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Circular to Professional Institutes / Associations

Dear Sir / Madam,

GREEN BUILDINGS INNOVATION CLUSTER (GBIC) DIRECTED CALL FOR PROPOSALS ON SMART BUILDING TECHNOLOGIES AND SOLUTIONS

Background

- 1 The Green Buildings Innovation Cluster (GBIC) funded by National Research Foundation (NRF) has launched the inaugural GBIC R&D Grant Call on 9 July 2015. The grant call takes reference from the Building Energy Efficiency R&D Roadmap developed via a consultative process with local and international experts, academics, industry professionals and policy makers to identify and address the priority area and gaps in the regional and global building industry.
- 2 This grant call aims to complement Singapore Smart Nation Initiative in the area of Smart Building, placing greater emphasis on making our green buildings smarter and healthier, apart from being energy efficient.
- 3 Today, over half of the world's population are living in cities, while nearly 10% more are expected to join in over the next 20 years. The demand for new buildings in the cities has never been higher. Smart building technology spending is forecasted to grow from US\$6.3 billion in 2014 to US\$17.4 billion in 2019, registering a compound annual growth rate (CAGR) of 22.6%¹. Singapore is well placed to develop smart

¹ Business Strategy: Global Smart Building Technology Spending 2015–2019 Forecast by IDC Energy Insights report

building solutions for regional and global customers to take advantage of this market growth.

- 4 There is a huge potential in environmental sustainability that can be materialised by the Smart Building technologies. Based on a study by the Oak Ridge National Laboratory, advanced sensors and controls have the potential to save 20-30% of energy consumption of buildings.
- 5 Despite of the significant benefits and huge potentials of the smart building technologies, they are still severely under - utilised in today's industry. A survey suggested that 82% of buildings are installed with Building Management System (BMS), but only a handful of the building managers are able to fully utilise them for targeting energy use. It was suggested that only 30% of the data collected from the BMS is analysed and put to use to make intelligent decisions in real-time².
- 6 In view of the rising importance of smart buildings, the next Green Mark for Non-Residential Buildings (Green Mark 2015) will also be incorporating Smart Building Operation as one of the key assessment criteria for new buildings.

Scope of Grant Call

- 7 Below are some potential key areas for R&D opportunities to develop state-of-the-art and cost effective smart building technologies and solutions. While this is not an exhaustive list, key areas include:
 - i. Integration of smart control systems into building systems to obtain optimal control of building's energy performance and indoor air quality and comfort.
 - ii. Multi-functional sensors and control networks that gather data from building systems and send commands to equipment, allowing buildings to adapt to the occupant activities.

² Singapore BIM Roadmap [Online]. Building and Construction Authority. Available: <http://www.bimmepaus.com.au/libraries/resources/BMA%20Forum%202012/singapore%20bim%20roadmap%202012-rev.pdf>

- iii. Affordable, accurate and reliable sensors for monitoring a number of parameters that would lead to better control of the building systems.
- iv. Smart solutions for energy management that dovetail with data from Building Information Modelling (BIM) to provide location-based visualisation.
- v. Convergence of information technology and building systems to enable interoperability of building systems and remote monitoring, diagnostics and control of appliances and systems within buildings.
- vi. Cost effective Fault Detection and Diagnosis (FDD) system for identifying poor energy performance, diagnosing the reasons, visualising the analysis, proposing intelligent solutions and forecasting performance improvements.
- vii. Smart energy management systems that can be more easily installed and commissioned in existing buildings, clusters of buildings or across a portfolio of buildings.
- viii. Smart solutions that would enhance users' engagement and influence behaviour changes.

Funding Support

- 8 IHLs, research institutes, public sector agencies and not-for-profit organisations will qualify for up to 100% funding support of approved direct qualifying costs of a project. Private sector companies will qualify for up to 70% of funding support of the approved direct qualifying costs of a project. Only IHLs and not-for-profit entities would be allowed support for indirect costs. These include up to 20% of qualifying costs for overhead costs.
- 9 Proposals should not be funded or be currently considered for funding by other agencies.
- 10 Funding awarded cannot be used to support overseas R&D activities. All funding awarded must be used to carry out the research activities in Singapore unless approved in the grant.

- 11 We expect projects to range in total size up to S\$1,200,000, although we may consider projects outside this range. Project duration should not be more than **2 years**.
- 12 Awarded projects may be reviewed to identify those with high potential to be considered for further funding support for testbedding at BCA Rotatable Lab or large scale demonstration in a real building environment.
- 13 As this grant call is an industry centric research, projects led by a Principal Investigator (PI) from the Institute of Higher Learning (IHLs), research institutes, public sector agencies and non-profit organisations **must have at least one relevant industry partner**.

Application

- 14 Interested applicants are invited to submit their proposals via GBIC's RITA website at <https://rita.nrf.gov.sg/ENIC/gbicrnd/default.aspx> Submission of white paper is open from **09 July 2015, 0000hrs** until **21 August 2015, 2355 hrs Singapore time (GMT +08:00)**.
- 15 The proposals will be evaluated in two stages (i) White Paper stage; and (ii) Full Proposal stage.
- 16 The full details of the scheme can be found on GBIC's RITA website at <https://rita.nrf.gov.sg/ENIC/gbicrnd/default.aspx>
- 17 For more information, please contact:

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Thank you.

A handwritten signature in blue ink, appearing to read 'Tan Tian Chong', with a stylized, cursive script.

TAN TIAN CHONG
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