



News Release

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NTU collaborates with Nexeya to develop commercial nanosatellites.

- *France and Singapore Year of Innovation 2018*

Nanyang Technological University, Singapore (NTU Singapore), Nexeya Frances SAS (Nexeya), and Censin Technology Pte Ltd (Censin) have joint forces to develop and market small nanosatellites for the region.

A Memorandum of Understanding between the three parties was signed during the Singapore Airshow. This is in conjunction with the France-Singapore Year of Innovation 2018. The partnership aims to introduce new concepts in the nano satellite segments with specific payload on board satellites less than 100 kg.

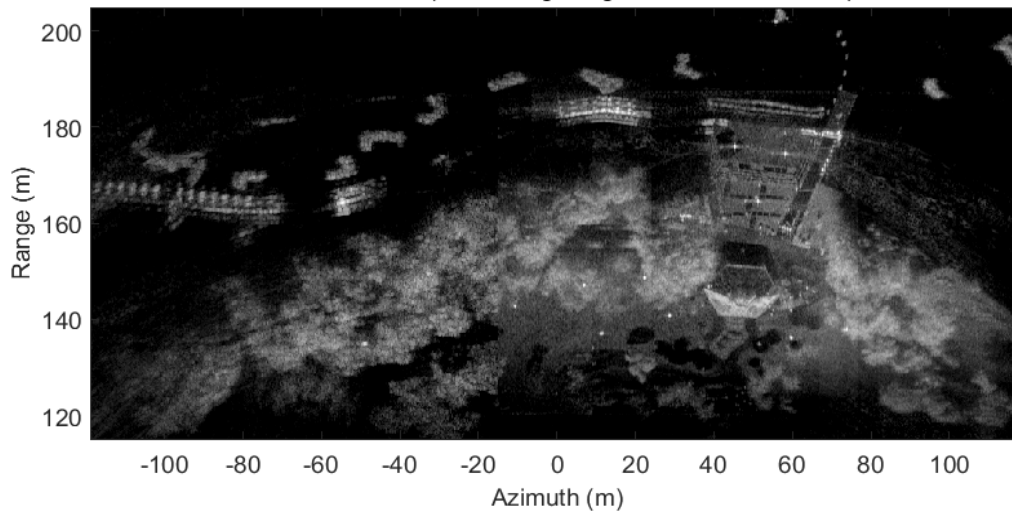
NTU Singapore, with its extensive research effort and achievement in satellites shall be embarking on a series of satellite technologies. There is a vast amount of NTU research that can be applied to the space borne application.

NTU has developed a multi-rotor based synthetic aperture radar (SAR). The lightweight flight system transmit radio frequency signal, which will be reflected from the ground. This information can be processed to form the ground image. This multi-rotor drone, which has high vibration during flight, is still capable of forming high quality images of 25cm×25cm resolution. From the image, small objects such as small boat, motorcycle and people can be detected.

The key objective is to build a small and reliable system, which is cost effective to have the earth observation capability throughout the day and night. This radar technology shall enable the view of the ground surface even at low lights or cloudy sky conditions. There will be further application usage when analysing and re-processing the SAR images.



LakeSide Trial (After Range Alignment and Autofocus)



Nexeya shall be providing the expertise on the bus system whereby the application has high demand on power and thermal management. The use of small satellite platform for a SAR mission is really innovative and disruptive. Currently the ongoing development of ANGELS (Argos Neo on a Generic Economical and Light Satellite) by NEXEYA in collaboration with CNES (Space French Agency) is the first step to target a range of Nanosat platforms perfectly dedicated to needs of miniaturization, modularity, reliability and cost efficiency. Collaborative developments expected with NTU will take advantage of the technological advances.

Censin Technology whom has a strong presence in the region, shall be venturing to this new market segment, creating new business solution to the end customers.

NTU satellites in space

NTU is the first university in Singapore to launch a satellite programme for undergraduates and postgraduates. The success of NTU's first satellite, the X-SAT, has resulted in a joint venture between ST Electronics (Satcom & Sensor Systems) Pte Ltd, DSO National Laboratories and NTU, to form ST Electronics (Satellite Systems) Pte Ltd.

