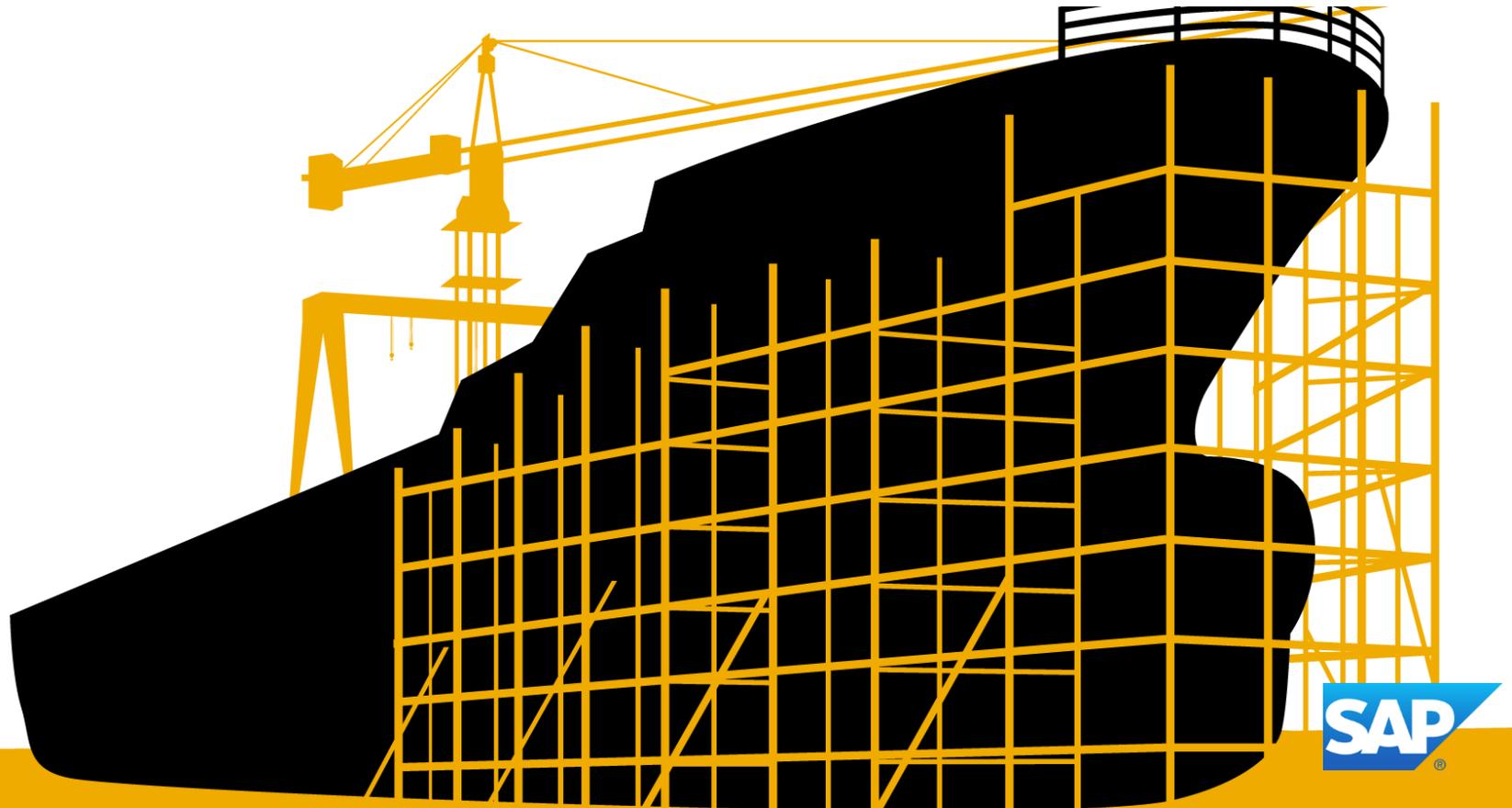


3D Business Visualization



Optimize with 3D Visual Content

Leveraging Visual Information

Delivering 3D to Everyone

Optimize with 3D Content

Business information and processes are increasingly complex – and can't be explained fully with words and numbers. Integrated 3D visual information provides a more complete view of data and increases the understanding of complex processes.

