## Systems Engineering Collaborators Information Exchange (SECIE)

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# Knowledge-Based Analysis and Design (KBAD): An Approach to Rapid Systems Engineering for the Lifecycle

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**Abstract**

This seminar describes the features of the Knowledge-Based Analysis and Design (KBAD) methodology, which provides a cost-effective way to meet the goals of the design and analysis phase of the acquisition lifecycle. KBAD combines system engineering and program management disciplines to enable the development of a knowledgebase that can result in cost-effective decision making. KBAD spans the acquisition lifecycle enabling support for design, development, integration, test, operations and sustainment. KBAD focuses on using a variety of techniques and tools, brought together in a common database using special software to migrate data between tools. The KBAD process links the technique and tools together in an executable, cost-effective way to support decision making at all levels. A major advance in this methodology is the development of a simplified data schema that provides the information necessary to meet DoD Architecture Framework (DoDAF) needs. Reducing the number of primary data elements means less complexity for analysts to deal with, thus enabling quicker capture and presentation of the information for analysis and decision making. KBAD also includes an approach to developing a reasonable set of operational scenarios for analysis. This methodology results in a non-proprietary, faster, better, and cheaper approach to conducting analysis and design that results in a knowledge-base, which can be used to make decisions.

**Biography**

Dr. Steven Dam is the President and Founder of the Systems and Proposal Engineering Company (SPEC Innovations), based in Marshall, VA. He has been involved with structured analysis, software development, and system engineering for over 30 years. He participated in the development of C4ISR Architecture Framework and DoD Architecture Framework (DoDAF), the Defense Airborne Reconnaissance Office (DARO) Vision Architecture, the Business Enterprise Architecture (BEA), and Net-Centric Enterprise Services (NCES) architecture. He currently is applying system-engineering techniques to various DoD projects. Dr. Dam is currently the President of the Washington Metropolitan Area (WMA) chapter of INCOSE. Dr. Dam is the author of two systems engineering-based books: "DoD Architecture Framework: A Guide to Applying System Engineering to Develop Integrated, Executable Architectures;" and "Proposal Engineering: A Guide to Developing Winning, Cost-Effective Proposals." He was a contributor to the DoD/NASA-sponsored textbook entitled "Applied Space Systems Engineering." Dr. Dam is currently completing his third book entitled "Knowledge-Based Analysis and Design (KBAD) – A Methodology for Rapid, Cost-Effective System Engineering and Architecture Development." Dr. Dam has a BS degree in Physics from George Mason University and a PhD. in Physics from the University of South Carolina.