Spacefaring Institute™

Becoming Spacefaring

Why becoming a true spacefaring nation is *now* America's needed next step in space

Why building an integrated spacefaring logistics infrastructure is *now* needed

How building this spacefaring logistics infrastructure can *now* be started

http://spacefaringinstitute.com
info@spacefaringinstitute.com

Opening the Earth-Moon frontier is important for:

- Science & Exploration
- Industrialization
- Wealth generation
- Security

Americans should embrace opening the Earth-Moon frontier as an important national goal

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> "In this new century, those who effectively utilize space will enjoy added prosperity and security and will hold a substantial advantage over those who do not."
>
> - U.S. National Space Policy (2006)

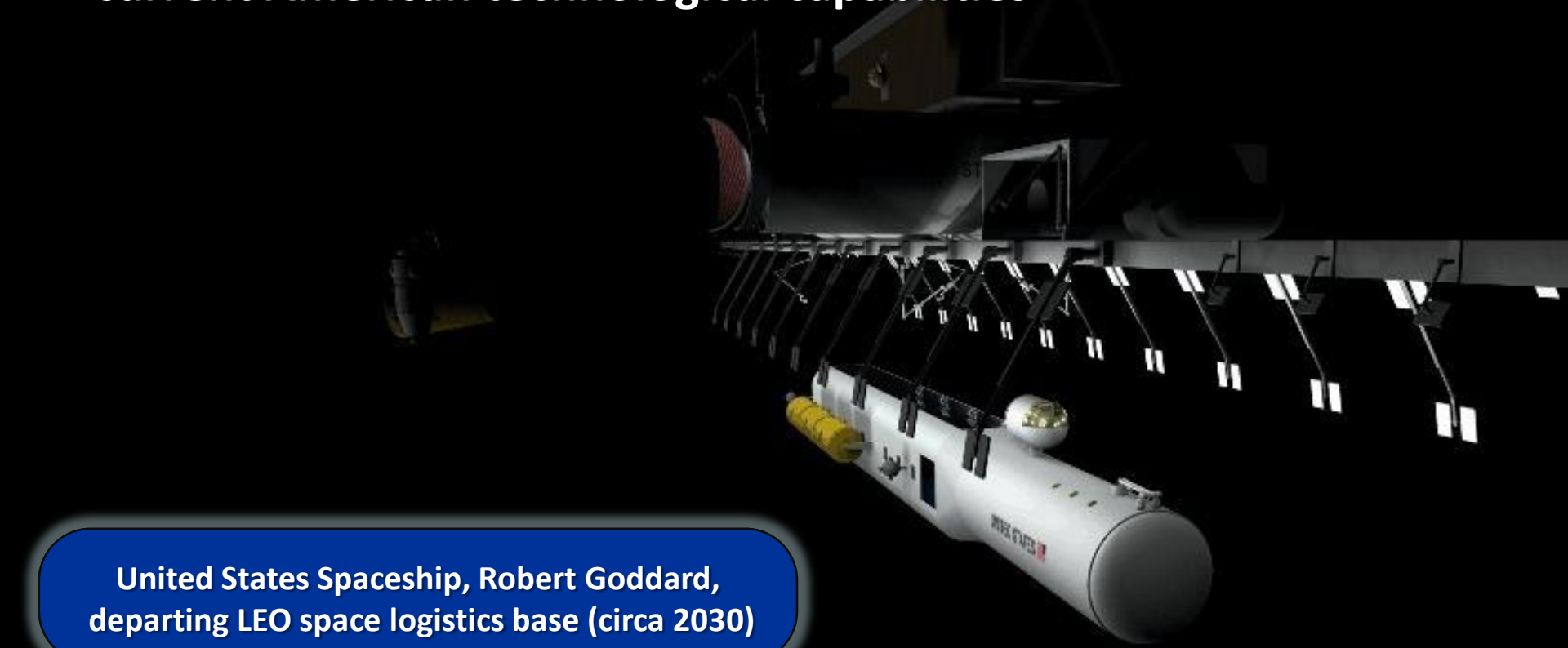
To open the Earth-Moon frontier, America must develop new space operational capabilities

> "In order to increase knowledge, discovery, economic prosperity, and to enhance the national security, the United States must have robust, effective, and efficient space capabilities."
>
> - U.S. National Space Policy (2006)

The starting point is to build an integrated spacefaring logistics infrastructure, as first envisioned in the 1950's

Wernher von Braun's vision, from the early 1950's, of a spacefaring future for America

Becoming a true spacefaring nation will remain a dream until we choose to effectively use our current American technological capabilities



United States Spaceship, Robert Goddard, departing LEO space logistics base (circa 2030)

The (It's Already Started) New Space Race

The world is (re)awakening to the potential of space—marking the beginning of the 21st century's spacefaring race

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Nations and alliances seeking to expand or establish their human spacefaring capabilities:

- China (1,300 million)
- Europe (700 million)
- India (1,100 million)
- Japan (130 million)
- Russia (140 million)
- United States (300 million)

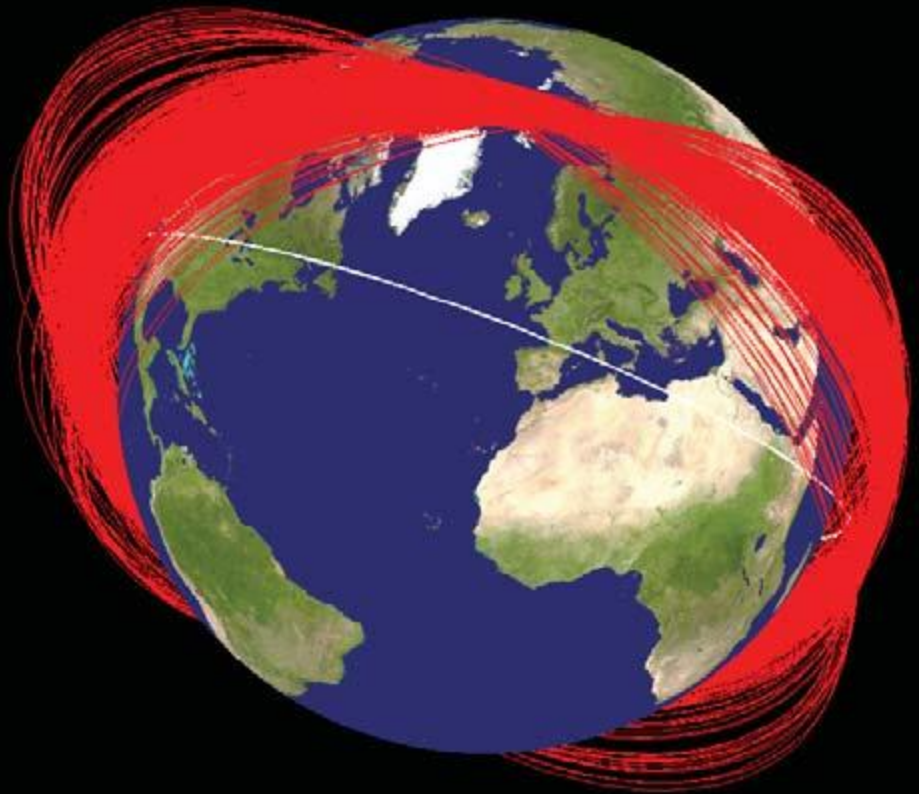
This century, America will have less than 10% of the world's population (and economy) working to become spacefaring

All major nations seek natural resources, security, wealth, and prestige from new physical and technological frontiers

"For the modern Russia, as for the other world nations, cosmonautics now is not only the subject of national pride. Exploration and application of Earth-orbital space become serious resource of national development and real advancement of peoples living standards."

