



*Empowered lives.
Resilient nations.*

RETHINKING SMART CITIES

– ICT for New-type Urbanization and
Public Participation at the City and
Community Level in China

James Kin-Sing Chan • Samantha Anderson



RETHINKING SMART CITIES

ICT for New-type Urbanization and
Public Participation at the City and
Community Level in China



*Empowered lives.
Resilient nations.*



© **2015 United Nations Development Programme China**

2 Liangmahe Nanlu Beijing 100600, P.R. China

Telephone: +86-10 8532-0800

Internet: www.cn.undp.org

Authors of the report:

James Kin-Sing Chan

Programme Coordinator (Governance & Urbanization), Poverty Equity and Governance Team, UNDP China.

Email: james.chan@undp.org

Samantha Anderson

Senior Advisor on Sustainable Cities and Climate Change, Climate Change Team, UNDP China.

Email: samantha.anderson@undp.org

Cover design: *Lucy Huang*

The analyses and recommendations expressed in this publication are those of the authors and do not necessarily represent those of the United Nations, including UNDP, or the UN Member States.

CONTENTS

FOREWORDS	01
ACKNOWLEDGEMENTS	04
INTRODUCTION	05
PART I – BACKGROUND AND POLICY OVERVIEW	07
OVERVIEW OF CHINESE POLICIES ON SMART CITIES	07
IN TRANSITION: FROM TECH-CENTRED TO HUMAN-CENTRED	09
LONG ROAD AHEAD: THE IMPLEMENTATION OF PUBLIC PARTICIPATION IN CHINA	10
PART II – CASE STUDIES OF CITY AND COMMUNITY ICT INITIATIVES FOR PUBLIC PARTICIPATION	13
1. FEEDBACK MECHANISMS FOR INCREASING CITIZEN ENGAGEMENT AND GOVERNMENT ACCOUNTABILITY	13
2. MEASURES TO IMPROVE THE QUALITY AND RESPONSIVENESS OF PUBLIC SERVICE DELIVERY	14
USING SOCIAL MEDIA TO IMPROVE RESPONSIVENESS OF SOCIAL SERVICES	15
USING SMART INITIATIVES TO IMPROVE QUALITY OF HEALTHCARE AND EDUCATION	16
3. INFORMATION ACCESS INITIATIVES TO HELP CITIZENS MAKE BETTER MARKET AND LIFE CHOICES	17
4. PLATFORMS FOR COMMUNITY- AND NEIGHBOURHOOD-BUILDING	18
PART III – ANALYSIS AND POLICY RECOMMENDATIONS	19
1. FORMULATE A CLEAR VISION AND STRATEGIC PLAN FOR SMART CITY DEVELOPMENT	19
2. CONDUCT ASSESSMENT TO TRULY UNDERSTAND PEOPLE’S NEEDS AND PROBLEMS	20
3. GRADUALLY INTRODUCE CHANGES, USING PROTOTYPES, TO GAIN BUY-IN FROM DIFFERENT STAKEHOLDERS	20
4. ESTABLISH COORDINATION MECHANISMS AMONG DIFFERENT MINISTRIES AND AGENCIES	21
5. ENSURE THE SUSTAINABILITY OF ICT INITIATIVES BY ALLOCATING BUDGETS FOR SYSTEM MAINTENANCE	22

6. USE OPEN DATA AND OPEN PLATFORMS TO CROWDSOURCE PUBLIC KNOWLEDGE, PROMOTE INNOVATION AND REDUCE COSTS	23
7. INVEST IN DIGITAL LITERACY PROGRAMMES FOR BOTH CITIZENS AND GOVERNMENT OFFICIALS.....	23
8. PROTECT PEOPLE’S PRIVACY AND ENHANCE CYBER SECURITY TO BUILD TRUST.....	24
CONCLUSION: MAKING SMART CITIES MORE PARTICIPATORY AND INCLUSIVE	25
NOTES AND REFERENCES	27
BIBLIOGRAPHY.....	31
ANNEX I: LIST OF INTERVIEWEES.....	35
ANNEX II: 10 CASE STUDIES	36
CASE 1:“I LOVE BEIJING” CITY ADMINISTRATION PUBLIC SERVICE MAP AND MOBILE APP (BEIJING).....	36
CASE 2: BEIJING COMMUNITY SERVICE HOTLINE 96156 (BEIJING)	37
CASE 3: SMART TUANJIE LAKE SMART CITY INITIATIVE (BEIJING)	37
CASE 4: HAIDIAN DISTRICT SMART CITY INITIATIVE (BEIJING).....	38
CASE 5: SHENZHEN DIGITAL VOLUNTEER CERTIFICATE SYSTEM (SHENZHEN).....	39
CASE 6: THE STAR RENTAL MANAGEMENT SYSTEM (GUANGZHOU, GUANGDONG)	40
CASE 7: THE MICROBLOG SERVICE HALL (CHENGDU, SICHUAN)	40
CASE 8: THE SHUIJINGFANG SERVICE APP (CHENGDU, SICHUAN)	41
CASE 9: NINGBO COMMUNITY SERVICE HOTLINE 81890 (NINGBO, ZHEJIANG)	41
CASE 10:‘BINZHOU-CHINA’ GOVERNMENT ONLINE INTERVIEW PLATFORM (BINZHOU, SHANDONG)	42

FOREWORD

Urbanization is one of the most complex and pressing development challenges facing China in the coming decades. More than half of the Chinese population currently lives in cities, and the percentage is projected to increase to 76 percent by 2050.¹ Nearly 300 million more people will migrate from rural to urban areas in the next 35 years. We have seen significant challenges emerge as a result of urbanization, such as land expropriation conflicts, inefficient urban sprawl, severe pollution, and inequalities induced by the *hukou*² system, and these will only increase with rising urban populations. Therefore, systematic governance reforms – such as the recommendations suggested by UNDP’s *National Human Development Report 2013* on sustainable and liveable cities – are needed for the country to deal with these issues and challenges.

At the same time, people and governments are increasingly turning to technology for new solutions to address these urban challenges. Multiple government documents have been issued in China on this subject – known as the Internet Plus Strategies for urbanization or, in general, smart city plans. However, many smart city projects have mainly focused on technology infrastructure, the *hardware* of the city. In order to address rapidly changing urban challenges, however, strategies and plans need to address challenges beyond infrastructure. To ensure inclusive urbanization, it is crucial to engage the

public in and leverage bottom-up innovation for these ICT initiatives. Tapping into collective knowledge and supporting the capacities of people who will call cities home will help ensure solutions that respond directly to their needs.

The central government has sowed the seeds for promoting bottom-up ICT and innovative initiatives in China. Premier Li Keqiang recently has made public calls for “*mass entrepreneurship and innovation*” and the State Council’s *National New-type Urbanization Plan (2014-2020)* emphasizes the key principles of “*human-centred and equitable development*” in urbanization, which encourages self-adjustment and self-governance within society and public participation for significant urban decisions. These top-level policies take time to be adopted and implemented by every local government, yet there are some early adopters at the city and community level that have already started to pilot some ICT for public participation initiatives to better inform citizens, provide more responsive social services, improve government’s accountability and build a more connected community.

By looking at how ICTs are used to enhance public participation on the ground in rapidly urbanizing China, and providing corresponding policy recommendations, we hope this paper can be the very first step to encourage local governments to rethink smart city approaches

and thus promote public participation and citizen engagement through ICT initiatives. We hope this paper can also be a good reference for other emerging economies – like India which

has just announced an investment in 100 smart cities – to better address challenges brought about by urbanization.



Agi Veres

Country Director

United Nations Development Programme China

FOREWORD

At Intel, corporate social responsibility is not only about what we do, but what we can make possible.

Many of the prevailing social and environmental challenges today result from rapid economic growth, well beyond the grasp of individual organizations. For this reason it is imperative that we bring together the best minds around the world to learn, explore and co-create solutions that tap into the potential in grassroots innovation and building on this, to bring the enterprising spirit, intellectual rigor and discipline of the business world into a societal context in the name of social innovation.

We believe in the power of corporate social innovation whereby leading organizations, with their global footprint and touch points, can leverage their core capabilities to make a big difference. We believe that we have to break

down the boundaries between technology innovation and social innovation for collective impact.

With this vision in mind, in 2012 Intel China incubated an independent not-for-profit organisation, Cinnovate, with the support of the Chinese government to champion social innovation by catalysing cross-sector collaboration among government, citizens, businesses and the academic community.

We are delighted to work with UNDP China on *Rethinking Smart Cities – ICT for New-type Urbanization and Public Participation at the City and Community Level in China*, and hope it will stimulate thinking and actions from cities around the world in how to unleash technology and social innovation to make cities smarter, more inclusive, sustainable and human-centred.



CY Yeung

Director, Corporate Responsibility, Intel China
Vice Chair of Board, Cinnovate

ACKNOWLEDGEMENTS

This research is a collaborative effort under the urbanization and social innovation work between UNDP China and Intel. This research benefited enormously from experts and practitioners who gave interviews and provided their invaluable insight and comments to the two authors. A special thanks goes to – in alphabetical order by institution name – Song Gang (Beijing City Administration Science and Technology Information Center), Mei Zhenpeng (Binzhou Municipal Government), Wu Xiaomin (China Center for Urban Development), Meng Rongqi, Yang Limei (Community Service Center of Beijing Municipal Government), Thomas Hart (EU-China Policy Dialogues Support Facility II), Pu Lin, Zhong Wen (Government Affairs Service Center of Chengdu Municipal Government),

He Jianwu (Haidian District Government, Beijing), C.Y. Yeung, Henry Gui Hao (Intel), Yang Haiping (IYouShe), Tom Saunders (Nesta), Xu Yiping (Ningbo Bureau of Civil Affairs), Li Yuanyuan, Peng Chun (Peking University), Gao Kun (Shenzhen Municipal Volunteer Work Federation), Song Qinghua, Zhao Xu (Shining Stone Community Action), Dan Yi (Shuijingfang Sub-district Government, Jinjiang District, Chengdu), Zhang Nan (Tsinghua University), Li Rongzhen (Tuanjiehu Sub-district Government, Chaoyang District, Beijing) and Minerva Novero, Zheng Yuan (UNDP). The analyses and recommendations expressed in this publication do not necessarily represent those of the interviewees.

INTRODUCTION

China is at a crucial stage of rapid urbanization and urban transformation. In 2014, 54% of the Chinese population was urban with this expected to increase to 76% by 2050.³ Cities, especially national central cities,⁴ continue to attract people, resources, and economic activities. This fast pace and wide scope of urban transformation brings both immense opportunities as well as challenges for China. Smart technologies and smart cities have therefore been prioritized in multiple policy documents and studies – issued by the government,⁵ private sector⁶ and even NGOs⁷ – as responses or potential solutions to a range of urbanization challenges, such as traffic congestion, pollution and waste management. However, many smart city plans have been criticized for their intention to transform cities into an “*optimised panopticon*”,⁸ while overlooking the needs of the beneficiaries – people who work and live in the city.

