



# A new 'Star Wars'?

Satellite Evolution Asia (SEA) presents an overview of the 'US National Space Policy' published on 6 October 2006.

**Where is the world's battleground** of the future? Iraq? The Middle East? Korea? While each one of these answers might have some logic to it, they are all fundamentally wrong: the battleground of the future is space. But, before the reader goes off and starts imagining a sci-fi scenario with spaceships engaged in laser-based mortal duels, it is necessary to qualify this statement: space will soon become the environment through which military powers are able to achieve supremacy on the ground, over the sea and in the air.

There are increasingly strong signs, in fact, that military powers from around the globe are looking at space as a strategic resource for their security.

In an overlooked document titled 'US National Space Policy', published by the Office of Science and Technology Policy and signed by President George Bush, it is stated that the US national security is critically dependent upon space capabilities, and that this dependence will grow in the future. This is far from a being a mere expression of wish. In the same ten-page paper, in fact, it is also stated that: "The US will preserve its rights,

capabilities, and freedom of action in space... and deny, if necessary, adversaries the use of space capabilities hostile to US national interests."

Interestingly, the document rejects any proposals to ban space weapons, although the White House has been quick to point out that there is a substantial difference between implementing defence strategies from space and the weaponisation of space. However, while the White House has said that the policy does not call for the development or deployment of weapons in space, some critics have warned that by refusing to enter into negotiations on space weaponry, the US is likely to fuel international suspicions that it will develop such weapons.

But while headline-grabbing, the issue of the weaponisation of space somehow misses the point. The US clearly considers space resources, including spy and other communication satellites, as essential elements in the achievement of a national security objective.

It is worthwhile reiterating this point: even communications satellite resources are seen as strategic assets that could one day be

denied to hostile forces.

This document, which is the first revision in US space policy for ten years, is the most important statement of space policy from anywhere in the world since Ronald Reagan's Strategic Defence Initiative, or 'Star Wars' programme as it came to be known, which proposed a defence shield using laser or particle beam technology to 'intercept and destroy' incoming nuclear missiles. It might not appear to be as grand and ambitious as the first Star Wars programme, but in many ways the ramifications of Bush's 'US National Space Policy' go much further than Reagan's 'Star Wars'.

## A new US space policy

The President authorised a new national space policy on 31 August 2006 that establishes overarching national policy that governs the conduct of US space activities. This policy supersedes Presidential Decision Directive/NSC-49/NSTC-8, National Space Policy, dated 14 September 1996.

## Background

For five decades, the US has led the world



in space exploration and use and has developed a solid civil, commercial, and national security space foundation. Space activities have improved life in the US and around the world, enhancing security, protecting lives and the environment, speeding information flow, serving as an engine for economic growth, and revolutionizing the way people view their place in the world and the cosmos.

Space has become a place that is increasingly used by a host of nations, consortia, businesses, and entrepreneurs.

In this new century, those who effectively utilize space will enjoy added prosperity and security and will hold a substantial advantage over those who do not. Freedom of action in space is as important to the US as air power and sea power. In order to increase knowledge, discovery, economic prosperity, and to enhance the national security, the US must have robust, effective, and efficient space capabilities.

**Principles**

The conduct of US space programs and activities shall be a top priority, guided by the following principles:

- The US is committed to the exploration and use of outer space by all nations for peaceful purposes, and for the benefit of all humanity. Consistent with this principle, "peaceful purposes" allow US defense and intelligence-related activities in pursuit of national interests;
- The US rejects any claims to sovereignty by any nation over outer space or celestial bodies, or any portion thereof, and rejects any limitations on the fundamental right of the US to operate in and acquire data from space;
- The US will seek to cooperate with other nations in the peaceful use of outer space to extend the benefits of space, enhance space exploration, and to protect and promote freedom around the world;
- The US considers space systems to have the rights of passage through and operations in space without interference. Consistent with this principle, the US will view purposeful interference with its space systems as an infringement on its rights;
- The US considers space capabilities - including the ground and space