Too often, 3D visual information about products, processes, and assets is sequestered in engineering and not available to others who need it to drive downstream processes.

At the same time, companies tend to rely on the written word and static imagery to describe products and document complex processes. But these documents become outdated very quickly. Plus, they require too much interpretation and lack the clarity needed to ensure proper execution of tasks and processes. For these reasons, relying exclusively on documentation can have huge impacts on the speed of innovation, quality of output, productivity of resources, and overhead costs required to support products and processes.

Whether people are reviewing product designs, collaborating with suppliers, manufacturing and servicing products, or maintaining plants and facilities, traditional documentation can delay time to market, extend training time, and necessitate costly document translations. And reliance on outdated information can lead to poor decisions.

Visual content – animated, 3D images – can provide accurate product and asset views and information to users that simplify complex processes and details and speed comprehension and learning.



Taking 3D Beyond Engineering

Leveraging Visual Information

Delivering 3D to Everyone

Optimize with 3D Content

Reduce complexity, increase productivity, and improve quality with 3D-enriched processes and decision making.

What makes using 3D assets outside engineering so challenging?

First, 3D computer-aided design (CAD) files come in a variety of formats that are very complex and too large for non-engineering users to consume. Furthermore, without CAD expertise and costly application licenses, non-engineers find the content unusable and inaccessible.

With SAP 3D Visual Enterprise applications, CAD files are converted to a neutral, lightweight format that makes them portable and useable without CAD application knowledge.

This enables users across the enterprise to access the information contained in CAD models, as well as related business information, whenever and wherever they are.

Now, companies can use 3D visualizations to improve collaboration, speed, learning, and more. These models can also be used as a visual means to search through massive amounts of related data; this simplifies the navigation through complex data structures and speeds up the search process.

Best-Run Visual Enterprise



Better Decisions and Efficiency with 3D

Leveraging Visual Information

Delivering 3D to Everyone

Optimize with 3D Content

SAP 3D Visual Enterprise applications are being leveraged across many functional areas within industrial machinery and component manufacturers to help simplify complexity and improve processes. Integrated 3D visual content and associated business data can provide stakeholders with a more complete view of information. This combination of data enables better collaboration throughout the business, improves learning and decision making, and optimizes processes. Industrial manufacturers can:

- Turn ideas into viable products faster
- Reduce complexity
- Ensure compliance with standards
- Reduce assembly cycle time and costs
- Increase product revenue
- Decrease design change frequency
- Improve productivity
- Increase quality
- Reduce maintenance and repair costs
- Improve mean time between repair intervals



Providing 3D Content to the Enterprise

Solution Overview

3D Collaboration



3D Collaboration

Share 3D CAD models throughout the value chain without requiring that users have CAD application knowledge.

3D Process Animation



3D Process Animation

Simplify complex processes with 3D-animated, step-by-step procedures.

3D Content Viewing

3D Visual Search and Navigation



3D Content Viewing

Provide visual information to better illustrate and represent actual products or environments.

3D Visual Information Analysis

R & D and Engineering

Why SAP?



3D Visual Search and Navigation

Speed information retrieval time and compress process cycle times with visual browsing through 3D content.



3D Visual Information Analysis

Associate visual information with business information to enable analysis with visual context.



