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Department of Defence
Defence Science and
Technology Organisation

A Robotic Middleware

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Why robotic middleware?

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- Build a framework that allows for multi-robot cooperation and decision making, with supervisory control in distributed environments (NCW)
- Overcome interoperability issues between different vendor specific hardware and software platforms
- Software development and maintenance cost reduction measure
- Allow for portability of software between different vendor platforms

3 Tier Architecture

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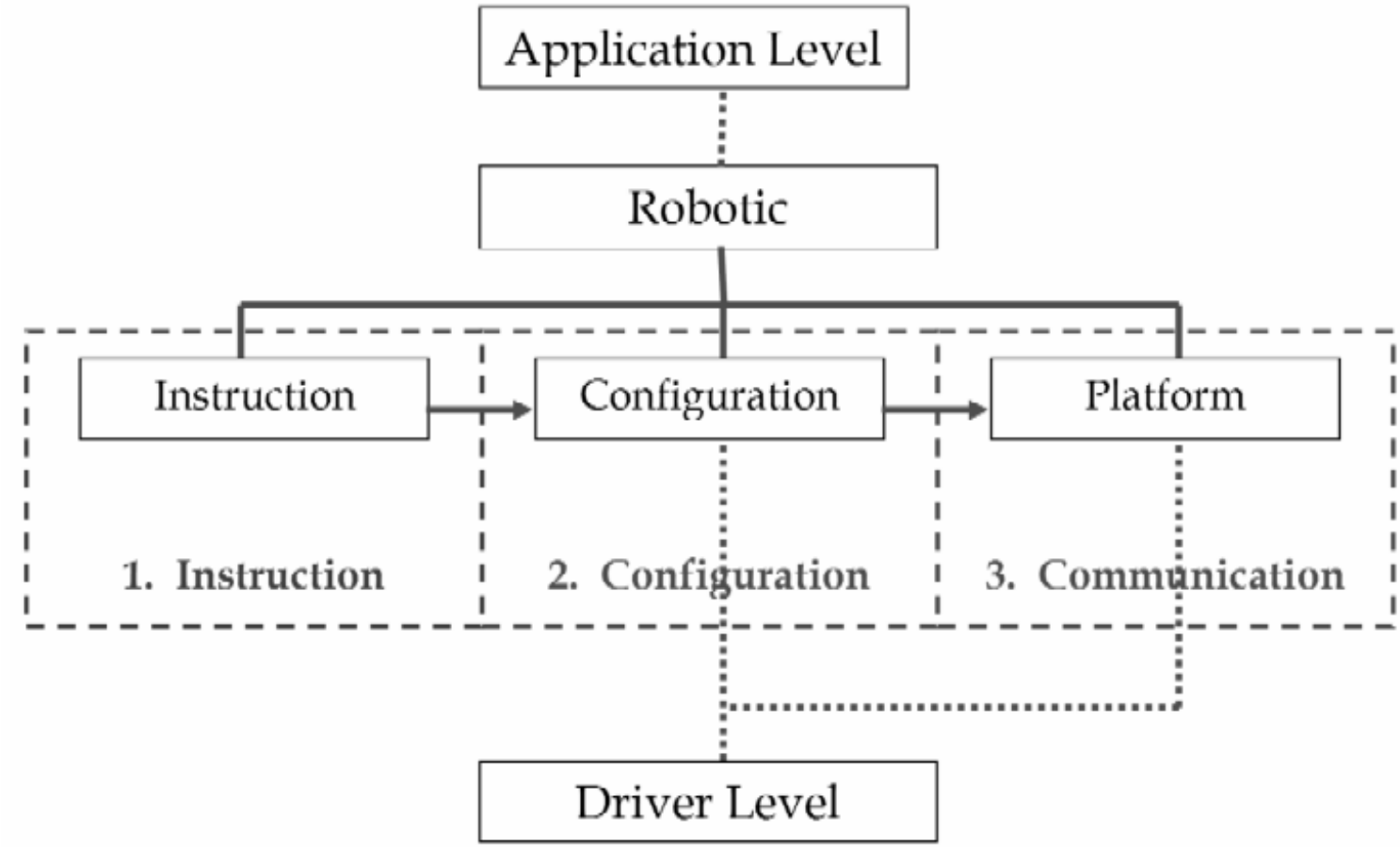