Yet what does the term *smart city* really refer to? The concept of smart city has been defined and interpreted differently by different people.⁹ It can be as broadly defined as “*the use of information technology to attack urban problems*”,¹⁰ or a more elaborated version provided by the International Telecommunication Union’s Focus Group on Smart Sustainable Cities: “*A smart sustainable city is an innovative city that uses ICTs and other means to improve the quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects.*”¹¹

Among all these definitions, there is an emerging trend in viewing smart cities less as focusing on “*technology-driven solutions to yesterday’s problem*” and more towards “*a human-centered approach to digital government*”.¹² For instance, the UK Department of Business, Innovation and Skills emphasizes that smart city is a process or series of steps – rather than an end point – aiming to “*become more ‘liveable’ and resilient and, hence, able to respond quicker to new challenges through ‘citizen engagement, hard infrastructure, social capital and (digital) technologies*”.¹³

In China, a smart city has been defined by the government as “*a new concept and model which utilizes the next generation of information technology, such as the Internet of Things (IoT), cloud computing, big data, to promote smart urban planning, construction, management and services for cities*”.¹⁴ Notably, the government also emphasizes that the smart city concept should be human-centred, practical and demand-driven, in line with the abovementioned international trend of adopting a bottom-up or citizen-led approach in smart city development. Such an approach is called “*new-type urbanization*” by the State Council and emphasizes the importance of public participation (*gongzhong canyu*) and positive interaction between citizens and the administration for urban governance.¹⁵ This has been promoted by the central government as an innovative way to address China’s emerging urbanization challenges.

Therefore, as a continuation of the United

Nations Development Programme (UNDP) China research on urbanization in China, including the *China National Human Development Report 2013* on sustainable and liveable cities,¹⁶ this *Rethinking Smart Cities: ICT for New-type Urbanization and Public Participation at the City and Community Level in China* paper aims to take a closer look at one of the bottom-up elements of Chinese smart cities – the ways in which city governments use technology for citizen engagement and public participation. In particular, this paper seeks to address the following research questions:

- What are the current policies, strategies, and pilot projects on smart cities development in China, especially for utilizing ICT to promote citizen engagement and new-type urbanization?
- How do ICT initiatives at the city and community level generate positive social impacts and improve urban governance?
- What are the policy instruments and recommendations which make smart city development more inclusive and participatory?

This paper is structured into three parts:

I) Background and Policy Overview; II) Case Studies; and III) Analysis and Policy Recommendations.

Part I lays out the overall background and relevant policy documents for Chinese smart city development including how they are related to public participation. This includes the Ministry of Housing and Urban-Rural Development (MOHURD) smart city pilot projects,¹⁷ the

National New-type Urbanization Plan (2014-2020) of the State Council, as well as a brief history on public participation in China.

Part II consolidates and analyses findings of studies conducted by the UNDP China research team regarding city and community ICT initiatives that promote citizen engagement and new-type urbanization. The research team conducted desk research, field visits and interviews with municipal, district and sub-district level government officials; civil society organizations' staff members; private sector practitioners; and academics (refer to Annex I for the full list of interviewees). The aim of this research was to collect various examples of facilitating citizen engagement through technologies. The case studies are grouped into four types based on the initiatives' objectives:

- 1. Feedback mechanisms for increasing citizen engagement and government accountability**
- 2. Measures to improve the quality and responsiveness of public service delivery**
- 3. Information access initiatives to enhance market, personal and civic opportunities**
- 4. Platforms for community- and neighbourhood-building**

Finally, the paper concludes with *Part III* which provides analysis and policy recommendations to assist the Chinese government in effort to promote public participation and citizen engagement through smart technology initiatives, and suggests further areas for research.

PART I – Background and Policy Overview

Overview of Chinese Policies on Smart Cities

In a development context in which accelerating urbanization is fuelling a transition to a domestic service-based economy, smart cities are very much on a growth trend in China. Moreover, smart cities have been highlighted in the *12th Five Year Plan (12th FYP)* as a sector to be developed and strengthened.¹⁸ In August 2013, the State Council issued *Several Opinions on Promoting Consumer Spending on Information Technology and Expanding Domestic Demand (hereinafter referred to as "The Opinions")*, one of the very first policy documents in China which laid the groundwork for smart cities development.¹⁹

The Opinions encourages pilot cities with favourable environments to issue policies that support *"market-based investment and financing, outsourced information services, and social development and utilization of information resources"*.²⁰ The Opinions also permits local government to use funding raised by local treasury bonds to finance smart city infrastructures – including smart grids, smart water supplies, smart land administration and smart logistics, etc. – while at the same time encouraging market players to jointly participate in smart city development.

The Ministry of Science and Technology (MOST), The Ministry of Industry and Information Technology (MIIT), and the Ministry of Housing and Urban-Rural Development (MOHURD) all have in-house Smart City Programmes. For

example, 20 cities have been chosen by MOST for technology or standards piloting and MIIT is cooperating with the European Union on a green smart city project via a ministerial-level dialogue.

The sector was led however by MOHURD, which in 2013 designated 193 official smart city project sites, eligible to 100 billion RMB of funding.²¹ These cities have all formulated plans for the development and implementation of smart programmes. In total, 311 Chinese cities were engaged in smart city development by the end of 2013, with a total estimated investment during the 12th FYP period (2011-2015) of 1.6 trillion RMB.²²

Aiming to coordinate the smart city development work among different ministries and agencies, the National Development and Reform Commission (NDRC) and seven other ministries²² jointly issued a strategic policy document in September 2014. *The Guidance on Promoting Healthy Smart City Development (hereinafter referred to as "The Guidance")* explains the basic principles, objectives, strengths, weaknesses and action plans for smart city development in China.²⁴ The Guidance notes that future smart city development should be human-centred and practical; city-based and demand-driven; market-oriented and avoiding unnecessary government intervention, etc.²⁵ Key themes in The Guidance, which are also in line with the

recommendations of case studies (see Part II) that the research team has conducted, include:

- **Strengthening comprehensive public services using smart technologies.**

Paragraph 2.5 of The Guidance recommends that digitalization of public services should be one of the key priorities in developing smart cities, including a) building smart hospitals with digital archives of medical records which can provide remote medical advice for the elderly; b) developing an all-in-one smart card for transportation transactions, accessing social services, retrieving health records, etc.; c) promoting education via digital means, such as building e-libraries, digital archival centres and museums.

- **Promoting data sharing and management via digital platforms.**

Paragraph 3.10 of The Guidance states that a smart information platform and interagency coordination mechanisms should be established to share data and information among government departments and agencies. The Guidance recommends cities to start with establishing a preliminary platform with basic geographic and demographic data, and different departments can then share their data to enhance the database.

- **Supporting urban management by digital means.**

Paragraph 2.6 of The Guidance recommends that a grid-system should be established for managing cities, with the aid of CCTV and GPS technology. The Guidance also suggests developing an online credit system which stores citizens' records on taxation compliance, as well as their criminal and loan history. A similar idea is mentioned in the State Council's *National New-type Urbanization Plan (2014-2020)* which proposes to "promote the use of smart information and encourage the digitalization of information on urban planning

and managements ... and detailed social governance".²⁶

- **Establishing e-governance platforms for citizens to express opinions.**

Paragraph 2.6 of The Guidance recommends that digital platforms should be built and improved to allow the public to express opinions and raise complaints, and to build e-governance platforms to open information about government affairs to the public. This is built upon the State Council's *Regulations on Open Government Information (OGI)* enacted in 2008,²⁷ as well as the decision of the Fourth Plenary Session of the 18th Communist Party of China (CPC) Central Committee that calls for ever "greater openness regarding topics of particular interest to the public including finances and budgets, low-income housing and the like, as well as in five areas of government activities: the decision-making the decision-making process for major policies and investment programs; enforcement of the law; management; services; and results."²⁸

In 2013, the State Council issued a policy document – *Opinions on Further Strengthening Government Information Disclosure Responding to Social Concerns in order to Raise Government Credibility* – which requested all central and local government agencies to better utilize online platforms to disclose information and respond to concerns raised by the public.²⁹ The document specifically instructs government to establish official *Weibo* (Chinese Twitter) accounts as an authoritative source for releasing information about important policies, legislation and high-level public events. The document also requests government to use new media and government hotlines to interact with the public – such as online surveys, "the leaders' mailbox",³⁰ online interviews and Q&A sessions – to collect public opinions and feedback on policies.

In addition, Premier Li Keqiang highlights smart technologies and smart cities as two priorities for the country's development in the State Council's *2015 Report on the Work of the Government*.³¹ For instance, the report says that China will "promote extensive application of information technologies in industrialization", as well as make breakthroughs in areas such as "digitalization and smart technologies".³² The report also announces the development of The Internet Plus Action Plan to promote the development of e-commerce, industrial networks, Internet banking, and Internet-based companies; and specifically "to integrate mobile Internet, cloud computing, big data, and the Internet of Things with modern manufacturing".³³ The report reiterates NDRC's 2013 action plans, which outline how the Internet of Things should be better incorporated into 10 different areas including human resources development, business and security.³⁴

Apart from aiming to generate economic benefits, the report also stresses the importance of applying technology to build more liveable and sustainable urban environments, in the context of smart cities:

"We will develop smart cities and protect historical and local culture, ensuring it is passed on from generation to generation. We will strengthen urban facilities for water, gas, and electricity supplies, public transport, and flood prevention and rainwater control. We will ensure the effective governance of urban maladies such as pollution and traffic congestion to make transportation more convenient and improve the environment for urban living."³⁵

In Transition: From Tech-centred to Human-centred

Through the above policy development – from The Opinions to The Guidance – it is clear that the framework of smart technologies and smart cities development of China is in a transitional period. The Opinions in 2013 mainly adhered to a technology-oriented mindset that focused on hardware and technology infrastructure development like smart grids and smart water supplies.³⁶ However, The Guidance issued in 2014, emphasized not only the principles of human-centred and demand-driven development, but also the concept of smart cities beyond the scope of finance and technology infrastructure.³⁷ Moreover, bottom-up and citizen engagement

elements like strengthening public services via smart technologies and establishing platforms for expressing opinions are in the document. This concurs with the global emerging trend for positioning smart city development as a *human-centred approach to digital government*.

