

CAD software for optimizing human-machine interfaces **Visual Ergonomics**



VISUALIZE EXACTLY WHAT THE DRIVER, PILOT, OPERATOR, INTERFACE USER WILL PERCEIVE

SIMULATE LIT & UNLIT APPEARANCE OF YOUR LIGHTING SYSTEMS

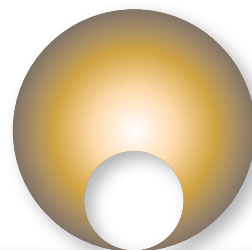
IMPROVE COMFORT AND SAFETY OF THE INTERFACE THANKS TO COLORIMETRY,
CONTRAST, GLARE, REFLECTIONS, VISIBILITY & OBSTRUCTION ANALYSIS TOOLS

REDUCE COST BY VIRTUALLY VALIDATING YOUR DIGITAL DESIGN

REACH AN UNEQUALLED LEVEL OF REALISM
THANKS TO PHYSICAL ALGORITHMS OF LIGHT PROPAGATION

BENEFIT FROM A FAST LEARNING CURVE

- Technology
- stand alone
 - CATIA V5 integrated



- Automotive • Electrical & Electronics • Aerospace
- Lighting • Consumer goods • Architecture • Medical
- Defense • Luminaires • Interior design • Yacht • Display...



OPTIS

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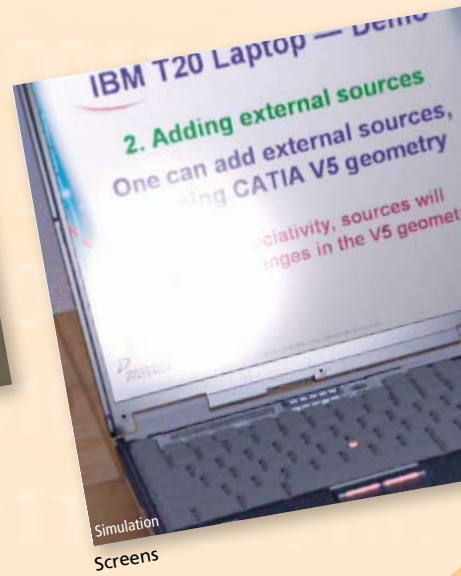
OPTIMIZE HUMAN-MACHINE INTERFACES TO ENSURE INFORMATION LEGIBILITY AND VISIBILITY
 USING A METHODOLOGY 100% BASED ON PHYSICS LAWS



Automotive dashboards



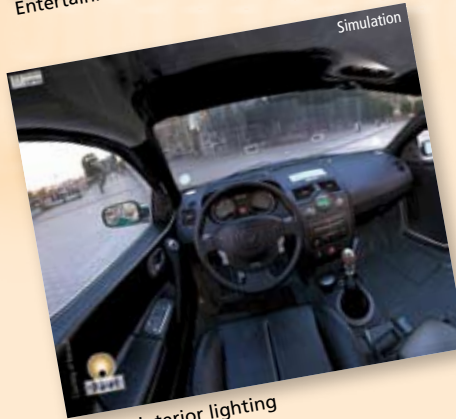
Entertainment screens in aircraft



Screens



Cockpits



Vehicle interior lighting



Control rooms

✓ MEASUREMENTS

- Surfaces : ALAN
- Materials : plas
- Sources : auton

✓ ON-LINE MEASURED LIBRARIES

✓ SENSORS

- Luminance (cd/m^2) & radiance ($W/m^2.sr$) & Colorimetry
- Human vision model: fovea area, physiological vision
- Geometry serves as 3D sensor
- Virtual CCD Camera, night vision devices for defense version

✓ DISPLAY

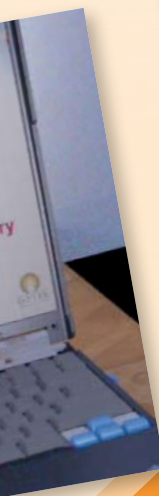
- LCD, CRT, pictograms with real spectral emission
- Infrared emission

✓ SOURCES

- Complex source modeling (incandescent, arc, fluorescent lamps, LED)
- On-line libraries: more than 350 references: see above
- Customized measured sources: see measurements above
- Spectral emission (IR, visible, UV)

✓ MATERIAL & SURFACES

- Surface & volume optical properties (index, reflectance, absorption, scattering, mass diffusion, dispersion, fluorescence, BRDF)
- Specific editor for real life cases (aluminized, tinted opalescent plastic, thin film color filter, paint, glass...)
- On-line libraries: more than 350 references: see above
- Customized measured materials & Surfaces: see measurements above
- Extended spectral behavior (IR, visible, UV)



