

# Affordability Considerations: Cost Effective Capability

*Joseph Bobinis (INCOSE Affordability Working Group) - joseph.bobinis@lmco.com*

*Jay Haimowitz (INCOSE Affordability Working Group) - jay.s.haimowitz@lmco.com*

*Terry Mitchell (INCOSE Affordability Working Group) - pgtuttle@earthlink.net*

*Cheryl Garrison (INCOSE Affordability Working Group) - cheryl.garrison@ngc.com*

*Jeff Klingberg (INCOSE Affordability Working Group) -*

*Paul Tuttle (INCOSE Affordability Working Group) -*

*Copyright © 2013 by Bobinis, Haimowitz, Mitchell, Garrison, Klingberg, Tuttle. Published and used by INCOSE with permission*

**Abstract.** This paper examines how best to determine the contextual and dynamic attributes of an affordable system. The complexity of the problem cannot be overstated. The affordability trade space is composed of a relational set of attributes that are contextually sensitive; once this set is bounded, the need arises for an implicit comparison to other systems, sub-systems and components. The problem may be embedded in how systems are designed, how they are governed, and how they are evolved. Considerations are provided to help resolve the complexities involved in identifying and evaluating what an affordable system is. Most of the existing literature is focused on cost comparison or performance comparison of systems separately; the literature which addresses a perspective of how cost and capability of systems can be integrated is found under the disciplines of Cost as an Independent Variable (CAIV) and Value Engineering (VE), but appears insufficient in providing an encompassing framework in which to develop a design for affordability trade space. Both of these disciplines may not adequately address the life cycle or temporal dimensions of systems. To address this deficiency, INCOSE and National Defense Industrial Association (NDIA) have worked to define affordability, and identify related concerns, through ongoing working groups since late 2009. Both organizations have developed definitions for use in this context. Even though affordability has been defined by NDIA, INCOSE and Military Operations Research Society (MORS), in discussions at the recent MORS Special Meeting on Affordability Analysis - How do we do it? (Oct.2012), the Development Planning Working Group discovered that affordability analysis was contextually-sensitive, often leading to misunderstanding and fragmented perspectives. Various industry working groups have recommended developing and formalizing affordability analysis processes, including recognizing the difference between cost and affordability analyses... Key insights include the need to consistently define an affordability context, and establish a framework for the appropriate analytic process. They also have determined that accountability for affordability needs to be assigned across the life cycle. System Engineers must understand that the affordability trade space is fluid, an ever changing set of boundaries that evolve as mission needs evolve, and recognize that any affordable solution is essentially a \_snapshot\_ within that trade space at any point in the life of the system.