

CITIES ROUNDTABLE

28 NOVEMBER 2013

Report on proceedings

*The Cities Roundtable is convened by the **Centre for Liveable Cities (CLC)**. It is an annual event to facilitate sharing and networking between the numerous research institutes established in Singapore. The Roundtable serves as a platform for centres/agencies to discuss and leverage on each other's focus, create potential synergies in research topics and explore possible future collaboration and follow up subsequently.*

This year's Cities Roundtable was co-hosted by CLC and the Singapore- ETH Centre's Future Cities Laboratory on 28 November 2013 at CREATE campus, University Town, Singapore.

Introduction:

The second edition of the Cities Roundtable, co-hosted by Centre for Liveable Cities and Singapore-ETH Centre's Future City Lab, was convened on 28 November 2013 at CREATE Campus. More than 90 persons from 31 research institutes as well as research and policy divisions within government agencies attended the Roundtable. Each was represented by the Centre Director or a senior representative (see *Appendix A: List of Participants*). Prior to the Roundtable event, CLC collated the research synopses of all participating research centres and institutes as well as direct contact points for research projects. This was then distributed to all participating research centres and institutes (see *Annex: Research Synopses Collation*).

Themes were discussed at the Roundtable in three consecutive sessions. The themes revolved around some topics raised in the previous year's Roundtable, namely:

- (1) Social Aspects of High Density Living;
- (2) Big Data/Smart City; and
- (3) Mobility and Environment.

CLC invited centres and agencies undertaking research in the above themes to present at the Roundtable. All attendees participated also had the opportunity to be involved in open discussions at the end of each session. Discussions centred on the presentations as well as possible future research areas. The presentations included a diversity of foci and depth, from technical to multi-disciplinary. The presentations are listed below:

Session 1: Social Aspects of High Density Living

- **'Rochor +'**, Future Cities Laboratory, Singapore-ETH Centre; Presenter: Prof Kees Christiaanse, Programme Leader
- **'Research for better HDB living'**. Building Research Institute, Housing Development Board; Presenter: Tan SzeTiong, Senior Engineer
- **'Population Outcomes: Singapore 2050'**, Institute of Policy Studies, NUS; Presenter: Dr Yap Mui Teng, Senior Research Fellow
- **'High Density'**, Centre for Sustainable Asian Cities (CSAC), School of Design and Environment, NUS; Presenter: Dr. Lai Choo Malone-Lee

- **'Dense + Green'**; Lee Kuan Yew Centre for Innovative Cities, SUTD; Presenter: Assoc Prof Thomas Schroepfer

This session highlighted that perceptions on density is a neutral concept, and its value is influenced by social connectedness and inclusiveness: higher densities are not perceived negatively if there is good social interaction and connectedness. Crowdedness is perceived if there is a lack of cohesion. Social interaction can be enhanced through provision of high quality urban environment with highly accessible and flexible public spaces/ amenities. Soft infrastructure, such as art and culture are important as well to promote participation. These need to withstand changing demographic profiles as well. Researchers are focusing on how to define, model and replicate these high quality spaces and interactions. This is possible through urban design, adjusting scale, including environmental sustainability measures and by building in greenery.

Session 2: Big Data/Smart City

- **'A*STAR Data and Analytics Exchange Platform (A*DAX)'** Institute for Infocomm Research (i2R), A*STAR; Presenter: Prof Ng See Kiong, Lead, Urban Solutions Initiative
- **'Smart Cities'**; National Climate Change Secretariat (NCCS); Presenter: Ms Denise Tan, Executive, Mitigation & Resilience Policy & Planning
- **'Crowd Sensing'**; Complexity Programme, NTU; Presenter: Prof Cheong Siew Ann, Assistant Professor, School of Physical & Mathematical Sciences
- **'Database Support for Research on Megacities'**; Energy and Environmental Sustainability Solutions for Megacities (E2S2); Presenter: Prof Ooi Beng Chin, Co-Principal Investigator

Presenters in this session provided fascinating examples of applications of Big Data. One of the identified challenges in Big Data research was access, which is due to privacy and legal concerns. While anonymisation of big data can be achieved, there is the residual persistent identity, i.e. patterns in the data from which the person can be identified. An area to further look into is how to prevent the re-identification through the persistent identity.

Big Data, when computed with gaming theory, can offer insights into possible future scenarios. Its application to policy decision should still be approached with caution, as data is often gathered at small time scales, and may or may not stably be expanded for longer time scales; answers to critical governing and planning decisions may also not be found through big data.