3D Visual Enterprise

Solution Overview

3D Collaboration

3D Process Animation

3D Content Viewing

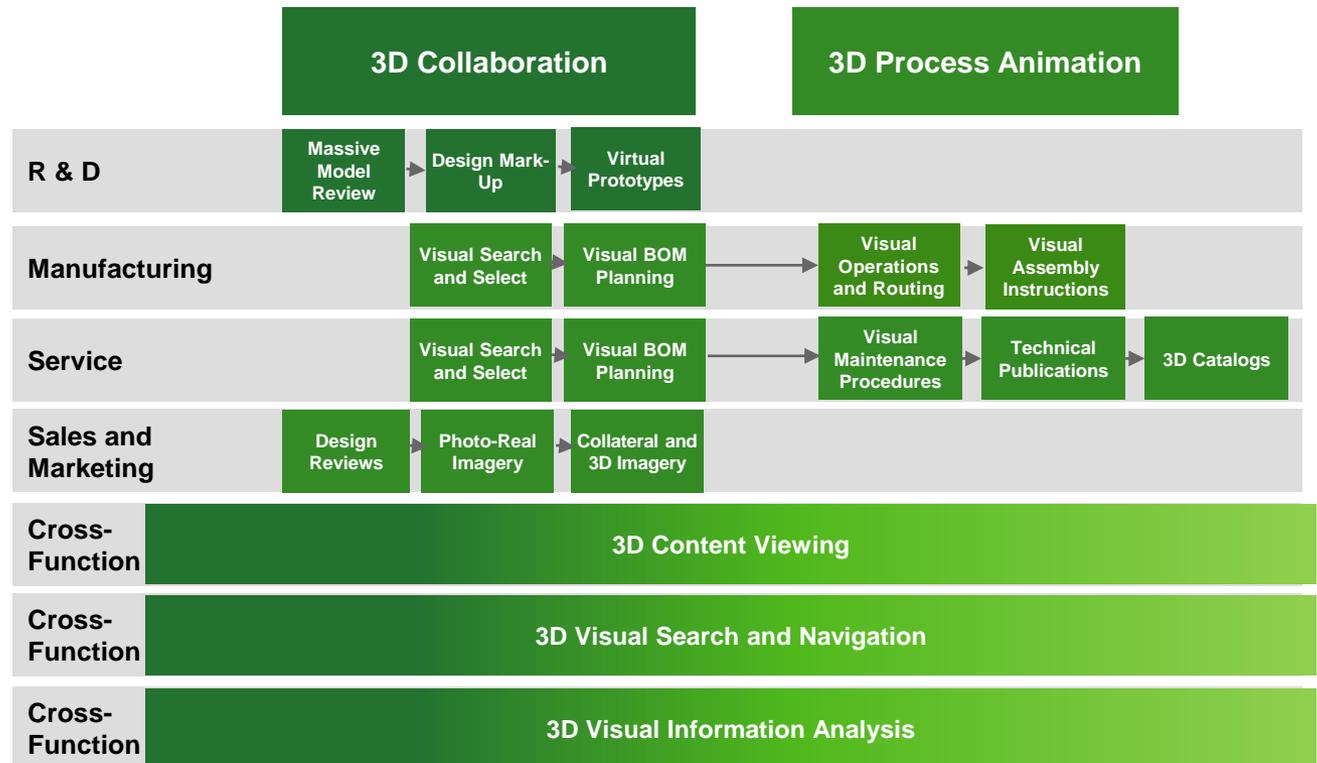
3D Visual Search and Navigation

3D Visual Information Analysis

R & D and Engineering

Why SAP?

3D Visual Enterprise provides visual content to the entire business. When combined with business data it enables better collaboration, improves learning and decision making, and optimizes processes.



3D Visual Enterprise Collaboration

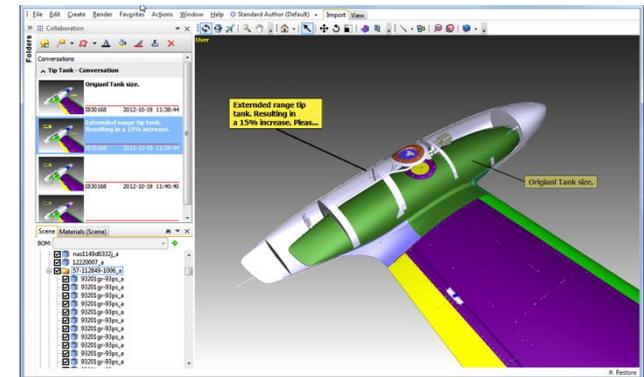
Solution Overview

3D Visual Enterprise Collaboration

Capabilities

Benefits

Easily communicate complex problems and processes by visualizing, collaborating, and securely sharing 3D CAD data within the enterprise and extended supply chain.



