

## Unbundling of space

The meaning of “space” for mankind has evolved over the last few decades. What was once a battleground for one-upmanship during the Cold War is now morphing into a cauldron of entrepreneurship. While there are several interesting threads in the space entrepreneurship narrative, I find what I call “the unbundling of space” the most interesting.

First, some context. The de-escalation of the space race from the heights of animosity in the days of the Apollo and Luna missions was a precursor to the end of the cold war. The last lunar mission from the US and the former USSR happened in the mid-1970s. Through the 1980s and the 1990s, the romantic notion of exploring space gave way to talks on making it useful for mankind. Satellites became the centrepiece of this era rather than the adventurous narrative of footprints on the Moon.

Humanity is going through a resurgence of interest in space exploration. Entrepreneurs like Elon Musk, CEO of Tesla Inc., and Space Exploration Technologies Corp. (SpaceX)— where he oversees the development and manufacturing of rockets and spacecraft—have shattered the status quo and revived the idea that mankind could one day become a space-faring species. We have already heard of announcements of human flights to Mars in the next decade including one from SpaceX about two American space tourists signing up to orbit the moon. What is different in this era is that human interest in space does not merely come from a position of curiosity or of geopolitical muscle flexing: what comes along with it is a nose for business opportunities. One of the forces underlying this shift is the arrival of specialized firms doing specialized things in space—a massive shift from an era defined by national space agencies which did everything to one where smaller firms focus on a wider variety of things.

This is the start of an era of “unbundling” where there would be firms exploring how to mine space resources (Planetary Resources Inc., for one) and those clearing space junk (Astroscale). There would be firms talking about colonizing planets (SpaceX) and firms that beam down the internet from high up. Firms like Planet Labs Inc.—the one that accounted for the bulk of the 104 satellites Indian Space Research Organization (Isro) launched in February—intend to provide imagery and data derived from that imagery for sectors including agriculture, defence, energy and infrastructure, finance, forestry and mapping. Applications stemming from investments in space are clearly there to be seen and can be game changers. Parallels can be drawn with how the internet grew and changed the world through entrepreneurial innovations. Think of the number of multibillion-dollar firms that the global positioning system (GPS) has spawned.

There is a big opportunity in space for a nation like India where talent and cost advantage combine in large numbers to make business sense. With Isro, India already offers the lowest-cost space projects in the world. Private enterprise, working with the space agency, can further streamline this and develop India into a destination for low-cost development of space hardware and continue to provide affordable launch services. Think “Make in India—Launch in India”. This is key to what we at Team Indus envision as our future. The capabilities we have built through the Moon Mission will be invaluable as we explore other areas of space, for it is one of those industries whose impact goes way beyond its immediate periphery. It breeds and enables an ecosystem spanning everything from super light and super strong materials to beaming down television channels and even the internet.

Adding value to the space GDP will come from many ways; that includes evolution of existing services—next-generation GPS, wide area Wi-Fi and sharper, more local space-based weather prediction that is married to big data and introduction of new services like space-debris removal. Add to that space tourism of the Virgin Galactic ilk, evolution of Terra Bella (formerly Skybox

Imaging, it is now a Planet Labs subsidiary) type services, renewed interest in exobiology (possibility of life on other planets), and research into sustainable multi-planetary life; you can see a host of services that can come out of investing into space. This is why I call this the unbundling of space and space applications.

The unbundling of space has immense potential to generate a large number of jobs in India—reminiscent of the information technology revolution in India. I do hope more of the best minds in India will make their move into space-based entrepreneurship over the next few years.

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