

2. KEYNOTE 1: How to eat an elephant – building a constituency for research in simulation and modelling

Professor Andrew Parfitt

**Pro Vice Chancellor and Vice President, Division of Information Technology,
Engineering and the Environment, University of South Australia**

Abstract

Research to develop disciplines and capabilities that underpin outcomes for a variety of applications often struggles to gain support from end users, partly due to assumptions made about the utility of the underpinning science or technologies and partly because it is difficult to find a constituency within some application domains to champion the adoption of new techniques. Modelling and simulation and systems engineering are broad areas that seems to fall within this category outside a few recognised communities.

This presentation discusses some of the ways in which the research community might look to engage users in order to develop an understanding of the benefits associated with the adoption of a systems approach, and in particular the use of modelling and simulation in the design, implementation and operations phases of large projects.

Presenter Biography

Professor Andrew Parfitt commenced as Pro Vice Chancellor and Vice President of the Division of Information Technology, Engineering and the Environment in August 2007. Previously, he was the Director of UniSA's Institute for Telecommunications Research (ITR) (2004 - 2007), one of Australia's foremost ICT research organisations.

In 2006 he concurrently acted as Head of the School of Electrical and Information Engineering and led the strategic planning that resulted in the formation of the new Defence and Systems Institute (DASI) and a closer cooperation between our electrical and electronic engineering related disciplines.

Andrew has been a major contributor to the ATN Universities' push to establish and maintain measures of applied research on the research evaluation agenda.

He has a PhD in Electrical and Electronic Engineering from Adelaide University and was an Associate Dean in the Faculty of Engineering there, before joining CSIRO's Telecommunications and Industrial Physics division in Sydney in 1998. Within the CSIRO he led the Space and Satellite Communication Systems team from 2001. During this time he was responsible for fundamental and applied research in areas ranging from radar and communications to satellite systems and radio astronomy technologies.

Andrew has had an outstanding career as a specialist in antenna and radio systems and more recently in areas relating to space science and technology. A graduate in engineering from the

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14. ABSTRACT Research to develop disciplines and capabilities that underpin outcomes for a variety of applications often struggles to gain support from end users, partly due to assumptions made about the utility of the underpinning science or technologies and partly because it is difficult to find a constituency within some application domains to champion the adoption of new techniques. Modelling and simulation and systems engineering are broad areas that seems to fall within this category outside a few recognised communities. This presentation discusses some of the ways in which the research community might look to engage users in order to develop an understanding of the benefits associated with the adoption of a systems approach, and in particular the use of modelling and simulation in the design, implementation and operations phases of large projects.			
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University of Adelaide, he began his professional career with the Defence Science and Technology Organisation before returning to study under a DSTO cadetship.

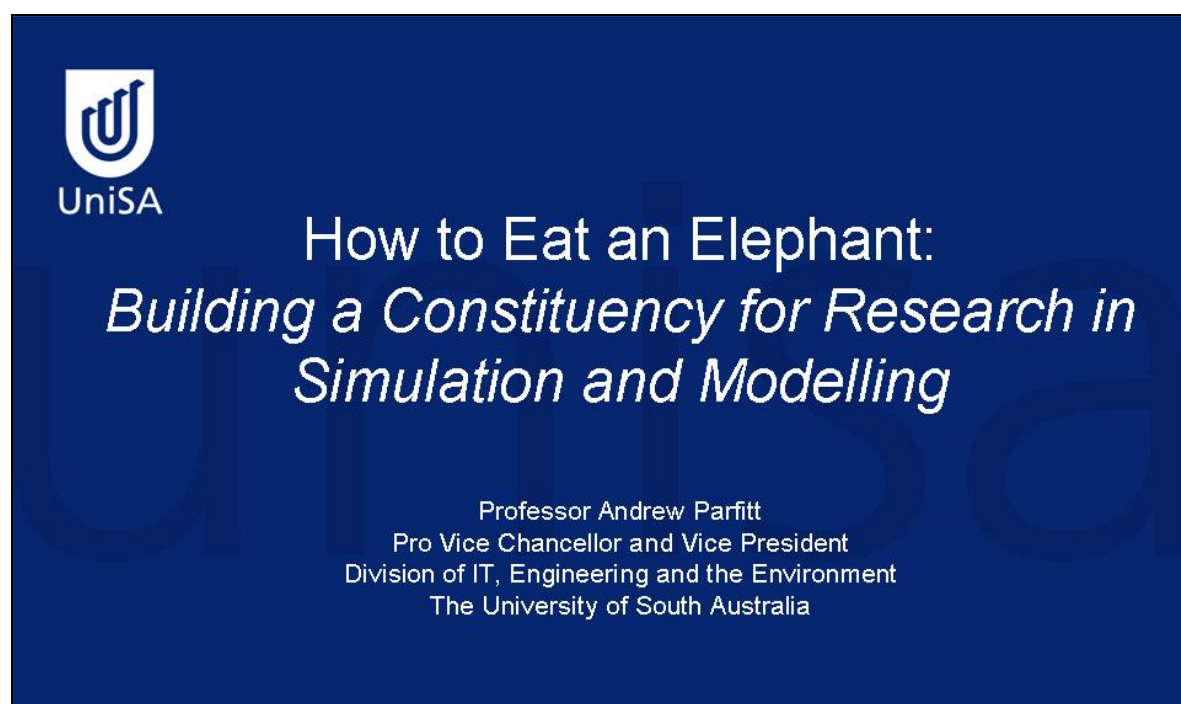
In 2003 Andrew became CEO of the Cooperative Research Centre for Satellite Systems (CRCSS), the national research group responsible for launching FedSat, Australia's first satellite in 30 years.


