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## **Valuation of Real Options as Competitive Prototyping in System Development**

**p.668** *Diana I. Angelis, David N. Ford, and COL John T. Dillard, USA (Ret.)*

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A Real Options Valuation Model is developed to recommend how to value technology when benefits cannot be measured in monetary value. Expected values of effectiveness are used to select the preferred alternative. The methodology is illustrated using three guidance system technologies in the Army's Javelin program. The strategy created multiple real options that gave the Army the right (without the obligation) to select one guidance system technology based on the outcome of technology development tests. Results indicate the Army paid less than the total value of the options, but could have increased net savings by paying different amounts to test each alternative. The analysis method provides a logical and defensible approach to the analysis of alternatives under technology development uncertainty.

## **Better Buying Power or Better Off Not? Purchasing Technical Data for Weapon Systems**

**p.694** *James Hasik*

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In September 2010, then-Under Secretary of Defense for Acquisition, Technology and Logistics Ashton Carter directed program managers to routinely analyze the business cases behind procuring the technical data packages and rights to new weapon systems. In this article, the author recounts some of the historical difficulties with procuring technical data for fielded systems, and presents a heuristic economic model outlining the problems that PMs should consider before making an offer.

## **Initial Capabilities Documents: A 10-Year Retrospective of Tools, Methodologies, and Best Practices**

*Maj Bryan D. Main, USAF, Capt Michael P. Kretser, USAF,*

*p.716* *Joshua M. Shearer, and Lt Col Darin A. Ladd, USAF*

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The Joint Capabilities Integration and Development System (JCIDS) is 10 years old and ripe for review. A central output document of the JCIDS process is an Initial Capabilities Document (ICD) used by the Department of Defense to define gaps in a functional capability area and define new capabilities required. The research team analyzed 10 years of ICDs to identify methods and trends. The team found that several methodologies were favored and a convergence emerged in format and necessary content. Additionally, potential shortfalls in current best practices of interest to implementers and decision makers are identified. Guidelines and best practices are presented to create more effective, concise, and complete ICDs.

## **A Proposed 2025 Ground Systems “Systems Engineering” Process**

*p.752* *Robert E. Smith and LTC Brian D. Vogt, USA*

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The U.S. Army’s mission reflects a strong impetus to provide flexible and adaptable ground vehicles that are rapidly fieldable. Emerging manufacturing technology, such as three-dimensional printing, is making mass customization possible in commercial industry. If the Army could produce tailored military ground vehicles that incorporate mission-specific tactics, it would outperform generic systems. To produce such systems, a new systems engineering (SE) process should be developed. Virtual environments are central to the proposed SE/2025 process because they provide a sandbox where soldiers and engineers might directly collaborate to codevelop tactics and technologies simultaneously. The authors’ intent is to describe how ground vehicle systems might be developed in 2025 as well as to describe current efforts underway to shape the future.

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*Grounded: The Case for Abolishing the United States Air Force*

*Written by Robert M. Farley, Reviewed by Aleisha R. Jenkins-Bey*

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