HR Wallingford Limited

HR Wallingford is an independent civil engineering and environmental hydraulics organisation which undertakes computer and physical modelling to develop solutions to water-based challenges. One of their core business aims is to work alongside universities to make research output available to the broader industry sector. Having identified the need for improved testing methodology they approached Professor Jeremy Oakley at the University of Sheffield to set up the collaboration as the School of Mathematics and Statistics (SoMaS) is well known for its pioneering research in computer model uncertainty.

"We are delighted with the contribution the KTP has made to our organisation. We now routinely apply this software on projects and have noted others are already starting to follow suit, a sure sign we have hit the mark!"

Ben Gouldby, Chief Technical Director (Flood Risk), HR Wallingford
The KTP was one of the most satisfying projects I have worked on. It enabled a very rewarding and substantial collaboration with industrial users of my research.”
Professor Jeremy Oakley, The University of Sheffield

What were the aims of the project?
Modelling which simulates a range of complex processes, such as coastal flooding, can require huge computing resources and be time consuming to apply. The main area of focus for the KTP was the theory and application of statistical emulators, computer modelling software which uses mathematical solutions to estimate outputs of real-life physical processes. This could provide a more efficient and cost-effective solution to streamline a number of HR Wallingford’s projects.

What was achieved?
The three year project was carried out by KTP Associate Sajni Malde who brought specialist expertise to the company following her recent masters degree which focussed on flood risk modelling. Sajni enabled the development of new modelling software, that is now extensively used within the company, to replicate and predict flood risk scenarios. To date, the software has been adopted on over 80% of projects in one sector of the company. The technology is also being incorporated into a web-based software tool that will be freely available to the industry.

Value to the business?
As a result of Sajni’s work with HR Wallingford and the relationship with the University, a new type of modelling software has successfully replaced their traditional method and has helped to improve efficiency and accuracy. The software will save approximately a weeks-worth of effort for every future project it is used on, whilst also adding accuracy and robustness to specific technical areas within the organisation. The software is now a standard piece of kit which has already been used on several key projects and is expected to be introduced across wider sectors of the company.

Sajni’s work made a meaningful contribution to the business and following the completion of the KTP she was offered a permanent job in Statistics Research with HR Wallingford, demonstrating how a KTP can open up recruitment of graduate talent to businesses.

Value to the University?
Professor Oakley gained valuable insight into the process of knowledge transfer from academia to industry, for example, in overcoming obstacles where the adoption of new methods may require changes to established practice. The KTP allowed him to apply his research knowledge and expertise to solve real industry problems.

Testing and evaluating more substantial cases than had previously been considered enabled a deeper understanding of how well particular methods work in practice. The partnership enabled the department to identify new research challenges and priorities in line with industry need.

A key benefit to Professor Oakley and the department is the establishment of a new mutually beneficial relationship between the University of Sheffield and HR Wallingford with potential for further knowledge transfer, grant applications and joint publications.

Find out more:
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