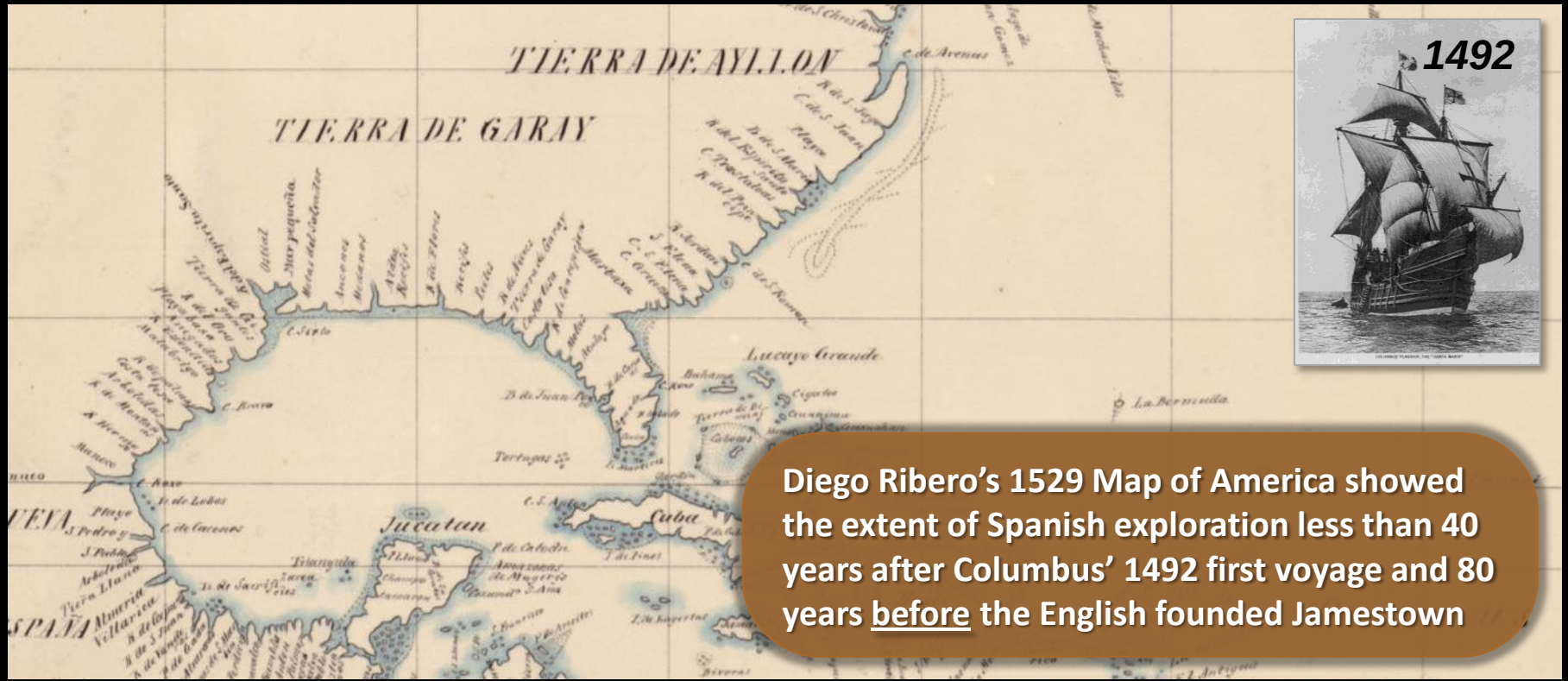
Vladimir Putin
President of Russian Federation
Moscow, Kremlin
12 January 2007

A growing list of nations are already competing to utilize space's potential for security, knowledge, and wealth



Debris cloud from Chinese anti-satellite test

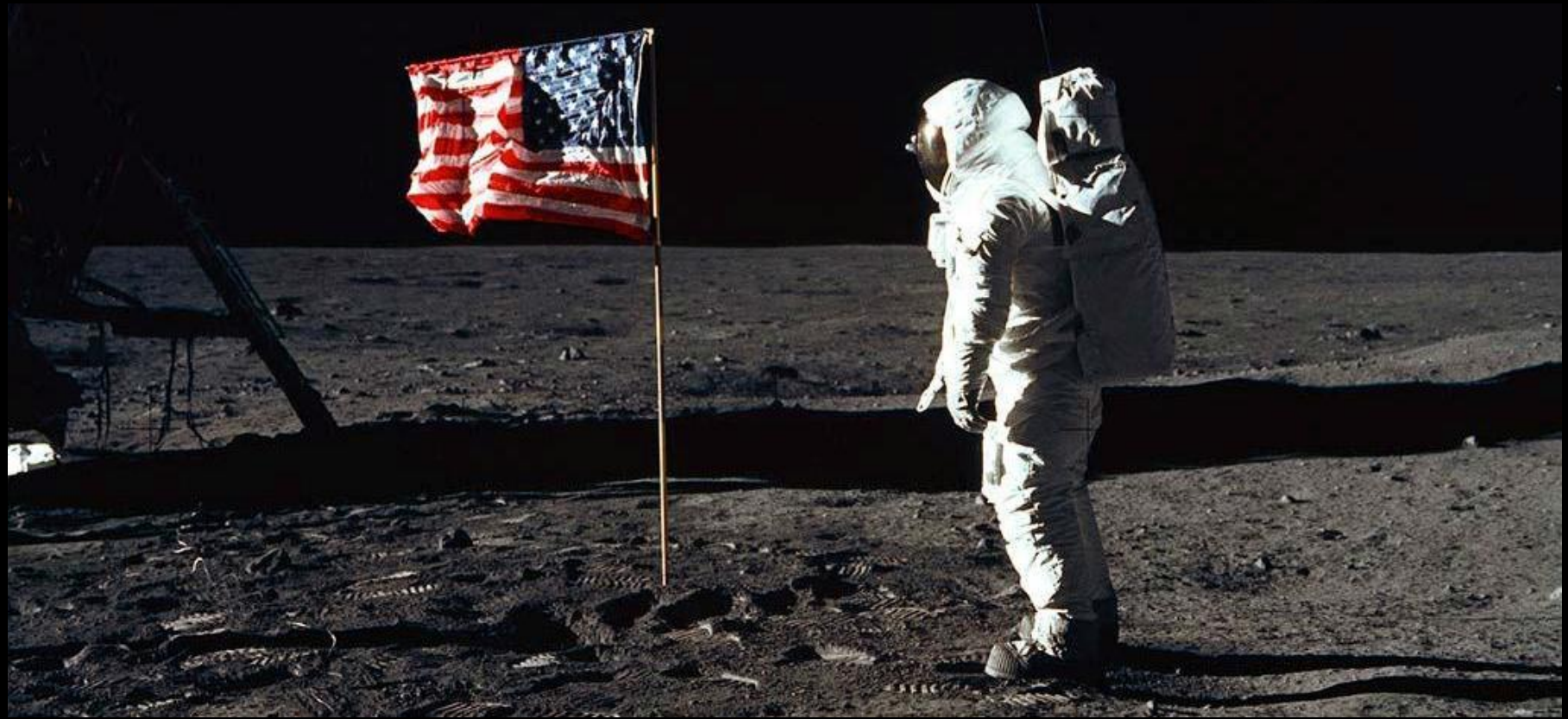
“Great nations” realize that the first to open a new frontier (physical or technological) can gain great advantage



Diego Ribero’s 1529 Map of America showed the extent of Spanish exploration less than 40 years after Columbus’ 1492 first voyage and 80 years before the English founded Jamestown

