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UAE turns the spotlight on space revolution

By Reena Amos Dyes on Thursday, July 24, 2008

Space has always fascinated the human race, stimulating both our instinct to explore and our sense of wonder.

In the future, mankind will no doubt push back the frontiers and perhaps explore new horizons in the Universe. But in today's world space and satellite-based services and applications are vital for economic as well as strategic development globally and represent a market that is expected to be worth $1 trillion (Dh3.67trn) by 2020.

The UAE's space-related activities have huge potential for growth. And the country hopes that, with its recent investment of $1.7 billion in a telecommunication satellite system, the planned launch of its first remote sensing satellite and its focus on the private spaceflight industry, it will become a regional focal point for the industry.

Meanwhile, the UAE is undergoing a revolution in the aviation branch of the aerospace sector. The Abu Dhabi and Dubai Governments are investing heavily in aeronautics and supporting infrastructure, as are many private companies.

It is against this background that the Global Space Technology Forum will be held from November 16 to 18 at the Abu Dhabi National Exhibition Centre.

Emirates Business spoke to the organisers and experts to find out more about the forum, how much the global space industry is worth, the commercial uses of space technology and the UAE's space ambitions.

"This first-of-a-kind event will allow suppliers to meet key players from the regional space industry," said Nick Webb, Director of Streamline Marketing Group, which is organising the conference.

"It will be a dedicated commercial forum for worldwide space system providers from all sectors including launchers, technology transfer, commercial applications and satellite manufacturers.

"Participants will include space organisations, military and civil departments, private corporations, investors, educators, companies interested in space-based applications, consultants and contractors working on emerging regional space programmes."

The forum will showcase space technology applications including the

latest developments in launch systems, micro-satellites, low cost access technologies, remote sensing, earth imaging, satellite communications, disaster recovery, meteorology, defence and tourism. "We have received confirmations and expressions of interests from major space regions such as North America, Europe, India and the Far East," added Webb.

"To ensure a truly global representation we are collaborating with leading aerospace and space organisations like the International Space University, the International Society for Photogrammetry and Remote Sensing, the Farnborough Aerospace Consortium, the UAE Space Reconnaissance Centre and the Emirates Centre for Advanced Science and Technology."

In addition to the forum there will be an international three-day conference on space technology commercialisation, which will outline international policy relating to future projects in space, new technology and research efforts making space access easy and affordable for travellers.

The range of commercial applications that involve the use of space technologies is extensive, encompassing satellite communications, earth observation and navigation. Examples include synchronising financial transactions, improving agriculture yields and reducing chemical use, surveying with pinpoint accuracy and governmental use of data for decision-making and secure communication.

John Gallimore, Director, T&M Consulting, and Head of Space at FAC United Kingdom, said: "Satellites provide broadcast television, mobile communications, news gathering and dissemination services and global positioning signals that are used for a range of navigation services.

"They enable remote monitoring of the earth, providing vital information concerning the environment and our climate.

"Space-based solutions rarely operate in isolation. They are usually part of an overall solution and as such are present in most things we do."

Abdul Ismail, owner and chief engineer of Interplanetary Expeditions, said: "There are effectively six independent space applications. Out of these telecommunications, navigation, remote sensing – also known as earth observation – and graphical information systems (GIS) afford a return on investment.

"The other two space applications are meteorology and science. While telecommunications, navigation, remote sensing, meteorology and science all use project-specific satellite payloads, GIS is an application that is only possible with a combination of telecommunications, navigation and remote sensing satellite systems. GIS is not supplied by a satellite on its own.

"Satellite manufacture – which includes the spacecraft bus, spacecraft payload and control algorithms, launch vehicle procurement, insurance and ground station establishment/training – are also profit-making but focus on the infrastructure required to offer the applications mentioned above."

Ismail said the space sector was valued at around $180bn based on 2006 figures. This equals 36 per cent of the total aerospace industry. "Some sources place the value of the aviation industry at $450bn in 2006," he added. "Out of this, 25 per cent is pegged to be aviation fuel.

"At seven per cent international government space budgets are pegged at $12bn, commercial infrastructure [satellite manufacturing, launch] makes up 16 per cent at $29bn, commercial institutional infrastructure [insurance, research and development] one per cent at $1bn, commercial satellite services 45 per cent at $80bn and private space flights [tourism] less than one per cent at $.03bn. Out of this the US Government space budgets is 32 per cent at $57bn.

"What is not often considered and omitted here is the financial figure that results from spin-offs from the technological advancements from

the space programme." Gallimore added: "Space and satellite-based services and applications are key to strategic and economic development across the world and represent a market that is forecast to be worth $1trn by 2020 from the $115bn today."

The industry experts feel that though the UAE's space industry is still in its nascent stages there have been a number of encouraging developments.

Webb said: "Space, until recently, has been on the back-burner.

But with the recent investment of $1.7bn in a telecom satellite system, the planned launch of the first remote sensing satellite and many private companies in the UAE placing a great deal of focus on private spaceflight, the country is expected to become a regional focal point of space activities."

Gallimore said: "Yahsat, the UAE's first nationally-owned satellite operator and a wholly-owned subsidiary of Mubadala, is approaching the financial market to raise $1.2bn to finance its satellite communications system. Other organisations such as the UAE Space Reconnaissance centre are also involved in the space industry."

Ismail said the Emirates Institution for Advanced Sciences and Technology was leading the way with its South Korean-built DubaiSat-1, which will be launched on board a Russian rocket within the next year.

The Space Investment Company has signed an agreement to establish three space camps in the Middle East and North Africa region, including one in Dubai. And a number of organisations are offering graphical information systems and remote sensing services throughout the UAE.

Ismail added: "The UAE Space Reconnaissance Center is part of the Air Force and is a ground station that receives high resolution images from foreign satellites. It is working with other GCC countries on a potential high resolution remote sensing satellite.

"Thuraya currently has three telecom satellites. The latest was launched earlier this year and Thuraya quoted a net profit of $26m in 2004 and $80m in 2005.

"Yahsat recently placed an order with an EADS-led consortium to supply it with two telecom satellites with a total project cost of $1.7bn. But it's hard to determine the total value of space-related activities in the UAE because an in-depth research has yet to be commissioned."

Ismail said the government-led organisations in Abu Dhabi and Dubai with aerospace components tended to focus on aeronautics and aviation even though the space sector was valued at 36 per cent of the total aerospace industry.

By 2020 the space component of the industry is projected to over take the aviation sector in terms of annual turnover.

The aviation and space sectors have followed parallel paths since the latter was spawned in the 1950s.

There is a lot of synergy between the two and technological advancement in one often benefits the other. This explains why companies such as Boeing, Lockheed Martin, EADS and Thales Alenia Space all have aviation and space segments.

Technological development in the two sectors is effectively the same and follows similar assembly, integration and verification (AIV) processes.

The only difference is in the verification process. Space technology has to withstand a larger level of tolerance than military and civil aviation so the verification process is much more intensive. Therefore any engineer trained in the AIV processes associated with spacecraft technology will have a greater capacity to be able to contribute to other AIV processes in the aviation, automobile,

electronics and materials sector.

"Both Mubadala and Dubai Aerospace Enterprise have maintenance, repair and overhaul facilities and Mubadala recently signed an agreement with EADS to build aircraft parts in the UAE," said Ismail.

"The next logical step will be the assembly/integration of aircraft and this will eventually lead to research and development that must include knowledge and facilities to conduct verification techniques.

"Therefore, it is only logical that the UAE embraces space technology since it falls into line with their existing aerospace strategies."