In addition, this transition to smart cities takes place in the context of people-oriented governance approaches to address urban challenges. This new-type urbanization was first identified in the State Council's *National New-type Urbanization Plan (2014-2020)*.³⁸ The plan defines new urbanization as a process which

encourages “a favourable interaction between government administration, self-adjustment within society, and self-governance by residents” through “comprehensive grass-root service management platforms”.³⁹ The Urbanization

Plan also emphasizes the importance of public participation (*gongzhong canyu*) in city planning and city governance structures especially in areas such as land management and social services.

Long Road Ahead: The Implementation of Public Participation in China

Despite all the central policies dedicated to promoting new-type urbanization and public participation, it is important to track whether and where such policies have been translated into effective daily implementation – especially at the city and community levels.

China today has implemented various reforms to increase the level of citizen participation in legislative and executive decision-making, such as “public hearings, deliberative polls, citizens’ right to sue the state, initiatives to make government information public, increasing use of People’s Congresses to discuss policy, and acceptance of some kinds of autonomous civil society organizations”.⁴⁰ While much literature views many such measures as *managed participation*⁴¹ or *controlled deliberation*⁴² – known as orderly participation (*youxu canyu*) in the Chinese government’s terminology – the degree and impact of public participation varies significantly depending on the issues of topic, location and timing of a deliberation.⁴³

Nevertheless, it is clear that the role of ICT and new media is becoming more and more important for promoting citizen engagement. Examples range from Internet Bulletin-Board Systems (BBSs), microblogs/tweets (Weibo) and

mobile instant messages (*WeChat*) for online discussion and deliberation, and to call for concrete collective action offline. A milestone example, illustrating how these new modes of expression have influenced concrete political decision-making, was when the Xiamen Municipal Government backed down from building a *P-Xylene* (PX) chemical factory near residential areas in 2007. After the original building proposal (as well as the potential hazardous effect to the environment and people’s health) was put online, 10,000 citizens were mobilized via text messages, emails and social media to participate in an “anti-PX leisure walk” protesting against the PX project. Many scholars later concluded that the major cause of the anti-PX event was lack of transparency and public participation during the planning process and environmental impact assessment (EIA); and that ICT and social media had created room for people to express their opposition and call for political action.⁴⁴

In response, both local and central governments are dedicating more resources and time to establishing e-government, social media and smart technology initiatives (see *Part II*) for improving governance and service delivery. However – deviating from the abovementioned

policy shift – many of these initiatives still focus on providing information to citizens, instead of encouraging participation from the bottom-up. According to the *UN E-Government Survey Report 2014*, China's public online service development is still largely only providing information services, rather than connected services, preferred because it is where *"governments create an environment that empowers citizens to*

be more involved with government activities to have a voice in decision-making."⁴⁵

The next section presents the findings of the case studies – examining how, in the context of the above policy development, ICT and smart technology initiatives are utilized for public participation at the city and community level in China, as well as potential social impacts.

PART II – Case Studies of City and Community ICT Initiatives for Public Participation

While part I described policy initiatives concerning smart cities, new-type urbanization and public participation, this section examines how these are implemented at the city and community level of government. The research team conducted interviews with 20 stakeholders (listed in Annex I) and documented 10 case studies of ICT initiatives (see Annex II for detailed descriptions) operated by municipal, district and sub-district governments in China. The 10 cases have been grouped into four different categories

based on the objectives of the initiatives:

- 1. Feedback mechanisms for increasing citizen engagement and government accountability**
- 2. Measures to improve the quality and responsiveness of public service delivery**
- 3. Information access initiatives to help citizens make better market and life choices**
- 4. Platforms for community- and neighbourhood-building**

1. Feedback mechanisms for increasing citizen engagement and government accountability

The first category includes initiatives which are utilizing ICT initiatives to gather feedback from citizens and increase the accountability of government. Examples in other countries have used online crowdsourcing platforms to collect a large quantity of feedback and opinions to guide policy-making, such as mobile apps and games in participatory budgeting and urban planning in Indonesia.⁴⁶ In China most of these ICT initiatives also focus on enabling citizens to interact with and gain direct access to government officials via online platforms. One of the prominent examples is online interaction sessions between former Premier Wen Jiabao and Chinese netizens, started in 2009.⁴⁷ This has now become a regular online activity called “*I have a question for the Premier*” held during the

*annual National People’s Congress (NPC).*⁴⁸

Deliberation – an “*act of communication that motivates others through persuasion*”⁴⁹ – and the idea that political elites must be responsive to the people, have had a long history in China’s political governance and is an important concept in Confucian political thought. He and Warren⁵⁰ note the expansion of deliberative practices starting in the 1980s as part of the rise of a wider range of participation including village elections and public hearings. For example, since 2004, the city of Binzhou has held one Democratic Political Discussion Day each month, which required all village-level cadres⁵¹ to hold a town hall meeting.⁵² In 2005, Binzhou began to evaluate government performance and this has

now developed into a comprehensive public satisfaction telephone survey and questionnaire as "a bridge of communication" between the government and citizens; while also increasing public participation, political awareness, and improved government accountability and performance. Extending this work, the 'Binzhou-China' Government Online Interview Platform (Case 10) was established in 2010, which the Binzhou municipal government decided to become the first city in Shandong Province to hold online interviews with government officials. As of 2015, it has organized 161 online interviews and responded to more than 5,100 questions with officials from all departments and levels of seniority including the mayor.

Chengdu is newer to this system of online engagement, having launched its programme in April 2014. As of May 2015, it has held 16 two-hour question and answer sessions on hot topics. Usually 150-200 questions are received and around 40 answered live. Other questions are answered after the session is over. Recent topics include changes in taxation and low-carbon options for celebrating the Grave Sweeping Festival (where typically paper money is burned in large quantities at ancestors' graves impacting air quality) (Case 7).

Haidian District in Beijing (Case 4) is another

example of local government initiatives using online as well as offline platforms to engage with citizens. The focus in Haidian is setting work priorities for the government. Opinions are gathered online and offline, and the top priorities, work plans and responsible departments are listed on their website with progress reports posted at the end of each year. The initiative has only been in place since 2013, and there is still more offline participation than online. A similar initiative called *I Love Beijing MyCity Government Wiki* (Case 1) allows the Bureau to publish drafts of city administration policies and regulations for citizens to provide feedback, raise questions and concerns, and collectively edit the policies' content, in the same way as editing an entry on Wikipedia.

One particularly successful example of an online platform for increasing the accountability of government has been the Central Commission for Discipline Inspection's (CCDI's) anti-corruption app. The app allows users to report anonymously on misuse of public funds or assets, and to bypass potentially corrupt local officials who may block reports. Municipalities are also developing local versions of the app or opening *Weibo* accounts to publicize corruption reporting methods. China Daily reports that since its launch, nearly half of all reports of corruption from the public have come through the app.⁵³

2. Measures to improve the quality and responsiveness of public service delivery

The second category – which is also one of the most common ICT for participation initiatives found in China – is aiming to improve the

responsiveness and quality of public service delivery. Most initiatives in this category are websites or social media channels like microblogs

(*Weibo*) and WeChat accounts that allow citizens to submit enquiries, complaints or suggestions regarding basic social services like education, healthcare, household registration (*hukou*), pensions, etc. Cities such as Beijing, Shanghai, Tianjin and Ningbo have been early adopters in this area, and now many local governments are following suit after recommendations from the State Council.⁵⁴

Using social media to improve responsiveness of social services

The Internet penetration rate in China reached 47.9% (649 million netizens) – including 278 million users of *Weibo* – at the end of 2014.⁵⁵ The most popular platforms are WeChat, *Tencent Weibo*, *Sina Weibo*, *Renren* and *Kaixin*. Tencent's Qzone outperforms them all in monthly users. More and more government agencies, especially local governments, have started official *Weibo* accounts to improve public service delivery as well as to gauge and guide public opinion.⁵⁶ As of November 2014, there were more than 277,000 official government *Weibo* accounts – 219 accounts from the central government and over 194,000 accounts from provincial and local governments – with most of these set up after 2012.⁵⁷ These accounts have 4.39 billion followers in total, which means that on average each Chinese netizen is following 6.7 government *Weibo* accounts. In 2014, government *Weibo* accounts put out 17.82 million posts, a 20.1% increase over 2013. Most of the official *Weibo* accounts are operated by the Communist Youth League, followed by the Police and Propaganda departments at different levels of government. Microblogs subjects which have seen the most development include public security, government publicity, party building, education and civil affairs.⁵⁸ Blogs on public security

accounted for the largest volume.⁵⁹

For example, *Ping'an Beijing* is one of most popular government *Weibo* sites with more than nine million followers.⁶⁰ The site's official mandate is to clear rumours, and provide authoritative information on news events such as robberies, terrorist attacks, fires, etc. Through the site, citizens can also submit recommendations for improving public services; make complaints; raise sensitive issues, and make requests for assistance (such as how to apply for a police permit for an event). The Public Security Bureau says it responds to about 25% of comments and uses responses to set police priorities.

According to Jiang & Schlæger, the three major drivers for the local government to use microblogs are public pressure; the need to monitor public opinion for social management; and to create a service-oriented government.⁶¹ The most successful government microblog accounts are those responsive to citizens' complaints and questions and promising to solve issues within a short period of time. For instance, one of our cases – the Chengdu Service *Weibo* account (Case 7) – operated by the Government Affairs Service Center of the Chengdu Municipal Government promises to respond to netizens' questions within one hour during working hours and within eight for non-working hours. The Center also promises to solve issues raised within 24 to 72 hours. The account has now over 432,000 followers and received the "Most Promising e-Government Prize for the Open City Category" in the 2nd World e-Governments Organization of Cities and Local Governments (WeGO) Award in 2014.

While municipal level government initiatives such as the Chengdu Service gather complaints or requests for information, they generally need

to pass this on to the responsible departments, district or sub-district (*jiedao*) level governments. However, many sub-district government agencies are also connecting directly with residents through microblogs. This requires considerable internal coordination which ICT is also being used to facilitate. Chengdu has been working on coordinating and streamlining public municipal services for many years, including the establishment of a 'one-stop service centre' to access the municipal services of the Government Affairs Service Center of the Chengdu Municipal Government.

Lots of these initiatives are built based on the existing social service hotline platforms in use in many Chinese cities. For instance, the *Beijing Community Service Hotline 96156* (Case 2) run by the Social Services Department of Beijing provides information and answers questions about a variety of policies and government administrative procedures, such as applying for marriage or driver's licences or accessing psychological or legal counselling. The hotline receives around 600,000 calls per year and over 700,000 service orders have been made by residents using different platforms.

