
TECTUS TO LEAD THE DEVELOPMENT OF AUTONOMOUS DRONES FOR ASSET INSPECTION

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Tectus Dreamlab and the National University of Singapore's Department of Civil and Environmental Engineering develop autonomous drones using artificial intelligence for building inspection, with funding support by the Building and Construction Authority under the 2-Stage Innovation Grant (iGrant)

A Tectus Dreamlab collaboration with the Department of Civil and Environmental Engineering at the National University of Singapore (NUS) on an autonomous drone project, supported by the Building and Construction Authority (BCA), is set to revolutionize construction engineering and asset management while drastically increasing productivity and driving down inspection and maintenance costs.

The project will see the development of self-fly drones on building construction sites to collect photographic data. The drones will be able to fly to multiple floors autonomously and automatically generate a report containing the images with their specific locations.

Craig Rice, Executive Director of Tectus Dreamlab explained: *"A key factor is that our drone is being developed to operate without GPS or other external positioning aids. It will be equipped to perform autonomous defect detection without human assistance or intervention."*

A primary objective of this project is to increase the potential use for drones in building construction by achieving autonomous indoor navigation and drone flight - without an operator and without requiring access to GPS, Wi-Fi or beacons. While unmanned aerial vehicles - or drones - are increasingly being used in construction, primarily flying outdoors, these are remotely controlled by a drone operator and have mission planning based on GPS data.

Next generation inspection and maintenance solutions leveraging cloud computing, virtual and augmented reality and machine learning are already in progress for the development of the Screening Eagle Platform at Tectus Dreamlab.

Marcel Poser, Tectus Group CEO added: *"The Screening Eagle platform leverages decades of experience in international property development and management, construction engineering, and materials testing within Tectus Group companies such as the BBR Group, which includes the Global BBR Network and Singapore-based BBR Holdings, and the Proceq Group. For Tectus Dreamlab, it is just the beginning of many next-generation initiatives to lead the digital industrial age and to serve global markets."*

Professor David Chua Kim Huat of the Department of Civil and Environmental Engineering at NUS said: *"The team at NUS welcomes the opportunity to collaborate in this leading edge project supported by the BCA that will deliver globally important technology and will radically improve the way world infrastructure is maintained. We share the vision with Tectus Dreamlab of innovating for a better future and, like the Tectus Group, also bring to the table many years of experience in this market sector."*

Mr. Tan Tian Chong, Deputy Managing Director of BCA Built Environment Research and Innovation Institute said: *"The use of drone technology could help to ensure consistent quality, improve productivity and enhance the safety of assessors. We are heartened to see such co-development efforts between private companies and academia in bringing about next-generation technologies that could change the way we build and manage our built environment productively. This move is in line with BCA's Construction Productivity R&D roadmap where BCA is providing funding to firms for technology adoption to drive higher productivity improvements in the built environment sector."*

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About Tectus Group

The Tectus Group (www.tectusgroup.com) and associated companies is a family-owned multinational business with headquarters in Zurich, Switzerland. The company has diverse operations and investments across six market segments - engineering & construction, real estate, IOT & sensing, digital health, and entertainment & lifestyle. An entrepreneurial spirit, innovative mindset, highest standards in quality and ethical practice are key to all activities the group leads.

About Tectus Dreamlab

Tectus Dreamlab Pte Ltd (www.tectusdreamlab.com) was established at Fusionopolis in Singapore in November 2015 by the Tectus Group, to focus on cutting-edge, cross-functional research. The Tectus Dreamlab team works on cross-disciplinary R&D projects that leverage existing expertise within the Tectus Group, combined with the novel technologies and capabilities of various research platforms in Singapore. One of the premier initiatives of Tectus Dreamlab is the Screening Eagle Platform - a research project to create a holistic platform for asset monitoring, maintenance and inspection, which will help ensure optimal performance of infrastructure investment worth around US\$57 trillion globally until 2020. In addition to tapping into global trends of virtual and augmented reality, the Internet of Things, mobile computing, big data, cloud computing and drones, this new facility also fosters frequent interactions with customers and partners in the region.

About BBR Network

The BBR Network (www.bbrnetwork.com) has a heritage stretching back nearly 75 years and experience of delivering specialized engineering solutions for literally thousands of structures - including high rise and other types of buildings, bridges, stadium, silos, dams and many more - executed in every corner of the globe. Today, the BBR Network is recognized as the leading group in the field of post-tensioning, stay cable, geotechnical and construction engineering in over 50 countries. With specialist know-how, the BBR Network can provide a full range of services. From its Technical Headquarters and Business Development Center in Switzerland, the BBR Network reaches out around the world and has at its disposal some of the most talented engineers and technicians, as well as the very latest internationally approved construction technology.

About BBR Holdings Singapore

BBR Holdings (S) Ltd (www.bbr.com.sg), established over 20 years ago, has created a footprint covering local Singapore and South East Asia markets as a property developer, general contractor and specialist engineering contractor. The company has adopted new approaches, such as investment and supply of solar energy installations and pioneered prefabricated prefinished volumetric construction (PPVC) of high-rise buildings in Singapore not only to revolutionize productivity, but also to enhance the way buildings are constructed. First listed on the Singapore SESDAQ in 1997, the company was subsequently upgraded to the Mainboard in September 2006. BBR Holdings is a reliable and trusted business partner in both public and the private sectors in Singapore and the region.



About Proceq

Since 1954, Proceq of Switzerland (www.proceq.com) has been providing innovative testing solutions for the energy, construction, automotive, material testing and manufacturing industry. With its extensive portfolio of high quality Swiss-manufactured technology and best-in-class research and development, Proceq is now shaping the future of portable materials testing (NDT) globally. After the 2016 launch of Equotip® Live, the world's first Internet of Things wireless hardness tester, Pundit® 250 Array, the fastest ultrasonic imaging scanner and Profometer® 6, a cover meter with Artificial Intelligence function, the company is poised to set still more benchmarks in 2017. With subsidiaries in North and South America, United Kingdom, Russia, the Middle East, China and Singapore, Proceq provides its international customers with excellent local support.

About Department of Civil and Environmental Engineering at National University of Singapore

The NUS Department of Civil and Environmental Engineering (CEE) has grown tremendously within the Faculty of Engineering since its inception in 1955 and continues to evolve with its unique strength to cater to the needs of all stakeholders including students, alumni, industry partners and academic collaborators. CEE facilitates interdisciplinary approaches for tackling new challenges facing the growth of cities due to rapid urbanization, such as the changing population profile, water resources management, rising energy costs, resource constraints, air pollution, climate change, underground space creation and sustainability.

About BCA 2-Stage Innovation Grant (iGrant)

The \$3 million 2-Stage Innovation Grant (iGrant) is targeted at the building and construction value chain (developers, consultants, builders and suppliers) to conduct small-scale R&D projects, in-depth feasibility studies and modeling. The type of projects eligible for the scheme will be more downstream, fast-track, easily implemented and deployable in actual development projects with up to a 2-year timeframe.

The scheme allows the industry to submit proposals on an ad-hoc basis via a 2-stage process. Stage 1 Proof-of-concept study involves sieving through ideas and projects for assessment of feasibility and proof of concept, with funding support level of up to 70%, capped at \$20,000 to allow applicants to jump start their R&D projects quickly. Findings from the first stage will allow BCA to make an informed decision on whether the project can proceed in full under the Stage 2 Project Implementation. The funding support level is also up to 70% but capped at a higher quantum of \$250,000. More information can be obtained at the following website:

http://www.bca.gov.sg/ResearchInnovation/2stage_InnovationGrant.html

