

THE SPACE ECONOMY IS THE NEW GOLD RUSH

FRONTIERS, INFRASTRUCTURE, INVESTMENT,
AND THE FUTURE OF SPACE COMMERCE



NEW
FRONTIERS



PICKS AND
SHOVELS



MARKETS AND
INFRASTRUCTURE



RULES AND
RESOURCES



LONG-TERM
VALUE

THE SPACE ECONOMY IS THE NEW GOLD RUSH

WHY SPACE IS THE NEXT GREAT ECONOMIC FRONTIER



NEW FRONTIER. NEW TOOLS. ENDLESS POTENTIAL.

Just as the Gold Rush unlocked a continent's potential, today's space economy is opening new markets, creating jobs, and expanding human prosperity.

THEN AND NOW: THE FRONTIER COMPARISON

ASPECT	GOLD RUSH ERA	SPACE ECONOMY ERA
FRONTIER MINDSET	Bold individuals venture into the unknown to build a better future.	Entrepreneurs and innovators tackle hard problems for long-term impact.
WHAT PEOPLE CHASE	Gold and natural resources with immediate value.	Data, connectivity, capability, and access to new markets.
INFRASTRUCTURE PARALLELS	Mining tools, roads, railroads, banks, and settlements.	Launch vehicles, satellites, ground systems, networks, and platforms.
WHO BENEFITS MOST	Businesses that provide tools, supplies, and essential services.	Infrastructure and platform providers often see the broadest returns.
RISKS & SPECULATION	High risk, boom-and-bust cycles, and speculative ventures.	High capital, technical risk, competition, and market volatility.
LASTING IMPACT	Economic transformation, cities, industries, and global trade.	New industries, jobs, and solutions that improve life on Earth and beyond.

WHO BENEFITS MOST?

- INFRASTRUCTURE BUILDERS:** Launch, satellites, ground systems, and networks.
- PLATFORM PROVIDERS:** Data, software, cloud, and analytics platforms.
- ENABLERS & SUPPLIERS:** Components, materials, and specialized services.
- SOLUTION CREATORS:** Companies that solve real-world problems with space data.
- SOCIETY AT LARGE:** Better services, new jobs, and a more connected world.

RISKS AND SPECULATION ARE PART OF EVERY RUSH

- HIGH RISK**
Complex technology. high capital needs, and long timelines.
- VOLATILITY**
Markets shift. Not every company or idea will succeed.
- SPECULATION**
Hype can outpace reality. Due diligence is essential.
- RISK MANAGEMENT**
Strong teams, sound finances, and focus on real value win.

THE KEY TAKEAWAY



FRONTIERS CREATE FORTUNES, BUT INFRASTRUCTURE BUILDS WEALTH.

In every great rush, the providers of essential tools, platforms, and services create the most lasting value. The space economy is no different.

FROM GOLD RUSH TO SPACE RUSH: A CONTINUING JOURNEY



19TH CENTURY GOLD RUSH

People flood frontiers seeking opportunity and fortune.



LATE 19TH CENTURY BUILDING THE NATION

Infrastructure unlocks commerce, industry, and lasting growth.



LATE 20TH CENTURY SPACE EXPLORATION

Governments pioneer space with science, missions, and satellites.



21ST CENTURY COMMERCIAL SPACE

Private innovation scales access, services, and new space markets.

THE SPACE ECONOMY VALUE CHAIN: FROM ACCESS TO IMPACT



LAUNCH & ACCESS

Reusable rockets and new vehicles lower cost and increase access to space.



SPACE ASSETS

Satellites and space systems enable a wide range of capabilities.



DATA & CONNECTIVITY

Data is collected, processed, and transmitted around the world.



PLATFORMS & SERVICES

Cloud platforms and software turn data into useful insights and APIs.



DISTRIBUTION & LOGISTICS

Information and services are delivered where they are needed, when needed.



DOWNSTREAM IMPACT

Solutions for businesses, governments, and everyday lives.

WHY THE SPACE ECONOMY IS BROADER THAN MINING

- CONNECTIVITY EVERYWHERE**
Global communications and internet access.
- INSIGHTS FROM SPACE**
Earth observation for agriculture, climate, and resources.
- SAFETY & RESILIENCE**
Disaster response, navigation, and national security.
- SCIENCE & DISCOVERY**
Advancing knowledge and inspiring innovation.
- HUMAN EXPANSION**
Opening new frontiers for future generations.



PROSPECTORS TO SPACE ENTREPRENEURS – WHO IS CHASING THE NEW SPACE GOLD?

MANY PLAYERS. DIFFERENT ROLES. ONE EXPANDING FRONTIER.



THE NEW SPACE GOLD RUSH

Just as prospectors once searched for gold, today's innovators and organizations are discovering, building, and delivering the capabilities that unlock the economic potential of space for all of humanity.



MODERN PROSPECTORS & FOUNDERS

Visionary entrepreneurs who identify opportunities, take risks, and build innovative space solutions.

- Discover new markets
- Develop breakthrough technologies
- Found and scale new companies



INFRASTRUCTURE COMPANIES

Build the essential systems that provide access, enable operations, and reduce cost.

- Launch, spacecraft, and habitats
- Satellites, ground systems, and data
- In-space services and logistics
- Manufacturing and test capabilities



LARGE AEROSPACE PRIMES

Bring deep expertise, scale, and reliability to complex space systems and missions.

- End-to-end mission delivery
- Advanced engineering and systems
- Quality, safety, and assurance
- Mentorship and partnerships



DOWNSTREAM APPLICATION COMPANIES

Transform space-derived capabilities into solutions people and industries use.