Other nations are now working hard to gain the needed technological spacefaring expertise

Americans recognize the need, as a “great nation,” to respond to such challenges

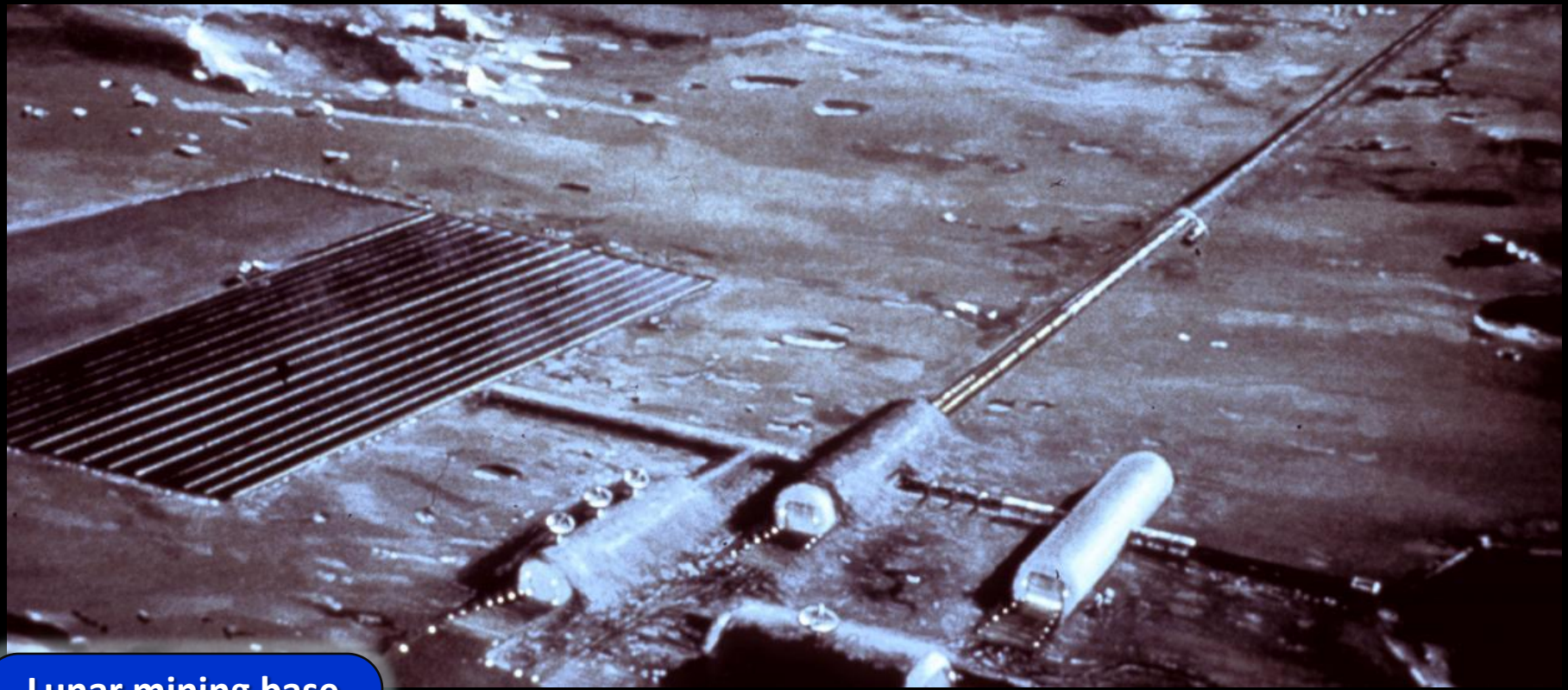


America Must Change Course to Successfully Meet this Challenge

Spacefaring nations will “race” for space resources to generate wealth and increase security

- Expanded communication, navigation and observation
- Space research into the fundamental laws of nature – the foundation for new science and technology
- Sunlight for renewable “beamed” energy for the Earth
- Earth orbits for tourism, manufacturing, and security
- Moon, asteroids, and comets for raw materials to industrialize space

America's real competition from other nations in space this century will be in industrializing space



Lunar mining base

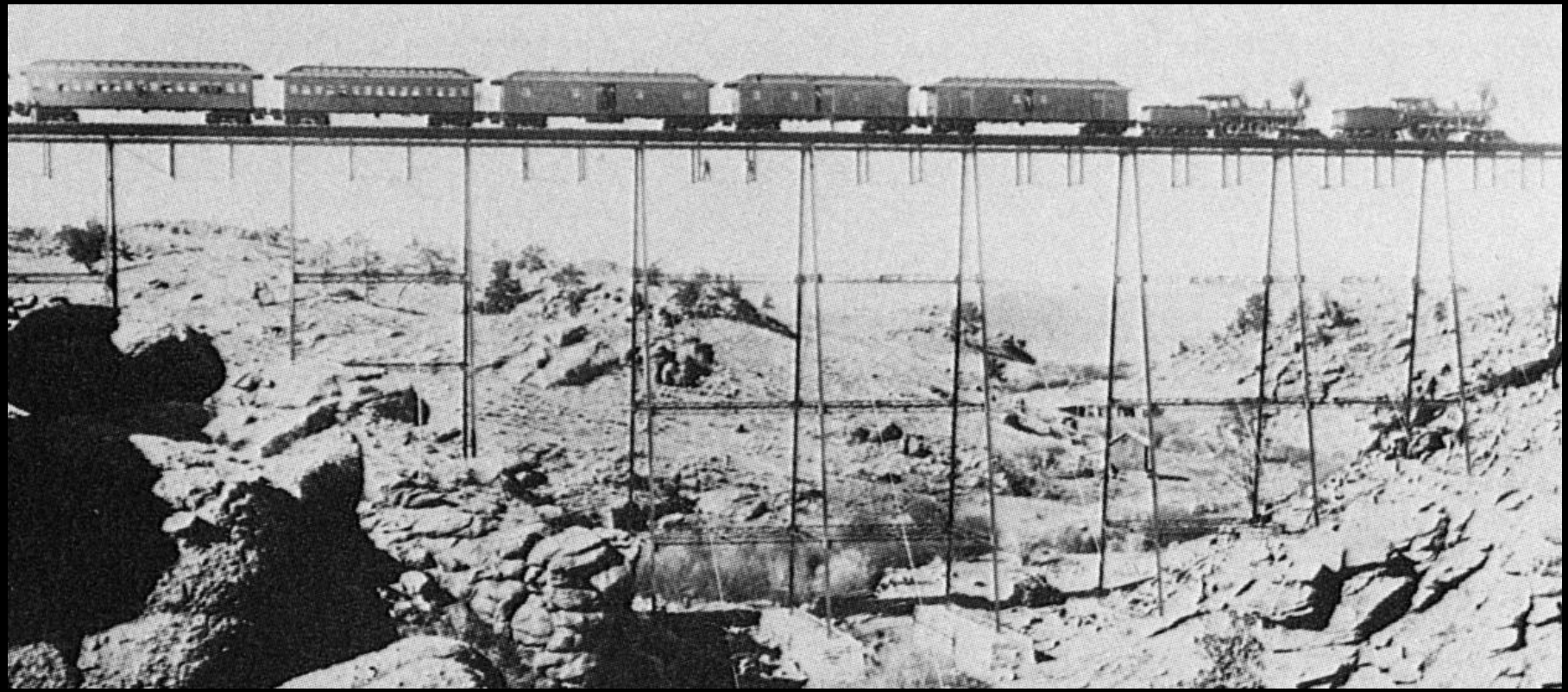
Image courtesy of the Space Studies Institute

