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NASA's Initial Artemis

HUMAN LANDING SYSTEM

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Initial Human Landing System

HLS

NASA has awarded SpaceX a contract to develop its HLS Starship for use on Artemis III, the mission that will put the next two Americans on the surface of the Moon.

The contract includes two surface missions:

- SpaceX Uncrewed Lunar Demo-A
- SpaceX Crewed Lunar Demo-A



Starship Vehicle Configurations for NASA Human Landing System

With same core design serving many purposes, Starship will accumulate significant flight heritage before the crewed Moon landing



Tanker + Booster

Delivers propellant to storage depot for later use by HLS Starship.

Based on the same core Starship design used for launching commercial satellites and a broad range of other missions



Storage Depot + Booster

Optimized for propellant storage in Earth orbit. Based on core Starship design with landing systems removed.

Exterior optical properties optimized for long duration LEO storage and tank volume set to maximize propellant capacity

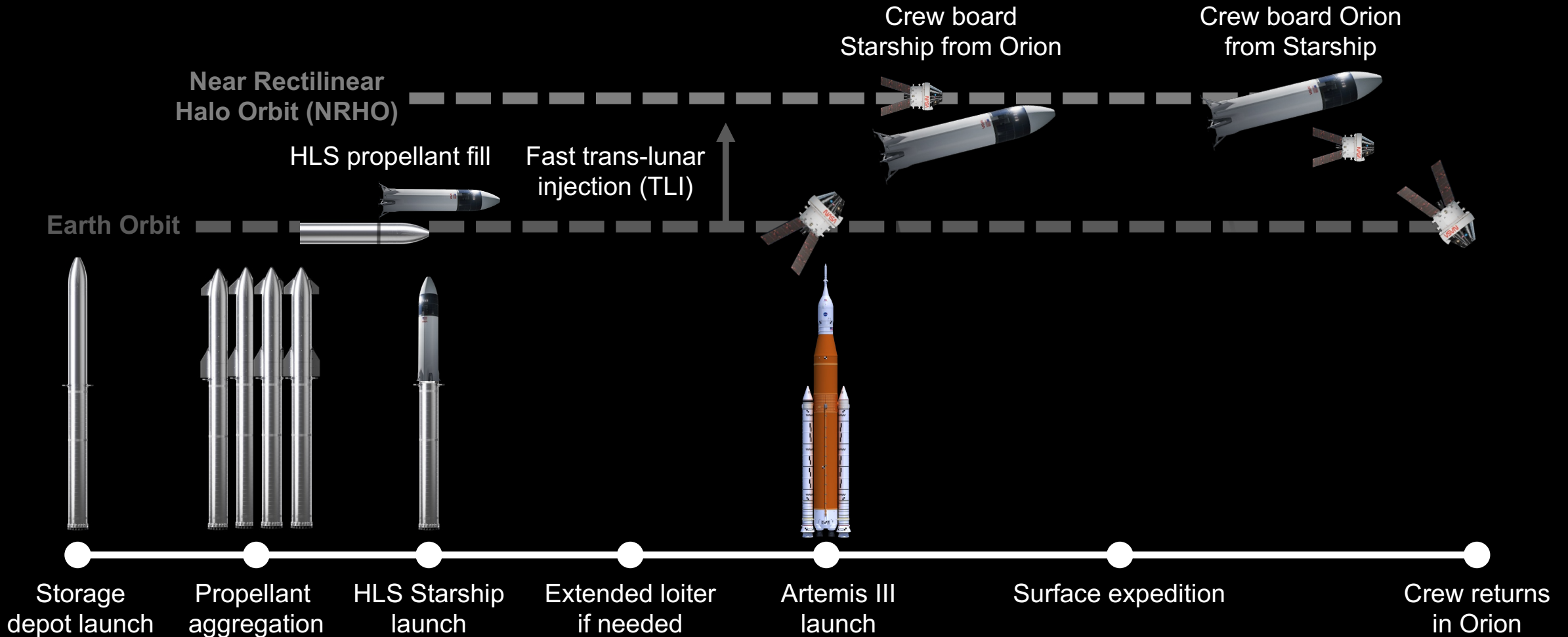


HLS Starship + Booster

Based on core Starship design and optimized for Moon operations (crew area, surface access, docking to Orion). Earth recovery hardware removed.

Thermally optimized to limit boiloff in transit and on the lunar surface

Human Landing System (HLS) Starship Artemis III Concept of Operations



Initial Starship HLS Progress



Crew and cargo elevator



Crew cabin VR evaluation



Airlock



Image Credit: SpaceX

Initial Starship HLS Progress





STARSHIP TEST FLIGHT SN8 LAUNCH (Image: SpaceX)



STARSHIP TEST FLIGHT SN15 LANDING (Image: SpaceX)



STARSHIP SUPER HEAVY (Image: SpaceX)

