Space: The New Wealth Creator?
May 2015 Dinner Discussion Highlights
Toffler Associates recently convened a dinner in New York to facilitate a robust discussion of space commercialization and its associated investment possibilities. We assembled a diverse group of executive and new generation (NewGen) thought leaders to consider these questions over dinner.

Participants were selected for their ability to contribute a unique combination of knowledge and experience across investment, commercial, government, and academic communities. We asked the questions, moderated the conversation, and captured emergent themes to develop this paper. The purpose of this paper to is to foster continued discussion and debate around the future of space.

The Topic

Space. It was the final frontier in the 1960s, a source of dreams, fantasies and ambitions. Today’s space ambitions are no less compelling than those of the ‘60s, but they focus on the commercial possibilities of space, rather than the governmental security issues that drove space exploration in the early days.

The Space Foundation estimates there are currently more than 1,000 satellites, both governmental and commercial, orbiting the earth, and more than 40 countries have satellites. They estimate that at least 80 percent of space communications are handled today by commercial satellites.

Space as a commercial reality is not 15 years down the road; it is 15 years ago, and the congestion in space is a signal of its growing commercial viability. The commercial exploitation of space is a maturing market, and as such, has a need for new sources of capital. Space will be a new wealth creator for those far-sighted enough to take advantage of its possibilities.

The commercial possibilities of space, in fact, are intriguing and far-ranging. Consider some of the new technologies currently in development, such as using microwaves or sunlight to propel small spacecraft. Or retrieving data from a

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satellite that can measure gravitational pull and thereby discover holes in the Earth’s surface – data that could allow monitors to determine if a hole is a new mining operation, a sinkhole eating houses in Florida, or the North Koreans trying to tunnel to Disneyland.

Also new is the growing number of people who want to get off the planet. The concept of transitory space has emerged as the idea of space tourism has become more popular. Those working on the challenge of transitory space see a need for space gas stations, supply depots, repair shops and rest stops on superhighways connecting Earth to the moon and Mars.

Space also offers rich natural resources to those able to extract them. The U.S. just passed a law governing mineral rights in space. Who owns the real estate and who has rights to mine the moon, asteroids, and other planets is critical as competing companies and countries develop business plans for space mining.

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What We Already Knew

When the U.S. and the U.S.S.R. started their race to space in the 1950s, participation in space exploration was limited to governments with large budgets. The high cost of space programs prevented smaller countries from creating their own programs, but many participated in international partnerships during the next few decades as we landed on the moon, constructed the International Space Station, and developed reusable spacecraft. Today, an increasing number of countries have the ability to build and launch a vehicle capable of orbit, including the United States, Russia, China, India, Iran, South Korea, North Korea, and the European Union.

In the ‘60s we asked, “how and when will we get into space?” Today we ask, “what can we do in (and with) space now that we have arrived?” Space has
become accessible to more companies, individuals, and agencies than ever before, presenting almost-boundless opportunities to create wealth.

Thus, commercialization and wealth creation are the new normal for space. It is critical for business and financial leaders to consider the possibilities of a future in which space drives global economics.

With the global population predicted to grow from 7 billion today to 8.3 billion by the year 2030, it is likely that resources on Earth will become strained. More people will have to share the same amount of space and resources. Technology will help solve the challenges as it has in the past with increased food production, cleaner fuels, and increased access to information, but also will play a new role as it provides a way to leave the planet. In that way, space development may be both a key to addressing overcrowding and an opportunity for wealth creation.

Of course, with population growth comes an increasing number of customers to consume, access, create, and share digital information. Some access will be through earth-bound fiber optics and similar technologies, but self-proclaimed “space geeks” view space-based access as a tantalizing opportunity. Entrepreneur and investor Elon Musk, for example, envisions a network of 4,000 micro satellites providing broadband Internet services around the globe. Current predictions estimate that 85 percent of the world will have access to high-speed Internet connections within five years.

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As a result, the world will become hyper-connected. Rules will change and power will shift in industries and markets, transforming how wealth is created and distributed globally. Consumers will be empowered and will press for even greater technological advancement to meet the demands in their daily life activities and businesses. Demands placed on militaries and governing bodies will surely increase. Such shifts in demand and consumer power will pressure the world’s critical infrastructure as people demand more data, bandwidth, and access to technology.
Our conversation in New York began with an understanding of those possibilities and explored the rewards inherent in the possibilities, as well as the risks of both acting and not acting in this new arena.

**What We Learned**

During the evening, the robust conversation addressed a wide array of topics, from which several themes emerged.

**Investors See Potential in the Space Industry**

Dr. Robert Hutchings Goddard, often known as the father of modern rocketry, was dedicated to creating rockets. He designed and built the world’s first liquid-fuel rocket, and held patents for both a multi-stage rocket and a liquid-fuel rocket, inventions instrumental in developing spaceflight. His published work became the foundation of theory in the field. In contrast to the importance of his discoveries, however, he received very little outside investment and was forced to fund his own research. His work was actually ridiculed in the press. Funding for space flight was simply not available to him in the first three decades of the 1900s.

