Smart City Priorities:
A Contribution to the Smart Hong Kong Consultation Paper
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Introduction

1. The Consultation Paper (CP) *Smart Hong Kong: Consultancy Study Report*[1] is wide-ranging in its identification of the different types of smart projects and initiatives that should be considered, as listed under six major 'smart' headings or 'buckets'[2]: mobility (14 items), living (5 items), environment (5 items), people (5 items), government (7 items), economy (6 items) *plus* Open Data (15 data sets). The sheer breadth of coverage is indicative of the potential scale and scope of smart city development. To even begin to make this manageable it would be necessary to break down the projects along the following lines:

   A. Who owns the project and what action do they require?
   - Require revisions or changes to laws and regulations
   - Require direct government intervention (e.g. land allocation) and/or funding
   - Lend themselves to public-private partnerships
   - Fall mainly in the domain of the private sector
   - Fall mainly in the domain of NGOs and community associations

   B. Priorities for Government and the Community
   - Projects owned primarily by Government
   - Projects owned primarily by either the private sector or the NGO/community sector
   - Enabling legislation and regulations for any of the priority areas

2. This contribution to the CP focuses entirely upon the **process of prioritizing, and the requirements for monitoring and assessment of projects and initiatives.**

A Smart City and its Priorities

1. There are many definitions of a smart city,[3] but for the purposes of this response to the CP, the focus is upon two: (i) the **smart use of ICTs** to improve the welfare and living conditions of citizens, and (ii) **smart policies** that probably involve the use of ICTs but are not defined by their

[1] https://www.smartcity.gov.hk/
[2] These are derived from the work of Dr Boyd Cohen, but as such they do not distinguish between developments that are fundamental to the welfare of society and the enhancement of life through the use of ICTs, such as luxury personal items. While the latter are part of economic development, they are not life-supporting as is, for example, food security or basic housing and health services.
[3] See, for example, TRPC (May 2105), 'Smart Cites, Smart Nation: Briefing Paper', http://trpc.biz/wp-content/uploads/Smart-Cities-19-May-Briefing-Paper.pdf

use. ***The latter are far more important to the future welfare of citizens than the former,*** but without the former the latter will be limited in achievements.

2. **The CP identifies the Vision** as "Smart Hong Kong – Embracing innovation and technology to build a strong economy, enhance quality of living and make Hong Kong a well-known Smart City." In today's world, innovation and technology usually implies 'digital' and 'connected', but it need not. For example, the promotion of electric vehicles is a smart way to reduce carbon emissions, an electric grid to support the recharging of car batteries is a necessary innovation, and regulations that permit private car parks and other private premises to revenue-share with utility companies to provide these facilities would also be smart, but not directly reliant on ICTs even if they embody some components, such as smart meters. Equally, it may be said that many ICT developments, such as IoT consumer products, are for the relatively affluent. These may be important elements of a market-driven economy, and they may need Government support in terms of policies that facilitate and promote the underlying communications infrastructure, but they have far less impact upon social welfare than steps to reduce pollution levels or provide adequate housing or health care for the elderly. ***Smart government should be about priorities that focus on the key challenges facing society***. In a market economy which remains competitive and open, the private sector will have its own priorities, and where these overlap with public goods there is scope for public-private-partnerships.