The SAP 3D Visual Enterprise applications allow people to view simple or complex 2D and 3D CAD data. Individuals can easily define queries, interrogate complex product structures, view cross sections, markup and measure items for collaboration, and publish graphics throughout the extended enterprise. This ability to visually

communicate, collaborate around, and publish industry-standard 3D deliverables minimizes the need for costly language translations, and streamlines complex business processes. It also improves time to market for manufactured and procured products and services.

Improve Enterprise Collaboration

Solution Overview

3D Visual Enterprise Collaboration

Capabilities

Benefits

SAP software fosters collaboration. For instance, business analysts can create new conversation threads or append existing ones that contain comments and redlines.

It also allows stakeholders to view both 2D and 3D CAD data in an easy-to-use, graphical interface that doesn't require CAD application knowledge.

Custom data queries can also be developed. Simply create or run filters and actions to gain valuable insight into and understanding of complex product structures and metadata.

The software also enables both distance and angular measurements of 2D and 3D graphics. Individuals can also interrogate corporate data by visually navigating product part and assembly structures and viewing associated metadata.



In addition, both 2D and 3D graphics can be easily transformed into industry-standard documents and file formats. Publish them as 2D and 3D PDFs and send to mobile devices. These files can be quickly and easily distributed to suppliers, and to extended enterprises in the cloud or offline.

Improved Decision Making and Communications with 3D Visuals

Solution Overview

3D Visual Enterprise Collaboration

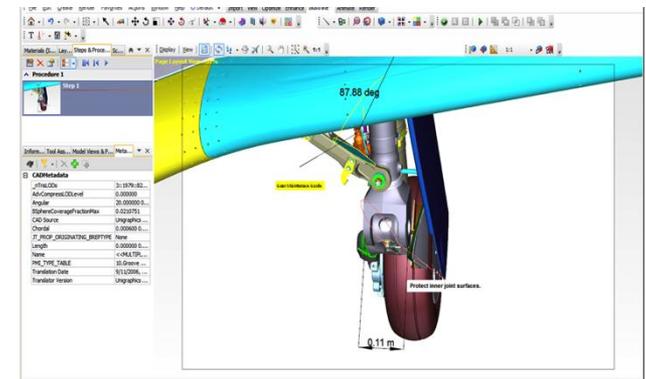
Capabilities

Benefits

Use 3D visual information to foster collaboration. Enable users to share comprehensive, visually enhanced information to drive better communication of ideas and more informed decision making.

Visual information facilitates a more definitive understanding of information than text or 2D illustrations can provide. When people collaborate around information communicated in 3D, they can move images to get a different view of the object. They can zoom in or out to gain a detailed or broad perspective. And they can get a better sense of aesthetics when they look at photo-real 3D imagery.

With this improved view, people can share their findings and take measurements, provide



comments by annotating directly on the model, and save them for reference later.

Plus, given the interactive nature of 3D models, people can navigate to areas of interest with browse, search, and query functions designed for easier use. Elements of 3D models can be isolated and viewed independent of surrounding objects, as well as in conjunction with them so people can assess tolerances and aesthetics.



3D Process Animation

Solution Overview

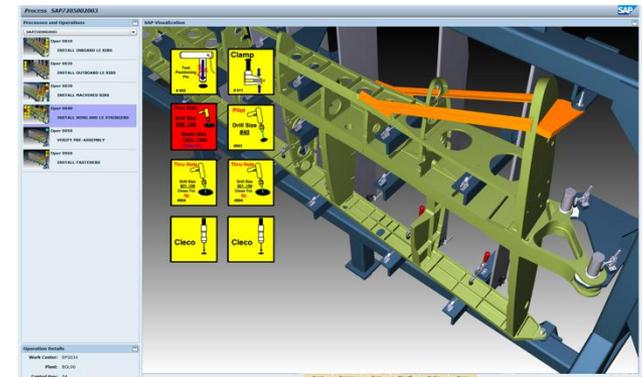
3D Process Animation

Capabilities

Benefits

The 3D process animation in SAP software enables companies to deliver 3D-animated, step-by-step sequences for complex processes and procedures, eliminating the need for paper-based instructions.

