

FROM GLOBALIZATION TO SPACE SOVEREIGNTY:

WHY NATIONS ARE BUILDING INDEPENDENT SPACE CAPABILITIES

WHAT IS DRIVING THE SHIFT?



TARIFF RISK

Tariffs and trade tensions can raise costs, delay programs, and disrupt plans.



EXPORT-CONTROL UNCERTAINTY

Changing rules can limit access to critical technologies and create delivery risk.



SUPPLY-CHAIN FRAGILITY

Concentrated suppliers and single points of failure increase vulnerability to shocks.



NATIONAL-SECURITY CONCERNS

Dependence on others can create surveillance, denial, or coercion risks.



DOMESTIC JOBS & INDUSTRIAL POLICY

Space investment drives high-skill jobs, innovation, and long-term economic competitiveness.



WHAT COUNTRIES ARE DOING



• DEVELOPING LAUNCH OPTIONS

Building reliable, sovereign access to space.



• BUILDING LOCAL SATELLITE MANUFACTURING

Expanding end-to-end satellite design, integration, and testing at home.



• INVESTING IN CHIPS AND COMPONENTS

Securing domestic production of critical electronics and advanced components.



• STRENGTHENING GROUND SYSTEMS

Developing resilient communications, tracking, and data infrastructure.



• FUNDING DOMESTIC STARTUPS

Supporting innovation, new entrants, and commercial ecosystems.

EXPECTED RESULTS

GOAL	HOW	SPACE EXAMPLE
LAUNCH INDEPENDENCE	Build and operate sovereign launch systems.	Access to orbit on your own terms, when you need it.
SECURE COMMUNICATIONS	Deploy protected, sovereign comms networks.	Encrypted government and defense communications.
RESILIENT EARTH OBSERVATION	Operate national or regional observation constellations.	Timely, trusted data for decisions and emergencies.
TRUSTED SUPPLY CHAINS	Build domestic capacity and vetted supplier networks.	Reduced reliance on high-risk suppliers and chokepoints.
STRATEGIC AUTONOMY	Control critical space capabilities aligned to national interests.	Freedom of action and resilience in crises.



IMPORTANT TAKEAWAYS



ACCESS TO SPACE IS ECONOMIC SECURITY.

It underpins communications, navigation, data, and growth.



DEPENDENCE CREATES RISK.

Trade frictions, controls, and supply-chain shocks can disrupt critical space services.



INVESTMENT BUILDS RESILIENCE.

Domestic capabilities, industry, and talent create long-term strength and flexibility.



SPACE IS NATIONAL STRATEGY.

Nations are building sovereign space ecosystems to protect interests and secure the future.

EUROPE'S PUSH FOR STRATEGIC AUTONOMY IN SPACE

TRADE TENSIONS, GEOPOLITICAL RISK, AND DEPENDENCE ARE ACCELERATING EUROPE'S DRIVE FOR SOVEREIGN SPACE CAPABILITIES

1. WHY EUROPE WANTS AUTONOMY



STRATEGIC AUTONOMY

Ensure Europe can decide, act, and operate independently in space.



SECURE COMMUNICATIONS

Protect government, military, and critical communications from external control or disruption.



RESILIENT SUPPLY CHAINS

Reduce exposure to interruptions and single points of failure in space technologies.



INDEPENDENT ACCESS TO ORBIT

Guarantee reliable launch capability for European missions and partners.



REDUCED EXTERNAL DEPENDENCE

Limit reliance on foreign providers for critical space services and infrastructure.

2. KEY EUROPEAN PROGRAMS



ARIANE 6

Europe's next-generation heavy-lift launcher for independent access to orbit.



VEGA-C

Flexible small-lift launcher for responsive and dedicated missions.



GALILEO

Global navigation system delivering accurate, resilient, and secure positioning.



COPERNICUS

Earth observation program providing critical data for society and policy.



IRIS²

Secure connectivity constellation for Europe and trusted partners.



GOVSATCOM

Secure satellite communications for governments and institutional users.

