

Defense Acquisitions: Assessments of Major Weapon Programs. GAO-03-476, Washington, D.C.: May 2003.

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Best Practices Reports

To obtain copies of these and other reports, visit www.gao.gov/bestpractices.

If you have questions or would like to discuss our reviews, please contact Katherine V. Schinasi, Director of Acquisition and Sourcing Management, at (202) 512-4841.

BEST PRACTICES

Best Practices: Capturing Design and Manufacturing Knowledge Early Improves Acquisition Outcomes. GAO-02-701. Washington, D.C.: July 15, 2002.

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U.S. GENERAL ACCOUNTING OFFICE

Highlights of the Knowledge-based Approach Used to Improve Weapon Acquisition

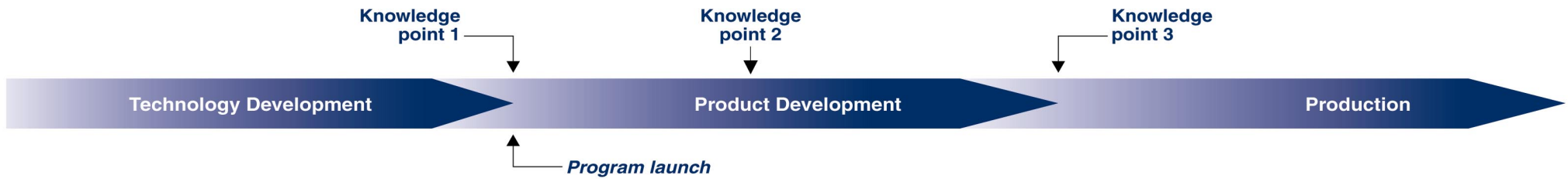


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HIGHLIGHTS OF THE KNOWLEDGE-BASED APPROACH USED TO IMPROVE WEAPON ACQUISITION



Knowledge point 1

Resources and needs match.

Knowledge point 1 occurs when a sound business case is made for the product—that is, a match is made between the customer’s needs and the product developer’s available resources, that is, time, money, and technology. This is the most leveraged decision point of the three junctures because it sets the stage for the eventual outcome—desirable or problematic.

When do you know you have achieved this knowledge point?

- When technologies needed to meet essential product requirements have been demonstrated to work in their intended environment.
- When the producer has completed a preliminary design of the product.
- When the program is also assured that the system can be produced within available funding.

Knowledge point 2

Product design is stable.

Knowledge point 2 occurs when a company determines that a product’s design is stable—that is, it will meet customer requirements and cost and schedule targets. A best practice is to achieve design stability at the product’s critical design review, usually held midway through development—when the first phase of product development, product integration, has been completed and the second phase, product demonstration, is about to begin.

When do you know you have achieved this knowledge point?

When 90 percent of engineering drawings are released to manufacturing organizations. Drawings are the language used by engineers to communicate to the manufacturers the details of a new product: what it looks like, how its components interface, how to build it, and the critical materials and processes needed to fabricate it. This makes drawings a key measure of whether the design is stable or not.

Knowledge point 3

Production processes are mature.

This level of knowledge is achieved when it has been demonstrated that the product can be manufactured within cost, schedule, and quality targets. It is important that the product’s reliability be demonstrated before production begins, as investments can increase significantly if defective parts need to be repaired or reworked.

When do you know you have achieved this knowledge point?

When all key manufacturing processes have come under statistical control and product reliability has been demonstrated.