurations:

#### SGI:

- Workstation O2 R10000 or greater
- High end graphics card
- 128 Mb RAM or more
- RIX 6.5.x operating system

#### HP:

- Workstation HP9000/700, C200 or greater
- Visualize class graphics card
- 128 Mb RAM or more
- HPUX 10.20 operating system or greater

#### IBM:

- Workstation A43P or greater
- GXT550P graphics card or greater
- 128 Mb RAM or more
- AIX 4.3.3 operating system or greater