3. HOW TRADE TENSIONS INFLUENCE STRATEGY



UNCERTAINTY AND RISK

Trade tensions and geopolitical rivalry create policy and market uncertainty.



DIVERSIFY SUPPLIERS

Reduce reliance on any single country or supplier for critical technologies and services.



INVEST IN INDUSTRY

Targeted investment in European capabilities, innovation, and industrial competitiveness.



STRENGTHEN SOVEREIGN CAPABILITIES

Build secure, reliable, and independent space capabilities for Europe's future.

4. INDUSTRIAL RESPONSE



LAUNCHER CAPABILITY

Scale sovereign launch systems to ensure reliable and cost-competitive access to space.



SATELLITE MANUFACTURING

Strengthen design, production, and testing of satellites across all sizes and missions.



SEMICONDUCTORS & COMPONENTS

Build secure supply chains for chips, sensors, and critical components within Europe.



SECURE NETWORKS & SERVICES

Deliver resilient, encrypted, and sovereign space-based services for users across sectors.



PUBLIC PROCUREMENT

Use coordinated demand and long-term contracts to de-risk investment and scale.



IMPORTANT TAKEAWAYS



AUTONOMY IS STRATEGIC

Space underpins security, prosperity, and resilience. Sovereign capability is essential to protect Europe's interests and choices.



RISK IS ACCELERATING CHANGE

Trade tensions, export controls, and geopolitical competition are speeding Europe's shift toward independence.



INVESTMENT DRIVES RESILIENCE

Sustained investment in industrial capabilities and innovation builds long-term security and global competitiveness.



TOGETHER FOR IMPACT

Stronger coordination among EU institutions, Member States, industry, and partners maximizes impact and reduces duplication.

CANADA BETWEEN ITS LARGEST TRADING PARTNER AND SPACE SOVEREIGNTY

BALANCING CLOSE U.S. TIES WITH RESILIENCE, DIVERSIFICATION, AND SELECTIVE SOVEREIGNTY

1. CANADA'S STARTING POSITION



DEEP U.S. INTEGRATION
Canada's space sector is tightly linked with U.S. markets, primes, and supply chains.



STRONG DOMESTIC EXPERTISE
World-leading capabilities in robotics, satellite systems, sensors, and AI-enabled analytics.



ARCTIC & EARTH-OBSERVATION NEEDS
Critical monitoring of the Arctic, climate, environment, and natural resources for sovereign decision-making.



PROVEN ROBOTICS HERITAGE
A legacy of innovation in space robotics and operations on Earth and beyond.



ALLIED PARTNERSHIPS
Strong ties with like-minded allies in Europe, Indo-Pacific, and global multilateral programs.

2. WHAT COULD CHANGE



PROCUREMENT UNCERTAINTY
U.S. policy shifts, export controls, and "Buy American" rules could limit Canadian access to programs and technologies.



SUPPLY CHAIN CONCENTRATION
Dependence on U.S. components, software, and launch services creates vulnerability to disruptions and cost volatility.



NEED FOR RESILIENT SERVICES
Canada requires assured access to critical satellite services for security, safety, and economic continuity.



PRESSURE FOR DOMESTIC CAPACITY
Industrial policy trends south of the border may incentivize reshoring and local content requirements.



DIVERSIFICATION OPPORTUNITY
Growing options with Europe, Japan, India, Australia, and others for technology, investment, and markets.