3. **Singapore versus Hong Kong**: There is a basic misconception that Hong Kong is somehow missing out by lagging Singapore. There may indeed be examples where Singapore has some policy advantages, such as close coordination between state agencies which breakdown policy silos; for example, unlike Hong Kong, there is no agency 'ownership' of lamp-posts that is allowed to stand in the way of affixing various sensors, WiFi nodes, network connectors, signal boxes, etc., to provide what is called a 'heterogeneous network' for island-wide IoTs. Government in Singapore is more unified, but out of necessity, not out of choice. Given Hong Kong's geo-political position on the world map, with China's huge market on its doorstep, the urgency for Hong Kong has been less, and Hong Kong's model has never required the same level of intervention. For example, unlike Singapore, Hong Kong has never needed to offer tax incentives to attract foreign investment. This is not to argue that Hong Kong should not make strenuous efforts to be 'smarter' than it already is, nor to argue that there are no lessons to be learned from Singapore, because clearly there are, as there are from many other smart cities. It is to argue that Hong Kong remains exceptionally well-placed to move up the smart city slope, but that priorities are of the essence. Certainly, bringing about a greater unity of purpose across government agencies is one of them and the proposal for a Smart City Steering Committee (SCSC) could be a way forward. ***In addition, a good start might be to form small working groups in all bureaux and departments tasked with exploring the opportunities to be smart using ICTs in their respective areas.***

4. **Low-hanging fruit and use of data:** Early successes in delivering smart solutions on a manageable scale, such as in East Kowloon ('Energizing Kowloon East'[4]), are always welcome and offer the advantage of (i) being Proofs-of-Concept in practice, and easily adjustable, and (ii) offering demonstration effects that can encourage future projects. They also have the

[4] PwC (June 2017), *Report of Consultancy Study on Smart City Blueprint for Hong Kong,* https://www.ogcio.gov.hk/en/news_and_publications/publications/

advantage of making good use of spatial data sets. ***But the next step in smart city development should be projects and initiatives that directly address the key challenges of the whole of Hong Kong.*** For that reason, the setting up of an SCSC may be less significant than what it is tasked to do.

5. **Smart policies for a smart city of necessity need to *prioritise*** government actions that address *the most compelling* of social and economic problems. TRP suggests these should include the following:

    I. **Environmental pollution** that endangers and shortens the life of citizens, especially the very young and the elderly. This will involve, among other things:
        a) Traffic management
        b) Green technologies for both industrial and residential adoption

    II. The problems experienced by **an ageing population**, notably health issues and social isolation. This will involve, among other things:
        a) Tele-health care using sensors and other modes of predictive monitoring
        b) Innovation in the design of smart community housing targeting the elderly

    III. The scarcity of adequate **housing**, especially for young adults and secure accommodation for the elderly. This will involve, among other things:
        a) Improvisation in the provision of low-cost accommodation, such as modular studio apartments, which should be a sub-set of smart buildings in general
        b) Innovation in the design of community housing (as above)

    IV. The supply of young people with adaptable **ICT skills** training to secure employment and drive an innovative economy. This will involve, among other things:
        a) A reskilling of teachers and a revamp of curricula, *but not just STEM, there is a need for the humanities to enlighten professionals to think of the social context*
        b) Closer engagement between institutes of learning and ICT companies to provide vision in the class room and laboratories

    V. **Enabling legislation** and regulations to cover:
        a) All the above, including standards for inter-operability of IoTs and standards for cyber-security and data privacy
        b) Private sector and NGO/civil society initiatives that need encouragement

As an example, consider innovation in the design of community housing (see II(b) and III(b) above). The example combines ways to assist the elderly, smart buildings using ICTs and the IoT, and energy-saving solutions. A community project ***could*** consist of

- A cluster of low-rise for the elderly living alone, and high-rise units for others;
- Shops, shop--houses and facilities such as well-regulated and sanitary hawker stalls (compare Singapore), ***a 24 hours' clinic*** **which would act as a connected command and control centre**;
- Each of the low-rise units (*possibly all units*) would be equipped with sensors and other monitoring equipment *connected to the clinic* for swift response to emergencies – *each unit could switch off the equipment if preferred to ensure privacy*;
- Personal IoTs could be hooked into the local area network as new health and other monitoring apps appeared in the market;
- Each unit could be linked to energy-saving metering equipment; (v) all common areas would be equipped with energy-saving and fire and flooding monitoring equipment.

A paper by the Smart City Consortium uses a diagram that captures the essence of this idea, but the actual configuration could be of any combination of building sizes and design.