The first nations to truly open space to industrial operations will reap the primary benefits

- Be first to achieve mastery of space industrial operations
- Be first to market new space products and services to a technology-hungry world
- Achieve spacefaring scientific, technological, and intellectual property leadership

- Through these achievements, these nations will become the first true spacefaring nations and dominate economic and security capabilities in/from space

America has often led in building the new infrastructure necessary to open new frontiers



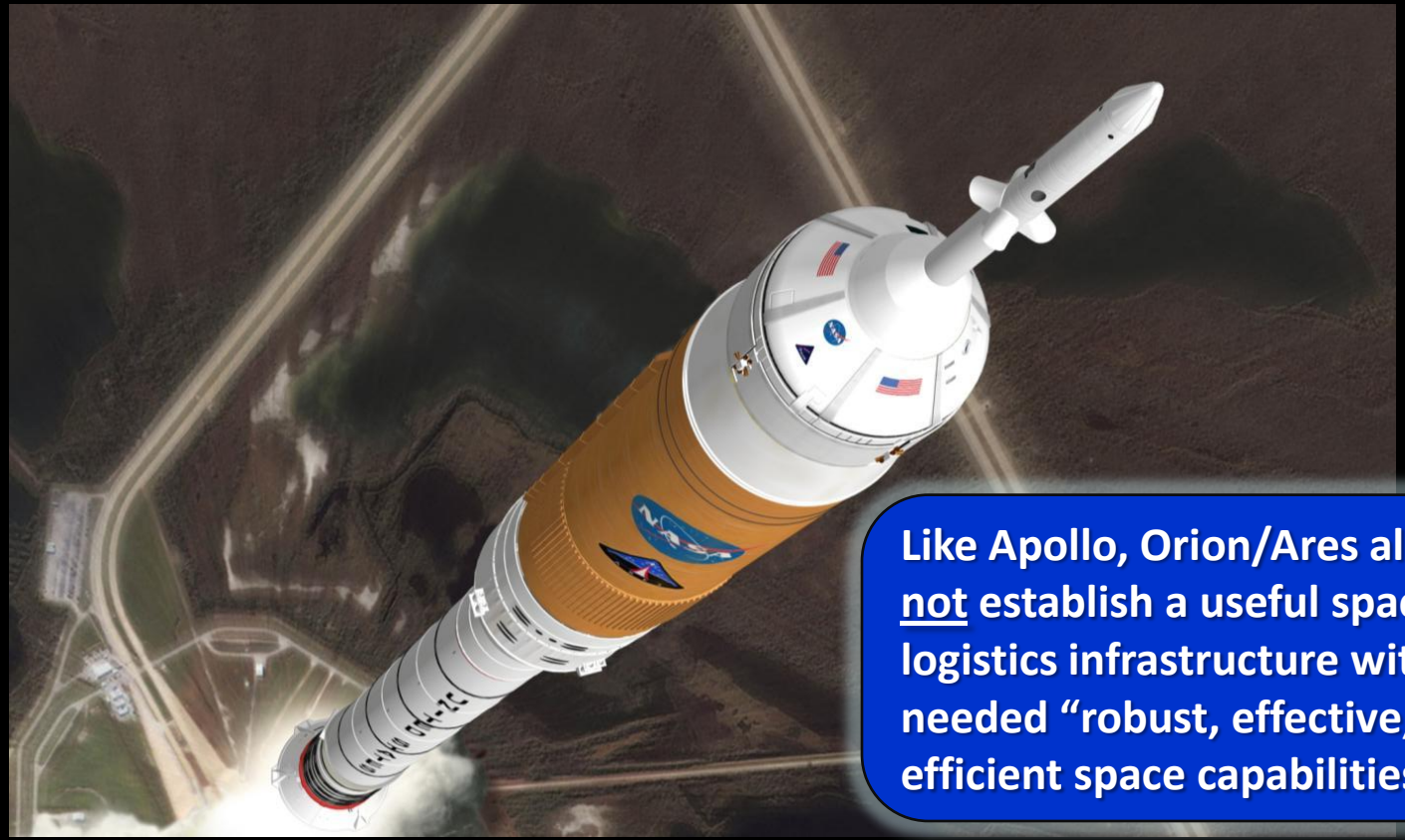
New infrastructure encourages and enables new business development—especially when new industries are just beginning

America's success with growth of commercial air travel highlights how wise infrastructure investment can bring great benefits

Wright Brothers' First Flight (1903)

Something few people envisioned in 1903: A snapshot of roughly 4,500 airliners and 250,000 air travelers flying on a typical afternoon a century later

Renewed human exploration of the Moon alone will not enable America to compete in space to benefit our economy and security



Like Apollo, Orion/Ares alone will not establish a useful spacefaring logistics infrastructure with the needed "robust, effective, and efficient space capabilities"

America's new direction in space must build the 21st century "transcontinental railroad" to open space to American industrial operations

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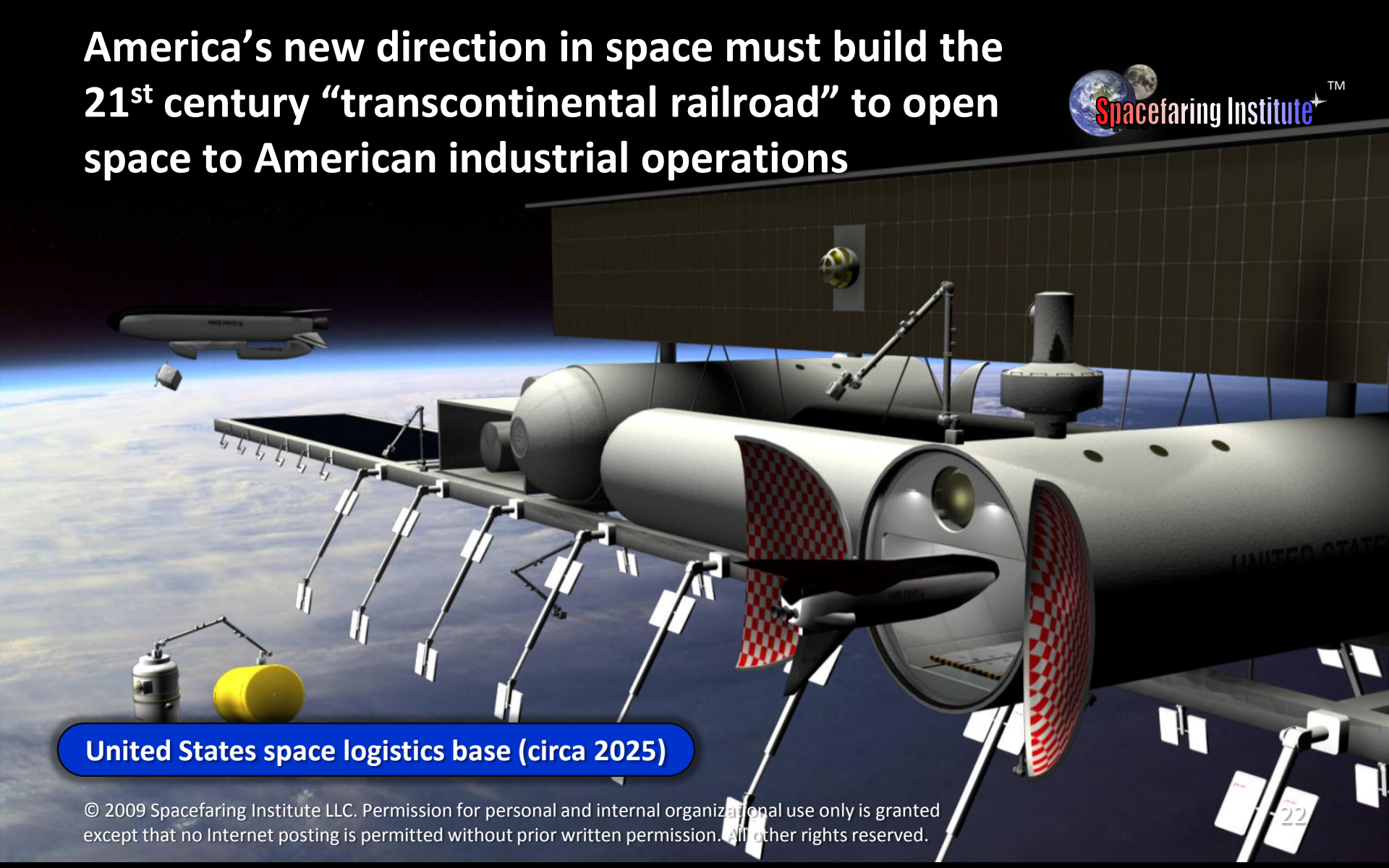


