The new and increasing contribution of High Resolution SmallSat Optical Constellations fuelling advanced Artificial Intelligence and Machine Learning Analytics

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Abstract

For several years now the Industry has been talking about the emerging potential of highly capable Smallsat optical constellations – typically defined as being 100Kg or less. While many companies have attempted to commercialize such capabilities, few remain and even fewer are succeeding to marry these constellations with highly scalable networks and advanced AI/ML techniques to put real and highly capable services in the hands of end-users.

 BlackSky is one of the companies that is both succeeding in this area and that is at the forefront of this field with currently four operational 1m Optical satellites in orbit and four more booked for launch in January of 2020. Two of the first 8 are already in Sun Synchronous orbit (SSO), two more are already operating in inclined orbits and the remaining 4 will also enter service in inclined orbits. The Company is fully funded to execute its plan to have a total of 16 operational 1m resolution satellites in orbit by early 2021 and is reviewing designs for a 50cm payload to be on orbit in early 2022.

 However, the drive to become a reliable and trusted partner to key users by delivering high performance, high utility and mission critical dependability from its smallsat constellation and AI/ML investments, is being fulfilled at BlackSky with much more than merely spatial resolution. While 1m or better spatial resolution is important, BlackSky is simultaneously executing its business road map on many fronts, including:

- High Temporal Cadence, with evenly spread intra-day revisits averaging 7 or more per day;
- Incredible speed from tasking to delivery, currently a few hours and heading towards a few minutes;
- 'No Man in the Loop' imagery QA and Delivery and soon, fully automated from target selection through to tasking and on to delivery
- Imagery Derived Analytics and Pattern of Life capabilities built on highly scalable AI/ML foundations using uniform and normalized imagery 'stacks' made possible by, and drawn from, a homogenous, large scale constellation;
- Hugely resilient services delivered by N:1 satellites and ground infrastructure - as opposed to a 1:1 larger and more expensive in orbit and network model.
- Vertically integrated, end-to-end and agile - design, build, orbit placement and service execution combining the LeoStella factory, the SpaceFlight launch capability and the BlackSky product and services suite.

During the course of the workshop sessions BlackSky will share it's vision, it's current and near term capabilities and demonstrate how 1m GSD smallsats already deliver today unique and complimentary capabilities related to persistent site monitoring, assured and fast tasking to

delivery and leading edge analytics in support of main stream applications ranging from, but not limited to, Construction, Asset Tracking, Resource Management, Transportation and the protection and development of civil society."