Knowledge Map: Smart - Cultural City Singapore

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Knowledge Map: Smart-Cultural City Singapore
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Abstract

This report compiles a “Knowledge Map” for the Goethe-Institut Singapore (GI) on ideas, projects and actors of Smart-Cultural Cities in Singapore. This report investigates the intersection and convergence of Smart Cities and Creative Cities that emerge with the availability of social media data, technology – smart technologies – and shifting mode of cultural production – creative economies – forming a new nexus of Smart-Cultural Cities. The “Knowledge Map” will allow GI to identify potential areas for meaningful and strategic engagement within the Smart-Cultural Cities in Singapore, overlapping with GI’s focus themes «cultures of urbanity», «cultures of participation» and «forming of the future». The “Knowledge Map” will allow GI to formulate future projects in Singapore with FCL and other institutions in Singapore.

The research starts with a short review of the main terminology surrounding Smart and Creative Cities. It highlights the relevant topics to cultural processes such as: participation and governance, data and technology, liveability, ecology. This goes along with a list of actors and institutions that shape this discourse at the moment in Singapore. The “Knowledge Map” is based on research and portraits of actors – agencies, industries, academics, artists and activist – in Singapore.

The research on actors gave rise to a list of attributes of Smart-Cultural Cities. Actors and attributes are analysed using digital humanities techniques. The result of this analysis reveals new clusters and nodes in
the actor-attribute network of the Singapore Smart-Cultural Cities discourse. The identified clusters are named ‘Urban Scenario Makers’, ‘Digital Cultural Transformers’ and ‘Public Engagers’. Insights on their composition, aims, methods, gaps and blind spots lead to potential areas of engagement for future projects, events, conferences for GI.

Figure: Smart-Cultural Cities, Clusters and Actors at the merger of creative economies and smart technologies.
PART 1: SMART-CULTURAL CONVERGENCE

The shifting discourse on Smart Cities away from ‘smart’ technology alone towards centring on humans on one hand, and the rise of the Creative Cities on the other, offer new perspectives on the development of cultural activities in the city. A logical next step is to explore the convergence of Smart Cities and Creative Cities towards new nexus of Smart-Cultural Cities. The report frames the main actors on governmental, industrial, academic and artist level that currently contribute to the discourse on both Smart Cities and Creative Cities in Singapore. The report delineates areas of convergence of both concepts, position fields of current and future operations and possible entry points in this discourse.

01-Smart Cultural Convergence

Evolving Definitions of Smart Cities

The concept of Smart Cities emerged out of a technological driven discourse and gradually broadened in scope to embrace a human-centric discourse in the early 2000s across the globe. In parallel the scale of observation and complexity grew from smart devices to smart homes, smart districts and smart nations. Both expanding definitions and scales offer the possibility to explore the convergence of Smart City and Creative City discourses.

Technological Definition:
The concept of Smart Cities emerged around the year 2005. It was first used in the context of energy efficiency applied to the scale of cities. So called ‘smart grids’ were proposed as distributed energy networks that could react to dynamic energy demands. The upgrade of conventional to smart grids promised enormous efficiency gains. These smart energy grids were also seen as the back-bone of information and communication technologies (ICT) that could give rise to Smart Cities. As part of the European Strategic Energy Technology Plan (Commission to the Council et al. 2007), the European Union envisioned the creation of a network of thirty Smart Cities by 2020; these cities, samples of high energy efficiency standards, set some common goals, among which the minimisation of emissions employed in building technologies and transportation, and the better use of information technologies for the education of energy related professional figures. (European Commission 2007) The term ‘smart’ refers to the potential of systems to automate routines, react faster, process more information and thus become more resilient to future changes. Rapidly, many aspects of urban infrastructure were identified to become smarter: energy, transport, water and waste management, etc. The emergence of Smart Cities also coincided with the advent of ‘smart phones’, such as the iPhone introduced in 2007, devices that radically expanded
the possibilities of mobile phones and connect people and devices with the internet, at least conceptually. Cisco defines smart cities as those who adopt “scalable solutions that take advantage of information and communications technology (ICT) to increase efficiencies, reduce costs, and enhance quality of life”. (Falconer and Mitchel 2012) (“Infrastructure & Cities - Sustainable Cities - Siemens” n.d.) The initial understanding of ‘smart’ also gave rise to its later critique: a technology driven definition with mainly economic benefits cannot describe the complexity of urban phenomena alone.

