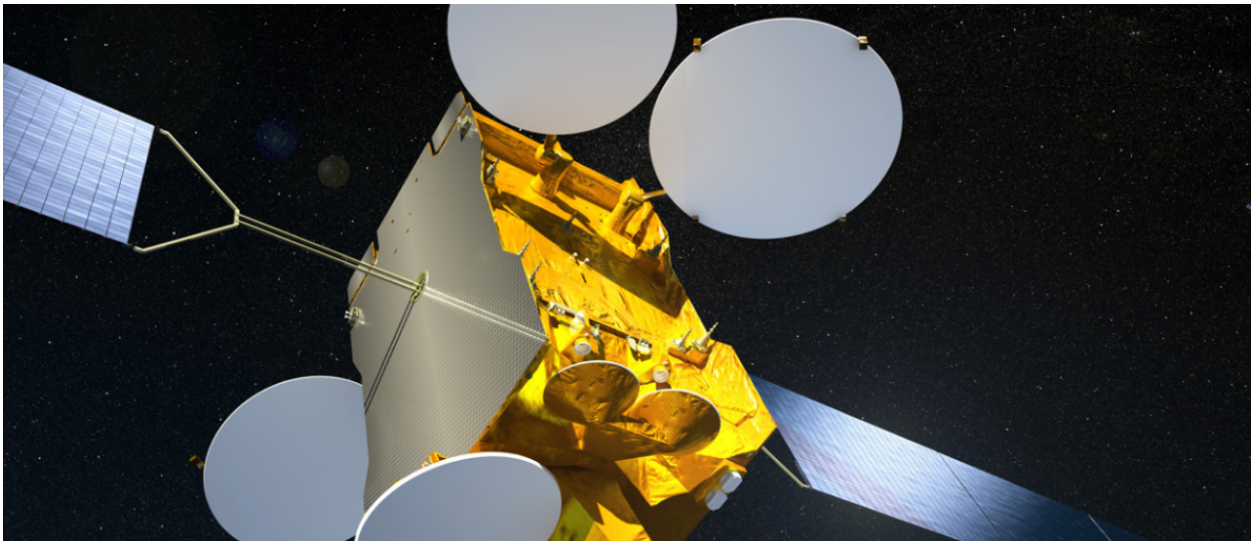
How to Manoeuver in Space



By Peter Dolle

The battle for a bigger share of the commercial satellite market is heating up as demand skyrockets for new multimedia services. Innovative satellite technologies are cutting the cost of market entry. But what else does it take to secure a foothold in space?

Consider the popular devices and applications now driving satellite demand: The Blackberry line, iPhone and countless smartphones, the iPad and numerous competing tablets, iTunes and other media stores, Google/Android, Facebook, Twitter and Skype – and all have new services in the pipeline. High definition TV (HDTV) and two-way video games add to the growing palette of news and entertainment.

Much of the new demand is global and requires a great deal more satellite capacity – more channels, faster processors, broader bandwidth - to handle the surge in visual communications. “So it’s all about bandwidth - getting more capacity for everybody. All of our pictures are getting more megabits,” Evert Dudok, CEO of Astrium Services (previously CEO of Astrium Satellites), told INSEAD Knowledge at the Berlin Air Show in September.

Astrium is Europe’s largest space group, with 18,000 workers and over 5

billion euros in annual sales. It is wholly-owned by EADS, the European Aeronautic Defence and Space Company and offers a wide range of products and services, including launch vehicles and ground operations. It makes the Ariane launch vehicle for the European Space Agency and Arianespace and runs regular re-supply missions to the International Space Station. Serving customer demand for more content on mobile devices is a big focus of the business today.

Dudok sees the market for new communications satellites growing over the next few years, driven by HDTV and mobile services. It has helped to offset cutbacks in military spending. "Since we have a mix of commercial business, which is quite stable, and institutional business…at the moment it's not hurting us very much," says Dudok.