United States space logistics base (circa 2025)

Building an American Spacefaring Logistics Infrastructure Can Now be Started

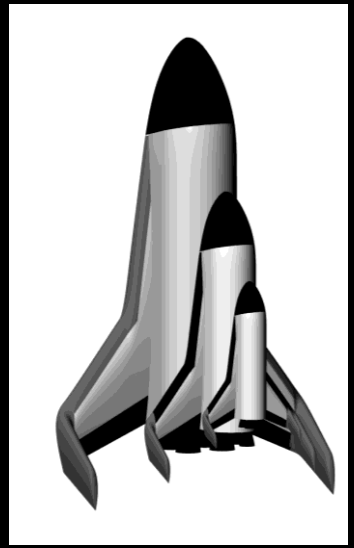
To industrialize space, the Earth-Moon frontier must be "opened," much as the American West was opened in the 1800's

- Space must become routinely accessible by anyone wishing to conduct business in space or to use new space products or services
- Space entrepreneurs must have the ability to conduct business in space by building new products or providing new services in/from space
- Space businesses must be able to bring new space products and services to the marketplace

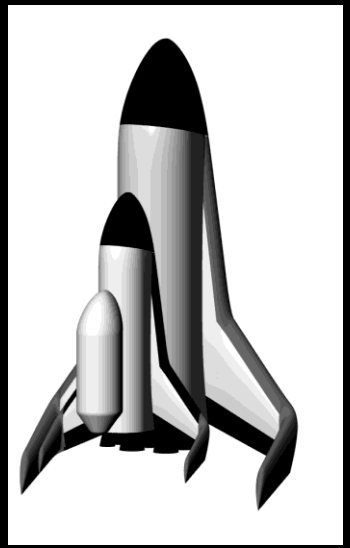
Opening space will require a phased approach, starting with:

- Establishing routine passenger and cargo transport to and from low Earth orbit (LEO) with "aircraft-like" safety and operability
- Establishing LEO space logistics depots in LEO
- Establishing routine passenger and cargo transport throughout the Earth-Moon system

First-generation, fully-reusable, rocket-powered, two-stage space access systems (aerospaceplanes) will transport passengers and cargo to LEO



With passenger spaceplane



With cargo container

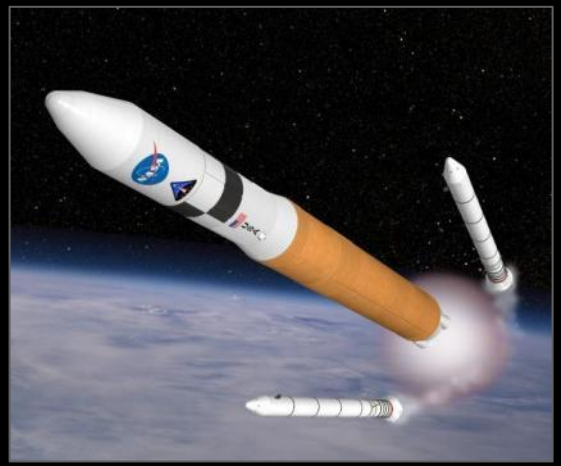
(Representative illustrations)

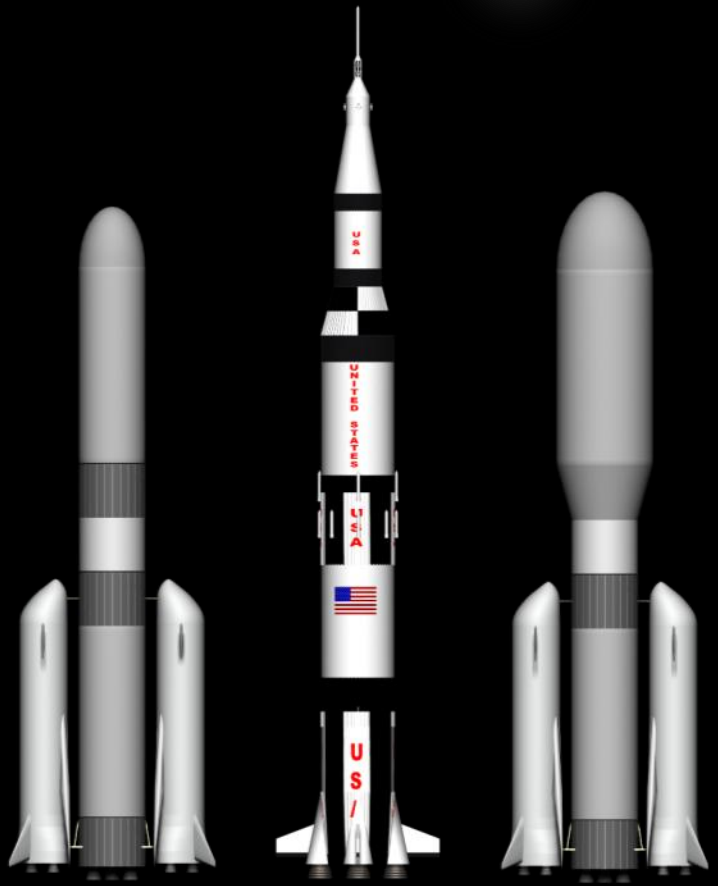
- Specifically developed using "aircraft-style" system engineering processes to achieve improved "aircraft-like" safety and operability

- Passenger spaceplane transports 10 passengers
- Cargo container delivers about 12 tons to LEO space logistics depots

2010 Start → 2018 Initial Ops

A heavy spacelifter will be used to transport the large modules needed to build the LEO space logistics depots & spaceships





Ares V design will be improved with fully-reusable boosters and increased payload size/capacity

Space logistics bases in LEO will form the core of new space depots to provide integrated logistics support for American spacefarers