- Earth observation and analytics
- Communications and connectivity
- Navigation, timing, and tracking
- Insights for business and society



GOVERNMENT AGENCIES

Create the conditions for a thriving space economy and pursue public missions.

- Fund research and development
- Establish policy and regulations
- Ensure safety, security, and sustainability
- Inspire through exploration



VENTURE CAPITAL & FINANCE

Provide the capital and financial tools that turn ideas into impactful companies.

- Equity investments
- Debt and structured finance
- Grants, prizes, and incentives
- M&A and public markets



UNIVERSITIES & RESEARCH

Advance fundamental knowledge, develop talent, and fuel the innovation pipeline.

- Basic and applied research
- Technology development
- Workforce education and training
- Open collaboration and discovery



CUSTOMERS

Organizations and individuals who adopt space-enabled products and services.

- Government and defense users
- Enterprises and industries
- Communities and institutions
- Consumers and global markets

GOLD RUSH THEN AND NOW

	GOLD RUSH ERA	SPACE ECONOMY ERA
PROSPECTORS	Individuals seeking gold in new lands	Founders seeking opportunities in space
PICKS & SHOVELS	Tools, equipment, and basic supplies	Infrastructure, platforms, and enabling tech
TOWNS & SERVICES	Businesses that support the rush	Services, data, logistics, and applications
LAW & ORDER	Establishing rules and stability	Policy, regulation, standards, and norms
INVESTORS	Financing the journey and the risk	Capital powering innovation and scale
CUSTOMERS	Buyers of goods and services	Users of space data, connectivity, and more

THE SPACE ECONOMY ECOSYSTEM



HOW THEY INTERACT



FOUNDERS BUILD SOLUTIONS THAT CREATE VALUE.



INVESTORS PROVIDE CAPITAL, EXPERTISE, AND NETWORKS.



GOVERNMENTS FUND RESEARCH, SET POLICY, AND ENABLE ACCESS.



SUPPLIERS AND PRIMES DELIVER INFRASTRUCTURE AND RELIABILITY.



RESEARCH INSTITUTIONS DRIVE INNOVATION AND TALENT.



APPLICATION COMPANIES TURN CAPABILITIES INTO PRODUCTS AND SERVICES.



CUSTOMERS ADOPT, INTEGRATE, AND CREATE DEMAND.



EVERY ROLE CREATES VALUE

A healthy space economy depends on a diverse ecosystem. From first spark to daily impact, each participant plays a vital part. When they work together, the whole economy launches higher.



NOT JUST ROCKETS

Launch is essential, but it's only one piece. The greatest value comes from the entire ecosystem working together.



THE FRONTIER IS OPEN

New opportunities. New participants. Limitless potential. Whether you build, fund, research, govern, or use — there's a place for you in the new space economy.

THE FUTURE ISN'T FOUND. IT'S BUILT TOGETHER.



THE GOLD RUSH MINDSET FOR TODAY



COLLABORATE

PARTNERSHIPS MULTIPLY IMPACT AND SPEED.



BE BOLD

BIG PROBLEMS REQUIRE BOLD IDEAS AND ACTION.



BUILD RELIABILITY

TRUST, SAFETY, AND QUALITY ENABLE SCALE.



CREATE FOR GOOD

SPACE SOLUTIONS CAN IMPROVE LIFE ON EARTH.



THINK LONG TERM

SUSTAINABLE VALUE COMES FROM PATIENCE AND PURPOSE.



PICKS AND SHOVELS OF THE SPACE ECONOMY

WHO PROFITS WITHOUT FINDING THE GOLD?



JUST AS MINERS NEED PICKS AND SHOVELS, THE SPACE ECONOMY RELIES ON ENABLING BUSINESSES THAT PROVIDE THE TOOLS, PARTS, INFRASTRUCTURE, AND SERVICES THAT MAKE EVERY MISSION POSSIBLE.



DIVERSE
CUSTOMER BASE



RECURRING
REVENUE



DURABLE
DEFENSIBILITY



RESILIENT
THROUGH CYCLES



SCALE
GLOBALLY

THE SPACE SUPPLY CHAIN: ENABLERS SUPPORT THE JOURNEY FROM EARTH TO IMPACT



LAUNCH
DELIVERS PAYLOADS
TO SPACE



SATELLITE & SPACECRAFT
BUILT TO PERFORM
THE MISSION



COMPONENTS & SUBSYSTEMS
THE BUILDING BLOCKS
OF SPACE SYSTEMS



GROUND SYSTEMS
CONTROL, COMMUNICATE,
AND DOWNLOAD DATA



SOFTWARE & CLOUD
PROCESS, STORE, AND
DELIVER INSIGHTS



SERVICES & OPERATIONS
INTEGRATE, OPERATE,
AND OPTIMIZE



USERS & APPLICATIONS
CREATE VALUE AND
DRIVE OUTCOMES

KEY PICKS-AND-SHOVELS BUSINESSES



LAUNCH PROVIDERS
Provide reliable and
frequent access to space
for satellites and missions.



SATELLITE MANUFACTURERS
Design and build satellites
and spacecraft for a wide
range of missions.



COMPONENTS SUPPLIERS
Supply critical parts and
subsystems that power
space systems.



GROUND SYSTEMS
Provide antennas, networks,
and data links to operate
and control missions.



SOFTWARE & CLOUD PLATFORMS
Enable data processing,
storage, analytics, and
mission software.



TESTING, INTEGRATION & MISSION SERVICES
Ensure systems work
reliably and missions
are executed successfully.



INSURANCE, FINANCE & COMPLIANCE
Manage risk, provide capital,
and ensure regulatory
compliance.