Today’s investment community, however, is quite different. Greg Wyler, the founder of satellite Internet company O3b Networks, Ltd., welcomed Virgin and Qualcomm as investors in his new company, OneWeb Ltd., earlier this year. OneWeb’s goal is to deploy 648 low-weight, low-latency satellites in lower orbit around the Earth to provide high-speed Internet connectivity to areas where it’s been too expensive to provide land-based service.

On the heels of this announcement, Elon Musk’s company SpaceX shared its vision of creating a constellation of 4,000 low-orbit satellites to provide services similar to OneWeb’s. Outside funding is not as prominent at SpaceX as it is at OneWeb because of the size of Musk’s fortune.
The business model in both ventures is two-fold: a monetary return on investment in commercial space technologies, as well as positive social impact. Both ventures plan to provide certain disadvantaged geographical areas greater and more stable access to the Internet.

They expect to create new markets, provide access to e-learning, stimulate job creation, and provide services for first responders in disaster situations and refugee camps. In return, the space companies plan to deliver a large, new consumer base to corporate customers.

The investments Virgin and Qualcomm are making in OneWeb indicate the willingness of investors to participate in the global space economy. Investors see a market that grew by 4 percent in 2013, reaching a new record of $314.17 billion, with roughly three quarters of this growth in commercial space rather than in government projects. Space Foundation Indexes also demonstrate investor confidence in space. The indexes track the performance of space stocks listed on the U.S. exchanges, and in 2013 reported gains of between 34 percent and 48 percent. In comparison, the S&P 500 rose 30 percent and the NASDAQ gained 38 percent during that same year.

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**How Can Space Entrepreneurs Access Funding?**

**Understand, Plan, Adapt**

Certainly individuals working in the space industry are comfortable with new ideas and concepts. Many have been dreaming about space since childhood. Space entrepreneurs are enthusiastic about their work and understand the technology required to produce results. Often, they have helped develop their company’s technology and systems. Technical knowledge comes with the territory.
Likewise, space entrepreneurs are able to plan well. They know they must create business models that can be sustained without large infusions of cash until customers are plentiful. In the cases of OneWeb and SpaceX, they know that making a profit requires the new ventures to lower launch costs, navigate a herd of small satellites in lower earth orbit, increase the frequency of launches, and provide security for data and hardware. They must deploy hundreds or thousands of satellites to create a constellation before they can serve the first end-user. They also must identify potential corporate customers willing to pay to reach new consumers and open new markets composed of the more than 4 billion previously unconnected people. Ongoing funding depends on their ability to deliver what their business models predict.

Understanding the technology and developing business plans, however, are not the highest hurdles they or other space entrepreneurs face. They need to be agile in order to adapt, and agility for the space industry requires the same elements as agility in any other industry:

- developing a good strategy
- telling a compelling story
- selecting the right people and the right processes
- and developing a positive relationship with investors

Investors say that business plans are important, but they need more; they need to hear compelling reasons to invest in a given project. Space entrepreneurs need to share their passion and tell great stories about their strategies – the needs to be met and the rewards to be realized. Investors need to see the possibilities inherent in a different future before they focus on the financial details of a new project.

Entrepreneurs, inventors, and visionaries, who may be better at creating new ideas than creating financial statements, should hire business people to help with the nuts and bolts of developing the necessary business plans. The space industry
is a mature industry and requires a certain level of business acumen. Investors are willing to accept risk, but they need to see a path to profit detailed in a believable business plan, even if the return on investment is some years down the road.

**Bring Space Back Down to Earth**

It’s a simple fact for both investors and entrepreneurs: without customers and funding, a space company cannot innovate. In 2015, the value of the space industry is expected to increase to more than $360 billion, a majority of which is attributable to commercial space services, mainly communications and PNS/GPS. There is tremendous wealth in space, and both the consumer and investor must become educated about the opportunity to take advantage of it fully.

Customers must see what’s in the new service or delivery model for them before they’ll sign up in large numbers. They must be sure their data is secure and new ways of doing business are safe. The product must also meet a need.

It is incumbent upon the commercial space community to educate the general consumer about the lucrative nature of space and how it has become an economic driver. It is also incumbent upon the space community to share both its passion for space and sound business models with the investment community to secure the funding it needs to move forward.

**Key Takeaways from the Conversation**

The best time to capitalize on space’s wealth is now, and the U.S. has no time to waste. The global space industry is experiencing the start of what some call “Space’s Golden Age,” where new, non-traditional space players are offering cutting-edge and efficient technological solutions.

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It is imperative that new space entrepreneurs mature their business processes and create valid and feasible business models that serve a market purpose or need, but it is also imperative that they tell compelling stories about their plans. The investors and companies that enter the market now will better preserve their future positions in the market.

U.S.-based companies are not the only participants in the arena and the possibilities for launching 4,000 satellites without interference from non-U.S. competitors will not necessarily be available forever. In 15 or 20 years, after substantial investment has been made and space is even more congested, what role will the government play in protecting U.S. assets in space?

**Invitation to continue the discussion**

What are your thoughts on the prospects for development in space? Your feedback is not only welcome – it is highly encouraged – and we invite you to share these thoughts with your extended network to continue the discussion on this important subject. We welcome your comments and encourage you to share this paper.

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