

Campus for Research Excellence And Technological Enterprise (CREATE)

- a microcosm of the future economic system of Singapore based on research, innovation and enterprise

1.0 AN INTRODUCTION TO CREATE

- 1.1 CREATE (**C**ampus for **R**esearch **E**xcellence **A**nd **T**echnological **E**nterprise) is a framework to accelerate Singapore's thrust towards an inventive, innovative and entrepreneurial economy. The National Research Foundation (NRF) is working with selected world-class research universities to establish research centers in Singapore under the CREATE structure. These research centers will host inter-disciplinary research programmes involving faculty, researchers and students from their home institutions collaborating with faculty, researchers and students from Singapore's universities and research institutions as well as amongst themselves. (Figure 1)
- 1.2 CREATE is made up of a complex of research centers from top universities, augmented with corporate research laboratories, incubators for high-tech start-ups and other shared infrastructure and services. CREATE will contribute towards making Singapore an innovation-driven knowledge-based economy, characterized by high levels of intellectual energy and innovation, able to attract talent globally and sustain strong economic growth. A brief outline of the terms of cooperation between NRF and the research centers in CREATE is provided in ANNEX A.
- 1.3 CREATE is expected to house some 1,000 researchers at steady state, as well as a larger churn of scientific talent coming through Singapore to work with the best minds from all over the world gathered here.

2.0 CREATE BUILDING DESIGN

- 2.1 The CREATE building complex is designed with the following considerations:

(a) Pioneering environmental sustainability technologies in the tropics

CREATE will be developed with an inspiring tropical botanic garden setting where the natural characteristics of the site are maximized. The garden setting will provide a quiet and contemplative environment for researchers to conduct their research activities.

CREATE will pioneer the use of environmental sustainability and energy efficient technologies in buildings in the tropics. The laboratory core spaces and corridors will be located at the perimeter to introduce maximum daylight and reduce the need for artificial lighting significantly. The dependence on municipal water will be reduced by the collection, storage, and treatment and re-use of rainwater and grey water from showers and lavatories. The use of photovoltaic

panels on the building is also being explored and provides an opportunity for the test bedding of the latest solar technologies. (Figure 2)

(b) Strong interaction & collaboration

The campus will house a multi-cultural and multi-disciplinary research community. CREATE will be designed to maximize the interaction among these diverse individuals.

(c) Flexible Configuration

CREATE laboratories would be built with flexibility to cater to the different needs of researchers. Laboratories would be reconfigured quickly in response to the dynamic requirements and varied needs of the research groups.

(d) Magnet for global research talent

Through the presence of world class research universities and research facilities, and the proximity of the National University of Singapore, the Science Parks and the One-North developments of Biopolis and Fusionopolis, CREATE will be a magnet for attracting scientific talent from all over the world.

3.0 SINGAPORE – MIT ALLIANCE ON RESEARCH AND TECHNOLOGY (SMART) CENTER

3.1 The SMART Center is MIT's first such research centre outside its home campus in Cambridge, Massachusetts and MIT's largest international research endeavor ever. MIT's decision to partner with NRF in this new venture reflects tremendous interest and enthusiasm on the part of MIT's faculty.

3.2 The SMART Center will serve as an intellectual hub for interactions between MIT and global researchers in Singapore at exciting frontier areas of science and technology. The SMART Center will house a continuous cohort of MIT professors, post-doctoral fellows and PhD students working side by side with researchers from other institutions in the SMART Center. At steady state, the Center plans to house five inter-disciplinary research groups.

4.0 INTER-DISCIPLINARY RESEARCH GROUPS (IRG) IN SMART

4.1 The Infectious Disease IRG aims to develop an integrated, cutting edge research program to study pathogen-host interactions of infectious diseases. It will focus on infectious diseases of importance to Singapore, Asia and the world.

4.2 The Center for Environmental Sensing and Modeling (CENSAM) IRG will address the grand challenge of providing proof of concept of the paradigm of pervasive monitoring and control within the highly developed and carefully managed urban environment of Singapore.

