



VRXPERIENCE Perceived Quality

Ansys VRXPERIENCE Perceived Quality is part of the Ansys VRXPERIENCE product family

Predicting and validating the impact of lighting, colors and materials variations on product appearance to achieve the optimal perceived quality is critical in product design. Enabling faster design decision-making for virtual prototypes, Ansys VRXPERIENCE Perceived Quality is a physics-based, real-time solution for design evaluation. Delivering the ultimate virtual customer experience, its accurate visual renderings are the perfect way for designers, stylists or engineers to see and experience exactly what a future product will look like, in a fully immersive virtual environment. By ensuring that lighting, materials and finish combinations are pleasing to the eye and achievable, you can deliver the highest possible perceived quality without increasing cost.

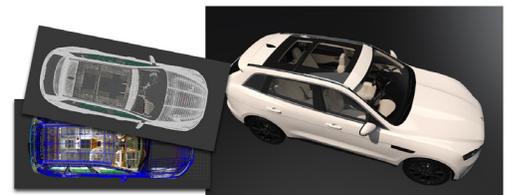


Benefits

- Perform real-time assessment of the visual impact of various combinations, for informed design decisions
- Anticipate visual defects related to lighting and materials, like reflections or light leakage, to optimize them early in the process
- Eliminate the need for multiple, expensive physical prototypes
- Shorten your design phase and accelerate time to market, while reducing design and costs

/ A Fast, End-to-End Design Process

VRXPERIENCE Perceived Quality lets you create a virtual prototype from a 3D format, including any native CAD format, onto which optical properties can be applied. It can also exchange data with Ansys SPEOS to easily prepare a virtual model. Simply export and import light and material components to or from the Ansys optical library or Ansys SPEOS.



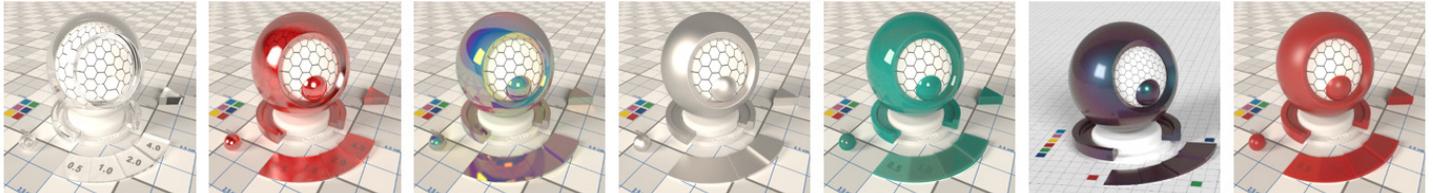
- Design teams, as non-experts on the subject, can easily hand a completed mock-up to the engineering team by **exporting** VRXPERIENCE Perceived Quality-generated designer data as SPEOS inputs, communicating design intents to engineering teams.
- Designers can also **import** Ansys SPEOS projects into Ansys VRXPERIENCE Perceived Quality to make sure that the virtual prototype is on spec as the launch approaches, after the engineering team has analyzed and optimized the design. Teams can review virtual prototypes in a real discussion space, where suggested changes and iterations can be performed multiple times.

/ A Physically Accurate Simulation

VRXPERIENCE Perceived Quality interfaces with SPEOS lighting simulation, bringing physics-based light simulation to studio designers. Based on the physics of light, Ansys VRXPERIENCE Perceived Quality is a “what you see is what you get” solution.

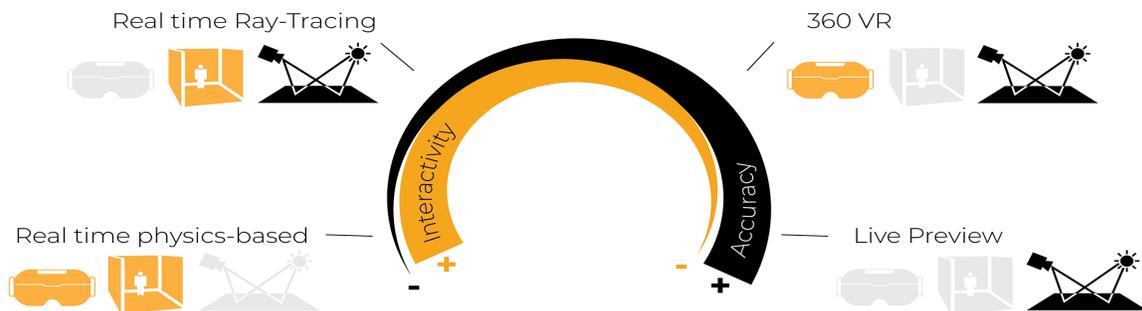
Its predictive simulations provide an accurate rendering thanks to accurate optical propagation capabilities, certified against reality.

All material inputs can be either 100% reliable scanned optical properties or procedural materials based on PBR models from the design studio. Lighting properties are defined using physical quantities.



