# Envision speeds up workflows by 94% with best-in-class reality capture solution

*Combining reality with design delivers time and cost savings to a renovation project*

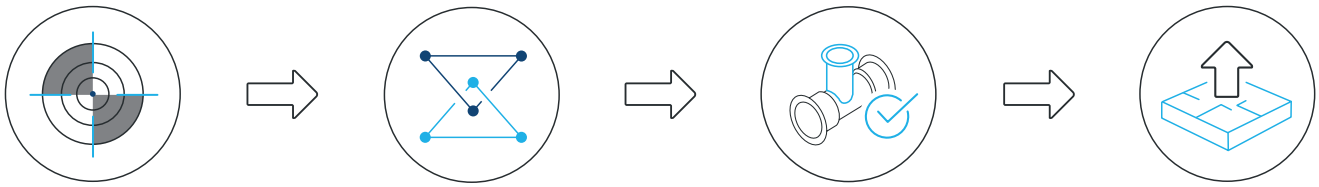
**Envision Engineering and Design provides a range of services to industrial sectors including nuclear, oil and gas, renewables and national utilities. Its work covers a range of design services including reverse engineering, 3D modelling, CAD drawings, and a range of technical assessments. With over 86 years of experience, the team aims to provide a flexible and cost-effective approach to engineering – and now, supported by Leica Geosystems and PointFuse, they're able to deliver on that promise even more.**

## The challenge - challenging environments make measuring difficult

Envision's work often takes the team to very specialist sites such as hydroelectric dams, with very complex access requirements and non-standard equipment that make measuring for projects very tricky. Mark Graham, Mechanical Design Engineer at Envision, explains: *"often, we either find ourselves working off hand-drawn plans that are 40 years old – which doesn't give us a great starting point for our design work – or we simply can't safely get where we need to in order to get measurements."*

In these conditions, it could take the team as much as 3 days to create models based on what measurements they could make – while having to leave a large degree of tolerance to account for any areas that they hadn't been able to measure accurately. *"I knew we could do better,"* says Mark.

## Workflow with Leica Geosystems scanner and PointFuse Powered by Jetstream



Scan entire site, eliminating need to revisit site

Load scan data into PointFuse and convert to an intelligent mesh, reducing size by 90% and adding classification to the data

Create model based on scan data, easily removing irrelevant data

Export to Autodesk Navisworks for visualisation

## The solution - Leica Geosystems and PointFuse

Mark and the team decided to invest in reality capture in order to tackle the challenge, choosing the Leica RTC360 scanner. Designed for maximum productivity and an intuitive user experience, the RTC360 is able to register point clouds on-site – meaning that Mark and the team can be totally confident that they have all the data they need before leaving site. *"It enables us to be more efficient, and ultimately to work safer if we're on a hazardous site,"* Mark says.

Envision initially relied on Autodesk Inventor and Navisworks for working with their point cloud data for modelling and visualisation. But alongside the usual challenges of file sizes and lag that come from working with large point clouds, the team had particular difficulty removing data that wasn't necessary, or irrelevant to the project in hand.

*"We were redesigning a stairway for a client,"* Mark recalls, *"and it was very time-consuming for us to remove the background noise – and the section of the stairwell that we were actually redesigning. Though we could be confident of our measurements thanks to the point cloud, I wanted to try and improve the workflow even more."*

That's where PointFuse came in. Using PointFuse Powered by Jetstream (PPJ), Mark and the team can convert their point clouds into intelligent mesh models, reducing the file size by around 90% and adding layers to the data that can be easily added or removed in Inventor. *"Using PointFuse, it's quick and easy for us to remove the elements of the cloud that we are redesigning, making our design work easier and higher-quality at the same time,"* Mark explains. PPJ is pre-configured to accept scans from Leica scanners, making the process of getting point cloud data from the scanner onto the computer faster and simpler too.

Crucially, PPJ also enables Envision to easily classify non-standard objects where no design families exist. This solves the challenge of working in spaces where nothing is a standard shape, size, or design. *"It gives me confidence that our technology is going to add value regardless of the project's complexity or uniqueness,"* Mark says, *"which, given the nature of our work, means I get a lot of confidence from PointFuse!"*

Finally, the mesh models generated in PPJ are much easier for Mark and the team to work with in Navisworks, meaning they can include far more of their scan data in their visualisations than before. *"Our clients really value the context the scan data gives to our designs,"* Mark explains, *"which makes it much easier to explain design decisions and get their buy-in for what we want to do."*

## The results - working 94% faster with Leica Geosystems and PointFuse

Mark and the team can now complete work that used to take as long as 3 days in just 90 minutes, thanks to their reality capture technology. On top of that increased speed, the accuracy of their work has increased now that they have point cloud data to work from rather than old plans and incomplete measurements. *"Not having to pore through old drawings, converting feet and inches into centimetres, is such a relief,"* Mark laughs.

With a full-fledged reality capture technology stack and workflow, Envision has also been able to increase the volume of offsite measuring and analysis. *"We don't want to be on site any longer than we have to be,"* Mark explains, *"and knowing that we can get all the data we need to get our work done in one visit is great for our bottom line in terms of time and cost saved, and great for keeping our staff safe when working on hazardous sites."*

Looking to the future, Mark is excited to continue delivering high-quality work in a fraction of the time using reality capture. *"It's so exciting to work with the scan data in PPJ,"* says Mark, *"after having worked with hand-drawn plans and best-effort measurements for so long. I'm so glad that we've found powerful partners in Leica and PointFuse to help take our business forward."*

Pointfuse
powered by JetStream

Leica Geosystems