

**A CRUCIAL PROGRESS UPDATE OF OUR IDRS BUSINESS:**

- 1. ADDVALUE TO SEE TO THE COMMERCIALIZATION OF ITS INTER-SATELLITE DATA RELAY SYSTEM (“IDRS”) TERMINAL VIA THE LAUNCH BY CAPELLA SPACE INC (“CAPELLA”) OF ITS INITIAL LOW EARTH ORBIT (“LEO”) SYNTHETIC APERTURE RADAR (“SAR”) SATELLITE (WHICH IS INSTALLED WITH ADDVALUE’S IDRS TERMINAL) SCHEDULED FOR MARCH 2020**
  - 2. ADDVALUE ON TRACK TO DELIVER ANOTHER SIX IDRS TERMINALS TO CAPELLA BY THE FIRST HALF OF 2020 FOR INSTALLATION ON CAPALLA’S LEO SAR SATELLITES SCHEDULED TO BE LAUNCHED AFTER MARCH 2020**
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The Board of Directors (the “**Board**”) of Addvalue Technologies Ltd (the “**Company**”, and together with its subsidiaries, the “**Group**” or “**Addvalue**”) refers to the press release made by the Company on 22 October 2019 concerning the partnership among Addvalue, Capella and Inmarsat Inc (“**Inmarsat**”) in working towards outfitting Capella’s constellation of 36 small LEO SAR satellites (the “**Capella’s Space Program**”) with Addvalue’s IDRS terminals and through Inmarsat’s award-winning global L-band network, thereby enabling two-way, secure and always-on IP-based connectivity. The Capella’s Space Program will kick start with the launch of seven LEO SAR satellites and commence commercial operations in 2020 (the “**Capella’s Initial Space Program**”).

Reference is also made to an article entitled ‘*Capella Space to launch seven radar satellite in 2020 as it prepares for commercial operations*’ as published by Space News on 16 December 2019 (a copy of which is attached herewith). It was mentioned therein that Capella has scheduled for its first production satellite, Sequoia to be launched in March 2020 on board a SpaceX rideshare mission to sun-synchronous orbit from Vandenberg Air Force Base, U.S.A., with a batch of three more slated for a PSLV launch in India in June 2020. The last three will be launched in the second half of 2020 with Capella still evaluating options between larger rideshare and a dedicated Rocket Lab Electron mission. The Sequoia satellite is currently completing system level tests and will arrive at the launch site in early March 2020.

Via its press release made on 21 January 2020 (a copy of which is attached herewith), Capella further unveiled its evolved satellite design which encompasses Addvalue’s IDRS terminal to enable real time tasking and imagery capture anywhere on earth at any time. This is a game-changer for a variety of industries — from

monitoring military threats to assessing crop yields in agriculture to coordinating disaster response. The new satellite design helps cemented major deals with multiple divisions of the U.S. government, including a contract with the U.S. Air Force and National Reconnaissance Office. The technological enhancements will be embedded in Capella's next six commercial satellites, named the "Whitney" constellation, after the launch of Sequoia slated for March 2020.

Capella is also licensed by the National Oceanic and Atmospheric Administration for its 36 small satellite constellation, along with approval to sell the highest resolution legally allowed SAR commercial imagery to customers globally.

The Board looks forward with high anticipation and great excitement to the imminent commercialisation of its IDRS terminal via Capella's Initial Space Program. It is especially pleased with the progress made by the Group thus far in the development and growth of its IDRS business, and expects the sales of its IDRS terminals (including but not limited to the six units which the Group is committed to supply to Capella) to progressively contribute in a significant way to the revenue and performance of the Group over particularly the final financial quarter of the financial year ending 31 March 2020 ("FY2020") and the ensuing financial year.

With more IDRS contracts expected to be signed in 2020, barring any unforeseen circumstance, the Group expects its IDRS hardware sales and the associated airtime revenue to grow at an accelerated pace starting from early 2020. Coupled with all the existing IDRS partnerships forged, the Group is cautiously optimistic that these collaborations will help to propel the exponential growth of its IDRS business in 2020 and beyond in a very significant way.

