

# China's Space Narrative: Examining the Portrayal of the US-China Space Relationship in Chinese Sources and its Implications for the United States

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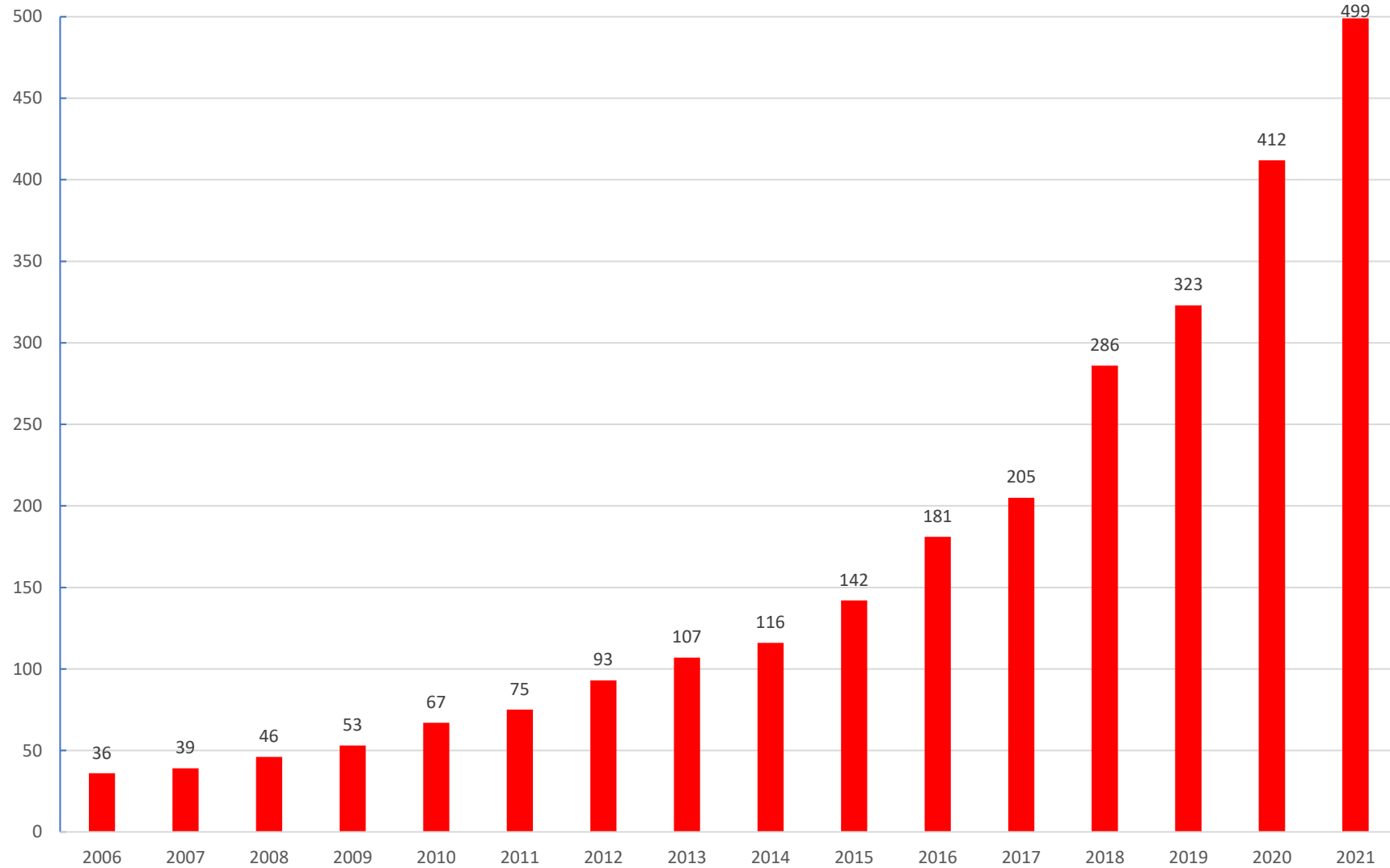
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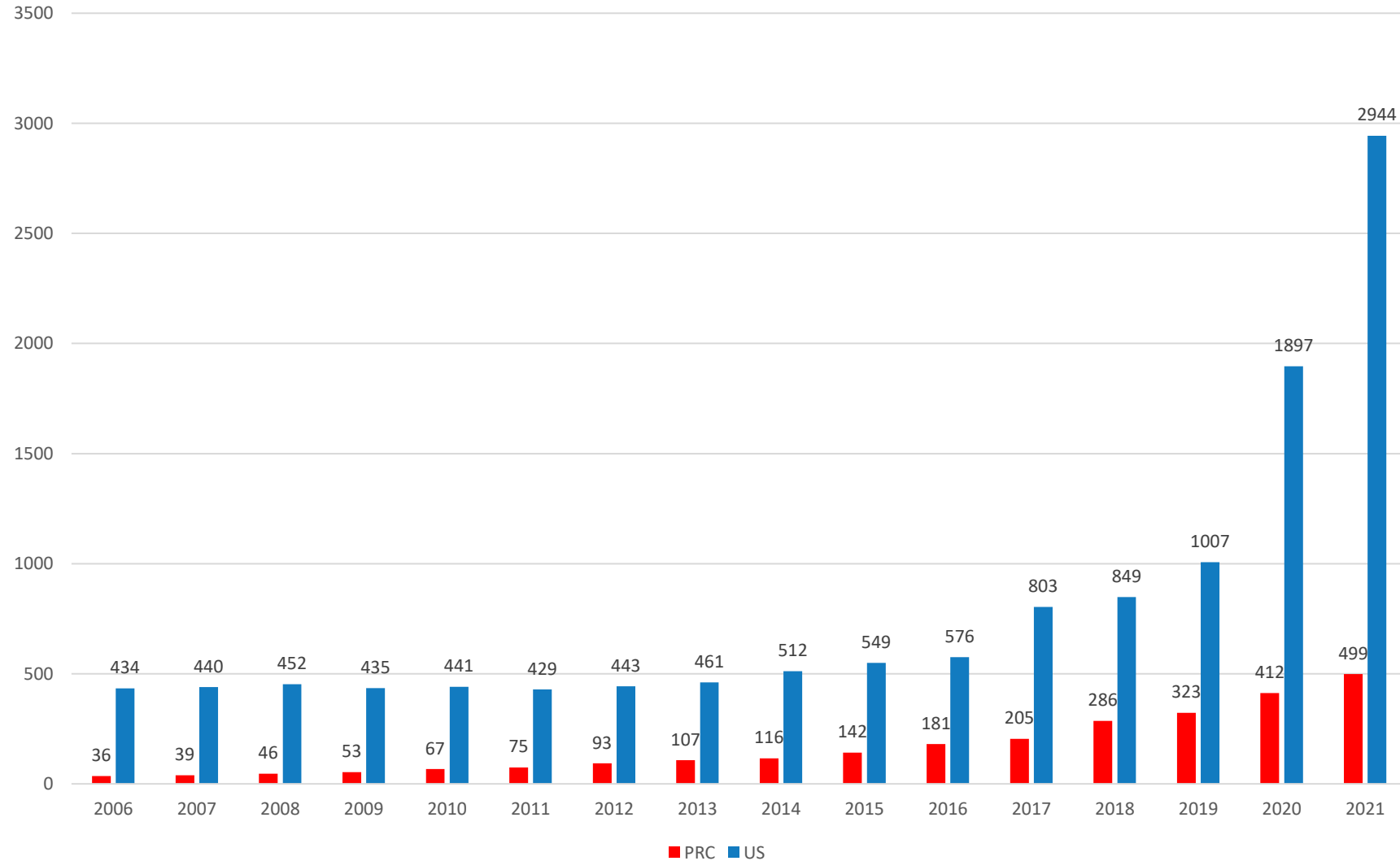
# Successful International Space Launches, 2010-2020

