



Centre for Systems Engineering Bringing Systems Engineering to Life, Technology Enhanced Learning Paul Adams

Cranfield
UNIVERSITY

Systems Engineering for Defence Capability (SEDC) Courses

The Twenty First century has been called the 'Systems Century'. We all live and work in an increasingly complex, joined up and rapidly changing world. This requires individuals and integrated teams to think in different, innovative ways in order to bring about success. Our Systems Engineering (SE) programmes are aimed at equipping people to understand and deal with these complex challenges.

The SEDC courses provide a comprehensive coverage of modern Systems Engineering principles, practices, methods and tools; placing great emphasis on their practical application through use of real world case studies and technology-enhanced learning.

How We Use Technology for Learning

The SEDC MSc, PgDip and PgCert courses include a range of teaching designs to cater for the different learning preferences of students. An ever increasing dimension of teaching is the use of technology to enhance learning. We have a range of technology aids used on the course, here are a few examples:

Learning, Virtual Learning Environments and Software Tools

We use the Virtual Learning Environment for a range of activities to enable distance learning and part-time study to be more convenient for students. We have a range of software tools available, which augments the 'pen and paper' approach.

We also use tools such as Webex and YouTube to deliver content to students.

Models and Props

We use a range of 3-D printed components and props to run through wargames and scenarios, using Airfix models as systems. The aim is to enable more practical learning of complex concepts such as capability generation, system of systems interoperability, operational architectures and resilience.

