NASA’s Exploration and Development of Space Narrative

...to explain and accomplish NASA’s policy-based intent

Commercial Space Lecture Series
NASA ARC Space Portal Office

Commercial Space’s Relevance to NASA
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For years NASA has been doing the hard work of moving to its “strategic next” with commercial partners, and yet getting little understanding or credit, even by some in NASA. To increase understanding I use the intersection of three features of my career:

- Over 50 years of broad NASA experience;
- Experience with the themed attraction industry’s use of narrative;
- Regular invitations to speak about NASA to public and space audiences for over 35 years.

In those speeches I use the narrative “exploration and development of space” to explain NASA’s National policy-based intent. Destinations, spacecraft, etc. are “means” to the policy-based “end” of the exploration and development of space. The “end”... the “why”... enables NASA to shape and explain “means” by putting them in context, and it enables stakeholders to understand their value.
NASA’s Exploration and Development of Space Narrative

- What is Narrative? .... its Power
- The Narrative of NASA’s Human Space Effort ... its Evolution
- The Exploration and Development of Space Narrative
- Unique Importance of the Moon and of Mars

Reference Material for Conversation

- Elements of NASA’s Exploration and Development of Space Narrative Layer
The Power of Narrative*

Narrative is a **statement of enterprise intent**. The **why** ... the **end** to shape the **means**

**Brief ... actionable ... relevant ... compelling**

Narrative is an **enterprise organizing principle**

- Narrative **shapes** the enterprise ... narrative is strategy;
- Narrative **messages** enterprise value and values;
- Narrative **engages** enterprise stakeholders’ hopes, experience...

Narrative promotes enterprise coherence and efficacy

* Joe Rohde - Disney Imagineering VP/Creative and Lead Creator of Animal Kingdom - NASA JSC AAS Imagine’09 Conference
https://www.youtube.com/watch?v=SaYFPhGhgig
# The Narrative of NASA’s Human Space Effort
... its Evolution, the Arc of its Story

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NASA’s Exploration and Development of Space
... it’s National Policy Platform

+ The Administration is to “seek and encourage, to the maximum extent possible, the fullest commercial use of space.” (The Space Act)


- Permanent human presence beyond LEO with international and industry partners;
- A thriving space economy in the 21st Century;
- Sustainable economic activities in space ...

National Space Policy of the USA (June 28, 2010) as amended by Space Policy Directive 1 (December 12, 2017)

National Space Council’s A New Era for Deep Space Exploration and Development (July 23, 2020)

NASA’s Plan for Sustained Lunar Exploration and Development (April 2, 2020)
NASA’s Exploration and Development of Space Narrative

NASA leads the human exploration of space with commercial and international partners ...

In an innovative, new way that supports space’s commercial development

- Locale of interest to partners
- Prefers procuring services rather than vehicles
- Accounts for industry commercialization plans
- More orchestration, less direction
- NOT focused on “getting to” but on “staying”

and then uses that development to advance exploration ...

While its commercial partners pursue markets adjacent to NASA

This generation’s Apollo ...

... a monumental challenge for NASA to establish its next;
... which will alter the course of history by “staying” not just “getting to”
Narrative Defeats Misconceptions & Clichés

Just getting to Mars can undermine sustainability if it de-emphasizes partnerships ... “Mars AND Bust,” Apollo redux

“Been there, done that”  Done WHAT ??

“NASA’s betraying its heritage”  Not betraying its heritage or adrift ... it’s moving to its “strategic next”

Not competition, it’s a partnership
Unique Importance of the Moon

1. As NASA exploration and development of space expands outward from LEO, the Moon is where permanent human presence will first be possible technically and cooperatively.

2. Early permanent human presence at the Moon enables the U.S. to establish international “norms of behavior” based on free market values.

3. Advances enterprise sustainability by:
   - Creating a critical mass and broad portfolio of commercial and international partner stakeholders ... the Moon is not too far ahead of, or too far behind, potential stakeholders
   - Building humanity’s “psychological highway into space”... everyone has seen the Moon. To look at the Moon and know that there are people living and working there will build wide-ranging expectation.

4. Advances and proves technologies/capabilities for human activity at Mars
Unique Importance of Mars

1. NASA human space flight and exploration’s policy platform mandates Mars as the horizon locale beyond LEO and the Moon. As such it will shape NASA and commercial/international partner activities at, and investments in, both.

