



Australian Government
Department of Defence
Defence Science and
Technology Organisation



**\$30,000 Sponsored Masters Scholarship
through the
Graduate Industry Linked Entrepreneurial Scheme – GILES**

G05/08 – Microcosm Simulation Environment Validation and Verification

Objective of Project

Microcosm Simulation Environment Validation and Verification

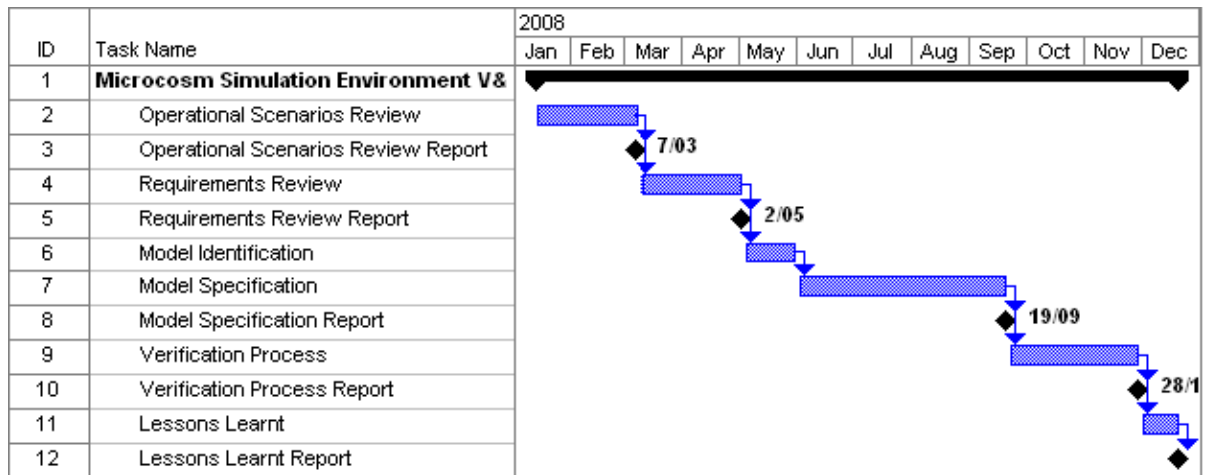
Objective of Project

The purpose of *Microcosm* is to utilize an environment where autonomous platforms (specifically model cars and model blimps) can cooperate in the tracking of multiple targets (i.e., people). In support of the *Microcosm* universe, the platforms, sensors, environment and targets will be simulated, and operational scenarios will be initially executed within the simulated environment. However, the value of the simulation will remain suspect unless the simulation capability can be validated and the simulation fidelity can be verified against the *Microcosm* environment. The objective of the project is to validate the *Microcosm* Simulation Environment requirements and to identify how the *Microcosm* Simulation Environment can be verified.

Project Specification and Timetable

The task requires the following activities to be undertaken:

- Review of *Microcosm* operational scenarios: Confirm that the *Microcosm* requirements can support the operational scenario to sufficient fidelity. In addition, the activity will identify the necessary level of functional and performance fidelity.
- Review of *Microcosm* requirements: Analyze the functional and performance requirements to validate completeness, consistency, conformance to standards; and to confirm that there are no conflicts, the requirements are not ambiguous and there are no technical conflicts.
- Model Specification: Specify simulation models that can be used to verify the *Microcosm* requirements against the operational scenarios and to the required fidelity.
- Verification Process: Develop test plans and test procedures that can be used to verify the actions of entities within the *Microcosm* universe against the simulation models.
- Lessons Learnt: Prepare a report detailing lessons learnt over the period of the project including assumptions made that were invalidated; difficulties realised and actions taken to overcome these difficulties; effectiveness of team communications; tools used, effectiveness of these tools and suggestions for improving these tools; and proposals to increase/improve the effectiveness of the *Microcosm* universe against purpose.



Personal Requirements

The successful applicant must be an Australian citizen, must have good English communication skills (both oral and written), and they are required to gain and hold a security clearance. The successful applicant will also be required to work at the DSTO Edinburgh site over the duration of the project.

Academic Qualifications

The successful applicant will be in their final year of a four-year Systems Engineering course or be engaged in a Systems Engineering Masters degree. Ideally, the successful applicant will be strong in modelling and simulation knowledge and skills.

Other Requirements

The successful applicant will have detailed systems engineering knowledge, particularly requirements analysis, modelling and simulation. The successful applicant should also be aware of the Department of Defense Architecture Framework (DoDAF) or similar architecture frameworks, and be familiar with Microsoft Office products.

Division and Contact Person

Dr. Todd Mansell of the Maritime Operations Division will be the point of contact for DSTO. Dr. Mansell may be contacted on 8259 7566.