

Agency Priority Goal Action Plan

James Webb Space Telescope

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Overview

Goal Statement

- Revolutionize humankind's understanding of the cosmos and humanity's place in it. The James Webb Space Telescope will study every phase in the history of our universe, ranging from the first luminous glows after the Big Bang, to the formation of other stellar systems capable of supporting life on planets like Earth, to the evolution of our own solar system. By September 30, 2021, NASA will complete shipment of the James Webb Space Telescope in preparation for launch in FY 2022.*

Challenge

- Complete integration and test of largest cryogenic telescope ever to be launched.

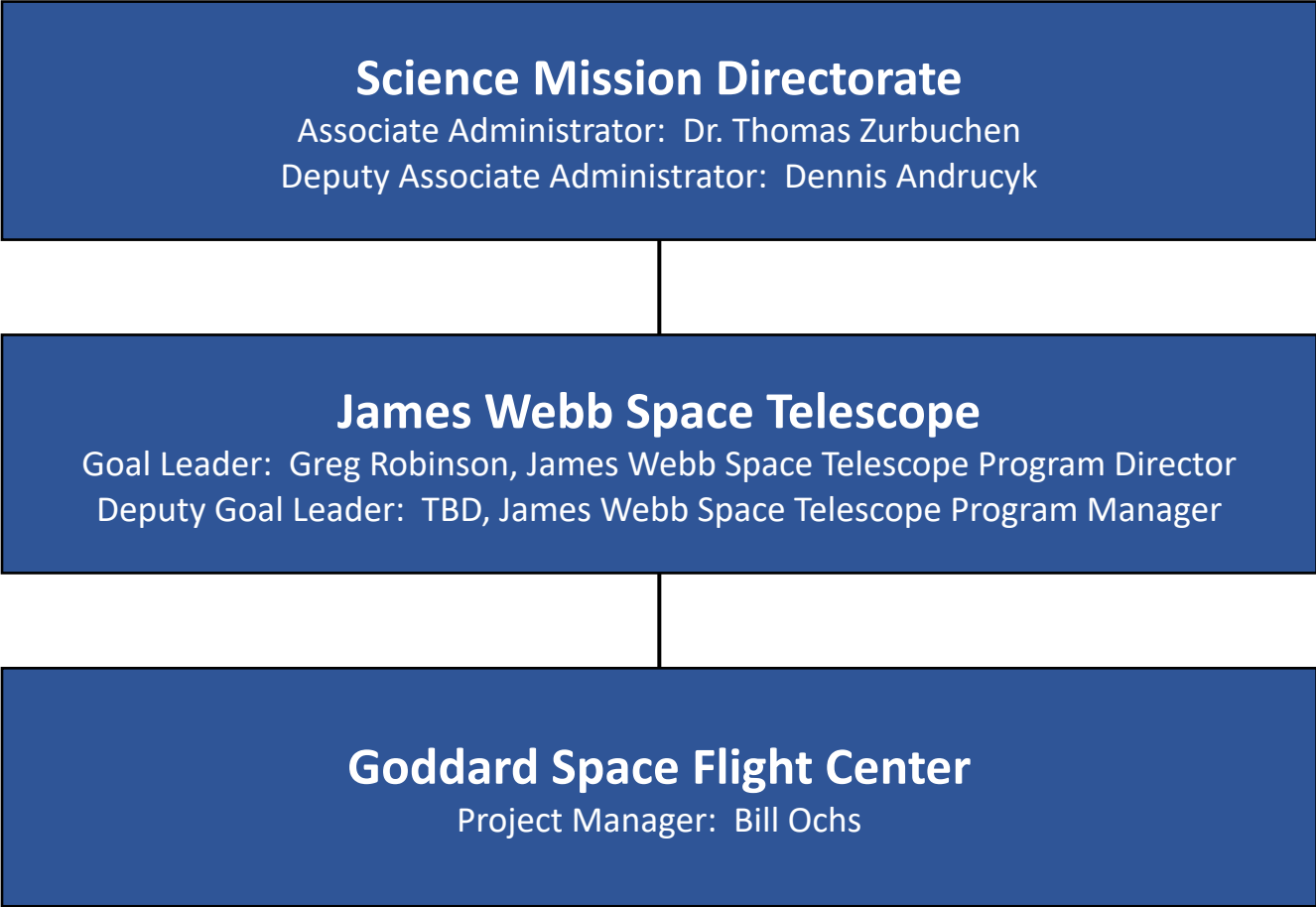
Opportunity

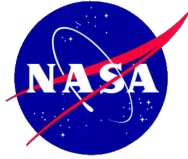
- The Webb program will produce an astronomical observatory capable of watching the universe light up after the Big Bang. It will revolutionize humankind's understanding of the Cosmos and our place in it.
- This observatory is key for meeting NASA's strategic goal to expand human knowledge through new scientific discoveries.
- Webb is NASA's new telescope that will allow us to explore deeper into space and see things that even the Hubble Space Telescope cannot see.

*As Webb schedule margins grew tighter in fall 2019, NASA planned to assess the program's progress in April 2020. However, NASA postponed the assessment due to the COVID-19 pandemic. Based on a risk assessment completed in July, NASA determined that—due to facility closures, reduced shifts to protect the workforce, and the ongoing impacts of COVID-19—a launch during FY 2021 Q2 was no longer feasible and moved the launch readiness date to FY 2022 Q1, with no requirement for additional funds. (Read NASA's July 16, 2020, [announcement](#).) NASA has revised the goal statement and the FY 2021 milestones to reflect this new launch readiness date. On-orbit checkout and observatory commissioning, part of the original goal statement, will take place in FY 2022.



Leadership & Implementation Team





Goal Structure & Strategies

In continuing to work with its partners toward completion of Spacecraft Element (SCE) environmental testing, OTIS* integration to the SCE, and observatory-level environmental testing, NASA will:

