

NSS North Houston Space Society

Space News

May 2, 2020



Greg Stanley



International Space Station (ISS)

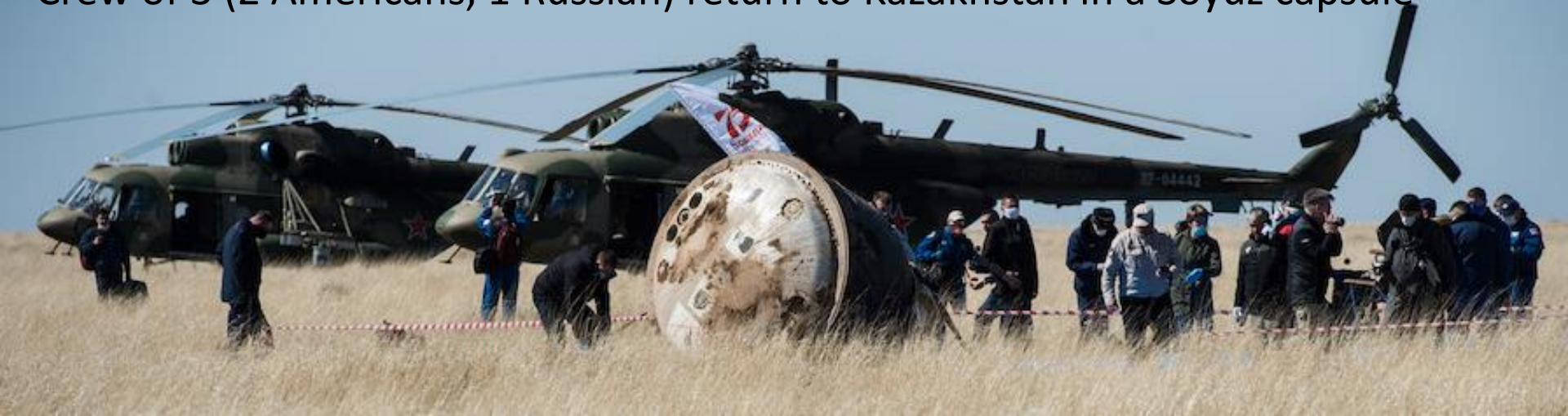
Crew of 3 (1 American, 2 Russians)
launch from Kazakhstan ...

... Hopefully the end of an era, as US
crewed launches should begin soon



International Space Station (ISS)

Crew of 3 (2 Americans, 1 Russian) return to Kazakhstan in a Soyuz capsule



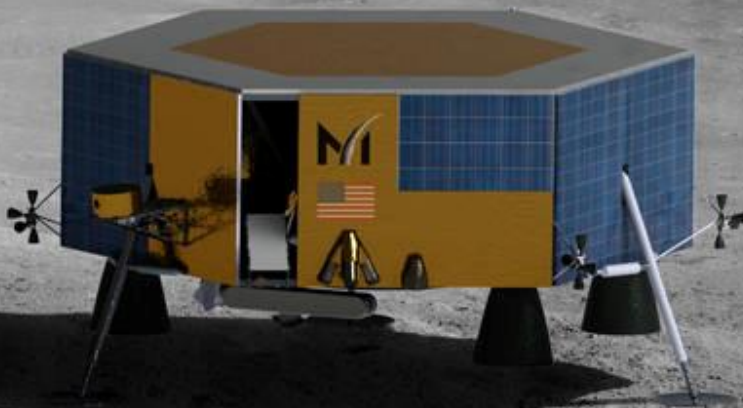
Cargo launch (Soyuz)

ПЕРМОНЪ ЗОНН



NASA Contracts Masten Space Systems for robotic lunar landing in 2022

- \$76 M to deliver 9 science and technology instruments to the moon's south pole in late 2022 (including a rover, and a robotic arm)
- Fourth company receiving task orders through NASA's Commercial Lunar Payload Services (CLPS)
- First mission to softly land at a lunar pole
- Payload of 80 kg
- Hundreds of additional kgs available for Masten to sell to others
- Launcher not yet announced



Intuitive Machines (Houston) announces Oct. 2021 moon launch date and landing site

- NASA contracted \$77 M for a robotic lander to deliver 9 science instruments to the moon in Oct. 2021
- Task order through NASA's Commercial Lunar Payload Services (CLPS)
- Landing near a deep, narrow valley, likely a collapsed volcanic lava tube (not near a pole)
- To launch on a SpaceX Falcon 9 rocket
- 100 kg payload



Astrobotic (Pittsburgh) is the other company with a lunar landing in 2021

- NASA contract: \$79.5 M for a robotic lander to deliver payloads to the moon in Oct. 2021
- Task order through NASA's Commercial Lunar Payload Services (CLPS)

