Smart-Wise Inclusive Cities in India

An E.P.S.R.C. funded 'Smart Cities in the Global South' Project

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This project investigates how smart city technologies drive rapid urban change and transformation. Generally, smart city technologies can be powerful and innovative. They can also disrupt economies and societies, with risks of power grabs, land grabs, data grabs, and new patterns of inequality and exclusion.

Smart technologies also bring opportunities for 'Smart-Wise Inclusive Cities'. This 'smart-wise' model aims to manage new technologies for social goals – social inclusion, anti-poverty, anti-corruption, sustainable business, and open governance. The scope includes –

- 'Smart cities' – understanding new digital technologies, and the effect on social and economic change.
- 'Inclusive cities' – cities which respond to issues of inequality, exclusion, unemployment, etc.
- 'Wise cities' – avoiding the negative effects of 'smart', and building the 'collective urban intelligence', so that urban technology systems can benefit the whole of society.

The Synergistic Toolkit helps to explore the 'smart-wise' model, not only as a technical system, but as creative human experiences, values and cultures. Overall, the project explores three main research questions –

a) How are smart city systems changing the economy and society of Bhubaneswar?
b) What are the side effects, positive and/or negative?
c) Is there an alternative 'wise city' model, and which pathways could lead towards it?

Overall the project is a pilot and test-bed for the synergistic methods. With the final report, we aim to scale up the methods for a global research program, seeking major funding from UK / EU / international sources.

RESEARCH PLAN

PHASE 1: LIBRARY OF SMART CITY SYSTEMS

(before 16 March)

- India & UK researchers: discuss which themes & case studies to look at (see shortlist below).
- India researchers: investigate by desk study & observation, the 3 questions above, for each case study.
- India researchers: fill a template for each case study (see template below), together with other kinds of mapping and analysis (see papers attached).
- Consultation with India-UK by weekly conference call.

PHASE 2: CONSULTATION & DEVELOPMENT

(visit 19-23 March)

- Review & discussion of results so far: comparison between sectors:
- UK researchers: interviews with stakeholders, using templates as a baseline.
- Further development of ideas with stakeholder workshop: cross-fertilization of ideas: brain-storming on 'wise cities'.

- Preparation for next stage, with any revisions to template & methods.

PHASE 3: FOLLOW UP & WRITING UP

(after 26th March)

- India researchers: some further case studies with revised template
- UK researchers: draft final report & academic paper
- India-UK consultation on draft report & paper, with options for follow-up research & funding.

CASE STUDIES - SHORTLIST

The following case studies have been identified, as suitable themes for exploring the smart-wise city questions.

We need to focus on around 4-5 themes, and then identify about 4-5 case studies in each. Some of these are suitable for comparison with UK smart city studies.

- Bhubaneswar city centre – (900 acre redevelopment area under smart city agenda): (i.e. how does the national policy translate to city level.)
- Solid waste & recycling: (comparison to UK / EU waste systems)
- Water supply (less direct comparison)
- Renewable energy initiatives: (comparison to UK / EU energy systems)
- Transport, e.g. taxis, ride shares etc: (comparison to UK / EU transport systems)
- Building permits & approvals: (link to various online planning systems)
- Greening digital infrastructure: (link to EU Green Digital Charter)
- MyGov platform – visioning cities & smart systems, with citizen participation: (i.e. how does the city respond to national initiatives.)

Late suggestions

- culture / heritage / tourism / leisure – rapidly going online – what are the effects?

POLICY LINKS

The India National Smart Cities Mission is the primary context. The background includes:

- There is a significant expectation that 'smart cities' will deliver the urban transformation urgently needed in India. Note that 'smart cities' in India is a very broad concept (in contrast to the UK/EU where much urban development is already in place, and there is a greater focus on digital systems).
- However there is growing criticism that smart cities too easily promote the interests of the elite and the 'haves' at the expense of the 'have-nots'
- In particular the informal sectors can benefit from new technologies, but they are also at risk of rapid change and disruption.
- There is a need for new 'general purpose technology' digital platforms to enable new apps for informal sectors. e.g. slum mapping will then enable a host of social & economic initiatives
- For the hardware, basic wifi access is still patchy, although mobile coverage increases very rapidly.

- So, there is an important & urgent proposition to be made to national smart city policy, for '***Smart-Wise Inclusive Cities***'. This project aims to contribute some real evidence and analysis to that case.

in the UK / EU / developed world, there are also many smart city initiatives. These generally assume that new shiny technology will be the answer to long -running urban problems. The smart-wise city approach questions this and aims to provide alternative solutions, more inclusive & holistic.

The EU Green Digital Charter provides a point of reference for this project (http://www.greendigitalcharter.eu/ It includes for guidance and self-assessment tools with a community of users. We propose to use the relevant parts of this, to help structure the research reporting and the follow-on activities. In future the European GDC hopes to collaborate and reach out to partners in India & elsewhere in the majority world.