Many of these hotlines have now created integrated platforms to receive citizens' enquiries. The *Ningbo Community Service Hotline 81890* (Case 9) established in 2001 operates 24 hours a day, seven days a week and is accessible on various mediums such as telephone, SMS, website or *Weibo*. As of 2013, the hotline employs over 50 operators and on average receives more than 3,000 calls and enquiries every day. The website has over 20,000 hits per day and is currently cooperating with over 850 companies and enterprises to provide citizens with different types of public and private services. Also, the *Smart Tuanjie Lake initiative* (Case 3) established

by the Tuanjiehu Sub-district Office in Beijing allows citizens to use WeChat, Weibo and micro-groups to report on problems (such as potholes, broken street lights and fly-tipping), or on conflicts with neighbours (such as over parking spaces or noise). A similar platform called the *I Love Beijing App* (Case 1) operated by the Beijing Law Enforcement Bureau allows registered users to file complaints or send their suggestions regarding city administration using the application on smart phones. The App also provides access to the Bureau's microblog and hotline (more of its function will be introduced in the third category below).

Using smart initiatives to improve quality of healthcare and education

Another initiative under this category focuses on using smart technology to improve the quality of public services – most of them currently focused in health and education – known as "Smart Health" or "Smart Education" initiatives, for instance. The two examples presented here are both located in Beijing, operated by two different sub-district governments.

In Tuanjiehu sub-district (Case 3), the government is harnessing an Internet of Things (IoT) approach in around 200 homes of elderly residents – building a network of devices including smoke detectors, infrared intruder detectors, gas leakage detectors, heart pulse monitors, blood pressure gauges, etc., which are all connected to the Internet. If they detect any emergency, action will be taken automatically, such as calling the police, ambulance or shutting down the town gas supply. A smart TV is also installed in these homes to provide the elderly residents with medical advice offered by a doctor via online conference call according to

health data collected by the various detectors.

In Haidian district (Case 4), the government has been building digital infrastructures to establish a smart network for all hospitals and medical facilities in the district since 2013. The goal of the Smart Health Initiative is to use technology to improve the service quality of small and second-tier medical institutions, and so encourage people to receive treatment from a nearby medical facility instead of overcrowding the top-tier hospitals. The initiative plans to establish an online medical history for each patient. With the consent of the patient, the medical record will be shared with doctors to provide informed medical treatment. The initiative also plans to design a mobile application for patients to retrieve their own medical records, make appointments with hospitals in the district, seek medical advice and

pay outstanding medical bills. An annual budget of 100 million RMB has been designated to the project and 300 million RMB has been invested so far.

Similar to the Smart Health Initiative, the Haidian government started the Smart Education Initiative in 2013. Its activities include building a smart network between over 300 kindergartens, primary, secondary and vocational schools. With an annual budget of 200 million RMB, the initiative wishes to push forward the development of e-learning courses and Massive Open Online Courses (MOOCs) in Haidian District. All data collected from the initiative will be uploaded to the E-Governance Cloud Platform for a possible big data project to improve the district's education services.

3. Information access initiatives to help citizens make better market and life choices

The third category of ICT initiatives focuses on providing market and public information for citizens to make better choices. For example, The Beijing Law Enforcement Bureau's *I Love Beijing App* (Case 1) provides the location of 2,096 wet markets (both temporary and permanent) in Beijing, with information on opening and closing hours and types of goods on sale at the market. Many of these markets are operated informally by groups of neighbours on an ad hoc basis. Users can use the platform to rate and comment on the quality of the wet markets, correct inaccurate information and add new data points such as the opening of a new market. Users can also use the platform to request for a new wet market in their neighbourhood or ask for a market that

sells specific types of goods.

Elsewhere, in the Panyu District in Guangzhou – a city with one of the highest volumes of migrants in China – has developed a number of ICT initiatives to provide better housing information, aiming to address the large numbers of undocumented migrants, slums and illegal housing in the city. It is a pilot project – named the Star Rental Management System (Case 6) – to incentivize household registration for migrant workers and to develop a rating system for rental housing. Rental housing is registered on the system and issued with QR codes. Housing inspectors, police and other government officials have access to the housing

database and give points to houses that are well-maintained and have residents that are properly registered. Migrants who download the App can scan the QR code to view the rating of the house,

and have their residency updated automatically. Landlords and tenants can redeem points for services such as access to libraries or free movie tickets.

4. Platforms for community- and neighbourhood-building

The last category of ICT initiatives aims to better connect people living in the same neighbourhood and community. As people are working longer and longer hours, and becoming more mobile, sub-district governments are seeing a shift from tightly knit communities where residents spent most of their time in the neighbourhood. One of the motivations for the Tuanjiehu sub-district government (Case 3) to start more online initiatives was to try to reach younger people who may not have the time to be physically present in their neighbourhood but can still connect to local activities online. While many municipalities are using microblogs to provide information to users on local festivals or activities, Tuanjiehu sub-district in Beijing has taken this to the next step by providing an online art gallery for residents to post their artwork and photos of local activities. This gallery has become very popular, especially with people from the neighbourhood who have moved overseas or to other communities. A similar initiative has been established in Chengdu. The Shuijingfang Sub-

district Government Office has taken an innovative approach to using ICT to promote community building by collaborating with the multinational corporation Intel and a local NGO to create and manage the *Shuijingfang* service app (Case 8). This app also connects neighbourhood residents with activities and volunteer opportunities in the neighbourhood, as well as allows residents to organize their own events.

Last but not least, the Shenzhen Communist Youth League started a project called *Volunteer in Shenzhen* (Case 5) to encourage people to volunteer their time. Volunteers that officially register with the Youth League are provided with chip cards that gives them access to an online platform of information on volunteer opportunities, social support from other volunteers, and volunteer management tools. Opportunities are also sent out over the *Weibo* microblog platform and there are also plans to develop an App. The chip card records their volunteer hours, and entitles them to insurance and worker's compensation while volunteering as well as discounts on public transit, financial services with the Bank of China and in partner stores.

PART III – Analysis and Policy Recommendations

As illustrated by the abovementioned examples, in China there is top-level political support for bottom-up and human-centred ICT initiatives for smart city development, as well as progress in some cities to adopt these initiatives on the ground. However, there are still significant challenges. Inadequate planning and coordination, a lack of human capacity and

conflicting political incentives, for example, are all barriers to maintaining or scaling-up ICT for public participation initiatives, even in the early adopter cases outlined above. Therefore, the following section outlines a set of policy recommendations for central and local governments to make their smart city initiative more effective, sustainable and inclusive.

1. Formulate a clear vision and strategic plan for smart city development

First and foremost, before capital investment in ICT initiatives, it is important to have clear project objectives, as well as a top-level strategic plan (*dingceng guihua*) of what the city wants to achieve, and what problems need to be solved in the short, medium and long term through smart technologies. This may sound intuitive; however few of the cities and sub-district governments interviewed had such a plan. Some cities like Ningbo do have an annual work plan which lists the key priorities of the government's smart city work, but most of these are top-down projects, such as expanding Wi-fi/4G networks, which fail to listen to citizens' demands or address urban problems about which the locals care the most.

A vision helps prioritize work and focus on the issues that ICT platforms can help solve rather than just jumping on the smart city bandwagon.

Proceeding without a vision can result in effort and money wasted on programmes that do not bring about improvement to city management or quality of life. As well, without a comprehensive plan to identify what, why and how the city should be engaged in smart city development, the government would likely receive proposals and tenders passively from private technology conglomerates, and for projects that maximize revenue for corporations rather than tackle significant urban challenges. The government smart city development priorities may thus risk being captured by the private sector as a result. If a private company introduces proprietary systems and technologies through these smart city projects, the government may incur significant costs to change the service providers or move towards a different direction for smart city development in the future.

2. Conduct assessments to truly understand people’s needs and problems

While formulating a strategic plan for smart city development, it is crucial to understand what people really need and focus on the priorities which will have a significant positive impact on a large population. However, it is not common for cities, at least in the cases that the research team studied, to conduct systematic needs assessments of their citizens prior to formulating a smart city development plan and key priorities. Research has found that although some smart city pilots, like Wuxi, have policy instruments, they mostly focus on boosting financial investment and offering tax incentives for smart city development.⁶² One of the experts interviewed concluded that governments are inclined to issue capital related smart city policies that they consider quick and easy to implement, rather than (often more appropriate) complex policies that are demand-driven. Another reason for governments to focus on top-down policies that boost financial investment using smart city programmes is that promoting, or at least, sustaining GDP growth is still one of the crucial indicators for the central government to evaluate the performance of local officials. Such policies usually have a limited effect that

only last for the short-term, as most of them are guiding principles and provisions that have weak continuity, omit operational details, and most importantly, ignore people’s needs. Most ICT projects formulated hastily under these top-down and capital focus policies are usually unpopular and underutilized.

It is therefore important for a municipal government to conduct a thorough need assessment via multiple online and offline tools – including surveys, online voting, public hearings and focus group interviews – to understand citizens’ demands and requests before developing any smart city plans. Such assessment should be carried out before developing any standalone smart technology projects. For example, the Shenzhen Municipal Volunteer Work Federation spent half a year conducting consultations before launching the *Shenzhen Digital Volunteer Certificate System* (Case 5). It interviewed different civil society organizations, and district and sub-district governments to understand the demand for volunteer services in the city, as well as what specific functionality citizens wanted from the platform.

3. Gradually introduce changes, using prototypes, to gain buy-in from different stakeholders

Zhang, Guo, Chen & Chau conducted surveys for around 100 government officials who are operators of e-government initiatives in the Chaoyang district of Beijing.⁶³ The research found that if an ICT initiative is perceived by the

operators as compatible or a ‘fit’ with their work style and work routine, the initiative is more likely to be evaluated as useful and effective.⁶⁴ The research suggests that it is important to gain political buy-in with the internal operators

of the ICT initiative; often government employees who are used to the existing routine of their daily work and may be reluctant to change. The study found that many e-government initiatives examined by the research team adopted a top-down implementation process. Operators of these initiatives were usually the last one to know about the change and *“were expected to accept the system without any participation in the process of design”*.⁶⁵ This usually led to underutilization or even failure of the ICT projects.

The case study, described above, on the *I Love Beijing City Administration Public Service Map and Mobile App* (Case 1) generated similar findings. In 2004, Dongcheng district of Beijing started a technology initiative – the predecessor of the *I Love Beijing App* – for municipal administration. The district hired middle-aged unemployed workers as ‘grid-inspectors’ (*wanggeyuan*)⁶⁶ to go around the community and take pictures with PDAs distributed by the government. Specifically, they were tasked with documenting problems regarding city management (such as potholes on the road, broken street lights, fly-tipping, etc.). Data collected was then fed to the relevant authorities, such as the municipal

engineering departments, municipal road administration, water supply companies, etc., for corresponding actions.