Using 3D model content as the basis for animations, industrial manufacturers can create fully illustrated, detailed instructions that show workers how to execute a specific procedure or task. This visually animated approach to depicting procedures simplifies and speeds learning by showing users how to do the work, as there's no need to read text and interpret static illustrations.



When people are learning new tasks, this greatly reduces time to proficiency (especially when users are multilingual, as animation eliminates text, and thus, translation time and complexity). Industrial manufacturers benefit from improved productivity and quality in operations.

Simplify Complexity and Improve Speed

Solution Overview

3D Process Animation

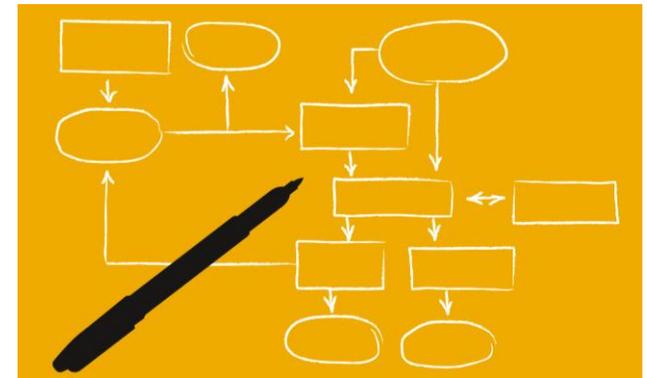
Capabilities

Benefits

With SAP 3D Visual Enterprise applications, stakeholders can share and reuse product data from engineering CAD systems. The software converts visual content for presentation in common desktop documents and back-office applications. People can then integrate the 3D animations into their work processes throughout the functional areas of their business.

For example, step-by-step process and procedure instructions can be outlined using 3D animations. Sequential steps can be defined, tasks can be animated, and procedures can be published in a broad range of formats, including mobile devices. If individuals need to undo a task, they can reverse the sequence.

Steps can be time sequenced and fully controlled for stop, pause, playback, and 3D-presentation angles.



Animations can be supplemented with text, symbols, directional guides, and even tool and material requirements. At any time 3D-animation sequences can be updated to reflect changes.

Driving Time, Cost, and Complexity Out of Business Processes

Solution Overview

3D Process Animation

Capabilities

Benefits

3D animation of processes and procedures can help accelerate learning, simplify complex tasks, ensure clarity in work required, and drive execution consistency and higher work quality.



Many functional areas in an enterprise rely heavily on written documents to describe processes and 2D illustrations to depict steps in processes. But all too often, words alone are unable to effectively define a process – even when combined with 2D illustrations because they require the reader to interpret actions, which creates ambiguity in the process.

Using 3D imagery and animations brings clarity to complex information and processes. Simplifying the steps in a process through use

of 3D visualizations improves understanding and reduces training time. This increased comprehension drives improved productivity and efficiency so workers can complete tasks faster. Equally important, the quality of their work is improved, as workers have a better understanding of what they need to do and how to do it. By eliminating uncertainty about tasks and procedures, 3D visualizations compress time to completion, improve productivity and quality, and lowers overall costs.



3D Content Viewing

Solution Overview

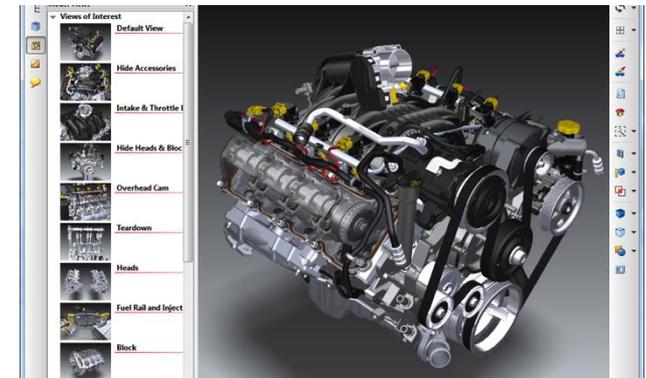
3D Content Viewing

Capabilities

Benefits

Provide visual, interactive 3D information to better illustrate and represent products, processes, and environments. 3D visuals linked to business data change how people use rich graphics in processes.

