



Studio 2000x

Automotive design is a long process that starts with a two-dimensional sketch; it can take as long as two years for that sketch to become a vehicle ready for production.

A little-known step in this complex process involves animations. Animations offer the opportunity to see the new vehicle in its natural habitat, so to speak. An animation also can dynamically bring to life the differences between the current version and the next-generation product.

In a small, secret room in the Ford Product Development Center, a team of approximately 10 animators work on computers with three screens each. This is Studio 2000x, the Ford internal animation facility that creates ultra-high-definition productions for a wide range of uses.

Think of it as a trailer into the future – a glimpse of an exciting and dramatic coming attraction.



Studio 2000x

Videos created by Studio 2000x convey the essence of upcoming Ford products before a prototype is ever built. The artistic vignettes display vehicle shapes and forms, and layer them against real-life backgrounds. This adds emotion to early designer sketches and incredible definition to more advanced renderings.

Like the movie industry

Creating the animations requires a long list of ingredients, including renderings and scans. These ingredients then must be “seasoned” correctly. Images are created in high definition. Shot angles – some of which are not possible in real life but can be replicated – are selected, and backgrounds created to see how the vehicle looks in different contexts. This helps to assess proportions and to evaluate visual changes that would not be as evident without the reference points.

Did you know?

Just as with full-length motion pictures, music is a key part of these animations to accurately convey the character of the vehicle.

Selling a vision

Studio 2000x renders images in ultra-high-definition, known as 4K, which is four times clearer than commercial high-definition imaging. 4K helps Studio 2000x sell a vision, enabling others in the company to see what the Ford design team envisions.

On with the show

The audience, made up of key executives, uses these animations to make better-informed decisions for the customer. Changes are implemented before a prototype is even built, thus improving efficiency. Even more importantly, customer satisfaction can ultimately be improved by making changes early in the process.



Virtual Reality Lab

Years before a Ford Motor Company vehicle shines on the stage at a car show or arrives in dealer showrooms, Ford researchers are hard at work behind the scenes.

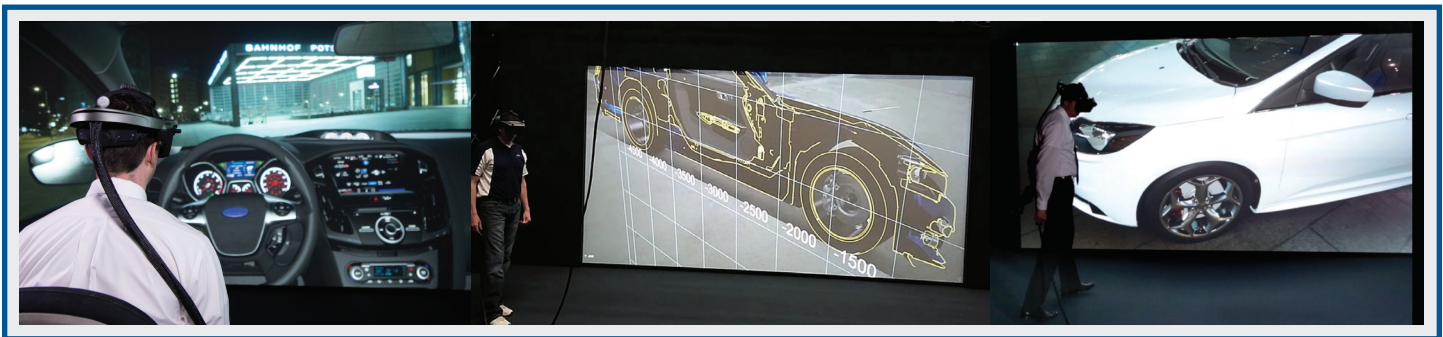
Early evaluations in the virtual world contribute to the high-quality materials, superior craftsmanship and refined finish that characterize Ford vehicles at production. These evaluations also speed up production timing while reducing costs.

In the Ford immersive Vehicle Environment lab – a state-of-the-art facility that allows users to fully experience a vehicle via virtual reality long before a physical prototype can be built – designers and engineers analyze how concepts come together. The lab enables engineers and designers to communicate in a common environment and apply their unique knowledge of different disciplines to produce higher-quality vehicles.

The lab envelops a person in a full-size, photo-realistic environment, enabling real-time product evaluations to take place before physical builds. The Ford immersive Vehicle Environment can evaluate crafted quality for margins, gaps and fit-and-finish. It is also used in aesthetics and design, vehicle packaging, ergonomics and visibility.

The facility offers a multitude of significant capabilities that have eliminated costly physical aids. The Ford immersive Vehicle Environment lab goes beyond digital renderings. This concentrated technology provides:

- A true sense of the physical world, increasing the ability to evaluate complex engineering issues concurrently with aesthetic design characteristics
- Manufacturing process capability – the lab can represent a complete vehicle, including every powertrain configuration, in one virtual environment



Enhancing craftsmanship

The virtual space within the Ford immersive Vehicle Environment lab is a large motion-capture area, where engineers and designers can fully interact with the entire interior and exterior of a vehicle. Ford team members are able to walk around a full-scale virtual vehicle, then get inside and quickly evaluate each seating position. This environment is used to develop and ensure quality and to review designs for potential manufacturing-related issues.

What gets evaluated

Within the virtual world, just about anything a customer can do, see or touch in a car can be replicated. In terms of visibility – forward, upward, rearward (over both shoulders), sideward – everything can be assessed. This includes vision through the rearview and sideview mirrors and sunroof, along with readability and potential obstructions in the instrument panel. Location, reach, roominess, comfort and other ergonomic factors also can be evaluated.

Realism is key

A beautiful display that draws attention is an underlying principle for these involved evaluations. This environment needs to show gradation of color, contrast, shadow, texture, light, reflection and many other attributes to simulate the real world. Further, physical touch points must be engaging as well.

Immersive engineering

Immersive engineering brings together multiple disciplines in product development, unlike any other engineering or design approach. The Ford immersive Vehicle Environment lab enables engineering and design teams to make educated decisions, which helps the company satisfy customer expectations.