3. STRATEGIC PRIORITIES

PRIORITY	WHY IT MATTERS	KEY ACTIONS	OUTCOMES
 EARTH OBSERVATION	Informs Arctic operations, climate resilience, and resource stewardship.	- Expand sovereign EO systems - Invest in data analytics - Ensure open, timely data	 Better decisions, sovereign insight, economic value
 SECURE COMMUNICATIONS	Protects government, defense, emergency services, and critical infrastructure.	- Build secure satcom capacity - Strengthen encryption & resilient networks - Assured access	 Trusted connectivity and mission assurance
 DEFENSE & SURVEILLANCE	Sovereign awareness of Arctic and global threats.	- Enhance ISR capabilities - Improve domain awareness - Integrate with allies	 Deterrence, early warning, and maritime security
 ADVANCED MANUFACTURING	Builds autonomy and high-value jobs at home.	- Grow satellite & component production - Invest in robotics & automation - Increase local content	 Stronger industry, innovation, and resilience
 COMMERCIAL SPACE GROWTH	Drives exports, innovation, and private investment.	- Scale start-ups and scale-ups - Improve access to capital - Open global markets	 Economic growth and global competitiveness
 SOVEREIGN DATA	Data control supports security, privacy, and policy autonomy.	- Build sovereign data infrastructure - Set data governance standards - Prefer Canadian data paths	 Trusted data, compliance, and strategic control

4. POSSIBLE RESPONSES



DOMESTIC INDUSTRIAL SUPPORT
Use targeted funding, procurement, and tax tools to scale critical capabilities and anchor jobs across Canada.



ALLIED COLLABORATION
Deepen partnerships with trusted allies for co-development, interoperability, and market access.



TALENT DEVELOPMENT
Invest in STEM education, apprenticeships, and retention to secure Canada's space workforce.



LOCAL INTEGRATION & TESTING
Expand Canadian facilities for integration, validation, and environmental testing for space systems.



TRUSTED SUPPLY CHAINS
Map critical inputs, qualify alternative sources, and build domestic capacity for essential components and software.



IMPORTANT TAKEAWAYS



Canada's advantage is collaboration, not isolation—leverage U.S. ties while reducing single-point risk.



Diversify partners, markets, and supply chains to increase options and bargaining power.



Invest in sovereign capabilities that underpin security, resilience, and economic prosperity.



Align industrial policy, procurement, and standards to build a competitive, innovative sector.



Selective sovereignty: control what matters most, partner where it multiplies value.

CHINA'S SPACE STRATEGY IN AN ERA OF TECHNOLOGICAL DECOUPLING

TRADE RESTRICTIONS, TECHNOLOGY CONTROLS, AND GEOPOLITICAL COMPETITION
ARE ACCELERATING CHINA'S PUSH FOR A SELF-RELIANT SPACE ECOSYSTEM

1. WHAT IS DRIVING SELF-RELIANCE?



EXPORT CONTROLS

- Restrictions on dual-use and space technologies limit access to critical systems and components.



ADVANCED ELECTRONICS

- Limits on chips, sensors, and specialized software constrain design and manufacturing.



NATIONAL SECURITY

- Space capabilities are essential for defense, intelligence, and economic security.



SUPPLY-CHAIN INDEPENDENCE

- Vulnerabilities in global supply chains drive the need for domestic control and redundancy.



LONG-TERM INDUSTRIAL PLANNING

- State-led programs and sustained investment enable capabilities across the entire space value chain.

2. CORE CAPABILITIES



LONG MARCH LAUNCH SYSTEMS

Reliable, increasingly high-cadence launches for all mission types.



BEIDOU NAVIGATION

Global navigation system with independent signals and services.



TIANGONG SPACE STATION

Sustained human presence enabling science, technology, and collaboration.



EARTH-OBSERVATION SATELLITES

High-resolution imaging and data for economy and security.



COMMUNICATIONS CONSTELLATIONS

Broadband and mobile connectivity for domestic and global markets.



DOMESTIC MANUFACTURING & COMPONENTS

Integrated supply base for spacecraft, payloads, chips, materials, and precision equipment.

3. DECOUPLING EFFECT



RESTRICTIONS AND CONTROLS

Trade limits and technology controls restrict access to critical space technologies.



SUBSTITUTE DOMESTIC TECHNOLOGY

Invest in R&D and engineering to replace restricted technologies.



EXPAND LOCAL SUPPLIERS

Build capacity across the supply chain and reduce single points of failure.



STRENGTHEN NATIONAL ECOSYSTEM

A resilient, end-to-end space industrial base under domestic control.