- 90 kg payload
- Commercially available rate: \$1.2M / kg



NASA \$1B Phase 1 funding for lunar “Human Landing System” (HLS)

- NASA selects companies to develop crewed lunar landers
- Part of overall Artemis program to get back to the moon
- Phase 1: 10 months, nearly \$1B
- All phases cost \$18.4 B through end of 2024
- Each contractor must provide private funding for design & development

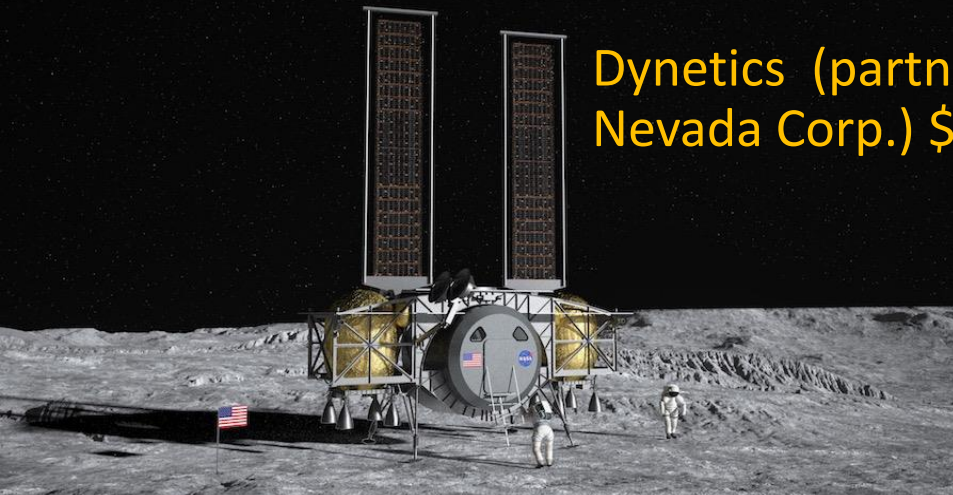
3 Companies in NASA Phase 1 funding for lunar “Human Landing System” (HLS)

Blue Origin (partnered with Lockheed Martin & Northrop Grumman) \$579 M

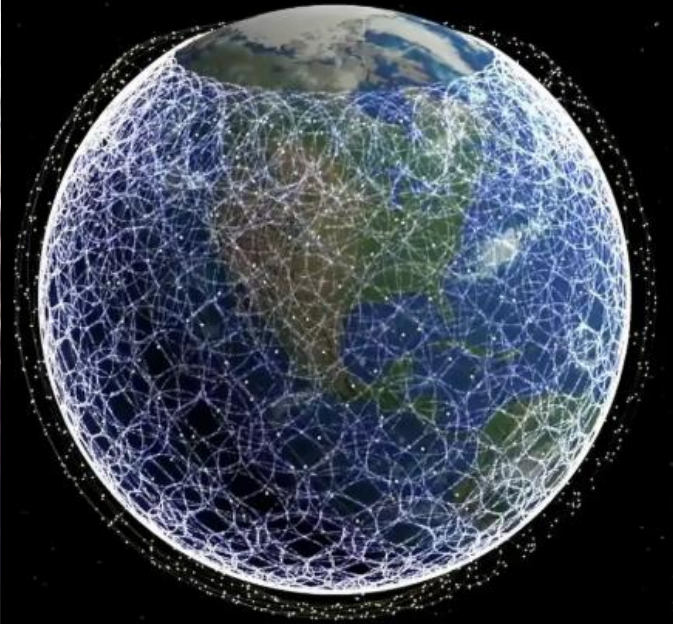


SpaceX \$135 M

Dynetics (partnered with Sierra Nevada Corp.) \$253 M



SpaceX/Starlink update








- Now launched 420 satellites
- Astronomers are worried about brightness and number of satellites
- Solutions now being implemented
 - Adding a light-blocking panel of radio-transparent foam
 - Changing orientation during initial orbit-raising and final orbits

How many launches since the last meeting?



Yes, this includes failed launches

Launches Since Last Meeting (Apr. 4, 2020)

-  Apr. 24/25 – Soyuz – Cargo to ISS
-  Apr. 22 – Falcon 9 – SpaceX 7th batch of 60 Starlink communications satellites
-  Apr. 22 – Qased (Iranian)– Noor military satellite
-  Apr. 9 – Long March 3B – Palapa N1 communication satellite (Indonesian) - FAILED
-  Apr. 9 – Soyuz – Crew to ISS. Capsule also an escape pod for 6 months

Featured Speaker: Lee Hutchinson

- Senior Technology Editor, Ars Technica
- Oversees story development for gadget, automotive, IT, and video sections of Ars Technica
- Writes about manned space flight, gaming
- Extensive background in enterprise storage and security
- Decade at Boeing as an enterprise architect, then EMC and Symantec

