

# Projects as Complex Adaptive Systems - understanding how complexity influences project planning, control and risk management

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Large scaled, capital intensive and technically intricate projects (i.e. complex projects) have an extremely poor delivery track record. In fact, research published by IPA Global in 2012 identified that 65% of over 300 complex infrastructure projects observed globally, had failed to meet their sanctioned objectives (i.e. to come in on time and within budget, whilst delivering the expected benefits) and in 2015, Bent Flyvbjerg of Oxford Business School identified a similar failure rate amongst a data base of over 2,000 complex projects. Equally alarming is that this high failure rate had not improved in at least 70 years, across all major project sectors.

Unfortunately what these studies confirm is that despite any perceived improvements in project planning, control and risk management practices over the years, the measurable impact on complex project success rates has been negligible. Argue it any way you want, but an industry which boasts an almost 70% failure rate over 70 years, still has room to learn. Now although there are a broad range of views as to why complex project failure rates are so high, one of the growing theoretical arguments is that conventional project methods fail to adequately account for the true nature of complexity.

That is, complex projects are highly integrated and energised entities comprising of an advanced number of stakeholders, tasks, work packages, resources and objectives, all intricately entwined into a colossal spider web of co-dependent relationships which are continually interacting and adjusting in pursuit of a common goal. In many ways, complex projects are comparable to those highly adaptive and purpose driven complex systems which exist in nature, biology and science such as a colony of bees building a hive, an immune system attacking a virus, a hurricane forming off a coastline or a rain-forest preparing for the coming of winter.

The observation that projects are in fact scientifically valid, complex systems opens up an interesting door for the project management community because if it is indeed true, then it means that the scientifically endorsed rules of Complex Systems Theory apply to project management in much the same manner as any other control system within the broader Complexity Sciences. More specifically, the teachings of Complex Systems Theory potentially offer a next generation solution to controlling the highly dynamic, multi-dimensional and rapidly shifting challenges of modern day complex projects.

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Come join us as we discuss how advanced states of complexity influence project planning, risk and control. More importantly join in as we discuss how appointed project professionals need to start challenging the conventional project methods with a Complex Systems Theory mindset.

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Warren is an associate of the *International Centre for Complex Project Management (ICCPM)* and currently consults as an industry specialist on how to embed appropriate governance, risk and assurance practices within complex project delivery environments.



In this regard, Warren is and is engaged in a Higher Degree in Research at the Queensland University of Technology, Engineering & Science Faculty on the topic “Controlling risks in complex-uncertain project environments”