**Broad Definition:**
The research framework regarding the Smart Cities shifted in terms of its content and objectives in 2010 with (Giffinger 2007) study to define the ‘smartness’ of medium-sized cities. The study analyses seventy European medium-sized cities, referring to six specific characteristics: economy, people, governance, mobility, environment, and liveability. What makes this research methodologically innovative is the involvement of additional variables outside of the energetic sphere, such as governance, participation, and quality of life. The White Paper, produced in 2011 by the Expert Working Group on Smart City Application and Requirements, clearly states the need to focus on broader aspects rather than only the technological ones: “The concept of Smart Cities is gaining increasingly high importance as a means of making available all the services and applications enabled by ICT to citizens, companies and authorities that are part of a city’s system. It aims to increase citizens’ quality of life and improve the efficiency and quality of the services provided by governing entities and businesses. This perspective requires an integrated vision of a city and of its infrastructures, in all its components, and extends beyond the mere “digitalisation” of information and communication: it has to incorporate a number of dimensions that are not related to technology, e.g., the social and political ones.” (Net!Works European Technology Platform, Correia, and Wünstel 2011) This broader definition is widely accepted today and understands Smart Cities as a processes rather than a static outcomes, “in which increased citizen engagement, hard infrastructure, social capital and digital technologies make cities more liveable, resilient and better able to respond to challenges.” (Department of Business Innovation & Skills 2013). Similar definitions have been issued by [“Bundesverband Smart Cities e.V.”, n.d.] and [“Centre for Cities,” n.d.].

**Citizen-focused Definition:**
It becomes apparent that this broad concept of a Smart City hinges on the inclusion of citizens. ([London School of Economics, n.d.]) A citizen-focused definition foregrounds human centric aspects of cities sided by the ubiquity of mobile devices, the increased production of data, feedback and response mechanisms. The Future Cities Laboratory thus adopted the term Responsive City borrowed from (Goldsmith and Crawford 2014). (Future Cities Laboratory and ETH Singapore Centre, n.d.) This concept places human-centred governance as its main objective, employing “the responsive, interactive and participatory possibilities of information technology” in the centre of the discourse. Responsive Cities are human-centred in two ways: As a goal, which supports social justice and urban quality and is focused on people, rather than technology. In governance, planning and design processes, which are knowledge and data based, transparent, open, and participatory. This definition includes social media data produced by the citizens and gradually completing a picture of urban activities, interests and intensities. (Goldsmith 2016) (Tomarchio 2018) It further allows to look at the inclusion of the Internet of Things (IoT) from a citizen point of view. (Adler 2016)
Box: Guiding Questions

- Do smart technologies as exemplified in Smart Cities and creative economies as manifested in Creative Cities stipulate new Smart-Cultural Cities?
- Can Singapore be a testing-ground for Smart-Cultural Cities concepts?
- How can we identify actors and clusters in the Smart-Cultural City Singapore?
- How could Goethe-Institut Singapore engage in the Smart-Cultural Cities discourse?

Box: What makes Singapore a smart city?

