Right Hemisphere® Product Graphics Management™: Practical and Powerful Product CGI for Sales and Marketing

Executive Summary

Rising competition in the automotive industry has increased cost-cutting pressure on the major automakers. Some costs are more difficult to trim than others. The labor rates and healthcare costs in the U.S. are much higher than elsewhere, and outsourced manufacturing has been restricted by labor contracts. These challenges have generated interest for the potential sales and marketing savings due to computer-generated imaging (CGI) techniques. CGI can lower the cost of sales and marketing and help boost sales by leveraging existing CAD data assets.

The premier Product Graphics Management (PGM) software vendor, Right Hemisphere, has partnered with some of the leading players in the CGI automotive field. Together with advertising agencies, CGI vendors, and automakers, Right Hemisphere has pioneered cost saving technologies and methods. Using Right Hemisphere's PGM software, photoreal images can be generated by repurposing existing CAD assets. Fewer prototypes and photo shoots (and therefore less travel) are required for the product launch cycles, and automakers gain product artwork that can be shared and leveraged among cross-functional project teams. CGI artwork can also be made available in a variety of emerging media including digital video, interactive product configurators, and other formats suitable for personal platforms such as i-Pods and cell phones.

This paper describes where traditional photography falls short, where and how CGI saves money, first-generation CGI solutions and their limits, integrated CGI and PGM (second-generation solutions), and the outlook for going beyond CGI in the future.

The use of Product Graphics Management software and product CGI solutions yields several benefits for automakers and ad agencies:



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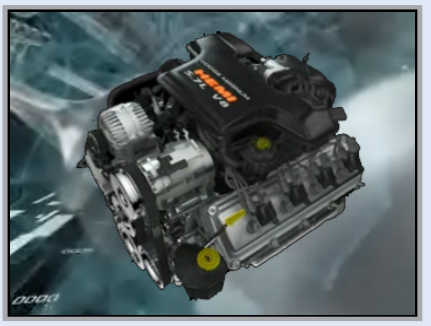

© Produced by: Armstrong White.

Armstrong-White created this powerful advertising video for DaimlerChrysler leveraging Right Hemisphere's Deep Server. Simply click on the lower image to play the video.

- Costly product prototypes can be eliminated for sales and marketing photo shoots.
- The reduction in travel, vehicle transportation, and preparation for photo shoots can decrease costs by 30% and make it possible to create and deploy campaigns quickly.
- More impactful content can be created and leveraged for numerous advertising, sales, and marketing projects.
- Sales and marketing campaigns can be successfully targeted by reaching more people through a variety of interactive digital media formats (e.g., photoreal still images and animations, interactive product configurators) and channels (e.g., TV, Web, iPods, PDAs, cell phones, etc.).
- Introduction teams gain the freedom to move away from model-year production and release schedules, and respond more rapidly to market fluctuations.
- Compelling imagery can be developed for effective focus group studies relating to future vehicles.
- Consumer feedback (about accessories, consumer packages) can be gathered earlier, before bending any metal.

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Background: Traditional Photography and Video

Location-based photography and video adds significant costs to new car launches and marketing campaigns. Special prototype vehicles, costing several hundred thousand dollars each, must be produced before the shoots can be carried out. The prototypes are shipped at great expense to the international sites desired by the creative teams. High demand among ad agencies, dealers, and other press relations groups makes it challenging to schedule and allocate prototype shipments. A big three automaker can require as many as 100 units for photo shoots each year.

The labor costs associated with photo shoots quickly add up as well. Agency personnel must travel to each location, and a single shoot can extend to more than a week of time for the entire crew. For example, a leading Detroit design agency reported that the creation of photo realistic automotive renderings for customer brochures saved more than $10 million.

The CGI Alternative

Television ads have taken advantage of CGI for the last decade. As PCs have evolved to support higher image quality, CGI content has made its way into ads targeted for print or web publishing channels. Automakers are driving the demand for CGI product photography and video. Opportunities to drastically reduce the photo fleets have many manufacturers demanding that agencies adapt technology and workflows to accommodate rendered artwork. In some cases, automakers are refusing to provide prototypes or to ship the prototypes to on-site locations.