Ansys VRXPERIENCE Perceived Quality offers scalable spectral and physics-based rendering with optimized calculations for the best trade-off between accuracy and interactivity:

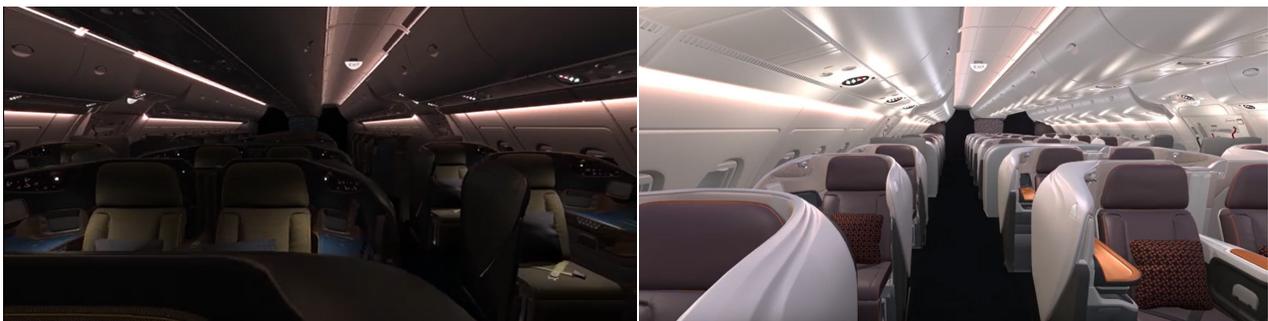
- Interactive VR
- 360 VR offline simulation with dynamic lighting control
- Raytracing for reflection simulation
- SPEOS Live Preview for 100% true-to-life optical simulation



At every step of the design, you can switch between the different levels of rendering, from a full real-time review to 100% accurate optical simulation, using the same dataset.

As a result, you get a rendering with reliable, measurable visualizations, so you can make informed design decisions.

/ Test and Validate Your Product Design in Context



For car or aircraft interior designs, Ansys VRXPERIENCE Perceived Quality gives you immersive and realistic in-vehicle experiences. You can instantly test and compare several design intents for materials and lighting, while validating engineering choices against design specifications. How? By combining materials and lighting systems easily within your virtual product prototype. Then you can explore a wide variety of colors and texture configurations to create and experience compelling lighting choreographies and dimming transitions.



Disturbing reflections on the windshield due to the interior material choice

Next, you can assess your product within the lighting context of its operating environment to get a full product view in a custom 360° surrounding. Enjoy natural sun and sky simulation for realistic evaluation conditions, or artificial lighting to simulate a showroom, for instance. Finally, experience your product configurations, changing lighting and materials in real time to test and validate any lighting and material combinations in lifelike conditions, and make the optimal design choices. You can also detect potential visual defects and ergonomic problems in context early in the process.

/ An Immersive Decision-Making Solution

You can deploy and experience your Ansys VRXPERIENCE Perceived Quality visualizations in any VR system, in 3D, with guaranteed 1:1 scale, 1:1 color, and 1:1 luminance. This way you can be sure to detect any issue and make the optimal design decision based on a reliable virtual mock-up.

/ Applications

Visual Ergonomics Assessment

With Ansys VRXPERIENCE Perceived Quality, you can assess visual ergonomics early in the design process, anticipating reflection, screen wash-out and visibility issues — phenomena deeply linked to the point of view. Fully deterministic raytracing in real time, combined with VR head tracking, is the best way to explore all potential eye positions for all drivers, without a physical prototype.



You can also experiment with several lighting conditions, materials and shapes to reduce the number of Ansys SPEOS simulations. At any time, you can directly trigger an Ansys SPEOS simulation based on the current VRXPERIENCE data to confirm and measure the detected issues and take corrective design actions.

Early Lit Aspect Review

Dreaming of an early lit aspect exploration to ensure the feasibility of your design intent? You can activate a fully physics-based lit aspect, followed by a SPEOS simulation on your studio/style design data, that you can then use as a specification for the lighting engineers. VRXPERIENCE's full-physics, GPU-accelerated optical simulation enables early assessment of the lit aspect of complex optical elements. You can prepare all the data in Ansys VRXPERIENCE based on 3D artist data and optical properties.



Varying screen visibility depending on sun position



Live preview of a rear lamp for early lit aspect review

Then, by changing viewpoints, geometries, properties and lighting conditions, you can see the result of any change in a few seconds. You can also record your modifications, creating high-quality videos to share and review results with colleagues.

Global Interior Lighting Evaluation

With Ansys VRXPERIENCE Perceived Quality, you can perform real-time simulations of complex light sources (such as light guides), that can be used for VR reviews. Using timelines, you can create interior lighting scenarios such as blinking, fading, welcome, parking, etc.

You can then experience them as the final customer will by interacting naturally with your virtual prototype HMI.*

Additionally, you can compute full physics 360 stereoscopic VR simulations of your interior lighting to ensure the right level of perceived quality for the final customer, avoiding light leakage while ensuring lighting uniformity. 360 VR preserves light interactivity, so you can create and validate compelling lighting scenarios. Take into account color harmony, fading and blinking speed, and intensity while avoiding disturbing reflections during night driving.



With Ansys VRXPERIENCE Perceived Quality, you can explore, create and validate a compelling interior lighting scenario with full physics simulation and dynamic lighting.

* requires an additional Ansys VRXPERIENCE HMI module

/ Ansys VRXPERIENCE Product Line:

- VRXPERIENCE Driving Simulator powered by SCANeR
- VRXPERIENCE Sensors
- VRXPERIENCE Headlamp
- VRXPERIENCE HMI
- VRXPERIENCE Sound
- VRXPERIENCE Perceived Quality

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