DISTRIBUTION & SALES CHANNELS
Connect solutions to
customers worldwide
and drive adoption.

ENABLERS VS. SPECULATIVE FRONTIER BETS

DIMENSION	ENABLERS (PICKS & SHOVELS)	SPECULATIVE FRONTIER BETS
CUSTOMER BASE	MANY CUSTOMERS ACROSS MULTIPLE MISSIONS	FEW CUSTOMERS OR SINGLE PROGRAMS
REVENUE PATTERN	RECURRING AND REPEATABLE	LUMPY AND MILESTONE-BASED
RISK PROFILE	DIVERSIFIED AND LOWER MISSION RISK	CONCENTRATED AND HIGHER RISK
CAPITAL INTENSITY	MODERATE AND SCALABLE	HIGH AND HARDER TO SCALE
DURABILITY	BUILT ON INFRASTRUCTURE AND STANDARDS	OFTEN DEPENDENT ON TECHNOLOGY OR MARKETS
THROUGHABILITY	STRONG THROUGH MARKET CYCLES	VOLATILE AND CYCLE-SENSITIVE
LONG-TERM VALUE	COMPOUNDING AND DEFENSIBLE	UNCOMFORTABLE AND HARDER TO DEFEND

VALUE CHAIN: WHERE VALUE IS CREATED AND CAPTURED



THE GOLD MAY BE RARE, BUT PICKS AND SHOVELS ARE ALWAYS IN DEMAND.

ENABLING BUSINESSES BUILD THE INFRASTRUCTURE OF POSSIBLE — AND PROSPER BY POWERING EVERY MISSION.

BOOMTOWNS IN ORBIT

WHERE THE SPACE ECONOMY IS BUILDING NEW MARKETS



WHAT ARE BOOMTOWNS?

Boomtowns are emerging market clusters in the space economy. They take root where strong demand meets enabling technology, capital, and talent—then grow into self-reinforcing ecosystems that create jobs, attract investment, and unlock new value.



EARLY DEMAND

A clear need emerges.



CORE OFFERING

Products or services meet the need.



SUPPORTING SERVICES

Enablers, tools, and infrastructure arrive.



MATURE ECOSYSTEM

A thriving cluster creates new markets.



1. LAUNCH AND ACCESS

Getting to space more often, for less, and more reliably.

CORE MARKETS

- Launch services
- Small launch vehicles
- Rideshare and hosting
- Range and logistics

KEY ENABLERS

- Reusable vehicles
- Manufacturing scale
- Launch infrastructure
- Regulatory frameworks



2. COMMUNICATIONS

Connecting people, devices, and assets anywhere on Earth and beyond.

CORE MARKETS

- Broadband connectivity
- Mobile and IoT backhaul
- Enterprise solutions
- Broadcast and media

KEY ENABLERS

- High-throughput satellites
- Spectrum and terminals
- Network software
- Ground infrastructure



3. EARTH OBSERVATION

Turning data about our planet into insights and decisions.

CORE MARKETS

- Imagery and monitoring
- Environmental intelligence
- Agriculture and resources
- Risk and disaster insights

KEY ENABLERS

- Sensor technology
- Data platforms
- Analytics and AI
- Cloud and storage



4. NAVIGATION AND TIMING

Positioning, navigation, timing, and precise data for modern life.

CORE MARKETS

- PNT services
- Timing for networks
- Aviation and maritime
- Autonomy and robotics

KEY ENABLERS

- GNSS and augmentations
- Atomic clocks
- Signal authenticity
- Resilient architectures



5. IN-SPACE SERVICES

Operating, maintaining, and extending the value of space assets.

CORE MARKETS

- On-orbit servicing
- Space tug and logistics
- Refueling and repair
- Debris removal

KEY ENABLERS

- Robotics and autonomy
- Proximity operations
- Standardized interfaces
- Propulsion systems



6. COMMERCIAL STATIONS AND DESTINATIONS

Human presence in space enabling research, industry, and experience.

CORE MARKETS

- Orbital stations
- Microgravity research
- In-space manufacturing
- Tourism and experiences

KEY ENABLERS

- Life support systems
- Radiation protection
- Logistics and crew transport
- Safety and standards



7. LUNAR ECONOMY

Building a sustainable economy around and on the Moon.

CORE MARKETS

- Lunar missions and landers
- Resources and ISRU
- Power and infrastructure
- Science and exploration

KEY ENABLERS

- Lunar mobility
- Power systems
- Surface infrastructure
- International norms



8. DOWNSTREAM INDUSTRIES ON EARTH

Space-derived innovations that improve life and drive new industries.

CORE MARKETS

- Telecom and internet
- Climate and sustainability
- Finance and insurance
- Healthcare and education

KEY ENABLERS

- Data integration
- Software and AI
- Edge and connectivity
- Talent and partnerships

THE BOOMTOWN LIFECYCLE: FROM IDEA TO IMPACT



IDEA AND NEED

A problem or opportunity is recognized.



EARLY ACTIVITY

Pioneers build solutions and prove the concept.



GROWTH PHASE

Investment, talent, and infrastructure accelerate growth.



ECOSYSTEM SCALE

Partners, suppliers, and customers expand the cluster.



BROAD IMPACT

New markets emerge and value spreads across the economy.

WHAT BOOMTOWNS DELIVER



NEW MARKETS AND REVENUES

Open opportunities across industries.



HIGH-SKILL JOBS

Attract and grow top talent.



TECHNOLOGY SPINOFFS

Create innovations that benefit society.



RESILIENCE AND SECURITY

Strengthen critical services and capabilities.



SUSTAINABLE GROWTH

Build long-term economic value.

