UNIVERSITY OF Southampton

Case Study | Knowledge Transfer Partnership

RNLI

The RNLI and the University of Southampton working in partnership to enhance the operating efficiency of lifeboats through innovative engineering modelling techniques, decision support tools, and advanced data manipulation and management science.

RNLI

The Company

The RNLI is the charity that saves lives at sea. They provide, on call, a 24-hour lifeboat search and rescue service around the UK and Ireland, and a seasonal lifeguard service. With their lifeboat fleet, lifeguards, safety advice and flood rescue, they are committed to saving lives.

Lifeboats play a key role in achieving this goal and the maintenance of this UK-wide fleet is of critical importance. As a result the basis of the RNLI's strategy is to be recognised as the most effective, innovative and dependable lifeboat and lifeguard service. As part of this aim the organisation is constantly challenged to be more effective and efficient, in order to ensure that it is in a position to provide the same output with potentially fewer resources.

The RNLI currently spends around 35% of its expenditure on operational maintenance (c. £45M/pa). The Institution recognised that this outlay can potentially be reduced through the use of through life cost and maintenance modelling.

The Project

The RNLI designs, specifies and manages the construction of most of its rescue craft. A large variety of equipment is specified to RNLI requirements and all of the assets of the RNLI have design lives and need ongoing maintenance.

The design life of a major new lifeboat is twenty five years, but there is a strategic need to extend this to fifty years or more. In order to achieve this the RNLI understood that they required the latest developments in the areas of engineering modelling techniques, decision support tools, and advanced data manipulation and cost modelling techniques.

The University of Southampton, with its cutting-edge expertise in both management science and ship-building design and engineering, was the natural choice for the RNLI as project partner for this Knowledge Transfer Partnership. Professor Douglas Macbeth and Dr Tri-Dung Nguyen from the School of Management provided invaluable consultancy and expertise in enabling the RNLI to get an accurate view of the total costs of a product over a lifetime, and were pivotal in recommending areas for potential savings by eliminating non value-adding activities and trimming costs

Professor Ajit Shenoi and Dr James Blake from the Faculty of Engineering and the Environment brought vast experience and knowledge of ship design and manufacture, enabling the latest developments in concurrent engineering design to the Atlantic roll bar as a case study for further applications to be incorporated in the underpinning engineering specifications of the RNLI fleet.

Together, working under the aegis of the Southampton Marine and Maritime Institute, this interdisciplinary team of world-leading academics, was able to provide the skills, knowledge and expertise required by the RNLI for this challenging KTP.

The Results

The KTP project was highly successful in meeting the original challenges and has enabled the RNLI to get a much more accurate view of the total costs of a product over a lifetime, considering every major variable from maintenance and repair through to training and deployment costs.

The particular skills and capabilities developed and transferred to the RNLI through this KTP included:

- Life cycle costing approaches adapted for the unique context of the RNLI
- System wide measures of the operational costs involved and the associated decision choices in operating in the extended network (including impacts on the supply network the RNLI interacts with)
- System modelling and optimisation approaches to evaluate the through life cost impacts of changes in 'product' design and the operational and maintenance behaviours of the RNLI
- New design approaches and software support requirements to evaluate the interconnection of design choice and operational costs of an extended lifecycle for a variety of asset groups or 'products'
- The training and development of the RNLI personnel in new ways of working and in the operation of modified or newly developed design software incorporating the operational measures above.

Together these developments, alongside other activities of the core team, are playing a major role in ensuring the ongoing viability and vitality of the RNLI lifeboat fleet, and help to ensure that the organisation has the latest tools and techniques to support its aims of saving even more lives at sea.

Academic Excellence

Our world-leading engineers work at the cutting edge, developing solutions to some of the key issues facing society. Our vibrant research community is multidisciplinary in nature and led by internationally renowned academics working at the forefront of their fields.

We provide support to industry through leading-edge research projects, consultancy, knowledge transfer, use of our state-of-the-art facilities and commercialisation of research.

What can KTP offer your business?

By participating in a KTP you can:

- Access qualified people to spearhead new projects
- Access experts who can help take your business forward
- Develop innovative solutions to help growth
- Develop your business for today's market
- Increase your competitive advantage and profitability
- Improve your performance/business operations

Business performance outputs vary considerably from case to case, given the variety and type of projects. Latest information shows that, on average, the business benefits that can be expected from a single KTP project (typical duration 1-3 years) are:

- An increase of over £240,000 in annual pre-tax profits
- The creation of two genuine new jobs
- An increase in skills of existing staff