

Satellite Companies Moving Markets

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7

Alternative Data Vertical Markets, Data Industry Trends

[satellite imagery analysis](#)



Stop me if you've heard this one before: high resolution images taken from space now allow us to count cars in retailers' parking lots, and therefore estimate quarterly earnings ahead of the street. Or this: we can use trigonometry to measure the shadows cast by floating oil tank lids to then gauge the world's oil supply. Or this: we can monitor the vehicles coming and going from industrial facilities in China, and create a nascent China manufacturing index. Dozens of other possibilities exist, bound only by our ability to imagine what we can infer about markets based on high quality satellite imagery of the earth.

Some of the tales are becoming the stuff of legend: how [RS Metrics correctly predicted strong earnings](#) for JCPenney in Q2, 2015, and more than one hedge fund profited from it.

How [Descartes Labs moved the national corn market by 3%](#) when Bloomberg wrote that its crop yield estimates were lower than the government's by 2.8%. And how infrared sensors combined with satellite images detect crop health far ahead of the USDA, which is proving to be a [boon to commodities traders](#).

A handful of companies are just now realizing the value of their earth imagery for investment purposes. While the original missions for these organizations may have been more altruistic than driving profits for investors, the business case is there, and the investment community is excited. Realtime or near-realtime satellite data gives traders that elusive information edge, and we're in the race to diffusion with [alternative data](#).

In short, if you're seeking alpha, and you're not looking at satellite data, now is the time to start.

Companies selling data from satellites can be grouped into two categories: Those who actually launch satellites in the sky, and those who analyze satellite data. It's important to understand that the satellite manufacturers often do both: hardware and analysis, but the converse is not true.

Climate Corp, and other think tanks.
Here are some of the key players in this brave new world.

Up In The Sky: The Satellite Players

Never has it been so easy – or so cheap – to launch a satellite into the sky. That's not to say it's either easy or cheap, but it is less prohibitive than in previous years. A new generation of micro-satellites, made possible by the miniaturization of consumer electronic components, can now be built at a fraction of the cost of what's already in space, and a fraction of the size. Add to that the federal effort to commercialize space, and you have yourself a great opportunity.

A handful of companies have decided to make it their mission to take the best photos of the earth, each with a slightly different angle – no pun intended – on their technical differentiation. Among them:

DigitalGlobe

[DigitalGlobe](#) is the matriarch in an industry of pre-teens. Founded in 1992, and public in 2009, DigitalGlobe has 6 satellites in orbit. While enjoying first mover advantage, it's hard to say whether this company can keep pace with the up-and-comers. Older satellites are not easy to replace, and can be outgunned by newer and better technology. However, [DigitalGlobe is entering the “smallsat” market](#), and already enjoys 0.4m resolution imagery today, which is one of the best in the business.

Airbus Defence & Space

Perhaps this one should be called *paterfamilias*: Airbus Group has been around since 1970 and is the largest and best-known aerospace and aircraft company in Europe. [Airbus Defence & Space](#) has two well-known satellite families in orbit: Pleiades and SPOT. This incumbent continues to invest in improved resolution and refresh rate, and you can access its image bank directly from its website.

Terra Bella

Google wants in on this opportunity too. [Terra Bella](#), formerly known as Skybox Imaging, was bought by Google in 2014 for \$500 million. Based in Mountain View, this company's goal is to be able to provide high-resolution satellite imagery of any place on Earth multiple times a day. The plan is also to leverage as much Google machine learning as possible to develop a best-in-class analytics offering.

Planet Labs

A San Francisco startup founded by ex-NASA scientists, [Planet Labs](#) wants to corner low-orbit space with small satellites called Doves. They already have 50 foot-long Doves in space that orbit the Earth every 90 minutes, and plan to launch 100 more by the end of 2016. There is no shortage of funding for Planet Labs: CrunchBase estimates they have raised \$158 million dollars across four rounds. According to [this piece in the Atlantic](#), Planet Labs has 400 customers from across businesses, researchers, and academics. Note that they simply license the right to view their photos, and do not provide any analysis.