Singapore is well positioned to be a smart city and has implemented many aspects of smart city technology and governance. As a city-state Singapore the smart city is at the same time a smart nation. The smart nation engages with all urban sectors and in particular mobility, health, safety and productivity. Consequently, Singapore ranks high on international liveability rankings. Singapore’s smart nation concept is (“Many Smart Ideas - One Smart Nation,” n.d.):

- **Guided by ‘Liveability’**: “A Smart Nation is one where people are empowered by technology to lead meaningful and fulfilled lives.”
- **Technology-driven**: “Through harnessing the power of networks, data and info-comm technologies, we seek to improve living, create economic opportunity and build a closer community.”
- **Embracing citizen-centric governance**: “A Smart Nation is built not by Government, but by all of us - citizens, companies, agencies. This website chronicles some of our endeavours and future directions.”
Disruptive Technologies (DT) refers to a way to manage innovation and transform economies (Christensen 1997). With the advent and multiplication of technological innovation and connected devices, cycles of disruption and spheres of penetration increased. As culture production is more and more driven by technology, DT also transforms this sector:

“Disruption, as a transformative process, holds the promise of challenging the status quo. [...] Disruptive Technologies are always embedded into an eco-system of innovators, market drivers and technological changes. These, in return are embedded into complex socio-economic settings.” (Cairns, von Richthofen, and Stokols 2018)

Expanding Scales

The concept of smartness can be applied at various urban scales, from homes to districts to cities and even nations. (Ott, Brucke, and Expertengruppe Smart Cities / Smart Regions 2017) Google plans an integrated smart neighbourhood in Toronto that will showcase Google’s ambitions to move into the smart cities industry: “Sidewalk Toronto will blend people-centered urban design with cutting-edge technology to achieve new standards of sustainability, affordability, mobility, and economic opportunity.” (Side Walk Labs and Alphabet, n.d.) Singapore aims to become a Smart Nation by connecting and synchronizing available Smart City efforts across the island. The Smart Nation discourse underlines Singapore’s aspiration to remain a top player in technological advancement, efficiency, and liveability while at the same time creating economic opportunities and creative communities (“Many Smart Ideas – One Smart Nation,” n.d.) The Singapore narrative highlights economic benefits, lean government, improved health and efficient urban infrastructure projects on their website. The website also links to governmental apps to be installed on mobile devices that range from Singapore’s customs, health, transportation, online parking payment, local administrative statistics, and national security to report ‘suspicious’ activities. The process of Smart Nation building is not finished and will be expanded to other domains of the Singaporean nation, including social, political, creative, and cultural domains.
Creative Cities as Planning Paradigm

The Creative City is a planning paradigm or urban agenda for cities, encouraging the inclusion of culture and creativity as solutions of urban problems. It is a term that summarises different arguments, advocating that art and culture would eventually contribute in an urban environment to:

- Economic revenues
- Strong identity and cultural vibrancy
- Urban quality and liveability

The implementation of cultural projects or activities will not only imply the creation of lateral local economic revenues (Myerscough 1988), but also create incomes generated by tourism (Landry 2006) and attract a creative class that will push urban economies into a post-industrial society (Florida 2004). In a period of knowledge economy (Drucker 1969), the production of ideas rather than the production of goods creates wealth. Knowledge production is dynamic, seeking for innovation in order to remain competitive. The people, who are able to drive the innovation, are regarded as creative people and they constitute the creative class. Richard Florida (2002) is the main supporter of the creative class, intending creative professionals that seek quality of life, tolerance, and creative vibes in cities (the three ‘Ts’ are talent, tolerance and technology). In a global competition among cities, municipalities should back the arts and culture, precisely to feed the creative atmosphere to attract the creative class.

Both the art tourism, the local induct and the creative class consider art and culture as a commodity, carrying contradictions and limits. For example, the creative occupations explored by Florida include lawyers, scientists, managerial and business professionals as well as creative people. These professional groups can be attracted by consumption strategies of art and culture, regarded mainly as entertainment, unlikely to benefit artists per se (Peck 2005).

Culture and art is part also of an urban agenda, as it able to impact people’s identity and quality of life. Through the implementation of flagship cultural projects, public spaces, and urban landscaping it is possible to develop a shared urban vision or national image. These projects can contribute to build a shared character and a distinct identity for the place. In the case of Singapore’s city-state they can be mobilised to the level of nation-building. Distinct places not only develop the potential to draw people and serve as a driver to develop tourism industry and attraction of inward investment (Parkinson and Bianchini 1993), but the presence of distinct places also most likely increases the interaction intensity between people and the urban environment, improving people’s quality of life and urban quality (Landry 2000).