4. STRATEGIC OUTCOMES



GREATER RESILIENCE

Reduced vulnerability to external shocks, sanctions, and supply disruptions.



FASTER DOMESTIC INNOVATION

Local iteration and integration accelerate technology maturation and performance.



REDUCED FOREIGN DEPENDENCE

Strategic autonomy across key systems, components, and services.



COMPETING STANDARDS AND ECOSYSTEMS

Alternative technologies, standards, and partnerships shape the global space order.



IMPORTANT TAKEAWAYS



DECOUPLING IS A CATALYST.

External restrictions strengthen China's resolve to control the full space value chain.



SELF-RELIANCE IS STRATEGIC.

Independent systems support national security, economic development, and global influence.



INVESTMENT DRIVES CAPABILITY.

Sustained funding and industrial policy are building world-class space capabilities.



COMPETITION IS STRUCTURAL.

Parallel space ecosystems will coexist and compete across markets, standards, and geopolitics.

INDIA'S OPPORTUNITY: BECOMING AN ALTERNATIVE SPACE-SUPPLY-CHAIN PARTNER

HOW TRADE TENSIONS AND SUPPLY-CHAIN DIVERSIFICATION OPEN THE DOOR FOR INDIA'S SPACE SECTOR



THE RACE TO REPLACE AMERICAN SPACE COMPONENTS

WHY COUNTRIES AND COMPANIES ARE BUILDING ALTERNATIVES AND WHICH COMPONENTS MATTER MOST

1. WHY REPLACEMENT EFFORTS ARE GROWING



EXPORT-CONTROL RISK
Licensing rules can change quickly, restricting access to critical technologies with little notice.



TARIFFS & TRADE COSTS
Tariffs and duties increase costs and create uncertainty for budgets and long-term planning.



DELIVERY UNCERTAINTY
Supply disruptions, backlogs, and geopolitical tensions can delay missions and programs.



SECURITY CONCERNS
Reliance on potential adversaries creates vulnerabilities in sensitive systems and data.



INDUSTRIAL STRATEGY
Nations are investing in sovereign capabilities to create jobs, build resilience, and strengthen leverage.

2. HIGH-PRIORITY COMPONENTS

COMPONENT CATEGORY	WHY IT MATTERS	WHAT COUNTRIES WANT
 RADIATION-HARDENED ELECTRONICS	Essential for reliability in harsh space environments.	Access to chips, FPGAs, memory, processors, and power ICs.
 SENSORS	Provide awareness, navigation, and mission data.	Star trackers, IMUs, Earth sensors, radiometers, and spectrometers.
 OPTICAL SYSTEMS	Enable imaging, observation, and communication.	Telescopes, lenses, mirrors, lasers, and optical assemblies.
 SATELLITE BUSES	The backbone that hosts payloads and provides core functions.	Structures, avionics, AOCS, thermal control, software.
 PROPULSION SYSTEMS	Critical for orbit placement, stationkeeping, and maneuvers.	Thrusters, tanks, valves, green and storable propellants.
 COMMUNICATIONS PAYLOADS	Deliver connectivity and link missions to users.	Transponders, amplifiers, phased arrays, and antennas.
 SOLAR POWER SYSTEMS	Provide reliable, long-duration power in space.	Solar cells, panels, regulators, batteries, and power electronics.
 GROUND INFRASTRUCTURE	Supports launch, tracking, control, and data downlink.	Ground stations, networks, software, and mission tools.

3. COMMON STRATEGIES



BUILD DOMESTIC CAPACITY
Invest in local manufacturing and supply chains for critical components.



SOURCE FROM TRUSTED PARTNERS
Diversify imports from aligned countries with strong export-control alignment.



DESIGN FOR MODULARITY
Use open standards and swappable components to reduce lock-in.



USE DUAL SUPPLIERS
Qualify multiple suppliers to reduce single points of failure.



SUPPORT R&D & INNOVATION
Fund research, prototypes, and test facilities to accelerate maturity.