Mailiao Refinery, Taiwan. Source: [Planet Labs](#)

PlanetIQ

While some satellite providers seem to be trying to boil the ocean, as it were, (or perhaps photograph it), [PlanetIQ](#) is hyper focused on improving our understanding of Earth's atmosphere for weather forecasting and climate monitoring. They will launch the first commercial constellation exclusively focused on climate, with 12 microsatellites on orbit by early 2018. Their 'Pyxis' satellite uses radio occultation to see through clouds and storms all the way down to the ground where we feel the weather, improving on previous technologies. How relevant is weather data to the investment community? We are certain there are at least a handful of quants thinking about it.

UrtheCast

Vancouver-based [UrtheCast](#) wants to provide the first Ultra HD video feed of earth from space using imagery from two high-definition cameras it has lodged on the International Space Station. It also has plans to put a constellation of 16 satellites into space by the end of 2020, called OptiSar™. UrtheCast's differentiator comes in being able to provide high quality images regardless of cloud cover or other obfuscating weather. It does this by pairing optical cameras with radar sensors. The company plans to make its image data easily available via API and other tools. UrtheCast went public on the TSX in 2013.



45% of Montana's wheat crop captured by UrtheCast camera Theia. Greener rectangles signify fields that will be harvested later in fall. Source: urtheCast.com

Down On The Ground: The Image Analysis Players

[Fortune recently reported](#) that VCs invested more in space last year than in the previous 15 years combined. "The play is not because it's space," says Carissa Christensen, managing partner of The Tauri Group. "The play is not even because it's imagery. The play is because these satellite systems are going to create large data sets, and those data sets yield insight into corporate policy and industrial activity around the globe—things like corporate supply chains, production, or shipping and maritime activity."

But director of geospatial big data at DigitalGlobe, Kevin Lausten, said [it is quick to point out](#):

Enter machine learning. A growing cast of startups are combining machine learning knowledge with satellite data imagery – now refreshed at almost a daily rate – to infer market movement. These startups abound; here are a few that we think are positioned for success:

Orbital Insight

[Orbital Insight](#) is one of the first startups to gain traction in the satellite analytics space. The company has attracted investment from Google Ventures, Sequoia, and Bloomberg Beta, and already produces data sets on agriculture, retail car counting, and oil inventory. In January, Orbital Insight [published](#) that it has “correctly predicted a beat or miss of Bloomberg consensus estimates 78% of the time” using its US Retail Traffic Index.



Orbital Insight's car-counting algorithm gauges economic activity in Nanjing, China. Source:[DigitalGlobe/Orbital Insight](#).

Descartes Labs

Descartes Labs became known for correctly predicting a drop in domestic corn production based on its analysis of the change in color of plants over time. When Bloomberg published the article, the corn market moved 3%. The company was spun out of Los Alamos National Laboratory, and its founders bring deep knowledge of machine learning to the table. While Descartes is currently focused on satellite imagery, it also plans to branch out into drones and cell phones for analysis.

Tellus Labs

This Boston-based startup is just coming out of stealth mode with its first data set focused on agriculture and crop health. We expect big things from this small group of applied science experts who were named finalists in the prestigious [Mass Challenge program](#). “We’re excited to get going with our agriculture data service. Early test results are very promising. We’re putting yield forecasts in the hands of a select set of early adopters this growing season,” says [Tellus Labs](#) co-founder and CEO David Potere.

RS Metrics

By this industry’s standards, [Remote Sensing Metrics](#), out of New York and Sri Lanka, might qualify as the veteran. They’ve been in the business of analyzing satellite imagery since 2009. Where they have a leg up is in their financial and investment expertise. While most of the startups are scientists by nature, these guys have a lot of Wall Street experience, with unparalleled understanding of the markets to which they’re selling.

While certainly not an exhaustive list, the information in this post should give you a good understanding of the satellite landscape. Stay tuned for a more comprehensive Lumandscape of the companies shaping this industry. If you have additional information to suggest for this post or infographic, please [email us](#) or add a comment, below.