

BECOMING A MULTIPLANET SPECIES



SPACEX



“You want to wake up in the morning and think the future is going to be great - and that's what being a spacefaring civilization is all about. It's about believing in the future and thinking that the future will be better than the past. And I can't think of anything more exciting than going out there and being among the stars.”

Elon Musk, CEO and Lead Designer, SpaceX

PROGRESS

DEEP CRYO LIQUID OXYGEN TANK TESTING

Pressure tested to 2.3 atmospheres

Carbon fiber matrix

Volume 1000m³

Holds 1200 tons of liquid oxygen



ENGINE TESTING

Over 1200 seconds of firing across 42 main engine tests

Longest test 100 seconds; 40 seconds typical for Mars landing

Test engine operates at up to 200 atmospheres



PERFECTING PROPULSIVE LANDING

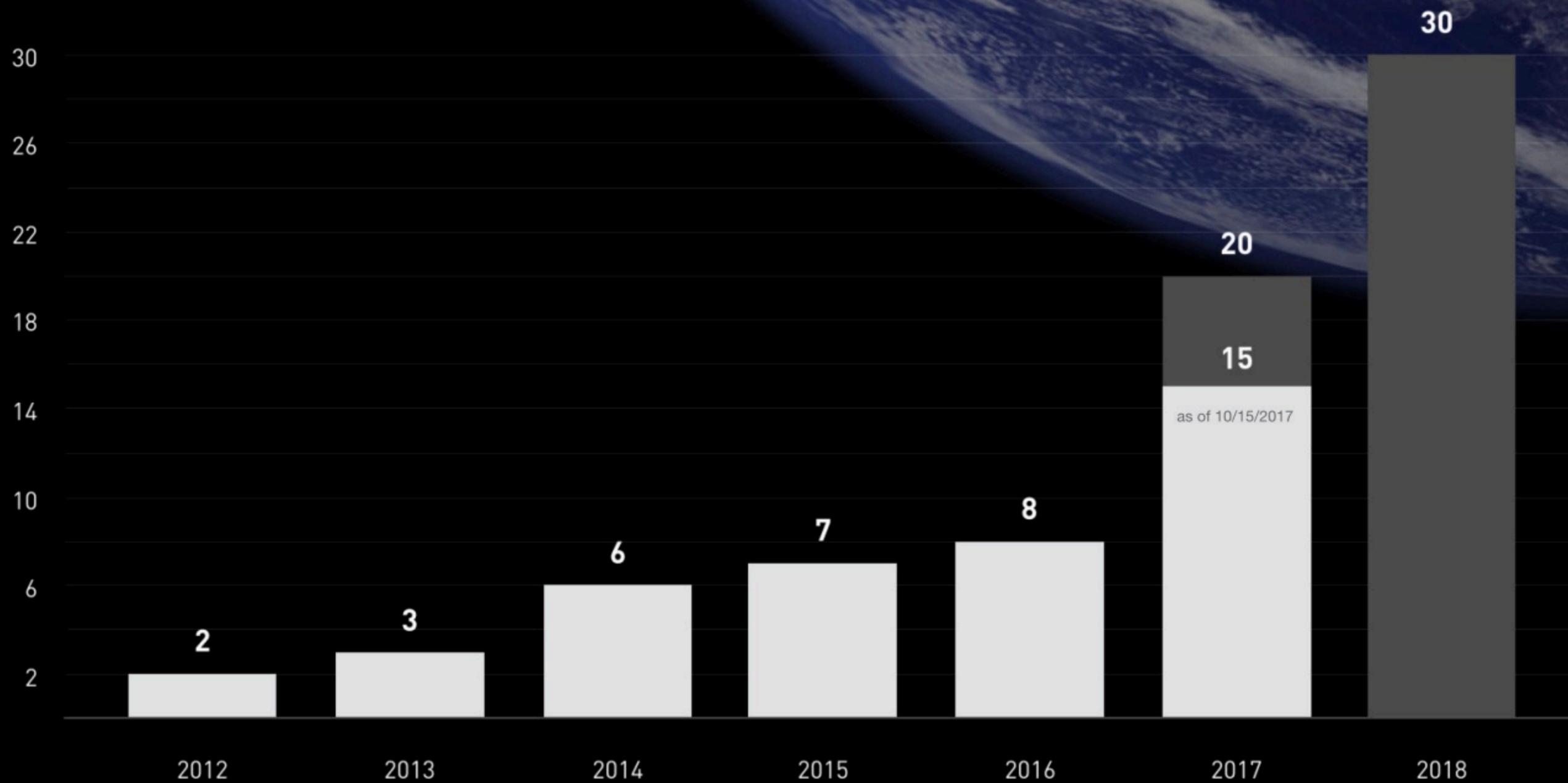
18 successful Falcon 9 landings as of
10/15/2017