2. The challenge is to NOT undermine permanent human presence beyond LEO and enterprise sustainability by a rush to simply get to Mars that de-emphasizes partnerships ... Apollo redux.

3. Plays a central role in pursuing the policy platform mandate to advance overall knowledge of the universe, especially in the search for life and comparative planetology.
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NASA’s Exploration and Development of Space Narrative

Reference Material for Conversation

- Elements of NASA’s Exploration and Development of Space Narrative Layer
SEC. 202. GOALS AND OBJECTIVES.

(a) **LONG TERM GOALS** - The long-term goals of the human space flight and exploration efforts of NASA shall be -

1. to expand permanent human presence beyond low-Earth orbit and to do so, where practical, in a manner involving international, academic, and industry partners;

2. crewed missions and progress toward achieving the goal in paragraph (1) to enable the potential for subsequent human exploration and the extension of human presence throughout the solar system; and

3. to enable a capability to extend human presence, including potential human habitation on another celestial body and a thriving space economy in the 21st Century.

*Bipartisan ... 2010 signed by President Obama and 2017 by President Trump*
SEC. 202. GOALS AND OBJECTIVES.

(b) KEY OBJECTIVES - The key objectives of the United States for human expansion into space shall be -

(1) to sustain the capability for long-duration presence in low-Earth orbit ... through:

✓ continuation of the ISS and full utilization of the United States segment of the ISS as a National Laboratory,

✓ assisting and enabling an expanded commercial presence in, and access to, low-Earth orbit, as elements of a low-Earth orbit infrastructure;

(2) to determine if humans can live in an extended manner in space with decreasing reliance on Earth, starting with utilization of low-Earth orbit infrastructure, to identify potential roles that space resources such as energy and materials may play to meet national and global needs and challenges, such as potential cataclysmic threats,

to explore the viability of and lay the foundation for sustainable economic activities in space;
section 202. goals and objectives.

(b) **Key Objectives** (concl) - -

(3) to maximize the role that human exploration of space can play in ....

- advancing overall knowledge of the universe,
- supporting United States *national and economic security* and the United States *global competitive posture*,
- inspiring young people in their educational pursuits;

(4) to *build upon the cooperative and mutually beneficial framework established by the ISS partnership* agreements and experience in developing and undertaking programs and meeting objectives designed to realize the goal of human space flight set forth in subsection (a); and

(5) to achieve *human exploration of Mars and beyond* through the prioritization of those technologies and capabilities best suited for such a mission in accordance with the stepping stone approach to exploration under section 70504 of title 51, United States Code.
NASA Leads Human Exploration with Commercial and International Partners

ARTEMIS PREPARES FOR MARS

Testing landing and ascent capabilities
Expanding the range of surface exploration and ISRU demonstrations
Gateway augmented with international habitat for increased capabilities
Foundation Surface Habitat and Habitable Mobility Platform delivered to complete Artemis Base Camp
Expanded habitation capability added to Gateway to enable Mars mission dress rehearsal at the Moon
Mars mission dress rehearsal with longer in-space and surface durations

SUSTAINABLE LUNAR ORBIT STAGING CAPABILITY AND SURFACE EXPLORATION

MULTIPLE SCIENCE AND CARGO PAYLOADS | INTERNATIONAL PARTNERSHIP OPPORTUNITIES | TECHNOLOGY AND OPERATIONS DEMONSTRATIONS FOR MARS
NASA Supports & Uses Development

**Commercial Cargo Program**
- Northrop Grumman ‘Cygnus’
- Space X ‘Dragon’
- Sierra Nevada Corporation ‘Dream Chaser’

**Commercial Crew Program**
- Space X ‘Crew Dragon’
- Boeing ‘CST-100 Starliner’

**Commercial Lunar Payload Services (CLPS)**
- 9 companies

**Artemis Human Landing System (HLS)**
- Blue Origin
- Dynetics
- SpaceX

**NextSTEP** - develop capabilities that meet NASA objectives while also supporting industry commercialization plans
- >30 companies and 1 university in 11 capability domains
Markets Adjacent to NASA, Like ...

Space Tourism
$1.2B global revenue by 2024

Destinations

Space Resources

The global market for space-related products and services is $400B today