ECOSYSTEM INGREDIENTS



VISION AND LEADERSHIP



CAPITAL AND FINANCE



POLICY AND REGULATION



INFRASTRUCTURE AND TOOLS



TALENT AND EDUCATION



PARTNERSHIPS AND COMMUNITY



BOOMTOWNS IN ORBIT ARE BUILDING MORE THAN BUSINESSES—THEY ARE BUILDING THE FUTURE.

By meeting real needs today and unlocking possibilities for tomorrow, these market clusters power a thriving space economy and a better world.



MANY BOOMTOWNS. ONE FUTURE.

CONNECTED MARKETS. SHARED INFRASTRUCTURE. LIMITLESS POSSIBILITIES.

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CLAIMS, TERRITORY, AND RESOURCES

THE NEW RULES OF SPACE PROSPECTING



SPACE IS OPEN TO ALL, BUT NOT WITHOUT RULES.

International law and national regulation shape how states and companies explore, use resources, and operate sustainably beyond Earth.

RULES ENABLE:



PEACEFUL
USES



INNOVATION
AND INVESTMENT



SAFETY AND
SUSTAINABILITY



FAIR ACCESS AND
COOPERATION



LONG-TERM
VALUE CREATION

1. OUTER SPACE TREATY FRAMEWORK (1967)

The cornerstone of international space law.



- ✓ Exploration and use of outer space shall be for the benefit and in the interests of all countries.
- ✓ Outer space shall be free for exploration and use by all States without discrimination.
- ✓ States are internationally responsible for national activities in outer space, including those by private entities.
- ✓ States shall avoid harmful contamination and conduct activities with due regard to the interests of others.
- ✓ States shall assist astronauts and return them safely.

OTHER KEY TREATIES AND PRINCIPLES:

Rescue Agreement (1968) • Liability Convention (1972) • Registration Convention (1975)
Moon Agreement (1979) – promotes the common heritage of mankind (limited adherence)

2. NO NATIONAL SOVEREIGNTY IN OUTER SPACE

Outer space, including the Moon and other celestial bodies, cannot be appropriated by any state.



NO CLAIMS
No sovereignty, ownership, or occupation of celestial bodies.



NO EXCLUSIVE CONTROL
No state may exclusively claim an area or resource in outer space.



OPEN TO ALL
Activities must be conducted for the benefit of all and with transparency.



COOPERATION
States are encouraged to cooperate and share information.

3. LICENSING AND SUPERVISION BY STATES

States authorize and continually supervise space activities by private actors.



APPLICATION
Company applies for authorization to its national government.



EVALUATION
Government assesses compliance with law, policy, safety, and international obligations.



AUTHORIZATION
License or authorization issued with terms and conditions.



SUPERVISION
Ongoing oversight to ensure compliance and responsible conduct.



ENFORCEMENT
Corrective action or penalties for non-compliance may be applied.



STATES CANNOT AUTHORIZE SOVEREIGNTY, BUT THEY CAN AUTHORIZE ACTIVITIES.
This ensures private activity supports international law and shared interests.

4. RESOURCE EXTRACTION: A CONTINUING DEBATE

International law does not explicitly address extraction and ownership of space resources.

ARGUMENTS IN FAVOR OF USE RIGHTS



No prohibition in the Outer Space Treaty
The Treaty does not forbid the use or commercialization of resources.



Incentivizes investment
Clear rights to use resources encourage innovation and bear the high costs of exploration.



Consistent with freedom of use
States and companies already use resources in other environments (e.g., high seas, international waters).



NO GLOBAL CONSENSUS YET. DISCUSSIONS CONTINUE AT THE UNITED NATIONS COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE (UNCOPUOS) AND IN OTHER FORA.

ARGUMENTS FOR CAUTION



Risk of unequal appropriation
Without guardrails, powerful actors could dominate access and benefits.



Common heritage principles
Some argue resources should be shared equitably with all humankind.



Environmental and heritage concerns
Sites may have scientific, cultural, or future value that warrants protection.

5. LUNAR AND ASTEROID RESOURCE USE

Emerging norms and national approaches are evolving.



National Laws
Some states have adopted laws affirming rights to own and use resources obtained in compliance with international law.



Artemis Accords
Non-binding principles for peaceful cooperation, transparency, interoperability, and responsible behavior (open for adherence).



Case-by-case basis
Activities are assessed for compliance with international obligations and safety norms.

KEY CONSIDERATIONS



Transparency and notification



Environmental stewardship



Safety zones and avoidance of harmful interference



Scientific access and data sharing



Fair opportunity to participate

★ **BEST PRACTICE: PLAN OPERATIONS RESPONSIBLY, SHARE INFORMATION, AND MINIMIZE HARM.**

6. SPECTRUM AND ORBITAL SLOTS

Finite orbital resources are managed through international coordination.



WHO DOES WHAT?

INTERNATIONAL TELECOMMUNICATION UNION (ITU)
Coordinates the global radio frequency spectrum and geostationary-satellite orbit (GSO) slots to prevent harmful interference.



NATIONAL ROLE

States submit filings, obtain rights of use, and ensure their systems comply with ITU rules.

KEY PRINCIPLES

- ✓ First-come, first-served (subject to rules)
- ✓ Efficient and economical use
- ✓ Non-interference and compatibility
- ✓ Transparency through public registers

7. SAFETY AND COORDINATION

Responsible operations protect people, property, and missions.



SPACE DEBRIS
MITIGATION



COLLISION
AVOIDANCE



SPACE TRAFFIC
COORDINATION



NOTIFICATION
AND DATA SHARING



EMERGENCY
RESPONSE



PLAN FOR END
OF LIFE

Voluntary guidelines and national regulations support safe, sustainable, and predictable space operations.