From a planning perspective, the Creative City argues for new modes of governance. Starting from the assumption that contemporary governance arrangements inhabits innovative initiatives, new modes of governance should have a double creativity, both in terms of its potential to foster creativity in social and economic dynamics; and to creatively transform its own capacities. Flexibility, ability to transform and to adapt to multiples needs are key aspects to respond in multiple ways to the city creative dynamism (Healey 2004).
Box: What makes Singapore a creative city?

Singapore adopted a framework to support art production in urban settings. Singapore’s first contribution in cultural planning is the Report on advisory council on culture and the arts (acca) (Council on Culture and the Arts 1989). Supporting art was seen as necessary to develop national identity, societal bond, individual benefit, quality of life and mass tourism. The Report on advisory council on culture and the arts mainly lamented lack of physical infrastructure to support the arts in Singapore. The reaction was the development of the National Museum and more space to the National Library, but also programs such as the Art housing Scheme.

The Renaissance City 2.0 plan was announced in 2001 (Ministry of Information and the Arts 2005). This plan shifts the attention from the development of the hardware (facilities) to the software (capacity buildings, audience development). It also claims the need to merge art with entertainment, mixing the agencies relating with commercial and non-commercial art and adopting a creative industries perspective, with creative industries benefitting from the presence of core art. This following planning frameworks by the Urban Redevelopment Authority thus included tangible urban planning measures such as the definition of five ‘Art Belts’. The Centre for Liveable Cities in Singapore retraced the path towards Singapore as a ‘City of Culture’. (Wong, Koh, and Araib 2017)

Singapore joined the UNESCO Creative Cities Network and focusses on ‘design’ in 2015. The focus on design indicates that creative industries are understood in the wider sense of Florida (2002) and KEA (2006) they are meant to support the rise of industry 4.0 and economic diversification. According to DesignSingapore Council:

“Design remains the key driver of the local creative economy by contributing annually about $2.13 million to the citystate’s GDP, with an estimated 5,500 active design enterprises employing up to 29,000 people.” (UNESCO, n.d.)
Art, Culture and Creative Industries

There are different cultural models that define and describe the relation between art, cultural and creative industries. According to (KEA 2006)'s model referring to Europe, there are:

- The cultural sector, including:
  
  In the non-industrial sectors producing non-reproducible goods and services aimed at being consumed on the spot (a concert, an art fair, an exhibition). These are the arts field (visual arts including paintings, sculpture, craft, photography; the arts and antique markets; performing arts including opera, orchestra, theatre, dance, circus; and heritage including museums, heritage sites, archaeological sites, libraries and archives).

  In the industrial sectors producing cultural products aimed at mass reproduction, mass-dissemination and exports (for example, a book, a film, a sound recording). These are cultural industries including film and video, video-games, broadcasting, music, book and press publishing.

- The creative sector:

  In the creative sectors, culture becomes a creative input in the production of non-cultural goods. It includes activities such as design (fashion design, interior design, and product design), architecture, and advertising.

  Cultural resources are often considered intermediate consumption goods for production processes in non-cultural sectors, and thereby seen as a source of innovation. In this sense, the non-industrial cultural sectors and the cultural industries support the development of other fields such as cultural tourism and, perhaps more importantly, information, communication, technology (ICT) industries, revealing the links between culture, creativity and innovation.

Convergence of Smart Cities and Creative Cities

The white paper (Expert Working Group on Smart City Application and Requirements 2011) describing the Smart City included 'Smart People', intending people with a high level of qualification, affinity to life-long learning, social and ethnic plurality, flexibility, creativity, cosmopolitanism / open-mindedness, and inclined to participate in public life. The Smart People have lots of affinity, already in the definition, with the creative class supported by Florida. According to the white paper these people appreciate Smart Living that includes cultural facilities and tourism attractions.