- segments and supporting links - vital to its national interests. Consistent with this policy, the US will: preserve its rights, capabilities, and freedom of action in space; dissuade or deter others from either impeding those rights or developing capabilities intended to do so; take those actions necessary to protect its space capabilities; respond to interference; and deny, if necessary, adversaries the use of space capabilities hostile to US national interests;
- The US will oppose the development of new legal regimes or other restrictions that seek to prohibit or limit US access to or use of space. Proposed arms control agreements or restrictions must not impair the rights of the US to conduct research, development, testing, and operations or other activities in space for US national interests; and
- The US is committed to encouraging and facilitating a growing and entrepreneurial US commercial space sector. Toward that end, the US Government will use US commercial space capabilities to the maximum practical extent, consistent with national security. ■

# A new lease of life

As Globalstar signs a contract with Alcatel Alenia Space for a second-generation Low Earth Orbit (LEO) satellite constellation, Global Mobile Personal Communications Systems (GMPCS) come back into limelight.

**Globalstar, Inc., a leading provider** of mobile satellite voice and data services to businesses, government and individuals, and Alcatel Alenia Space, the European leader for satellite systems, have announced that the two companies have signed a contract under which Alcatel Alenia Space will design, manufacture and deliver the Globalstar second-generation constellation of 48 Low Earth Orbit (LEO) satellites.

The total contract value is approximately Euro 661 million. Globalstar will compensate Alcatel Alenia Space approximately Euro 620 million for the design, development and manufacture of 48 new satellites and approximately Euro 41 million for launch and mission operations support services. The contract value could be reduced by up to Euro 28 million if Globalstar chooses to accelerate delivery of the constellation.

The satellites are being designed with a life expectancy of 15 years, which is signifi-

cantly longer than the design life of Globalstar's first generation constellation. Globalstar anticipates the increased satellite lifespan will provide the Company with a second-generation space segment through at least 2025.

Jay Monroe, Chairman and Chief Executive Officer (CEO) of Globalstar, Inc., and Pascale Sourisse, President and CEO of Alcatel Alenia Space, signed the new agreement during the SATCON Satellite Conference and Expo in New York, NY.

"We are extremely pleased with this agreement, which not only secures the Globalstar space segment through at least 2025, but also takes us another step to offering a host of exciting future services while assisting us in our strategy to maximise our global spectrum opportunity," said Jay Monroe. Monroe added: "We are thrilled to be working with Alcatel Alenia Space again on something so vital to the long term suc-

cess of Globalstar and look forward to a mutually beneficial relationship as we move through the next decade and beyond."

Pascale Sourisse commented: "This contract demonstrates the confidence and trust that Globalstar places in our company. It highlights Alcatel Alenia Space's strong competencies and resources to design, produce and assemble Globalstar's whole satellite constellation as well as our expertise in providing competitive satellite solutions." She added: "This contract confirms Alcatel Alenia Space's world-wide leadership in telecommunications satellite orders for the year 2006."

The agreement is subject to the establishment of an escrow account, which will require the consent of Globalstar's lenders. Globalstar and Alcatel Alenia Space also agreed that US\$190 million of the contract payments are to be denominated in dollars with future possible bonus payments of up to \$75 million being paid to Alcatel Alenia Space pending both companies meeting certain criteria through 2014.

The second-generation Globalstar constellation will integrate with and eventually replace the current Globalstar space segment, which provides satellite voice and data services to over 120 countries on six continents. In addition to providing backwards compatibility with the company's current products and services, the Company expects the new satellites to be engineered to provide greater peak demand call capacity, improved data speeds for file transfer and video



applications, and improved network management for integrated ATC terrestrial applications, video streaming and broad band data service. The new constellation is also intended to be capable of supporting a wide variety of potential handset services such as push-to-talk and multi-cast networking.

As a contractor for the first generation Globalstar satellites, Alcatel Alenia Space was responsible for the satellite payloads and structures, as well as satellite integration. The company was also responsible for manufacturing and installing the Globalstar ground station antenna terminals.

As with the original Globalstar LEO constellation, the second-generation satellites are designed to provide satellite coverage to all but the polar regions of the earth's surface. "A second-generation LEO constellation has always been a preferred space segment choice because it provides us with the

flexibility to offer backwards compatibility to our present customer base while we augment the current satellites with new ones," said Monroe. "A LEO constellation also continues to provide Globalstar with the capability to offer superior call quality and features such as path diversity, which leads to fewer dropped calls and virtually no signal latency or perceptible voice delay."

