



ENOVIA V5 DMU for Vehicle Occupant Accommodation

Highlights

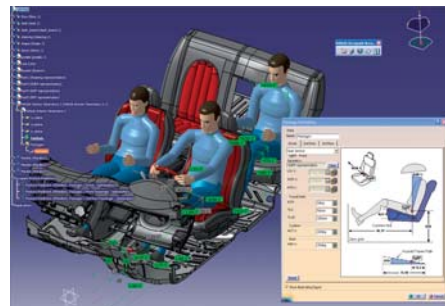
- » **Introduce Human Factors earlier in design life cycle**
- » **Reduce cost of occupant accommodation validation**
- » **Provide a sophisticated set of analysis tools to optimize occupant comfort**
- » **Improve productivity through template and knowledge based approaches to vehicle occupant packaging**

Using 3D Manikins to Optimize Vehicle Occupant Packaging

The human being is one of the most non-standard and unpredictable components of any system. Human capability is a major (limiting) parameter of design, therefore in many application areas there is a strong requirement to model the physical elements of the human alongside product designs.

From the program start to the vehicle design freeze, human accommodation issues are a major component in design decision making processes:

- Is the vehicle design safe and comfortable for the designated population?
- Are all the vehicle commands reachable for the designated population?
- Can the above issues be addressed through a single integrated engineering desktop solution?



V5 for Vehicle Occupant Accommodation provides engineers and ergonomics specialists with an out-of-the-box solution to set up a vehicle interior configuration, place and position manikins and eventually validate the interior layout.

Leveraging the virtual 3D product definition from concept to retirement

Digital Mock-up (DMU) is an essential element of a successful Product Lifecycle Management (PLM) strategy. Within a unified PLM environment, DMU lets engineering teams review, manipulate and evaluate digital representations of 3D product information. By allowing engineers and ergonomics experts to test vehicle packaging, interactively, using 3D manikins, DMU accelerates collaborative decision making and enables more accurate decision on occupant comfort.

Reduce cost of interior vehicle design validation

Part of the DMU portfolio, Vehicle Occupant Accommodation (VOA) provides a set of tools enabling to reduce the number of physical prototypes, minimize customer focus groups and reduce the number of design iterations required to ensure an interior vehicle design that meets the occupants needs in term of comfort and accommodation.

Vehicle Occupant Accommodation (VOA) allows companies to explore, compare and validate more design alternatives by letting 3D information accessible to all stakeholders.

VOA enables organisations to:

- Automate elements of vehicle occupant

packaging process

- Increase productivity of vehicle occupant packaging analysis
- The rapid preparation of review sessions in a continuous product quality assessment process
- Leverage enterprise intellectual property and proprietary knowledge

Effectively predict vehicle occupant posture

Vehicle Occupant Accommodation (VOA) enables users to create vehicle interior dimension packages in compliance with the SAE (Society of Automotive Engineers) standard J1100 (Sept.05). It includes, among other capabilities, to input all the dimensions used for predict the occupant posture of any seating position in a motor vehicles, to quickly change dimensions values using interactive manipulators (one per dimension), to display illustrations for better understanding of the dimensions and the reference points definition, to carry out common operations that can be done on a "Part", such as Copy, Paste, Delete, Edit and Move using the compass.

All the package's elements can be associated to a 3D geometry enabling for instance users to specify automatically the vehicle dimensions based on existing vehicle geometries and or to easily retrieve the dimensions and locations of specific geometries (seat, steering wheel and pedal) of an existing vehicle design. Packages can be then saved in catalogs and be applied on an existing package.

Vehicle Occupant Accommodation (VOA) provides users by default with an automatic way to predict the driving posture of a specific manikin based on two methods: cascade and optimization.

- "Cascade"-based method is composed of formula (regression equations) representing the position coordinates of the ankle, the pelvis and the eye
- "Optimization" one is rather based on the flexion comfort angle of the forearm, leg and optionally trunk (thoracic and lumbar)

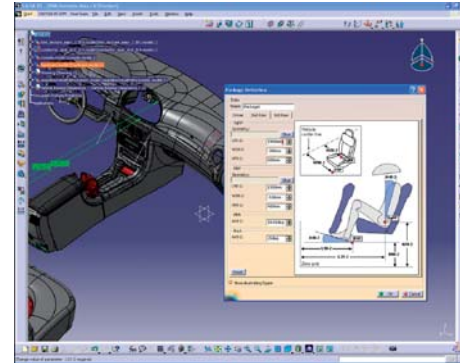
Automatic prediction reduces the time and increase the accuracy of placing the manikin inside a vehicle. The resulting posture is function of vehicle dimensions package (SAE J1100) and manikin anthropometry and includes the grasping posture of the hands based on the diameter of the steering wheel. Posture can be predicted for more than one manikin at the same time. Choice of left, right or center seat is available for the 2nd or 3rd row passenger.

Users can also create their own user-defined posture prediction method based on the two methods available.

Reuse and share information across multiple design disciplines

For further exchange, users can extract data from a package or a posture prediction and present it in html or XML format. For more efficient reuse and sharing, VOA packages can be save in catalog and both (packages and catalogs) stored in ENOVIA VPLM, and

retrieved in CATIA when loading a product from ENOVIA VPLM. Same capabilities are available using ENOVIA SmarTeam.



V5 for Vehicle Occupant Accommodation enables users to create vehicle interior dimension packages in compliance with the SAE (Society of Automotive Engineers) standard.

V5 DMU for Vehicle Occupant Accommodation is based on the following products:

- Vehicle Occupant Accommodation 2
- Human Builder

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