The seven satellites are:

- **X-SAT**, Singapore's first locally built satellite launched in April 2011. The fridge-sized micro-satellite weighing 105kg is built by NTU and DSO National Laboratories.
- **VELOX-P11**, an NTU student-built nano-satellite satellite launched in November 2013. It is the size of a 10cm cubic box weighing 1.3kg.
- **VELOX-I**, a 4.5-kilogramme satellite built by students and research staff to demonstrate advanced satellite technologies designed by NTU. It tested an inter-satellite communication system that could communicate with the 193-grams **VELOX-P111** satellite which it piggybacked. These two satellites were launched in June 2014.
- **VELOX-II**, a 12kg nano-satellite that demonstrated Inter-Satellite Data relay System (IDRS) which is owned and developed by Addvalue Innovation Pte Ltd. It was launched in 16th Dec 2015 and is NTU's first satellite to carry a commercial payload.
- **VELOX-C1**, a 123-kg microsatellite, supported by Singapore's Economic Development Board, is designed to evaluate a new precise navigation system and to measure atmospheric parameters for studying the tropical climate. It was launched in 16th Dec 2015 together with VELOX-II and four other satellites from India.
- **AOBA VELOX-III**, a 2.3-kg nanosatellite, jointly developed with Kyushu Institute of Technology (Kyutech) to demonstrate the operation of Pulsed Plasma Thruster for attitude control and orbit maintenance. Deployed from International Space Station (ISS) on 16 January 2016.

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About Nanyang Technological University

A research-intensive public university, Nanyang Technological University, Singapore (NTU Singapore) has 33,500 undergraduate and postgraduate students in the colleges of Engineering, Business, Science, Humanities, Arts, & Social Sciences, and its Interdisciplinary Graduate School. It has a new medical school, the Lee Kong Chian School of Medicine, set up jointly with Imperial College London.

NTU is also home to world-class autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies, Earth Observatory of Singapore, and Singapore Centre on Environmental Life Sciences Engineering – and various leading research centres such as the Nanyang Environment & Water Research Institute (NEWRI), Energy Research Institute @ NTU (ERI@N) and the Institute on Asian Consumer Insight (ACI).

A fast-growing university with an international outlook, NTU is putting its global stamp on Five Peaks of Excellence: Sustainable Earth, Future Healthcare, New Media, New Silk Road, and Innovation Asia.

The University's main campus has been named one of the Top 15 Most Beautiful in the World. NTU also has a campus in Novena, Singapore's medical district.

For more information, visit www.ntu.edu.sg

About Nexeya

NEXEYA designs, tests, and maintains critical electronic systems for the aeronautics, defense, space, energy, and transport industries. NEXEYA has 860 employees and annual revenue of 118 million euros (as at 30 June 2017). Since July 2017, the management has been increasing its stake in the company and, with 75% of the capital, now holds a majority stake.

With "Small Sats by NEXEYA", NEXEYA is offering a range of small highly reliable platforms (from 6U to 27U), from 10kg to 40kg, that is both highly competitive and efficient.

These satellite platforms, used for observation, low-speed telecommunications and technology demonstrations, have an unparalleled orbit lifetime for their size, with over 4 years of service commitment. Available in various configurations (standard, intermediate and premium) and designed to reduce non-recurring costs and integration and operation costs, they provide new opportunities for defense, earth observation in high resolution (video and imaging), data collection from connected objects, in-flight demonstrations of technology and components (or software), scientific research missions, and pharmaceutical and biological experiments in microgravity.

For more information, visit www.nexeya.com

About Censin Technology Pte Ltd

Censin Technology is technology marketing company which helps overseas high technology companies to develop their market presence and business opportunities in South East Asia region. Some of the companies which have engaged Censin Technology's services have expanded their businesses exponentially.

For more information, visit www.censintechnology.com