|                      | 2021 | 2020 | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>China</b>         | 53   | 35   | 32   | 38   | 16   | 20   | 19   | 16   | 14   | 19   | 18   | 15   |
| <b>United States</b> | 48   | 40   | 27   | 34   | 29   | 22   | 18   | 22   | 19   | 12   | 17   | 15   |
| <b>Russia</b>        | 24   | 17   | 25   | 19   | 18   | 18   | 24   | 31   | 28   | 24   | 25   | 27   |
| <b>Europe</b>        | 6    | 4    | 6    | 7    | 9    | 9    | 9    | 7    | 5    | 8    | 5    | 6    |

# PRC Satellites in Orbit, 2006-2021



# US and PRC Satellites in Orbit, 2006-2021



# PRC Seeks to Achieve National Rejuvenation

- Chinese Communist Party's goal is to make China rich, strong, and proud
- Seeks “great rejuvenation of the Chinese nation” by mid-century
  - Now to 2035 - significantly increase economic, scientific, and technological strength and be among the most technologically innovative countries
  - 2035 to 2049 - national power and international influence “will be at the forefront,” and the “Chinese nation will stand tall among the nations of the world.”
- Technology and techno-nationalist approach central to plans
  - S&T are the “first productive forces”
  - S&T capabilities cannot be outsourced
  - S&T activities are state-directed
  - S&T competitions takes place at the state level

# Making China into a Strong Space Power

- China values space for its ability to increase China's comprehensive national power (CNP)
