

*“ Customers walk in and have that ‘Wow’ moment when they realise SOLIDWORKS can reduce their time to market and bring so much potential to their company”*

Matt Bellis, Technical Officer for CAD and Prototyping Technologies, ISD

## ISD Gives Welsh Companies The Edge With CAD Solutions

The Institute of Sustainable Design (ISD) in Swansea, South Wales, is a £4.7m ERDF funded project. Led by Dr Ian Walsh at University of Wales Trinity Saint David (UWTSD), the team comprises business, design and technical advisors who work together to transfer the knowledge of the university and assist businesses in building up their capacity to undertake research and innovation.



By providing expert advice and support to qualifying businesses and individuals looking to develop commercially sustainable routes to market, ISD can assist them in developing design capacity within their business.

Through a combination of workshops, seminars and one-to-one business mentoring sessions, ISD advisors work to build capacity, confidence and industry connections to innovate in-house and drive businesses to a profitable future. Qualifying businesses and individuals can take advantage of any or all of their offerings, including CAD software, 3D scanning, 3D printing, CNC machining, and Abrasive water jet cutting.

### The Challenge

ISD has a very broad remit and needed advanced CAD solutions that could assist with a variety of industries, primarily in industrial design, automotive design and glass. “Making people aware of CAD and advanced technologies and what their capabilities are, is what we are all about,” says Matt Bellis, ISD’s technical officer for CAD and prototyping technologies. “Initially we didn’t know who was going to walk through our door and what software our client range would want. It could be an individual tinkering away in their shed or a big pharmaceutical company wanting to push the limits of 3D printing technologies. We needed to scour the market for software that was easy to use and that could deliver a whole range of solutions on budget.”

### The Solution

In 2012, ISD bought four high-end workstations running commercial seats of SOLIDWORKS Premium, two seats of SOLIDWORKS Simulation, two seats of SOLIDWORKS Flow Simulation for Computational Fluid Dynamics, SOLIDWORKS Sustainability and two seats of 3DVIA Composer (now known as SOLIDWORKS Composer).

“SOLIDWORKS was a must,” says Matt. “It’s a very good piece of software because you have the ability to model in a number of different ways due to the vast features options. The interface is very straightforward and we know it is used widely within the design industry and clients using the software can see the benefits straight away. ISD chose SOLIDWORKS because of its widespread use and integrated tools. By using CAD and SOLIDWORKS primarily we can demonstrate to our clients the change from a 3D design on screen to a tangible 3D printed part within 2-3 days,” says Matt.

### Challenge:

**ISD has a very broad remit and needed advanced CAD solutions that could assist with a variety of industries, primarily in industrial design, automotive design and glass. With a wide range of requirements across these industries, they needed to ensure that the software was easy to use and could deliver a whole range of solutions on budget.**

**Key Features - Hole Wizard and Toolbox**

Working with SOLIDWORKS every day, Matt and the ISD team were very clear on the range of features they needed from the software. "Initially I was just using SOLIDWORKS as a modeller, cutting away at a block and then subtracting material," says Matt. "But I am constantly adapting the way I use SOLIDWORKS. The connection between parts and assemblies makes it incredibly simple to make iterations to models with live updates. I am constantly adapting the way I model on SOLIDWORKS to make sure I have an efficient workflow. Creating a large assembly as a part means I know that I have applied the appropriate tolerances; with this I can use the Save Bodies function to save off individual parts and create an assembly at the same time, making for an effective workflow. The Toolbox feature is also fantastic; having a multitude of standard nuts, bolts and washers to access, finishing off assemblies is as easy as drag and drop. This combined with the Hole Wizard tool makes easy work of creating connection points.

**Key Features - Simulation**

"The integration of SOLIDWORKS Simulation software with SOLIDWORKS CAD software is key for us," explains Matt. "You can state what material you want or come up with your own customisable materials as well - so all I have to do is open simulation, create a test and it's seamless. This has helped with clients who are researching into a specific material that they have created, to make sure the properties are an exact match to do appropriate FEA testing."

**Key Features - Ease of Data Translation**

SOLIDWORKS compatibility with other software was essential in working with such a broad range of customers. Using Geomagic Design X, Matt and the ISD team are able to get unknown native files into SOLIDWORKS simply and fast. This is made viable by SOLIDWORKS working with other software companies to make a smoother transference. ISD collaborated with a small innovative business in developing an assisted living device to help people with muscular dystrophy. The research focused on the use of scanning technology to see how effective it was to collect the appropriate data. This was done by using a 3D Artec EVA hand held scanner. Matt's Eureka moment came when he was able to scan in a mannequin so that he would have a solid surface to work from. "Using Geomagic Design X I could convert the scan data and drop it into SOLIDWORKS and model a form around what I knew would fit a human body. The icing on the cake was using 3D printing technology to build a bespoke component from the CAD data created. To transfer the data across so flawlessly has made my life very easy. We have made significant progress by combining technologies to come up with a better design and a solution that could work."

**3D Printing**

With the explosion in 3D printing, ISD have several printers including ZCORP 450 powder printer, Ultimaker and Fortus 250mc using Fused Deposition Modelling technology (FDM) and an Objet 30 Pro (Polyjet printer). ISD has utilised SOLIDWORKS to demonstrate the benefits of adopting an integrated approach to research and innovation. ISD clients have access to the powerful tools within SOLIDWORKS where they can see for themselves how workflows can be speeded up and time to market reduced.

**Reseller Support**

In partnership with NT CAD/CAM, ISD run a variety of CAD workshops to introduce SMEs to the benefits of integrating digital workflows into their process. "NT CAD/CAM workshops have been a great way to target so many different people at one time," explains Matt. "We have a wide range of clients coming to these workshops and any questions they have had, NT CAD/CAM have been able to draw on real life case studies that have worked in similar situations. We are demonstrating 3D CD using SOLIDWORKS and NT CAD/CAM because we feel they can offer us expert knowledge and real examples of how to fully exploit the software and help make a significant impact to peoples' product designs."

**Benefits:**

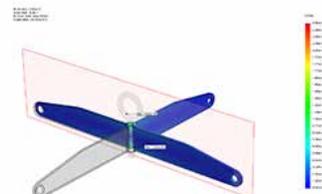
- Seamless data translation reduces design cycles
- FEA testing delivers better designed products
- Improved prototypes aids significant savings in costs of materials
- Accelerated prototype testing speeds up time-to-market
- Design led businesses are more than twice as likely to see rapid growth\*
- Design driven businesses outperform their peers by 200 per cent\*\*
- \* & \*\* Value of Design Survey - Design Council

**Industry:**

- Education/Design Consultancy

**Product Used:**

- SOLIDWORKS Premium
- SOLIDWORKS Simulation
- SOLIDWORKS Flow Simulation
- SOLIDWORKS Sustainability
- SOLIDWORKS Composer



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