The Bureau later realized that it is very challenging, but important, to integrate the new ICT platform into the daily work cycle of the end-users. Song Gang, head of the Bureau’s ICT department said, *“it is difficult to change people’s mind-sets and for them to embrace the new system, without perceiving the change as an increase of workload”*.⁶⁷ The Bureau therefore decided to reformulate the project and established a working group of 20 people, including officers from different departments (i.e. the end-users of the platform), government officials at the municipal and district level, citizens from communities, academics and representatives from the private sector. The working group spent one year with consultations; to test out specific functions through various prototypes; and to improve and streamline the workflow for managing and operating the platform. The new platform was re-launched in 2011 (for the website) and 2012 (for the mobile app) and received positive feedback from both operators and citizens.

4. Establish coordination mechanisms among different ministries and agencies

Many ICT and smart city initiatives generate, and operate based on massive amount of citizens’ data. These data usually cut across various sectors and thus are possessed by different government ministries and agencies, as well as stored in different formats and managed by different protocols which cause interoperability

issues. According to the findings of the 10 case studies, one very common reason for an ICT initiative’s failure to scale-up is reluctance to engage in data-sharing among government agencies. That said, there are exceptions where strong political will from the top have successfully pushed for inter-agency

cooperation – such as the Panyu district of Guangzhou which established an integrated database for all municipal agencies for the 2010 Asian Games; or the Haidian district of Beijing which, in 2012, formulated a clear strategic plan and coordination mechanism around its technology hub, *Zhongguancun* (known as the *China's Silicon Valley*).

It can be very difficult for different departments of a city to share sensitive data. This is especially true for local governments who often lack strong technology capacities. It is recommended that municipal governments should start establishing a small common data-pool or different agencies or or the Haidian district of Beijing which, in 2012, formulated a clear strategic plan and coordination mechanism around its technology hub, *Zhongguancun* (known as the *China's Silicon Valley*).

It can be very difficult for different departments of a city to share sensitive data. This is especially true for local governments who often lack strong technology capacities. It is recommended that municipal governments should start establishing a small common data-pool for different agencies or departments to contribute their non-sensitive data (like weather and traffic information), and use the data for a small ICT prototype. City governments can then gradually enlarge their data-pools to include other data, with the aim of building a comprehensive integrated database. As mentioned in Part II of this paper, this recommendation of data-sharing and better coordination among agencies was raised in the NDRC and joint-ministry document, *The Guidance*, in September 2014. MOST and MOHURD then issued a third batch of 84 pilot smart cities in April 2015 – which are expected to be the first batch to apply the principles outlined in *The Guidance*.

5. Ensure the sustainability of ICT initiatives by allocating budgets for system maintenance

While top-down political will, especially from the highest leadership of a city, can overcome hurdles for inter-agency coordination and accelerate the initiation of a new ICT project in China,⁶⁸ such pressure can sometimes do more harm than good. According to Zhang et al., top-down directives will usually lead to hasty project implementation with unrealistic planning, especially when there is pressure to launch the project for a major sport or cultural event, such as the Olympic Games or World Expo.⁶⁹

Zhang notes that such projects will usually forgo

long-term sustainability and opt for producing a website or mobile app in a short timeframe without any prior research, proper consultation or maintenance plan – which generally leads to poor outcomes.⁷⁰

Even when there is no top-down pressure for delivery, the ICT project can still risk being unsustainable and short-sighted due to the existing budgeting system. Zhang has found that it is often easier for agencies or departments to get an approved budget for purchasing new hardware or producing software or mobile apps,

rather than obtaining a grant for systems maintenance and upgrades, or for conducting needs assessments and formulating strategic plans. It is therefore crucial for municipal government to allocate budgets to the whole

project cycle, including prior research and subsequent systems maintenance, in order to ensure ICT initiatives is sustainable in the long run.

6. Use open data and open platforms to crowdsource public knowledge, promote innovation and reduce costs

Following the G8 Open Data Charter signed in June 2013,⁷¹ more and more countries have pledged to commit to the principles of the International Open Data Charter issued in October 2015.⁷² In response to the global open data movement, a few Chinese cities, like Wuhan, Beijing and Shanghai, have started to release data on centralized open data platforms.⁷³ As both the economic⁷⁴ and social benefits⁷⁵ of open data are well documented, we recommend that smart city pilots also release machine-readable open data generated by their ICT initiatives, as well as support open source collaborative technologies (rather than using closed systems with proprietary data).⁷⁶

In addition, smart city initiatives could mobilize collective knowledge from the public using crowdsourcing techniques. For example, the

predecessor of the I Love Beijing initiative (Case 1) was not cost-effective as the government has to bear the cost of hiring inspectors and purchasing equipment. The project also encountered potential conflict-of-interest problems arising with the end-users: Inspectors' performance assessments were linked to how many problems they reported per month, giving the incentive for inspectors to create new problems themselves.

The Bureau later decided to crowdsource citizens' input for locating and updating details of wet markets, as well as reporting city management problems via mobile phones. The initiative has therefore reduced its costs greatly and attracted more people's attention by engaging citizens to participate and holding the initiative accountable to the public.

7. Invest in digital literacy programmes for both citizens and government officials

Most ICT initiatives in smart city pilots have targeted users with access and knowledge to technological devices and the Internet – usually

middle- or high-income populations that are young and educated. However, this may unintentionally systematically exclude

vulnerable populations including the poor, the elderly and persons with disabilities for whom some of these ICT initiatives are designed. For example, the *Shenzhen Digital Volunteer Certificate System* still has major challenges including elderly users in the platform, which is one of the largest groups of volunteers other than university students. The Shenzhen Communist Youth League therefore has kept operating its original offline platform for volunteers who are not active online.

The digital divide is a commonly overlooked factor that causes a low penetration rate of ICT and smart city initiatives in particular groups of citizens. On the one hand, ICT may not be an appropriate platform for some initiatives, or at least needs to be paired with robust offline

services. On the other hand, it is also crucial for governments to promote their citizens' digital literacy in order for them to better embrace new smart technologies. For instance, the Canadian government has promised to develop training toolkits and materials to improve the digital literacy of its people, while England's primary schools have begun to teach 5-year-old students how to code.⁷⁷ Furthermore, additional digital literacy programmes should be conducted for municipal government officials. This is especially important for operators of ICT initiatives, but also more broadly so that municipal officials can not only understand their own ICT initiatives, but can also understand the uses and limitations of ICT and smart city initiatives in addressing urban issues.

8. Protect people's privacy and enhance cyber security to build trust

Most ICT initiatives result in the generation and collection of large quantities of citizens' data by the government and private companies such as Internet service providers (ISPs). According to a survey conducted by consumer organizations in 30 cities across China, over half of the interviewees found their personal data such as contact information and purchasing records had been disclosed to third parties.⁷⁸ In December 2012, the NPC enacted the *Decision on Strengthening the Protection of Online Information* which instructs businesses and government organizations to obtain consent prior to collecting personal electronic information. The decision also requires organizations to "implement measures to protect individuals' personal electronic information against theft, loss, and damage", as well as to inform them about "the purpose, method, and scope of data

collection". However, the implementation of the Decision is largely ineffective, as it has neither specified what practice organizations should follow to attain the abovementioned goals, nor elaborated on the types of remedial measures necessary in case of compromising users' data.⁷⁹ Similar problems have been found with the proposed new Cybersecurity Law.⁸⁰

While it is not the goal of this paper to provide detailed privacy and cyber security policy recommendations, we would like to emphasize the importance for smart city pilots to protect users' privacy and communicate their data policies clearly with citizens. Otherwise, it will be hard for citizens to trust and participate in these ICT initiatives, especially if they think that their information could potentially be compromised.

CONCLUSION:

Making Smart Cities More Participatory and Inclusive

Technology has a crucial role in shaping the future of the city and addressing urban challenges. In China, multi-million yuan hardware and technology infrastructures usually receive the most attention from the media, private sector and government officials, such as the establishment of the Global Big Data Exchange in Guiyang, Guizhou which has been visited by both President Xi Jinping and Premier Li Keqiang. While this infrastructure is a crucial enabler for smart city development, it is equally important to foster bottom-up innovative ICT initiatives which respond to citizens' needs. Meeting the demands of urban populations and communities will be one of the key drivers for the country to advance sustainable development, and create an inclusive, equitable and participatory environment for all.

In China, it is encouraging to observe that there is top-level political will to focus more on bottom-up and human-centred ICT initiatives for smart city development. However, like with most Chinese central government policies, it takes time for local governments to get on board and implement the policy on the ground. Through the documentation and analyses of 10 cases, this *Rethinking Smart Cities* paper provides city and community governments with recommendations (Part III) to promote e-participation – using ICT to enhance citizen engagement and public participation:

1. Formulate a clear vision and strategic plan for smart city development

2. Conduct assessments to truly understand people's needs and problems

3. Gradually introduce changes, using prototypes, to gain buy-in from different stakeholders

4. Establish coordination mechanisms among different ministries and agencies

5. Ensure the sustainability of ICT initiatives by allocating budgets for system maintenance

6. Use open data and open platforms to crowdsource public knowledge, promote innovation and reduce costs

7. Invest in digital literacy programmes for both citizens and government officials

8. Protect people's privacy and enhance cyber security to build trust

Looking forward, the world's nation states, city governments and a wide range of actors in the urban arena are going to reach consensus on the New Urban Agenda at the Habitat III cities conference in October 2016. Technology will certainly be one of the key factors to address emerging problems, such as climate change and various natural or man-made risks, related to urbanization. It is therefore important for China, as well as other emerging economies and industrialized countries to rethink their smart city agenda: not only to promote ICT for public participation and new-type urbanization as recommended by this paper, but also to develop an urban agenda which uses smart technology to ensure inclusive urbanization and sustainable development, in order to achieve Goal 11 of the Sustainable Development Goals (SDG).

NOTES AND REFERENCES

FOREWORDS

- 1 Different sources provide various projections. The figures cited here are based on the UN's World Urbanization Prospects 2014.
- 2 The household registration or *hukou* system was established in the 1950s to control internal migration. It identifies a person as a resident of a specific area, and that person only has the right to access the social services such as education or pensions, and in earlier eras housing and food rations, provided by the government in that area. Rural *hukou* holders generally enjoy less access to social services than urban *hukou* holders. *Hukou* restrictions have been diminishing since the 1980s, starting with areas dependent on migrant labour such as the Pearl River Delta, resulting in larger and larger waves of rural migrants to cities. One of the goals of the *National New-type Urbanization Plan (2014-2020)* is to equalize access to social services between urban and rural *hukou* holders throughout China with restrictions only remaining on uncontrolled migration to the eastern megacities. See United Nations Development Programme China (2013). *China National Human Development Report 2013 – Sustainable and Liveable Cities: Toward Ecological Civilization*. Beijing: China Translation and Publishing Corporation, June 2013.