  - CNP: the aggregate of a country's diplomatic, informational, military, and economic power
- China has goal of becoming a “strong” space power by 2045
  - Currently views 30% of its space technology at world-class level
  - By 2035, seeks to surpass Russia with 60% of Chinese space technology at world-class level
  - By 2045, aims to equal US and surpass it in some areas
    - In terms of both quantity and quality

# Making China Respected: China's Space Diplomacy

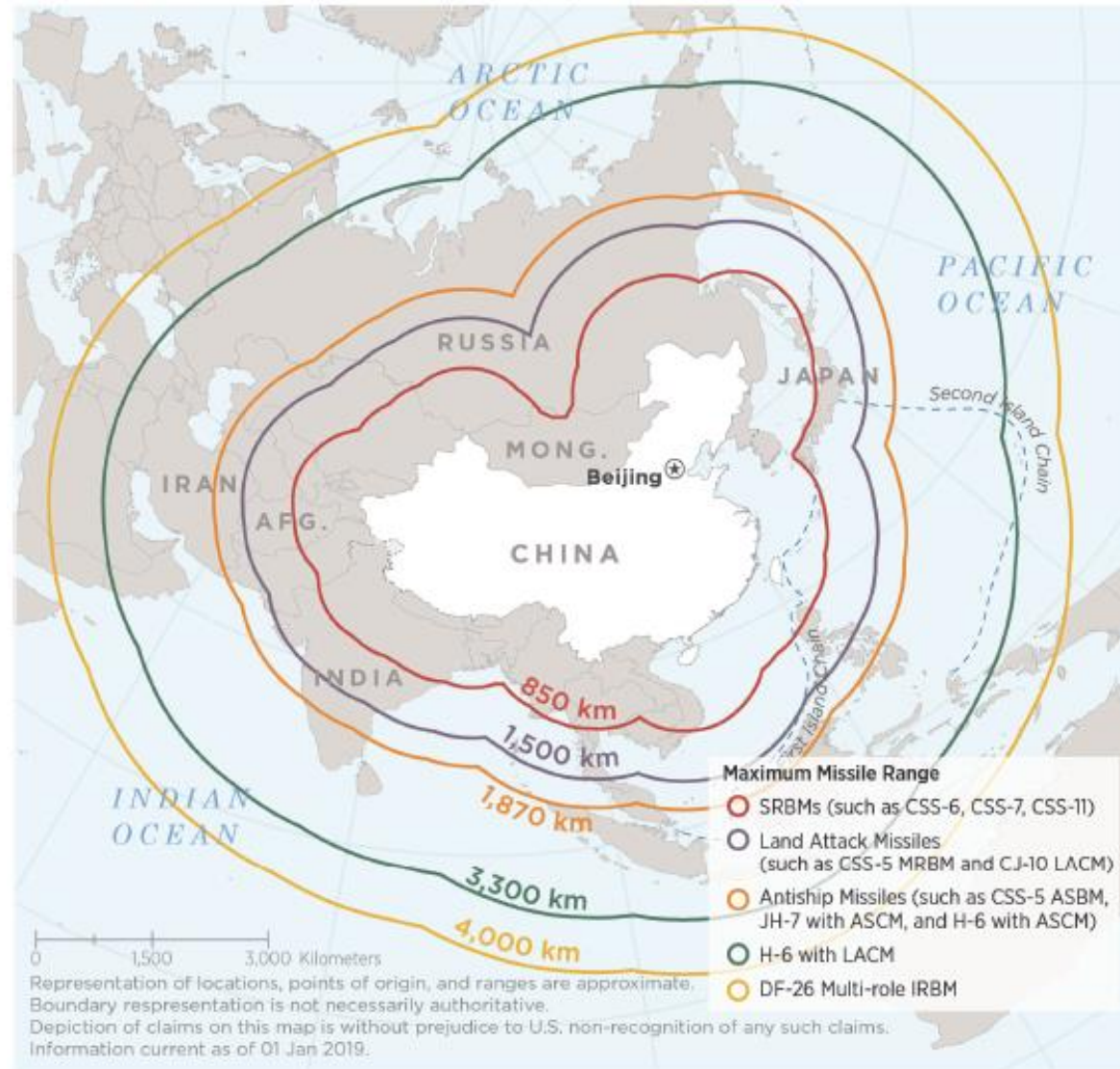
- China portrays itself as building “a shared vision for humanity in space”
  - Promotes peaceful uses of space; international space cooperation, especially with developing countries; the advancement of humankind, while downplaying the national security aspects of its space program.
  - Demonstrates Chinese leadership separate from US efforts
- China Space Station
  - Open to all UN countries regardless of political system and development level
    - Russia has expressed interest
- Lunar exploration
  - March 2021 MOU between China and Russia on construction of the International Lunar Research Station
  - Open to other international partners
- International space governance and a shared future for humanity in space
  - “Shared vision” language in UN Group of 77 documents on space and 61st session of the UN Committee on the Peaceful Uses of Outer Space
- 2008 and 2014 PPWT
  - Only bans ASATs in space
  - Does not ban development and testing
  - No verification mechanism