Another factor driving demand for CGI content relates to new advertising channels. Hand-held devices such as PDAs and i-Pods present marketing teams with new ad distribution opportunities, but require media formats that are not easily accommodated with traditional photography. The product CGI solutions lend themselves to a variety of new advertising possibilities.

"CGI is being recognized as an alternative to traditional photo shoots in terms of reducing time and cost. We're delivering to our clients and their ad agencies powerful product imagery for print, broadcast, and the Web. Right Hemisphere's Deep Server software saves us tremendous time and helps us deliver high-quality CGI for any marketing medium at a lower cost".

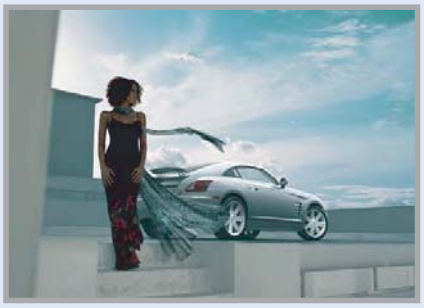
Chuck White,
President Armstrong-White

CGI Cost Savings

The use of CGI content reduces costs in several areas:

- Elimination of some or all physical prototypes.
- Reduction of traditional photography costs (reduced staff required for shoots involving backgrounds only; reduced travel costs; no car prep or shipping costs).
- Lower photo re-license fees (licensing background photos only; better negotiating power since manufacturers are no longer dependent on seasonal photo shoots).

The digital workflow introduces additional costs for rendering CGI content and editing models/backgrounds that have been combined digitally. This slight increase in cost is far outweighed by the previously listed savings, and the overall decrease in cost can be conservatively estimated to be at least 30%, and up to as much as 65% when employing other efficiencies such as expanding a product CGI project to include multiple models or campaigns.



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Early Adopters

Several Japanese automakers have leveraged CGI content for various campaigns. Toyota has announced that they are cutting their prototype fleet. The company's Avalon ads, created by Saatchi & Saatchi, use CGI models for the cars. Some U.S. automakers are also employing CGI techniques. One major U.S. automotive manufacturer has deployed a 69-vehicle digital garage showing trim options. The company created the entire virtual fleet in only two months, and subsequently expanded the use of digital models for sales and marketing, technical publications, training, and other departments.

Industry press coverage includes frequent predictions for a continued rapid increase in use of CGI in the future. Another indicator of strong acceptance for CGI is the high increased demand among CGI companies such as Armstrong-White in Bloomfield Hills, Michigan.

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First-Generation CGI Solutions and Workflows

The first product CGI solutions relied on scanning technology to shorten the model creation process. Once the product was scanned, highly skilled engineers were required to work with the digital data file. Textures would be built from material supplier data, and lighting adjusted to match the setting, and the models would be rendered to blend into the various settings.

Background Alternatives

Originally, 2D photographs were used for the backgrounds. As demand for CGI techniques has grown, a combination of digital panoramic cameras and PC software has been introduced. The resulting high-dynamic range imagery (HDRI) techniques allow the creation of very large image files that can be used to create a broad range of backgrounds. The renderer can input information about camera locations and light sources while adjusting the scene. These files can be created to reflect different seasons, and allow models to be virtually placed in realistically impossible settings such as in museums or on the surface of Mars. HDRI files can be used for multiple media (print, interactive, broadcast), and the backgrounds have longevity beyond a particular vehicle model.