Both planning paradigms, in the evolution of their concepts, point in a similar direction. They both want to consider as ultimate goal of their actions the quality of life of people, or more specifically referred to cities, the ‘urban quality’; ‘open governance processes’ and ‘cultural life and participation’, should be key components of urban quality.

We could actually consider these three points as the intersection of the two planning paradigms, designing a common path of actions.
As discussed, the Smart City moved away from a technological oriented goal, but it is still technological intensive in its methods, meaning that it supports processes which are enhanced by technology. The most innovative technologies that can support planning, decision making, or revolutionise the way we live and refer to cities are 'big data', 'model and simulation', 'artificial intelligence', 'block chains', 'automation or robotics' and 'Internet of things or information technologies'. We thus see a clear overlap of smart technologies on the one hand and creative economies on the other. The intersection gives space for an emergent Smart-Cultural City with Smart-Cultural Clusters and Smart-Cultural Actors in Singapore [see figure below].
PART 2: SMART-CULTURAL ACTORS & CLUSTERS

This report aims to explore Smart-Cultural City by identifying Smart-Cultural Clusters and Smart-Cultural Actors in Singapore.

Smart-Cultural Actors in Singapore

This report identifies actors in the Smart-Cultural Cities discourse in Singapore. The actors are anonymised for the report. The full list of actors and their description is available in the print version in the appendix. The field of actors on the topic of the smart cities has been divided into the following four sectors deemed significant for the report as they overlap and potentially converge on the topic of Smart-Cultural Cities discourse in Singapore:

- Authorities & Institutions
- Academia & Research
- Industry & Technology
- Artist & Activists

The actors are selected according to their position towards the field of Smart-Cultural Cities. These selected actors expand the conventional field of their operation towards as larger discourse on science, technology and policy in the city [e.g. Smart City]. We included only those actors who directly address a wider definition of Smart City, which looks at the urban quality, governance and cultural production, through the use of technology (information technology, artificial intelligence, data, etc). The list of actors has undergone several rounds of selection and editing. We have deliberately decided to not include institutions like established museums, art councils, tourism boards, because even if they clearly contribute to the cultural sector in the city, they have not engaged, so far, with what we describe as Smart Cultural Agency below. This list is by no means complete, but the selected actors represent their sector and allow to extrapolate trends for the knowledge map and to conclude insights on the dynamics of the field.

The actors are evaluated against their contribution to different domains divided into 'Action', 'Goals' and 'Methods'. The Action describes the way of engagement of the actors within the discourse. These are: Discuss (Share, Criticise) and Contribute (Make). The Goals describe the larger topics that the actors want to contribute to within the Smart-Cultural discourse. These are: Urban Quality of Life, Participation and Governance, support of Cultural Production. The Methods describe the technological tools, domain expertises and approaches chosen by the actors relative to the Smart-Cultural discourse. These are: Big Data, Social Media, AI, Blockchain, Modelling, Simulation, IoT, Technology, Robotics, Automation.

Emergent Smart-Cultural Clusters

Actors from four professional groups or sectors have been evaluated for eleven domains of expertise. The graph network depends strongly in the initial set-up and how we attributed the domains of expertise to the professional groups. Each actor from the four professional groups is linked to the attributes applicable (See table).
It is important to note that this attribution is a qualitative judgement, just as the selection of the actors was. Therefore the results have a qualitative bias and cannot be taken as quantitative value. The resulting graph strength value gives an indication on the structure (or randomness) of the initialisation. The graph strength value that is a measure of how far this graph network differs from a random graph was at 0.23 indicating a relatively structured graph. This underlines that the initialisation was sensible and that the results yield meaningful insights.