This agreement will involve Alcatel Alenia Space's production sites in France, Italy, Spain, and Belgium. Globalstar's second-generation satellites will be assembled and integrated in the Alcatel Alenia Space facility in Rome (Italy). The payloads will be provided by the company's facility in Toulouse (France) with the structures as well as the thermal subsystems being provided by the facility in Cannes (France). Over the next three years, Globalstar will also send selected engineers and contractors to work with

Alcatel Alenia Space in Europe.

Globalstar has commenced launch contract discussions with a number of launch providers and expects to finalise its launch plans over the next 12 months. The contract with Alcatel Alenia Space calls for Globalstar to begin taking deliveries of the new satellites in the summer of 2009 with launches beginning shortly thereafter.

In order to supplement its current constellation, Globalstar continues with preparations to launch eight spare first-generation satellites, using two Soyuz launch vehicles, in the first half of 2007. Launch provider Starsem has set two Globalstar launch windows, the first of which begins on 26 March 2007 and the second of which commences on 14 May.

Alcatel Alenia Space currently is conducting pre-launch preparations on the eight satellites at its facility in Rome, Italy. ■

# 13 million strong

The satellite radio broadcasting market in the US is proving to be a resounding success story.

**According to company sources**, Delphi Corp. has just sold its thirteen-millionth satellite radio receiver, setting a new milestone.

As satellite radio service providers revolutionise the US radio landscape, Delphi has steadily ridden the wave by providing a variety of original equipment and retail receivers. The satellite radio market now boasts more than 13 million subscribers.

## Leader

Delphi is the leader in the OE satellite radio market and produces receivers for more than ten new vehicle manufacturers. It also sells a variety of models as add-on accessories for multiple uses at home and on the road.

Among consumers, the Delphi name has become synonymous with satellite radio because of its Delphi SKYFi, MyFi and ROADY family of portable satellite radio receivers. In fact three out of four users listen to satellite radio on Delphi hardware.

"Satellite radio is changing the paradigm of radio in the US," said Ken Erickson, Delphi Electronics & Safety General Director of the Entertainment & Communications product business unit. "Satellite radio has not only taken a long-time analogue medium and made it digital, but it has also opened a new world of offerings to customers by providing more than a 100 additional channels of programming."

Satellite radio is the radio medium that offers customers up to 170 channels of pro-

gramming in addition to the traditional AM/FM radio offerings in OEM applications. Satellite radio programming is beamed from satellites and includes a very wide variety of music, talk, sports, news, traffic, weather and entertainment coast-to-coast in the US without fading.

"Consumers now demand this level of flexibility and ownership, fuelled even more today by their ability to personalise their listening experience through MP3 players," said Max Rogers, Delphi consumer electronics executive. "Satellite radio's 170 channels of individual programming offers the same type of tailored listening experience with no downloading hassles."

Many of the offerings are commercial-free and categorised by chronological time periods music genre and other defined segments that add another dimension to satellite radio that is not offered by traditional AM/FM radio.

"Satellite radio has all of the right features and benefits to keep moving up the growth scale," said Erickson. "We are continuing to develop technologies to make it more attractive. Several new car manufacturers have already announced that they will include the satellite radio feature on all of their vehicles."

In addition to adding loads of new programming to the vehicle, Delphi has developed a digital data decoder that works in conjunction with the Delphi satellite receiver

to enable real-time traffic services in North America.

Vehicles with a Delphi satellite receiver equipped with this data port and a navigation system can receive up-to-date traffic while playing satellite radio.

The system is also capable of providing real-time weather, sports scores and stock updates.

## Long history

Delphi's long history with satellite radio receivers includes celebrating sales milestones for 2.5 millionth in May 2004 and 5 million units in April 2005.

In 2001, Delphi helped launch satellite radio with the SKYFi. Delphi went on to introduce the first satellite radio boom box, first home signal repeater and even the first personal and portable satellite radio receiver, the MyFi.

Its most recent first, SKYFi3, is the first microSD compatible MP3 satellite radio with pause-replay just hit the stores for the holiday season.

Satellite radio is expanding to other locations around the world. Delphi manufactures hardware for use by satellite radio subscribers in Canada and has announced its intentions to help launch satellite radio in Europe.

