

"Composable Capability" - Principles, strategies and methods for capability systems engineering

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Abstract. Current systems engineering approaches for Capability Systems Engineering are difficult to understand and are not deployed consistently. Language is a barrier to understanding. A top-down approach to "capability" still seems intractable. The traditional system focus of defence acquisition has been the _equipment_. Force elements have been constructed bottom up from equipment. Inevitably such bottom-up integration leads to unintended emergent properties in operational "force elements". This paper proposes that: improved operational readiness, performance and interoperability can be achieved by applying a systems engineering methodology in which the "system focus" is the force element, not the individual equipment; it is possible to identify a finite set of stable, well characterised building blocks (Force Elements) from which a wide variety of task force structures can be put together, providing almost infinite variety of capability solutions; that by thus re-framing the problem we can contain the complexity explosion, giving more benefit with less difficulty; and that using such an approach top-down will allow better statements of need, requirements and acceptance criteria to be passed to the acquisition community and supply chain.