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SCI AEROSPACE & DEFENSE GLOBAL SECTOR TEAM

STANTON CHASE insights

The Stanton Chase International Aerospace & Defense Global Sector Team is pleased to provide you with Quarterly Market News and Views of our industry. We hope you will find these articles both informative and timely. Our Spring 2015 view is below and focuses on how the commercial and defense sectors of the industry continue to shift as global politics as well as markets evolve and economies reshape.

RACE TO SPACE AND MORE DRIVE THE A&D MARKET IN 2015

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Trends in the aerospace and defense industry defy the world economic picture as nations around the globe continue efforts to develop indigenous aerospace capabilities, to include not just defense and commercial aircraft but also the space sector. Each development represents technical challenge, investment in "all new" areas, and the need for the industry to transform – quickly.

The key developments, on a global basis, include:

- Connectivity
- Space launch capability
- An explosion of demand for satellites, to include small CubeSat's
- Autonomous systems

Connectivity

Aircraft connectivity provides a broad expanse of opportunity to the overall aerospace supply chain, from applications to wi-fi systems to the more complex waveforms and data links required for stealthy aircraft to talk to older weapon systems. Connectivity capitalizes upon three technology trends: computing power; data access, analysis and storage capacity; and expanding communications bandwidth.

Airlines are relying on connectivity to increase efficiency in routing and operations, but also in offering passengers new amenities. Ironically, European passengers are more demanding of onboard wi-fi than are their North American counterparts who are less likely to pay for such an onboard service.

For the military aircraft sector, connectivity serves as a means to optimize readiness rates through real-time monitoring of operational metrics, but also is a key factor in allowing fifth-generation stealth aircraft to communicate with older, non-stealth systems.

There are three layers of technical opportunity. At the base, connectivity relies on sensors, displays, power management and air traffic management. The second layer of technologies includes health monitoring systems that feed data real-time to ground stations, electronic flight bags, seat-back displays, wi-fi, at-seat power, and devices. Once the infrastructure is set, the third layer, software applications, similar to those found on any smart device, will provide the crew with additional information ranging from weather reports to traffic congestion points. Air transporters can provide full service systems to passengers, from doorstep to doorstep, as well as improve crew productivity, asset management and decision-making tools.

Space Launch Capability

The space race has reignited in the past 24 months, due in large part to the evolving reliance on satellites for the valuable data stream that enables Internet access and connectivity. Aerospace companies are learning to partner and compete with high-tech companies, as Internet entrepreneurs have made their way into the industry, bringing with them different processes and cultures. The result is a list of newcomers, ranging from SpaceX and New Zealand-based Rocket Labs to Blue Origin and Virgin Galactic. Note that in all four instances, entrepreneurs made their fortunes in the dot-com industry providing the investment needed to create entirely different business models and approaches to the staid space industry.

Secondarily, rocket propulsion is in transformation. The Russian-made rockets used for years to engine launches have fallen out of favor due to political tensions, and SpaceX has introduced a less costly model. The result is that United Launch Alliance, Aerojet Rocketdyne, Orbital ATK, and ArianeAerospace must line up new capabilities that are less costly. Simultaneously, countries such as Japan, China and India are working to create indigenous capabilities to manufacture spacecraft and launch them. Countries ranging from Ecuador to Liberia have relied on launch companies to give access to their satellites.

This commercial race is balanced by a new-found interest in exploration. The U.S. is no longer the only frontier-buster, with countries such as China planning their own missions.

Satellites

The commercial satellite market has gone from big and expensive to small and cheap. Low Earth orbit CubeSat's, defined as a four-inch cube, holding one quart volume and weighing just under 3 pounds, provide more flexibility due to the lower cost, and with a much shorter lifespan, also make change in technology less disruptive and faster to adopt. This is truly a grass roots change that began at universities where students could complete design, launch and total life service of the satellite in one academic career of four years. Using off-the-shelf parts from commercial electronic stores, students around the globe proved out the manufacture of the "satlets" for under $300.

That was then. Today the CubeSat's are desirable for big players – whether by Amazon in working out the most efficient traffic routing for a delivery truck, to monitoring a geographic area decimated by natural disaster.

The CubeSat market value, which was negligible just two years ago, is expected to be $7.4 billion (in 2014 U.S. dollars) for the period of 2015-2020.

And while providing for commercial use is the target of most CubeSat's, governments are also in line to develop the assets for weather and disaster monitoring, as well as defense. Among the projects is use of an F-15 fighter to reach the edge of the atmosphere to release a flock of CubeSat's to monitor, sense, and communicate to other airborne, naval and land systems.

Autonomous Systems

"Real life is stranger than science fiction" may be a cliché, but it also relates to autonomous systems. While these have been part of the scientific imagination for centuries, autonomous systems today are envisioned for myriad uses, from humanitarian to warfighting. Japan is advancing much of the work, based on the need for health assistants that can monitor, sense, and interact with the nation's aging population.

From the perspective of natural disasters and defense, the notion is that unmanned systems (again, ground, naval or airborne) can interact with one another to accomplish a human-initiated mission. Cost drops by using swarms of smaller unmanned systems that are capable of acting and reacting, cost goes down. In addition, less manpower is needed to operate multiple unmanned systems – a single operator assigns the mission to the swarm, from fighting a fire in a building to precise delivery of medical aid to multiple locations.

Autonomous systems will require breaking new technical ground: translating the vagaries of language into algorithms, ensuring that such non-deterministic systems can be validated and controlled, creating environmental sensors to which the system can respond, and enabling the communication in a low-power/low-bandwidth manner.

In summary, these emerging technologies and evolving capabilities are coupled with a continued drive toward more computing power, materials research and advanced manufacturing techniques. As one aerospace and defense CEO said, "There's no doubt that the Silicon Valley types of companies are phenomenal. But then, too, the A&D industry has done and is doing some phenomenal things."

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At Stanton Chase, our A&D Global Sector Team objective remains unchanged – comprehensively understand our market, its direction, trends, needs and requirements, and provide superior and transformative leadership talent to our client partners that advantage them in this increasingly competitive, complex and ever-evolving global market.