Challenges Arising With First-Generation Solutions

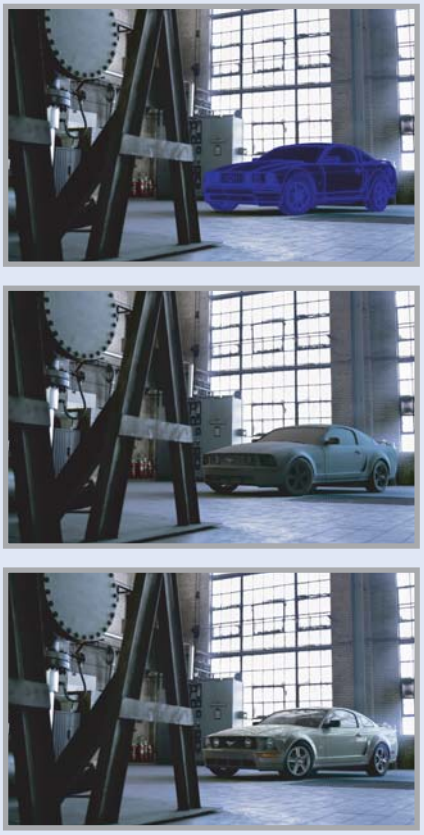
The emergence of CGI created drastic changes in process for the creative supply base. A lack of data file standards and best practices complicated companies' ability to leverage assets. Many companies didn't know how to extract usable lightweight data files from complex CAD models. Since early CAD model files were proprietary, and tools did not exist for automating file conversions or editing CAD image files, the first projects were labor intensive and many companies perceived that the cost of building virtual garages was too high. To further complicate the workflow, budgets were difficult to reconcile. While engineering might benefit from cost savings associated with a reduction in prototypes, marketing had no way to apply these savings towards the additional costs they incurred for creating virtual prototypes. Other challenges included:

- Access to CGI data was difficult for marketing and sales (first CAD model files were highly proprietary, and lacked intuitive, simple viewers for integrating product CGI with artwork design and storyboard ideas).
- Drastic changes in the creative process created obstacles for many creative teams. When the process centered around on-location photo shoots, teams were used to dealing with physical conditions for lighting and the scene content. With CGI, some teams struggled to adapt to interactive, online variables for controlling the image and scenes.
- There is a limited number of CGI experts familiar with the automotive industry.

The Right Hemisphere Contribution to the CGI Process

The workflow surrounding CGI content must take into account the creation of the digital model. This step would introduce a major cost if not for the capabilities of the Right Hemisphere software. Right Hemisphere Deep Server automates the creation of lightweight digital models by extracting only the image-relevant information from existing CAD files. Right Hemisphere software also simplifies viewing and integrating product CGI. Intuitive, interactive tools simplify the additions of realistic material textures, adjustments for lighting sources, shadows, and reflections, and a variety of other image editing functions that contribute to a superior end result that can be merged into artwork designs and storyboards.

By leveraging existing CAD assets, automakers and ad agencies can significantly shorten the time required and costs of creating digital product models. Tedious and technically challenging manual CAD conversions or data extractions are avoided and multiple teams within marketing, sales, and service organizations can share and manipulate the resulting lightweight files. This extends the usability of CGI content beyond initial marketing campaigns, and increases the return on investment for content creation over the life of the product.



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Right Hemisphere Deep Server automates the creation of lightweight digital models, in the CGI artists desired graphical format. The CGI artist can then use their preferred authoring tools to add materials, textures, and lighting to create powerful imagery.

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Current Second-Generation Solutions: Combining PGM and CGI

The introduction of PGM software into the CGI workflow overcomes the challenges associated with first-generation solutions. Automakers can take advantage of Right Hemisphere software to take control of their image assets and protect confidentiality by carefully defining what data gets released to whom. Engineering is often reluctant to share CAD data outside their department. Right Hemisphere Deep Server can automatically extract relevant data for product CGI from CAD files, and convert the product data to an optimized graphical format that protects the intellectual property that is of concern to the company. The lightweight graphical content can then be safely shared among downstream users in marketing, sales, and service.



Creating and Managing CGI Files

Right Hemisphere Deep Server can automatically create lightweight product models from CAD data that are optimized for high-quality photoreal rendering. The output can be saved in over 80 formats that reflect the most popular digital content creation (DCC) and rendering tools (e.g., Maya, 3ds max, Softimage, etc.). Users can choose the formats most suitable for viewing, editing, content authoring, and publishing without trying to force-fit one format for all tasks and tools.

Right Hemisphere Deep Server manages 2D and 3D product graphics in a unified repository that is easy to access, yet secure. This centralized library for lightweight graphical models and derivative graphics (technical illustrations, photoreal images, and interactive scenes) maximizes the sharing of already created content. It allows subject-matter experts, illustrators, graphics designers, and others to author and publish lightweight digital content to a variety of media channels (e.g., print, PDF, Web, iPods, cell phones, PDAs, dealer kiosks, etc.). Content authors are free to use whatever tools and formats work best while eliminating the need for engineering involvement. Right Hemisphere Deep Server can automatically update any product-related graphics whenever the source CAD data changes. This enables efficient reuse of product images and means there is no penalty for starting early in the design phase.

