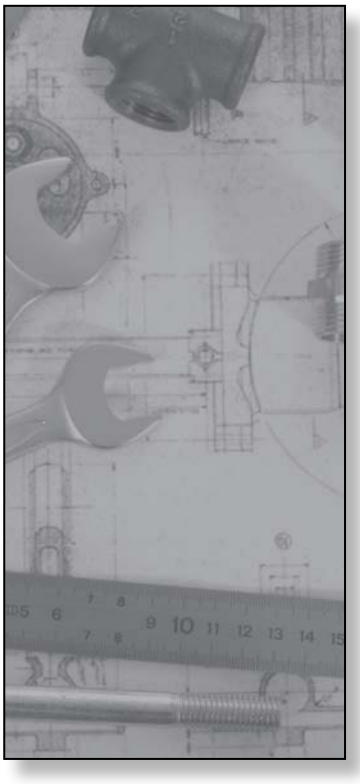
Communicating Technical Product Information Across the Enterprise with 3DVIA Composer



EXECUTIVE SUMMARY

Historically, manufacturers have simply had to accept the high costs and delays associated with creating product documentation, maintenance instructions, training materials, and product visualizations. Today however, product manufacturers are growing their competitive advantage, cutting costs, and saving time with the next generation of integrated software tools. 3DVIA Composer, a new class of 3D authoring software, is an industry leading software solution designed to make these gains possible. With 3DVIA Composer, organizations are able to leverage existing product design data for use in technical product communications across the enterprise. Working with native 3D design files, 3DVIA Composer enables work on product deliverables to be initiated sooner and completed faster, resulting in lower costs and improved time to market.

3dvia composer

INTRODUCTION

Over the past decade, advances in 3D computer-aided design (CAD) technology have given designers and engineers increasingly powerful tools for creating new and innovative products. These CAD tools help engineers to not only create and visualize new designs, but also shorten design cycles, reduce development costs, and improve product quality. Until recently, the main benefits associated with implementing 3D CAD technologies have been limited to engineering tasks that occur before a product goes out for production. This whitepaper describes how 3DVIA Composer, a desktop software application from Dassault Systèmes, can provide organizations the tools needed to break with convention and begin utilizing their 3D CAD data throughout a wide variety of business-impacting technical product communications.

In a typical manufacturing workflow, requests for CAD-related images are numerous. Meeting these requests requires costly engineering time and can delay the arrival of deliverables required to bring products to market. Further compounding this problem is the fact that product communications each serve unique purposes, and graphics used to support them must be developed individually to be effective. This process alone is time consuming, but becomes an ever greater challenge whenever designs change and supporting product communications must be remade.

As manufacturers strive to find ways to become leaner and more competitive in global markets, repurposing CAD data to satisfy product-support requirements holds excellent potential for improving technical product communications. The potential benefits are numerous and can have a significant impact on the bottom line. Engineers can be freed from the taxing responsibility of generating product screen captures or exploded views. Product documentation can be updated automatically with the latest design information. And product images can be viewed inside immersive 3D environments to more clearly explain complex details.

Creating product documentation is often a separate step that takes place after product design, introducing unnecessary delays and the potential for rework. 3DVIA Composer allows product documentation to be developed concurrently with product design to accelerate time to market and increase competitiveness.

3DVIA Composer is an industry-leading software solution for enabling these gains. An easy-to-use desktop content authoring platform, 3DVIA Composer provides non-engineers with the ability to access a product's design data and then create annotations, illustrations, and animations to more clearly communicate product information. This material can then be deployed in a variety of formats including product documentation, manufacturing and assembly instructions, maintenance and repair information, marketing visualizations, and electronic training manuals. The result is an entirely new class of product communication that speaks to customers and partners in the universal language of 3D.

CREATING BETTER PRODUCT DOCUMENTATION

The core purpose of product documentation is to clearly communicate information to customers. Accordingly, the better the documentation a manufacturer provides, the better the experience a customer will have. Additional benefits follow as customers transfer these positive experiences into increased brand loyalty. With this in mind, the production of effective product imagery and documentation becomes an important element in building customer satisfaction.

The problem facing documentation specialists is that documentation workflows are highly inefficient, and finished deliverables are often ineffective in describing complex product details. Central to this inefficiency is the fact that product images required for documentation can only be generated by engineers. Not only does this process take time away from higher value engineering activity, but the resulting low visual quality of the images may be ineffective in communicating technical product details.

