

# New Space vs Traditional



Gerry Simon – Technical Director / Space Engineering Solutions / Parsons

# Working Group Proposal

- Until the early 2000's space was the domain for a select few nation-states and very large corporations. They largely developed their own launch & ground assets and other capabilities required to design, build, deploy and operate their satellites primarily because no alternatives existed. Due to the high cost and long lead time to build traditional satellites, many legacy space users developed conservative acquisition and design processes to ensure success as failure was not an option for a satellite costing hundreds of millions of dollars, that took 5-10 years to design and build, and cost over \$200M to launch. Contrast that with today where there are multiple vendors that can provide a satellite bus, launch services as well as ground services within weeks to under two years. Due to significantly lower costs and lead times, commercial "New Space" has become more risk tolerance by balancing risk with business plans & objectives and system architecture. Expected failure rates are often incorporated as part of the business plan and system architecture in many "New Space" offerings. The commoditization of space services, which enables "New Space", presents many interesting opportunities and challenges for legacy space organizations that have used organic resources to architect/design, implement, and operate space systems for over 50 years with a risk adverse mindset. For legacy/traditional users, carefully and selectively leveraging "New Space" paradigms, products & services to meet mission needs can introduce new opportunities to become more agile and cost effective; however, "New Space's" commercial paradigms and processes often do not mesh well with traditional business practices/processes, mission requirements/architectures and general risk aversion embedded in some legacy "old space" cultures.

## **Can legacy space industry users leverage New Space to meet mission needs and introduce new opportunities?**

*Certainly! The integration of legacy space industry capabilities with the emerging New Space sector offers exciting possibilities. Let's delve into this:*

*Hybrid Space Architecture (HSA): The government is actively working on an architecture called HSA. It's designed to integrate New Space small satellite capabilities with traditional U.S. government and allied space systems. Here's how HSA benefits both legacy and New Space users:*

*Distributing Risk: By increasing the satellite population, we gain strength in numbers and diversity.*

*Rapid Innovation: HSA allows for the swift inclusion of new technologies as they mature.*

*Improved Interoperability: It fosters interoperability among U.S. government, allied, and commercial space systems.*

*Public-Private Partnerships (PPPs): HSA enables governments to benefit from commercial sector capabilities.*

*HSA assumes that a mission is achieved through multiple platforms, not just a single monolithic system. This approach encourages orbital diversity and flexibility, allowing platforms to choose the best orbit for their mission<sup>1</sup>.*

*Legacy Stakeholders Benefiting from HSA:*

*U.S. Strategic Commanders: They can leverage proliferated SmallSats with higher revisit rates, ensuring timely data collection<sup>1</sup>.*

*National Space Security Enterprise: To enhance national security objectives, authorities need redefinition and new processes to compete effectively in a contested space environment<sup>2</sup>.*

*U.S. Space Priorities Framework: Space activities advance our understanding of Earth, the universe, and humanity. The framework emphasizes the importance of space in our way of life<sup>3</sup>.*

*In summary, the collaboration between legacy and New Space players not only meets mission needs but also introduces fresh opportunities for innovation and cooperation.*

## **Can legacy space industry users leverage New Space to meet mission needs and introduce new opportunities?**

*Yes, legacy space industry users can leverage New Space to meet mission needs and introduce new opportunities. New Space refers to a recent trend in the space industry characterized by smaller, more agile companies and lower costs. This is in contrast to the traditional "Old Space" industry, which is dominated by large, government-funded contractors.*

*Here are some ways that legacy space industry users can leverage New Space:*

*Use New Space technologies: New Space companies are developing a wide range of new technologies, such as small satellites, reusable launch vehicles, and 3D printing. Legacy space industry users can adopt these technologies to reduce costs, improve efficiency, and expand their capabilities.*

*Partner with New Space companies: Legacy space industry users can partner with New Space companies to develop new products and services, or to access New Space technologies and expertise.*

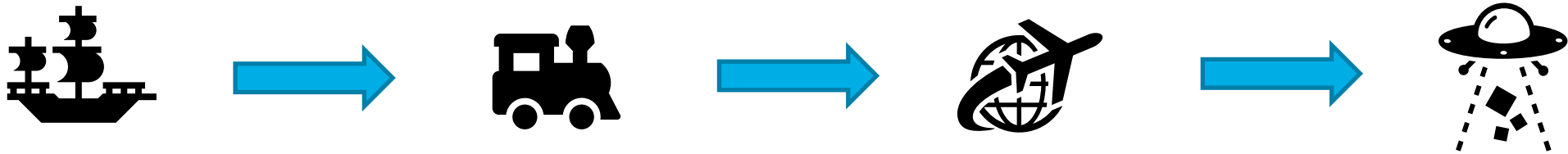
*Invest in New Space companies: Legacy space industry users can invest in New Space companies to gain exposure to the growing New Space market and to help shape the future of the industry.*

*Of course, there are also some challenges to leveraging New Space. For example, New Space technologies may not be as mature as traditional technologies, and New Space companies may not have the same level of experience as legacy space industry users. However, the potential benefits of New Space outweigh the challenges for many legacy space industry users.*

*Overall, New Space is a major opportunity for legacy space industry users to meet mission needs, introduce new opportunities, and become more agile and cost-effective.*

# Observations

- **What is Old Space today was New Space 30 years ago**
  - TCP/IP for networking
  - Client/Server and distributed computing
  - COTS hardware and software for ground systems
  - FOSS software for critical ground system operations
  - Virtualization
- **Launch is already New Space**
  - 98 of 223 launch attempts in 2023 were on SpaceX
- **Tread toward proliferated LEO may be considered as new space?**



# Observations and Questions

## Observations

- **Commoditization and Commercialization of services**
  - Launch
  - ESPA rings
  - Standard Bus's
  - Space Access Services (antennas)
  - Spacecraft Operations
- **Impatience for large prime contracts**
  - Increased use of FFP for commodity products and services
  - Agile for custom or new development
  - Increasing rewards for excellence

## Questions

- **Majority of work?**
  - Contract FFP
  - Contract Agile
  - Contract Traditional
- **Is your work new or traditional?**
- **Risk tolerance?**
- **Will new space completely replace traditional?**