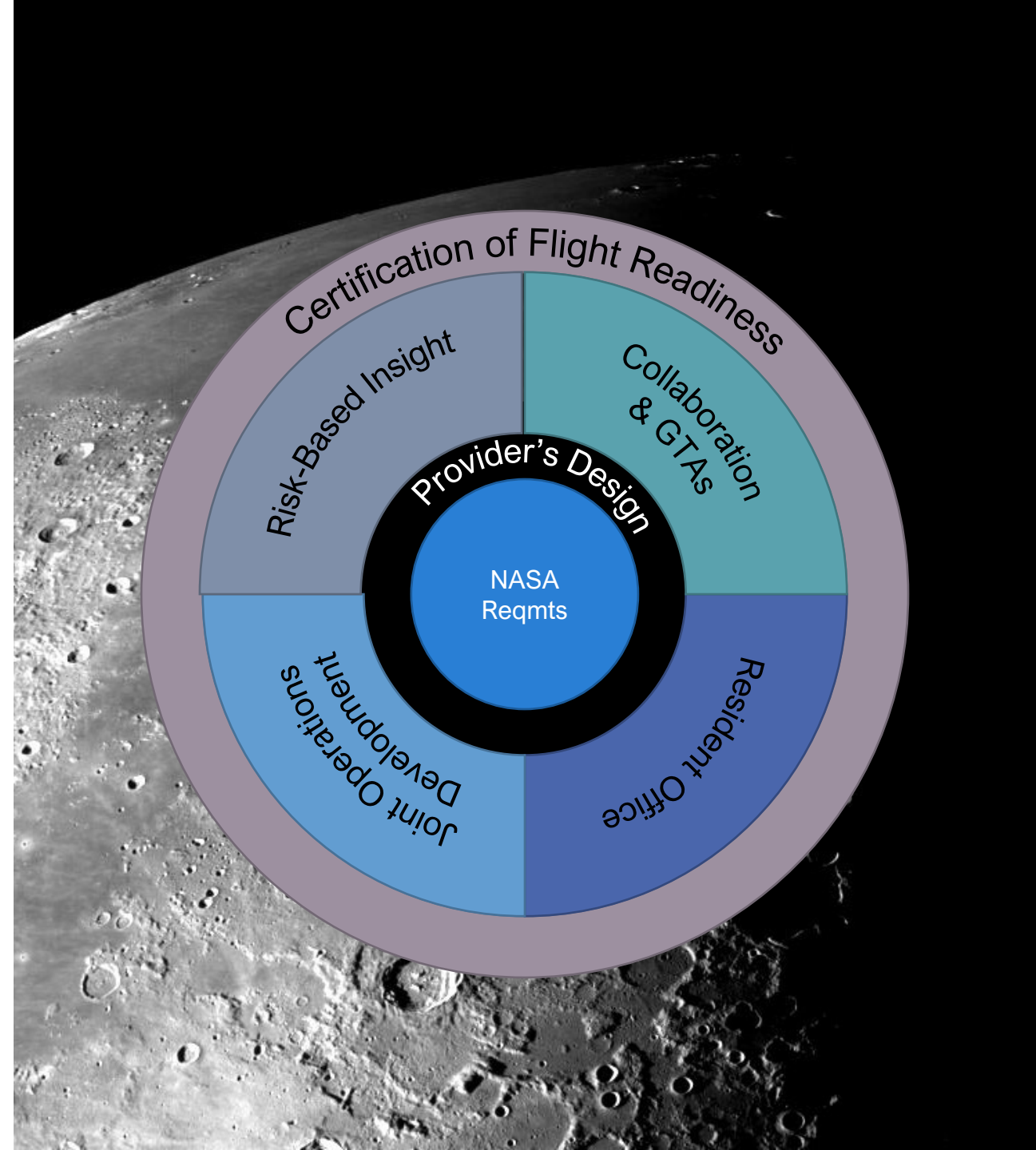
Insight

- Risk based focusing on targeted areas of program concern
- Ensures HLS resources are applied efficiently, and that Providers are not overly burdened by excessive insight activity in low risk areas

Collaboration

- Personnel that are assigned to work with the Provider and part of their team
- Accomplish tasks that are specified by the Provider, and deliverable to the Provider as in-line work

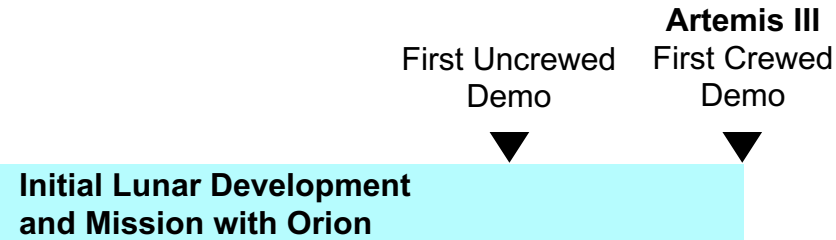
NASA maintains ultimate authority on certification of flight readiness.



Human Landing System Acquisition Plans



SpaceX Initial Lunar Development (Option A)



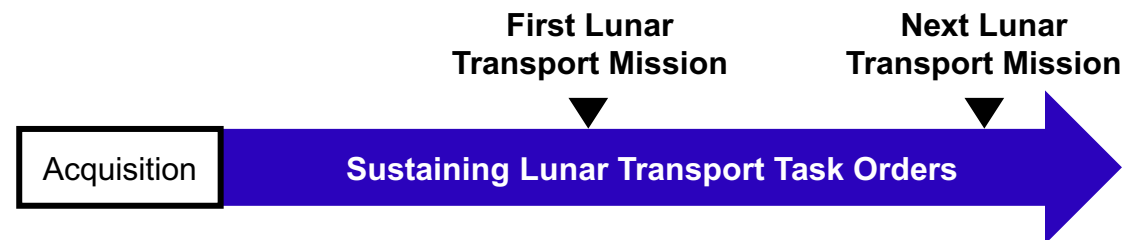
SpaceX Sustaining Lunar Development (Option B)



NEW COMPETITION Sustaining Lunar Development (Appendix P) (open to industry)



Sustaining Lunar Transport Services (open to industry)







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