With 3DVIA Composer, product documentation professionals can produce more dynamic and engaging documentation that can be delivered in 2D and 3D formats. Unlike conventional workflows, 3DVIA Composer does not require engineers to provide exploded product views, vector line art images, or annotations to support documentation creation. All of these elements can be produced directly in 3DVIA Composer using the original product design data. And when product designs change, updated images can be produced automatically to minimize the need for rework.

3DVIA Composer can also deliver 3D animations to support user manuals and product help systems. These animations can become a central element for more clearly illustrating how to use a product, helping to reduce reliance on text-based instructions. As a result, customers are not required to read overly technical and potentially confusing text to review a product's use or capabilities.

Brayton Energy, a leading developer of innovative energy applications, adopted 3DVIA Composer as a way to improve the quality of their product documentation. "Because our development process is very fluid, with multiple iterations and design changes, we need a documentation approach that does not slow us down," stated Antoine Corbeil, President of Brayton Energy Canada. "With 3DVIA Composer software, we can document our products in a professional manner directly from the final CAD model; which allows us to reduce the time it takes to document common designs by about 25 percent and large, complex assemblies by 35 to 50 percent. If we make design changes, we do not have to do all the work again. Instead we can simply update the documentation with the revised model."

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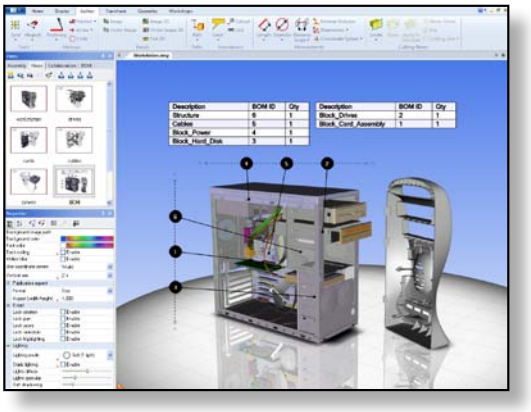

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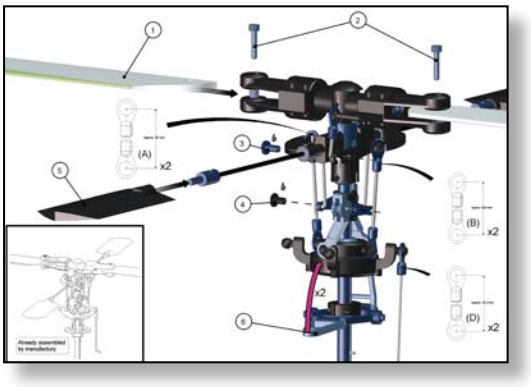
AUTOMATING MANUFACTURING AND ASSEMBLY INSTRUCTIONS

Manufacturers traditionally rely on the use of 2D drawings to instruct personnel on product assembly. Often these documents are complex and difficult to understand, relying on the use of highly technical text to communicate important production details to an audience on the shop floor. Unanticipated language and literacy barriers between design and manufacturing teams can increase the risk of production errors and the high costs associated with them. Time can also be wasted trying to understand procedural instructions, or in verifying required components. This leads to confusion, errors, and delays.

3DVIA Composer helps manufacturers create non-textual, 3D manufacturing and assembly work instructions that are more universally understood. By communicating visually, technical details are better understood and language barriers more effectively overcome.

Beckman Coulter, a leading biomedical equipment manufacturer, has achieved notable success deploying 3DVIA Composer to develop assembly instructions. The company developed a series of paperless assembly instructions and delivered them directly to shop floor workers using a dynamic web template. Application content is continually updated in real time based on data inputs, and it captures usage data for establishing electronic signoff and quality-assurance metrics. With this solution, Beckman Coulter has been able to show several notable operational gains including:

- 50% reduction in assembly process planning and documentation
- 93% reduction in time to roll out process plan changes
- 22% increase in first-pass yield rates
- Near elimination of shop floor worker assembly training