8. WHY LEGAL CLARITY MATTERS TO INVESTORS

Clear rules reduce risk and unlock capital.



REDUCES UNCERTAINTY
Understand rights, responsibilities, and processes.



ENABLES LONG-TERM PLANNING
Supports mission design, partnerships, and financing.



ATTRACTS CAPITAL
Investors price risk more confidently with clear rules.



FACILITATES PARTNERSHIPS
Aligned expectations build trust among stakeholders.



SUPPORTS SUSTAINABLE GROWTH
Balanced governance protects the space ecosystem and markets.



THE BOTTOM LINE

SPACE OFFERS LIMITLESS OPPORTUNITY—BUT NOT A LAWLESS FRONTIER.

International law, national regulation, and responsible norms are the foundation for safe, sustainable, and prosperous space prospecting.



RESPECT THE RULES. SHARE THE BENEFITS. SECURE OUR FUTURE IN SPACE.

GOLD RUSH FORTUNES AND SPACE FORTUNES

WHERE THE MONEY REALLY COMES FROM



BEYOND THE MINE

In every rush, a few find the resource. Many more build the picks, shovels, roads, tools, services, and systems that make the rush possible.



THE REAL WEALTH IS BUILT IN THE ECOSYSTEM

Space prosperity comes from data, services, infrastructure, logistics, platforms, and applications—creating value for governments, businesses, and people on Earth and beyond.



MANY PATHS. ONE ECOSYSTEM.

Multiple players. Many roles. Sustainable value comes from collaboration and compounding capabilities.

RESOURCE SEEKERS VS. SERVICE PROVIDERS

RESOURCE SEEKERS (THE MINERS)



Seeks finite resources



High risk, high variability



Capital intensive



Project based, one-time wins



Dependent on discovery



Price taker

SERVICE PROVIDERS (THE SHOVEL SELLERS)



Enables the rush



Broader customer base



Scalable and recurring



Long-term relationships



Creates essential value



Value creator

HOW VALUE FLOWS IN THE SPACE ECONOMY



ENABLERS

Launch
Manufacturing
Infrastructure



DATA & SIGNALS

Satellites
Sensors
Networks



PLATFORMS

Processing
Storage
Compute



APPLICATIONS & SERVICES

Insights
Solutions
Experiences



CUSTOMERS

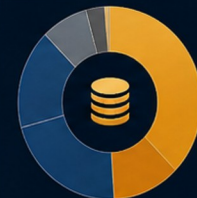
Governments
Businesses
People



FEEDBACK FUELS THE ECOSYSTEM

Demand drives investment. Innovation expands capability. Value compounds over time.

WHERE VALUE IS CREATED: THE SPACE ECONOMY VALUE POOL



- DATA, ANALYTICS & INSIGHTS
- SERVICES & APPLICATIONS
- INFRASTRUCTURE & PLATFORMS
- CONNECTIVITY & COMMUNICATIONS
- MANUFACTURING & COMPONENTS
- LAUNCH & LOGISTICS
- TOURISM & EXPLORATION

DIVERSIFIED REVENUE POOLS CREATE RESILIENCE AND LONG-TERM GROWTH.



GOVERNMENT CONTRACTS

- National security
- Civil and public programs
- Science and exploration
- Development and capability programs



COMMUNICATIONS REVENUE

- Broadband connectivity
- Mobility & backhaul
- Broadcast & media
- IoT connectivity



EARTH OBSERVATION & ANALYTICS

- Imagery & remote sensing
- Environmental monitoring
- Change detection
- Insights & intelligence



NAVIGATION-ENABLED SERVICES

- PNT (position, navigation, & timing)
- Location services
- Mapping & geospatial
- Timing & synchronization



LAUNCH & MANUFACTURING

- Launch services
- Spacecraft & payloads
- Components & subsystems
- Assembly & integration



TOURISM & EXPLORATION

- Human spaceflight
- Space tourism
- Exploration missions
- Experiential services



LOGISTICS & IN-SPACE SERVICES

- In-space transportation
- On-orbit servicing
- Refueling & maintenance
- Supply chains



RECURRING REVENUE BUILDS RESILIENCE

- Subscriptions, connectivity, and data services create predictable cash flow.
- Long-term contracts and platforms compound value over time.
- Scale drives efficiency and expands total addressable markets.

VS.



ONE-TIME WINS CREATE MOMENTUM

- Milestones, missions, and hardware sales capture early value.
- Strategic wins open doors to future opportunities.
- Best when paired with recurring revenue streams.



THE WINNING STRATEGY

Build essential capabilities.
Serve real needs. Create lasting value.
That is how rushes become industries.



FROM RAILROADS TO ROCKETS

INFRASTRUCTURE THAT MAKES A FRONTIER ECONOMY POSSIBLE



FRONTIERS DON'T THRIVE BY LUCK—THEY THRIVE ON INFRASTRUCTURE.
JUST AS RAILROADS UNLOCKED THE AMERICAN WEST, MODERN SPACE INFRASTRUCTURE UNLOCKS
A NEW ECONOMY—CONNECTING RESOURCES, MARKETS, PEOPLE, AND IDEAS AT GLOBAL SCALE.