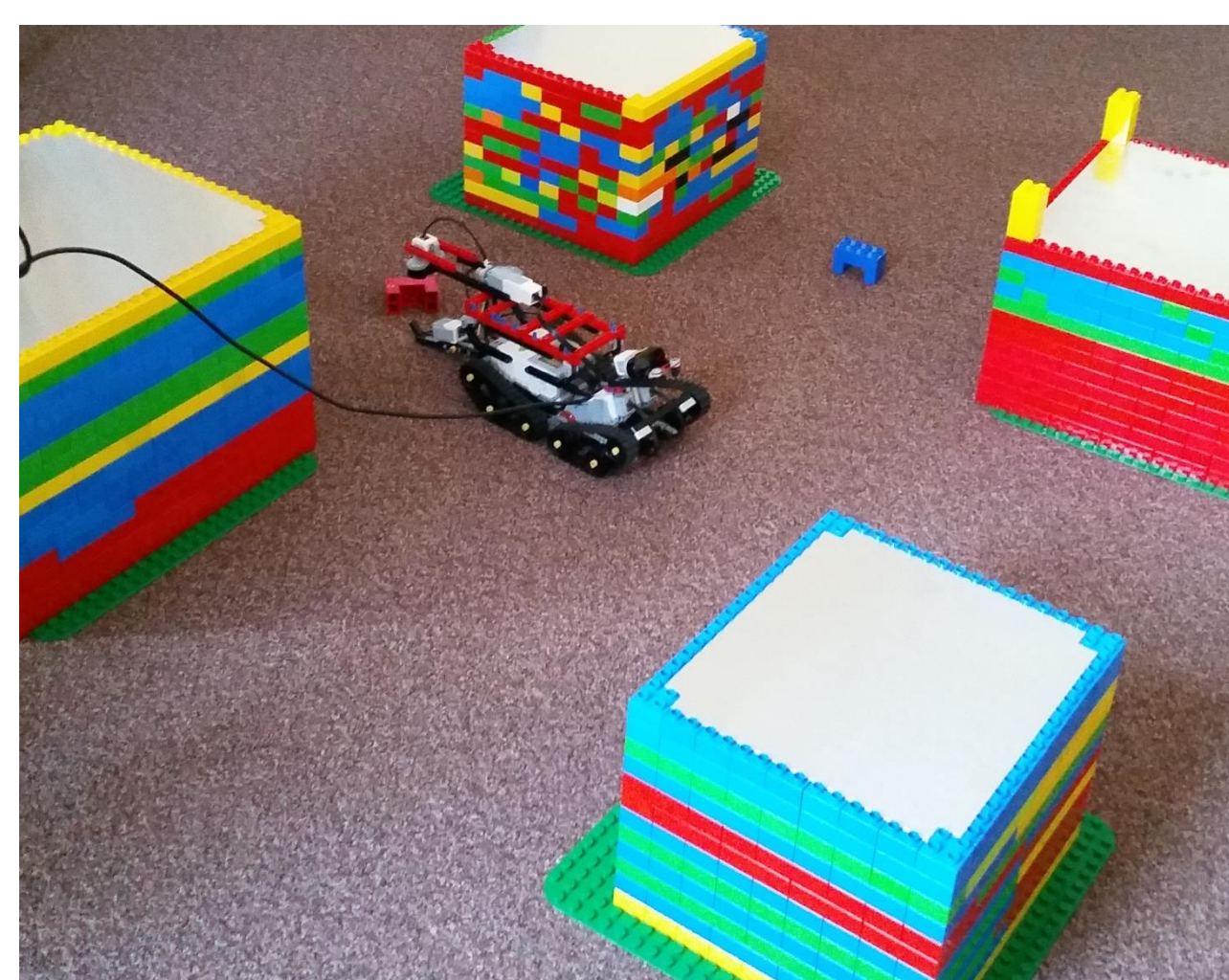
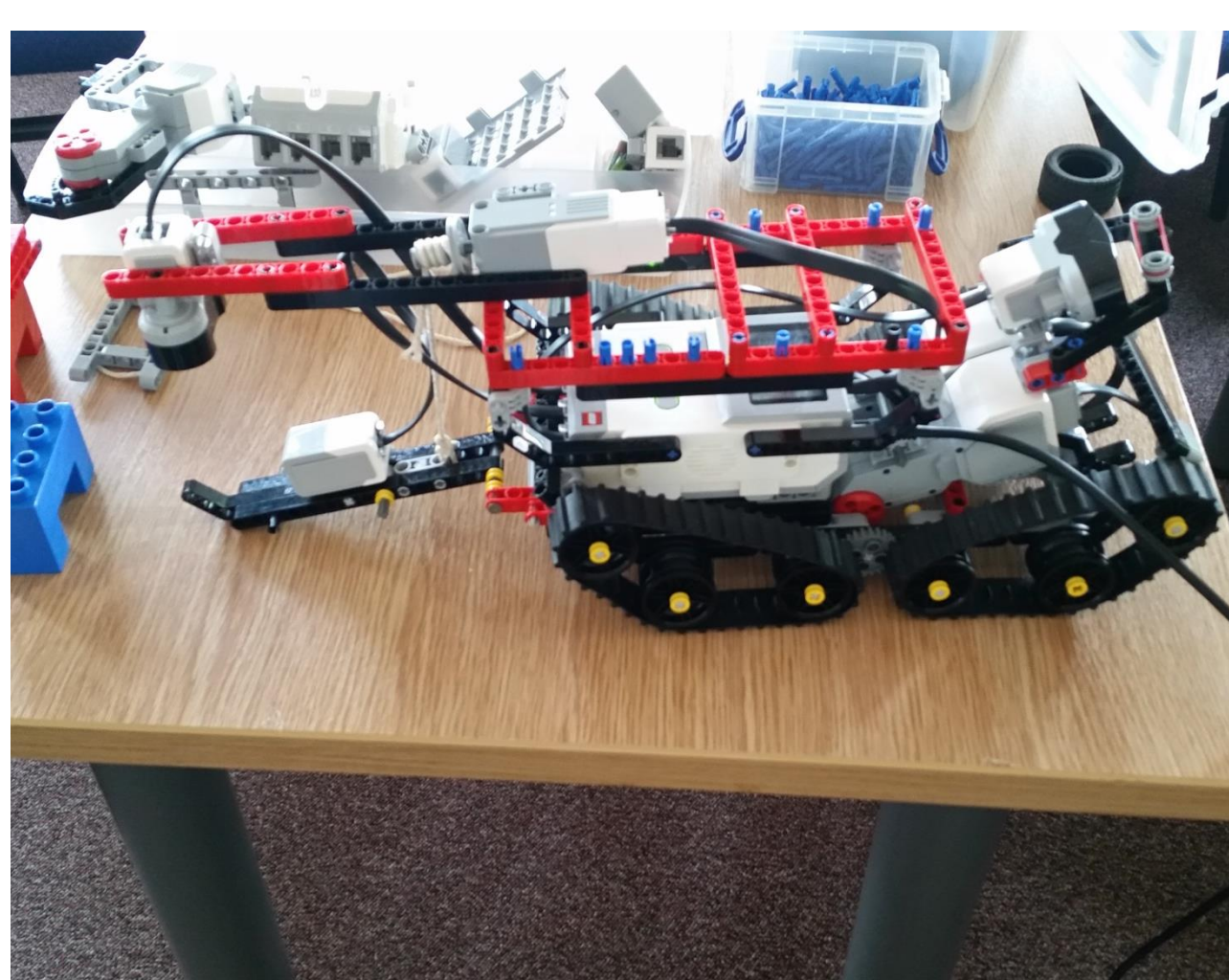


Fast Prototyping and Testing

To achieve a working prototype at the end of the Systems Engineering Workshop (SEW) students need to work as a team, exploring the transformation from functional architecture to physical design choices.

Students work with other 'suppliers' to create a system using computer-aided design tools, prototyping hardware and programmable software, whilst evaluating the impact of requirements and design trade-off decisions.

The end result is tested using a Lego™ city test track to achieve the ultimate purpose - the use of automated vehicles for dangerous tasks.



Don't Just Take Our Word for It!

Here are some of the student testimonials from those that have had the opportunity to design and build robots in the Systems Engineering Workshop module, part of the SEDC MSc, PgDip and PgCert.



Lego Mindstorms™ ...

"...exposed the real issues with integration and the complexities Systems Engineers face in the 'real' world"

MSc Student (2015)

"...is a good method to help collective Systems Engineers to work together to deal with real system problems."

MSc Student (2015)