



WATCH THIS SPACE

Until recently, space travel was the bailiwick of the public sector. However high costs and a shifting of priorities for Western governments largely put the desire for intergalactic travel into hibernation. Enter the latest advances in technology, a drop in costs, and high-profile billionaires who are reinvigorating space travel. And there is more to come

By **CHRISTINE GROVÉ**
Illustration by ANJANA JAIN

Space technology investment? A futuristic notion, exclusively reserved for the Bransons of the world? Not anymore. Space is emerging as the new frontier for private investors the world over, including a growing number from the MENA region. For as little as \$25,000, individuals can get in on the intergalactic action. VC and angel investments into the 'space sector' are picking up the pace in the US, Europe, and even the GCC.

FORMIDABLE NAMES and groups are now looking to fund entrepreneurial projects relating not only to satellite communication and network technology, but space travel as well.

"We've seen a lot and still will see a lot of business plans related to space-enabled businesses, space-related businesses, and core space businesses from all over the world," says Joerg Kreisel, CEO of JKIC, an independent space finance advisory firm in Germany.

"I think that the mechanisms of finance and the types of finance...the approach to raising money...are not yet fully understood in this industry, there's still a bit to learn. But we see a lot of exciting things happening," he adds, speaking at the Global Space Congress in Abu Dhabi in February.

According to Kreisel, it's not that there hasn't been any investment in the past; over the last 17 years, there has been a lot of activity in funding space and space technology. "However, what we're lacking is visible high-return exits. So if we could achieve that, it could accelerate the process."

It's evident that the industry is not only breaking out but blasting forward.

Just last month, Elon Musk's SpaceX launched and successfully landed its third Falcon 9 rocket, using NASA's historic pad 39A at the Kennedy Space Center, which once sent Apollo moon ships and space shuttles on their way.

◆ OF CITIES ON MARS

Musk, who is famous for his plan to colonize Mars, isn't the only one with his eye on the red planet. Last month, the UAE announced that they want to be the first to build a mini-city on Mars by the year 2117.

The Emirates Mars Mission will kick off with the Hope spacecraft, the launch



⊕ **REACHING FOR THE STARS**
Forget supercars, yachts and festooned mansions. Among the world's tech aristocracy, space exploration is now the ultimate status symbol. (Above: Elon Musk; Founder of SpaceX. Left: Richard Branson; founder of Virgin Galactic, and George Whitesides, CEO at Virgin Galactic.)

EARTH TO MARS

Distance
The distance between the two planets is constantly changing as they travel around the sun. But the average distance is 225 million km.

Time
The fastest spacecraft launched from Earth was NASA's New Horizons mission, which is en route to Pluto. The time it would take to get to Mars on average would be 3,888 hours (162 days).

Speed
Light travels at approximately 1299,792 km per second. A light shining from the surface of Mars would take on average just over 12.5 minutes to reach Earth.



THE CHEAPEST RIDE?

George Whitesides, CEO of Virgin Galactic, says the current price that the Russians charge NASA for a ride on the Soyuz, is around \$75 million. Virgin Galactic's price is \$250,000, which is significantly less. "I think it's the most exciting time in space since maybe the Apollo era. And my hope is that what we can drive a lot of benefit to people on Earth, whether that's flying through space, or weather prediction or increased communications or navigation. All these different things we get from the space industry. The lower the cost of space access gets, the more we can do in space and so the more people on Earth can benefit," he says.

of which is planned for 2020 and which is set to arrive on Mars in 2021, coinciding with the 50th anniversary of the founding of the UAE.

And then as part of its 100-year national program, the country is getting ready to “prepare national cadres that can achieve scientific breakthroughs to facilitate the transport of people to the Red Planet over the next decades.”

This push could trigger a significant amount of investment into the space sector at a regional level too. The UAE’s investments in space technology has already exceeded \$5.4 billion, including local companies who are now among major international players.

Kreisel, who was a special adviser to the European Space Agency (ESA) for 15 years, specifically on commercialization of space and investment, believes that the UAE is in a unique position having jump-started a space agency in a very young space sector.

“I believe that the country can pioneer new developments, new funds, new investment vehicles, be it in the country or all over the world,” he muses.

FUNDING THE STARS

For Chad Anderson, CEO of Space Angels Network, getting in at the seed stage is vital to fuel the industry.

Space Angels is an investment company that brings space startups together with investors via online dealing, and they’re celebrating their 10th anniversary this year. With hundreds of companies coming up in the space sphere, they’ll be looking to these kinds of angel investors to finance their projects.

“Back then [2007] there were a few dozen commercial companies operating in the sector, and today there are hundreds. And not startups with powerpoint presentations,” Anderson says. “But startup companies that have raised capital, that have convinced someone else to put money into their business, and they’re out executing those business plans.”

