Weapon Systems Testing: DOD Needs to Update Policies to Better Support Modernization Efforts

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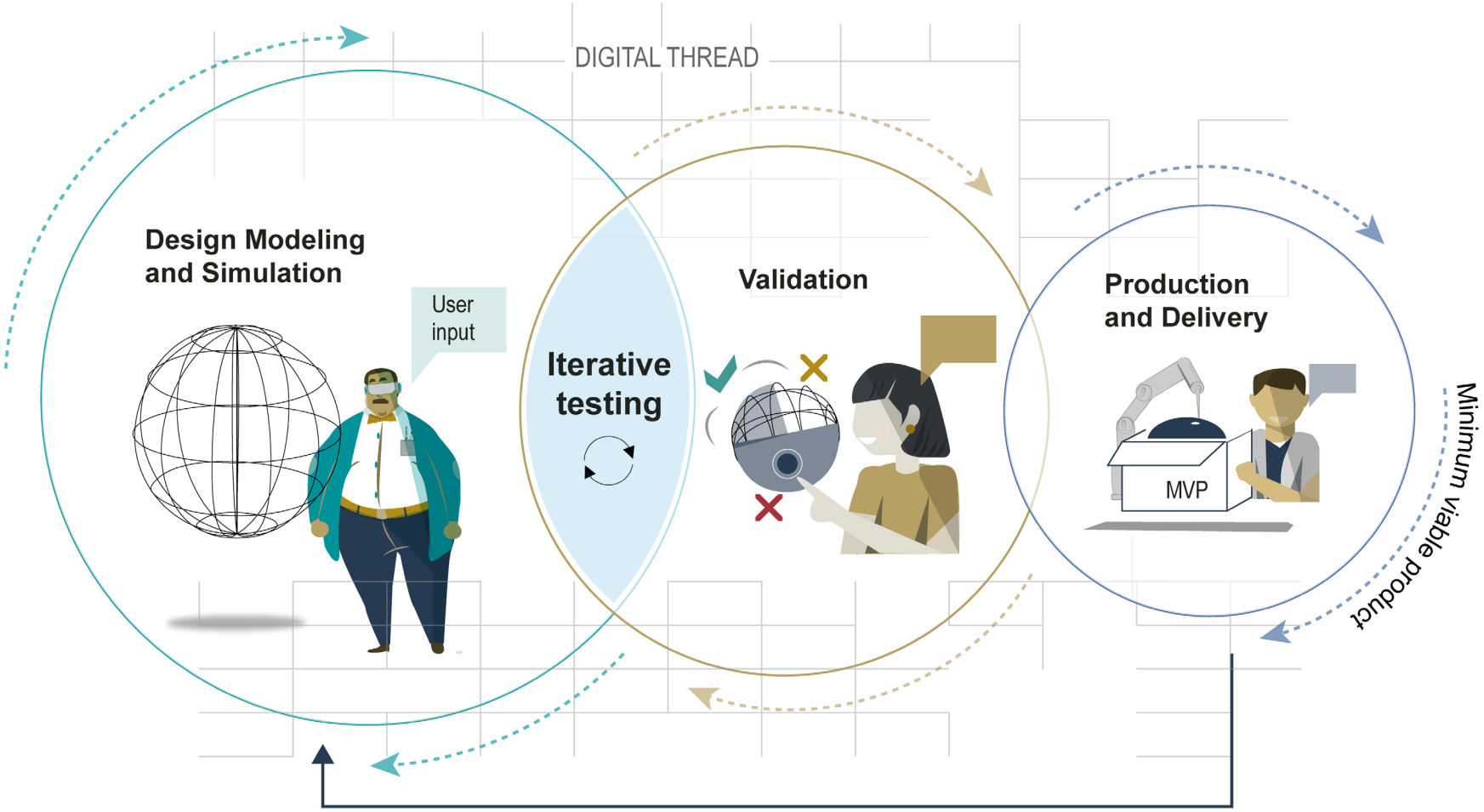
Research Objectives

1) What plans has DOD established to modernize test and evaluation to deliver relevant capabilities faster to warfighters?
2) To what extent do DOD-wide and military department policies for test and evaluation reflect selected leading practices for product development?