Robotic Middleware Hosting a Mobile Agent
Scenario I

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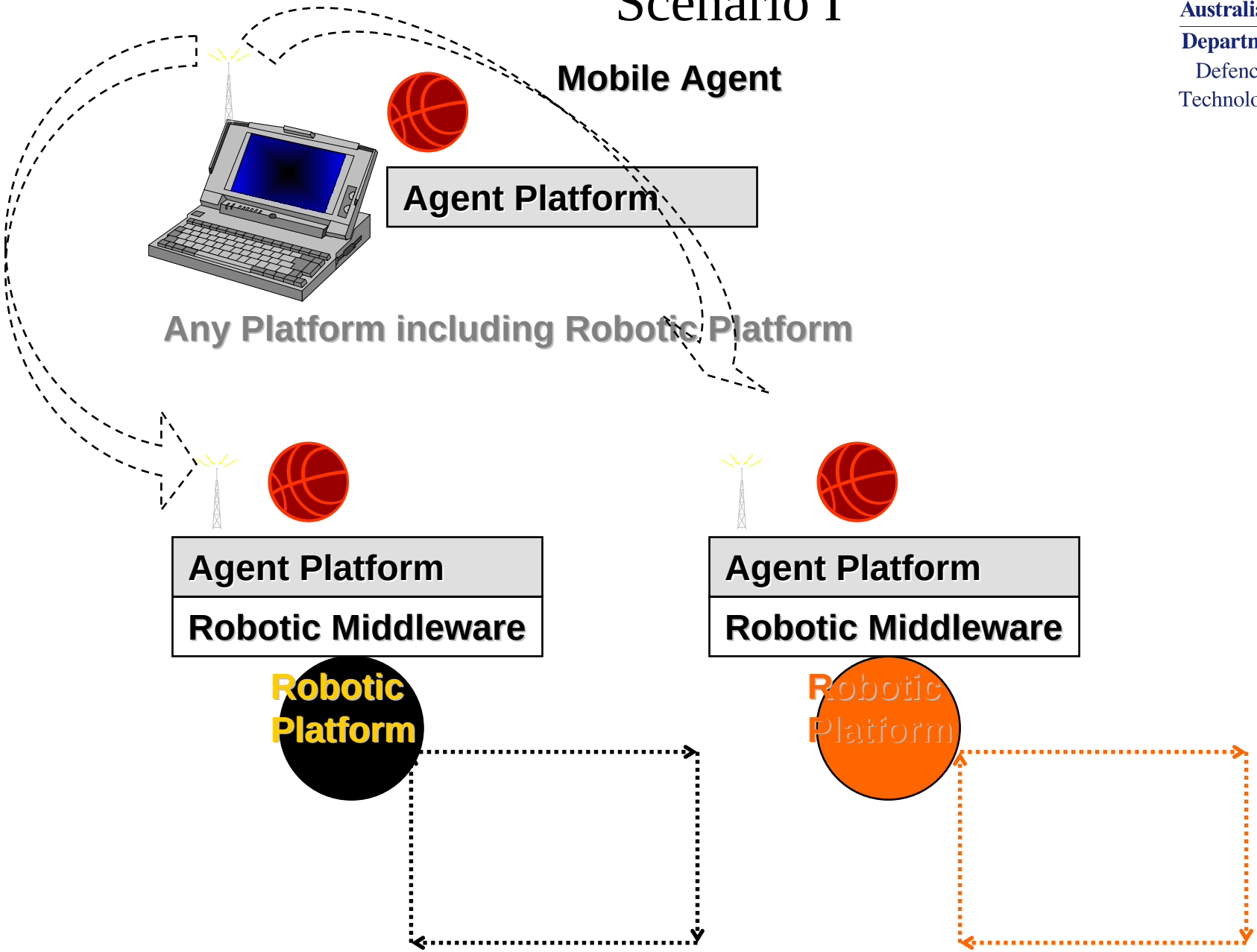