THEN AND NOW: INFRASTRUCTURE COMPARISON

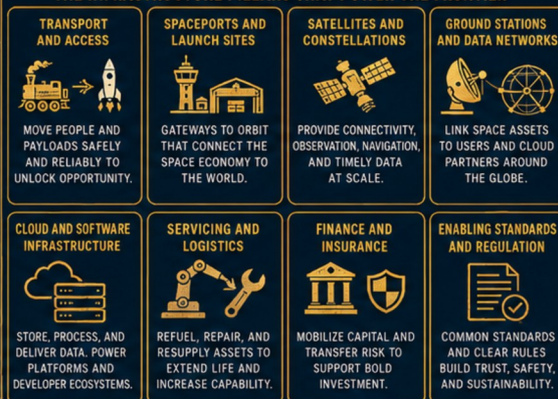
FUNCTION	GOLD RUSH ERA (THEN)	SPACE ECONOMY ERA (NOW)
 TRANSPORT AND ACCESS	RAILROADS CARRIED PEOPLE, GOODS, AND SUPPLIES WEST.	LAUNCH VEHICLES MOVE PAYLOADS AND PEOPLE TO SPACE.
 GATEWAYS	RAIL HUBS CONNECTED TOWNS AND REGIONS TO MARKETS.	SPACEPORTS CONNECT ORBITAL MARKETS TO THE WORLD.
 COMMUNICATIONS	TELEGRAPH LINES CARRIED INFORMATION ACROSS GREAT DISTANCES.	SATELLITES & NETWORKS DELIVER DATA AND REAL-TIME INSIGHTS.
 BUSINESS INFRASTRUCTURE	DEPOTS, WAREHOUSES, AND BANKS SUPPORTED COMMERCE.	CLOUD, DATA CENTERS, AND PLATFORMS POWER DIGITAL COMMERCE.
 RISK & SECURITY	INSURANCE AND LAW REDUCED RISK AND ENABLED INVESTMENT.	INSURANCE, SECURITY, AND RESILIENCE PROTECT ASSETS AND OPERATIONS.
 RULES & STANDARDS	SURVEYS, LAND LAWS, AND OPERATING RULES CREATED ORDER.	STANDARDS, SPECTRUM RULES, AND SPACE LAW CREATE TRUST.
 MAINTENANCE & LOGISTICS	REPAIR SHOPS, SUPPLY LINES, AND DEPOTS KEPT TRAINS MOVING.	IN-SPACE SERVICING AND LOGISTICS KEEP ASSETS OPERATING AND SCALING.
 FINANCE	INVESTMENT, CREDIT, AND CAPITAL MARKETS BUILT THE RAIL NETWORKS.	CAPITAL MARKETS AND INSURANCE FINANCE SPACE INFRASTRUCTURE GROWTH.

THE LAYERED INFRASTRUCTURE STACK



← EACH LAYER ENABLES THE NEXT. TOGETHER, THEY CREATE SCALE. →

THE INFRASTRUCTURE PILLARS THAT POWER THE FRONTIER



HOW INFRASTRUCTURE POWERS SETTLEMENT, COMMERCE, AND SCALE



INFRASTRUCTURE IS THE FORCE MULTIPLIER OF THE FRONTIER.
INVEST IN THE FOUNDATIONS TODAY TO UNLOCK PROSPERITY FOR TOMORROW—ON EARTH AND BEYOND.





GOLD RUSH WINNERS AND LOSERS

LESSONS FOR SPACE INVESTORS AND ENTREPRENEURS



THE CORE LESSON

LASTING WEALTH COMES FROM SOLVING REAL NEEDS AT SCALE, NOT JUST FINDING OPPORTUNITY.



CREATE REAL VALUE

BUILD WHAT OTHERS NEED TO SUCCEED, NOT JUST WHAT YOU HOPE TO FIND.



MANAGE RISK

UNDERSTAND UNCERTAINTY, CAPITAL REQUIREMENTS, AND MARKET DEPENDENCIES.



ALIGN & ENDURE

ALIGN WITH CUSTOMERS, PARTNERS, AND CAPITAL THAT SHARE YOUR HORIZON.



THINK LONG TERM

COMPOUND ADVANTAGES THROUGH SCALE, TRUST, AND ADAPTABILITY.

WHY MANY PROSPECTORS FAIL



- Low odds of striking it rich
- Limited capital and resources
- Chasing hype, not data
- Poor tools and no leverage
- No plan for variability
- Emotional decisions

TAKEAWAY: MOST EFFORT DOES NOT COMPOUND. FOCUS ON PROBABILITIES AND PREPARE FOR VOLATILITY.

WHY PICKS-AND-SHOVELS BUSINESSES CAN WIN



- Serve everyone in the rush
- Repeatable demand
- Essential products and services
- Scalable operations
- Better margins, lower luck
- Stronger resilience

TAKEAWAY: ENABLE THE ECOSYSTEM. SOLVE BROAD NEEDS WITH RELIABLE, SCALABLE SOLUTIONS.

CAPITAL INTENSITY MATTERS



- High upfront capital can extend time to returns
- Capital efficiency improves optionality
- Plan for cost overruns
- Access to capital = success
- Discipline outperforms optimism

TAKEAWAY: MATCH CAPITAL INTENSITY TO RISK, TIME TO VALUE, AND FOOTPRINT OF CONTROL.

TIMING AND DEMAND RISK



- Markets evolve
- Demand can be cyclic
- Technology shifts
- Overbuilding happens
- Exit windows matter
- Plan for down cycles

TAKEAWAY: STRESS TEST DEMAND, TIMING, AND PRICING. BUILD FOR RESILIENCE.

THE ROLE OF GOVERNMENT CUSTOMERS



- Provide anchor demand
- Longer sales cycles
- Higher assurance & compliance
- Budgets can be lumpy
- Strategic alignment matters
- De-risk early adoption

TAKEAWAY: GOVERNMENT CUSTOMERS CAN VALIDATE MARKETS AND UNLOCK SCALE.

