UNIVERSITY OF ILLINOIS
URBANA-CHAMPAIGN · CHICAGO · SPRINGFIELD

SINGAPORE RESEARCH PROGRAMS
PROGRESS UPATE
July 2014

James D. Montgomery, Sr.
Chairman, UI Singapore Research L.L.C.
University of Illinois Board of Trustees

RECITALS

<u>2008</u>: University of Illinois (UI) Board of Trustees approval of a new university related organization – UI Singapore Research L.L.C. (LLC) and a subsidiary company in Singapore – Illinois at Singapore Research Pte Ltd (Illinois at Singapore), a private limited company.

<u>January 2009</u>: UI ratification of research program agreement with the Agency for Science, Technology and Research (A*STAR).

<u>April 2009</u>: Advanced Digital Sciences Center (ADSC), an affiliated center of UI, established as a research center of Illinois at Singapore for the purpose of conducting research in Singapore.

THE RESEARCH PROGRAMS

Phase I – *Human Sixth Sense Program* (HSSP): ~$50M grant from A*STAR, 2009 – 2014

Phase II – *Human Centred Cyber-physical Systems for Safe and Secure Urban Living Program* (HCCS): ~$16M grant from A*STAR, 2014 – 2017 (this phase formally proposed by A*STAR and ratified by Illinois at Singapore Board of Directors, April 2014). Phase II:
- extends UI's Singapore research program from five to eight years
- enables ADSC to maintain the research facility at a similar to current capacity

Phase I and II funding includes full support for the research programs, participating UI faculty's research engagement, program administration, and UI professional services for the Singapore operations.

HCCS Research Focus – three research components: Data Analytics, Data Visualization and Cyber Security. This new program of research will focus on developing systems which enable the human to more fully interact with the digital world while addressing challenges and opportunities of contemporary urban life. The program seeks to do so by also enhancing city safety, security and quality of life while ensuring the privacy of individuals and their data. Program delivery resides with UI's College of Engineering.

Additional HCCS Focus – the new research focus will increase collaborations with fellow A*STAR-funded organizations, such as the Institute for Infocomm Research and other Singapore-funded agencies, and also with Singapore's research universities which have developed into highly respected higher education pillars in Southeast Asia.

"Through our partnership with A*STAR, ADSC is providing unique opportunities for UI researchers to develop and field-test new technologies for increasing energy efficiency on urban platform scales in one of the world's most advanced and forward-looking cities. Singapore encourages public, private and international research collaborations and has established itself as a living laboratory for enhancing urban life with new and innovative ideas. UI-based research can provide significant positive impact in Singapore; more rapidly advance our research, and ultimately enhance the quality of life for millions of Illinois and American citizens."

UI Professor Douglas L. Jones
Director, Advanced Digital Sciences Center (ADSC)

RESEARCH PROGRAM DEVELOPMENT

Since the program's launch in 2009, maturity growth has been significant as has UI's framework to provide program support. Notable developments include:

- Elevated UI-based *international research acumen* across sectors including research administration, international collaborations, corporate compliance, and technology licensing

- Strategic *pairing of UI faculty expertise with ADSC research personnel* complementing UI Engineering and A*STAR's program priorities

- Effective *re-tooling of research program foci* for transition from Phase I to II

- HSSP *key performance indicators met* (a refocused set of KPIs are aligned for the new HCCS program)

- Significant *policies development across mission-critical areas* including budgeting, personnel, hiring, ethics, research integrity, conflict of interest, etc.

Realization that a UI-anchored international research program of this scale – a first in UI's history – is not only possible, but now successfully exhibited

PROGRESS BY THE NUMBERS

Scientific Impact
▫ Conference papers accepted | 212
▫ Journal papers accepted | 106
▫ Competition awards | 13

Economic Impact
▫ IP licenses | 6 in Asia, 1 in US
▫ Provisional patent applications | 2
▫ Copyrights | 31
▫ Technical disclosures | 9
▫ Startups facilitated | 6 in Singapore, 1 in US

CURRENT PERSONNEL

Staff *(Singapore-based)*
▫ Management | 2
▫ Research Scientists | 28
▫ Engineers | 28
▫ Administration | 4.5
Total | 62.5

Students
▫ A*STAR UI Partnership PhD Programme Scholars | 5
▫ Singapore International Graduate Award Scholars | 1 *(+2 in fall 2014)*
▫ Interns | 9

UI Faculty | 11 (via secondment to ADSC via Illinois at Singapore)

WHY A UI RESEARCH PROGRAM IN SINGAPORE

The ADSC's research program was established in Singapore for multiple reasons, not the least of which is its highly developed market economy. The economy is known as one of the freest and most innovative and business-friendly in the world. Singapore has a strong financial base and is currently the only Asian country to receive AAA credit rating. The World Bank names Singapore as the world's top logistics hub and is the world's largest foreign-exchange trading center after London, New York City and Tokyo.