Old-HK Foundation's proposed Co-Housing facility for the aged

Source: SCC (2016), 'Advisory Paper (Interim Report) For Building a Smart City in Hong Kong', pg. 27

The additional suggestion (above) of a 24-hours clinic combines healthcare issues, first responder issues, the smart use of ICTs and community 'ownership' of the facilities and their operation. This can encourage feelings of direct community involvement in the efficient delivery of services and the monitoring of local security, thus making the project sustainable.

The key question is: how could such a design and the realisation of such a project come about? What would be necessary for this to happen? A crucial part of the answer is close collaboration across

Government agencies. The bureaux of housing, land, works, social security, health, financial services and the treasury, and the ITB would all need to collaborate at the conceptual, planning, and execution levels. On a day-to-day basis, this never happens. The human resources of the bureaux are not set up for this, and coordination for such a project – in reality, a series of such housing schemes – is beyond the normal scope of the OGCIO. For special projects, such as the Airport, it is *made to* happen, the exception that proves the rule. And therein lies the challenge. ***For smart city development, the exception needs to become the rule for the projects concerned, but the resources of Government just do not extend so far as to allow this to become a general rule.*** It most likely will always remain a rule of limited applicability. For that reason, ***priorities and criteria for priorities are inevitable,*** and stakeholder engagement, especially with the wider community, is a vital part of that process.

So, smart projects need to involve smart processes of engagement with those citizens most affected, drawing upon their living experiences and ideas to (i) generate innovative people-oriented approaches to solving community issues, and (ii) building a consensus for the changes to occur. This has been termed the "living Lab",[5] and is a widely-endorsed approach by policy and project designers and community leaders involved in smart city development.

Smart Project Selection and Assessment

1. From a social perspective, the priorities should be reasonably obvious. Those listed above are based upon the mega-trends that are fundamental to the future welfare of the people of Hong Kong. Any smart project designed to alleviate these problems therefore should receive high priority status. From an economic perspective, the usual policy distinction is between projects that offer a positive financial return (to commercial capital) and those that do not, but offer a positive economic return (where social benefits exceed the costs). While there is no economic law that dictates State investments should not receive positive financial returns,[6] it is where the economic returns are the highest that governments would normally be expected to set priorities. As a rule-of-thumb, these criteria are recommended.[7]

2. Once priorities have been determined, project assessment will require many factors, ranging from opportunity costs (what has to make way for the investment involved), sources and structure of funding (debt, grants, subsidies, PPP, etc.), the design principles involved (who benefits and how), technology issues (standards, modular designs that can be easily maintained and upgraded), legal requirements, procurement procedures, etc. The complexity of these processes is the enemy of doing things in a smart way.

3. One option is to get manageable-sized proofs-of-concept up and running quickly, with stakeholder involvement to identify both the benefits and the hidden costs and challenges before the implementation stage.

[5] IEEE (2009), 'Concept Design with a Living Lab Approach', http://ieeexplore.ieee.org/document/4755508/?reload=true
[6] This is an issue about alternative models of development.
[7] From a political perspective, there may be priorities that do not always and obviously fall under these categories.

4. **A Way Forward:** Government can select a series of projects and initiatives to run as workshops and proofs-of-concept between the conclusion of the CP and the drawing up of the blueprint in late 2018. Participants would be all relevant stakeholders together with outside experts to help identify the costs, benefits, and the sustainability of the projects. There are already pilot projects underway in East Kowloon. One or two of those, plus others from the priorities areas, could be selected for cost-benefit 'testing'. This process could provide a solid basis with practical feedback into the Government's blueprint scheduled for late 2018. The format of such workshops might consist of:

    a. Presentations and demonstrations of smart project proposals by proponents
    b. Classification as government, PPP, private or NGO in ownership
    c. Costs and benefits to be spelt out
    d. Expert reviewers from industry and academia
    e. Sources of funding and returns to the community delineated
    f. Implications for laws and regulations
    g. Timelines explored
    h. Assessment and lessons to be fed back to government and other stakeholders