

INNOVMETRIC CASE STUDY

STREAMLINING CAD MODEL-BASED DIMENSIONAL INSPECTION WITH 3D INTEROP



Market

Metrology, Software Development,
Manufacturing Quality Control

Product & Services

3D InterOp, 3D ACIS Modeler

INNOVMETRIC STREAMLINED CAD MODEL-BASED DIMENSIONAL INSPECTION FOR 26,000 CUSTOMERS WITH SPATIAL'S 3D INTEROP SDK

InnovMetric needed a reliable, high-performance native CAD translation solution at the core of its PolyWorks® platform.

SUMMARY

For over 20 years, InnovMetric has relied on Spatial's 3D InterOp SDK to power native CAD translation at the heart of its PolyWorks® platform. What began as a response to customer demand for accurate native CATIA V5 import has grown into a deep, strategic partnership, expanding to cover complex assembly structures, precise geometry, and rich Product Manufacturing Information (PMI) across a wide range of CAD formats.

As InnovMetric's software architecture evolved, the team successfully migrated from the legacy Connect SDK to the modern UConnect SDK, preserving 100% of their existing 3D ACIS modeler investment, saving several months of development effort, and achieving an average performance gain of 10% through native multi-processing support.

Throughout this journey, Spatial's Technical Account Managers provided dedicated weekly support, helping InnovMetric overcome integration challenges and keep development on track.

The result: a more robust, higher-performance CAD import pipeline that enables PolyWorks|Inspector to deliver accurate, reliable CAD-based dimensional inspection, supporting 26,000 customers across 100 countries, from first article inspection to in-process quality control.



THE COMPANY

InnovMetric is an independent software development company headquartered in Quebec City, Canada, specializing in advanced industrial 3D metrology solutions. Founded in 1994, the company has been a pioneer in the field, introducing point-cloud-based dimensional inspection in 2000 and the concept of a universal 3D metrology software platform in 2006.

Today, InnovMetric serves over 26,000 customers across 100 countries, with the world's largest industrial manufacturers adopting its PolyWorks® solutions as their standard 3D metrology software platform. Serving industries including automotive, aerospace, consumer products, heavy machinery, and energy, InnovMetric helps organizations improve efficiency, reduce errors, and accelerate time to market.

“ Our experience with Spatial SDKs and the integration team has been very positive. We had been using the Connect SDK with ACIS for many years and recently transitioned to the newer UConnect SDK, which offers a more modern, object-oriented API, additional features, and improved performance. ”

~ Simon Héroux, Senior Product Manager, InnovMetric



THE POLYWORKS|INSPECTOR™ SOFTWARE SOLUTION

At the core of InnovMetric's offering is PolyWorks|Inspector™, a powerful universal 3D metrology software platform designed to streamline dimensional inspection from first article inspection to in-process control.

The platform interfaces seamlessly with a wide range of portable and CNC measurement devices, including 3D scanners, probing systems, and CMMs. This hardware independence allows companies to standardize their inspection processes, regardless of the measurement technology involved, reducing training efforts and ensuring consistent methodologies across teams, sites, and technologies.

At its core, PolyWorks|Inspector delivers robust CAD model-based dimensional inspection tools, enabling precise comparison between measured data and CAD models, supporting GD&T, surface analysis, and feature control.



THE CHALLENGE

Accurate and Reliable Native CAD Translation for Dimensional Inspection

In CAD-based inspection, the CAD model is the foundation of the entire workflow. It is used to define inspection requirements, align measurement data, extract measurement components, display color map comparisons, plan CNC CMM execution paths, detect collisions, and generate contextual inspection reports. Every step depends on the accuracy and integrity of the imported CAD data.

InnovMetric faced a clear challenge: customers needed CAD models to be translated quickly and accurately from native CAD systems into PolyWorks|Inspector, preserving complex geometry, product structure, and PMI data across a wide range of formats, while keeping pace with continuous changes in CAD platforms.

Twenty years ago, customers using Dassault Systèmes' CATIA V5 began demanding native file import rather than neutral formats such as IGES or STEP. Accuracy was non-negotiable and InnovMetric needed a proven, reliable toolkit to meet that demand.

More recently, as InnovMetric's software architecture evolved, the team needed a modern, object-oriented API that would offer greater flexibility, performance, and alignment with their development roadmap.

THE SOLUTION

Native CAD Translation with 3D InterOp

InnovMetric turned to Spatial's 3D InterOp SDK as the trusted solution for native CAD file import. 3D InterOp provided a centralized, format-agnostic API that significantly reduced the need for format-specific development. When new data types were supported for additional CAD formats, they could be integrated into InnovMetric's workflows with minimal additional development effort, accelerating feature adoption across the entire format portfolio.

Through 3D InterOp, PolyWorks|Inspector gained the ability to import native CAD files including CATIA, NX, and Creo, extracting both precise part geometry and complex product assembly structures. The integration of Product Manufacturing Information (PMI) became a critical component of the workflow, enabling InnovMetric to capture detailed manufacturing data required for downstream inspection processes.