Mark Boggett, a space venture capitalist and managing director at Seraphim Capital, who visits the MENA region on a regular basis now, is on a mission to identify all the accelerators and incubators around the world that could harbor space-related businesses.

“The people who want to go to Mars straight away view the Moon as a distraction. But there’s a third option... Asteroids.”

SPACE TALK

Experts from the world’s space industry came together at the Global Space Congress, held in Abu Dhabi last month, talking everything from investments to regulations in space.



CHAD ANDERSON

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MARK BOGGETT

“Early-stage entrepreneurs won’t necessarily see themselves as space businesses.”



JOERG KREISEL

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MIKE GOLD

“It requires us to come together globally to strengthen partnerships that we have here on earth.”

COURTESY GLOBAL SPACE CONGRESS

“What’s important to note is that our definition of space-relevant business is very broad. There are a lot of sectors from IoT, to machine learning, to artificial intelligence, to robotics, to drones, to smart cities. So to us all of these are space-relevant, but the early stage companies and entrepreneurs setting them up won’t necessarily see themselves as space businesses,” he tells us.

Boggett has identified Careem, the homegrown cab-hailing company which is now considered one of the the first unicorns in the region, as a space-enabled company.

“If you switch the satellites off, it effectively does not exist. So in my view, that’s a space-related company.”

Speaking at the Global Space Congress last month, Boggett says that the capital acquiring activities happening in the UAE are very much the same as everywhere else. “And that is [based] around the creation of technology hubs,” he says.

The UAE currently has 12 tech incubators and accelerators, as opposed to only a few short years ago, where there were almost none.

According to Boggett, this kind of growth in tech hubs will only make it easier for international investors to be able to quickly identify where the opportunities are, which will boost the industry exponentially.

The space industry today, perching itself at \$330 billion market value, is robust, and it’s promising to see an even more significant shift into the commercial sector. According to Anderson, the commercialization of space has grown to 76% and is continuing to increase.

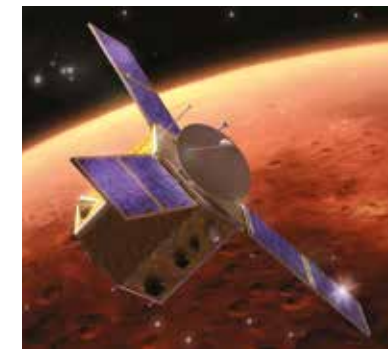
“We’re keen to see how the UAE plays into our global future of space in an era, where we have seen five big space agencies dominating the landscape for a long time, and that’s not the case anymore,” Anderson says.

BUT WHEN WE GET THERE?

The question of whether we’ll see sustained life on either the moon, Mars or even an asteroid, is no longer an ‘if’ but a ‘when’.

MISSION OF HOPE

The mechanical engineering team at the Mohammed bin Rashid Space Center conducts a short briefing prior to performing tasks on the Hope Spacecraft.



And it looks as though it could even be within our lifetime. “I think things are happening far quicker than the general public are aware of,” says Anderson. “We’ve invested in a lunar transportation company. A very real company with very real revenues, and very real customers. They’re planning their launch in 2019.”

There is also long-term demand from the European Space Agency, with their desire to establish a lunar village.

“We’re seeing the groundwork being laid. A lot of the robotics is being taken to the Moon to set the stage, so to speak, starting to develop some habitats, helping to establish a communications network and power, and also all the other things you need to survive,” says Anderson.

But what about the non-technical side of setting up an extraterrestrial civilization? What about laws and rules?

With all these activities coming to the fore, we, the people of earth, are confronted with our place in the world.

With space being unexplored, unclaimed, and probably soon dominated by companies and not countries, it’ll come with a new set of regulations.

When asked about creating new laws for a place without borders, in a climate where the Trumps of the world are building walls, Mike Gold, a US aerospace attorney calms our nerves.

“I am not an immigration attorney, so I won’t comment on that [Trump’s immigration clampdown], but let me say that what has always driven me to space regulation is the inherent international cooperation that it forces on us. It asks us to come together to expand our knowledge of the universe as well as strengthen partnerships that we have here on earth.”

The next five to 10 years promise to bring exciting new ventures to get us earthlings to other planets. Whether you’re a Moon or Mars fan doesn’t matter anymore, because, as Anderson puts it, we won’t have to choose anymore.

“The people who want to go to Mars straight away view the Moon as a distraction...fair enough. The people who want to go to the Moon first, say that it could be used as a launch point. But there’s a third option...Asteroids,” he says.

— CHRISTINE GROVÉ is a senior reporter at Inc. Arabia.

\$330

BILLION

Size of Space Market

\$75

MILLION

Flight on the Soyuz

\$250

THOUSAND

Flight on Virgin Galactic

76%

Commercialization