Introducing Workflow Efficiencies

With a centralized product graphics repository, the flow of graphical content can be streamlined throughout the entire company and best practices evolved to efficiently manage and deliver CGI content. For example, advertising agencies along with their clients and partners first put together a storyboard or conceptual scene for evaluation. Once the concept and storyboard are approved, the final production begins. Right Hemisphere Deep Server provides easy and secure access to a library of product graphics, materials, textures, and other effects enabling CGI artists to quickly assemble and build photoreal digital content using their DCC tools of choice.

Right Hemisphere speeds up and facilitates the collaborative evaluation process by automating numerous steps in the photoreal graphic authoring and rendering process. Tools for applying lighting effects, reflections, shading, materials and textures to surfaces automate otherwise very time consuming manual processes. Consider the visual creation of leather interiors, metallic exteriors, and rubber tires on a vehicle, or introducing reflections from a complex scene onto metallic and chrome surfaces. These steps can take more than half the total time to author and render a scene. With Right Hemisphere software, the scene can be automatically rendered and published in PDF for review.

Removing Obstacles to the Creative Process

The Right Hemisphere Adobe Design Collaboration Solution leverages existing CAD and PDM assets to efficiently deliver 2D and 3D graphics for product CGI into intelligent 3D PDF documents. Sales and Marketing creative design teams can now use these documents and other Adobe solutions to collaborate flexibly and efficiently throughout the creative process. The solution provides the following capabilities:

- Easily publish product CGI into template-based PDF documents. These PDF documents can be used for conceptual and storyboard design, review and approval workflows, all the way through to final production of marketing communications.

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- Create intelligent 3D PDF documents either manually using Adobe Acrobat 3D, or automatically using Right Hemisphere Deep Server and the PDF Publishing Module.
- At each step in the creative process, the intelligent 3D PDF documents can be readily viewed in Adobe Reader eliminating the need for costly propietary viewing software.
- Creative design feedback is accelerated using Adobe Acrobat 3D to comment, markup, and track review and approvals.
- Sensitive information is protected through access control and digital signatures.

Right Hemisphere's PDF Publishing Module enables you to automatically publish lightweight 3D graphics for product CGI into PDF documents. Creating interactive 3D objects in PDF with materials, textures, lighting, and animation is simple using out-of-the-box PDF templates. Custom templates for unique layouts and interactive control are easily created using Adobe Designer. Right Hemisphere's Deep Server automatically creates and updates these interactive 3D PDF documents when dealing with large volumes of 3D CAD models that continuously change.

Current Status for Product CGI Solutions

CGI remains a leading-edge technology within the automotive industry, with only a few agencies and service providers delivering proven solutions. Right Hemisphere, as a provider of enabling technology, has teamed up with other companies to deliver best practice solutions and capabilities to the industry. Armstrong-White and Saddington & Baynes both provide product CGI content, and CGI Backgrounds offers HDRI background content. Already, solutions from these companies are supporting the delivery of numerous CGI campaigns not just within automotive but in other consumer product industries.

PGM: Beyond CGI

Right Hemisphere solutions have been recognized for streamlining business processes across the enterprise and increasing returns on CAD and PLM investments that extend beyond CGI product applications. In particular, Right Hemisphere customers are applying the company's technology to gain cost savings in the production of technical publications, interactive training, manufacturing documentation, part catalogs, supplier collaboration, and other graphical content for product support offerings.

For more information about Right Hemisphere solutions, please visit: www.righthemisphere.com.

"Protection of ideas, concepts and copyright is a challenge in the creative collaborative environment. Adobe's Intelligent Document platform provides persistent content control with policies and security so that the right information is delivered to the right people at the right time for the right use. Adobe PDF also represents the richest content container for creative CGI. Right Hemisphere's Deep Server manages 2D and 3D products graphics and automatically delivers the right graphic, at the right time in the right PDF document".

Anton Commissaris
Vice President, Business Development
Right Hemisphere Inc.



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Consumers can now quickly visualize aftermarket accessories with a variety of car colors and trim level configurations within a 3D PDF document.

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