Very high reliability demonstrated with
single engine landings

Precision landing will allow for return to
launch mount, no landing legs needed



LAUNCH RATE

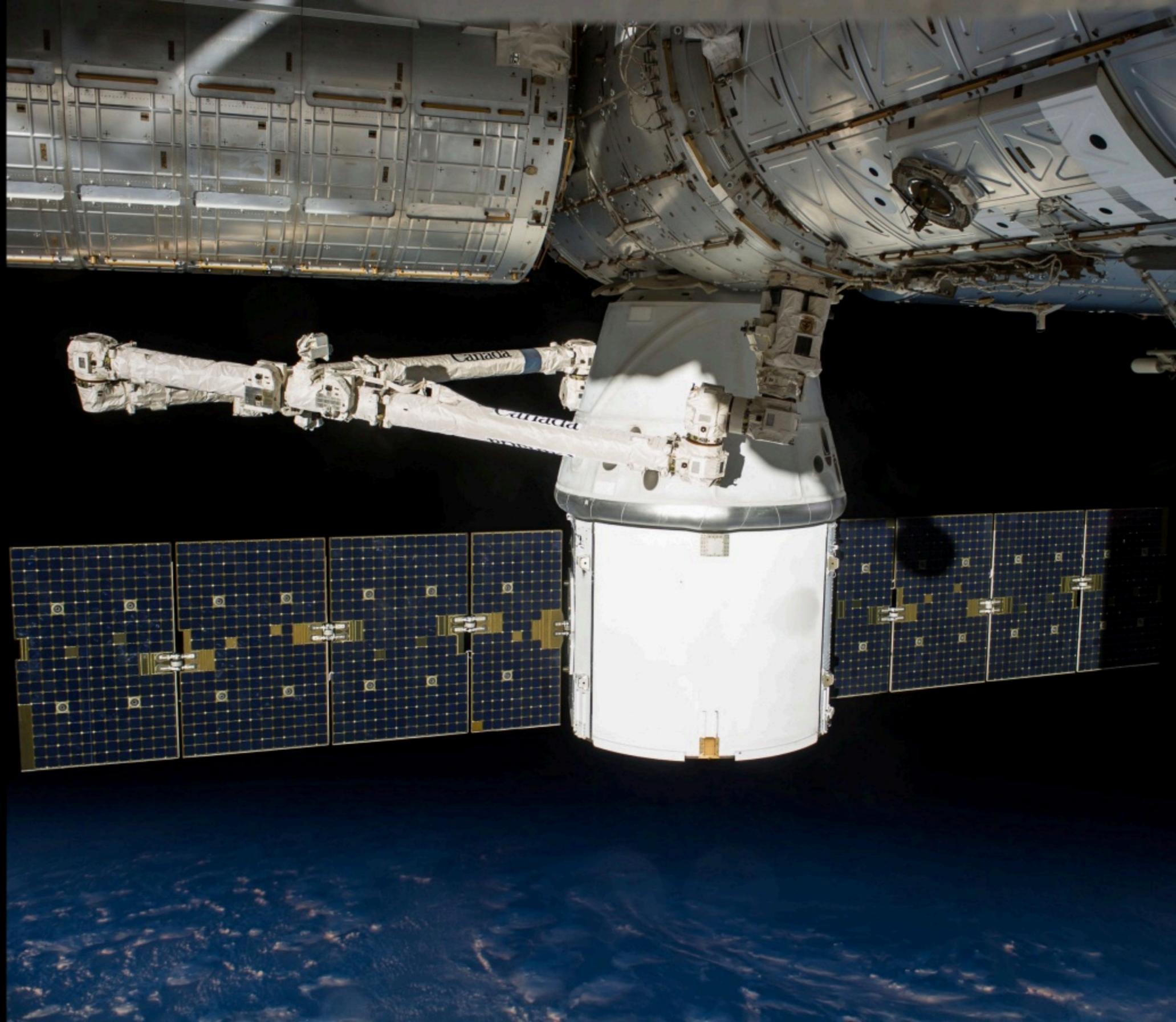


DRAGON UPDATES

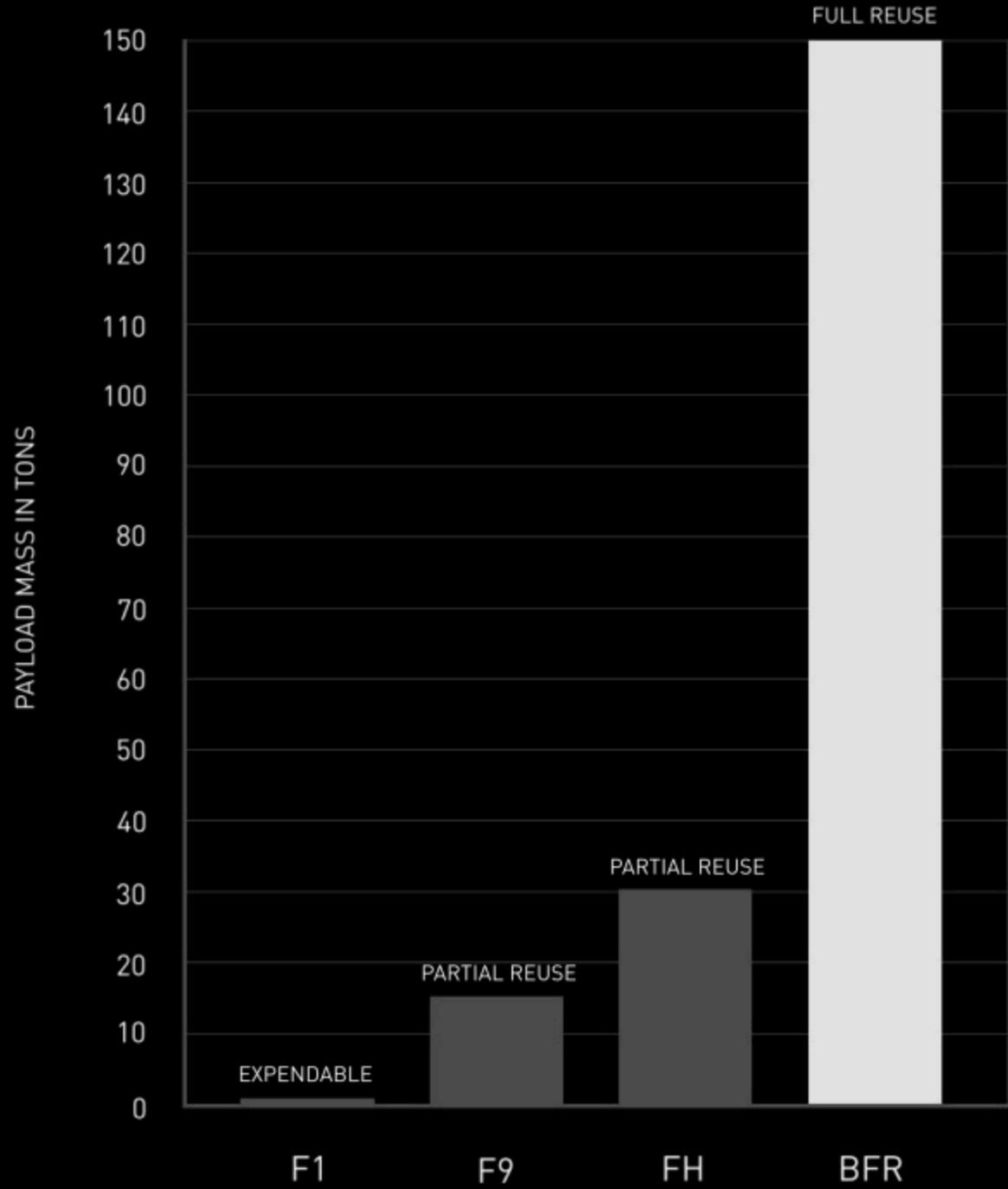
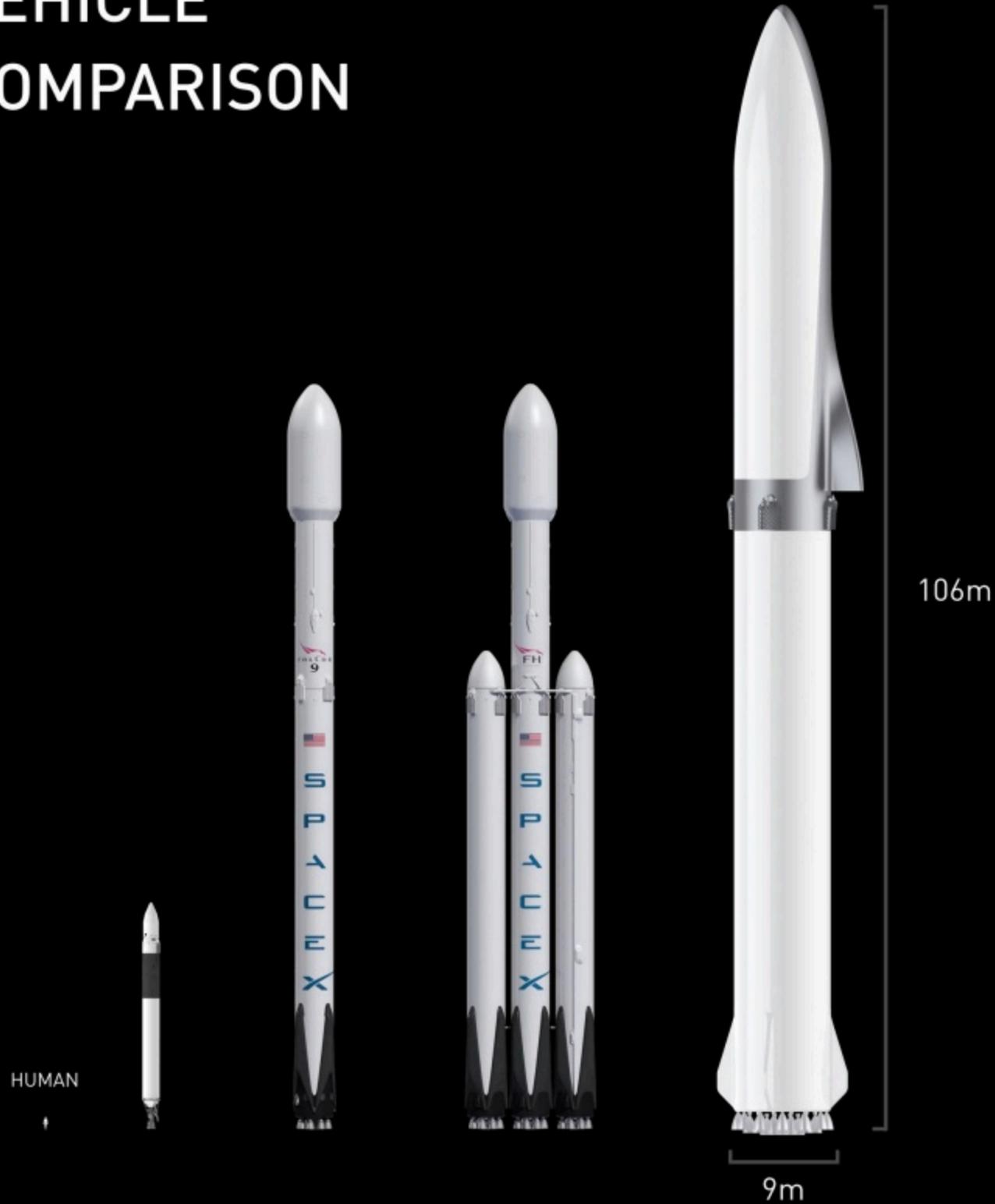
Demonstrated automated rendezvous and docking to space station with Dragon 1

Dragon 2 will dock directly, not needing use of Canadarm

Perfected heat shield technology to withstand extremely high reentry temperatures