4. MAIN CHALLENGES



QUALITY ASSURANCE: Matching reliability standards is hard.



HIGHER COSTS: Alternatives can be more expensive at first.



CERTIFICATION BURDEN: Validating for space takes time.



LIMITED SCALE: Smaller volumes increase unit costs.



LONG DEVELOPMENT CYCLES: Building capability takes years.



IMPORTANT TAKEAWAYS



REDUCING DEPENDENCY BUILDS RESILIENCE
Sovereign and diversified supply chains lower risk and improve mission assurance.



FOCUS ON HIGH-IMPACT COMPONENTS FIRST
Targeting critical components delivers the greatest security and capability gains.



COLLABORATION ACCELERATES PROGRESS
Industry, governments, and academia working together shorten timelines.



STRATEGIC INVESTMENT YIELDS LONG-TERM VALUE
Upfront investment creates jobs, strengthens sovereignty, and reduces future disruptions.

LAUNCH INDEPENDENCE BECOMES ECONOMIC SECURITY

SOVEREIGN ACCESS TO ORBIT UNDERPINS RESILIENCE, PROSPERITY, AND NATIONAL INFLUENCE

1 WHY LAUNCH MATTERS



COMMUNICATIONS

Power connectivity, broadcasting, and secure government links.



DEFENSE & SECURITY

Enable surveillance, early warning, and protected operations.



WEATHER & CLIMATE

Improve forecasts and disaster preparedness.



DATA & INTELLIGENCE

Support decision-making, resource management, and innovation.



NAVIGATION & TIMING

Provide precise positioning and synchronization for critical systems.



COMMERCIAL ACCESS

Unlock markets, services, and high-value economic opportunities.

2 HOW DIFFERENT COUNTRIES APPROACH LAUNCH INDEPENDENCE

COUNTRY / REGION	FOCUS	STRATEGIC GOAL
 EUROPE	 Reliable launch, shared investment, Ariane 6	 Strategic autonomy and industrial sovereignty
 INDIA	 Cost-effective launch, rapid cadence, PSLV/SSLV	 Self-reliance and global commercial leadership
 JAPAN	 Small launchers, technology innovation	 Resilient access and advanced capabilities
 SOUTH KOREA	 Domestic launch vehicles, private sector growth	 Indigenous capability and export competitiveness
 CHINA	 High-cadence launches, integrated industrial base	 Technological leadership and global reach
 AUSTRALIA	 Spaceports, allied access, sovereign options	 Regional security and economic participation

3 THE STRATEGIC VALUE CHAIN



BUILD LAUNCH CAPABILITY

Develop reliable vehicles, infrastructure, and operations.



ASSURE ACCESS TO ORBIT

Launch when needed, on your terms, without dependency.



DRIVE ECONOMIC RESILIENCE

Power critical services, innovation, and new high-value industries.



EXPAND NATIONAL INFLUENCE

Shape standards, build partnerships, and strengthen global standing.

4 WHAT GOVERNMENTS INVEST IN



LAUNCH VEHICLES

Reliable, competitive rockets from smallsats to heavy lift for diverse missions.



SPACEPORTS

Modern launch sites with efficient operations and global reach.



TEST INFRASTRUCTURE

Facilities for engines, stages, and systems to ensure quality and safety.



SUPPLY CHAINS

Secure access to materials, components, and trusted industrial partners.



SKILLED WORKFORCE

Engineers, technicians, and operators to design, build, and launch.



IMPORTANT TAKEAWAYS



ACCESS TO ORBIT IS A CORE ELEMENT OF SOVEREIGNTY.



INDEPENDENT LAUNCH ENABLES RAPID RESPONSE IN CRISES.



STRONG SPACE INDUSTRIES DRIVE JOBS, EXPORTS, AND TECHNOLOGICAL LEADERSHIP.



COUNTRIES THAT INVEST TODAY WILL LEAD THE ECONOMY OF TOMORROW.



PARTNERSHIPS AMPLIFY CAPABILITIES AND SHARED SECURITY.