Robotic Middleware Hosting a Mobile Agent
Scenario II

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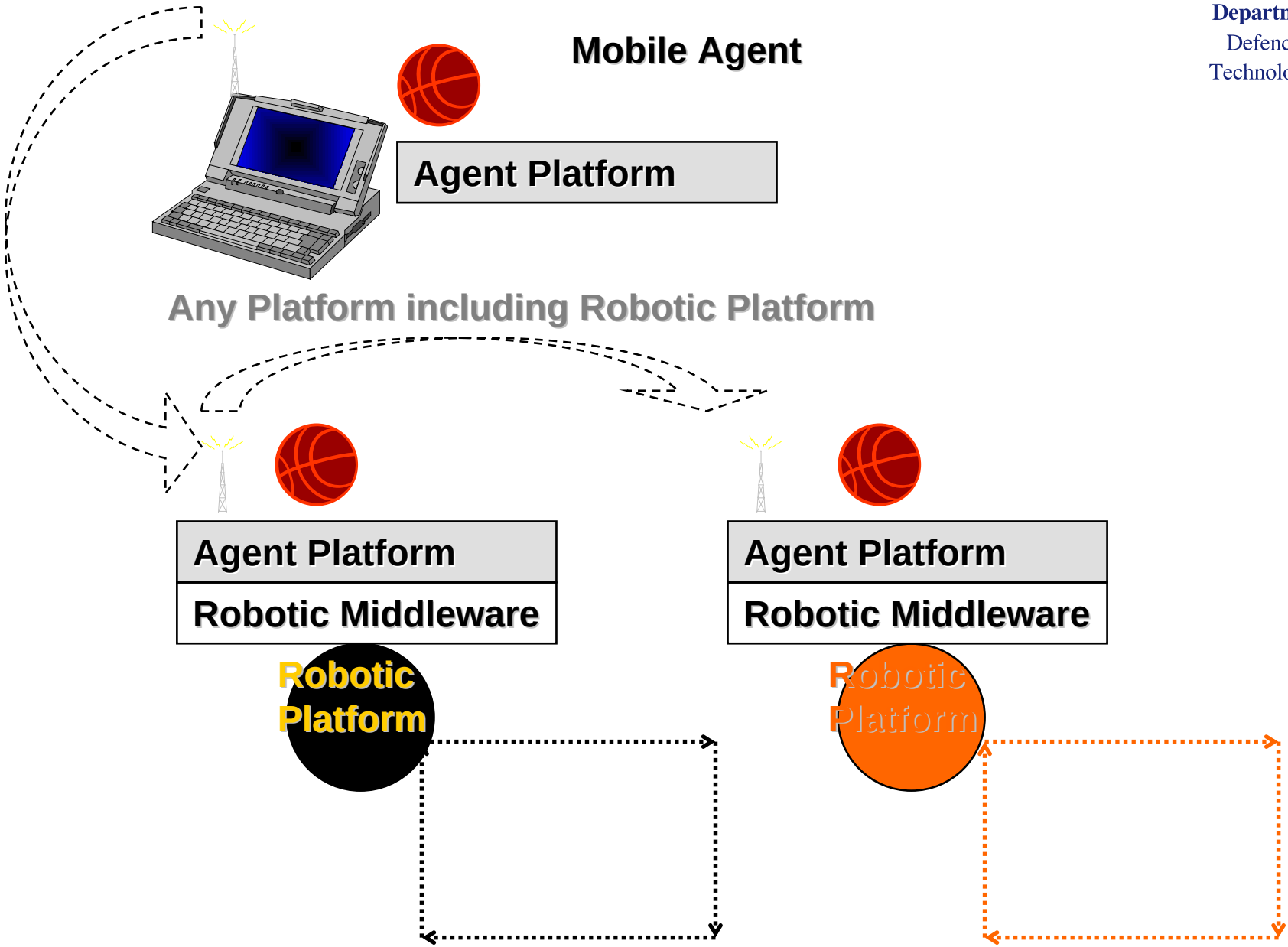