INTRODUCTION

- 3 United Nations (2014). World Urbanization Prospects 2014 Revision. Retrieved from <http://esa.un.org/unpd/wup/Highlights/WUP2014-Highlights.pdf>
- 4 A city classification defined by the Ministry of Housing and Urban-Rural Development (MOHURD) in the *National Urban System Planning (2005-2020)*. There are currently five national central cities in China: Beijing, Shanghai, Tianjin, Guangzhou and Chongqing.
- 5 Such as the State Council's *2015 Report on the Work of the Government* and the National Development and Reform Commission's *Ten Action Plans About the Development of Internet of Things* (2013).
- 6 Elfrink, W. (2012). The Smart-city Solution. *McKinsey & Company*. Retrieved from http://www.mckinsey.com/insights/public_sector/the_smart-city_solution
- 7 Appleyard, B., Zheng, Y., Watson, R., Bruce, L., Sohmer, R., Li, X., Qian, J. (2007). *Smart Cities: Solutions for China's Rapid Urbanization*. Natural Resources Defence Council. Retrieved from <https://www.nrdc.org/international/smartcities/smartcities.pdf>
- 8 Poole, S. (2014). The Truth about Smart Cities: 'In the End, They Will Destroy Democracy'. *The Guardian*. Retrieved from <http://www.theguardian.com/cities/2014/dec/17/truth-smart-city-destroy-democracy-urban-thinkers-buzzphrase>
- 9 United Nations Human Settlements Programme (2015). HABITAT III Issue Paper 21: Smart Cities. Retrieved from http://unhabitat.org/wp-content/uploads/2015/04/Habitat-III-Issue-Paper-21_Smart-Cities-2.0.pdf
- 10 Johnson, D. (2014). Smart City Development in China. *China Business Review*. Retrieved from <http://www.chinabusinessreview.com/smart-city-development-in-china/>
- 11 The International Telecommunication Union (2014). *Sustainable Smart Cities: From Vision to Reality*. Retrieved from <http://www.itu.int/en/ITU-T/Workshops-and-Seminars/Pages/2014/14-oct.aspx>
- 12 Accenture (2014). *Just How Smart Are Smart Cities?* (p. 1-2). Retrieved from https://www.accenture.com/t20151012T135656_w_us-en_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_6/Accenture-PoV-How-Smart-are-Smart-Cities-FINAL.pdf
- 13 UK Department of Business Innovation & Skills (2013). *Smart Cities: Background Paper* (p.7). Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/246019/bis-13-1209-smart-cities-background-paper-digital.pdf
- 14 National Development and Reform Commission (2014). *The Guidance on Promoting Healthy Smart City Development* (p.1). Retrieved from <http://www.sdpc.gov.cn/gzdt/201408/W020140829409970397055.pdf>
- 15 State Council of the People's Republic of China (2014). *National New-type Urbanization Plan (2014-2020)*. Retrieved from [http://www.51baogao.cn/uploads/xinxingchengzhenhua\(2014-2020\).pdf](http://www.51baogao.cn/uploads/xinxingchengzhenhua(2014-2020).pdf)
- 16 United Nations Development Programme China (2013). *China National Human Development Report 2013 – Sustainable and Liveable Cities: Toward Ecological Civilization*. Beijing: China Translation and Publishing Corporation, June 2013.
- 17 Johnson, D. (2014). Smart City Development in China. *China Business Review*. Retrieved from <http://www.chinabusinessreview.com/smart-city-development-in-china/>

PART I

- 18 Government of the People's Republic of China (2011). 12th Five-Year Plan. Retrieved from <http://www.britishchamber.cn/content/chinas-twelfth-five-year-plan-2011-2015-full-english-version>
- 19 State Council of the People's Republic of China (2014). *Several Opinions on Promoting Consumer Spending on Information Technology and Expanding Domestic Demand*. Retrieved from http://jtkj.gdcd.gov.cn/userfiles/file/20131014/20131014170650_670.pdf
- 20 State Council of the People's Republic of China (2014). *Several Opinions on Promoting Consumer Spending on Information Technology and Expanding Domestic Demand* (p.2). Retrieved from http://jtkj.gdcd.gov.cn/userfiles/file/20131014/20131014170650_670.pdf
- 21 Johnson, D. (2014). Smart City Development in China. *China Business Review*. Retrieved from <http://www.chinabusinessreview.com/smart-city-development-in-china/>
- 22 Kang, Y., Zhan, L., Chen, C., Ge, Y., Li, H., Cui, Y., Whyte, J., Hart, T. (2014). *Comparative Study of Smart Cities in Europe and China*. Retrieved from http://euchina-ict.eu/wp-content/uploads/2015/01/Smart_City_report-Final-Draft-March-2014.pdf
- 23 The Ministry of Industry and Information Technology (MIIT), The Ministry of Science and Technology (MOST), The Ministry of Public Security (MPS), The Ministry of Finance (MoF), The Ministry of Land and Resources (MLR), The Ministry of Housing and Urban-Rural Development (MOHURD), and The Ministry of Transport (MoT).
- 24 National Development and Reform Commission (2014). *The Guidance on Promoting Healthy Smart City Development*. Retrieved from <http://www.sdpc.gov.cn/gzdt/201408/W020140829409970397055.pdf>
- 25 National Development and Reform Commission (2014). *The Guidance on Promoting Healthy Smart City Development*. Retrieved from <http://www.sdpc.gov.cn/gzdt/201408/W020140829409970397055.pdf>
- 26 State Council of the People's Republic of China (2014). *National New-type Urbanization Plan (2014-2020)* (p. 50). Retrieved from [http://www.51baogao.cn/uploads/xinxingchengzhenhua\(2014-2020\).pdf](http://www.51baogao.cn/uploads/xinxingchengzhenhua(2014-2020).pdf)
- 27 However, according to Article 8 of OGI, the government can reject the application for information disclosure on the grounds of national safety and security. Compliance by local government also is a problem, according to Peking University's Center for Participation Studies and Supports (2015) *China Administrative Transparency Report 2014-2015*.
- 28 Horsely, J. (2014). *China's Leaders Endorse Disclosure as the 'Norm'*. *Freedominfo.org*. Retrieved from <http://www.freedominfo.org/2014/11/chinas-leaders-endorse-disclosure-norm/>
- 29 State Council of the People's Republic of China (2013). *Opinions on Further Strengthening Government Information Disclosure that Responding to Social Concerns in order to Raise Government Credibility*. Retrieved from http://www.gov.cn/zwqk/2013-10/15/content_2506664.htm
- 30 "Leaders' mailbox" here refers to an initiative which allows citizens to file complaints or enquiries to senior government officials directly by letter.
- 31 State Council of the People's Republic of China (2015). *Report on the Work of the Government*. Retrieved from http://www.china.org.cn/chinese/2015-03/17/content_35077119_4.htm
- 32 State Council of the People's Republic of China (2015). *Report on the Work of the Government*. Retrieved from http://www.china.org.cn/chinese/2015-03/17/content_35077119_4.htm
- 33 State Council of the People's Republic of China (2015). *Report on the Work of the Government*. Retrieved from http://www.china.org.cn/chinese/2015-03/17/content_35077119_4.htm
- 34 National Development and Reform Commission (2013). *Ten Action Plans About the Development of Internet of Things*. Retrieved from http://www.sdpc.gov.cn/zcfb/zcfbghwb/201309/t20130917_585500.html
- 35 State Council of the People's Republic of China (2015). *Report on the Work of the Government*. Retrieved from http://www.china.org.cn/chinese/2015-03/17/content_35077119_4.htm
- 36 State Council of the People's Republic of China (2014). *Several Opinions on Promoting Consumer Spending on Information Technology and Expanding Domestic Demand*. Retrieved from http://jtkj.gdcd.gov.cn/userfiles/file/20131014/20131014170650_670.pdf
- 37 National Development and Reform Commission (2014). *The Guidance on Promoting Healthy Smart City Development*. Retrieved from <http://www.sdpc.gov.cn/gzdt/201408/W020140829409970397055.pdf>
- 38 State Council of the People's Republic of China (2014). *National New-type Urbanization Plan (2014-2020)*. Retrieved from [http://www.51baogao.cn/uploads/xinxingchengzhenhua\(2014-2020\).pdf](http://www.51baogao.cn/uploads/xinxingchengzhenhua(2014-2020).pdf)

