RAMSIS AUTOMOTIVE

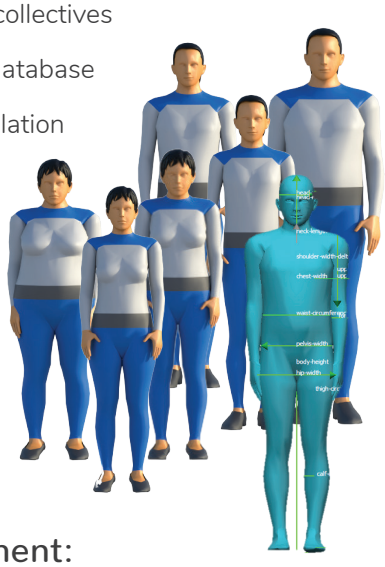
ADVANCING INTERIOR DESIGN THROUGH ERGONOMICS

Ergonomics and efficiency: Space in cars is limited with more assistance and communication systems integrated to optimize driving and travel time. RAMSIS ensures that future vehicle designs continue to meet today's ergonomic and efficiency standards.

The ergonomics tool RAMSIS is developed together with the German Automotive industry. As the world's leading software for optimal ergonomic vehicle functionality, RAMSIS improves efficiency in development, ensuring your vehicles always perform reliably.

Advantages

- Definition of representative test collectives
- World's largest anthropometric database
- Realistic automatic posture calculation
- Many ergonomic analyses
- Interior design for passenger cars



Highly Efficient Development: the on Digital Model

RAMSIS is a 3D Manikin designed for ergonomic analysis of passenger cars. Vehicles can be designed to meet specifications. Studies are quickly documented, and results can be repeated or transferred between models. Standardization enables direct comparison of different studies.

Key Features

Digital ergonomic simulation analyses posture and movement of occupants directly in CAD

Comprehensive anthropometric databases ensure accurate results with global population data

Optimized vehicle interiors improve visibility, comfort, belt routing, and reachability

Efficient and standardised development reduces design cycles and enables easy comparisons

Seamless integration with design tools works standalone or within Catia V5, 3D-EXPERIENCE, and NX

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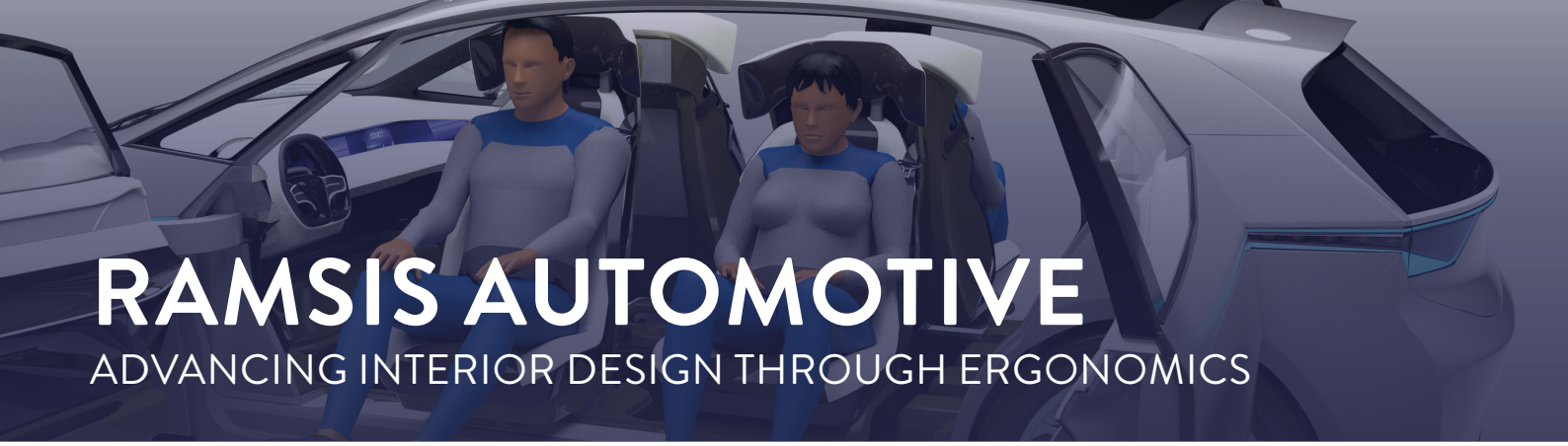

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The Manikin and Its Positioning

- **Model Structure:** RAMSIS works with grid, shading, and surface models, simulating human motion with physiological joints. Positioning begins with the H Point.
- **Special Anthropometric Database:** RAMSIS uses detailed data to generate any target group by height, gender, or age. Databases come from international, replicable sources such as research projects and serial measurement projects worldwide, including Size North-America and SizeWorld China. Detailed hand size is also included.
- **Automatic Posture Calculation:** Based on current research, RAMSIS simulates realistic postures and movements. Tasks can be defined interactively and quickly transferred to more manikins by fixing and orienting body parts.
- **Role-Based Properties:** Vehicles can be occupied by driver and co-driver collectives, with combinations of men, women, and children in various seating roles. Each role has typical posture/movement models and is individually positioned into the seat.
- **Analysis for Total and Partial Collectives:** By simulating several manikins at once, RAMSIS covers entire populations or individual sections for consistent ergonomic analysis.
- **Animation and Movement:** RAMSIS predicts postures and extends them into animated sequences with automatically calculated transitions. Recordings can be saved as videos. Manikins can also be moved interactively via joint angles or inverse kinematics.

Ergonomics Analyses

Health and Comfort: RAMSIS measures posture discomfort, distances, and angles to optimize comfort and assess fatigue.

Direct and Indirect Vision: RAMSIS analyses visual fields early in the concept phase, including direct and mirror-based views, inside, and outside the vehicle. Eye, head, and neck movements are considered. The Cognitive module also evaluates perceptibility of information.

Belt Routing: RAMSIS simulates seat belt routing digitally. Basic analysis includes seat belt deflector height; release points, and compliance with eBTD guidelines.

Reachability: RAMSIS calculated reach envelopes and areas for defined body part chains.

Operating Force: RAMSIS checks posture-dependent maximum forces for operating elements, such as opening the glove compartment.

Project Support and Availability

RAMSIS includes four core modules (Framework, Ergonomics, BodyBuilder, Project Manager) that can be expanded and reused, minimizing external documentation. Design optimization is standardized and automated with concepts, macros, and user functions for efficient, reproducible, and comparable results. The software runs stand-alone on Windows or integrates into Catia V5, 3D-Experience, and Siemens NX, with data exchange via IGES, VDA, SAT, JT, STEP and Catia formats.

HUMANETICS