

SUCCESS STORY | HAKUHODO

SUPERCHARGING MATERIAL WORKFLOWS WITH NVIDIA QUADRO VCA

Combining NVIDIA® Quadro® VCA with MDL and physically-based Iray® rendering delivers photoreal results for HakuHodo.



Replacing manual and photo-based textures with measured materials and extreme rendering performance accelerates creativity and generates award-winning results.

AT A GLANCE

CUSTOMER PROFILE

Company: Hakuhodo

Industry: Communications and advertising

Location: Headquarters in Tokyo, Japan

Size: Over 3,200 employees and contractors

SUMMARY

- > Award-winning digital creative agency
- > Seeking to accurately reproduce materials to generate photoreal images for marketing collateral
- > Implemented NVIDIA QUADRO VCA with MDL and Iray rendering
- > Physically based rendering of measured materials generates photoreal renderings faster than ever before

Hakuhodo DY Media Partners, Inc. was founded in 1895 by Hironaro Seki as an advertising space broker and wholesale distributor of educational magazines. The company became part of the Hakuhodo DY Holdings in 2003 as part of a series of mergers. Today, Hakuhodo employs over 3,200 employees and contractors across dozens of offices located in Europe, southern Asia, Australia, and the United States.

CHALLENGE

The Visual Creative Studio Production Team at Hakuhodo specializes in using 3D computer graphics to produce still images for catalogs, websites, and other media for clients that include automobile and other industrial manufacturers. These images are often produced to support marketing efforts that commence before the products are released.

“The models themselves are very accurate because we receive CAD data from our client,” explained Keiji Shirasawa, CG Producer at Hakuhodo. “However, the textures are a different story. Little things like fine wrinkles on leather or delicate patterns on plastic or wood trim pieces are very important to our clients because they add a sense of luxury to the final product. They also help reduce glare and conceal small imperfections. Paint also plays a crucial role in how customers perceive the product.”

CGI makes it easy to create images from many different camera angles using almost any combination of lighting, backgrounds, and other environmental components; however, matching the exact look of the finished product poses significant challenges. Manually creating materials requires many hours of painstaking adjustments. Using photographs to create texture, bump, displacement, and other maps can help, but any uneven lighting and/or perspective in those photographs can make accurate matches almost impossible.

For example, the brightly lit areas of a photograph make it difficult to ascertain the depth of surface irregularities. Thus, the bump and displacement maps created from that photograph cannot accurately recreate the surface textures.



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Keiji Shirasawa
CG Producer
Hakuhodo

4 REASONS FOR NVIDIA QUADRO VCA

- 1 Accelerate design and VFX workflows using NVIDIA Iray or Chaos V-Ray RT and deliver photograph-quality images faster than ever before.
- 2 A network attached appliance allowing every 3D artist in the company to have access to multi-GPU rendering
- 3 Enjoy the high quality interactive rendering performance of a multi-GPU workstation from a lightweight mobile computer.
- 4 Designed for datacenters, VCA offers flexibility and reliability.

SOLUTION

From his many years of CGI experience, Shirasawa knew that physically based rendering using accurate measurements was the answer to these challenges. Hakuhodo acquired an NVIDIA Visual Computing Appliance (VCA) in March of 2015. Each VCA includes eight high-end GPUs with a total of 24,576 total CUDA cores. Combining the VCA with the NVIDIA Material Definition Language (MDL) and NVIDIA® Iray® physically-based rendering yields both extreme performance and photoreal results. The team immediately went to work gathering accurate material measurements of surface textures.

“We conducted bidirectional reflectance distribution function (BRDF) measurements to determine the luster of synthetic resin, and we used a microscope to measure the depth of the surface irregularities,” said Shirasawa. “Measurements could be taken for areas up to approximately 10cm by 20cm. This could cause tiling when applied to large areas, but an algorithm automatically generates the approximate surface irregularity pattern. We also developed in-house software to convert our measurements into MDL and almost immediately saw results that were far more realistic than our previous efforts. Clients who used to complain about renderings looking like computer graphics started asking if the new images were photographs.”

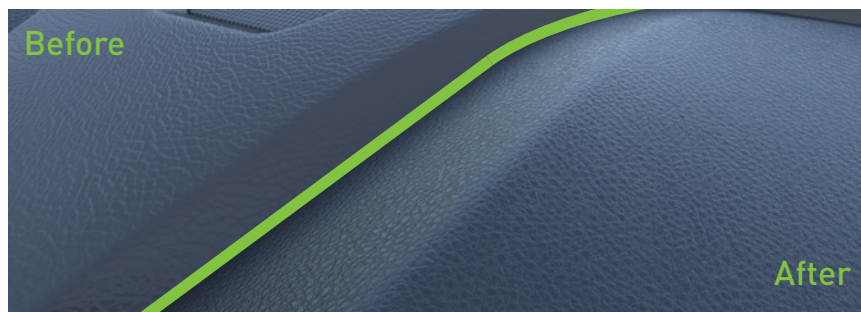
One of the biggest advantages of using the VCA with MDL and Iray is that we can iterate different combinations of lighting and camera angles very rapidly at high resolution and with high accuracy, allowing us to focus more on creation and meeting our clients' needs instead of wrestling with an inefficient workflow.

Keiji Shirasawa
CG Producer
Hakuhodo

RESULTS

Shirasawa's team currently has seven or eight artists who are each working on different projects for different clients. These artists are generalists, because the work entails working on still images under short deadlines. The pre-VCA workflow used data provided by Maya and rendered using V-Ray. The VCA produces images using either V-Ray RT or Iray as needed for individual projects, which allows the team to continue leveraging their accumulated data and expertise.

"People working on urgent projects and people who need to render images with large quantities of data receive priority for using the VCA with Iray," Shirasawa continued. "One of the biggest advantages of using the VCA with MDL and Iray is that we can iterate different combinations of lighting and camera angles very rapidly at high resolution and with high accuracy, allowing us to focus more on creation and meeting our clients' needs instead of wrestling with an inefficient workflow."



The image above provides a before-and-after example. The textures in the left-hand portion of the enlarged view were created from photographs, while the ones on the right were created from accurate measurements.

To learn more about NVIDIA DesignWorks and Iray, visit:
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