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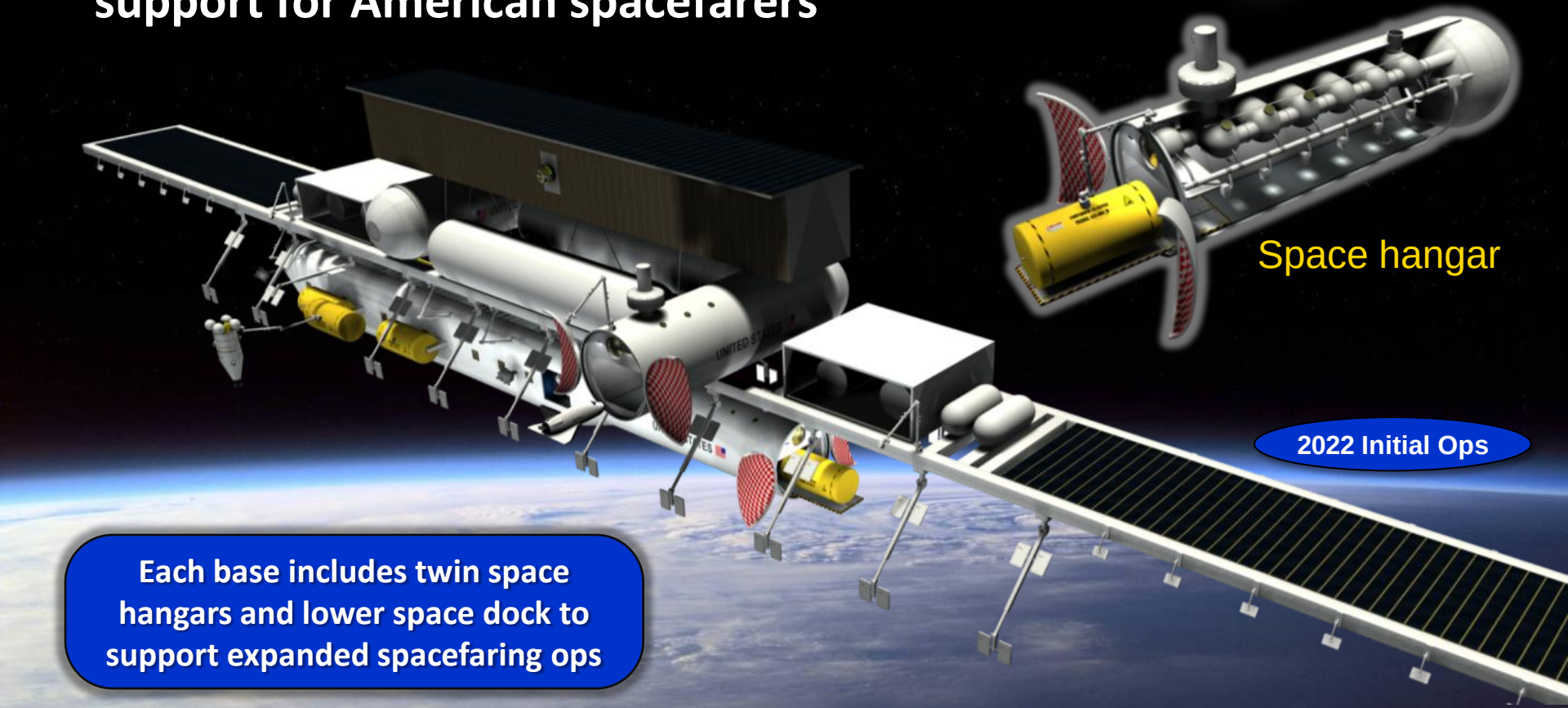
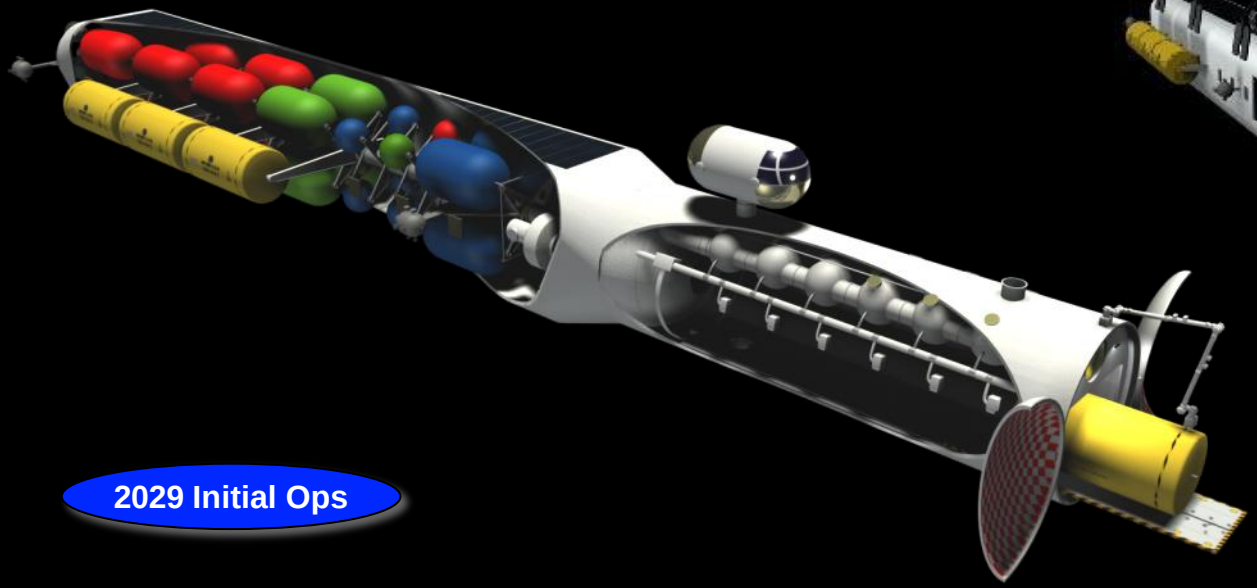


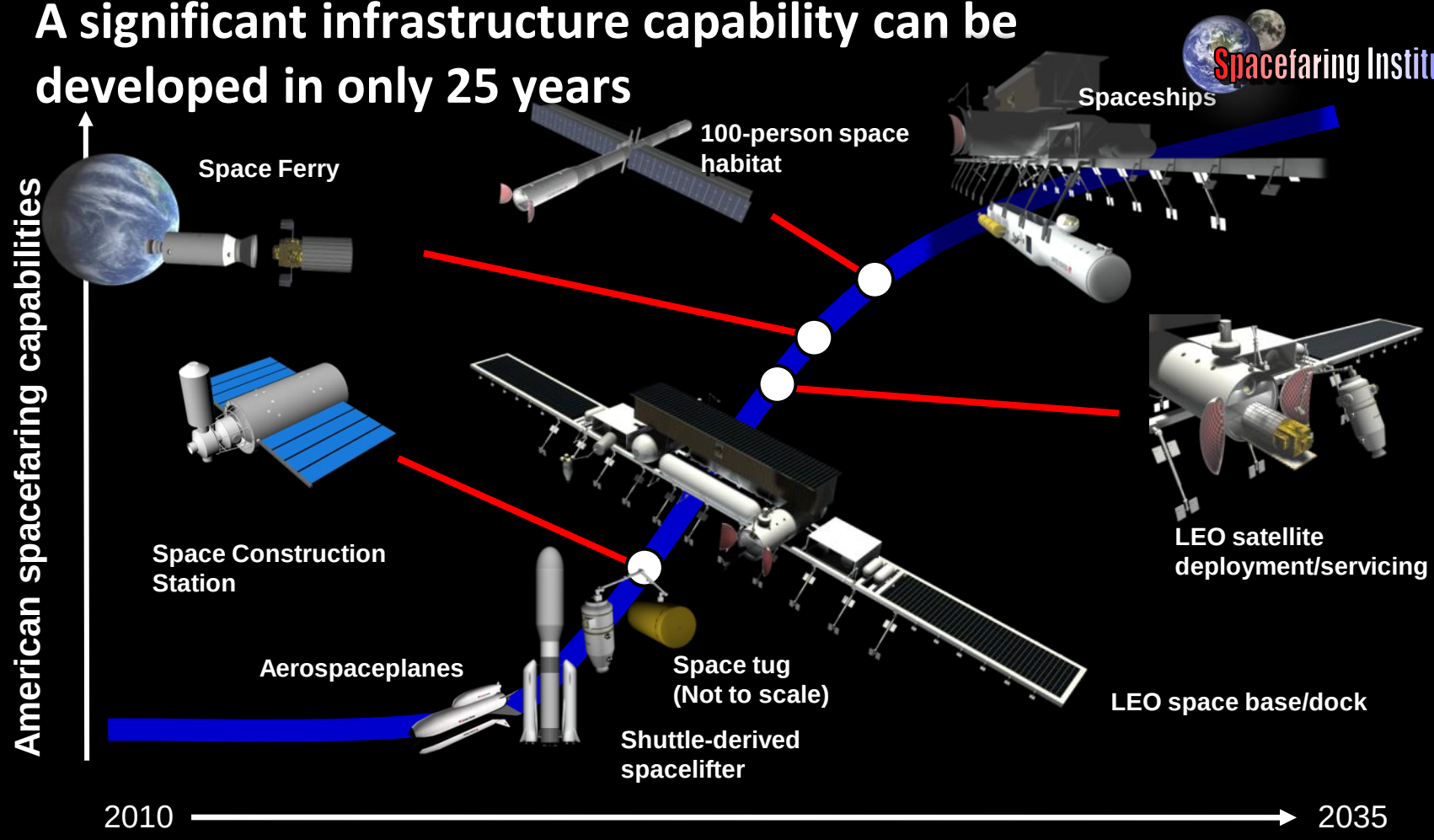
Each base includes twin space hangars and lower space dock to support expanded spacefaring ops