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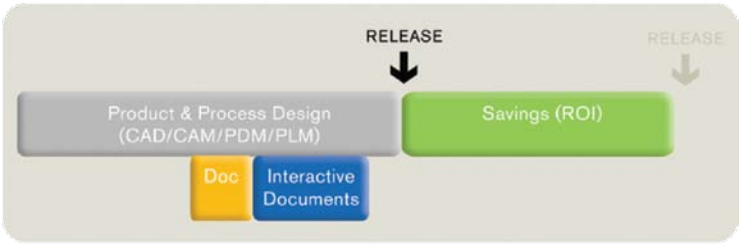
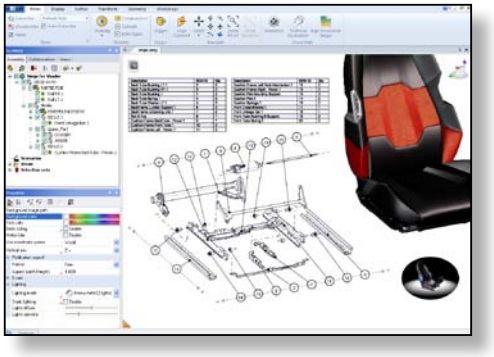


Using 3DVIA Composer, manufacturers can easily repurpose CAD data for use in product communications. The 3DVIA Composer desktop authoring platform enables documentation to be produced up to 30 percent faster than conventional methods.

DELIVERING ACCURATE FIELD MAINTENANCE AND REPAIR INFORMATION

Providing clear and concise instructions to support aftermarket product maintenance and repair is a pivotal element in establishing customer satisfaction. However, as with other technical communication processes, providing comprehensible maintenance and repair manuals places a considerable burden on engineering resources. For example, describing the steps required to disassemble a component, perform a maintenance task, and then reassemble the component, takes an elaborate series of step-by-step graphics created by an engineer. After multiplying this process to include all repair and maintenance instructions required for a product, the amount of engineering time and labor required becomes daunting. Further complicating this task is the need to localize material for use by geographically dispersed field service technicians.



3DVIA Composer overcomes these difficulties by leveraging the universal language of 3D. Combined with 3DVIA Composer content authoring tools, 3D graphics can be transformed into detailed animations that visually describe how to perform maintenance or repair activities with minimal text. By seeing an action take place and not just reading about it, lessons are better absorbed, and localization costs are minimized.

CREATING DYNAMIC MARKETING CONTENT AND WEB-BASED CATALOGS

Considering that manufacturers regularly spend a significant amount of budget creating digital and photographic representations of products, the value that 3DVIA Composer brings to sales and marketing activities is unquestionable. By developing high quality 2D and 3D product visualizations directly from CAD data, the need to create expensive ad hoc product imagery is reduced considerably. 3DVIA Composer is a highly extensible content development platform that produces high-quality online and offline marketing deliverables including product illustrations, animated trade show displays, and interactive web-based content.

For even more dynamic audience engagement, 3DVIA Composer enables 3D sales and marketing applications to be embedded into many industry standard documentation and presentation formats. This allows potential customers to explore products with 3D applications that effectively highlight key product details, operation, and differentiating features. With advanced 2D and 3D rendering functionality and the ability to easily define output resolution, 3DVIA Composer offers users a generational leap from using screenshots to display product capabilities. Because 3DVIA Composer maintains association with design data, production of marketing visualizations can also be initiated before designs have been finalized, helping to bring products to market even faster.

3DMP, a marketing and production organization based in France, has adopted 3DVIA Composer as the medium of choice to produce high quality interactive marketing visualizations. The company's CEO, Jean Marcel Heudier, focuses on providing organizations with high quality 3D product marketing material. "Due to the trend toward product-focused communication," states Heudier, "the demand for solutions to represent realistic 3D representations of products has grown."

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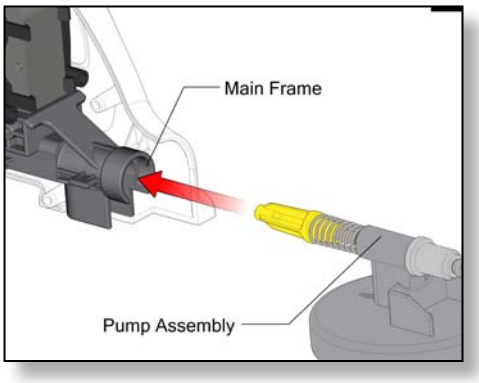
With 3DVIA Composer, 3DMP is addressing these demands and delivering more effective product marketing applications. Being optimized to handle large assemblies, 3DVIA Composer is also helping 3DMP to work faster. “We can work with an entire airplane engine,” says Heudier, “and don’t need to ask the design office to break down the model for us beforehand.” The result for 3DMP is a 90 percent reduction in the time it takes to prepare heavy models for use, which directly translates into additional time that designers can use developing content.