## **BY ORDER OF THE BOARD**

Dr Colin Chan Kum Lok  
Chairman and CEO

5 February 2020

## Capella Space to launch seven radar satellites in 2020 as it prepares for commercial operations

by [Sandra Erwin](#) — December 16, 2019



Capella high resolution SAR imagery of the San Francisco Bay Area, captured September 2019.

SAR Imagery credit: Capella Space

## Capella's goal is to have 36 radar imaging satellites on orbit by 2023

WASHINGTON — Space-based radar imagery provider Capella Space will launch seven satellites and start commercial operations in 2020, the company announced Dec. 16.

The San Francisco-based startup deployed one small synthetic aperture radar (SAR) satellite in December 2018 to test the service. The next seven it plans to launch in 2020 are a new design, Payam Banazadeh, CEO and founder of Capella Space, told *SpaceNews*.

The first satellite, to be named Sequoia, will launch from Cape Canaveral in March into a polar sun-synchronous orbit on a SpaceX rocket. The next three satellites are booked on an Indian Polar Satellite Launch Vehicle flight scheduled for June to a polar sun-synchronous orbit. These would be the first batch of a constellation to be named Whitney.

The next batch of three are being booked to go up late 2020. “We hope to finalize booking in the next few months,” said Banazadeh.

Sequoia and Whitney are identical satellites but get different names because they are built in separate production cycles, he said. “We plan to launch between six and 12 satellites per year.” The goal is to have 36 satellites on orbit by 2023.

Banazadeh said details of the new satellite design will be unveiled in January. Based on market research and tests with the prototype satellite, the company decided it needed larger spacecraft to accommodate a bigger sensor aperture that can provide high-resolution sub-0.5 meter imagery.

Higher resolution imagery is especially important to government and military customers the company is pursuing in addition to commercial business. Capella has contracts with the U.S. Air Force and recently won a study contract from the National Reconnaissance Office.

The new satellite design, at under 100 kilograms, is larger than the original 40 kilogram design. “It is still small but deploys to something really big in space,” said Banazadeh. “Over the last 12 months looking at the competition and talking to customers we realized we really want to dominate the very high resolution market. To meet that demand, we need a large aperture so we changed the size.”

During the past year the company built the ground infrastructure and developed a process from when a customer puts in an imagery request to when the data gets downlinked into an Amazon Web Services (AWS) ground station and cloud service. “That process is fully automated,” said Banazadeh.

The advantage of radar is that it can see through clouds. Customers want to see how patterns are changing but the higher resolution is important as well, he said. “We will be able to detect any object bigger than a half meter, and identify any object larger than 1.5 meters in any dimension.”

A half-meter SAR image of an airport, for example, would be able to discriminate the types of aircraft on the ground. A picture of a combat zone would show vehicles and identify if they are military or civilian.

“That’s where the sub half-meter becomes very useful,” said Banazadeh. “Customers want to understand change and what is changing.”

Capella expects to have an edge over competitors because it designed the new satellites to consume less power so they can image for 10 minutes per orbit, he noted.

Radar in general even for bigger satellites consumes a lot of power. While optical imagery satellites are always imaging, radar satellites are only sent to take pictures of a specific area

because they have limited power on board. “You have to know where you want to look at,” said Banazadeh. Capella predicts that 10 minutes of imaging per orbit will give it a competitive advantage over other small satellite services that can only image for two minutes per orbit, he said. “That limits how many locations they can look at and how they manage orders.”

The company is promising customers that once it begins commercial operations it will be able to deliver SAR data in less than 30 minutes from the time of collection, a much faster turnaround than the industry average of eight to 12 hours, according to Banazadeh.

To help shorten the cycle, Capella signed an agreement with Inmarsat to provide a communications terminal to go on every satellite. “We can access our satellites through the Inmarsat network in real time all the time,” he said. When a request comes in, it is immediately uploaded to a specific satellite. The time it takes for the satellite to reach the target will come down as more satellites are deployed, said Banazadeh.

The 30 minute turnaround begins once the data is collected and beamed to the Amazon Ground Station. “The data gets into the cloud in 25 minutes, and we make it accessible to customers,” he said.

Banazadeh said this is important to customers that use radar imagery precisely because they’re in a hurry and can’t wait for the clouds to go away. “Having to wait eight to 12 hours defeats the purpose.”

