

Concept Development: "... matures new concepts, ideas, and technologies into well-defined requirements and initial capabilities. These activities may be separate from a formal acquisition program. Concepts are generated out of operational needs or deficiencies, new technology opportunities, or innovative ideas. The concept, initially a general statement of an objective or hypothesis, is matured through any mix of analysis, rapid prototyping, experimentation, simulation, battlelabs, operational evaluation, and/or exercises. The development process is managed by decisions to repeat, continue, or kill concept spirals and shall consider remaining risks, return on investment, and net benefit. Concepts are developed with operator "hands on" involvement early and often."

Baseline Development: "... begins with the requirements and capabilities developed during Concept Development and then refines, integrates, and tests them (capabilities) into a solution ready for fielding. ... These activities are part of a formal acquisition program. Acquisition organizations such as System Program Offices will normally lead, manage, and execute this activity with frequent user participation. Baseline Development must include training of an appropriate number of users in anticipation of fielding fully supportable capabilities. ... Baseline Development concludes when the user accepts the results of the increment for fielding."

Fielding and Operations: "... these activities include fielding ... subsystems (systems) from Baseline Development and then operating and supporting them throughout the system's remaining life cycle. These activities are part of a formal acquisition program. An initial portion of a system normally will be fielded with only the core (initial) capabilities of the envisioned final system. Feedback from the system operators is used to improve or change upcoming increments or may alter the envisioned final state of the system."

Simultaneously, the initial and subsequent increments may be in concept and baseline development and fielding

and operations. Each increment builds upon or adds to previous capabilities, progressing toward an envisioned final state of the system.

Looking at a single increment in relation to the DoD requirements and acquisition process, one can equate the concept development as that portion up to Milestone B that is essentially the pre-acquisition activity. Baseline development encompasses the activities that begin with the Milestone B decision (when an acquisition program is initiated) up through production and deployment of the capability. The fielding and operations are those activities accomplished during the sustainment phase. This is captured in Figure 4 on p. 12.

EA and SD—Different but Complementary

The DoD and Air Force guidance highlights that EA is the preferred strategy to acquire weapon systems and that spiral development is the preferred process to implement an EA strategy. Figure 5 on p. 13 represents another way of looking at how EA and SD are different yet complementary.

EA recognizes the need for future enhancements to provide capability. An EA strategy allows for the inclusion of new technology, changes in users' needs, and lessons learned as the system progresses from the initial increment through the full fielding of a system. SD is the process to reduce the various risks associated with acquisition of a weapon system beginning with initial fielding of an increment. Concept Development reduces the risk associated with concepts and technology. Baseline Development reduces risk associated with integration of technologies and preparation for production of units. Once a system is fielded and lessons learned captured from using the systems, the opportunity is there to implement improvements to the system in subsequent increments.

Editor's Note: The authors welcome questions or comments on this article. Contact Farkas at Kenneth.farkas@afit.edu or Thurston at Paul.thurston@afit.edu. For more information on EA and SD, go to the EA Community of Practice Web site at <https://afkm.wpafb.af.mil/ASPs/ACQ/EntryCoP.asp?Filter=AS-01>.

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