- 39 State Council of the People's Republic of China (2014). *National New-type Urbanization Plan (2014-2020)* (p. 53). Retrieved from [http://www.51baogao.cn/uploads/xinxingchengzhenhua\(2014-2020\).pdf](http://www.51baogao.cn/uploads/xinxingchengzhenhua(2014-2020).pdf)
- 40 He, B. & Warren, M. (2011). Authoritarian Deliberation: The Deliberative Turn in Chinese Political Development. *Perspectives on Politics*, 9(2), p. 269.
- 41 Cai, Y. (2004). Managed Participation in China. *Political Science Quarterly*, 119(3), 425-451.
- 42 Nathan, A. (2003). Authoritarian Resilience. *The Journal of Democracy*, 40, 368-383.
- 43 He, B. & Warren, M. (2011) have done an in-depth analysis to map out different kinds and locations of deliberative politics in China (p.278).
- 44 Wang, X. (2008). *The Rise of Public Participation and New Public Movements in China*. China: China Legal Publishing House.
- 45 United Nations Department of Economic and Social Affairs (2014). *United Nations E-Government Survey 2014: E-Government for the Future We Want*. NY: United Nations, (p. 195).
- Part II**
- 46 Chan, J.K.S. & Keserü, J. (2015). *The Social Impact of Open Data*. Retrieved from <http://www.opendataresearch.org/dl/symposium2015/odrs2015-paper20.pdf>
- 47 Retrieved from <http://news.qq.com/zt/2009/wenjiabao/index.htm>
- 48 The latest session (2015) of "I have a question for the Premier": <http://wzl.people.com.cn/>
- 49 He, B. & Warren, M. (2011). Authoritarian Deliberation: The Deliberative Turn in Chinese *Political Development*. *Perspectives on Politics*, 9(2), p. 269.
- 50 He, B. & Warren, M. (2011). Authoritarian Deliberation: The Deliberative Turn in Chinese Political Development. *Perspectives on Politics*, 9(2), p. 269.
- 51 The Democratic Political Discussion Day is held by the Communist Party of China, instead of the government, but both party and non-party members are invited to participate in the town hall meetings.
- 52 News of Communist Party of China (2009). *Binzhou Discusses the Future of the County on Democratic Political Discussion Day*. Retrieved from <http://dangjian.people.com.cn/GB/10080046.html>
- 53 Zhang, Y. & Zhang, Y. (2015) Mobile App Joins Toolbox in Anti-corruption Effort. *China Daily*. Retrieved from http://europe.chinadaily.com.cn/china/2015-07/21/content_21364626.htm
- 54 State Council of the People's Republic of China (2013). *Opinions on Further Strengthening Government Information Disclosure that Responding to Social Concerns in order to Raise Government Credibility*. Retrieved from http://www.gov.cn/zwqk/2013-10/15/content_2506664.htm
- 55 China Internet Network Information Center (2015). *Statistical Report on Internet Development in China 2015*. Retrieved from <http://www.cnnic.cn/hlwfzyj/hlwzbg/201502/P020150203551802054676.pdf>
- 56 Jiang, M. & Schlæger, J. (2014). Official Microblogging and Social Management by Local Governments in China. *China Information*, 28(2). Retrieved from <http://cin.sagepub.com/content/28/2/189.full.pdf+html>
- 57 Xinhua News (2014). *National Government New Media Development Report 2014*. Retrieved from http://news.xinhuanet.com/newmedia/2014-12/25/c_1113781094.htm
- 58 Other popular subjects include Communist Youth League affairs, transportation, the judiciary, tourism, earthquake reports and meteorology.
- 59 Xinhua News (2014). *National Government New Media Development Report 2014*. Retrieved from http://news.xinhuanet.com/newmedia/2014-12/25/c_1113781094.htm
- 60 Ping'an Beijing's Weibo: http://weibo.com/pinganbeijing?c=spr_qdzh_bd_baidusmt_weibo_s&nick=%E5%B9%B3%E5%AE%89%E5%8C%97%E4%BA%AC
- 61 Jiang, M. & Schlæger, J. (2014). Official Microblogging and Social Management by Local Governments in China. *China Information*, 28(2). Retrieved from <http://cin.sagepub.com/content/28/2/189.full.pdf+html>
- Part III**
- 62 Zhang, N., He, X. & Chen, S. (n.d.). *Understanding Short-Term Impact of the Industrial Support Policies on the Urban Development: An Empirical Study Based on the Smart City Related Policies in Wuxi*.
- 63 Zhang, N., Guo, X., Chen, G. & Chau, P.Y.K. (2008). Impact on Perceived Fit on E-government User Evaluation: A Study with a Chinese Cultural Context. *Journal of Global Information Management*, 17(1), 49-69. Retrieved from <http://www.irma-international.org/viewtitle/3682/>
- 64 Zhang, N., Guo, X., Chen, G. & Chau, P.Y.K. (2008). Impact on Perceived Fit on E-government User Evaluation: A Study with a Chinese Cultural Context. *Journal of Global Information Management*, 17(1), 49-69. Retrieved from <http://www.irma-international.org/viewtitle/3682/>
- 65 Zhang, N., Guo, X., Chen, G. & Chau, P.Y.K. (2008). Impact on Perceived Fit on E-government User Evaluation: A Study with a Chinese Cultural Context. *Journal of Global*

- Information Management*, 17(1), p. 63. Retrieved from <http://www.irma-international.org/viewtitle/3682/>
- 66 They are named as ‘grid-inspectors’ because each inspector is in charge of monitoring a small area of the district divided by a grid system.
- 67 Personal communication, March 19, 2015.
- 68 Chen, G., Wu, R., & Guo, X. (2007). Key issues in information systems management in China. *Journal of Enterprise Information Management*, 20(2), 198-208.
- 69 Zhang, N., Guo, X., Chen, G. & Chau, P.Y.K. (2008). Impact on Perceived Fit on E-government User Evaluation: A Study with a Chinese Cultural Context. *Journal of Global Information Management*, 17(1), 49-69. Retrieved from <http://www.irma-international.org/viewtitle/3682/>
- 70 Personal communication, September 22, 2015.
- 71 Group of Eight (2013). *G8 Open Data Charter*. Retrieved from <https://www.gov.uk/government/publications/open-data-charter>
- 72 International Open Data Charter (2015). Retrieved from <http://opendatacharter.net/principles/>
- 73 Zheng, L. & Gao, F. (2015). Research on China Open Government Data Platform: Framework, Current Status and Recommendations. *Dianzizhengwu 2015* [E-Government], Issue 7.
- 74 According to Manyika et al. (2013), open data can generate \$3 trillion potential economic benefits annually in seven sectors alone.
- 75 According to Keserü and Chan (2015), open data can generate the social benefits of 1) educating or informing citizens so that they can make more informed choices; 2) promoting direct civic engagement and increasing citizen participation in democratic processes; 3) gathering feedback for policy-makers and/or the private sector; and 4) monitoring and holding officials and/or the private sector accountable.
- 76 Saunders, T. & Baeck, P. (2015). *Rethinking Smart City from the Ground Up*. UK: Nesta. Retrieved from <http://www.nesta.org.uk/publications/rethinking-smart-cities-ground>
- 77 Chan, J.K.S. & Keserü, J. (2015). *Open Government in Canada: Ambitious plan yet to be implemented*. Sunlight Foundation. Retrieved from <http://sunlightfoundation.com/blog/2014/12/22/open-government-in-canada-ambitious-plan-yet-to-be-implemented/>
- 78 China Consumers' Network & China Safety Alliance (2015). *Investigation Report on the Current Status of Personal Information Protection Under the Big Data Era*. Retrieved from http://www.gzaic.gov.cn/jrgs/sfjs/201510/t20151027_663015.htm
- 79 Lovells, H. (2013). Making Sense of China's New Privacy Law. *Privacy Tracker*. Retrieved from <https://iapp.org/news/a/making-sense-of-chinas-new-privacy-laws-2/>
- 80 Richardson, S. (2015). Submission by Human Rights Watch to the National People's Congress Standing Committee on the draft Cybersecurity Law. *Human Rights Watch*. Retrieved from <https://www.hrw.org/news/2015/08/04/hrw-submission-draft-cybersecurity-law>

ANNEX II

- 81 In 2011, Binzhou also partnered with UNDP for a project on increasing public participation in government performance assessment as part of its commitment to more open and responsive government.

BIBLIOGRAPHY

- Accenture (2014). *Just How Smart Are Smart Cities?* Retrieved from https://www.accenture.com/t20151012T135656_w_usen_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_6/Accenture-PoV-How-Smart-are-Smart-Cities-FINAL.pdf
- Appleyard, B., Zheng, Y., Watson, R., Bruce, L., Sohmer, R., Li, X., Qian, J. (2007). *Smart Cities: Solutions for China's Rapid Urbanization*. Natural Resources Defence Council. Retrieved from https://www.accenture.com/t20151012T135656_w_usen_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_6/Accenture-PoV-How-Smart-are-Smart-Cities-FINAL.pdf
- Cai, Y. (2004). Managed Participation in China. *Political Science Quarterly*, 119(3), 425-451.
- Chan, J.K.S. & Keserü, J. (2015). *Open Government in Canada: Ambitious plan yet to be implemented*. Sunlight Foundation. Retrieved from <http://sunlightfoundation.com/blog/2014/12/22/open-government-in-canada-ambitious-plan-yet-to-be-implemented/>
- Chan, J.K.S. & Keserü, J. (2015). *The Social Impact of Open Data*. Retrieved from <http://www.opendataresearch.org/dl/symposium2015/odrs2015-paper20.pdf>
- Chen, G., Wu, R., & Guo, X. (2007). Key issues in information systems management in China. *Journal of Enterprise Information Management*, 20(2), 198-208.
- China Consumers' Network & China Safety Alliance (2015). *Investigation Report on the Current Status of Personal Information Protection Under the Big Data Era*. Retrieved from http://www.gzaic.gov.cn/jrgs/sfjs/201510/t20151027_663015.htm
- China Internet Network Information Center (2015). *Statistical Report on Internet Development in China 2015*. Retrieved from <http://www.cnnic.cn/hlwfzyj/hlwxzbg/201502/P020150203551802054676.pdf>
- Elfrink, W. (2012). *The Smart-city Solution*. McKinsey & Company. Retrieved from http://www.mckinsey.com/insights/public_sector/the_smart-city_solution
- Government of the People's Republic of China (2011). *12th Five-Year Plan*. Retrieved from <http://www.britishchamber.cn/content/chinas-twelfth-five-year-plan-2011-2015-full-english-version>

Group of Eight (2013). *G8 Open Data Charter*. Retrieved from

<https://www.gov.uk/government/publications/open-data-charter>

He, B. & Warren, M. (2011). Authoritarian Deliberation: The Deliberative Turn in Chinese Political Development. *Perspectives on Politics*, 9(2), 269-289.

Horsely, J. (2014). China's Leaders Endorse Disclosure as the 'Norm'. *Freedominfo.org*. Retrieved from

<http://www.freedominfo.org/2014/11/chinas-leaders-endorse-disclosure-norm/>

International Open Data Charter (2015). Retrieved from

<http://opendatacharter.net/principles/>

Jiang, M. & Schlæger, J. (2014). Official Microblogging and Social Management by Local Governments in China. *China Information*, 28(2). Retrieved from

<http://cin.sagepub.com/content/28/2/189.full.pdf+html>

Johnson, D. (2014). Smart City Development in China. *China Business Review*. Retrieved from

<http://www.chinabusinessreview.com/smart-city-development-in-china/>

Kang, Y., Zhan, L., Chen, C., Ge, Y., Li, H., Cui, Y., Whyte, J., Hart, T. (2014). *Comparative Study of Smart Cities in Europe and China*. Retrieved from

http://euchina-ict.eu/wp-content/uploads/2015/01/Smart_City_report-Final-Draft-March-2014.pdf

Lovells, H. (2013). Making Sense of China's New Privacy Law. *Privacy Tracker*. Retrieved from

<https://iapp.org/news/a/making-sense-of-chinas-new-privacy-laws-2/>

Manyika, J., Chui, M., Farrell, D., Kuiken, S. V., Groves, P., & Doshi, E. A. (2013). *Open Data: Unlocking Innovation and Performance with Liquid Information*. McKinsey & Company.

Retrieved October 31, 2014, from

http://www.mckinsey.com/insights/business_technology/open_data_unlocking_innovation_and_performance_with_liquid_information

Ministry of Housing and Urban-Rural Development (2005). *National Urban System Planning (2005-2020)*.

Nathan, A. (2003). Authoritarian Resilience. *The Journal of Democracy*, 40, 368-383.