The coupling of these Singapore attributes with a vibrant A*STAR partnership and UI expertise are resulting in tangible benefits including:

- ***Enables research*** that would be difficult if not impossible in Urbana. For example, energy-efficient research technology for use in tropical climates and unified urban monitoring for safety and security in large cities.

- ***Collaborations with research groups that are some of the very best in the world***. For example, UI is collaborating with a speech and language technologies group with Singapore's Institute for Infocomm Research – an institute consistently recognized worldwide.

- ***International higher education research collaborations*** are rapidly becoming highly important to many university faculty members. The Singapore research program strengthens UI's position for faculty recruitment and retention.

- ***International research visibility and presence is greatly enhanced***. A world-class research university needs a world-wide reputation. The international visibility that Singapore offers UI is undeniably important to potential collaborations, international student and faculty recruitment, and further partnerships in Asia.

"A*STAR's long-standing partnership with the University of Illinois at Urbana Champaign (UIUC) has offered Singaporeans world class PhD training opportunities in the US. Our close relationship led to the establishment of the Advanced Digital Sciences Center (ADSC) in April 2009. Through ADSC, A*STAR and UIUC have jointly developed multiple technological capabilities in the Interactive Digital Media space such as audio-visual telepresence, hardware synthesis, scene understanding and web mining. It also resulted in 6 IP licenses, the training of local IDM talent and spawning of 6 start-up companies in Singapore. On the other hand, ADSC provided UIUC with a point of entry into Asia's vibrant technology market and environment. As ADSC begins its next phase, I am confident that the A*STAR-Illinois partnership in research and education will continue to create world-class research and talent."

Mr. Lim Chuan Poh
*Chairman – Agency for Science, Technology and Research (A*STAR)*

NEW & COMPLEMENTARY INITIATIVES

The A*STAR-sponsored HSSP and HCCS programs are being complemented and extended by:
- Commercialization technology grants awarded by Exploit Technologies Pte (A*STAR's technology transfer arm)
- Active pursuit of National Research Foundation-funded grants and other initiatives

Additional UI-based initiatives are partnering with Nanyang Technological University (NTU) in Singapore:

- UI's College of Agricultural, Consumer and Environmental Sciences' *Food Science and Food Security Program.* In addition to NTU and UI, Wageningen University (Netherlands) is an additional partner – recent launch of funding announcement for proposals among the universities for first phase joint projects, ~$1.6M

- UI's National Center for Professional & Research Ethics's program *Higher Education Leadership Development: Leading with Values and Integrity* – recently ratified 3-year direct contract of $2.9M

- UI's College of Engineering's *Engineering Meets Medicine* concept – in substantive discussion stage among key principals

LEADERSHIP – BOARDS & STAFF LEADERSHIP

- *UI Singapore Research LLC Board of Managers:* James Montgomery *(Chair)*, Larry DeBrock and Pradeep Khanna – *Officers:* Lisa Power *(Secretary)*, Walter Knorr *(Treasurer)*

- *Illinois at Singapore Research Pte Board of Directors:* Phyllis Wise *(Chair)*, Ilesanmi Adesida, Andreas Cangellaris, Peter Schiffer and Teh Kwang Hwee *(Singapore resident director)* – *Officers:* Walter Knorr *(Treasurer),* Secretary via Singapore-based corporate secretariat

- *Administrative Manager for the Boards:* Kraig Wagenecht

- *Illinois at Singapore Pte Executive Director:* Jesse Delia

- *ADSC Director:* Douglas Jones, UI Electrical and Computer Engineering, Professor

- *ADSC Associate Director:* William Sanders, UI Department of Electrical and Computer Engineering, Interim Head

- *ADSC Deputy Director:* Jeremy Heng

- *ADSC Managing Director:* Donna Foley