RISK-REWARD LANDSCAPE



SCALING CHALLENGES



- Operations must scale
- Supply chains break
- Talent is scarce
- Quality can slip
- Culture strains
- Systems must evolve

TAKEAWAY: DESIGN FOR SCALE EARLY. INVEST IN PEOPLE, PROCESS, AND INFRASTRUCTURE.

CONSOLIDATION OVER TIME



TAKEAWAY: DURABLE ADVANTAGES AND SCALE WIN MARKETS. PARTNER OR POSITION FOR THE LONG GAME.

WHAT HEALTHY DUE DILIGENCE LOOKS LIKE



- Clear problem and customer
- Evidence of demand
- Unit economics that work
- Defensible advantage
- Capital plan and runway
- Risk register and mitigations
- Team, culture, and governance

TAKEAWAY: SEEK SIGNALS, NOT STORIES. VALIDATE BEFORE YOU COMMIT.

PICKS-AND-SHOVELS EXAMPLES



- HARDWARE AND COMPONENTS
- TOOLS AND TEST EQUIPMENT
- SOFTWARE AND DATA PLATFORMS
- MANUFACTURING AND SUPPLY CHAIN
- TESTING, INTEGRATION, AND SAFETY SERVICES

TAKEAWAY: BUILD THE ESSENTIALS THAT POWER THE ECOSYSTEM.

LESSONS FOR FOUNDERS



SOLVE A REAL PROBLEM FOR A CLEAR CUSTOMER.



FOCUS ON LEVERAGED SOLUTIONS.



DESIGN FOR SCALE AND RESILIENCE.



MANAGE RISK, CASH, AND EXPECTATIONS.



BUILD TRUST AND LONG-TERM RELATIONSHIPS.

BUILD VALUE OTHERS DEPEND ON. COMPOUND ADVANTAGES OVER TIME.

THE GOLD RUSH MINDSET



FORTUNES ARE BUILT BY THOSE WHO SOLVE REAL PROBLEMS AT SCALE.

DISCIPLINE, FOCUS, AND ENDURANCE WIN THE LONG RUN.

LESSONS FOR INVESTORS



UNDERSTAND THE PROBLEM, MARKET, AND CUSTOMER.



EVALUATE TEAM, EXECUTION, AND GOVERNANCE.



ASSESS RISK, CAPITAL NEEDS, AND DOWNSIDE.



ALIGN ON TIME HORIZON AND OUTCOMES.



FOCUS ON VALUE CREATION OVER VALUATION.

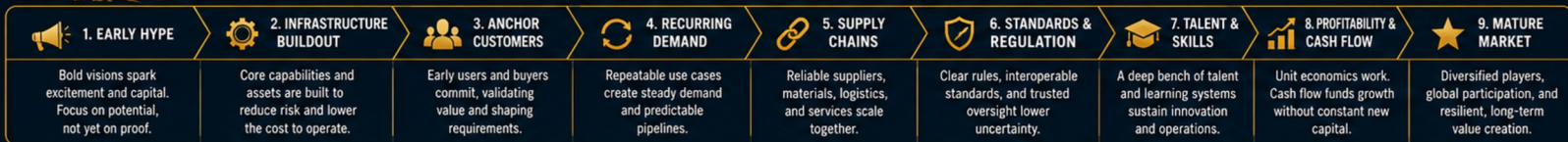
BACK ENDURING COMPANIES THAT CREATE DISPROPORTIONATE VALUE.



FROM SPECULATION TO SUSTAINABLE INDUSTRY

WHEN DOES A SPACE GOLD RUSH BECOME AN ECONOMY?

THE MATURITY JOURNEY: FROM BOOM TO FOUNDATION



HYPE VS. FOUNDATION: WHAT'S THE DIFFERENCE?

SPECULATIVE EXCITEMENT	LONG-TERM FOUNDATION
 VISION DRIVEN	VALUE DRIVEN
 PROMISES & HYPOTHESIS	PROVEN CAPABILITIES
 CAPITAL CHASES NARRATIVE	CAPITAL CHASES RETURNS
 UNCERTAIN MARKETS	CLEAR USE CASES
 HIGH RISK, HIGH VOLATILITY	MANAGED RISK, STABILITY
 ONE-OFF PROJECTS	REPEATABLE SYSTEMS
 SHORT-TERM HYPE CYCLES	LONG-TERM VALUE CREATION
 LIMITED TRANSPARENCY	DISCIPLINE & ACCOUNTABILITY

THE FOUNDATIONS OF A DURABLE SPACE ECONOMY



TRANSITION INDICATORS: IS THE MARKET MATURING?



A SPACE GOLD RUSH BECOMES AN ECONOMY WHEN VALUE IS REPEATABLE, RISK IS MANAGED, AND VALUE CREATION IS SUSTAINABLE.



FOCUS ON PROBLEMS WORTH SOLVING



BUILD TRUST WITH CUSTOMERS AND PARTNERS



OPERATE SAFELY AND RESPONSIBLY



DELIVER VALUE TODAY, BUILD A LEGACY FOR TOMORROW

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BEYOND THE GOLD RUSH

WHAT HAPPENS AFTER THE SPACE FRONTIER IS SETTLED?



FROM FRONTIER VENTURES TO ENDURING VALUE: BUILDING A MATURE SPACE ECONOMY THAT SERVES LIFE ON EARTH AND BEYOND.



1. STABLE TRANSPORTATION SYSTEMS



- ✓ REUSABLE LAUNCH AND RETURN SYSTEMS LOWER COSTS AND INCREASE RELIABILITY.
- ✓ HIGH-CADENCE SERVICES CONNECT EARTH, MOON, AND ORBITAL HUBS.
- ✓ STANDARDIZED INTERFACES AND SAFETY NORMS ENABLE SCALABLE OPERATIONS.

