

# GAO Highlights

Highlights of [GAO-20-213](#), a report to congressional requesters

## Why GAO Did This Study

Many of DHS's major IT acquisition programs have taken longer than expected to develop or failed to deliver the desired value. In April 2016, to help improve the department's IT acquisition and management, DHS identified Agile software development as the preferred approach for all of its IT programs and projects.

GAO was asked to examine DHS's adoption of Agile software development. The objective of this review was to assess the extent to which DHS has addressed selected leading practices for its transition to the use of Agile software development.

GAO identified leading practices for planning, implementing, and measuring organizational change that apply to DHS's transition to Agile through its review of guidance published by the Project Management Institute and GAO. GAO also reviewed work it performed to develop leading practices for Agile software development adoption. GAO analyzed DHS documentation, such as policies, guidance, plans, and working group artifacts and assessed them against the selected leading practices. GAO also reviewed the implementation of selected practices within individual IT projects. Finally, GAO interviewed DHS officials to discuss any practices that were not fully implemented.

## What GAO Recommends

GAO is making 10 recommendations to DHS to implement selected leading practices for its transition to Agile software development. DHS agreed with GAO's recommendations and described actions taken and planned to address them.

View [GAO-20-213](#). For more information, contact Carol C. Harris at (202) 512-4456 or [harriscc@gao.gov](mailto:harriscc@gao.gov).

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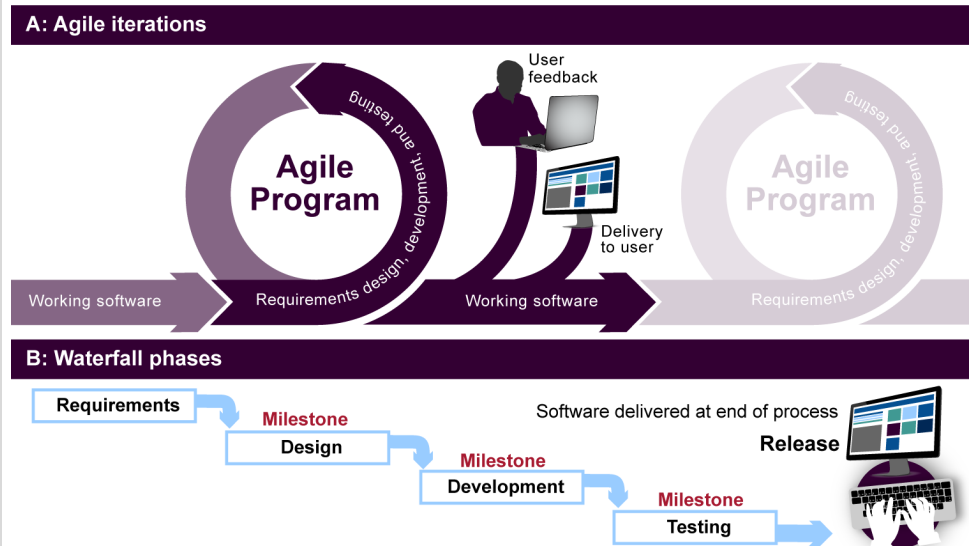
## AGILE SOFTWARE DEVELOPMENT

### DHS Has Made Significant Progress in Implementing Leading Practices, but Needs to Take Additional Actions

#### What GAO Found

The Department of Homeland Security (DHS) has taken steps to implement selected leading practices in its transition from waterfall, an approach that historically delivered useable software years after program initiation, to Agile software development, which is focused on incremental and rapid delivery of working software in small segments. As shown below, this quick, iterative approach is to deliver results faster and collect user feedback continuously.

#### Comparison of Agile and Waterfall Methods for Developing Software



Source: GAO analysis of U.S. Citizenship and Immigration Services documentation. | GAO-20-213

DHS has fully addressed one of three leading practice areas for organization change management and partially addressed the other two. Collectively, these practices advise an organization to plan for, implement, and measure the impact when undertaking a significant change. The department has fully defined plans for transitioning to Agile development. DHS has partially addressed implementation—the department completed 134 activities but deferred roughly 34 percent of planned activities to a later date. These deferred activities are in progress or have not been started. With respect to the third practice, DHS clarified expected outcomes for the transition, such as reduced risk of large, expensive IT failures. However, these outcomes are not tied to target measures. Without these, DHS will not know if the transition is achieving its desired results.

DHS has also addressed four of the nine leading practices for adopting Agile software development. For example, the department has modified its acquisition policies to support Agile development methods. However, it needs to take additional steps to, among other things, ensure all staff are appropriately trained and establish expectations for tracking software code quality. By fully addressing leading practices, DHS can reduce the risk of continued problems in developing and acquiring current, as well as, future IT systems.