

**Cranfield Defence and Security  
Department of Engineering Systems and Management**

**Internship Project Summer 2010**

**Title: Vehicle Interdependent Control Transmission Architectures (VICTA)**

**Introduction:**

This internship concerns the investigation of a patent pending electric drivetrain system known as Vehicle Interdependent Control Transmission Architectures (VICTA), which has been developed recently by Cranfield University's Power and Drive Systems Group. The VICTA is low carbon vehicle concept that promotes the use of electric propulsion with unique built-in safety and efficiency benefits. It rests on a novel but simple structure that comprises two electric motors axially linked by a differential gear assembly, such that interdependent torque/speed control of individual motors is possible. VICTA has a number of advantages including:

- Simple torque control with no software overhead for safety
- Intrinsic fail-safe feature with built-in redundancy
- Use in both hybrids or all-electric
- Modular operation with one or two motors

The internship will involve close team work with other researchers in the Group, and the opportunities to work with other industry partners who are in the VICTA consortium.

**Aim:**

To evaluate and validate the concept of the VICTA drivetrain

**Objectives:**

- To formulate an evaluation plan for VICTA
- To program some basic control algorithms to drive the VICTA
- To further develop the existing prototype

**Pre-requisites:**

- Background in physics, electrical and/or mechanical engineering
- Strong analytical or simulation skills using MATLAB or similar software tools
- Experience in control and design of electric machine will be a distinct advantage