FRIEND-SHORING THE SPACE ECONOMY:

THE NEW GEOGRAPHY OF SPACE ALLIANCES

1. WHAT IS FRIEND-SHORING?



Building space supply chains, programs, and markets with trusted partners to reduce geopolitical risk and strengthen resilience.



TRUSTED PARTNERS

Work with countries that share values, security practices, and export-control alignment.



LOWER GEOPOLITICAL RISK

Reduce exposure to sanctions, export restrictions, and political coercion.



RESILIENT SOURCING

Diversify across allies to avoid single points of failure and strengthen continuity.

2. HOW IT LOOKS IN SPACE



CO-DEVELOPMENT

Allies share R&D, split costs, and build interoperable solutions together.



ALLIED PROCUREMENT

Buy from trusted partners through aligned rules and transparent processes.



SHARED STANDARDS

Adopt common technical, cybersecurity, and data standards for interoperability.



LAUNCH PARTNERSHIPS

Leverage allied launch capacity for assured access to space.



DATA-SHARING

Share data, insights, and services within trusted networks.



JOINT MANUFACTURING

Build components and systems together across allied industries.

3. POTENTIAL PARTNER GROUPS

PARTNER	KEY STRENGTHS	EXAMPLE CONTRIBUTIONS
 UNITED STATES	Innovation, scale, investment	Launch, satellites, deep tech, exploration
 EUROPE	Industrial base, standards, services	Earth observation, telecom, navigation
 CANADA	Robotics, space operations	Robotics, remote sensing, mission support
 JAPAN	Precision, reliability, systems engineering	Components, optics, mission systems
 AUSTRALIA	Deep space communications, resources	Ground stations, space situational awareness
 INDIA	Cost-effective launch, engineering talent	Launch services, spacecraft, components
 SOUTH KOREA	Electronics, advanced manufacturing	Satellites, payloads, components

4. BENEFITS AND TRADE-OFFS

BENEFITS	TRADE-OFFS
 Stronger supply chain resilience	 Higher complexity in coordination and governance
 Enhanced security and technology protection	 Potential market fragmentation and duplication
 Faster innovation through allied collaboration	 Short-term costs of reconfiguration and transition
 Lower disruption risk and long-term cost savings	 Longer timelines to align standards and processes

IMPORTANT TAKEAWAYS



REDUCE RISK, BUILD RESILIENCE

Friend-shoring lowers exposure to geopolitical shocks and secures critical space capabilities.



STRONGER TOGETHER

Alliances unlock scale, share costs, and accelerate innovation across the space ecosystem.



ALIGN STANDARDS AND TRUST

Common standards, rules, and data protections enable secure and interoperable systems.



BALANCE AND MANAGE TRADE-OFFS

Friend-shoring improves resilience but can fragment markets and increase short-term costs.

WHEN EXPORT CONTROLS BECOME SPACE POLICY

HOW CONTROLS ON DUAL-USE TECHNOLOGIES SHAPE SATELLITE DESIGN, SUPPLIERS, PARTNERSHIPS, AND NATIONAL STRATEGY

1. WHAT EXPORT CONTROLS AFFECT



SEMICONDUCTORS

Advanced chips, FPGAs, and high-performance processors.



SENSORS & IMAGING

High-resolution optics, infrared detectors, and specialized sensors.



COMMUNICATIONS

High-throughput radios, encryption hardware, and phased arrays.



SOFTWARE & FIRMWARE

Design tools, source code, and secure development tools.



AI-ENABLED SYSTEMS

Machine learning models, training data sets, and inference hardware.



PROPULSION TECHNOLOGIES

High-efficiency engines, valves, pumps, and advanced materials.

2. POLICY IMPACT CHAIN



EXPORT CONTROLS IMPOSED

Restrictions on specified technologies and entities.



LIMITED ACCESS

Key components and tools become harder or illegal to obtain.



REDESIGN OR SUBSTITUTE

Modify designs, lower performance targets, or use alternative solutions.



