

Press release 2021-06-16

## SpaceCloud makes maiden flight in June from Cape Canaveral to validate future space data handling

**Unibap AB (publ), a leading NewSpace data and information processing company, is now ready to validate its cloud computing SpaceCloud® ecosystem in space. SpaceCloud will hitch a ride to space at the end of June 2021 from Cape Canaveral on ION Satellite Carrier, D-Orbit's orbital transportation vehicle, as part of the WILD RIDE mission. D-Orbit announced the mission scope on May 31<sup>st</sup>, 2021 and the SpaceCloud demonstrations and tests to verify on-orbit timely data generation for Earth Observation applications will be carried out during the third mission phase. The SpaceCloud in-orbit validation on WILD RIDE includes applications developed by Unibap and third parties for disaster monitoring, video and image data transfer optimization, space domain awareness, advanced image processing for precision agriculture, defense early warning and integrated satellite communication. The applications are selected to target the four highest-value markets segment of space data.**

ION Wild Ride is the world's first space mission using radiation-tolerant advanced heterogeneous computing technologies featuring 4 Terra Operations per Seconds (TOPS) distributed over AMD CPU and GPU, Microsemi FPGA, and Intel Movidius Myriad X Vision Processing Unit. To this end, Unibap has delivered a flight model of the SpaceCloud iX5-100 and a full flight software solution for the mission. This will be used in-orbit by Unibap and D-Orbit to test and validate the SpaceCloud capabilities for providing commercial global geospatial high-value real-time information, such as:

- crop health monitoring
- yield forecasting
- environmental monitoring
- disaster/risk management
- surveying
- underwriting/claims processing
- risk management
- inventory monitoring
- and other functions from the global perspective of orbiting satellites

The ION WILD RIDE mission is the first to leverage the SpaceCloud framework developed with the support of the European Space Agency to run powerful SpaceCloud applications. D-Orbit's Nebula services, an on-demand, on-orbit cloud computing and data storage service will also be tested on the SpaceCloud iX5-100 solution on the mission.

- We are excited to bring the fruit of our hard and dedicated teamwork to bring SpaceCloud off the ground and being able to demonstrate it is full potential together with a fantastic set of partners with the common goal of transforming space business and let loose its full commercial potential, says Dr Fredrik Bruhn, Chief Evangelist in digital transformation at Unibap.

### **A one-year space mission**

The space mission, which will start on a 500 km Sun-synchronous orbit (SSO), will go through four phases during the one-year that the mission will last. The third phase, in-orbit demonstration, is devoted to the demonstration of payloads on the WILD RIDE mission, including demonstration of SpaceCloud applications, services, and performance.

## The SpaceCloud Apps that will be tested on-orbit

Unibap have developed several applications to monitor the system performance and behavior in the space environment. This includes an application to measure the speed of detected vehicles in satellite imagery that uses the full performance of the SpaceCloud compute capabilities. This application is also part of the SpaceCloud educational and training package.

Unibap has partnered with US-based, SaraniaSat Inc to demonstrate high-performance onboard computing of advanced geospatial Earth Observation (EO) for rapidly processing, remote-sensing “Big Data” for extremely low-latency decision support. As previously announced Unibap and SaraniaSat have already successfully implemented the powerful L3Harris Geospatial ENVI® and IDL® software platform on SpaceCloud.

- The SaraniaSat-developed, customized AI/ML algorithms will be used in space to demonstrate, near real-time, onboard tracking and geolocation of flying aircraft (sparse targets) within large, multi-spectral satellite scenes. The significance of all the SpaceCloud Apps that we validate on this mission is the opening of a door to the future, in which satellite edge intelligent computing will play an increasingly larger role in services on Earth, says Mathias Persson, Head of Sales Space
- UK-based V-Nova is testing high-quality Video compressing techniques offering radical efficiency gains. It cuts transmission times by downloading high quality lower resolutions of the images first, followed by higher resolutions with no redundant data until the full resolution is available. This allows much faster access to the images on earth. V-Novas LCEVC and VC-6 compression methods are tested.
- UK-based Trillium is testing “Worldfloods” which have the ability to identify flooding and send down a flood map to emergency responders seconds after image acquisition. The Machine Learning SpaceCloud App is developed by the Frontier Development Lab (FDL), a partnership led by Trillium Technologies with the University of Oxford and ESA. Worldfloods offers a glimpse of a future where rapid insight is delivered almost instantaneously from space.
- Swedish ENEA’s Romanian subsidiary is testing compression of hyperspectral data using the global standard CCSDS 123.0-B-2. Hyperspectral data from space is a rapidly growing business and compression allow for faster downloading to customers. This demonstration is performed in collaboration with the European Space Agency.
- Irish-based Ubotica is testing an advanced ship detection application based on machine learning for low latency use cases leveraging the SpaceCloud resources including Intel Movidius Myriad X Vision Processing Unit.
- ESA is testing several applications, including robust compression of health data headers according to the upcoming standard CCSDS 124, and two scientific oriented applications (i.e radiation particle detection application, and a solar activity analysis application).
- Sweden-based 12G Flight Systems demonstrate SpaceCloud service compatibility with the common global satellite communication standard CCSDS protocol with PUSOpen®. This allow SpaceCloud to communicate with all major ground stations globally.