Box: Digital Humanities Research Methods

This report uses a mathematical method of graph clustering that is applicable to digital humanities, so called bipartite graph clustering algorithm (Barber 2007). The list of actors and a list of attributes form bipartite graph [represented as a table first and later visualised as a network graph using a mapping software]. The reconfiguration of this graph according to optimal distribution of nodes and clusters can be described as a mathematical optimisation problem that can be solved with an algorithm. This method has been tested by (von Richthofen and Costa 2018) to find thematic research clusters and collaboration nodes within the Future Cities Laboratory based on the usage of tools.

Box: Smart-Cultural Agency

The selection of Actors prioritises the Agency these actors exercise on their field in light of Smart-Cultural transition.

Authorities & Institutions: As the regulating, legislating bodies that govern the processes of urban transformation this sector engages with data, new media and digital technology to cope with the changing duties of public service, to adjust to demands for data-transparency and participation

Academia & Research: As the scientific community that drive progress and innovation this sector uses data, new media and digital technology to gain new insights and generate knowledge.

Industry & Technology: As the applicators that transform economies this sector mobilises data, new media and technology to disrupt conventional business models and to innovate.

Artist & Activists: As the critical inquirers and experimenters this sector explore data, new media and technology to comment and to create.
Table: The actor-attribution matrix creates the bipartite graph.
PART 3: SMART-CULTURAL CITY SINGAPORE

Three Clusters

The algorithmic optimisation of the graph network shows that three distinct emergent clusters appear. These clusters mix the members of the four professional groups and are thus not re-iteration of these groups. The method applied finds the optimal cluster number algorithmically and is not predetermined on a specific number of clusters. The connections between the two sides of the graph from left to right relate actors to domains e.g. analyse the primary connection and within clusters. The three clusters include ten actors each. The distribution of the different professional groups in the three clusters is quite balanced.

The first cluster is mainly defined by the use of technology (Fields/Methods) and the Action, as it includes 50% of the actors dealing with Big Data, AI and Modelling and Simulation and 90% produce tools and services, rather than studying them. The combination of the four domains describe a clear method to automatically generate and assess urban scenarios. The first cluster will be called: Urban Scenario Makers.

The second cluster is defined by a common goal as it includes 70% of the actors directly addressing the need to enrich cultural production in cities, using mixed technologies (100% of blockchains, 85% of robotics, 83% of IoT). The second cluster will be called: Digital Cultural Transformers.

The third cluster is also mainly defined by a common goal and the type of Action, as it includes 50% of the actors dealing with participation or advocating for a different type of governance. Even in this case there is a clear methodology: these actors mainly discuss”, to raise awareness and produce more participation with aspect of the smart/cultural city. The third cluster will be called: Public Engagers.

Further engagement areas open in close examination of the graph structure. The graph secondary connections from right to left relate domains to actors e.g. analyse the supportive links across clusters. These ‘weak’ links indicate potential areas for fruitful engagement discussed in the conclusion part. Finally, we can describe the three emergent clusters in detail by examining the commonalities of the actors that make up the cluster. The three clusters are interdependent and their links and interdependencies deserve closer attention.
Figure: Bipartite Graph of Selected Smart-Cultural Cities Discourse Actors and Domains in Singapore.
Who are the Urban Scenario Makers?

Urban Scenario Makers navigate multiple urban scales and create scenarios in a pro-active way. The combination of technology including big data and AI as well as local, cultural insight allows Urban Scenario Makers to test decisions and effects of decisions. For example: What is the effect of a new road on traffic, the neighborhood and liveability? Real-time traffic information allows to create realistic models, which then reacts to the new element, highlighting limits and potentials of urban development. Urban Scenario Makers look all aspects of urban life: The quality of public space, diversity of artsy neighborhoods, gentrification processes. The Urban Scenario Makers test the city of the future before it happens. The Urban Scenario Makers depend on the Digital Cultural Transformers for disruptive new technologies and applications and on the Public Engagers to critique and balance their work.

Who are the Public Engagers?