- Conduct high-level (corporate Vice President and above) quarterly meetings of all mission partners to ensure accurate, consistent knowledge of program status and challenges.
- Conduct quarterly discussions between the NASA Administrator and the Northrop Grumman Chief Executive Officer.
- Provide quarterly updates to the Office of Management and Budget (OMB) and the Office of Science and Technology Policy (OSTP).
- Employ Estimate-at-Complete analyses that incorporate the current risk posture, independent analysis of those data, and detailed tracking of lower-level milestones that lead up to the APG, as well as schedule health assessments. (The project receives monthly earned value management and schedule health reports that detail how the work is progressing with respect to the plan and budget.)
- Continue practice of Standing Review Board (SRB) member participation in key reviews. Key SRB members will also participate in other reviews, such as the recent schedule assessment review. The SRB subject matter experts provide independent impartial assessments of the project's readiness to support the major upcoming activities along the APG schedule.

**OTIS is the combined Optical Telescope Element (OTE) and Integrated Science Instrument Module (ISIM)*



Summary of Progress – FY 2020 Q4

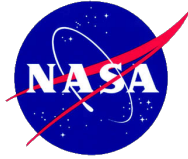
In Q4, the observatory underwent environmental testing, consisting of acoustics and sine-vibration testing. The testing was completed on October 2.

Key accomplishments for the quarter:

- Placed observatory on interplant transporter for transportation to the environmental test facility
- Successfully conducted observatory acoustics testing
- Successfully conducted observatory sine-vibration testing of the Z-axis
- Reconfigured the observatory and completed the sine vibration testing of the X-axis
- Reconfigured the observatory and began the sine vibration testing of the Y-axis

In March 2020, on-site work on Webb was paused due to the coronavirus pandemic. Several key observatory tests, including a second test deployment of the telescope deployable tower assembly, were delayed. In late June, the work schedule returned to two full shifts and the team was able to complete key milestones. After an assessment of the impacts to the schedule, NASA announced a new launch readiness date of October 31, 2021, with no requirement for additional funds.

