NX Human Modeling and Posture Prediction

**NX Human can provide feedback about the human-part interaction while still in the design environment.**

Benefits
- Find ergonomics issues without using physical prototypes
- Speed comprehensive design validation by including the human early
- Clearly communicate human related design issues
- Optimize product designs for ease of use
- Use human figures to gain a better understanding of part dimensions
- Employ multiple comfort assessment tools to help differentiate between design concepts

Summary
NX™ software is a powerful computer aided design, manufacturing and simulation tool. NX Human enables designers to use 3D human models to explore and verify how people of different sizes will interact with their product designs. Based on technology from Siemens' Tecnomatix® Jack software, NX Human allows rapid evaluation of fit, clearance and reach issues without leaving the design environment. With human modeling integrated into NX product design tools, companies can develop safer, more functional products that have greater user satisfaction.
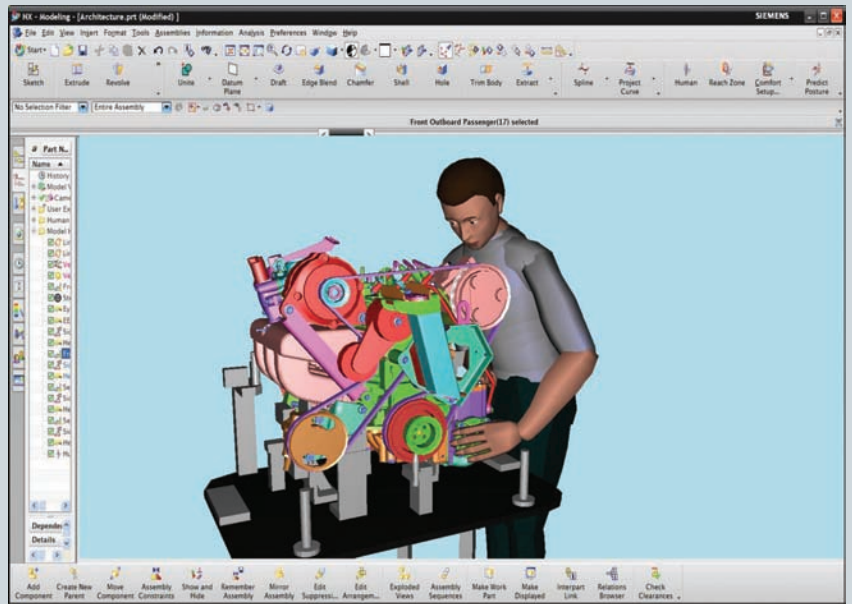
Simplified, accurate modeling of humans
Performing a human study within NX is a simple process. Designers select the gender, stature and weight to create a desired human model. For stature and weight the user can choose standard percentile values from established anthropometric databases, or enter custom values. Using the advanced scaling feature, individual segment length and breadths (e.g., arm length, abdominal depth) can be scaled by the user.

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Features
- Accurate figure dimensions for fit and accommodation studies
- Task-based whole body posture prediction makes tool easy to use
- Reach zones are presented graphically and generated based on size of the human figure
- Seated comfort assessments aid in packaging design
- Prediction of driver and passenger postures respond to packaging layout, and is fully associative with NX design tools

NX Human includes two sources of anthropometric measurement data: the 1988 Anthropometric Survey of U.S. Army Personnel (ANSUR 1988) and the National Health and Nutrition Examination Survey (NHANES III 1994).
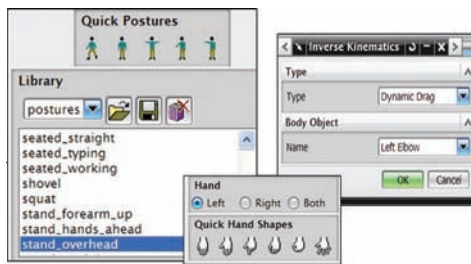
Based on the entered specifications, NX Human Modeling creates an accurate, faceted geometric model of the human, complete with kinematically accurate joints. The human model is created directly in the NX product modeling environment, where it can be positioned and manipulated as a feature-based model.

Editing and positioning the human model
The human model can easily be positioned to evaluate its interaction with the product model. Designers can change the human model's posture in a number of ways, including manual joint manipulation, inverse kinematics, whole body posture prediction or by using pre-defined posture libraries.

Custom human models and postures can be captured and saved for re-use.