DOMESTIC INVESTMENT

Build local capabilities and supply chains to reduce dependence.



NEW PARTNERSHIPS

Form trusted alliances and diversify suppliers to ensure resilient access.

3. SPACE-SYSTEM EFFECTS

AREA

HOW CONTROLS SHAPE OUTCOMES



SATELLITE DESIGN

- Performance trade-offs
- Alternative components
- Increased mass, power, or size to compensate



PROCUREMENT & SUPPLIERS

- Fewer eligible vendors
- Longer lead times
- Higher costs and qualification burdens



LAUNCH PLANNING

- Limited access to certain launch services
- Schedule uncertainty
- Insurance implications



INTEGRATION & TESTING

- New test methods and tools
- Requalification of parts
- More documentation and audits



LONG-TERM R&D STRATEGY

- Focus on sovereign tech
- Increased R&D spending
- Tech roadmaps aligned with control regimes

4A. WHY GOVERNMENTS USE THEM



NATIONAL SECURITY

Prevent adversaries from accessing capabilities that could support military advantage.



PROLIFERATION PREVENTION

Reduce risk of sensitive technologies aiding weapons of mass destruction or malicious actors.



ALLIED COORDINATION

Align policies with allies to close loopholes and present a united front.



TECHNOLOGICAL LEADERSHIP

Protect critical industries and maintain an innovation edge.

4B. UNINTENDED EFFECTS



INNOVATION SLOWDOWN

Constraints can delay projects and limit access to best-in-class tools.



HIGHER COSTS

Substitutes and domestic build-out increase costs and timelines.



MARKET FRAGMENTATION

Diverging rules create parallel ecosystems and inefficiencies.



REDUCED ACCESS GLOBALLY

Partners and customers may face barriers, limiting reach and impact.

5. IMPORTANT TAKEAWAYS



POLICY SHAPES TECH CHOICES

Export controls influence what technologies are available, and how systems are designed.



RESILIENCE REQUIRES INVESTMENT

Building sovereign capabilities and trusted supply chains reduces risk and improves mission assurance.



PARTNERSHIPS ARE STRATEGIC

Cooperation with aligned partners unlocks access, shares costs, and accelerates innovation.



ALIGN STRATEGY AND POLICY

Long-term space goals must be aligned with export control realities and global trends.

A FRAGMENTING SPACE ECONOMY: IS ONE GLOBAL SPACE MARKET BECOMING SEVERAL?

HOW TRADE TENSION, INDUSTRIAL POLICY, AND TECHNOLOGY CONTROLS ARE SHAPING PARTLY SEPARATE ECOSYSTEMS

1. WHY THE MARKET MAY BE FRAGMENTING



TRADE BARRIERS & TARIFFS

Tariffs and trade retaliations raise costs, create uncertainty, and discourage cross-border deals.



EXPORT CONTROLS & TECHNOLOGY RESTRICTIONS

Controls on sensitive space technologies, components, and data limit access and split technology stacks.



SECURITY & NATIONAL INTERESTS

Governments prioritize secure, trusted capabilities and data sovereignty over lowest-cost global options.



NATIONAL PROCUREMENT PREFERENCES

"Buy national" and offset requirements favor domestic suppliers and reduce open competition.



ALLIANCE-BASED SUPPLY CHAINS

Trusted partner networks shape sourcing, standards, and access to markets and programs.

