

In response to the high levels of innovation taking place in Irish companies, the Irish Government established **Disruptive Technology Innovation Funding (DTIF)** as an agile mechanism to support research and development. DTIF projects are typically industry led initiatives, with industry receiving up to 50% grant funding. The research needs to be ambitious, requiring multiple partners and significant funding to realise the solution and it must set a clear path towards follow-on commercialisation.

“The DTIF allowed us to realise the level of ambition we had in the development of our new Jet Electrochemical Machining technology. We had been working on this development project internally and we had sponsored PhD research in the UK, but the DTIF allowed us to put more focus and more resources into this to accelerate development. At one peak point during the project, we had 7 researchers and engineers working on the topic between the academic team and our company researchers. We had access to measurement and characterisation tools in the University, and the additional bandwidth was a game changer” - Dr. David Gillen, MD Blueacre Technology.

DTIF projects such as DEFINE-AM “Disruptive Finishing using Electrochemical machining for Additive Manufacturing” led by Blueacre Technology, together with Associate Prof. Garrett O'Donnell's team in TCD, developed a novel approach to generating engineered surfaces on 3D printed metal parts. The DTIF was initiated by Blueacre Technology, who sought expertise within the TCD School of Engineering.



DEFINE-AM platform and sample jECM machined stainless tube developed during DTIF

Together the team produced a **world-first robotic based jet electrochemical machine (jECM) tool**. The industry partner continued to pursue the commercialisation of this technology and a strong relationship continues with TCD. Positive impact from this DTIF project include researchers in TCD moving to the industry partner to continue their career, continued collaboration on postgraduate research in TCD and guest lectures to undergraduate Engineering students by Blueacre Technology.

A second DTIF led by HT Material Science NANOTerm subsequently engaged with Prof. O'Donnell, Prof. Robinson and TCD's School of Chemistry, to develop novel nano based cooling liquids that challenge the status-quo in HVAC, data centre and other liquid cooling applications. By bringing the best academics in their respective fields together to support industry partners in their ambition, TCD effectively provided end-to-end expertise from the fundamental nanomaterials development to testing and scale-up.

The most recent DTIF with Prof. O'Donnell's group is entitled SPRINT “Sustainable Production using Intelligent Tooling” and is a collaboration with TCD spin-out iSentoLabs, TCD Engineering (Dr. Trimble), IMR, DePuySynthes, Croom Medical and Schuf Valve Technology. SPRINT is led by iSentoLabs, a spin-out born from research work undertaken in TCD's STAM research group that focused on measurement and monitoring of machining operations. DTIF has enabled an early stage spin-out company to advance their technology with key consortium partners, putting the company on a clear path to commercialisation.