A Simulation Framework

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- testing robotic middleware is a time consuming and tedious process
- in order to speed up the development process it was necessary to do preliminary testing outside robotic platforms
- need for high performance ad- hoc simulation and experimentation environment

A Simulation Framework - Architectural Model

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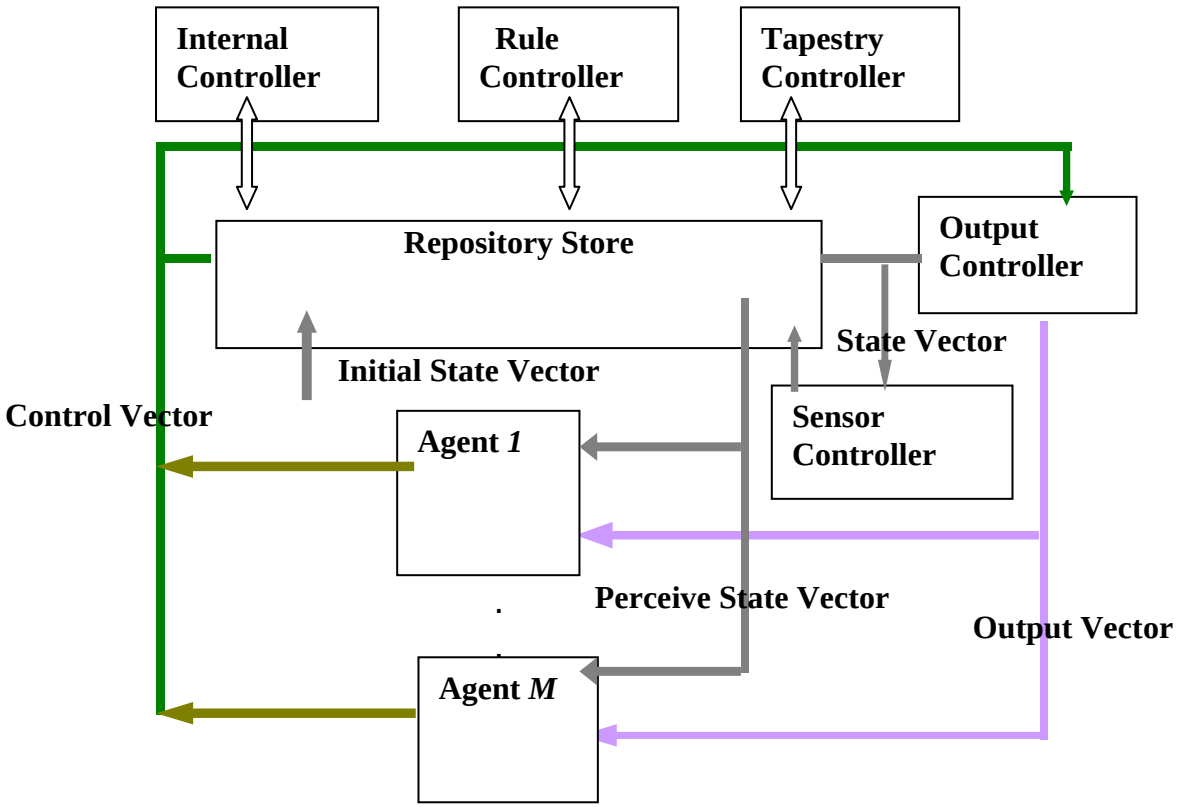
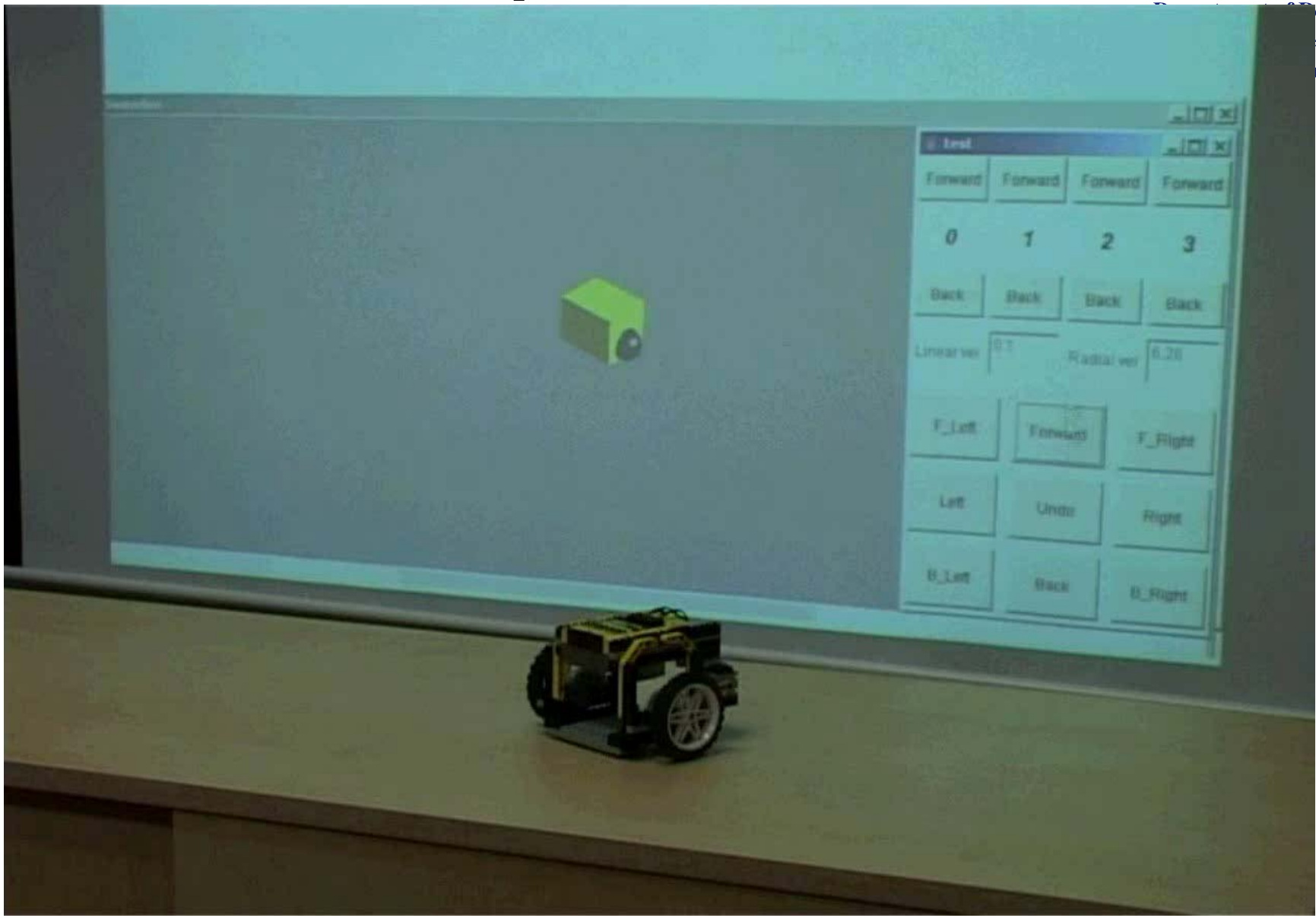
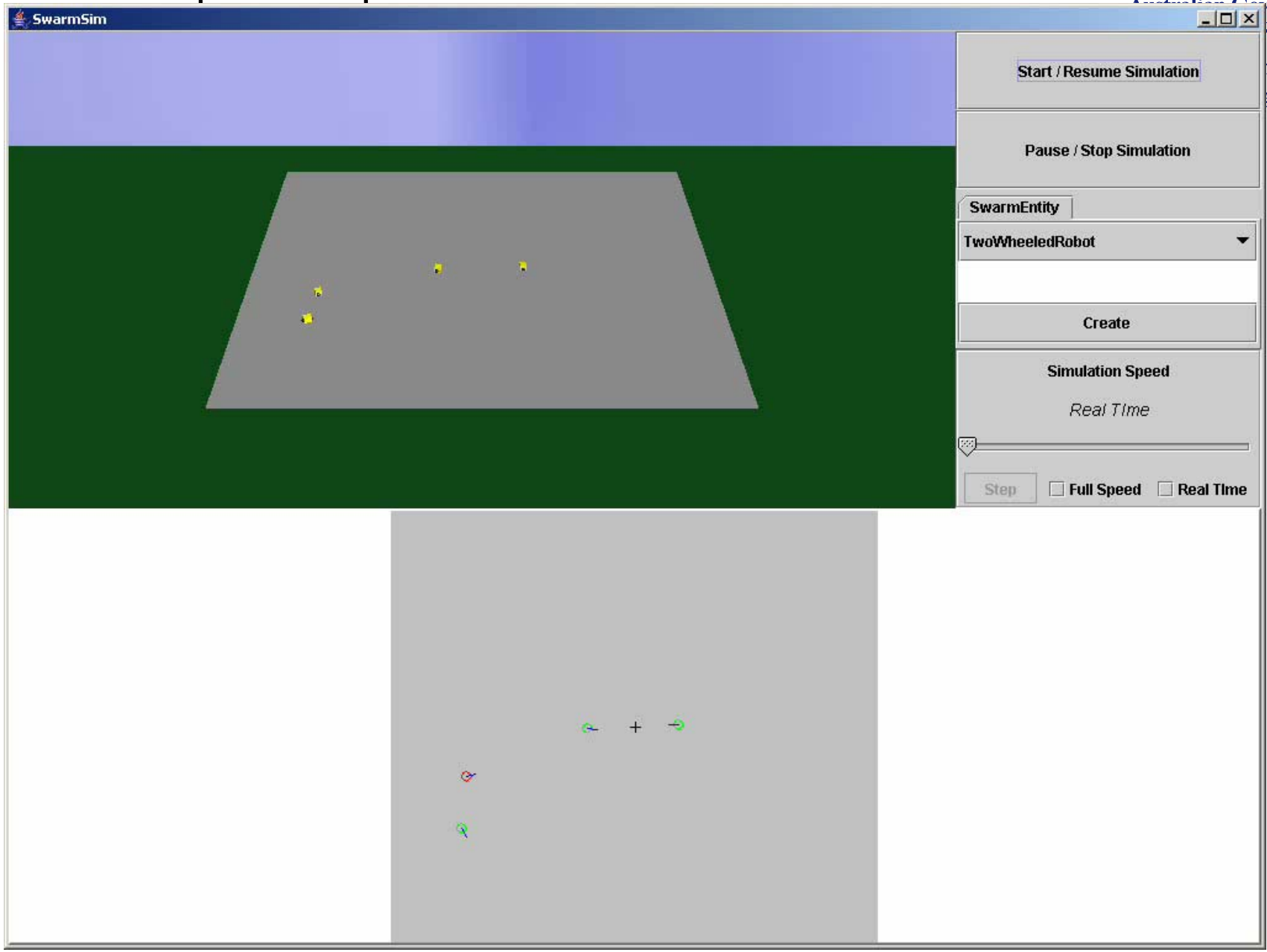