Session 3: Mobility and Environment

- **'Visual Explorations of Urban Mobility'**; MIT SENSEable Laboratory, MIT; Presenter: Prof Carlo Ratti, Director
- **'Social Values of Parks and Green Spaces'**; Centre for Urban Greenery and Ecology (CUGE) Research, NParks; Presenter: Ms Cybil Kho, Researcher
- **'Transportation System Dynamics and Modelling'**; Institute of High Performance Computing (IHPC), A*STAR; Presenter: Dr Erika Legara, Scientist II
- **'SEDSim simulation Platform for city scale electro-mobility'**. TUM CREATE; Presenter: Mr Heiko Aydt, Researcher
- **'Creating Healthy Places through Active Mobility'**; Centre for Liveable Cities, MND; Presenter: Mr Remy Guo, Assistant Director

Transitioning smoothly from the session on big data, session three provided examples on how big data can be used in enhancing mobility and the environment. Trash, greenery, commuter cards, taxis, cellphones, etc can be tagged to collect data on how people move, consume, transport, and recreate. Visualisation tools can bring a human and emotive dimension to understanding mobility. However, social and emotive dimensions are subjective, and hard to measure. Qualitative surveys are still, however, necessary to understand how to make mobility and greenery relevant to users, and to provide possible new input where data doesn't exist.

Scenario research on introduction of electric automobiles and cycling paths can also provide insight for system conflicts and risk reduction. Future research areas include impacts of increasing number of electric bikes as well as introduction of driverless cars. We need to strike a balance between ideals and strategic pragmatism: measures have to be in place to counter the possible dysfunction, such as viruses in the case of the driverless cars. Urban social resilience and robustness in systems is what keeps a smart city from degenerating into a dysfunctional city.

Potential Collaborations and Synergies

The Roundtable session continued with discussions on possible points of collaboration and synergies between private and government research centres and institutes. It was identified that research institutes could collaborate on how to operationalize factors that cannot be measured but have an important impact on people's lives.

Social science principles remain vital in planning and designing a modern and smart city. Experience and values need to be taken into account; therefore a trans-disciplinary approach is required for the modelling of smart cities. However, research institutes must also recognise and harness the dematerialisation of the economy and of the city, which is made possible because of complexity computing and big data. This could have implications on physical planning, for example traditional physical planning mechanisms are increasingly in conflict with big data-enabled modelling. In addition, a lot of computing is currently done in 'cloud', which means that computing capacity can be further devolved and distributed. In this light, no city is isolated and has to be understood inside its own hinterland. Singapore needs to understand its context in its hinterland and the rest of the world in order to increase its resilience. While a lot can be learnt from other countries, it is very important for the researcher to translate it to the Singapore context. There are tremendous opportunities for modelling and simulations.

Lastly, there needs to be a shift from the current short-term horizons employed by most research programmes. For effective collaborations and synergies to develop, long-term relationships have to be cultivated for new and innovative ideas and solutions to emerge. Researchers must also recognise that collaboration often thrives on chaos and mess; in universities, research and collaborations often start in coffee rooms and canteens. Research institutes should aim to encourage possibilities of incorporating these collaborations.

Conclusion of Roundtable and Future City Lab Presentations

The Roundtable ended with thanks from the hosts, Mr Khoo Teng Chye and Dr. Kees Christiaanse, as well as invitations to lunch and further presentations by Future City Laboratory showcasing its work.

FCL's presentations included:

- **'MATSim'** ; by Dr. Alexander Erath
- **'Walkability and Health'**; by Mr. Gideon Aschwanden
- **'Tropical Town/Smart Geometry'**; by Ms. Eva-Maria Friedrich

At the conclusion, Mr Khoo drew attention to Singapore overcoming its problems of high density through integrated and innovative approaches to urban development and design. The participants of the Roundtable were encouraged to collaborate and co-operate in their research work to further enhance Singapore's standing as a highly liveable city.

The system of rotating hosts for the annual Roundtable was well-received by the participants, who acknowledged that it was also an opportunity for individual research institutes and divisions to showcase their premises and projects. HDB's Building Research Institute has volunteered to co-host the 2014 Cities Roundtable.

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Appendix A: List of Participants