4.3 The BioSystems and Micromechanics (BioSyM) IRG aims to develop new technologies that will address critical medical and biological questions applicable to a variety of diseases and to provide a constant source of new technologies to the broader Singapore research infrastructure.

5.0 DEVELOPMENT OF FUTURE RESEARCH GROUPS AND CENTERS IN CREATE

5.1 NRF has been in discussion with a number of leading universities and corporations to have a research presence in CREATE.

5.2 The intent is to bring together top research minds from universities and companies worldwide to Singapore to work on major technological challenges in collaboration with Singapore's universities and research institutions.

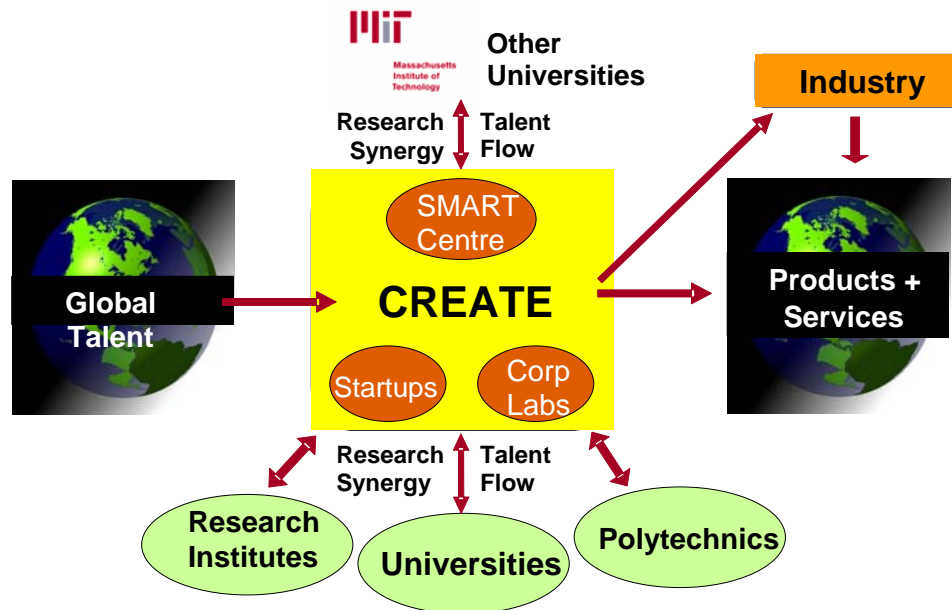


Figure 1: Microcosm of Future Economy Driven by Research, Innovation & Enterprise



Figure 2 - Physical model of the CREATE building (scale: 1: 250)

ANNEX A

General Terms for Research Centres in CREATE

Funding

Funding will be provided for CREATE research centres to support research activities. Funding will cover personnel costs, equipment, facilities, travel, relocation expenses and other related costs.

Cooperation with Local Institutions

Deep and extensive cooperation with researchers in the local tertiary and research institutions is expected. Post-docs and PhD students would be part of the research teams undertaking inter-disciplinary research.

Ownership of Intellectual Property (IP) rights

IP created would be owned by the institutions whose employees contribute to its creation. Such IP could be individually or jointly owned depending on inventive contribution.

Technology Commercialisation

The commercialization of such IP funded via CREATE will be carried out by a designated Technology Licensing Office (TLO) based in Singapore. This TLO will undertake all intellectual property (IP) management and licensing activities on behalf of the CREATE entity. Proceeds from such IP commercialization will be distributed among the inventors and owner institutions.

Residency

Scientists from the foreign institution participating in CREATE will be required to spend periods of residency in Singapore to ensure adequate supervision of research projects. For a research program led by a group of principal investigators (PIs), at least 1 PI must be based in Singapore at any time, for a period of at least 6 months to oversee the program. Each PI will also spend at least 1 month in Singapore per year during the program's life. For a typical 5 year program, each PI would need to spend 12 months on aggregate in Singapore.

Networking Opportunities

CREATE is expected to house some 1,000 research talent at steady state from MIT, and other foreign universities. This complex of research centers will be augmented with corporate research laboratories, incubators for high-tech start-ups and other shared research facilities.