ATM screens

✓ VALIDATION

- Virtual prototyping
- Unlimited "what-if" scenarios
- Informed decision-making
- Geometry automatically updated following design changes

✓ OPTIMIZATION

- Multi-configuration
- Optimization engine
- Tolerancing
- Automatic task manager

✓ ANALYSIS

- Glare, blooming, ghost images, reflections, ...
- Eye sensitivity (luminosity, color, contrast, tiredness...)
- Uniformity, contrast
- Perception by night, by day, in a tunnel...
- Iso-contours for visibility areas and obstructions
- Spectral / colorimetry - chromaticity coordinates (XYZ, xyY, Lab, Luv...)

✓ SIMULATION

- Luminance (cd/m²) & radiance (W/m².sr)
- Human vision
- Smart engine® for high speed calculations
- Interactive ray propagation in the 3D view for visual checking

- Sources : LEDs, incandescent, fluorescent, arc lamps...
- Scattering surfaces : BRDF, spectral BRDF...
- Volume : BSDF, mass diffusing, milky, mass tinted...
- Coatings, filters...

- ANOD, ANOFOL, SATMA, CHARMILLES...
- Optics (Bayer, Röhm...), glass (Hoya, Sumito, Schott...)
- Motive (OSRAM, Philips), LEDs (OSRAM, Lumiled, Stanley...), CCFL...



Ship bridges

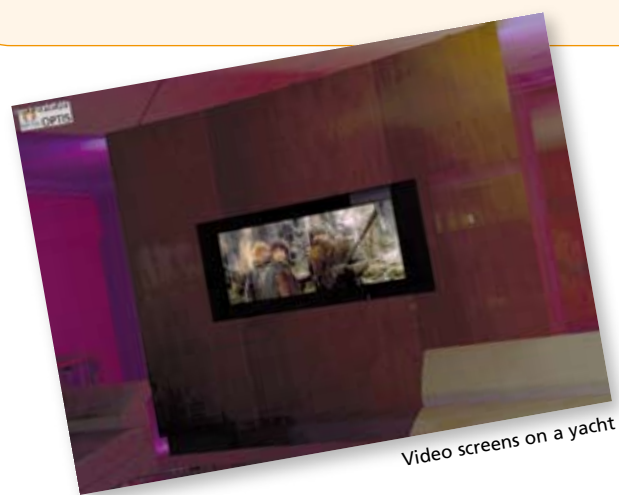
! FROM MEASUREMENT TO SIMULATION

BENCH: acquire our static optical bench to obtain very accurate input data or we can also provide you customized measurements...

SQUALE: Capture surface and color appearance in situ and transfer it immediately into your virtual prototypes...



PDA's



Video screens on a yacht



METHODOLOGY

VISUAL ERGONOMICS capabilities allow users to simulate and analyze the interaction between any product and its lighting environment, taking into account physiological aspects of human perception. SPEOS Technology will bring high added value to those developing lighting for vehicles, dashboards, control rooms, cockpits, electronics systems, GPS, LCD displays, Hi-Fi, mobile phones... by enabling them to create high quality lighting and visual ergonomics simulations of their products for early design validation and consequently reduce the number of physical prototypes. It will enable stylists and designers to see the final working appearance of the product, and give ergonomists a view of the product integrated into its final environment (such as a LCD screen on a car dashboard, surrounded by other controls and displays). The ergonomist will thus be able to check visual comfort and harmony of the product in its context. Light and color contrast, glare and dazzling, and ghost reflections can all be simulated.

BENEFITS OF VISUAL ERGONOMICS

- You will know how your interface will appear thanks to Human vision
- Improve safety and visual comfort to avoid fatigue
- Detect visual obstructions
- Avoid reflections in your system
- Master the overall harmony of the various information displays in your interface
- Optimize virtual mock-ups in your process
- Choose the best material and take into account real measured optical properties of materials, surfaces, chosen from our on-line libraries.
- Learn and master the software quickly thanks to its ease of use
- Benefit from the precision and reliability of proven scientific software combined with the industry-focused practical features of a CAD tool



SERVICES & CONSULTING

Expertise

Expertise allows you to optimize your lighting projects with SPEOS Technology implemented by sending OPTIS engineers to your site.

Measurement campaign

OPTIS has developed and acquired measuring tools to characterize light sources and materials/light interaction (BRDF, BSDF, emittance, intensity and luminance of lamps, spectrum of sources).

Audit

Optimize your product development process by analyzing with us where the SPEOS Visual Ergonomics technology can be deployed.