

HUBBLE – FROM DREAM TO REALITY

■ **1923:** German scientist **Hermann Oberth** first speculates on telescopes in orbit

■ **1946:** American astrophysicist **Lyman Spitzer** writes paper discussing feasibility of space observatory



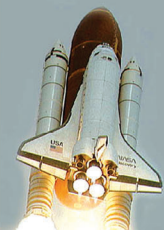
■ **1977:** U.S. Congress approves funding for space telescope



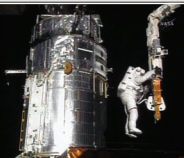
■ **1983:** **Hubble Space Telescope** named after renowned astronomer **Edwin P. Hubble**

■ **1986:** Launch delayed after **Space Shuttle Challenger** disaster

■ **Apr 24, 1990:** Hubble launched aboard shuttle **Discovery**. First pictures show telescope has "blurred vision" caused by slight distortion of main mirror



■ **Dec 1993:** Crew of seven fixes Hubble during five days of spacewalks. **Wide-Field Planetary Camera 2**, which later takes many of Hubble's most famous images, installed



Three other shuttle missions between 1997 and 2002 repair and upgrade telescope

■ **2004:** Planned servicing mission cancelled following **Columbia** disaster in 2003

■ **2009:** Final servicing mission makes Hubble 100 times more powerful than when telescope was launched

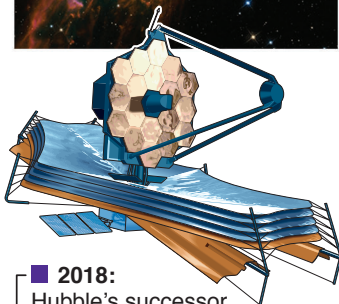
■ **2015:** As Hubble celebrates 25th anniversary, scientists hope it will keep working for at least another five years

Hubble celebrates 25 years in orbit

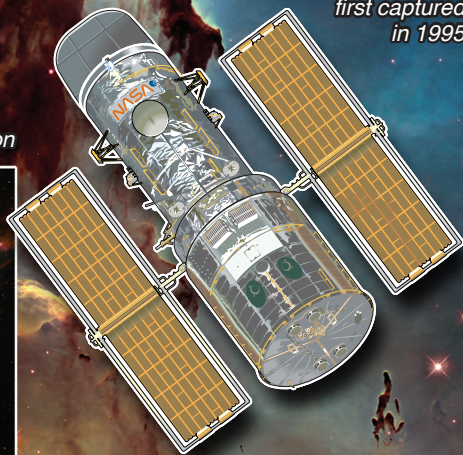
For a quarter of a century, NASA's Hubble Space Telescope has peered deep into distant galaxies, revealing images of breathtaking beauty and rewriting our understanding of the cosmos

◀ To mark occasion Hubble has revisited its most iconic image, providing wider, sharper view of **Eagle Nebula**, or "**Pillars of Creation**", first captured in 1995

Butterfly Nebula – one of first pictures taken following final astronaut servicing mission



■ **2018:** Hubble's successor, **James Webb Space Telescope (JWST)**, scheduled for launch



HUBBLE'S MAJOR ACCOMPLISHMENTS

- Hubble has helped refine estimates of age of universe down to 13.75 billion years
- Discovered that super-massive black holes may lurk in nearly all galaxies
- Helped determine process of how planets are born
- Detected first organic molecule – methane – discovered on planet outside our solar system
- Found four new moons around dwarf planet Pluto
- Provided evidence that mysterious form of "dark energy" is causing expansion of universe to accelerate