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SPACE: THE NEW FRONTIER

Why the UAE should build a spaceport.

OVER THE PAST THREE decades the UAE has successfully diversified its economy away from dependence on oil and gas production and exports towards trade, services and industry. Investment in infrastructure, transport and logistics has enabled this structural shift in the UAE's economy to become a regionally and internationally connected business, tourism and trade hub for the GCC and the Middle East. As the UAE prepares to host Dubai Expo 2020, it needs to prepare for a new phase of growth and development based on investing in new technologies and sectors that will embody innovation. In particular, this article proposes that the UAE should develop and implement a Space Policy and undertake investments to become a significant player in the global space economy.

STAR TREK: THE GLOBAL SPACE ECONOMY IS GROWING

The global space economy grew by four per cent in 2013, reaching a new record of \$314.2 billion, according to the Space Foundation, Space Report 2014. The majority of this growth, in absolute terms and as a percentage, took place on the commercial side of the space economy. Commercial products, services, infrastructure, and support industries add up to slightly more than three-quarters of the space economy, with government spending (24 per cent of total) constituting the remainder.

Space assets and infrastructure (land and space based) have also been building up with a growing number of satellites being launched. According to *satellitedebris.net*, there are some 7,090 spacecraft deployed,

with 5,201 in low earth orbit (LEO), 875 Geostationary and 380 Medium Earth Orbit (MEO), the remainder are military and other. Russia and the US account for most of the spacecraft: 49 per cent and 30 per cent respectively.

SPACE ECONOMY TRENDS

Three major trends are unfolding. One, the globalisation of the space sector is accelerating. More than 50 countries have satellites in orbit (including the UAE with seven and Saudi with 13) and more are joining.

Two, is the growing 'privatisation' of space. The space industry is becoming more commercial, with greater investment by the private sector (e.g. Elon Musk of SpaceX and Richard Branson with Virgin Galactic). Downward pressure on launch prices and cost-saving advances in satellite technology have combined to open the door for small and midsize space companies to enter the market, providing new niche services and solutions to a growing number of customers. These companies are well-positioned to serve the increasing demand for bandwidth and services across regions that expect to see large population growth, such as Asia, Africa, and the Middle East.

Three, there is a growing 'democratisation' of the space sector. Individuals can now buy microsatellites (masses below 91kgs.) and nanosatellites online. Microsatellites constituted more than half of the 197 satellites launched in 2013. Rockets are being launched carrying batches of 30 or more nanosatellites. Space technology will become increasingly ubiquitous, like the internet.

SPACE IS THE NEXT FRONTIER FOR THE UAE

Why is all this relevant to the UAE? The UAE's massive investments in infrastructure and logistics have turned it into a regional and global trade, tourism and business hub. Dubai's ports, airports, land-sea-air transport companies have transformed it into an Aerotropolis, a city whose activities are increasingly linked to its airports. Integrated transport systems and efficient logistics facilitate trade in goods and services and enable mobility and international connectedness. While these are important achievements, the UAE needs to invest into the new frontier of space, commercial space transportation and the commercial space economy in order to remain internationally competitive and relevant.

The coming decades will witness a growth in space activities and notably the development of the commercial space economy. The space economy includes many mature downstream activities that have reached mass markets and include information technology products and services, such as satellite television and GPS receivers. The geo-positioning market, is a rapidly growing new segment building on satellite capacities (including ship, aircraft, vehicle and individual navigation and positioning). Advances in smartphones and other mobile products, all offer geo-positioning capabilities.

SPACE TECHNOLOGY IS INCREASINGLY INTEGRATED INTO EARTHLY ACTIVITIES

Satellite technology is increasingly integrated in land, sea and air navigation,

media and telecommunications (the main commercial space market), meteorology, remote sensing and earth observation, according to the 'Why Satellites Matter' study by Booz & Co. It has given also rise to a growing stream of applications in areas such as air traffic control, transport, natural resource management, agriculture, environmental and climate change monitoring, media, entertainment and so on, which in turn are creating new downstream uses and new markets. Space is increasingly an integral part of earth-based activities and an important potential source of economic growth, innovation and competitive development.