RESEARCH TEMPLATE

The template here is designed for both the case studies and interviews: (see below and the worked example overleaf). It includes the following questions:

'Actor mapping': i.e. 'who is involved?' & who gets positive or negative effects?

- Owners / sponsors / investors in the new smart business / service models?
- Stakeholders on the supply side – workers, managers, suppliers
- Stakeholders on the demand side – users, customers, distributors
- Stakeholders in the wider community

'Factor mapping': i.e. 'how does the case study work?' what side-effects, positive or negative?

- Smart technologies which are used or developed?
- Data which is managed or generated?
- Smart business models or service models, which are enabled?
- Platform or 'general purpose technologies' which are enabled?

'Sector Mapping' i.e. 'which sectors are involved?' (what problems / risks: or, opportunities / benefits?)

- Urban technology: transport, housing, energy / water / etc
- Urban public services: health, education, cultural
- Urban economy: formal / informal in shopping & consumer services
- Urban government / governance / decision-making:
- Urban social & cultural & community issues.

'Systems Level' Mapping

We can use the 'multi-level perspective' on socio-technical change (Geels et al 2007) to map the layers:

- (niche level): Sector & infrastructure technology systems;
- (regime level): City management platforms & inter-operable systems; AI, IOT, platforms, social media
- (landscape level): general urban development: general IT development: social economic & govt development

VISUAL SYSTEMS MAPPING APPROACH

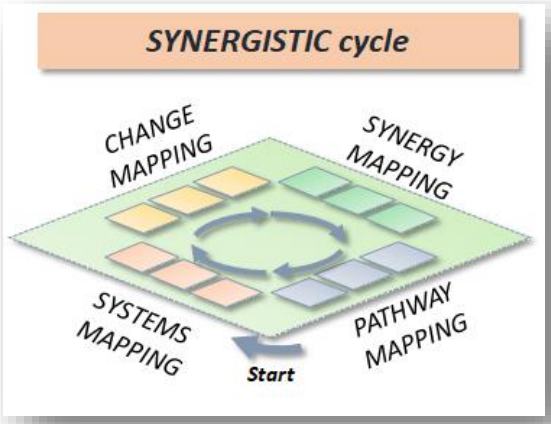
This is optional, but strongly recommended…. See the separate file.

FIELDWORK TEMPLATES

This is the suggested template for the phase 1 case studies, and the phase 2 interviews. It is designed as an application of the synergistic toolkit (see www.urban3.net). This table should be copied into separate files with a new sheet created for each case study. (See the attached file).

Interviewee	***Name***	***Organisation***	***Email address***
PROJECT	***Which project / business / innovation / service 'model' do you want to talk about? what does it do & how does it work?***	***Name of model***	***Short description of model***
ACTORS	***Questions: who is involved In the model?***	*WHAT ARE THE OVERALL PROBLEMS, COSTS & RISKS OF THE MODEL?*	*WHAT ARE THE OPPORTUNITIES & BENEFITS FOR THE MODEL?*
	Owners / sponsors / investors in the new smart business / service models?		
	Stakeholders on the supply side – workers, managers, suppliers		
	Stakeholders on the demand side – users, customers, distributors		
	Stakeholders in the wider community		
FACTORS	***Questions: how does the model work?***	*WHAT ARE THE PROBLEMS, COSTS, RISKS IN THE MODEL DESIGN?*	*WHAT ARE THE OPPORTUNITIES & BENEFITS IN THE MODEL DESIGN?*
	Smart technologies which are used or developed?		
	Data which is managed or generated?		
	Smart business models or service models, which are enabled?		
	Platform or 'general purpose technologies' which are enabled?		
SECTORS	***Questions: which domains are active in the model?***	*WHAT ARE THE PROBLEMS, COSTS, RISKS, IN THE DOMAINS WHERE THE MODEL OPERATES?*	*WHAT ARE THE OPPORTUNITIES & BENEFITS IN THE DOMAINS WHERE THE MODEL OPERATES?*
	Urban technology: transport, housing, energy / water / etc		
	Urban public services: health, education, cultural		
	Urban economy: formal / informal in shopping & consumer services		
	Urban government / governance / decision-making:		
	Urban social & cultural & community issues.		
SYSTEMS	***Questions: which levels are involved in the model?*** *(i.e. 'niche / regime / landscape' levels, from 'multi-level perspective')*	*WHAT ARE THE PROBLEMS, COSTS, RISKS, AT THE DIFFERENT SCALES WHERE THE MODEL OPERATES?*	*WHAT ARE THE OPPORTUNITIES & BENEFITS AT THE DIFFERENT SCALES WHERE THE MODEL OPERATES?*
	(niche level): Sector & infrastructure technology systems;		
	(regime level): City management platforms & inter-operable systems; AI, IOT, platforms, social media		
	(landscape level): general urban development: general IT development: social economic & govt development		