2. POSSIBLE SPACE ECOSYSTEMS (NOT EXHAUSTIVE)

	U.S.-ALIGNED	EUROPEAN	CHINESE	INDIAN / MULTI-ALIGNED
 LAUNCH	Commercial leaders, government assured access, allied ranges.	Ariane family, Vega, emerging launchers, sovereign access focus.	Long March family, growing commercial launch providers.	ISRO launches, commercial entrants, global partnerships.
 NAVIGATION	GPS (U.S.) with allied augmentation services.	Galileo open service, PRS for secure users.	BeiDou global coverage and services.	NavIC regional service, multi-GNSS use.
 COMMUNICATIONS	Starlink and other LEO/MEO/GEO systems, government networks.	IRIS ² , Eutelsat OneWeb, GOVSATCOM initiatives, trusted networks.	Tiantong, Guowang, growing LEO constellations.	GSAT series, regional satcom, international partners.
 MANUFACTURING & COMPONENTS	Advanced chips, exports from allies, trusted suppliers.	Strengthening local supply chain, strategic autonomy.	Integrated domestic supply chain, scale advantage.	Build domestic capabilities, selective import partnerships.
 STANDARDS & INTERFACES	CCSDS participation, allied-aligned implementations.	EU standards, sovereign requirements, open where possible.	National standards, ecosystem-specific interfaces.	Adopt global standards where feasible, regional adaptations.
 PARTNERSHIPS & MARKET ACCESS	Allied markets and programs, export control alignment.	Union members, trusted partners, strategic outreach.	Belt & Road partners, friendly states, selective openness.	Issue-based coalitions, South-South ties, flexible alignment.

3. FROM ONE MARKET TO MANY?

A GRADUAL SPLIT (STRATEGIC TREND, NOT A CERTAINTY)



ONE GLOBAL SPACE MARKET

Open trade, interoperable systems, shared standards, broad collaboration.



RISING FRICTION

Trade tension, export controls, security concerns, industrial policy, and procurement preferences increase.



POLARIZING CHOICES

Nations choose trusted partners, prioritize sovereignty, and build parallel capabilities.

PARTLY SEPARATE ECOSYSTEMS

Interoperability narrows, duplication grows, and cross-ecosystem access becomes harder.



U.S.-ALIGNED ECOSYSTEM



EUROPEAN ECOSYSTEM



CHINESE ECOSYSTEM



INDIAN / MULTI-ALIGNED ECOSYSTEM



4. WHAT THIS MEANS



GREATER RESILIENCE

Nations strengthen secure, trusted supply chains and sovereign capabilities.



MORE DUPLICATION

Parallel systems and infrastructure increase costs and complexity.



INTENSIFIED COMPETITION

Ecosystems compete for markets, partners, talent, and influence.



SPURRED INNOVATION

Competition and policy support drive innovation and new business models.



REDUCED INTEROPERABILITY

Different standards, controls, and architectures limit data and system compatibility.



5. IMPORTANT TAKEAWAYS



Fragmentation is a strategic trend, not inevitable. Choices on policy, standards, and cooperation can shape the outcome.



Engage across ecosystems.

Balanced partnerships reduce risk and preserve access to innovation.



Invest in flexibility.

Design systems, standards, and contracts for a multi-ecosystem world.



Keep channels open.

Dialogue and transparency lower miscalculation and build trust.

COPYRIGHT AND LICENSING

COPYRIGHT AND LICENSE NOTICE

Copyright © 2026 NEWSPACEECONOMY.CA. Except where otherwise noted, the original content of this document is licensed under the Creative Commons Attribution 4.0 International License. A copy of the license is available at <https://creativecommons.org/licenses/by/4.0/>.

NO ENDORSEMENT

References to organizations, products, services, technologies, publications, or individuals do not constitute or imply endorsement, recommendation, sponsorship, or approval by the author or publisher. Reuse of this document must not be represented as endorsed by the original author, publisher, or any person or organization identified for attribution.

ACCURACY AND COMPLETENESS

The information in this document is provided in good faith and was believed to be accurate at the time of publication. The author and publisher do not guarantee that the information is complete, current, error-free, or suitable for every purpose. Readers should independently verify information that may affect important decisions.

Feedback and Suggestions

This document is revised as its material is corrected and extended. Corrections, omissions, and suggestions for what a future edition should cover are all welcome, and are read by the people who maintain it. The most useful feedback names the page or the figure it is about, says what is wrong or missing, and — where it is a correction — points at a source. Feedback about the document as a whole, including whether it answered the question you opened it with, is just as welcome.

[Share your feedback on this document](#)