THE UAE SHOULD BUILD A SPACEPORT

This op-ed proposes that the UAE embrace the commercial space economy as part of its economic development strategy, develop a space policy and build a UAE Spaceport as part of the buildup to Dubai Expo 2020. The UAE Spaceport or Cosmodrome would be a site for the servicing and launch of space craft, including rockets, satellites, probes and other space craft or objects, including the UAE's Mars 2021 probe. The UAE Spaceport would extend and complement the Dubai Aerotropolis initiative and would focus on commercial space activities that currently include: the satellite industry (upstream and downstream), space travel and tourism, and microgravity manufacturing. The UAE could also develop and become a leader in the nascent sector of commercial space economy financing: Providing finance for satellites, space launches and space related activities.

The UAE has initiated its entry into the space economy through Mubadala's Yahsat satellites, while Aabar is investing in Virgin Galactic. Recently, the UAE set-up a space agency and started co-operation discussions with Russia, India and other countries. It will be launching an unmanned mission to Mars by 2021. The plans indicate that the UAE will develop its own spacecraft building and perhaps also launching capabilities. These can be part of the UAE Spaceport development.

For the UAE to develop its space

economy, it also requires an institutional and legal framework to organise and enable commercial activities. The UAE is a signatory of the UN's Convention on the Registration of Objects Launched into Outer Space, but has not yet signed up to the Space Protocol (Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Space Assets) or the Cape Town Convention on International Interests in Mobile Equipment. The Cape Town Convention is an international treaty intended to standardise transactions involving movable property. The Space Protocol is an instrument designed to facilitate asset-based financing for the acquisition and use of space assets, such as satellites and transponders that move beyond frontiers. Signing these international protocols and conventions would be a foundation for the UAE to become a space economy financier.

A spaceport would be transformational for the UAE, the GCC and the wider region by enabling these countries and their peoples to benefit from new job creation along with linkages to the space economy and its activities.

BUILD THE UAE SPACEPORT TO MAKE DUBAI EXPO 2020 A TRANSFORMATIONAL EVENT

Investments in space programmes are often justified by the scientific, technological, and industrial and security capabilities they bring. But these investments also provide economic returns such as new jobs and industrial activity, and bring cost efficiencies and productivity gains to other fields (e.g. weather forecasting, telemedicine, climate and environmental monitoring

and agriculture forecasts). In the majority of countries, space programmes are contracted out to national industry. For the UAE, the initial stage would have to involve partnerships and joint-ventures with international space industry players to initiate the various projects. As noted above, this has started.

The potential for the UAE entering the global space economy is vast and complements existing capacity. Commercial space transportation and enabled industries include launch vehicle manufacturing and services, satellite manufacturing, ground equipment manufacturing, satellite services, satellite remote sensing, and distribution industries. The UAE can develop space transportation: The movement of objects, such as satellites and vehicles carrying cargo, scientific payloads, or passengers, to, from, or in space. A UAE commercial spaceport would support those commercial launch activities.

By establishing a UAE Spaceport, Dubai Expo would be the first World Expo to initiate and showcase a spaceport, displaying a vision of the economies of the future, and kick starting new activities and industries directly involved or linked to the commercial space economy.

A spaceport would be transformational for the UAE, the GCC and the wider region by enabling these countries and their peoples to benefit from new job creation along with linkages to the space economy and its activities, varying from distance learning and telemedicine to e-commerce and entertainment.

The UAE and Dubai have become regional and international trade, business and tourism hubs based on their efficient infrastructure and logistics investments and location. Dubai Expo 2020 provides the occasion for developing a longer-term vision of the UAE economy. In the coming decades, the new frontier will be space. The UAE should develop a comprehensive space policy in order to integrate its economy into the growing global commercial space economy. A UAE Spaceport should be established by 2020 to launch the UAE Mars probe and signal its entry into the global space economy. 