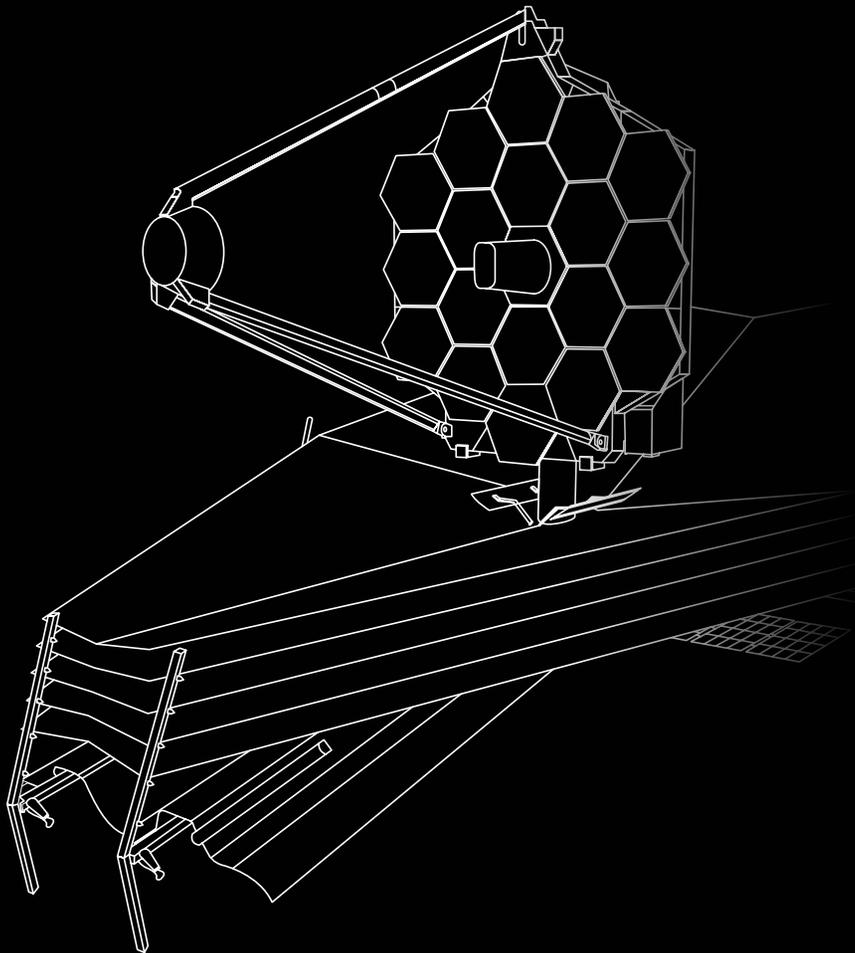




James Webb Space Telescope (JWST)

NASA OFFICE OF PROCUREMENT | VIGNETTE



Who/Where

The planning and execution of the James Webb Space Telescope (JWST) required the involvement of multi-disciplined subject matter experts across NASA. NASA's Science Mission Directorate (SMD), JWST Project Office at the Goddard Space Flight Center (GSFC) in Maryland, manages all facets of JWST. The Space Telescope Science Institute (STScI) in Baltimore operates JWST. Contractual instruments supporting JWST are awarded and administered by GSFC's Office of Procurement.

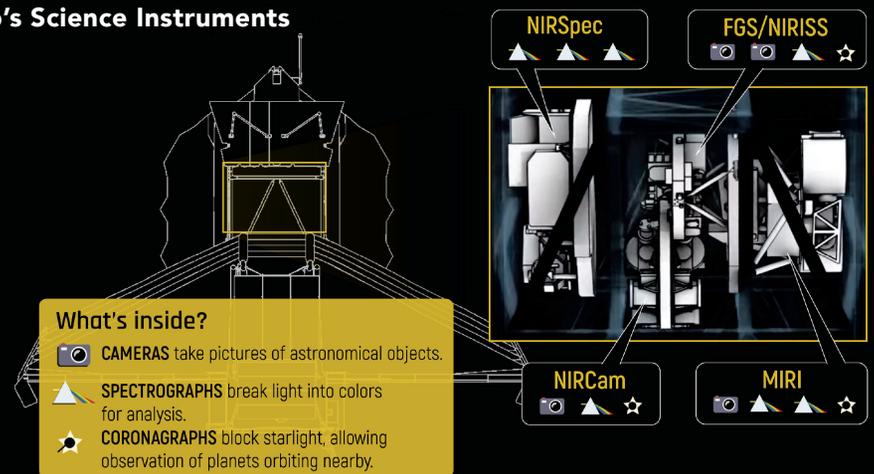
What

JWST is a space telescope designed primarily to conduct infrared astronomy and is the largest and most powerful space science telescope ever built.