Robotic Middleware and Simulation Framework – Mind Storm Robot Example



Robotic Middleware and Simulation Framework – Game of Tips Example



Physical Security Simulation Example

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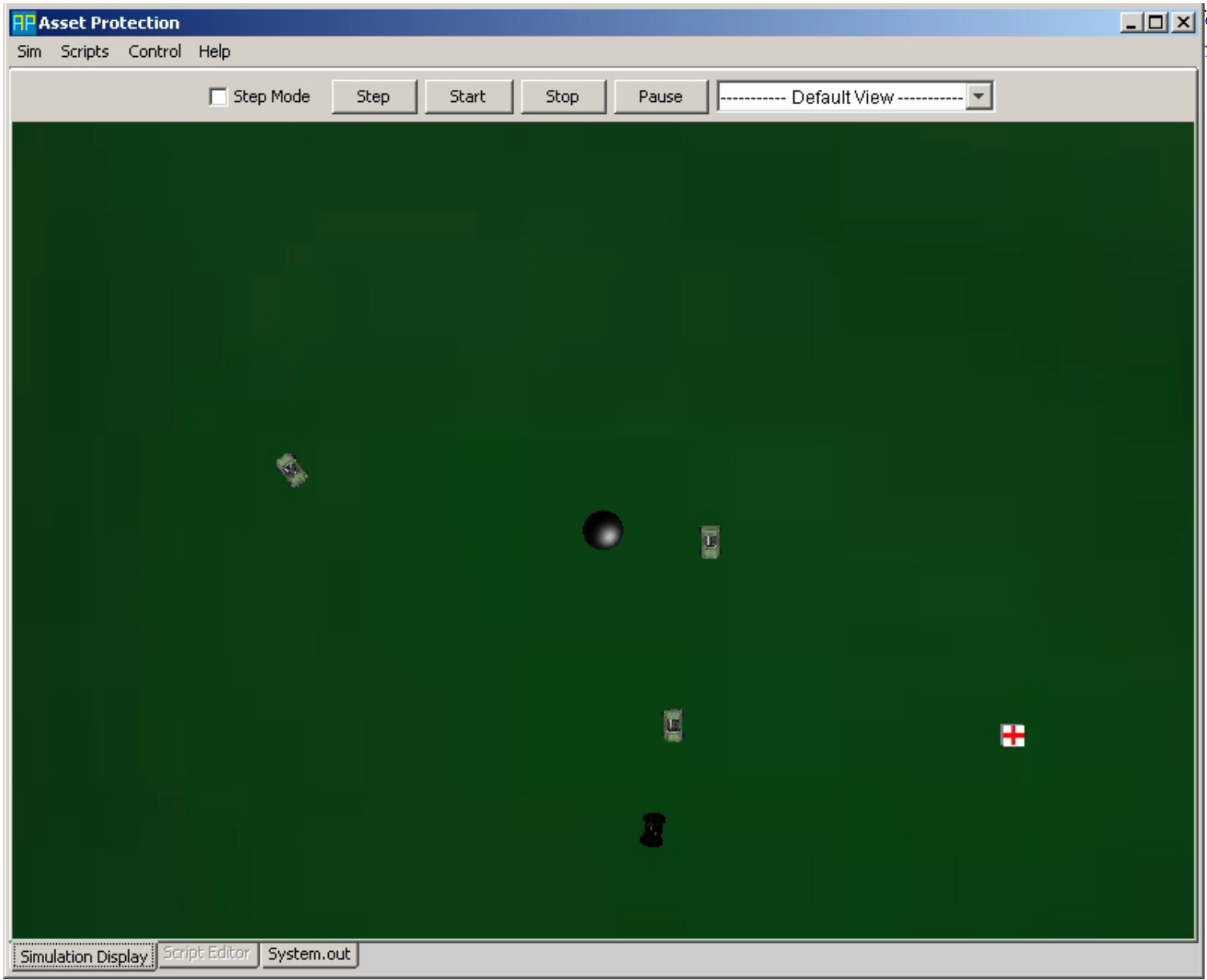

Conclusions

- Robotic Middleware is a future and the cost cutting measure for Defence,
- Developed prototype is a contribution to the standard for robotics industry,
- Developed simulation framework for real time robotic applications has been successfully deployed for gaming applications.