

ARC Centres of Excellence Program

ARC Centre for Complex Dynamic Systems and Control

Director: Professor R Middleton

Collaborating Institutions: The University of Newcastle
 BHP Billiton
 Matrikon Pty Ltd
 Industrial Automation Services

Complex dynamic systems characterise the world we live in, encompassing environmental systems, industrial processes, communications networks, and transportation infrastructure. These systems frequently exhibit feedback interactions, non-linear behaviour, multi-variable cross-coupling, unpredictability, and unstable states, all leading to complex behaviour which is difficult to analyse, design, predict, optimise and control.

The Centre will build on the successes of the existing ARC Special Research Centre for Integrated Dynamics and Control to become a world leader in the analysis, design, optimisation and control of complex dynamic systems. Drawing on a multidisciplinary team with a strong track record of research in electrical engineering, mathematics and statistics, the Centre will focus on fundamental problems in control system design, mathematical systems theory, learning and adaptation, and signal processing. This fundamental research will support applied research in process optimisation, high fidelity control, and problems in emerging technologies such as nanoscale positioning and biomedical systems.