

Knowledge Transfer Partnerships

KTP BENEFITS

Knowledge Transfer Partnerships are designed to benefit everyone involved

- 🔄 Businesses will acquire new knowledge and expertise
- 🔄 KTP Associates will gain business-based experience and personal and professional development opportunities
- 🔄 Universities, colleges or research organisations will bring their experience to enhance the business relevance of their research and teaching

Knowledge Transfer Partnerships

Accelerating business innovation; a Technology Strategy Board programme

<http://www.ktponline.org.uk>

OMG PLC KTP HELPS MOTION CAPTURE BUSINESS TO KEEP INNOVATION IN THE FRAME

ABOUT THIS CASE STUDY

This Knowledge Transfer Partnership (KTP) project brought together OMG plc and Oxford Brookes University in an outstanding collaboration. The aim was to build a highly-automated motion capture system capable of working outdoors under general lighting.

ABOUT THE SPONSOR

The European Social Fund (ESF) supports national employment and skills priorities, in line with EU regulations by helping unemployed and inactive people enter work, promoting lifelong learning, skills development and gender equality.

FAST FACTS

- 🔄 The Company now produces motion capture based on video technology
- 🔄 New research and expertise have been embedded
- 🔄 New products are being marketed based on this innovation
- 🔄 Sales turnover is expected to rise significantly as a result of the KTP
- 🔄 Experience and employment were gained by the two Associates
- 🔄 New research and collaboration opportunities arose for the University

The Company

“The KTP has brought real progress which is particularly satisfying as previous attempts to explore this kind of research have struggled. The KTP has provided the impetus and produced a broad range of new technologies.”

Dr Andrew Stoddart, Head of Research, Vicon, OMG plc

From left to right: Dr Manish Jethwa, KTP Associate, Professor Philip Torr, Academic Supervisor, Dr Andrew Stoddart, Company Supervisor and Dr Morné Pistorius, KTP Associate

OMG plc is based in Oxford and comprises a group of technology companies producing image-based solutions for the entertainment, defence, life science and engineering industries. Originally established in 1984, the Company's primary product is Vicon®, a system designed to analyse human motion by tracking reflective markers attached to the body of a subject. The technology has been used successfully in major Hollywood films, computer games and for advancements in medicine, sport and ergonomics. The customers are worldwide.

ABOUT THE PROJECT

OMG recognised that the current technology, which has existed for over 20 years, is restricted by its need for a subject to wear reflective markers and to capture data indoors in subdued lighting. OMG wished to explore alternate motion capture technology based on video and advanced image processing technologies. The Company looked to Oxford Brookes University for support and expertise in computer vision within the KTP project.

BENEFITS

The primary aim of this project was to develop technology demonstrators and prototypes, with a view to producing new products. All the objectives have been met and the results have surpassed



expectations. At the March 2009 KTP Awards ceremony, OMG won the best Knowledge Transfer Partnership Award. The Company was chosen from all the winning partnerships that had achieved excellence and were recognised as a collaboration that far exceeded projected outcomes and deliverables.

The KTP project made significant progress in the capture of data for camera calibration, subject calibration and tracking. For example, a milestone was achieved in having a six-camera system using 30 frames per second (fps) and the project is currently working on a 12-camera system which will run at 48fps. Multiple camera calibration has been achieved and is already in use. Trajectories have also been improved so that once the cameras have been calibrated, the sequences are used to make 3D moving points. The new motion capture technology can also be used outdoors and under general lighting.

As a direct result of the KTP project, OMG has acquired new knowledge and capabilities. The Company has achieved an understanding of video technology which is at the cutting edge of international research into computer vision. OMG has launched a special research unit to record, store and embed this learning. Already, the Company is finding opportunities for this expertise to benefit OMG and its subsidiaries.

The partnership has also had a beneficial influence on the Company's operations and competitive position. The developments in video capture have been incorporated into the Company's Vicon Nexus® product to advantage. This feature has been well received by customers as it allows optical motion capture data to be overlaid on reference video images. Because it offers enhanced visualisation, these developments have helped the Company to a greater competitive edge. OMG has also achieved an improved gross margin because the video capture is proving to

be a stronger product than that of its rivals. This situation should improve further when the technology is further released to market in various additional forms.

Reference video technology, developed within the KTP, has already helped OMG to maintain and extend sales of its optical motion capture systems. Sales turnover is expected to rise significantly as a result of this and from subsequent new products based on the technology. The Company is in a very strong position and gaining an ever more impressive reputation for innovation.

RESULTS

- 🌀 The Company now produces motion capture based on video technology
- 🌀 The project has brought and embedded new research and expertise
- 🌀 New products have been introduced using the new technology
- 🌀 Sales turnover is expected to rise significantly as a result of the KTP
- 🌀 The Company has further enhanced its reputation for innovation

The Associates

Dr Manish Jethwa and Morné Pistorius

Two Associates worked on the delivery of this KTP, sharing tasks and working to their individual strengths using their specific skills in engineering and computer science respectively to meet the objectives of the programme of work.

BENEFITS

This KTP has enabled both Associates to supplement their academic learning with practical knowledge from an international company. The experience of managing cutting-edge R & D has enabled both Associates to be awarded membership of the Chartered Management Institute. They have also acquired enhanced business, leadership, technical and project management skills. Their abilities and success in developing new technology has led both to be employed by the Company.

RESULTS

- 🌀 KTP has provided project success and career development
- 🌀 The project has brought increased technical, planning and commercial know-how
- 🌀 Each Associate now has an NVQ Level Four in Management and membership of a professional institution
- 🌀 Both Associates were offered employment with OMG

The Academic Partner

“This KTP project was a major complex piece of work that went almost entirely according to plan, and brought a lot of benefits to all the parties involved.”

Professor Phillip Torr, Lead Academic, Department of Computing, Oxford Brookes University

**OXFORD
BROOKES
UNIVERSITY**

BENEFITS

The KTP project has brought experience, new research, a higher profile for the University and additional teaching material. The project has enabled productive research links to be forged with other members of the School of Technology. OMG has provided current practice in film and visual effects which have benefited the School of Life Sciences, for example, which uses visual motion capture for its study of clinical interventions. The Associates have shared their knowledge via the University's Computer Vision Group, which has led to papers, new research collaborations and access to new data and grants. OMG has also loaned a six-camera motion capture system which will be used for teaching a new motion capture element within undergraduate projects.

RESULTS

- 🌀 An enhanced understanding of motion capture
- 🌀 On-going partnership with the Company
- 🌀 There is greater confidence in forming profitable collaborations
- 🌀 Additional research experience and expertise has been acquired
- 🌀 Useful case study material has been generated