Capella says it has funding to complete a seven satellite constellation launch in 2020, with backing from investors [DCVC \(Data Collective\)](#) and [Spark Capital](#).

“With new advancements allowing sub-0.5 meter very high resolution, impressive partnerships and a commitment to delivering imagery in real time, Capella reminds me of where Planet was in the optical market several years back: on the cusp of breaking open a massive new commercial opportunity,” Chris Boshuizen, partner at DCVC and co-founder of Planet Labs, said in a statement.

COMMERCIAL

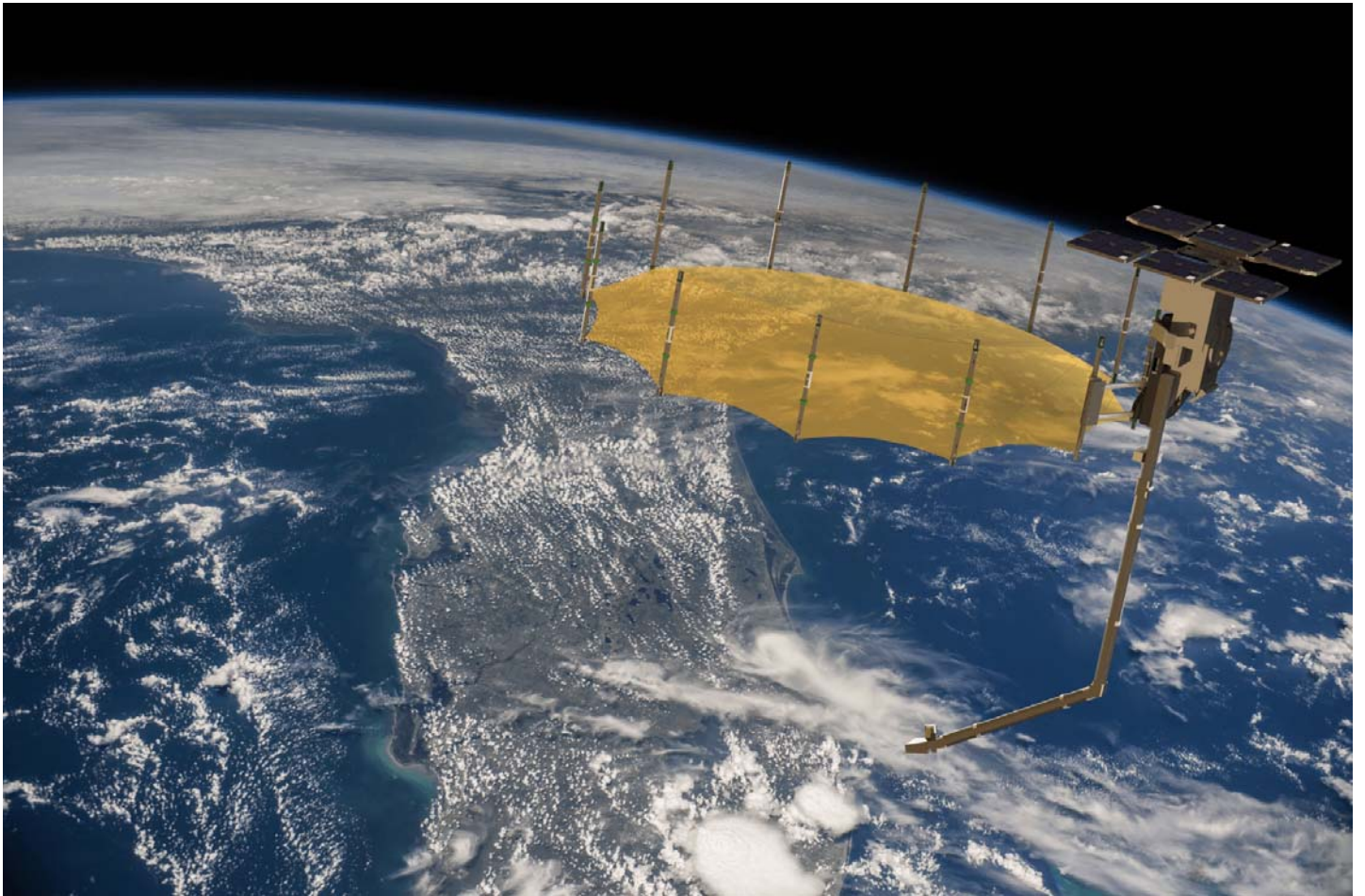
CAPELLA SPACE

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Capella Space

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## Capella Space Unveils Advanced Satellite Design to Deliver High Resolution On-Demand Earth Observation Data

WRITTEN BY [LEAH WALLING](#) ON JANUARY 21, 2020. POSTED IN [PRESS RELEASE](#).

