



VISUALIZATION PIPELINE

The **Visualization Pipeline** is a server-based technology that enables fast, efficient, flexible, and automated processing of all of **your** CAD and visualization data, while maintaining links to the associated metadata.

It's an enterprise ready application that manages all of **your** 3D assets, making them accessible to you, regardless of which output you require.

Designed to enhance visualization in every business, the **Visualization Pipeline** guarantees robust data exchange and optimization having been developed and built upon native Vendor technology.

| Who

If you're a business who wants to extract the most value from its digital 3D assets in line with established plans or processes; or if you are just starting out with your XR adoption strategy, but are struggling with getting your data into the latest augmented mixed and virtual reality devices; the Visualization Pipeline can do this for you.



Visualization



Design Review



Factory Layout



Guides



CAD Overlay

| Why

Getting your 3D CAD and PLM data into XR can be a major barrier to the successful adoption of XR within a business, but the visualization pipeline provides a solution that can overcome this problem for you. Because of the incredible flexibility of the pipeline, your data can be prepared for a huge array of software products and output devices, including Head Mounted Displays, desktop and tablet devices. It makes getting 3D CAD and PLM data into devices a quick and easy process.

| Enabling

Use-case based Experiences

Visualization, Design Review, Factory Layout, Guides and CAD Overlay

In-house XR

Using Unity or Unreal Engine

Photorealistic Rendering

DS 3DEXCITE and Autodesk VRED

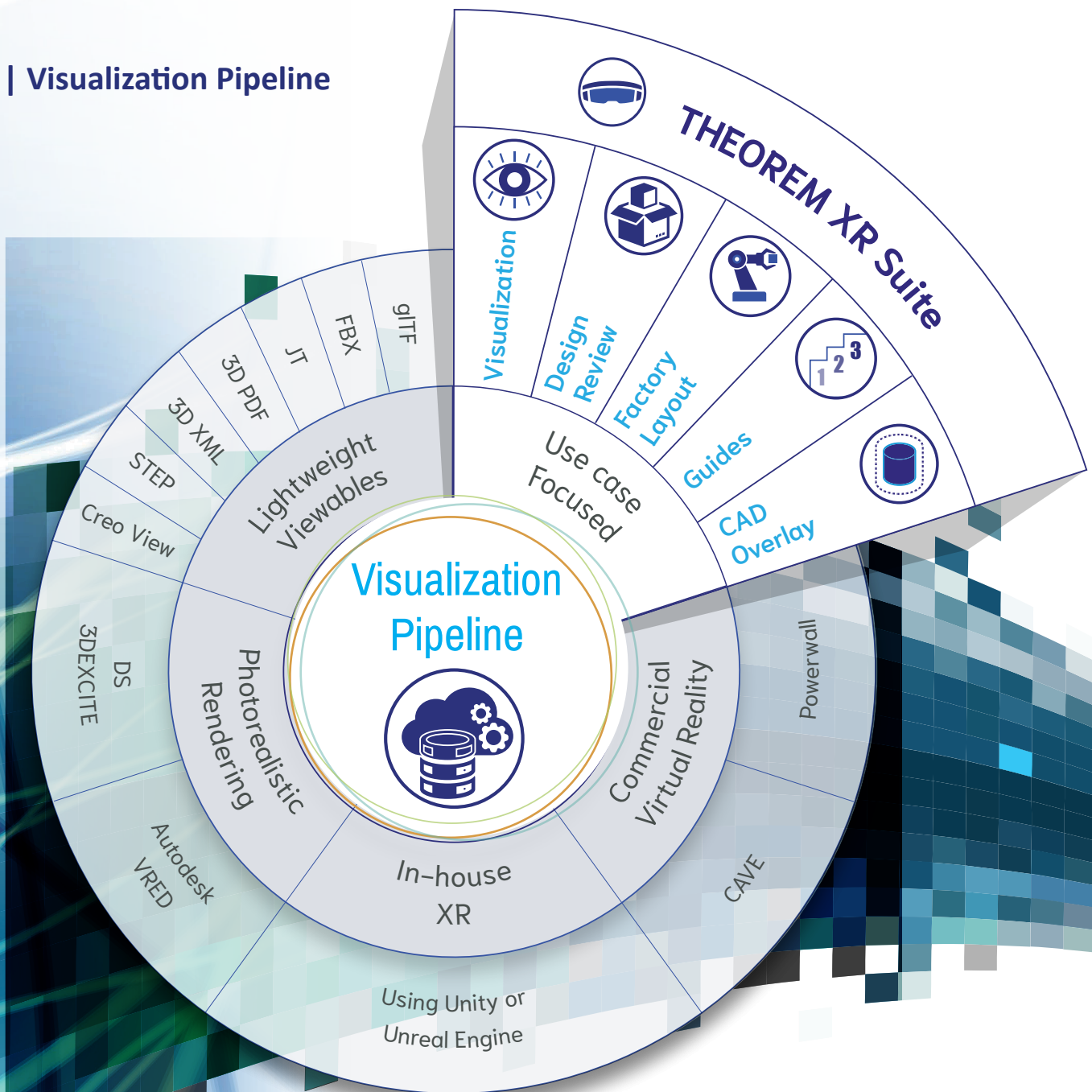
Lightweight Viewables

Creo View, STEP, 3DXML, 3D PDF, JT, FBX and glTF

Commercial VR

CAVE and Powerwall

| Visualization Pipeline



| How

The **Visualization Pipeline** has been designed to optimize the output for all visualization workflows; supporting The Theorem XR Experiences; data preparation for use within 'XReality' (XR) based technologies (powered by Unity and Unreal); photorealistic rendering (such as Alias, VRED and 3DExcite), existing lightweight viewing technologies (such as JT, Creo View and 3D XML) and Commercial VR (CAVE and Powerwall)

The **Visualization Pipeline** processes the 3D model data, the supporting meta-data, animation/motion data, and any captures/views from within the CAD or PLM data flow.