THE SYNERGISTIC TOOLKIT



The Synergistic Approach, Analytical Framework and Research programme combine into the four part process and logic of the 'Synergistic Toolkit': (details on www.urban3.net)

The Toolkit informs the design of the templates so the data capture feeds back into the SWIG model. These processes include:

- Baseline mapping: most of the agenda is beyond existing data, although we would use this where possible. Interviews and small groups, combined with online consultation, using structured mapping methods are the centre of this phase.
- Change mapping: this centres on alternative future scenarios and foresight methods, which (from experience) are the best way to get stakeholders engaged and committed. Visual & other media can be very useful.
- Synergy mapping: the main part is a hands-on creative process, supported by visual mapping and other media
- Pathway mapping: as above, with a focus on structured action, 'now / soon / later', 'public / private / civic' and so on.

REPORT TEMPLATE – WORKED EXAMPLE

This is one example of a typical Smart City technology in the UK / EU: Uber & similar platforms is possibly one of the most interesting developments in urban systems at the moment, but one which challenges the conventional model of 'command centre' urban management….

Interviewee	***Name***	***Organisation***	***Email address***
PROJECT	***What project / business / service model do you want to talk about? & what does it do?***	***UBER TAXI PLATFORM (UK)***	***- Mobile phone app for ordering and paying for taxis, uses GPS to show taxi movement***
ACTORS	***Questions: who is involved in developing the model***	***WHAT DO THEY CONSIDER TO BE THE OVERALL PROBLEMS, COSTS & RISKS OF THE MODEL?***	***WHAT DO THEY CONSIDER TO BE THE OPPORTUNITIES & BENEFITS FOR THE MODEL?***
	Owners / sponsors / investors in the new smart business / service models?	*The global firm pays very few taxes in each country.*	*The global firm is very profitable.*
	Stakeholders who are directly involved	*Driving work is insecure & wages are low. Drivers are under pressure to speed & cut corners* *Some passengers have suffered abuse & harassment.* *Local taxi firms are undercut.*	*Drivers might enjoy flexible working,* *Passengers have lower costs, & increased level of service & security,* *Local taxi firms are catching up with the platform tech.*
	Stakeholders in the wider community	*Some bus services lose their market*	*Some parts of the city are more accessible.*

FACTORS	***Questions: how does it work?***	***WHAT ARE THE PROBLEMS/COSTS/RISKS IN THE MODEL DESIGN?***	***WHAT ARE THE OPPORTUNITIES/BENEFITS IN THE MODEL DESIGN?***
	Smart technologies which are used or developed?		*The map API enables & links many other types of spatial information*
	Data which is managed or generated?	*Data can be extracted & analysed to show 'no-go' areas*	*Data management enables customer profiles & driver profiles.*
	Smart business models or service models, which are enabled?	*Non-digital services and resources may be bypassed*	*The platform enables a highly connected value chain from firm to drivers to passengers to destinations*
SECTORS	***Questions: which domains***	***WHAT ARE THE PROBLEMS/COSTS/RISKS IN THE DOMAINS WHERE THE MODEL OPERATES?***	***WHAT ARE THE OPPORTUNITIES/BENEFITS IN THE DOMAINS WHERE THE MODEL OPERATES?***
	Urban systems: transport, housing, energy / water /etc	*Possible negative effects on urban planning & urban sprawl.*	*Transport connectivity can be enhanced.* *Housing areas are better connected.*
	Urban public services: health, education, cultural		*Positive effects on accessibility to services.*
	Urban economy: formal / informal	*Disruptive effects on informal taxi providers*	*New opportunities for informal-digital*
	Urban government / governance:	*Disruptive effects on local government and transport planning*	
SYSTEMS	***Questions: which levels?***	***WHAT ARE THE PROBLEMS/COSTS/RISKS AT THE DIFFERENT SCALES WHERE THE MODEL OPERATES?***	***WHAT ARE THE OPPORTUNITIES/BENEFITS AT THE DIFFERENT SCALES WHERE THE MODEL OPERATES?***
	Sector & infrastructure technology systems; (niche level)	*The taxi app may soon be yesterday's technology*	*Specific taxi app is very successful*
	City-level management platforms & inter-operable systems;	*Disruptive effects on conventional urban 'command centre' management*	*City platforms need to adapt to the new systems.*
	Urban change & disruption by AI, IOT, platforms, social media	*The platform feeds directly into urban surveillance & social control*	*AI / IOT for AV (autonomous vehicle): opportunity / possible risks*
	Broader smart cities agendas: housing & urban, infrastructure, economic devt & government devt	*Uber may contribute to 'anarchic' version of smart / sustainable cities. It may disrupt 'inclusive' cities by putting low-cost buses out of business.*	*Emerging opportunities for low-cost ride-shares for lower income groups.*