RESEARCH CENTRES IN GOVERNMENT

Research Centre	Attendees/ Representatives
1. Centre for Liveable Cities	<ul style="list-style-type: none"> Mr Khoo Teng Chye, Executive Director Dr Limin Hee, Acting Director Ms Adeline Lim, Deputy Director Ms Jean Chia, Senior Assistant Director Ms Jo Fen Tai, Assistant Director Ms Mayers Ng, Assistant Director Mr Rodeo Cabillan, Assistant Director Ms Elyssa Ludher, Researcher Dr Guangming Lin, Manager Mr Gurubaran Subramaniam, Manger Mr Kay Teck Cheong, Manager Ms Mercy Wong, Manager Ms Mina Zhan, Manager Ms Lau Ying Shan, Manager
2. Strategic Research Department of URA (Physical Planning)	<ul style="list-style-type: none"> Ms Elaine Tan, Acting Director Ms Josephine Yang, Executive Planner, Ms Faith Yeo, Planner
3. Institute of Governance and Policy (IGP) CSC	<ul style="list-style-type: none"> Dr Vernie Oliveira, Researcher
4. Institute Of Public Sector Leadership (IPSL) CSC	<ul style="list-style-type: none"> Mr Codey Tan, Senior Executive
5. NParks (Industry/CUGE)	<ul style="list-style-type: none"> Mr Wilson Chan, Assistant Director Ms Cybil Kho, Researcher
6. Building Research Institute, HDB	<ul style="list-style-type: none"> Dr Wong Liang Heng, Johnny, Group Director Ms Teh Poh Suan, Director(Building Research) Alan Tan Hock Seng, Director(Env'l Sustainability Research)
7. Strategic Issues Division [economics department] (under NCCS)	<ul style="list-style-type: none"> Mr Benedict Chia, Director Ms Evelyn Khoo, Director Ms Denise Tan, Executive
8. Research & Strategy Management, MND	<ul style="list-style-type: none"> Mr Derek Tan, Director
9. Strategic Planning Division, MND	<ul style="list-style-type: none"> Mr Eugene Leong, Senior Director
10. Infrastructure Division, MND	<ul style="list-style-type: none"> Mr Lim Chee Hwee, Senior Director
11. Research & Development Division, MND	<ul style="list-style-type: none"> Ms Kho Soo Pei, Director Ms Tan Hui Chin, Deputy Director Mr Soh Cheng Hwee, Senior Assistant Director
12. Safe and Security Industry Programme Office, EDB	<ul style="list-style-type: none"> Mr Gian Yi-Hsen, Director
13. Technology and Planning Group, IDA	<ul style="list-style-type: none"> Mr Leong Mun Yen, Senior Director Mr Ling Kok Tong, Deputy Director Mr Ho Khee Yoke, Senior Consultant
15. 3P network department, PUB	<ul style="list-style-type: none"> Mr. George Madhavan, Director Mr. Mas Shafreen, Senior Assistant Director

RESEARCH INSTITUTES / CENTRES/ PROJECTS

Research Centre	Attendees/ Representatives
1. Singapore-ETH Centre	<ul style="list-style-type: none"> • Prof. Peter Edwards • Prof Kees Christiaanse • Prof Stephen Cairns • Prof. Ian Smith • Asst. Prof. Alexander Lehnerer • Asst. Prof. Dirk Hebel • Asst. Prof. Milica Topalovic • Ms Cheryl Song
2. Institute for Infocomm Research (of A*STAR)	<ul style="list-style-type: none"> • Prof Ng See Kiong, Lead/Urban Solutions Initiative • Dr Goh Shen Tat, Assistant Department Head
3. MIT SENSEable Lab	<ul style="list-style-type: none"> • Prof Carlo Ratti, Director
4. SMU-TCS iCity Lab	<ul style="list-style-type: none"> • Ms Elina Yu, Research Programme Manager • Mr Alfred Wu, Senior Director and Chief Architect • Jungyoon Kim, Research Fellow
5. SMU Behavioural Sciences Institute	<ul style="list-style-type: none"> • Professor David Chan, Director
6. Centre for Sustainable Asian Cities (CSAC) at the School of Design and Environment	<ul style="list-style-type: none"> • Lai-Choo Malone, Director • Prof Fu Yuming, Vice-Dean of Research • Dr Devisari Tunas, Research Fellow • Ms Melissa Reese, Researcher • Ms Irina Orlenko, Research Assistant • Ms Duong Quyen, Research Assistant
7. Institute of Policy Studies (IPS), LKYSPP	<ul style="list-style-type: none"> • Dr Gillian Koh, Senior Research Fellow • Dr Yap Mui Teng, Senior Research Fellow
8. Asia Research Institute (ARI) LKYSPP	<ul style="list-style-type: none"> • Prof Michael Douglass • Dr Rita Padawangi
9. TUM CREATE	<ul style="list-style-type: none"> • Prof Harry Hoster, Scientific Director • Prof Ulrich Stimming, Scientific Advisor
10. LKY Centre for Innovative Cities (CIC)	<ul style="list-style-type: none"> • Mr Poon King Wang, Director • Dr John Clancy Powers • Assoc Prof Thomas Schroeffer
11. Institute of Southeast Asian Studies (ISEAS)	<ul style="list-style-type: none"> • Dr Benjamin Loh, Fellow
12. Environmental Research Institute, NUS	<ul style="list-style-type: none"> • Prof Ong Choon Nam, Director
13. Energy and Environmental Sustainability Solutions for Megacities (E2S2-CREATE)	<ul style="list-style-type: none"> • Prof Tong Yen Wah, Local Programme Lead • Prof Ooi Beng Chin, Co-PI • Prof Tang Loon Ching
13. Institute of High Performance Computing (IHPC) (of A*STAR)	<ul style="list-style-type: none"> • Dr Terence Hung, Deputy Executive Director • Dr Christopher Monterola • Dr Erika Legara
14. Asia Competitiveness Institute (LKY SPP)	<ul style="list-style-type: none"> • Asst. Prof Tan Khee Giap
15. City Form Lab	<ul style="list-style-type: none"> • Asst. Prof Andres Sevtsuk • Dr. Onur Ekmecki • Dr Heiko Aydt
16. Complexity Research Programme/NTU	<ul style="list-style-type: none"> • Dr Jan Vasbinder, Director • Prof Cheong Siew Ann