Online parts catalogs can also benefit from 3DVIA Composer. 2D-based assembly illustrations used in parts catalogs are ineffective in accurately displaying assemblies and subassemblies, making it difficult to correctly identify replacement parts. Not only does this create a poor user experience, but it also places manufacturers at risk for high costs associated with the shipping and restocking of incorrectly ordered parts. One solution to overcome this is to task engineers with the responsibility of interfacing with customers for accurate replacement part identification. However, this solution comes with high overhead cost.

By shifting to a 3D-based catalog solution, manufacturers can offer customers a more intuitive way to identify parts. Lightweight 3D models of full assemblies can be easily exploded and drilled down into for greatly enhanced ordering accuracy. And when product designs change, 3DVIA Composer can automatically update the catalog to reflect the most up-to-date view of the product. Using conventional methods, this process could have taken days or even weeks.

European automotive manufacturer PSA Peugeot Citroën uses 3DVIA Composer to develop illustrations for spare parts catalogs. Previously, catalog illustrations were complicated and time consuming to produce. A typical workflow would see 2D vector views produced from the native CAD software, modifications made using technical illustration software, and then final renderings created with graphic design software. By shifting this workflow to 3DVIA Composer, spare parts illustrations are produced more efficiently and the resulting images are higher quality.

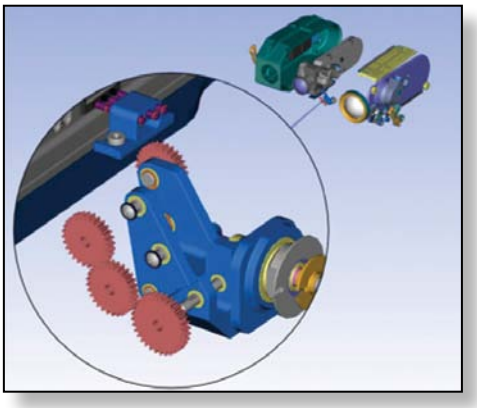
A simple, animated 3D work instruction can convevey manufacturing and assembly instructions more clearly, effectively, and universally than text-based 2D drawings _ and can help manufacturers reduce production errors and lower manufacturing costs.



PUBLISHING INTERACTIVE 3D ELECTRONIC TRAINING MANUALS

Interactive electronic training manuals (IETMs) provide better and more efficient product information for manufacturing customers, employees, and partners. Far superior to paper-based training materials, IETMs offer an environment where procedures are delivered in digital formats. Not only does this allow training information to be accessed faster and easier, it also provides the ability to include a dynamic array of interactive 2D and 3D content that is not accessible with printed materials. By expanding IETMs with rich 3D visualizations, the material retention rate improves considerably when compared to text-based lessons.

3DVIA Composer facilitates more efficient IETM creation workflows. By repurposing product CAD data, 3DVIA Composer eliminates the need to develop custom images or animations to support training requirements. With the ability to embed 3D content, markups, and animations directly into any ActiveX-compatible business application, training content can be authored rapidly and cost effectively. Because 3DVIA Composer offers an advanced API and authors in XML format, material can be intelligently linked with stand-alone or web-based training systems to deploy content dynamically across the globe.



With 3DVIA Composer, manufacturers can replace text-based field-service instructions with graphics and video animations, thereby improving service operations, minimizing the need for language translations, reducing training needs, and decreasing operational costs.

CONCLUSION

Product manufacturing is a constantly evolving and highly competitive environment. To be successful, organizations must consistently strive to identify new ways to save time and cut costs. With limited resources, manufacturers must continually explore new ways to improve their advantage in the market. One of the most promising solutions being adopted is sharing 3D product design data outside of the engineering department. Sharing 3D CAD assets holds the potential for achieving considerable productivity and quality improvements that manufacturers need to stay on top of the competition.

3DVIA Composer allows users to quickly and cost-effectively create 2D and 3D product deliverables directly from existing product design data. By illustrating products in 3D, customers are provided with clear, easily understandable communications that improve their ability to understand and retain product information. Straightforward to learn and intuitive to use, 3DVIA Composer helps maximize productivity while eliminating the need for rework as designs change.

CALL FOR ACTION

To see online demonstrations of how you can cut costs and improve product communications, try out a 3D authoring software package yourself, or discuss your documentation requirements with your local representative, visit www.3dviacomposer.com

DASSAULT SYSTEMES