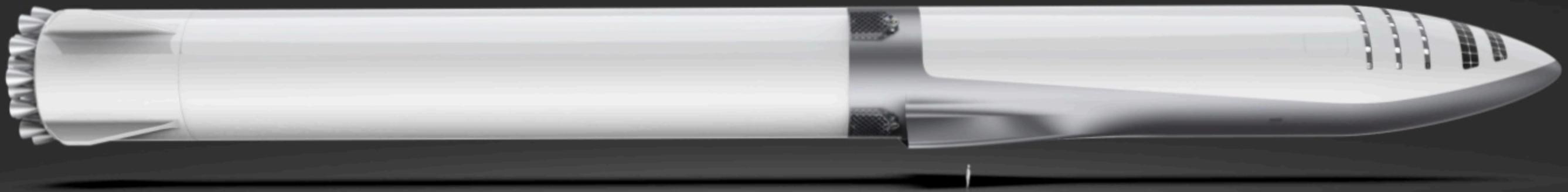
VEHICLE COMPARISON



BFR OVERVIEW

By creating a single system that can service a variety of needs, we can redirect resources from Falcon 9, Falcon Heavy and Dragon to this system—which is fundamental in making BFR affordable.

[WATCH ANIMATION](#)



Vehicle Length: 106 m

Booster Length: 58 m

Booster Thrust: 52,700 kN

BFR



Ship Length 48 m
Body Diameter 9 m

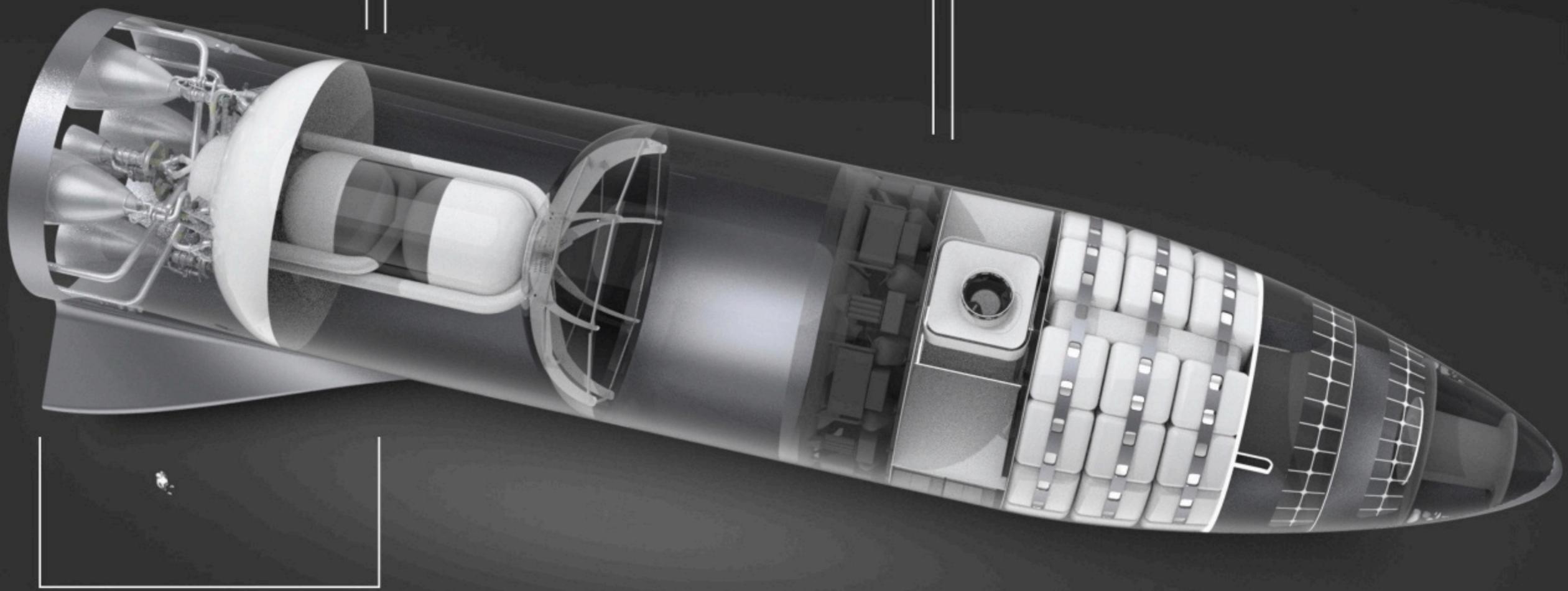
Ship Dry Mass 85 t
Propellant Mass 1,100 t