In the last decade alone, Delphi has pioneered or led the introduction of multi-speaker, multi-amp premium audio, CD playbacks, DVD rear seat video, MP3 playbacks, advanced TV reception systems and satellite radio into the market. Delphi supplies both OEM and retail hardware for both domestic satellite radio providers.

Since beginning production in 1936, Delphi has manufactured more than 260 million radio systems and introduced an array of new technologies. ■



# LeoTerra enters into unique relationship

LeoTerra LLC, an emerging Low Earth Orbit (LEO) satellite communications company and TerreStar Networks Inc., a subsidiary of Motient Corporation (MNCP), announced their intent to explore the feasibility of providing interoperable, advanced global mobile broadband communication services from their respective LEO and Geostationary-based (GEO) satellite networks.

**The interoperability of these LEO/GEO** satellite communication systems would provide global mobile broadband communications to support public safety and emergency providers as well as offer rural connectivity and wholesale wireless network extension services to retail operators.

Over the past several months, LeoTerra and TerreStar have been working together to develop a strategy to provide previously unavailable products and services over both networks using a common terminal or handset device. LeoTerra and TerreStar have asked Surrey Satellite Technology Ltd (SSTL), LeoTerra's satellite design partner, to study these advanced services.

"Working with our leading-edge small satellite builder and TerreStar, we hope to design an innovative platform to provide truly mobile broadband solutions across the globe," said David Marshack, CEO of LeoTerra LLC.

"Emerging customer requirements are compelling us to explore this opportunity," said Robert H. Brumley, President and CEO of TerreStar Networks Inc. "By combining our unique capabilities with LeoTerra's and SSTL we hope to provide our government and commercial partner's access to IP-based, global mobile broadband access anywhere."

Based on a platform designed by Surrey Satellite Technology Ltd., a leader in the design, manufacture and deployment of LEO satellites, LeoTerra's network will look to employ small, high-power satellites that will allow on-demand constellation growth while providing new, higher levels of service. By coupling LeoTerra's scalable design with the flexibility of TerreStar's all-IP, integrated GEO satellite/terrestrial network, the team hopes to provide users with previously unavailable coverage and adaptability. TerreStar plans to launch the largest, most advanced commercial communications satellite ever deployed.

"SSTL is very pleased to have been invited to participate in exploring the feasibility of providing this innovative service. We expect that SSTL's unparalleled combination of value-for-money and extensive experience

in orbit - gained through 26 satellite missions - will provide the team with a leading edge capability," said Sir Martin Sweeting OBE FRS, Director of the Surrey Space Centre and CEO of Surrey Satellite Technology Ltd.

Over the coming months the team intends to work with vendor partners, government agencies and commercial enterprises to develop a suite of comprehensive, leading-edge products and services. ■

## A satellite-based cellular backhaul Link... or bust?

According to a new report from NSR, many cellular and mobile operators have been quietly claiming, all in their different corners of the world, that there is not enough backhaul bandwidth out there to satisfy their hungry users.

**The build-out of mobile telephony** networks is going strong worldwide, and bandwidth is badly needed to sustain heavier traffic, they say, not just for well-wishers during their holiday season. What does this mean for the satellite industry? Most cellular operators are expected to issue more RFPs in the coming year to obtain additional backhaul bandwidth to sustain traffic increases, for their current network upgrades, and to satisfy tight deployment schedules for new and expanding networks in developing regions.

For North America and Europe, basic 2G networks are pretty much covered in terms of backhaul, using either landlines or wireless technologies. However, it is still work in progress in the Middle East and Africa, Asia and many parts of Latin America. There, backhauling cellular telephony, which is leaping landline voice services, is becoming a

headache for mobile operators who struggle to meet deployment deadlines, surges in text messaging and new data services, while keeping basic voice services alive.

This is where satellite solutions play a key role, and the cellular backhaul market holds a promising growth potential for the industry. In developing countries where the time to market is a significant competitive advantage, the operator who first backhauls their network with a satellite-based solution gains quick market share and decreases the duration of their deployment. The main focus for players then is to carry voice and data without compromising quality of current services delivery while helping growth and bringing operating costs down. ■

*The full report is available from NSR at [www.nsr.com](http://www.nsr.com).*