Reach zones
NX Human Modeling creates reach zones that define the maximum reach boundary for the selected digital human. Users can specify locations at the fingers, elbows or shoulders, and the analysis can be based on full range of motion, or limited to postures within comfortable bounds.
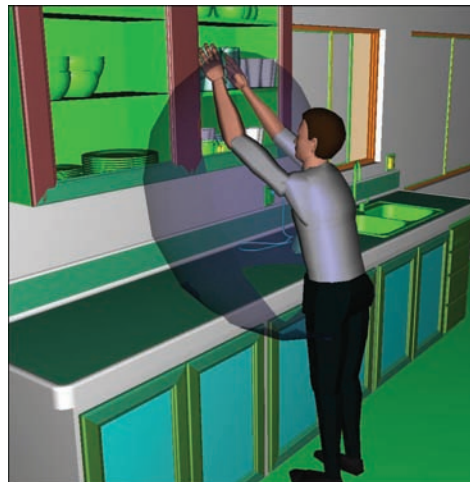
This feature is ideal for studying the accessibility of an object or target relative to the human. Reach zones can be dynamically linked (associated) to the human model so that the zone automatically adjusts when the human model is changed.

Comfort Assessment
The Comfort Assessment tool in NX Human helps you determine whether you've positioned your human model in a comfortable posture. Using the findings of recognized authorities on seated comfort, the tool predicts whether your human model is in a comfortable seated posture based on individual joint angles and overall body posture. You are given instant feedback about how the packaging design of your vehicle can affect the occupant's comfort. There are several methods of reporting your findings, including real-time bar graphs that dynamically display comfort ranges and the ability to display results directly on the human model, using different colors to represent comfort ratings for each body segment.
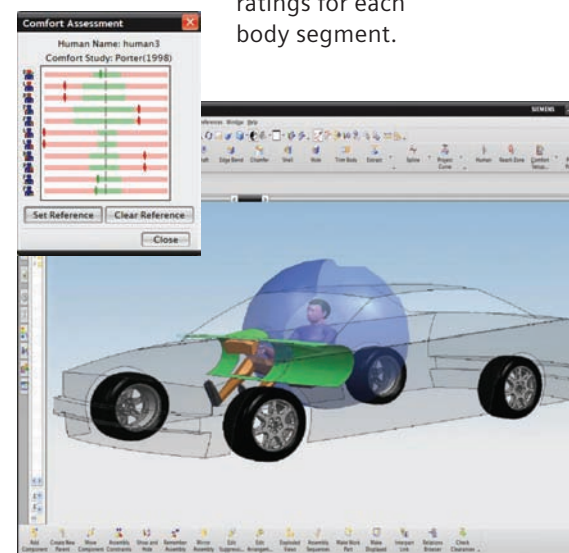
Packaging and availability
NX Human Modeling is available as an add-on software module for NX Mach Series solutions.
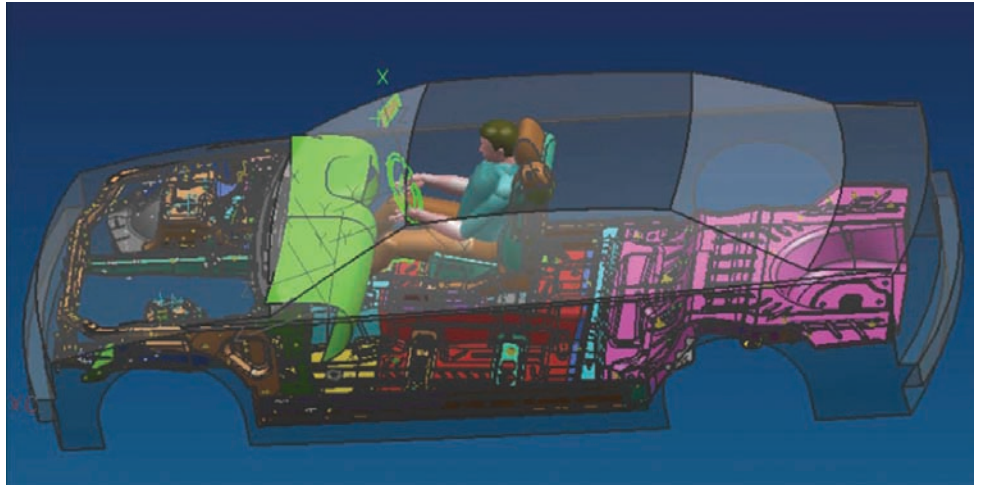
NX Human Modeling Posture Prediction
NX Human Modeling Posture Prediction extends the human analysis capabilities with automatic posturing and positioning of seated vehicle occupants. Postures can be predicted for driver as well as front and rear passengers. Designers can specify hand and feet locations to accommodate specific vehicle layouts.

The predicted postures are based on models of seated occupants developed as part of the Automotive Seat and Package Evaluation and Comparison Tool (ASPECT) program at the University of Michigan Transportation Research Institute (UMTRI). These models provide whole body posture and position prediction in response to the

package configuration. Both class A and class B vehicles are supported, as well as input data from either the pre-ASPECT J826 physical manikin measurements, or the new post-ASPECT physical device.

Packaging and availability
NX Human Modeling Posture Prediction is available as an add-on software module for NX Mach Series solutions. NX Human Modeling is a prerequisite.