Webb's state-of-the-art scientific instruments are engineered to produce a treasure trove of awe-inspiring imagery and data. The instruments primarily have two functions: 1) imaging scientific targets; and 2) breaking down light into separate wavelengths – like raindrops create a rainbow – to determine the physical and chemical properties of various forms of cosmic matter (spectroscopy).

NASA led development of the telescope in collaboration with the European Space Agency (ESA) and the Canadian Space Agency (CSA).

Webb's Science Instruments



When

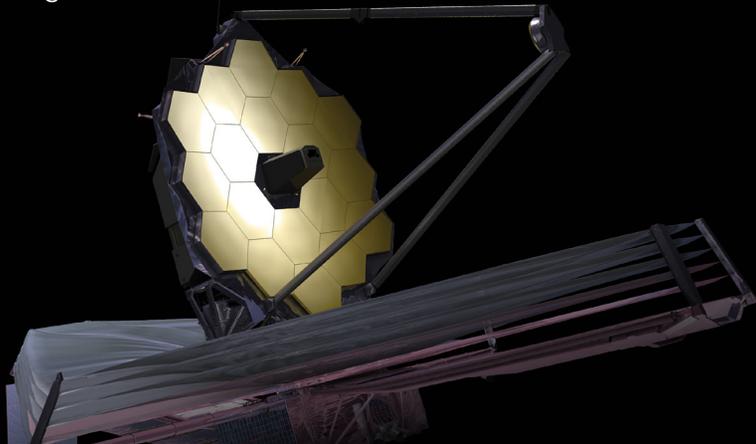
- NASA's formal start of JWST occurred in March 1999 with the signing of the Formulation Authorization for the Next Generation Space Telescope (NGST). In September 2002, NGST was renamed JWST after NASA's second administrator (1961–1968) James E. Webb (1906–1992).
- JWST was launched December 25, 2021 on an ESA Ariane 5 rocket from Kourou, French Guiana.

How

GSFC's Office of Procurement has awarded and/or is currently supporting the award of various elements of JWST throughout the development cycle and through mission operations and science research.

The acquisition framework for the design and build of the spacecraft began with a phased acquisition; starting with the award of study contracts to NGST (later became Northrop Grumman Space Technologies (NGST)) and Lockheed Martin. The studies were used to develop a proposed mission/system architecture that was credible and responsive to program expectations, requirements, and constraints on the project, including resources.

The down select was conducted in an accelerated manner so both NASA and the eventual selectee, NGST, could collaboratively attain a singular solution and more effectively promote state of the art concepts for this one-of-a-kind mission. This process also enabled NASA to be an integral part of reviews and design approval. Based on the high risk and complexity of JWST, NASA allowed flexibility and authorized the purchase of certain long lead parts and materials ahead of the timeframes dictated by internal processes and procedures; reducing schedule risk.



Why

JWST has four key goals:

- to search for light from the first stars and galaxies that formed in the universe after the Big Bang
- to study galaxy formation and evolution
- to understand star formation and planet formation
- to study planetary systems and the origins of life

Webb will fundamentally alter the understanding of the universe and is a giant leap forward in our quest to understand humanity's place in the great cosmic expanse. Scientists from 41 countries, 42 U.S. states, and Washington, D.C., have been awarded observing time during Webb's first year of science operations.

Fact Sheet

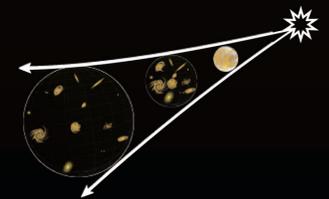


The sunshield protects the observatory, essentially providing an equivalent Sun Protection Factor, or SPF, of a million.



Webb is so sensitive it could theoretically detect the heat signature of a bumblebee at the distance of the Moon.

BIG BANG



Webb will peer back in time to when the universe was young - over 13.5 billion years ago, a few hundred million years after the big bang - to search for the first galaxies in the universe.

Additional information on JWST can be found at <https://www.jwst.nasa.gov/>.