The Public Engagers focus on public debate and discussion. They live themselves above the Digital Cultural Transformers as they often lack the tools and technology to actually transform and instead engage a public. Being critical and reactive, the Public Engagers shy away from developing scenarios, yet depend on those proposed by the Urban Scenario Makers.
Box: Social welfare and Digital Rights Activism in Singapore

Digital Rights Activism can be seen as a subgroup of Public Engagers. The use of social media and smart devices rises in Singapore as everywhere else in the world and in particular amongst the youth. At the same time social welfare of every citizen is a dedicated goal of Singapore government. Social welfare criticism voiced by Singaporean youth and propagated through Digital Rights Activism is therefore a governance dilemma. It is also a litmus test for Singapore’s position in the Smart Cities discourse. It sheds light on the interface of technology and society, grass-roots movement and top-down governance, acceptable forms of critique and taboos. This delicate field has been explored by Assoc. Prof. Zhang Weiyu of NUS in the article “Redefining youth activism through digital technology in Singapore” (Zhang 2013) and (Wolf 2017).
CONCLUSIONS

This report compiles a “Knowledge Map” on ideas, projects and actors of Smart-Cultural Cities in Singapore. This report investigates the intersection and convergence of Smart Cities and Creative Cities that emerge with the availability of social media data, technology and shifting mode of cultural production forming a new nexus of Smart-Cultural Cities. The “Knowledge Map” identifies three of emergent clusters in the Smart-Cultural Cities discourse for Singapore – Urban Scenario Makers, Digital Cultural Transformers, Public Engagers. These clusters present potential areas for meaningful and strategic engagement within the Smart-Cultural City Singapore, overlapping with GI’s focus themes ‹cultures of urbanity›, ‹cultures of participation› and ‹forming of the future›. The report proposes four areas of strategic engagement:

1. The research indicates that each of these cluster has a balanced contribution of the different professional groups and actors. Yet, those groups and actors might not know of each other’s work and rarely come together in real life. Even if they share similar goals, type of actions and methods they usually work in parallel addressing similar issue with different perspectives.

GI could bring together actors in the three emergent clusters under thematic workshops, call for projects and conferences.

2. Very few artists are found in the ‘Urban Scenario Makers’ cluster. As a result there is little critical discussion about scenarios and visions (e.g. a strong prevailing techno-naïve attitude). The ‘Urban Scenario Makers’ cluster have no links to ‘applied’ technology in the digital transformation group. Their tools are data and simulation. In return, they don’t engage with tangible technologies, yet.

GI could invite actors in the ‘Urban Scenario Makers’ cluster and match them with actors from the other clusters and the public to develop a more nuanced vision outside of technology about Smart-Cultural Cities.

3. The ‘Public Engagers’ cluster discusses primarily about the consequences of shifting public engagement through technology and culture without actively developing technology or cultural production.

GI could invite actors in the ‘Public Engagers’ cluster to engage more with technology development and ideation (hackathons) to transform their knowledge into applications for Smart-Cultural Cities.

4. The ‘Digital Cultural Transformers’ cluster is the most balanced of the three, as it includes actors who both discuss and make, they come from all the different professional groups and they usually directly address the cultural production in cities with different and emerging technologies. This is the most ‘convergent’ cluster in the sense of the Smart-Cultural Cities proposed here with a high potential of creative advancement of the discourse as they have a lot of commonalities.

GI could focus on this group of actors as multipliers for the Smart-Cultural Cities agenda. This could take place in the form of dedicated close-doors, small scale, frequent and engaging training, project funding and publication.

Acknowledgement
This report was commissioned by the Goethe-Institut Singapore. The information about the actors selected is publicly accessible on the internet. For the sake of privacy their names have been anonymised and have been removed from the public version of this report. No ethical concerns are declared.
Bibliography

- Department of Business Innovation & Skills. 2013. “Smart Cities: Background Paper.”
- Giffinger, Rudolf. 2007. “Smart Cities: Ranking of European Medium-Sized Cities.” Centre of Regional Science, Vienna UT.