2. PERMANENT ORBITAL SERVICES



- ✓ REFUELING, REPAIR, AND LIFE EXTENSION PROLONG ASSET VALUE.
- ✓ ON-ORBIT ASSEMBLY AND MAINTENANCE SUPPORT LARGE INFRASTRUCTURE.
- ✓ SPACE SITUATIONAL AWARENESS AND DEBRIS SERVICES PROTECT OPERATIONS.

3. LUNAR LOGISTICS



- ✓ LUNAR ACCESS AND SURFACE OPERATIONS BECOME ROUTINE AND RELIABLE.
- ✓ REGOLITH AND WATER-ICE RESOURCES SUPPORT PROPELLANT, CONSTRUCTION, AND LIFE SUPPORT.
- ✓ LUNAR HUBS SERVE AS WAYPOINTS FOR TRANSPORT AND DEEP SPACE MISSIONS.

4. INDUSTRIAL CAPABILITIES IN SPACE



- ✓ MICROGRAVITY AND VACUUM ENABLE UNIQUE MANUFACTURING PROCESSES.
- ✓ IN-SPACE PRODUCTION REDUCES NEED FOR MASS FROM EARTH.
- ✓ AUTONOMOUS FACTORIES AND ROBOTICS SCALE PRODUCTIVITY SAFELY.

5. COMMUNICATIONS & NAVIGATION AS UTILITIES



- ✓ HIGH-BANDWIDTH LINKS CONNECT PEOPLE, ASSETS, AND DATA ANYWHERE.
- ✓ PRECISION NAVIGATION AND TIMING UNDERPIN ALL SPACE SERVICES.
- ✓ RESILIENT, SECURE NETWORKS ARE BUILT AS PUBLIC INFRASTRUCTURE.

THE EVOLUTION OF THE SPACE ECONOMY



FRONTIER ERA DISCOVERY & ACCESS

HIGH RISK, HIGH UNCERTAINTY.
PIONEERING TECHNOLOGIES
AND MARKETS.



BUILDOUT ERA INFRASTRUCTURE & SCALE

REUSABLE SYSTEMS, ORBITAL
HUBS, AND CORE SERVICES
REACH ECONOMIES OF SCALE.



EXPANSION ERA NETWORKS & DIVERSITY

MULTIPLE SECTORS GROW.
SUPPLY CHAINS MATURE,
AND MARKETS DIVERSIFY.



MATURITY ERA VALUE & RESILIENCE

PREDICTABLE OPERATIONS,
SUSTAINABLE RETURNS, AND
BROAD SOCIETAL BENEFITS.



LEGACY ERA ENDURING IMPACT

SPACE BECOMES A FOUNDATION
FOR HUMAN PROGRESS ON
EARTH AND BEYOND.

6. TOURISM & DESTINATIONS



- ✓ ORBITAL AND LUNAR DESTINATIONS WELCOME RESEARCHERS, ADVENTURERS, AND FAMILIES.
- ✓ HOSPITALITY, EXPERIENCES, AND CULTURAL EXCHANGE DRIVE NEW MARKETS.
- ✓ SAFE, ACCESSIBLE TRAVEL STRENGTHENS PUBLIC ENGAGEMENT AND SUPPORT.

7. RESEARCH & MANUFACTURING



- ✓ SPACE-BASED RESEARCH ACCELERATES SCIENCE AND INNOVATION.
- ✓ ADVANCED MATERIALS, BIOTECH, AND PHARMA BENEFIT FROM UNIQUE CONDITIONS.
- ✓ DISCOVERIES AND PRODUCTS IMPROVE LIFE ON EARTH AND IN SPACE.

8. GOVERNANCE & NORMS



- ✓ CLEAR RULES, RIGHTS, AND RESPONSIBILITIES REDUCE RISK AND DISPUTES.
- ✓ INTERNATIONAL COOPERATION AND TRANSPARENCY BUILD TRUST AND STABILITY.
- ✓ ETHICAL, SAFE, AND SUSTAINABLE PRACTICES GUIDE LONG-TERM GROWTH.

9. LONG-TERM ECONOMIC VALUE



- ✓ DIVERSIFIED INDUSTRIES CREATE JOBS AND BROAD-BASED PROSPERITY.
- ✓ RESILIENT SUPPLY CHAINS STRENGTHEN SECURITY AND SELF-RELIANCE.
- ✓ BENEFITS ON EARTH AND BEYOND SUPPORT A MULTI-PLANET FUTURE.



KEY TAKEAWAYS

- ✓ MATURITY COMES FROM RELIABILITY, REPEATABILITY, AND TRUST.
- ✓ INFRASTRUCTURE AND SERVICES UNLOCK ENDURING VALUE.
- ✓ COOPERATION AND RESPONSIBLE USE ENSURE LONG-TERM SUCCESS.
- ✓ SPACE IS A SHARED OPPORTUNITY WITH GLOBAL BENEFITS.

FOUNDATIONS OF A MATURE SPACE ECONOMY



SAFETY &
RELIABILITY



OPEN MARKETS &
FAIR COMPETITION



TALENT, EDUCATION
& INCLUSION



SUSTAINABILITY &
RESOURCE STEWARDSHIP



SECURITY &
RESILIENCE



PARTNERSHIP &
COOPERATION



THE GOAL IS NOT JUST TO REACH SPACE —
IT IS TO BUILD A THRIVING, SUSTAINABLE ECONOMY
THAT ENRICHES HUMANITY FOR GENERATIONS.

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