# Making China Strong: PRC Views of Military Space

- Whoever controls space will control the Earth
  - “Outer space has become a commanding height in international strategic competition”
  - One of four critical security domains, along with maritime, cyber, and nuclear
- Space is the most important component of modern militaries’ information systems
  - U.S. uses spaced-based ISR for 70-80% of its intelligence
  - U.S. uses satellites for 80% of its communications
- Without space, conducting modern war is not possible
- Evolution of war from ground → sea → air → space as the dominant domain
- Goal is to achieve space superiority
  - Ability to freely use space and deny space to adversaries



# PRC Conventional Strike Capabilities



Source: Military and Security Developments Involving the People's Republic of China 2019

# PRC Counterspace Activities

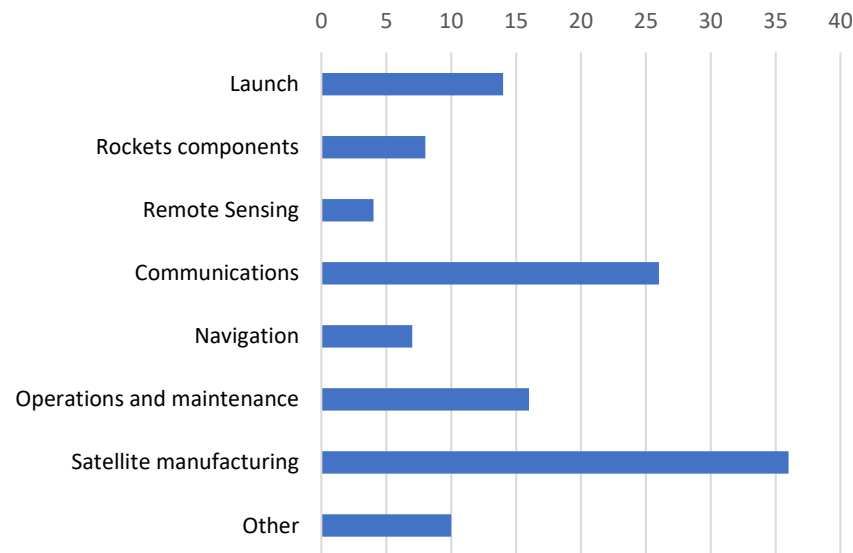
| Type            | Year | Description   | Comments  |
|-----------------|------|---|---|
| Direct Ascent   | 2007 | KKV test  |   |
|                 | 2010 | Mid-course ballistic missile defense test   |   |
|                 | 2013 | Mid-course ballistic missile defense test   |   |
|                 | 2013 | KKV test  | Test to GEO. China called it “high altitude science mission.”             |
|                 | 2014 | KKV test  | China called it ballistic missile defense test. U.S. called it ASAT test. |
|                 | 2015 | Unknown test  |   |
|                 | 2017 | Unknown test  |   |
|                 | 2018 | Mid-course ballistic missile defense test   |   |
|                 | 2019 | DNI reports that China “has an operational ground-based ASAT missile intended to target low-Earth-orbit satellites.”  |   |
| Co-orbital      | 2010 | Two Shijian satellites involved in close proximity operation, causing slight change in one satellite’s orbit  |   |
|                 | 2013 | Three satellites involved in close proximity operation to test space debris removal and robotic arm technologies  |   |
|                 | 2016 | Aolong-1 tested robotic arm to remove space debris  |   |
|                 | 2016 | Shijian-17 rendezvous with ChinaSat-5A  |   |
|                 | 2018 | TJS-3 satellite released probable subsatellite  |   |
| Cyber           | 2012 | Attack against Jet Propulsion Laboratory  | Allowed “full functional control” over JPL networks                       |
|                 | 2014 | Attack against NOAA   |   |
|                 | 2017 | Attack against Indian satellite communications  |   |
|                 | 2018 | Attack against satellite operators, defense contractors, and telecommunication companies  |   |
| Directed Energy | 2006 | Lased U.S.-remote sensing satellite   | Intent unknown  |
|                 | 2021 | DNI reports that China has already fielded “ground-based ASAT lasers probably intended to blind or damage sensitive space-based optical sensors on LEO satellites.” |   |

# Making China Rich: PRC Views of Commercial Space

## Chinese commercial space definition

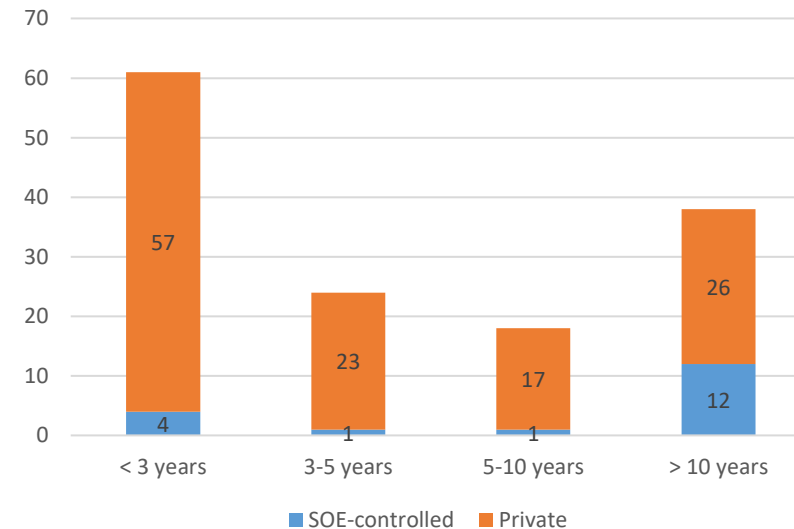
Companies using their own capital, private capital, and joint-capital/joint-venture models to satisfy national security and public interests with profit as the main objective

Number of Chinese commercial space companies by sector



Source: FutureAerospace

Age of Chinese commercial space companies by ownership structure



Source: FutureAerospace

# PRC Sources See Deficiencies In Commercial Space Sector

- Laws
  - Lack of legal rights and responsibilities creates uncertainty
  - Lack of preferential policies to promote commercial space sector
- Xi Jinping emphasis on SOEs
- Opposition from state-owned space industry
- No top-level government organization responsible for commercial space
- Insufficient access to launch sites and satellite operations centers
  - Ningbo, Zhejiang Province building PRC's fifth launch site
- Industry
  - Small market size limits growth
  - Lack of original products

