

As an ongoing example of the effectiveness of operating successful Knowledge Transfer Partnerships, this paper describes the relationship and subsequent projects undertaken between the University of Wolverhampton and Severn Partnership Ltd. Shrewsbury based Severn Partnership is a SME of chartered land surveyors with a 30-year history of undertaking high quality surveys for the construction and rail sectors. As early adopters of high definition laser scanners for accurate measurement, in 2010 the company identified the need to diversify and provide value added services / products by providing 3D modeling services to existing and new clients. The University of Wolverhampton, School of Built Environment had a pedigree in research in the field of 3D visualization and virtual reality and following a HE/Business briefing event a relationship was formed.

A KTP was awarded in 2010, which had the aim of establishing 3D modeling services within the company. The project involved a range of KT approaches in addition to the 'standard' weekly academic visits. The associate had the opportunity to attend a range of national and international conferences during the programme and all members of the team attended a conference in the UAE organized by the University to promote the work and develop new business contacts. The associate and other staff from the company completed several guest lectures for the University on topics related to the project and they also sponsored a competition project for students based on a live brief. In 2011, the government announced the requirement for Building Information Modelling (BIM) to be used on centrally procured construction projects and based on the KTP the company was well placed to take advantage of this opportunity and begin providing services in this field ahead of the competition. The associate is now employed permanently by company as 3D Modelling / BIM Project Manager with a team including a graduate and placement student from the University. The 3D modelling department and associated services established through the KTP equates to over 15% of sales turnover and contributes to the ongoing success of the company. The project led the University to purchase new scanning equipment and embedding the knowledge from the KTP into the curriculum. It also helped to shape the development of a new postgraduate course in BIM.

Following the success of the initial KTP, the team established the potential to use emerging technologies such as games engines and mobile devices to deliver 3D data to non-technical users and widen the scope of the companies' deliverables. Based on this, a second KTP bid approved and commenced in 2012. This had the benefit of bringing an academic from the computer science department into the team who had no previous KTP experience. The associate is a PhD graduate from the University who was supervised by one of the KTP team and the research undertaken as part of this study is now feeding directly into the KTP. A sister company has been spun out of this KTP called SEEABLE. In addition, the computer science department is now operating 'prestigious projects' for final year students using briefs set by the KTP team and working closely with the associate and academic. These will fit into the objectives of

the KTP whilst also engaging students in applied 'real world' R&D. This KTP is stretching the knowledge and application of technology for the construction industry and is leading the company into completely new and diverse markets.

As the second project developed, further commercial and research opportunities developed and the lead academic Dr. Heesom submitted and won a grant application to the Royal Academy of Engineering Industrial Secondment Scheme. Under this grant he is now working within the company full-time for 6 months gaining invaluable commercial experience, which can then be fed back into the curriculum and working closely with advancing the research aspect of the KTP.

A third KTP application building on the work of the first two has been submitted and approved to commence in summer 2014. This will further develop the SEEABLE technological approaches for health and safety training, initially focused towards the rail sector. Again, the development of this project has widened the scope of the academic knowledge base to bring in a further academic with specialism in construction health and safety that has not previously engaged with KTP and so this is broadening the engagement of the University academic staff. Also following the previous model, the associate from the second KTP will become the supervisor for this KTP ensuring continuity and consistency for the company and also experienced management and guidance for the new associate.