NASA achieved three of the four milestones for FY 2020, resulting in a Yellow rating for FY 2020. Beginning in FY 2021, this APG has a revised goal statement that reflects the new launch readiness date of October 31, 2021, as well as revised quarterly milestones, which culminate in shipment of the observatory to the launch site. NASA anticipates achieving the new FY 2021 Q1 milestone to initiate observatory post-environment testing deployments.



Key Milestones

Progress update for the James Webb Space Telescope APG.

	FY 2020 Q1	FY 2020 Q2	FY 2020 Q3	FY 2020 Q4	Forecast FY 2021 Q1
Quarterly Rating	Yellow	Yellow	Green	Yellow	↑
Milestones Achieved	0 of 1	1 of 2	3 of 3	3 of 4	1 of 4

Unchanged
 Improving
 Deteriorating

Milestone Summary

Milestones	Milestone Due Date	Comments
Complete second sunshield membrane deployment and folding	FY 2020 Q1	Completed January 2020
Complete deployment #2 of telescope deployable tower assembly	FY 2020 Q2	Completed June 2020 (delayed due to COVID)
Complete observatory pre-environmental test review	FY 2020 Q3	Completed June 2020
Complete observatory vibration and acoustics testing	FY 2020 Q4	Delayed due to COVID. (Completed Oct. 2.)
Initiate observatory post-environment testing deployments*	FY 2021 Q1	
Complete final comprehensive system test*	FY 2021 Q2	
Complete sunshield folding in preparation for final stow for shipment*	FY 2021 Q3	
Complete shipment of observatory to launch site*	FY 2021 Q4	

*Milestones have been revised to reflect the revised goal statement and launch readiness date of October 31, 2021.



Data Accuracy and Reliability

Verification and Validation:

- NASA monitors and tracks its progress towards this goal using various Agency documents and reports, including Directorate Program Management Council (DPMC) materials, monthly reports from the project and industry partners, and other program-internal documents.

Data Source(s):

- Emails and program-internal documents indicating progress NASA's industry partners make toward the James Webb Space Telescope integration, test and launch.

Level of Accuracy Required for Intended Use:

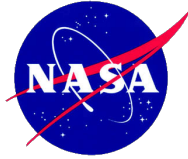
- Using the documents and reports referenced above, the Agency is able to accurately report at the end of each quarter on whether or not it has met its planned milestones.

Data Limitations:

- Materials from the industry partners may include company proprietary information; such information cannot be released publicly.

How the Agency Compensates for Data Limitations:

- NASA has not identified any data limitations that would preclude it from reporting accurate, reliable, and timely performance information.



Additional Information

Contributing Programs

NASA:

- James Webb Space Telescope (Webb) Program
- Space Communications and Navigation

Other: Webb is an international collaboration among NASA, the European Space Agency (ESA), and the Canadian Space Agency (CSA).

- ESA is providing the Ariane launch vehicle and some of the scientific instruments, including the Near Infrared Spectrometer and Mid-Infrared Instrument.
- CSA is providing the Fine Guidance Sensor, which will enable Webb to point precisely, so that it can obtain high-quality images
- Northrop-Grumman Aerospace Systems (NGAS) is the main NASA industrial contractor, responsible for building the optical telescope, spacecraft bus, and sunshield, and preparing the observatory for launch. NGAS has led a team including three major sub-contractors: Ball Aerospace, Orbital-ATK, and Harris (formerly ITT Exelis).

Stakeholder/Congressional Consultations

NASA provides updates to Congress on the status of required milestones, in addition to quarterly updates to the Office of Management and Budget (OMB) and the Office of Science and Technology Policy (OSTP). NASA also routinely provides status to the Government Accountability Office (GAO).