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James Webb Space Telescope (JWST)

- Successor to the Hubble Space Telescope
 - 7x collecting area of Hubble
 - 6.5 meter diameter segmented adjustable primary mirror
 - Primarily infrared
 - Cryogenic temperature telescope and instruments for infrared performance
 - 5 layer sunshield
 - ~570 km above Earth to Earth-Sun L2 Lagrange point (1.5 million km away)
- International collaboration between NASA, ESA, CSA led by Goddard Space Flight Center
 - Launched 2022-12-25 on ESA-supplied Ariane 6 rocket
 - 5-year science mission (10-year goal)

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JWST Instruments

- Near Infrared Camera (NIRCam) – University of Arizona
- Near Infrared Spectrograph (NIRSpec) – ESA
- Mid-Infrared Instrument (MIRI) – JPL/ESA
- Fine Guidance Sensor (FGS) and Near IR Imaging Slitless Spectrograph (NIRISS) - CSA

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JWST Technologies

- Ultralight mirrors cooled to 40K
- Wavefront sensing and control
- Better IR detectors
- Cryogenic amplifier and digitizer for detectors
- Backplane
- Micro-shutters
- Sunshield coating
- 7K refrigerator for mid-IR instruments

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JWST Control Status

- Prior to 2017
 - USML Category XV
- Since 2017
 - 9A004.u – The James Webb Space Telescope
 - 9A004.v – “Parts,” “components,” “accessories,” and “attachments” that are specially designed for the James Webb Space Telescope

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1758 Assessment

- The ITAR and EAR export control framework for satellites and spacecraft broadly control such items as well as specially designed parts, components, accessories and attachments.
- Items developed and produced to enable JWST capabilities included within these broad controls.
- JWST-specific control introduced in early 2017
 - Within the broad spacecraft controls, licensing requirements and policies can be tailored to reflect sensitivity of specific items

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Thank you for your attention.

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