With SAP Visual Enterprise applications, engineering teams can create interactive 3D visuals with optional, animated step-by-step instructions viewable on both PCs running Windows and iPads. Engineers can also tag 3D elements with metadata appropriate for the needs of a given business task. For example, pricing, availability, cost, and part numbers can be accessed by clicking on parts of a visual 3D model.



More than pretty pictures, interactive 3D visuals linked to business data can be accessed to provide innovative solutions for businesses. Examples include 3D product configurations, assembly instructions, and spare part catalogs.

Visualize 3D Product Data

Solution Overview

3D Content Viewing

Capabilities

Benefits

With SAP Visual Enterprise applications, design teams can convert CAD data to lightweight visualization data that maintains CAD hierarchical structures and metadata – and can be moved and read without native CAD software. The software can also read product markup information for use in manufacturing.

Lightweight visualization data can be made available outside of engineering in an intellectual property (IP) protected format. It can also be distributed throughout the enterprise for other business uses.

Interrogation tools help users drill down into complex assemblies and isolate data. And using item selection features, users can separate items while maintaining the visual context of all the surrounding items. Controls are available that obscure measurements, restrict file export,



and enable file obfuscation so the 3D models can be used in applications where IP protection is a concern. A query tool enables filtering of information based on available metadata, object size, and proximity in the viewer.

View Business Data on 3D Visuals

Solution Overview

3D Content Viewing

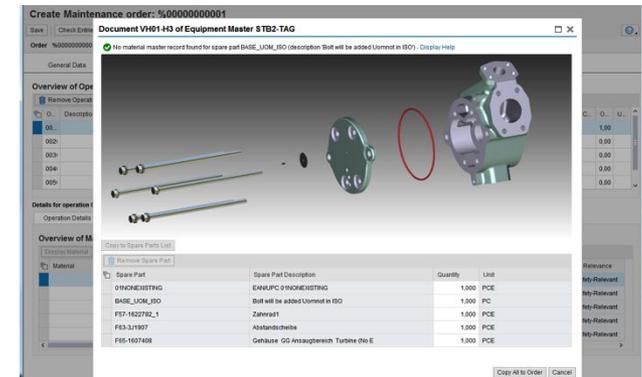
Capabilities

Benefits

By merging enterprise resource planning data and 3D visuals, workers can view accurate product information when performing tasks such as following assembly instructions, managing bills of materials, and ordering parts.

Being able to visualize complex 3D data has many applications across the enterprise, as it enables companies to eliminate the need for interpretation and guesswork.

Use 3D visualizations to support collaborative design review, sales product configurations, manufacturing instructions, service and repair instructions, spare parts ordering, and 3D analytic dashboards. When visual aids are included in these activities and workflows, it can change the way people interact with their visual assets.



These innovations allow a manufacturing supervisor to, for example, browse a 3D animated work instruction or click on a visual model to check on available stock. Or if a repair is being performed, a maintenance professional can identify the parts they need in advance and add them to a replacement part maintenance order.



3D Visual Search and Navigation

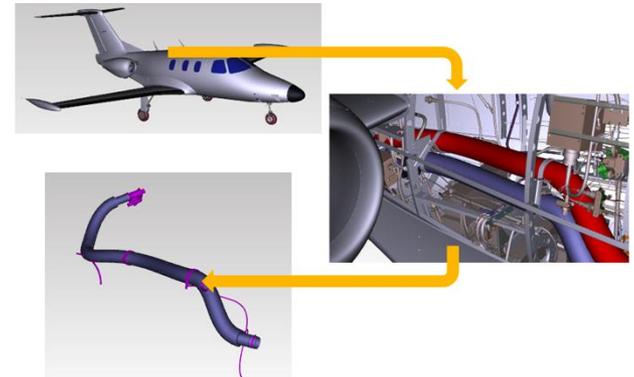
Solution Overview

3D Visual Search and Navigation

Capabilities

Benefits

Navigate, search, and filter 3D objects based on spatial and data properties to discover related business information. Speed up and improve the identification of objects and regions of interest.



