



# Immersion

## VirtualHand® for V5

Reach in and touch your CATIA V5 designs using Immersion's new suite of CAA V5-based software, VirtualHand® for V5. Wearing a CyberGlove®, use your hands to intuitively evaluate the ergonomics and assembly of your CATIA digital prototypes with either VirtualHand for V5-Design or VirtualHand for V5-Digital Mockup (DMU).

### VirtualHand for V5-Design

Manipulate your V5 models directly within the CATIA mechanical design workspace using Immersion's CyberGlove instrumented glove (Figure 1) or CyberTouch™ tactile feedback glove. CyberTouch includes six vibrotactile feedback actuators, one on each finger and one on the palm.

### VirtualHand for V5-Digital Mockup

Experience whole-hand and arm force feedback using Immersion's CyberForce® system with the ENOVIA Digital Mockup immersive environment to feel shape, movement, compliance and weight when you pick up and manipulate V5 models. Or use just the CyberGrasp™ for ungrounded grasping feedback to your fingers as you analyze your design.

### Sample Applications

**Design/Review:** Automotive engineers can design and immediately review variants of a car interior and component layout in terms of ergonomics, reach, convenience and comfort. Focus groups, design teams, and management can quickly compare and eliminate candidate designs to reduce expensive physical prototypes.

**Maintenance/Supportability:** Aerospace engineers can perform assembly and disassembly tasks on the CAD model of an aircraft design to evaluate maintenance procedures before the design reaches production, averting expensive support issues.

**Training:** Using only CAD models, military personnel can train on operation of vehicles and weapons. Medical personnel can perform simulated surgical procedures.

### The Digital Prototyping Workflow

A significant portion of a product's design time and expense can be attributed to design iterations involving a physical prototype. VirtualHand for V5 allows you to directly manipulate and interact with the CAD model itself as a digital prototype, in the same way you would interact with a physical prototype. Being able to quickly and inexpensively evaluate multiple digital iterations at an early stage of design yields superior product quality, reduced prototyping cost, and reduced time to market.

### Requirements

#### VirtualHand for V5-Design

CATIA V5 MD2/MS2 configuration  
Immersion CyberGlove or CyberTouch

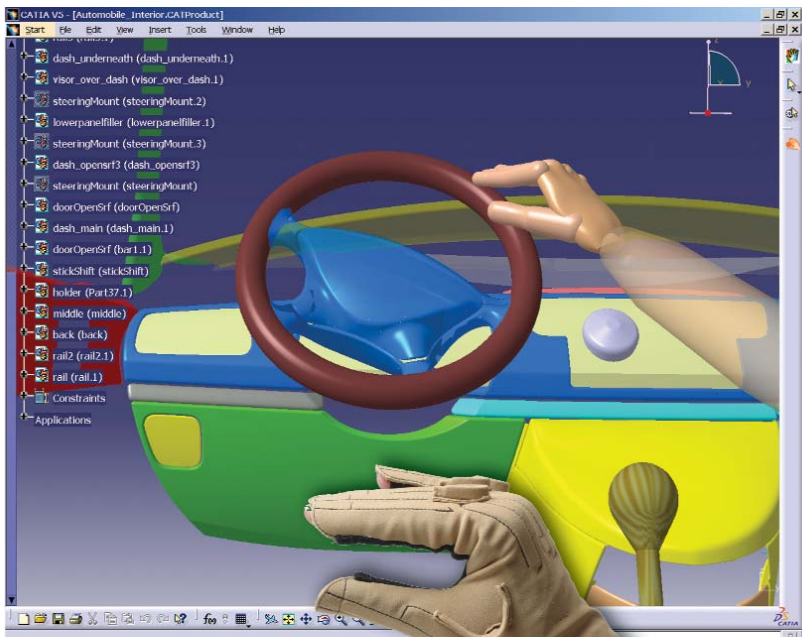
#### VirtualHand for V5-Digital Mockup

ENOVIA V5 DM3 configuration  
Immersion Haptic Workstation™,  
CyberForce or CyberGrasp

#### PC Workstation

Windows XP/2000

Figure 1: VirtualHand for V5-Design with the CyberGlove



Automobile interior courtesy of PSA Peugeot Citroën.





# Immersion

## PRODUCT FEATURES

### Seamless V5 Integration

- VirtualHand for V5-Design allows you to manipulate your V5 models directly inside the CATIA Mechanical Design workspace
- VirtualHand for V5-DMU allows you to feel physical forces associated with your digital prototype while you're immersed in the ENOVIA Digital Mockup workspace
- No programming necessary; just load the geometry and start interacting

### Interaction Capabilities

- Manipulation
  - Grasp and naturally manipulate any movable graphical object with your hand while wearing an Immersion CyberGlove or CyberTouch glove
  - Feel force-feedback while using the Immersion Haptic Workstation, CyberForce or CyberGrasp system (VirtualHand for V5-DMU only)
  - Mass and compliance properties defined for V5 parts are automatically used in force feedback calculations
  - Two-handed interaction
  - Object contact with forearm is visually displayed
  - Patent-pending algorithm constrains graphical finger tips from penetrating graphical surfaces
- Assembly/disassembly
  - Disassemble and reassemble mating parts
  - Verify assembly sequences and maintenance procedures
- Kinematic mechanisms
  - Interact with complex rigid and flexible subassemblies
  - CATIA constraints and DMU joints are supported (except sliding and roll curve)
  - Limit-stop constraint for unilateral joints is provided
  - Patent-pending algorithm determines optimal configuration for kinematic mechanisms
- Large model handling
  - Real-time interaction with large models (many parts, large parts)
- Interact with various geometry and surface types
  - Solid models, open surfaces, NURBS, CGR tessellated surfaces, sculpted and lofted geometries
- Interact with various file formats
  - CATIA V5, CATIA V4 (translated), STEP/IGES and support for various other translated non-CATIA models

### Motion Capture and Analysis

- Record and replay motion of the hands and manipulated objects
- Store assembly/disassembly sequences for subsequent editing and training-video generation
- Use FIT to generate swept volumes from motion data

### About Immersion Corporation

Founded in 1993, Immersion Corporation develops software and hardware technologies that improve the way people interact with digital devices. Immersion's 3D Interaction products include the VirtualHand line of hand-interaction software products and the CyberGlove line of whole-hand motion capture and haptic feedback hardware products that enable wearers to use their physical hands to interact with and manipulate 3D graphical objects.

### For more information

Immersion Corporation  
801 Fox Lane, San Jose, CA 95131  
phone: 408-350-8824  
fax: 408-467-1901  
3dinteractionsales@immersion.com  
www.immersion.com/catia