As American spacefaring operations expand beyond LEO, spaceships will be assembled at the LEO space bases to provide transport and support



2029 Initial Ops

A significant infrastructure capability can be developed in only 25 years



The Time to Change Course is Now

Strengthening international challengers and on-going American lassitude are threatening America's space leadership

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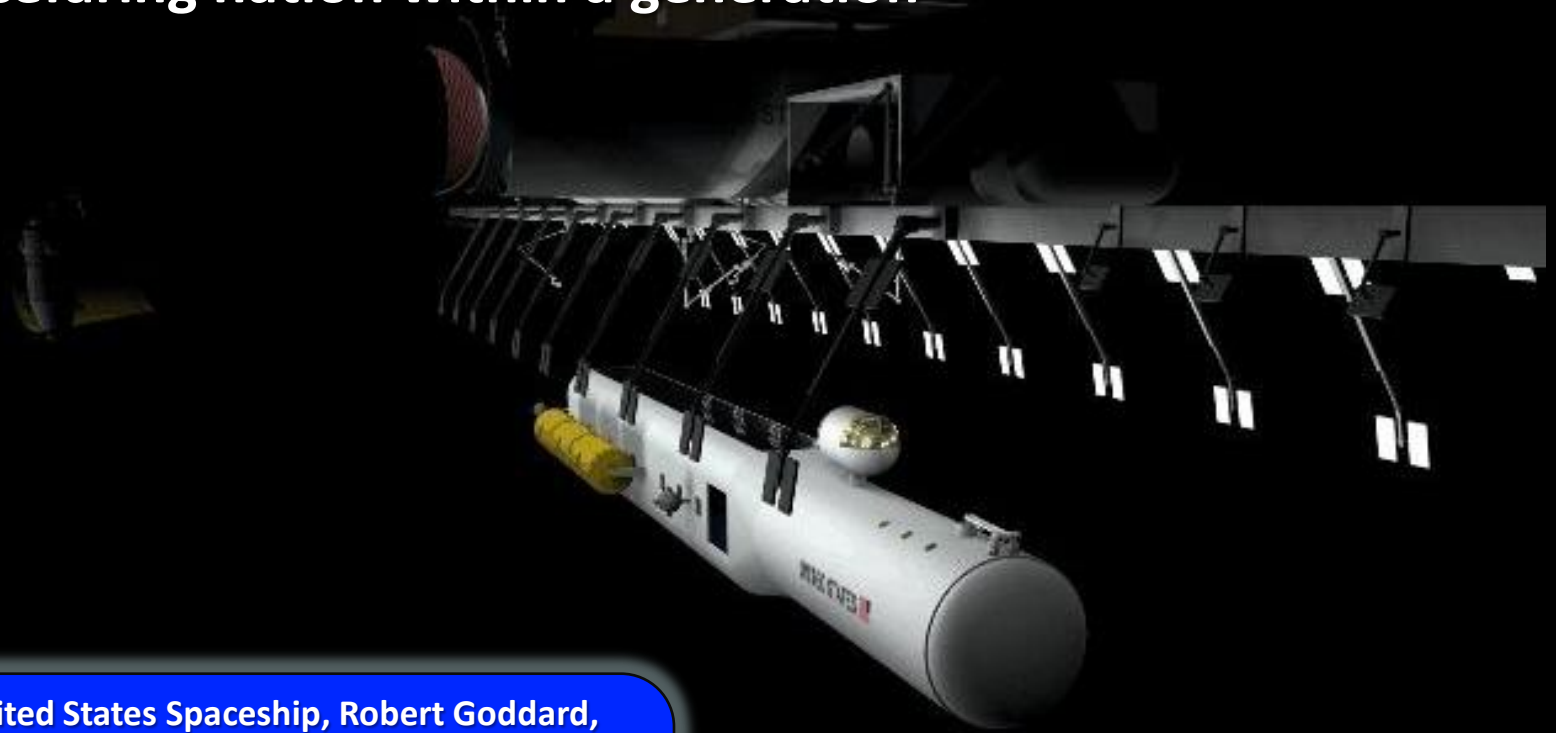
"In this new century, those who effectively utilize space will enjoy added prosperity and security and will hold a substantial advantage over those who do not."

