



**OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE
SYSTEMS ENGINEERING**

**System of Systems Engineering
Collaborators Information Exchange (SoSECIE)**

*November 27, 2018
11:00 a.m. to Noon Eastern Time*

**Emergence as a Subject of Research, Research Methods, and
Engineering Knowledge and Practice**

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The brief discusses several views on the definition of the term “emergence” in relation to systems. The brief then discusses several approaches to research which have different purposes in order to identify the relationship of the research approach and the issue of emergence. The discussion of research methods is developed through a consideration of the kind of knowledge needed in order to perform engineering work. Through this discussion it is possible to identify the relationship between research methodologies, engineering development and the issue of emergence. In particular, it is shown that the problem of emergence contains the core of a pathway to the engineering of systems.

Biography

Dr. Timothy Ferris received the degrees B.E.Hons, University of Adelaide, Adelaide, South Australia in 1982, B.Th., Flinders University, Adelaide, SA in 1988, B.Litt.Hons., Deakin University, Geelong, Victoria in 1991, GradCertEd, Queensland University of Technology, Brisbane, Queensland in 2002, and PhD, University of South Australia, Adelaide, SA in 1997. All these universities are in Australia. His PhD was in the area of the theory of measurement. He worked as an Engineer for the Electricity Trust of South Australia and Morrison Court Pty Ltd, and as a Church Worker in the Presbyterian Church of Australia before commencing as a faculty member in engineering in University of South Australia, at Mawson Lakes, South Australia, in 1991. He has published about 150 papers in journals and conferences and various other contributions to the scholarly literature. His current research interests relate to resilience issues in systems engineering, engineering education and research methods.

He was a member of the BKCASE project team and led the development of the graduate reference curriculum, GRCSE. In his academic work he has worked for University of South Australia and Cranfield University and done some adjunct teaching for Missouri University of Science and Technology. He has supervised nine PhD students to graduation and many Masters thesis students.