# PRC Sources Praise US Commercial Space Sector

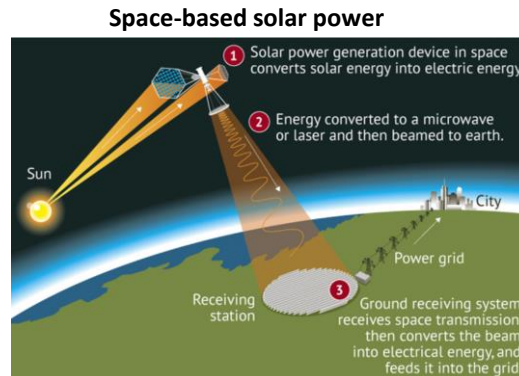
- US government plays positive role in promoting commercial space
  - Establishing guidelines
  - Preferential policies
  - Access to launch sites
- Private enterprises increase efficiency and market responsiveness
- Greater use of off-the-shelf technologies
- Promote commercial space to increase launch options

# PRC Sources Propose Space Natural Resource Extraction

- Chinese space proponents advocate establishing a cis-lunar space economy based, in part, on natural resource extraction.
  - “Form a sustainable economic cycle made up of consumers, industrial facilities located in geostationary orbit, and raw materials extracted from the Moon”

## Space-based solar power

- Experimental base in Chongqing
- Megawatt space solar power plant in 2030
- Gigawatt commercial space solar power plant by 2050



## Moon Mining

- Water Ice
- Helium-3

## Asteroid mining

- Develop heavy lift rockets and robotic rover technology to explore asteroids and comets within the solar system on a regular basis by 2045

“Not in the realm of science fiction, but more in the realm of economic fiction.”  
-Colorado School of Mines Interviewee

# Belt and Road Initiative's Space Information Corridor

- Chinese economic effort involving more than 70 countries spanning Asia, Europe, Africa, and Latin America.
- Signed 98 intergovernmental and interdepartmental agreements with 30 countries and three international organizations, including 23 pacts with 11 countries along the BRI.

## **China provides partner countries with**

- Services
- Joint R&D
- Scientific research
- Training
- Satellite Exports

# Conclusions

## China's space program challenges US across DIME

- **Diplomatic**
  - China uses space to advance its policy of building a “shared future for mankind” while depicting US as a destabilizing and threatening force
  - More countries with space agencies increases opportunities for Chinese leadership
- **Information**
  - China providing space-based services to developing world
  - Could set standards for space-based information
- **Military**
  - Critical part of A2/AD strategy
  - Represents effort to both freely use space and deny space to adversaries
- **Economic/Commercial**
  - Space is treated as strategic economic sector
  - Chinese mercantilist policies could harm US space sector
  - Demand for smaller satellites lowers bar for entry into commercial space market
  - A space resource extraction program could establish China as dominant space power
    - But is it feasible?



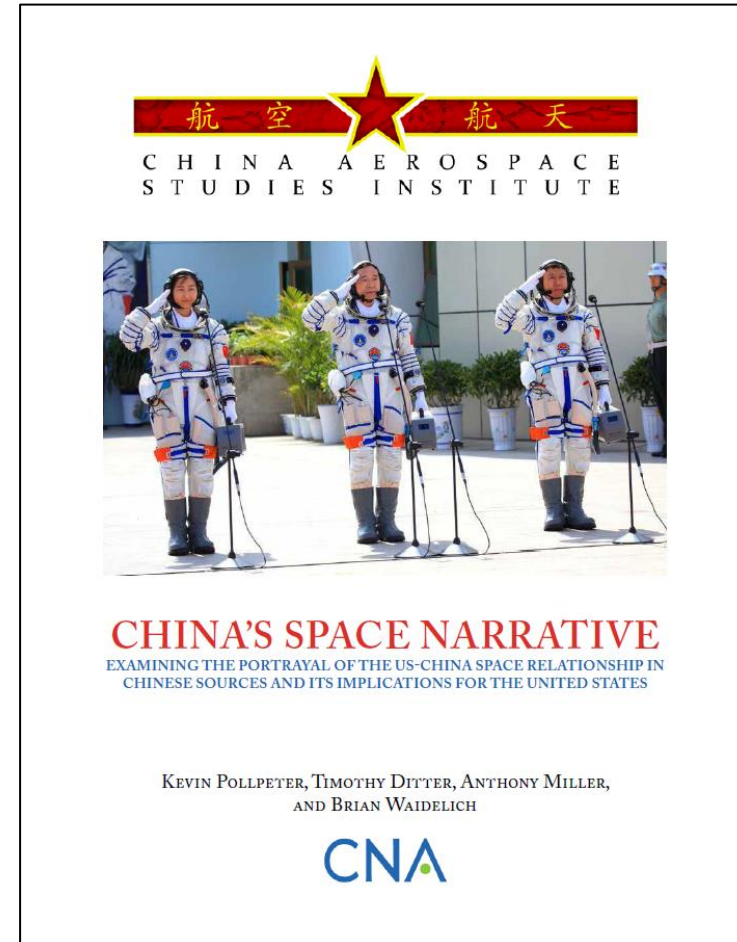
# China: From Fast Follower to Technological Leader?