*Artist impression of Capella SAR satellite. Background image courtesy NASA.*

*Enhanced technology package meets customer demand for timely, flexible and frequent very high resolution SAR imagery*

**SAN FRANCISCO, January 21, 2020** — Capella Space, an information services company providing Earth observation data on demand, today unveiled its evolved satellite design to enable on-demand observations of anywhere on Earth. Informed by extensive customer feedback and findings from the launch of Denali, Capella's testbed satellite, the re-engineered design features a suite of technological innovations to deliver timely, flexible and frequent sub-0.5 meter very high quality images to the market. The enhanced technology package will deliver the most advanced offering for small satellite SAR imagery on the market.

"Our customers have spoken: today's industry standard of waiting eight hours to receive data is woefully outdated. They want access to imagery that is reliable, timely and, most importantly, high-quality," said Christian Lenz, vice president of engineering at Capella Space. "The innovations packed into our small satellite make Capella the first and only SAR provider to provide real-time tasking and capture of sub-0.5m very high-quality imagery anywhere on Earth at any time. This is a game-changer for a variety of industries—from monitoring military threats to assessing crop yields in agriculture to coordinating disaster response."

The satellite evolution is a direct result of customer feedback, extensive on-orbit testing with Capella's first testbed satellite Denali, as well as ground-based testing. Enhancements include:

- **Advanced design delivering high contrast, low-noise, sub-0.5 meter imagery:** A 3.5 meter deployed mesh-based reflector antenna combined with a high power RADAR enable key performance improvements including quality advances.
- **Extended duty cycle:** A deployed 400 W solar array increases on-orbit duty cycle to 10 minutes per orbit.
- **Continuous imaging over long distance:** Advanced thermal management systems allow continuous imaging of up to 4000 km long strip images.
- **Highly agile platform:** Enabled by large reaction wheels, the new satellite quickly adjusts pointing to collect images from diverse targets.
- **Staring spotlight image mode:** New mode further enhances image quality with the ability to collect the highest commercially available multi-look data.
- **Enhanced data downlink rate:** A high average data rate downlink of 1.2 Gbps supports the massive image collection rate and extended duty cycle, providing more data per orbit than any other commercial SAR system in its class.
- **Real-time tasking:** A highly secure encrypted two-way link with Inmarsat through an exclusive partnership with Addvalue provides real time tasking capability for the entire Capella constellation.

The new satellite design cemented major deals with multiple divisions of the U.S. government, including a contract with the U.S. Air Force and National Reconnaissance Office (NRO). The technological enhancements will be embedded in Capella's next six commercial satellites, named the "Whitney" constellation, starting with the launch of Sequoia slated for March of 2020. The Sequoia satellite is currently completing system level tests and will arrive at the launch site

in early March.

Capella is also licensed by the National Oceanic and Atmospheric Administration (NOAA) for its 36 small satellite constellation, along with approval to sell the highest resolution legally allowed SAR commercial imagery to customers globally.

## About Capella Space

Capella Space is an information services company that provides on-demand sub-0.5m very high resolution (VHR) Synthetic Aperture Radar (SAR) Earth observation imagery. Through a constellation of small satellites, Capella is providing easy access to frequent, timely and flexible information affecting dozens of industries worldwide. Capella's high-resolution SAR satellites are matched with unparalleled infrastructure to deliver reliable global insights that sharpen our understanding of the changing world – improving decisions about commerce, conservation and security on Earth. Learn more at [capellaspace.com](https://capellaspace.com) and follow us on [LinkedIn](#) or Twitter [@CapellaSpace](#).

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