Laser scanning guided by CAD model in PolyWorks|Inspector

“

The UConnect SDK is robust and delivers reliable results. We also achieved measurable performance improvements, particularly with parallel import of parts within product structures. With UConnect handling multi-processing natively, we were able to remove our custom implementation and immediately realized an average performance gain of around 10%. ”

~ Simon Héroux, Senior Product Manager, InnovMetric

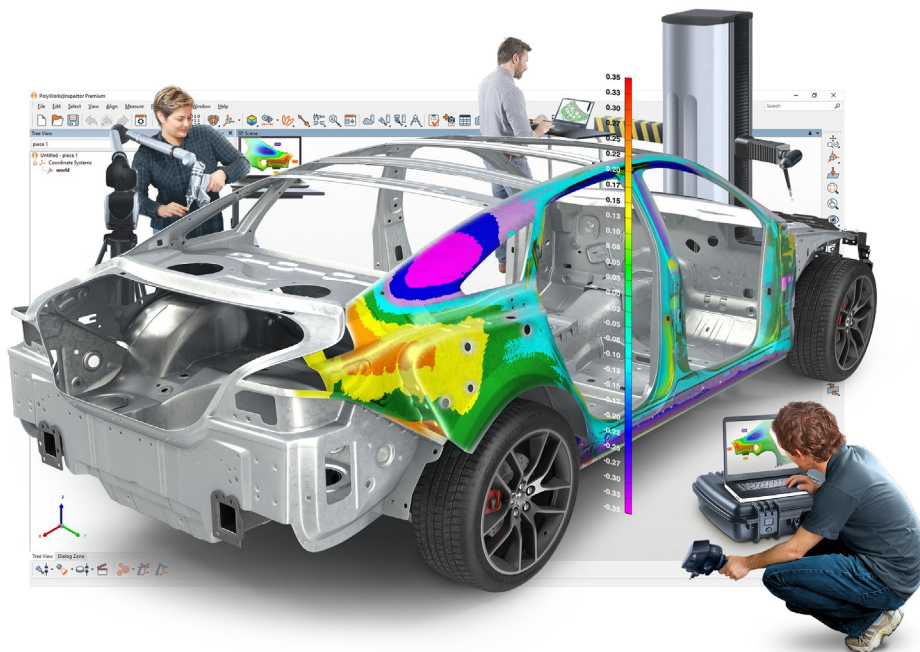


Modernizing the Pipeline with UConnect SDK

As InnovMetric's architecture evolved, the team migrated from the legacy Connect SDK to the modern UConnect SDK, a transition that delivered a more object-oriented API, additional features, and measurable performance improvements. The transition took more than a year and a half, reflecting the complexity of the migration and the team's commitment to delivering the upgrade without any loss of capabilities for their customers.

A key advantage of the migration was that the core 3D ACIS modeler was 100% reusable, preserving InnovMetric's existing investment and saving several months of development effort. The UConnect SDK's native multi-processing support enabled parallel import of parts within product structures, delivering an average performance gain of approximately 10%, without any custom implementation on InnovMetric's side.

The integration process benefited from access to Spatial's beta release channel, allowing InnovMetric to perform early testing and significantly reduce surprises when adopting final releases.



Dimensional inspection with 3D laser scanner, CNC CMM and touch-probing device

Dedicated Technical Support

Throughout the integration and migration process, InnovMetric worked closely with dedicated Spatial Technical Account Managers on a weekly basis. TAMs provided support across bug fix follow-ups, enhancement requests, and integration challenges, playing a particularly critical role during the UConnect migration by helping address blockers and maintain development progress.



Key PolyWorks software solutions for dimensional inspection

“ The integration support team has been highly responsive and knowledgeable, helping us quickly overcome key technical challenges. Their ability to address blockers efficiently contributed to a smooth transition. We value the collaboration and continue to work closely with the team. ”

~ Simon Héroux, Senior Product Manager, InnovMetric



KEY INSIGHTS

Over 20 years of partnership with Spatial, InnovMetric's integration of 3D InterOp has become foundational to PolyWorks|Inspector's position as a universal metrology platform, supporting 26,000 customers across 100 countries. Native CAD import is no longer a differentiator. It is a baseline expectation across the metrology market. By maintaining and continuously improving this capability, InnovMetric ensures it meets customer expectations and retains its competitive position among the world's leading metrology software vendors.

The migration to UConnect delivered concrete results: 100% 3D ACIS modeler reusability, saving several months of development effort, and an immediate average performance gain of 10% on parallel part imports. It also opened new capabilities that InnovMetric is actively exploring to support their digital thread strategy. A first example: in 2026, InnovMetric released a new capability allowing customers to update complex inspection projects with a new revision of a large assembly, powered by the reliability and performance of the UConnect SDK.

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Learn more about
InnovMetric and their
industry-leading
metrology platform,
PolyWorks|Inspector™.

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SPATIAL

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competition?

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About Spatial Corp

Spatial Corp, a Dassault Systèmes subsidiary, is the leading provider of 3D software development toolkits for technical applications across a broad range of industries. Spatial **3D modeling**, **3D visualization**, **3D meshing** and **CAD translation software development toolkits** help application developers deliver market-leading products, maintain focus on core competencies, and reduce time-to-market. For over 35 years, Spatial's 3D software development toolkits have been adopted by many of the world's most recognized software developers, manufacturers, research institutes, and universities. Headquartered in Broomfield, Colorado, Spatial has offices in the USA, France, Germany, Japan, China, and the United Kingdom. For more information on Spatial's latest updates and product offerings, please visit www.spatial.com.

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