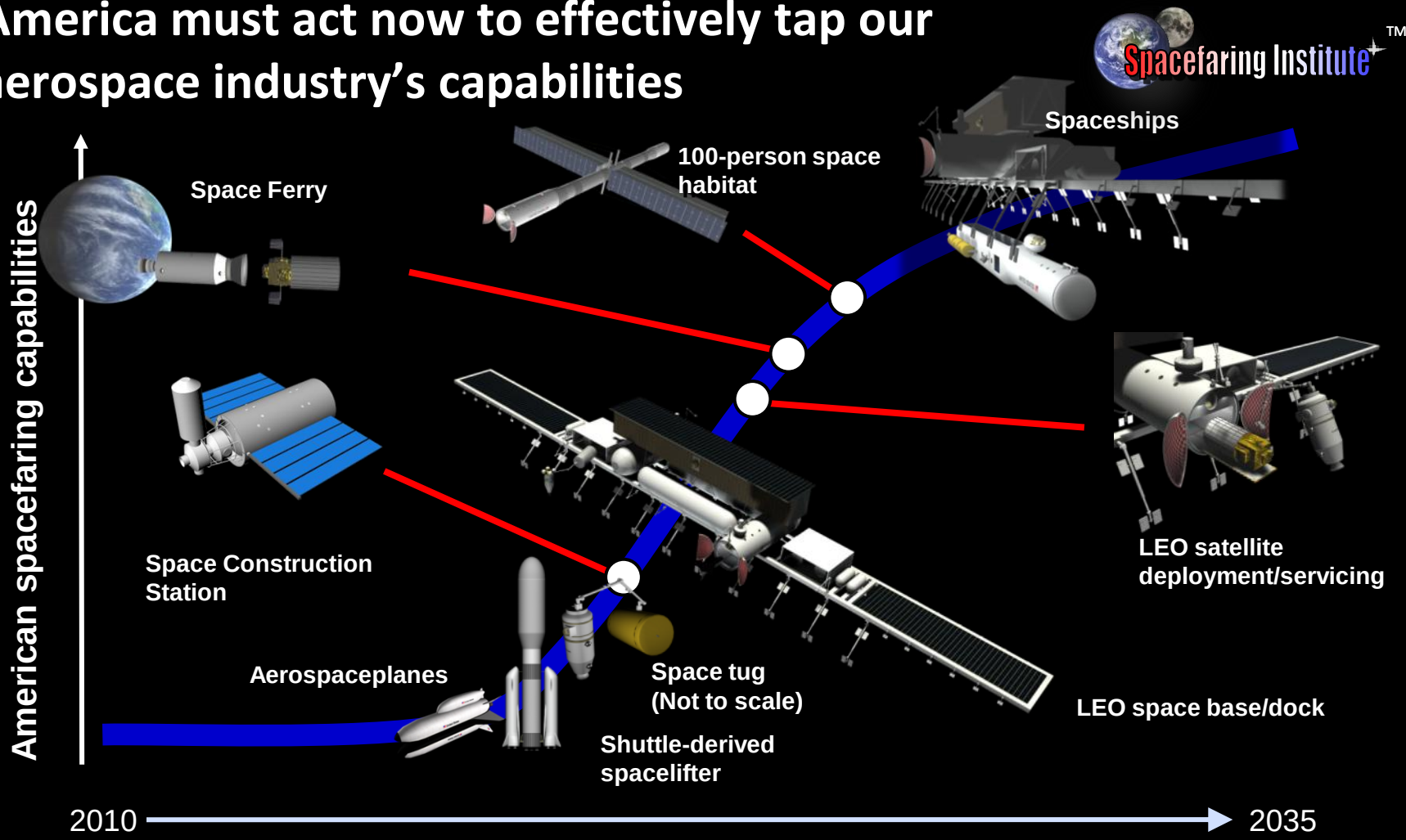
- U.S. National Space Policy (2006)

While once only a dream, America now has the technological ability to become a true spacefaring nation within a generation

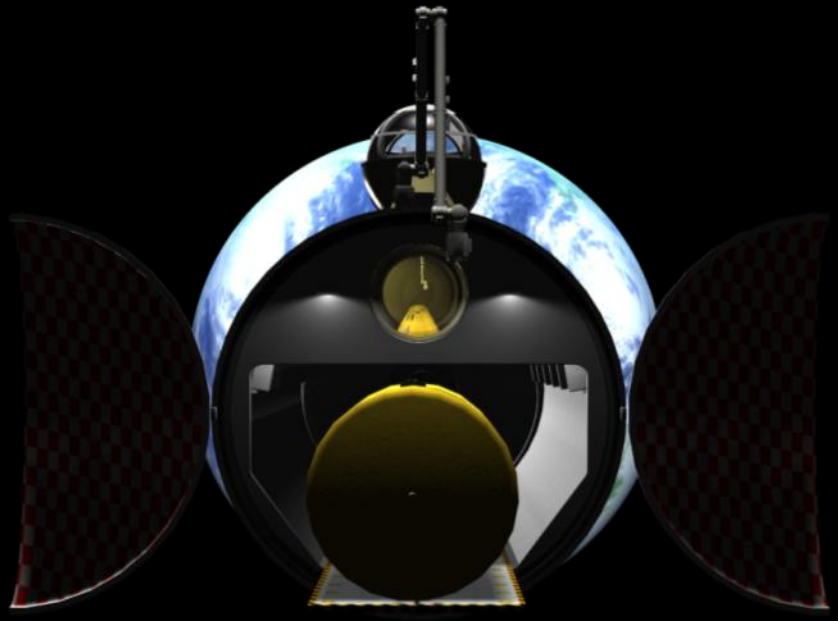


United States Spaceship, Robert Goddard, departing LEO space logistics base (circa 2030)

America must act now to effectively tap our aerospace industry's capabilities



It is, again, time for America to take the longer strides needed to become a true spacefaring nation

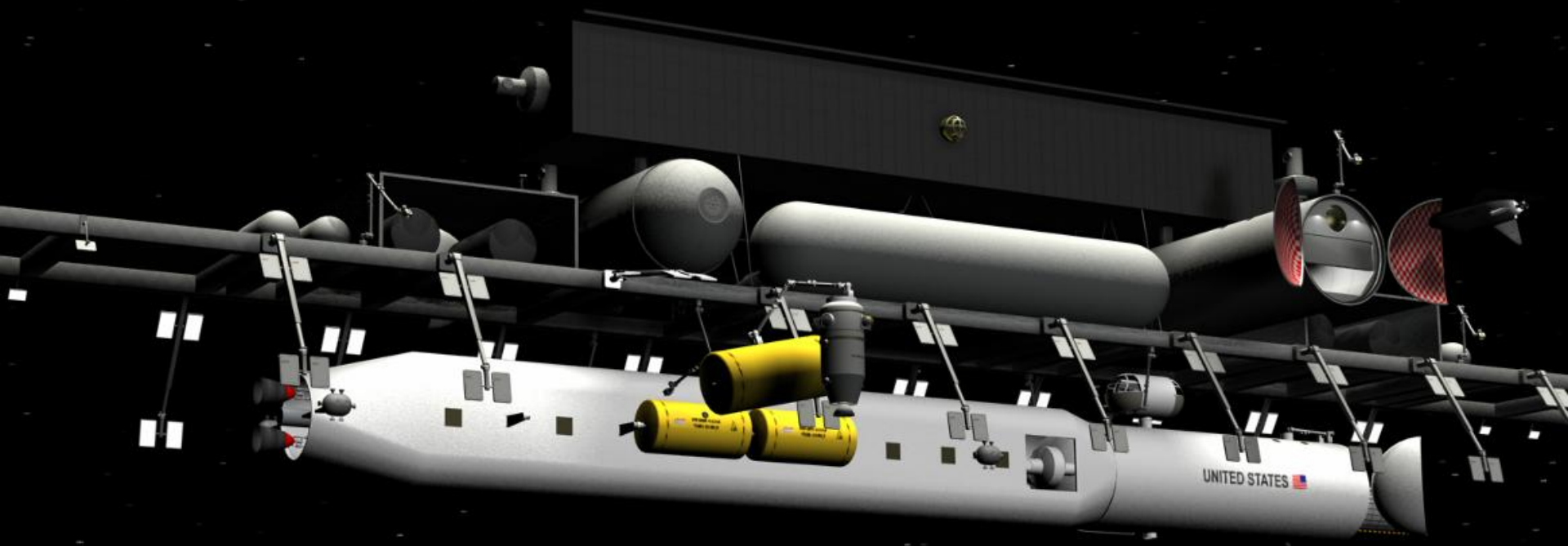


U.S.S Robert Goddard departing LEO (circa 2030)

"Now it is time to take longer strides—time for a great new American enterprise—time for this nation to take a clearly leading role in space achievement, which in many ways holds the key to our future on earth."

- President John F. Kennedy
(May 25, 1961)

While America must continue to explore space, America <u>now</u> must also act to become a true spacefaring nation – a nation of spacefarers!



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Vision

**Transforming America into a true spacefaring nation
with robust, effective, and efficient
human spacefaring operational capabilities
throughout the Earth-Moon frontier.**

Mission

**In partnership with America's aerospace industries,
establish an integrated spacefaring logistics infrastructure
providing access to space and mobility/operations support,
with aircraft-like safety and operability,
for passengers and cargo throughout the Earth-Moon frontier.**