



Future Space Trends Forecast 2025

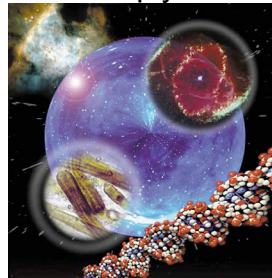
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Space is a strategic domain where numerous vital interests lie for the US and other nations as well as the private sector. These interests will affect commerce, security, power, defense and influence in the 21st century. Space represents a strategic domain of incalculable dimensions of which the achievement of space superiority by one government or corporation or non-state actor could change the balance of power on the planet overnight.

A fierce competition between states, non-states and corporate players will emerge over the next ten years. Of particular interest is the role of Dark Networks--criminal and terrorist organizations, the non-state actors given their influence and participation in space.

The strategic questions begin with How will space influence geostrategic power and influence in the 21st century?

Though the militarization of space has been avoided by sovereign interests, this may not continue in the future when global multinational corporations, dark networks (criminal and terrorist global organizations) or non-state actors demand access to space assets. States will simply not be able to afford not to expand into

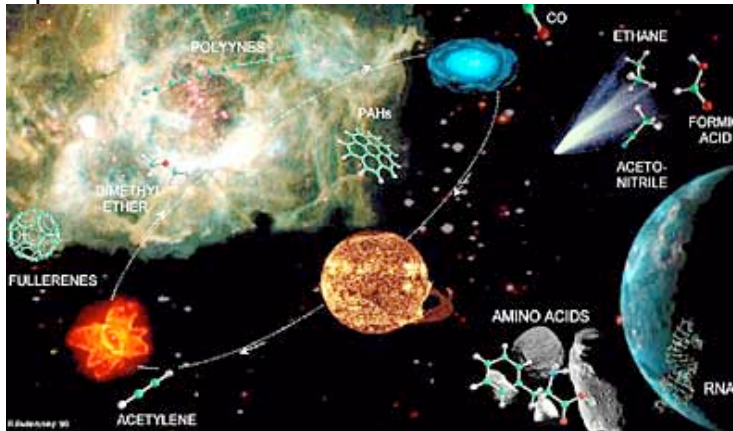


to space and develop assets.

Key trends in the quests for energy, climate management, minerals, communications and other private sector commercial interests may change this equation as well. This forecast will redefine competition in the 21st century.

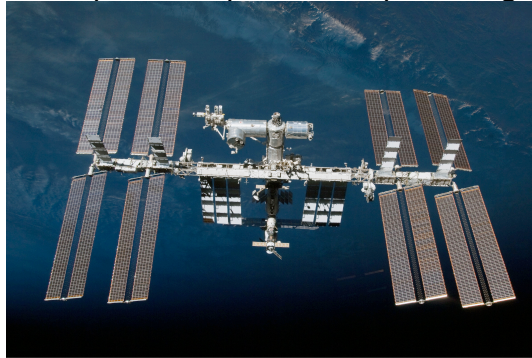
This overview of key trends speculates on what the future of space-based assets, systems, issues and networks will be by 2025 and how they may influence multinational and commercial interests over the next fifteen years.

- Future conflict and competitive forces on the planet will shape deployment off world. Space-based asset development and off world exploitation of resources, minerals, energy and weapon systems will be highly competitive between nations and corporations.
- Alliance efforts by global corporations, states and non-state actors will be necessary to address both the high costs of space development as well as the broad defense and intelligence issues that being in space will represent in the future.



- Space assets refer to: systems, logistics, materials, products, xeno-materials, infrastructure, energy sources, artificial, biological and non-biological life forms, networks, sensors, vehicles, robotics, AI (artificial intelligence) systems, constellations, hardware platforms and software architecture.
- Space as a strategic domain is referred here as: near Earth, orbiting Earth, orbiting other planets, asteroids or moons, deep space and hyperspace (future construct)
- The strategic positioning of key information, communications and defense systems in space will make for a more secure infrastructure.
- A new generation of security at the quantum encryption level to protect these space assets will be required as space assets will become an attractive target to attack, hijack or cyberjack (virtual).
- Issues about the readiness of the US and their allies defenses to counter a space-based aggressive force are of concern.
- Commercial opportunities for off world mining, energy exploration, manufacturing and communications could offer new industries that hold significant potential for profits, industry domination and competitive advantage.
- Recent testing by the Chinese of the ASAT electro-weapon anti-satellite system demonstrates an emerging capability by the Chinese who have accurately forecasted that space is in their long-term national interests.
- The ability to deliver systems from space to the Earth with capability will emerge over the next five years.
- US and private sector directed energy weapons research is proceeding and space is the ultimate use platform for this type of system of systems;

both space-to-space and space-to-ground systems.



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- New satellite and anti-satellite systems focused on non-lethal, disruption and intrusion will emerge in this time frame.
- One significant disruptive innovation in space once demonstrated will change the competitive dynamic between nations.
- It would be unrealistic to assume that space-based systems, dual use space S&T for energy, commerce, manufacturing, communications and defense will not play a decisive role in future geostrategic influence and tip the geopolitical balance of power.
- Discoveries off-world of new elements, minerals and processes, may have a game changing impact on energy, manufacturing, mining, aerospace and climate on Earth.
- China, India, Pakistan, Russia, Japan and Brazil all recognize the high frontier of space as a key strategic asset that must be pursued in the future.
- Experimental R&D in new propulsion systems may accelerate off-world missions.
- Deep space explorations, where humans cannot survive may offer innovative discoveries that could further space development.
- Coalitions of states who cooperate in multi-funding alliances, even non-state actors, are likely to offset high costs.
- Private sector investments in nano, neuro, bio, info and quantum technologies may bring the timetable closer to achieving results in realizing and monetizing space discoveries.
- Discoveries from deep space may redefine the basic assumptions and expand humanity's understanding of its evolution and its future.

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