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**About Unibap**

Unibap is a high-tech company that aims to automate and streamline industries on earth as well as in space. With smart solutions based on AI and robotics, we want to increase quality and productivity for our customers while eliminating dangerous tasks that today are performed manually. Unibap strives to have a positive impact on both society and the environment. Unibap aims to be a world leader in commercial AI driven services and automation on Earth and in space for a better, more sustainable living. The company's Quality Management System is certified according to SS-EN ISO 9001:2015. The company is listed at Nasdaq First North Growth Market.

For more information, please visit the Company's website [unibap.com](http://unibap.com).

FNCA Sweden AB, +46 8-528 00 399, is the Company's Certified Adviser.

**About D-Orbit**

D-Orbit is a market leader in the space logistics and transportation services industry with a track record of space-proven technologies and successful missions. The company is a space infrastructure pioneer with offices in Italy, Portugal, UK, and the US; its commitment to pursuing business models that are profitable, friendly for the environment, and socially beneficial, led to D-Orbit becoming the first certified B-Corp space company in the world.

**About SaraniaSat**

SaraniaSat is a US-incorporated small business aimed at developing advanced, high-performance computing solutions at the Edge. These solutions are aimed at providing actionable information rapidly to commercial and government decision makers. SaraniaSat's ultimate goal is to implement its H-cubed vision, namely a constellation of Low Earth Orbiting Satellites acquiring High Spatial Resolution, High Spectral Resolution, Hyperspectral Imagery, combined with High Performance Onboard Computing thereby making Remote Sensing impact daily lives much in the same way as the Cell Phone and the Internet.

**About V-Nova**

V-Nova, a London based IP and software company, is dedicated to improving data compression by building a vast portfolio of innovative technologies based on the game-changing use of AI and parallel processing for data, video, imaging, point cloud compression, with applications across several verticals. This is achieved through deep-science R&D (300+ international patents) and the development of products that test, prove and continuously enhance the technology portfolio.

**About Trillium / FDL**

Trillium Technologies aims to accelerate the adoption of intelligent technologies in planetary stewardship, space exploration and human health. The company's Frontier Development Lab (FDL) is an applied AI research lab for space exploration and all humankind. is a public / private researcher partnership between NASA, ESA and leaders in commercial AI and private space. FDL was developed and is co-ordinated by Trillium with NASA in the US and ESA in Europe.



### **About ENEA**

Enea AB is a global information technology company with its headquarters in Kista, Sweden that provides real-time operating systems and consulting services. Enea is a world-leading supplier of innovative software for telecommunications and cybersecurity. Focus areas are cloud-native, 5G-ready products for data management, policy and access control, video traffic optimization, edge virtualization, and traffic intelligence. More than 3 billion people rely on Enea technologies in their daily lives when they use mobile phones and connect to the Internet.

### **About Ubotica**

Ubotica Technologies provides technical expertise in the areas of Computer Vision and Machine Learning in embedded systems at the Edge. Ubotica is headquartered in Ireland with a team of AI Engineers based in DCU Alpha, Glasnevin, Dublin and has a team of Computer Vision Engineers in Spain based in UCLM, Ciudad Real.

### **About 12 G Flight Systems**

12G Flight Systems was founded in 2018, focusing on critical software for the aerospace and space sector. Our staff has experience working for big government and space agencies. 12G Flight systems main product is PUSopen®, the data handling solution based on established ECSS PUS and CCSDS space communication standards.