Max Ascent Payload 150t
Typical Return Payload 50 t

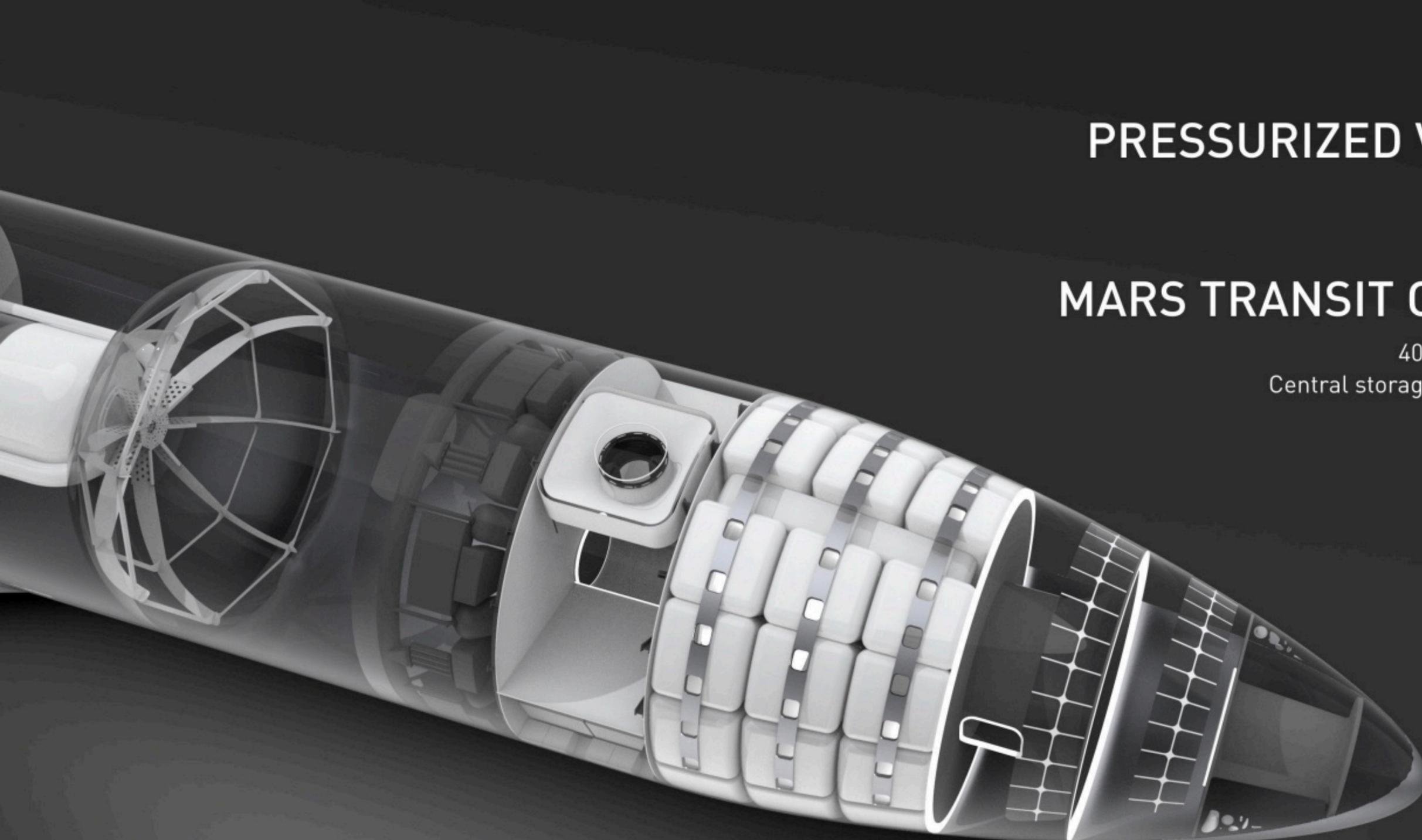
ENGINES

PROPELLANT TANKS

PAYLOAD



DELTA WING



PRESSURIZED VOLUME 825 m³

Greater than an A380 main deck

MARS TRANSIT CONFIGURATION

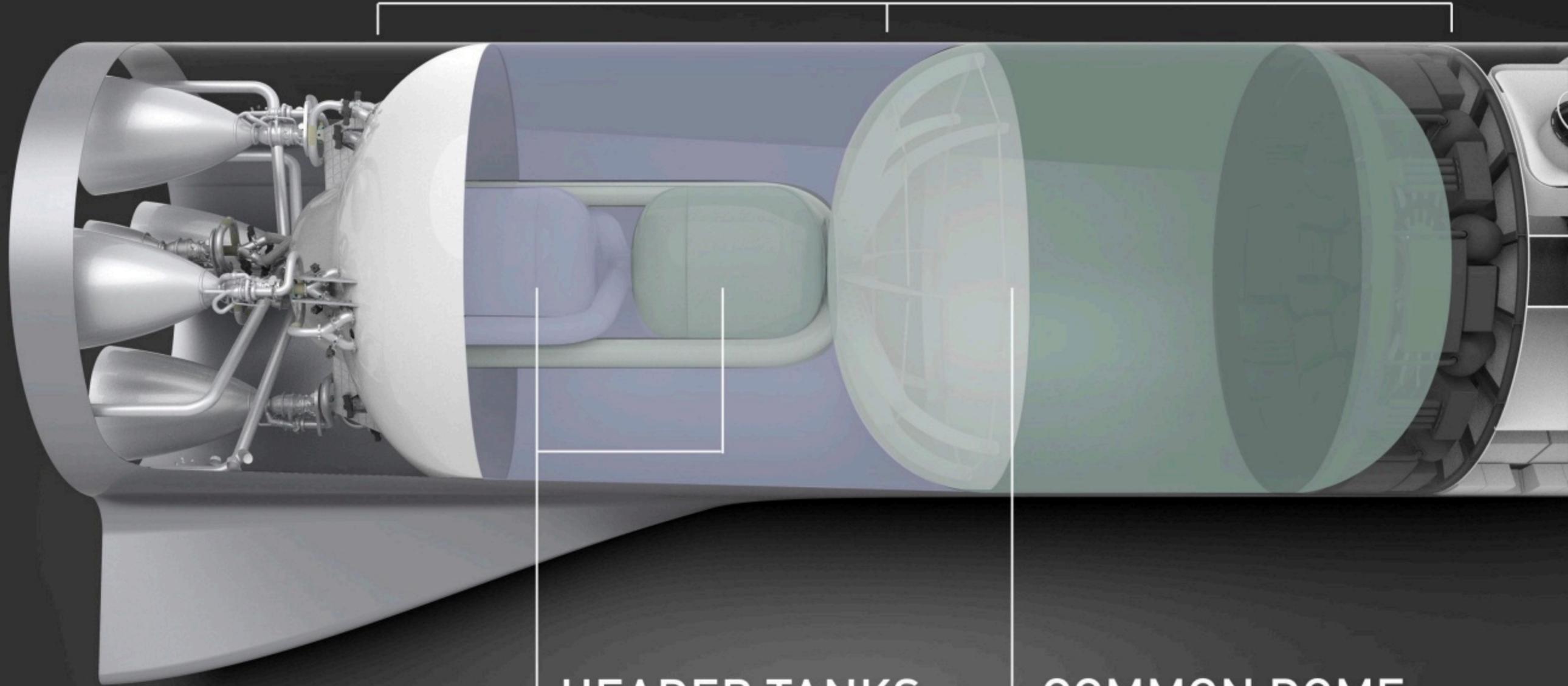
40 cabins and large common areas
Central storage, galley and solar storm shelter

FUEL TANK

Holds 240 tons of CH_4

OXYGEN TANK

Holds 860 tons of liquid O_2



HEADER TANKS

Hold landing propellant during transit

COMMON DOME

Separates CH_4 and O_2

RAPTOR ENGINES

Chamber pressure 250 bar
Throttle 20% to 100% thrust

2 SEA-LEVEL ENGINES

Exit Diameter 1.3 m
Thrust (SL) 1,700 kN
Isp (SL) 330 s
Isp (Vac) 356 s

4 VACUUM ENGINES

Exit Diameter 2.4 m
Thrust 1,900 kN
Isp 375 s