Background: Iterative Testing is Crucial to Modern Product Development



Source: GAO analysis of leading company information; GAO (illustration). | GAO-26-107009

Background: Relevant Leading Practices that Are Applicable to DOD Test and Evaluation

Leading practices		Application of leading practice to test and evaluation
Involvement in early acquisition decisions	Employ and empower right-sized teams of multi-disciplined stakeholders	Involve test officials early in defining the development program, including in the development of the acquisition strategy and by providing access to the key items, such as digital twins and digital threads, needed to conduct testing.
Iterative development	Implement iterative testing processes to generate a minimum viable product	Develop test plans that reflect an iterative testing approach and integrate developmental and operational testing to support rapid development of a minimum viable product.
	Use modern design tools, including digital twins and digital threads	Ensure testers use key modern design tools, including digital twins and digital threads developed by the design contractor and needed to support iterative government testing.
User feedback	Actively engage users to obtain feedback throughout an iterative development process	Develop and implement test strategies and test plans that incorporate end user agreements that detail a process for obtaining ongoing user input throughout testing to ensure the capability under development is relevant and responsive to users' most critical needs.

Source: GAO analysis of leading practices on product development applied to DOD test and evaluation processes. | GAO-26-107009

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Plans for Modernizing Test and Evaluation Vary Across DOD, but Share Several Focus Areas

Investment in test infrastructure	Workforce transformation	Policy and guidance changes
• Modeling and simulation, including digital twins • Digital environments and distributed test networks • Digitized business tools	• Identifying skill gaps • Training for new technology and processes • Hiring flexibilities	• Testing new technologies • Employing digital engineering • Testing early and continuously

Test and Evaluation Modernization Is Constrained by DOD-Wide Policies That Do Not Fully Reflect Leading Practices

Leading practices for product development applied to test and evaluation	Department of Defense (DOD) test and evaluation policy				
	Current developmental test policy			Current operational and live-fire test policy	
	Overall	MCA and MTA		Overall	MCA and MTA
		MCA	MTA		
Involve test officials in development of acquisition strategy	◐	○	◐	◐	◐
Conduct iterative testing to generate minimum viable product	◐	○		◐	○
Use digital twins and digital threads	◐	○		◐	◐
Obtain user feedback throughout iterative testing	◐	○		◐	○

◐ Policy partially reflects leading practice ○ Policy does not reflect leading practice

MCA = Major capability acquisition
MTA = Middle tier of acquisition
} Majority of DOD spending on weapon systems acquisition

Overall = overall assessment of test policy for four weapon system acquisition pathways: MCA, MTA, urgent capability acquisition, and software acquisition

Source: GAO analysis of DOD-wide policies applicable to test and evaluation. | GAO-26-107009

Military Department Test and Evaluation Policies Reflect Marginal Additional Use of Leading Practices Beyond DOD-Wide Policies

Selected leading practices for product development		Application of leading practice to test and evaluation	Test and evaluation policies: Air Force Instruction 99-103 — Overall	Air Force Instruction 99-103 — MCA and MTA	Army Regulation 73-1 — Overall	Army Regulation 73-1 — MCA and MTA	Navy Instruction 5000.2G, Section 10: Test and Evaluation — Overall	Navy Instruction 5000.2G, Section 10: Test and Evaluation — MCA and MTA
Involvement in early acquisition decisions	Employ and empower right-sized teams of multi-disciplined stakeholders	Involve test officials early in defining the development program, including in the development of the acquisition strategy and by providing access to the key items, such as digital twins and digital threads, needed to conduct testing.	◐	MCA ◐ / MTA ○	◐	Not applicable	○	○
Iterative development	Implement iterative testing processes to generate a minimum viable product	Develop test plans that reflect an iterative testing approach and integrate developmental and operational testing to support rapid development of a minimum viable product.	○	○	○		○	○
	Use modern design tools, including digital twins and digital threads	Ensure testers use key modern design tools, including digital twins and digital threads developed by the design contractor and needed to support iterative government testing.	○	○	○		○	○
User feedback	Actively engage users to obtain feedback throughout an iterative development process	Develop and implement test strategies and test plans that incorporate end user agreements that detail a process for obtaining ongoing user input throughout testing to ensure the capability under development is relevant and responsive to users' most critical needs.	○	○	○		○	○

● Policy reflects leading practice ◐ Policy partially reflects leading practice ○ Policy does not reflect leading practice

MCA = Major capability acquisition
MTA = Middle tier of acquisition
} Majority of Department of Defense spending on weapon systems acquisition

Source: GAO analysis of military department test and evaluation policies. | GAO-26-107009

Recommendations

- The report made 13 recommendations in total
  - 4 to the Secretary of Defense
  - 3 each to the Secretaries of the Air Force, Army, and Navy
- Recommendations focused on driving leading practices into current test and evaluation policies by requiring:
  - Developmental and operational tester input into acquisition strategies,
  - Iterative test plans and strategies, enabled by digital twins and threads, to support delivery of minimum viable products, and
  - Test plans and strategies that incorporate end user agreements that detail a process for obtaining ongoing user input and feedback for the system under test.
- DOD concurred with 7 recommendations, partially concurred with 5, and did not concur with 1 recommendation (to the Navy on end user agreements)

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