|   | Projects                           | Done before?                |
|---|------------------------------------|-----------------------------|
| <b>Launch</b>                             | Super heavy lift launch vehicle    | US Saturn V, 1967           |
|   | Partially reusable rocket launcher | SpaceX Falcon 9, 2015       |
|   | Fully reusable launch vehicle      | No                          |
|   | Suborbital space tourism vehicle   | Blue Origin, 2021           |
|   | Combined cycle launch vehicle      | No                          |
| <b>Space Station</b>                      | Tianhe space station               | International Space Station |
| <b>Space Plane</b>                        | Unmanned space plane               | Space Shuttle, 1981         |
| <b>Lunar exploration</b>                  | Robotic Exploration                | Luna-2, 1959                |
|   | Human lunar exploration            | US Apollo program, 1969     |
|   | Moon mining                        | No                          |
| <b>Asteroid exploration</b>               | Asteroid exploration               | Osiris Rex, 2020            |
|   | Asteroid mining                    | No                          |
| <b>Energy</b>                             | Space-based solar power            | No                          |
| <b>Mars exploration</b>                   | Mars orbiter                       | US Marine 9, 1971           |
|   | Mars Lander                        | US Viking 1, 1976           |
|   | Martian sample return mission      | No                          |
| <b>Jupiter exploration</b>                |                                    | US Pioneer 10, 1973         |
| <b>In-orbit servicing and maintenance</b> |                                    | Northrop Grumman, 2020      |

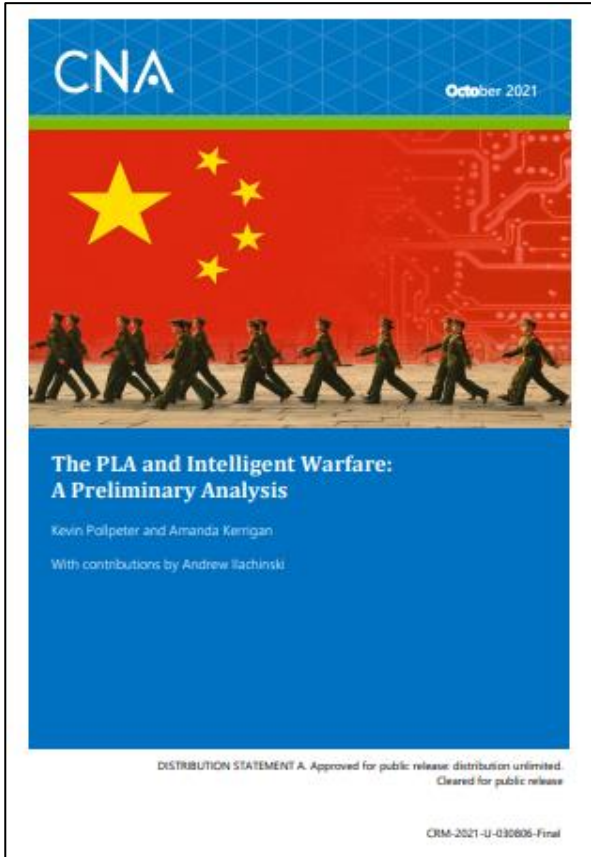
# China's Space Narrative Report

## Contact

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# China and AI



Questions?