Astrium has also made dozens of satellites for Low Earth Orbit (LEO). It is one of the world's leading manufacturers of weather monitoring and earth-observation satellites, a growing market segment fuelled by global warming, overpopulation and natural disasters, like earthquakes and floods. "We all know Google Earth. We all have looked at our houses, and the earth observation, let's say for making optical pictures and radar pictures," Dudok points out. "Earth observation and meteorology is picking up."

Commercial congestion

LEO is an active and crowded playing field: The world's biggest satphone provider Globalstar has 32 second generation satellites, the all-digital spacecraft replacing startup models, in LEO; and its competitor Iridium operates 66. Other players include Microsat Systems Canada Inc. (MSCI), with 78 active satellites. MSCI hopes to reach "100 percent of the world's population" by 2015.

LEO is also home to the Hubble Space Telescope, numerous weather and earth observation satellites (Google Earth, Bing Maps) and the International Space Station. But there is also a lot of "space junk" up there. The United States Space Command has logged more than 8,500 objects larger than 10 cm at this elevation – including booster rockets, satellite fragments and frozen waste – but unofficial estimates say there are as many as one million objects larger than the size of a bullet. And collisions do occur. In February 2009, a retired Russian satellite slammed into an Iridium spacecraft,

destroying both and spreading debris along the orbital band. The space junk poses a big threat to other craft and increases the cost of shielding satellites. So satellite makers search a new frontier, higher up in the cosmos.

More Launches, Higher Orbits

Over the past 25-years, Astrium and founding companies Aerospatiale, Matra Marconi Space, DaimlerChrysler Aerospace (Dasa) and BAE have put 45 minivan-sized Eurostar satellites in higher Geostationary Earth Orbit (GEO) – far above LEO - and plan to launch another 15 over the coming years. Eurostar is one of the first all-digital satellite systems and carries a majority of European and Middle Eastern telecom, broadcast and broadband signals. According to Dudok, “most industry growth has been in the telecommunications sector where all the digital broadcasters have been going into high definition television and where European suppliers are very competitive. It is a really strong market serving new and improved applications.”

There are some 800 digital HDTV channels currently beaming news and entertainment to viewers in North America and Europe, nearly twice as many as in 2005. And network operators are betting on even more channels and higher picture quality. Credit Suisse sector analysts are forecasting five Ultra HD channels in 2013, and 135 by the end of 2017. Ultra HD would have twice the definition of current HDTV, creating even more opportunities for satellite providers.

New projects funded by the EU are giving a boost to Astrium’s bottom line. The Galileo navigation system is a 20 billion euro project and is intended to reduce Europe’s dependence on American, Russian and Chinese global positioning services. Astrium’s subsidiary, Surrey Satellite Technology (SSTL), is a pioneer in microsatellites – or smallsats – and is producing the navigation payloads for 22 operational spacecraft for the Galileo navigation system in higher Medium Earth Orbit. “The costs, after having some hiccups with development, will be in line with expectations,” Dudok insists. The full, 30 satellite constellation is scheduled to be completed in 2014.

Innovation and flexibility

Astrium Satellites has a growing list of competitors, including Thales Alenia Space, Boeing, and Space Systems/Loral. It is steering clear of the competition in LEO by launching a new line of powerful satellites further out in Geostationary Earth Orbit that will communicate with lower spacecraft and ground stations. To reach higher orbits and save on fuel costs, Astrium is relying on the power of the sun and new technologies, explains Dudok: “You’ll be able to get into your final orbit with electrical thrusters and they don’t need any fuel - they just look at the sun…It takes about three to six months for you to get to your final position, but you get there, and you save a lot of launch costs and a lot of money.”

Dudok puts a great emphasis on innovation and flexibility. “Satellites live 15 years and how do you know what you need in 15 years from now because it’s less the building time of three years before you have it in orbit,” Dudok insists. “So all you do on board, how can you do that more flexibly, so you can adapt to the customers’ needs by the time this thing is up and years after this thing has launched?”

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