April 2014

NASA

Assessments of Selected Large-Scale Projects

GAO Highlights

Highlights of GAO-14-338SP, a report to congressional committees

Why GAO Did This Study

This is GAO's annual assessment of NASA's major projects. This report provides a snapshot of how well NASA is planning and executing its major acquisitions. In 2013, GAO reported that the performance of NASA's major projects had improved since GAO's first assessment in 2009, due, in part, to some underperforming projects launching and some demonstrating progress meeting practices that GAO has reported decrease cost and schedule risk.

In response to an explanatory statement of the House Committee on Appropriations accompanying the Omnibus Appropriations Act, 2009, this report assesses (1) the current status of NASA's portfolio of major projects, (2) NASA's progress in developing and maturing critical technologies (3) efforts NASA has taken to improve design stability of its projects, and (4) any challenges to NASA's management of the portfolio. GAO assessed 2013 and 2014 data on NASA's 18 major projects and the Commercial Crew program all with an estimated life-cycle cost of over $250 million, such as data on the projects' cost, schedule, technology maturity, design stability, and contracts; analyzed monthly project status reports; and interviewed NASA and contractor officials.

What GAO Recommends

GAO is not making any new recommendations in this report, but provides further evidence to support the importance of continuing to take action on recommendations GAO has made in prior reports. NASA generally agreed with GAO's findings.

View GAO-14-338SP. For more information, contact Cristina Chaplain at (202) 512-4841 or chaplainc@gao.gov.

What GAO Found

The National Aeronautics and Space Administration's (NASA) total portfolio of major projects saw cost and schedule growth that remains low compared to GAO's first review of the portfolio. Some projects in this year's portfolio launched within their cost and schedule baselines; however, several others are undergoing replans, which could temper the portfolio's positive performance. For example, the Mars Atmosphere and Volatile EvolutioN project launched on time and cost about $35 million less than its baseline estimate, but NASA officials are reporting that issues with the Ice, Cloud, and Land Elevation Satellite-2 project's primary instrument are driving costs to exceed the original baseline by at least 15 percent, and that the project will miss its committed launch date.

NASA projects have continued to make progress in maturing technologies prior to the preliminary design review. This year, 63 percent of projects met this standard, up from only 29 percent of projects in 2010. For example, in preparation for its upcoming confirmation review, one project has matured all 10 of its critical technologies, which GAO's past work has shown is important to decrease the likelihood of cost and schedule growth. NASA's heightened awareness of reducing technology risk is further evidenced by new guidance aimed at ensuring continued focus on technical maturity. As NASA continues to undertake more complex projects it will be important to maintain heightened attention to best practices to lessen the risk of technology development and continue positive cost and schedule performance.

NASA projects are maintaining steady performance toward meeting GAO's best practices for design stability, and the agency has also increased its focus on design stability. GAO has found over past several years that projects have consistently reported higher percentages of drawings releasable at the critical design review and lower percentages of drawing growth after that time, which indicates that project design stability has increased overall. NASA has taken steps to enhance its ability to assess design maturity. For example, NASA implemented three technical indicators to assess design maturity, and projects in the portfolio are tracking the required indicators. Additionally, experts in the space community have identified other design stability metrics, which can be used in tandem with GAO's and NASA's indicators in order to provide a more complete and robust assessment of a project's design stability.

NASA faces several challenges that could impact its ability to effectively manage its portfolio. A primary challenge in the next few years will be to complete a series of complex and expensive projects within constrained budgets and competing priorities. Any cost or schedule growth on NASA's largest, most complex projects, such as the James Webb Space Telescope, could have a ripple effect across the portfolio. While NASA has implemented a plan for improving its acquisition management, monitoring NASA's performance against that plan over time will be important in determining if the agency's efforts to improve its acquisition management practices have become institutionalized. For example, in 2013, two projects experienced significant issues immediately after being confirmed, indicating that neither project had completed an adequate assessment of risk which is necessary to ensure that the project's cost and schedule baseline estimates were realistic.