SAP software enables manufacturers to create 3D product models and plant layouts that serve as a visual index to corporate data. Massive models can be rapidly viewed, navigated, and searched to find objects of interest based on properties, business information, or location.

Manufacturers can explore physical models and understand processes and products faster and easier.

Insights gained help streamline operations and compress cycle times.

By accessing relevant business data from the objects impacted by an event, business analysts can easily answer questions about the implications of these events, such as unplanned downtime.

Navigate, Search, and Use 3D Data

Solution Overview

3D Visual Search and Navigation

Capabilities

Benefits

3D visualizations of assets and products can act as a platform for finding and managing corporate data at high speed.

For example, engineers can use 3D models as a visual index to search and explore full product and plant 3D visual data with ease and link it directly to related metadata and business information. Click through to customer, product, supply chain, and other information sources. Find exactly the right part of the 3D model view and use it to discover and exploit business information sources.

Individuals can also query 3D and related data. Reveal 3D relationships like colocation, adjacency, overlap, and density that underlie 3D information. Search by attributes, including size and shape, names and measures, and spatial characteristics.



The software also helps incorporate rich corporate information (formerly trapped in engineering) into the data models. As a result, business analysts can precisely locate the context of the items in reference to the surrounding objects.

View and Browse Through Large 3D Files to Find Information

Solution Overview

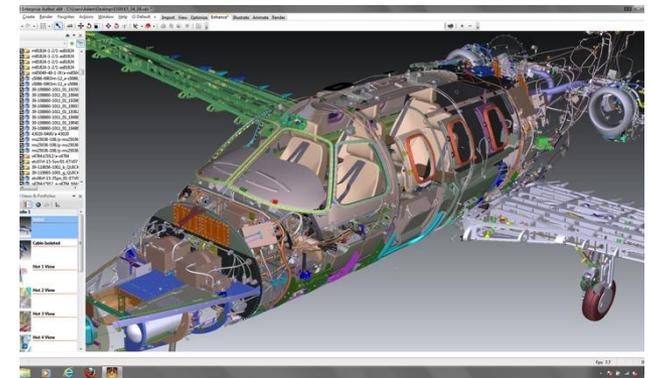
3D Visual Search and Navigation

Capabilities

Benefits

The use of 3D information is hampered by the sheer size and complexity of files. 3D visual navigation and search allows users to find information in any 3D file, regardless of its size or complexity.

Prior to the advent of 3D visual search and navigation, many 3D files could not be used outside the confines of their original 3D design applications. But now, manufacturers can transform these massive files into a lightweight, neutral format that can be used outside 3D applications. Any file can be viewed regardless of its size or 3D application format – and there is no need to eliminate model details from view.



Files can easily be shared as teams collaborate around design ideas and innovations, as well as combine 3D visuals with business information. This provides a complete view of all data associated with the 3D file. Stakeholders can also navigate to and access the information by simply zooming and panning. This functionality – designed for ease of use – is ideal for users who lack the reference information needed to develop a targeted, traditional query.

3D Visual Information Analysis

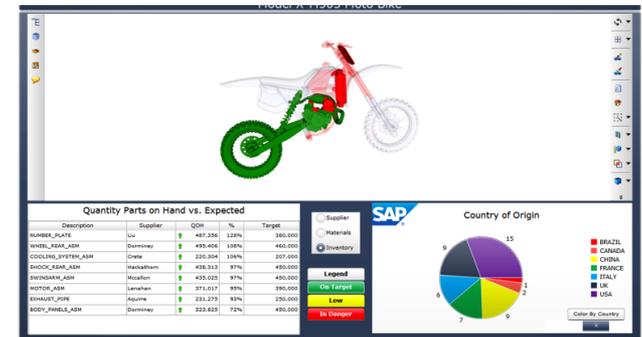
Solution Overview

3D Visual Information Analysis

Capabilities

Benefits

Associate visual information with business information and analytics to enable the understanding and exploitation of spatial context, and drill down into 3D data to find important business results.



With SAP software, industrial manufacturers can create 3D product models that serve as a visual index useful for corporate information sources. Analytic results can be shown with spatial context directly on 3D models.

As a result, business analysts can quickly and easily understand processes and streamline operations.

