

# Future Directions for the Space Industry



Space is no longer the sole province of the military and telecoms. The market is growing for earth observation, cybersecurity, navigation and positioning products, while tourism and mining loom, explains Niall Conway.

During a recent IoT event, I heard an observation which seems to reflect the changing status of the space industry in today's world. In the 1960s, the speaker said, some of the greatest minds on the planet worked towards putting a man into space. Today, he added, some of the world's greatest minds are now focused on increasing the number of views on a YouTube video.

Although this comment was a light-hearted attempt to emphasise the big effort behind selling ideas in the real world, it suggests that space activity is now perceived as being a less complex and more accessible pursuit than it once was. The comment also implies that other industries are so innovative that they can compete against the space industry for the world's top talent.

In order to better understand if and how such a comment could be true, one needs to examine some of the forces which have made space more mainstream in 2017. History books are full of the pioneering achievements of the space sector at a time when the industry comprised of government-led projects, national security agendas and lucrative contracts. Although the industry is often associated with secrecy, bureaucracy, and legacy, it has also sparked the imagination of a generation and has helped to drive home the STEM education agenda which now underpins our globalised economy.

It is quite likely that the same individuals who were influenced and inspired by early space achievements are today helping to reinvent certain aspects of the industry. Innovators and investors such as Elon Musk and Richard Branson, who are perhaps frustrated with the established space industry models or the progress that has been achieved to date, are beginning to pursue their own ambitions in space thanks to economic and technological factors.

## No Longer Cutting-edge

The space industry has matured considerably since its early days, and much of what was once considered to be 'cutting edge' technology is now widely available in the developed world - in cars, materials, devices and appliances. Furthermore, cost-effective manufacturing, streamlined supply chains and improved business models are allowing more parties to build a presence in space. In relation to satellites for example, the hardware, software and data required for situational awareness, imagery capture and systems operations are far more accessible than they were in the past. Furthermore, today many processes can be outsourced, automated or accessed through online services.

With the costs of entry now significantly lower, many new and often unlikely players with space-related ambitions have emerged. Pioneering bodies from the US and Russia collaborate with agencies, research institutions, NGOs and high-profile companies from a range of developed and developing nations. The arena which was traditionally concerned with defence and national security, space exploration, and telecommunications now includes a wider range of interests such as earth observation, cyber-security, and IoT navigation support. Combined with the increasing likelihood of extraterrestrial tourism and mining activity, space is expected to become a lot more crowded in the future. As an example, according to one statistic from [Euroconsult](#), an expected 1,450 new satellites, representing a market of \$250 billion for the space industry, will be launched between the years 2016 and 2025.

## Realising the Potential

Despite these major advances, the industry now faces some big challenges. Although being much better equipped and having more clearly defined objectives than ever before, there is an element of uncertainty for both pioneers of and newcomers to the 'Final Frontier'. The term 'frontier' implies an area which is as yet ungoverned, and since space, just like the Earth below, does not come pre-packaged with policies, agreements, rules and jurisdictions much work needs to be done. If the true potential of mankind's activity in space is to be realised then it will be necessary for all interested parties to design a framework for communication, coordination and collaboration. Such a system will need to combine decades old knowledge and experience with a modern, flexible, and results-driven mindset.

Before any such system or governing structure can be established it will be important to raise awareness of the role which geospatial technology and data can play in terms of helping to solve global issues. Participants should pay close attention to the recommendations of the UN's initiative for Global Geospatial Information Management (UN-GGIM), which emphasises the importance of education and skills development as well as to the recommendations of the Group on Earth Observation (GEO). The industry should also focus on implementing interoperability standards of the Open Geospatial Consortium (OGC). These standards, among other things, form the foundation of the important Earth Observation Sensor Web. The strengthening of the global spatial data infrastructure (SDI) network and

the continued support for space industry incubation centres, such as those launched by the ESA, should also be encouraged.

The major changes which the space industry is currently experiencing are likely to concern certain groups more than others. Pioneers of the industry may view current advances cautiously and seek more regulatory control. Meanwhile, younger generations will probably view the space industry as just another one to disrupt.

Regardless of which perspective is adopted, space is more accessible than it ever was before and the industry now competes with other hi-tech sectors for top talent. If the pioneers of space activity are to build on their groundbreaking achievements to date then they need to design frameworks and systems which will allow them to harness the imagination and skill set of a younger, more agile generation.

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