He has held adjunct academic positions at UniSA, the University of Adelaide, the University of Sydney and Macquarie University. In a professional capacity he is a Senior Member of the Institute of Electrical and Electronics Engineers and has been Chair of both its South Australia and New South Wales Sections. He is Chair of the Australian Academy of Science National Committee for Radio Science, and is a Fellow of Engineers Australia.

He is a Board Member of the Defence Teaming Centre and the Technology Industry Association.

In 2010 he was appointed to the Commonwealth Government's Space Industry Innovation Council.


Presentation

A presentation slide with a dark blue background. In the top left corner is the UniSA logo, which consists of a white shield containing a stylized 'U' and 'A' in blue, with the text 'UniSA' below it. The main title is centered in white text: 'How to Eat an Elephant: Building a Constituency for Research in Simulation and Modelling'. Below the title, the presenter's name and affiliation are listed in white text: 'Professor Andrew Parfitt, Pro Vice Chancellor and Vice President, Division of IT, Engineering and the Environment, The University of South Australia'.



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How to Eat an Elephant:
*Building a Constituency for Research in
Simulation and Modelling*

Professor Andrew Parfitt
Pro Vice Chancellor and Vice President
Division of IT, Engineering and the Environment
The University of South Australia



The University of South Australia



37,000 students (undergraduate, postgraduate, research)


6,000 International onshore students

3,500 staff (academic, research, professional)

4 Academic Divisions, 4 City Campuses


Business; Health Sciences; Education Arts and Social Sciences; IT Engineering and Environment

A\$550m budget, A\$60m research income



The Problem of Enabling Disciplines:

What is an enabling discipline?



The diagram illustrates the Center for Computational Diagnostics as a hub of interdisciplinary research. It features eight interconnected nodes: Medical Informatics (top), Information Science (top-right), Computer Science (right), Computer Engineering (bottom-right), Mathematics (bottom), Chemistry (bottom-left), Biology (left), and Medicine (top-left). The central text reads 'CENTER FOR COMPUTATIONAL DIAGNOSTICS'.



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The Problem of Enabling Disciplines:

How do you build an enabling discipline?



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Challenges



1. Identity – what is it?
2. Utility – what does it do?
3. Maturity – does it work?
4. Ubiquity – doesn't everyone do it?


Classic Example - *Statistics*



Education and Research: building a foundation



- Education – skills, professions, CPD ...
- Research – knowledge creation, innovation ...
- Engagement –
 - Partnerships and collaboration
 - Industry alliance programs
 - Networks and clusters
 - Technology transfer




Model 1: Collaborative Research



- Materials Science and Technology
 - High quality research (ERA 4 and 5)
 - Collaborative program (CRCs, ITCs, CoEs)
- Example partnership:
 - SMR Automotive – plastic mirrors
 - Long term strategic alliance
 - Staff exchanges, joint appointments
- Alignment of Interests



Model 2: Industry Alliance Program



- ICT Industry - Sector Wide
- Emphasis on developing *work-ready skills*
- Innovation factory – *bite size real problems*
- Partnership on student projects
- Workplace experience – building familiarity
- Promotion of outcomes



Model 3: Research and Innovation Clusters



- Strategic Research Partnerships
- Multidisciplinary challenges
- Extensive consultation and mapping
- Wide participation across UniSA
- Innovative initiatives
 - Zero Waste SA Centre
 - Northern Business Research Partnerships
- From seed funding to major coinvestment



Model 4: Technology Transfer




- Technology transfer nodes
- Spin out companies
- Joint ventures
- IP licencing
- Incubation
- ITEK



Key Success Attributes



- Communication and openness
- Realistic expectations
- Clarity around purpose and outcomes
- Understanding of opportunities
- Leveraging successful models
- Handling Intellectual Property


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Questions?

One bite at a time!