The pipeline can automatically process data in the background, or on-demand with 'save as' and 'drag and drop' functionality, removing the need for dedicated data processing teams.

Configurations can be automatically invoked when 3D CAD data is read to ensure the best quality and performance. If required, the Visualization Pipeline will run multiple configurations against a single input file to ensure each consumption device has the optimum data for the best result.



| Benefits

The **Visualization Pipeline** offers the ability to improve data consumption efficiencies with a variety of geometry and product structure optimizations to support different device types. This flexibility helps speed up processing times, boosts visualization performance, and enhances the XR user experience.

The **Visualization Pipeline** seamlessly integrates with the Theorem Solutions XR suite, enabling engineers to get closer to their creations in a full-sized, spatially relevant set of task-orientated XR experiences.

By adding the collaboration module, the **Visualization Pipeline** enables the bringing together of globally distributed teams via the Experience Apps, in a manner that has not been possible until now.

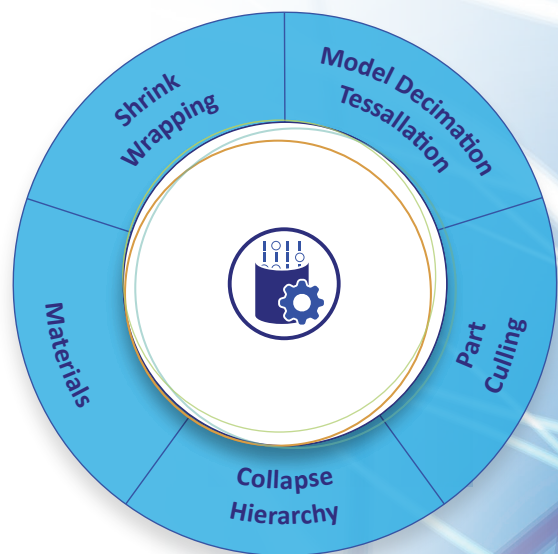


| Technical

Once your 3D data has been uploaded onto the **Visualization Pipeline** server, there are a number of model optimization settings available that enable you to select the level of detail in the data that you want to stream to your chosen device.

A description of these can be found below:

- **Collapse Hierarchy:** Visualization performance can be negatively impacted when the model contains a large number of objects. Setting a collapse level causes sub-assemblies to be collapsed into single parts, therefore boosting performance when the source data has a complex assembly tree.
- **Model Decimation/Tessellation:** Reducing the number of triangles in models improves the visualization performance. Larger tolerance values allow more triangles to be removed at the expense of accuracy. Decimation is the target percentage for remaining triangles. Setting this high can speed up processing time.
- **Part Culling:** Removing small parts can 'de-clutter' the model and reduce the triangle count. The pipeline has multiple options to decide which parts are small enough to be omitted.
- **Shrink Wrapping:** By 'ShrinkWrapping' the data, we find the subset of part instances that are visible from the outside. By excluding interior parts, there are fewer triangles to render. Using lower accuracy will speed up the processing time.



| Materials

To ensure a more consistent colour pallet for models, or to take advantage of high quality application specific materials, users can replace named materials with the materials defined on the material definitions page; supporting output from any CAD format to VRED, FBX and glTF.

| Uniquely

Our unique approach to the challenge of an enterprise level workflow is built from over 25 years of experience with CAD to CAD conversion and PLM data exchange. Our solutions are built with development tools and APIs supplied and supported by the major CAD vendors that we have strategic partnerships with. This means we don't need to reverse engineer, and can provide you with a robust application that offers full control over data preparation and optimization for the target formats.

The Visualization Pipeline is a truly enterprise ready solution for all of your XR assets. The Visualization Pipeline can manage your 3D assets and make them available to anyone that you want, anywhere in the world!

About Theorem Solutions

Theorem Solutions have been helping engineering and manufacturing users leverage the value of their CAD and PLM assets for over 25 years. We help the world's leading Automotive, Aerospace, Defense, Power Generation, Transportation, and White Goods manufacturers and their end-to-end value chains to optimize the use of their Digital assets. Our solutions enable product development and manufacturing businesses to compress design and manufacturing lifecycles, whilst improving product quality. Our core strength is in the visualization and utilization of data across complex organizations to maximize efficiency.

Theorem Solutions offers a consultative approach to help customers get the most from technology. We advise on optimum use cases, deployment strategy, and custom development as required to maximize the Return on Investment.

UK, Europe, Asia Pacific Regions

+44 (0)1827 305350

sales@theorem.com

US and the Americas

+1 (513) 576 1100

sales-usa@theorem.com

www.theorem.com