Manufacturers can produce products faster and with improved precision, as well as manage systems with greater clarity and insight. And the staff can get to relevant business data directly from the items impacted. For example, with spatial analysis, they can answer questions about where and how something has been impacted with ease.



Use 3D Data to Drive Performance

Solution Overview

3D Visual Information Analysis

Capabilities

Benefits

Use 3D models as a visual index. Link product and plant 3D visual data to corporate business information and analytics. Click through to customer, product, supply chain, and other information sources.

3D spatial analytics enable visibility into process, status, relationship, and performance metrics illustrated spatially right on visualizations of the products and assets to which the information applies. Examine analytical results in the spatial context of the assets where the data applies. Reveal 3D relationships like co-location, adjacency, overlap, and density that underlie back-end information sources.

Liberate the full understanding of products and plant data by including the rich information



formerly trapped in engineering. Use it to get a deeper understanding with the visual context of the data to see where things are in relation to each other as well as access the business information related to a given item.

Gain a Complete View of Business Data in a Visual Context

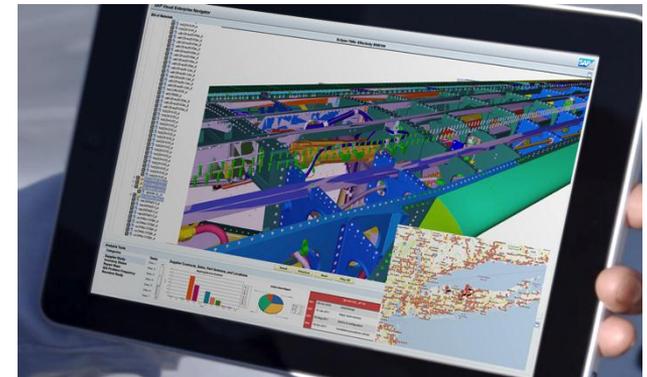
Solution Overview

3D Visual Information Analysis

Capabilities

Benefits

Embellish corporate information by adding a visual context. Simply browse visually to an area of a 3D model, select an item, and view all associated business information.



Finding specific corporate information can be a time-consuming and frustrating process. Even when the information being searched for is found, it's usually represented solely as text and numbers – or 2D graphics at best – so it lacks the spatial context of an item of data.

When 3D visual content is associated with an item of data, results of data searches are more tangible and readily understandable. Business analysts can simply navigate to a location in the 3D model and select the element of the visual model of interest.

Once selected, any data associated with that selection can be made available. This eliminates the guesswork of query definitions, complex data structures, or multilayer file management systems. And with the visual data connected to the business data, business analysts can run more complete analyses. Reports will not only reflect relevant business information, but also the physical location and overall context in the 3D model.



R & D and Engineering Value Map

Solution Overview

3D Collaboration

3D Process Animation

3D Content Viewing

3D Visual Search and Navigation

3D Visual Information Analysis

R & D and Engineering

Why SAP?



Why SAP?

Solution Overview

3D Collaboration

3D Process Animation

3D Content Viewing

3D Visual Search and Navigation

3D Visual Information Analysis

R & D and Engineering

Why SAP?

By using the SAP Visual Enterprise applications to repurpose 3D visual information across the enterprise, industrial manufacturers can realize significant improvements in processes, productivity, and quality while reducing operational costs and time to market.

3D business visualization functions enabled by the SAP Visual Enterprise applications can unlock the value of business and engineering data for use beyond design. 3D content can be leveraged for:

- 3D assembly visualization – Create step-by-step work instructions to guide the assembly of complex products.
- 3D service visualization – Empower service technicians with mobile enabled, 3D-animated maintenance procedures.
- 3D marketing visualization – Visualize products in high-resolution imagery for use in collateral, Web presentations, and sales engagements.

Manufacturers benefit from compressed time to market, improved worker productivity, reduced operational costs, and higher quality, while at the same time fostering better collaboration and decision making.



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For 3D business visualization:

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www.youtube.com/user/RightHemisphereCorp

www.linkedin.com/groups/SAP-Visual-Enterprise-4523929?gid=4523929&mostPopular=&trk=tyah



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