RAMSIS COGNITIVE

ADD-ON MODULE FOR ADVANCED VISION STUDIES 48

Drivers must recognize, understand and react to information quickly while keeping their focus on the road. RAMSIS Cognitive helps engineers optimize the visibility and presentation of information in the cockpit and the surrounding traffic environment. It supports the development of intuitive, safe and ergonomic vehicle concepts by evaluating visibility, readability and glance behavior under realistic conditions.

The RAMSIS Cognitive module extends RAMSIS Automotive with detailed analyses of visibility, lines of sight and display design. It enables objective evaluation of displays, mirrors, reflections, head-up displays and the driver's field of view. Potential issues can be identified and resolved early in the digital development process, reducing costly prototype iterations.

Advantages

- Analysis of visibility in realistic driving scenarios
- Objective evaluation of displays, mirrors and visual fields
- Improved readability and optimal positioning of cockpit displays
- Reduction of reflections and visual distractions during day and night
- Support for safer, more intuitive human-machine interfaces

Highly Efficient Development: The Digital Model

RAMSIS Cognitive performs ergonomic vision analyses directly on the digital vehicle model. Studies are documented automatically, can be repeated for different populations and compared across vehicle concepts. This standardized workflow shortens development cycles while improving the quality and consistency of design decisions.

Key Features

Direct & Indirect Vision
Optimize visibility inside and outside the vehicle.

Display Optimization
Ensure excellent readability and display positioning.

Reflection Control
Reduce glare and improve visual comfort.

Head-Up Display
Design clear and ergonomic HUD concepts.

Vision in Motion
Analyze driver attention in realistic traffic scenarios.

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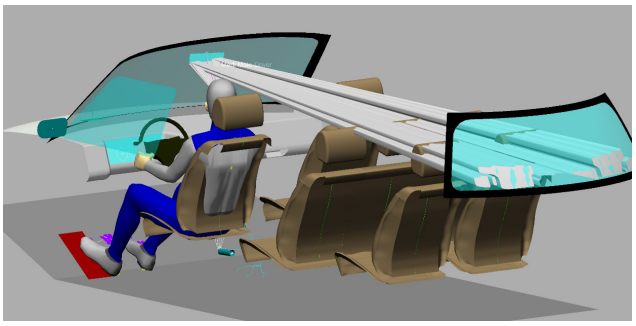
Visibility and Display Design

» **Direct Vision:** RAMSIS Cognitive evaluates the driver's direct field of view by identifying areas concealed by the steering wheel, dashboard, vehicle structure or the occupant. This enables engineers to optimize the positioning of displays and controls for unobstructed visibility.

» **Reflection Analysis:** The software analyzes reflections caused by sunlight, illuminated displays and glossy interior surfaces. Day and night conditions can be evaluated to reduce glare and improve driver comfort and information visibility.



» **Display Readability:** RAMSIS determines minimum character sizes, viewing distances and optimal display positions. Display visibility is assessed according to viewing angles, display specifications and occupant eye positions to ensure excellent readability.

» **Extended Visual Field:** Different visual field limits, gaze zones and visual ranges can be analyzed for various user groups. Monocular and binocular vision as well as different spectacle types are supported, enabling realistic evaluation of cockpit layouts.

» **Head-Up Display:** RAMSIS calculates projection geometry, eye-box dimensions and installation parameters for head-up displays. This allows engineers to optimize HUD positioning and image quality for different occupant sizes.

Driver Vision and Traffic Simulation

» **Vision in Motion:** RAMSIS calculates glance durations and gaze transition times between the road and cockpit elements. Engineers can objectively evaluate driver distraction and optimize the placement of information according to ergonomic principles.

» **Display View:** Display viewing angles are visualized according to component specifications and compared with occupant eye positions. This ensures reliable visibility for different seating positions and anthropometric groups.

» **Outer Vision Analysis:** Quantitative analyses evaluate the driver's view through windows, mirrors and vehicle openings. Visibility can be objectively compared across different vehicle concepts and window designs.

» **Traffic Scene Simulation:** Realistic traffic environments including roads, intersections, pedestrians, cyclists and surrounding vehicles can be created to analyze visibility in dynamic driving situations and support concept presentations.

Project Support and Availability

RAMSIS Cognitive is an optional module of RAMSIS NextGen and integrates seamlessly into existing ergonomic development workflows. It supports standardized, repeatable and objective vision analyses throughout the entire vehicle development process. The software is available as a stand-alone solution and as an integration for CATIA V5, 3DEXPERIENCE and Siemens NX. Standard CAD exchange formats enable efficient collaboration across development teams while ensuring consistent and reproducible analysis results.

HUMANETICS