National Development and Reform Commission (2013). *Ten Action Plans About the Development of Internet of Things*. Retrieved from

http://www.sdpc.gov.cn/zcfb/zcfbghwb/201309/t20130917_585500.html

National Development and Reform Commission (2014). *The Guidance on Promoting Healthy Smart City Development*. Retrieved from

<http://www.sdpc.gov.cn/qzdt/201408/W020140829409970397055.pdf>

- News of Communist Party of China (2009). *Binzhou Discusses the Future of the County on Democratic Political Discussion Day*. Retrieved from <http://dangjian.people.com.cn/GB/10080046.html>
- Peking University's Center for Participation Studies and Supports (2015). *China Administrative Transparency Report 2014-2015*.
- Poole, S. (2014). The Truth about Smart Cities: 'In the End, They Will Destroy Democracy'. *The Guardian*. Retrieved from <http://www.theguardian.com/cities/2014/dec/17/truth-smart-city-destroy-democracy-urban-thinkers-buzzphrase>
- Richardson, S. (2015). Submission by Human Rights Watch to the National People's Congress Standing Committee on the draft Cybersecurity Law. *Human Rights Watch*. Retrieved from <https://www.hrw.org/news/2015/08/04/hrw-submission-draft-cybersecurity-law>
- Saunders, T. & Baeck, P. (2015). *Rethinking Smart City from the Ground Up*. UK: Nesta. Retrieved from <http://www.nesta.org.uk/publications/rethinking-smart-cities-ground>
- State Council of the People's Republic of China (2013). *Opinions on Further Strengthening Government Information Disclosure that Responding to Social Concerns in order to Raise Government Credibility*. Retrieved from http://www.gov.cn/zwggk/2013-10/15/content_2506664.htm
- State Council of the People's Republic of China (2014). *National New-type Urbanization Plan (2014-2020)*. Retrieved from [http://www.51baogao.cn/uploads/xinxingchengzhenhua\(2014-2020\).pdf](http://www.51baogao.cn/uploads/xinxingchengzhenhua(2014-2020).pdf)
- State Council of the People's Republic of China (2014). *Several Opinions on Promoting Consumer Spending on Information Technology and Expanding Domestic Demand*. Retrieved from http://jtkj.gdcd.gov.cn/userfiles/file/20131014/20131014170650_670.pdf
- State Council of the People's Republic of China (2015). *Report on the Work of the Government*. Retrieved from http://www.china.org.cn/chinese/2015-03/17/content_35077119_4.htm
- The International Telecommunication Union (2014). *Sustainable Smart Cities: From Vision to Reality*. Retrieved from <http://www.itu.int/en/ITU-T/Workshops-and-Seminars/Pages/2014/14-oct.aspx>
- UK Department of Business Innovation & Skills (2013). *Smart Cities: Background Paper*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/246019/bis-13-1209-smart-cities-background-paper-digital.pdf

United Nations (2014). *World Urbanization Prospects 2014 Revision*. Retrieved from <http://esa.un.org/unpd/wup/Highlights/WUP2014-Highlights.pdf>

United Nations Department of Economic and Social Affairs (2014). *United Nations E-Government Survey 2014: E-Government for the Future We Want*. NY: United Nations.

United Nations Development Programme China (2013). *China National Human Development Report 2013 – Sustainable and Liveable Cities: Toward Ecological Civilization*. Beijing: China Translation and Publishing Corporation, June 2013.

United Nations Human Settlements Programme (2015). *HABITAT III Issue Paper 21: Smart Cities*. Retrieved from http://unhabitat.org/wp-content/uploads/2015/04/Habitat-III-Issue-Paper-21_Smart-Cities-2.0.pdf

Wang, X. (2008). *The Rise of Public Participation and New Public Movements in China*. China: China Legal Publishing House.

Xinhua News (2014). *National Government New Media Development Report 2014*. Retrieved from http://news.xinhuanet.com/newmedia/2014-12/25/c_1113781094.htm

Zhang, N., Guo, X., Chen, G. & Chau, P.Y.K. (2008). Impact on Perceived Fit on E-government User Evaluation: A Study with a Chinese Cultural Context. *Journal of Global Information Management*, 17(1), 49-69. Retrieved from <http://www.irma-international.org/viewtitle/3682/>

Zhang, N., He, X. & Chen, S. (n.d.). *Understanding Short-Term Impact of the Industrial Support Policies on the Urban Development: An Empirical Study Based on the Smart City Related Policies in Wuxi*.

Zhang, Y. & Zhang, Y. (2015) Mobile App Joins Toolbox in Anti-corruption Effort. *China Daily*. Retrieved from http://europe.chinadaily.com.cn/china/2015-07/21/content_21364626.htm

Zheng, L. & Gao, F. (2015). Research on China Open Government Data Platform: Framework, Current Status and Recommendations. *Dianzizhengwu 2015 [E-Government]*, Issue 7.

ANNEX I: List of Interviewees

(in alphabetical order by institution name)

ENGLISH NAME	CHINESE NAME	TITLE AND INSTITUTION
SONG Gang	宋刚	Director, Beijing City Administration Science and Technology Information Center
MEI Zhenpeng	梅振鹏	Deputy Director, E-governance Office, Binzhou Municipal Government
WU Xiaomin	吴晓敏	China Center for Urban Development (CCUD), National Development and Reform Commission (NDRC)
MENG Rongqi	孟蓉齐	Director, Community Service Center of Beijing Municipal Government
YANG Limei	杨丽梅	Community Service Center of Beijing Municipal Government
Thomas HART	---	EU-China Policy Dialogues Support Facility II
PU Lin	蒲林	Chairperson, Service Operation Center, Government Affairs Service Center of Chengdu Municipal Government
ZHONG Wen	钟文	General-Secretary of CPC, Government Affairs Service Center of Chengdu Municipal Government
HE Jianwu	何建吾	Director, Economy & Informationization Office, Haidian District Government, Beijing
Henry GUI Hao	桂浩	CSR & Community Relations Manager, Corporate Affairs, Intel
YANG Haiping	杨海平	General-Secretary, IYouShe
XU Yiping	许义平	Deputy General-Secretary of CPC, Ningbo Bureau of Civil Affairs
LI Yuanyuan	李媛媛	Deputy Director, Center for Public Participation Studies and Supports, Peking University
PENG Chun	彭隽	Research Fellow, Center for Public Participation Studies and Supports, Peking University
GAO Kun	高堃	Deputy Director, Shenzhen Municipal Volunteer Work Federation
SONG Qinghua	宋庆华	President, Shining Stone Community Action
ZHAO Xu	赵旭	Executive Director, Shining Stone Community Action
DAN Yi	但一	Chief Information Officer, Shuijingfang Sub-district Government, Jinjiang District, Chengdu
ZHANG Nan	张楠	Associate Professor, School of Public Policy & Management, Tsinghua University
LI Rongzhen	李容珍	Deputy Director, Tuanjiehu Sub-district Government, Chaoyang District, Beijing

ANNEX II – Case Studies

CASE 1: “I Love Beijing” City Administration Public Service Map and Mobile App (Beijing)

“I Love Beijing” City Administration Public Service Map and Mobile App is an online crowdsourcing and information provision platform (including both website and mobile app platform) for the City Administration of Beijing. It was developed from a pilot project commissioning middle-age unemployed workers to use PDAs to report on city management issues such as potholes, broken street lights and fly-tipping. The Beijing Municipal Bureau of City Administration and Law Enforcement felt that engaging citizens to provide this kind of data to city administration would be more efficient and cost effective. A multi-stakeholder working group including representatives from multiple departments, academic institutions, business partners and citizens was set up to develop the online platform.

The features of the platform include the locations of 2,096 wet markets (both temporary and permanent) in Beijing, with detailed information like opening times and the types of goods on sale. Many of these markets are operating informally by neighbourhood groups on an ad hoc basis. Users can use the platform to rate and comment on the quality of the wet markets, correct inaccurate information and add new data points such as



the opening of a new market. Users can also use the platform to request for a new wet market in their neighbourhood or ask for a market that sells specific types of goods. Complaints and advice forms also allow registered users to file complaints or send their suggestions regarding city administration. For complaints, users are able to describe the event, provide the location, upload pictures, and leave his/her email address for further updates through the App.

The app also provides access to the Bureau’s microblog, hotline and the *I Love Beijing MyCity Government Wiki*. The MyCity Government Wiki allows the Bureau to announce drafts of city administration policies and regulations for citizens to provide feedback, raise questions and concerns, and collectively edit policy content, in the same way as editing an entry on Wikipedia.



CASE 2: Beijing Community Service Hotline 96156 (Beijing)

The *Beijing Community Service Hotline 96156* is an integrated platform containing a telephone hotline, website and mobile app platform to provide three major types of services, including:

1) detailed explanations of policies and administrative procedures issued by the government, such as how to apply for driving licences or birth certificates;

2) a one-stop platform for citizens to access services like haircutting, babysitting and cleaning; and

3) pro bono services for legal advice and counselling provided by professionals.

The hotline receives around 600,000 calls per year and over 700,000 service orders have been made by residents using the different platforms.

CASE 3: Smart Tuanjie Lake Smart City Initiative (Beijing)



Smart Tuanjie Lake is a smart city initiative established by the Tuanjihu Sub-district Office in Beijing to better connect with the approximately 50,000 people living in the Tuanjihu area. The initiative includes a city inspection digital platform to facilitate inspectors reporting and taking pictures of city management problems, such as potholes on the road, broken street

lights, fly-tipping, etc. Citizens can use WeChat, *Weibo* (microblog) and micro-group (three of the most common social media platforms in China) for reporting as well. The Tuanjihu Sub-district Office gathers the reports and fixes the problems accordingly. They can also use the platform to ask for interventions in neighbour conflicts over noise or parking spaces for example.

Next, the project has installed an Internet of Things in around 200 single elderly homes (it is still in the pilot phase) – including a smoke detector, infrared intruder detector, gas leakage detector, heart pulse monitor, blood pressure gauge, etc. – which are all connected to the Internet. If any emergencies happen, corresponding actions will be taken automatically such as calling for police, ambulance or shutting down the town gas supply. A smart TV has also been installed in

these homes to provide elderly with medical advice via online conference call offered by a doctor according to the health data collected by the various detectors.

Finally, the project also includes an online platform called *3D Tuanjie Lake*, which is a virtual 3D platform that allows citizens to display photos

of their artwork such as paintings, calligraphy and ceramic. The Sub-district Office also posts photos of events in the community such as Children's Day celebrations. Deputy Director Li Rongzhen says that this feature is especially popular with family members and former residents who now live overseas as it gives them a way to connect back with the community.

CASE 4: Haidian District Smart City Initiative (Beijing)

In 2012, the Haidian District government of Beijing set up a strategic plan for its smart city development, focusing on the areas of government and social services, city management, high-tech incubator hub management, and business development. The smart city plan includes the following features:

- **E-governance Cloud Platform:** Despite having initiatives similar to other cities – such as a hotline “90181” for residents to report city management issues, or online e-government platforms to increase the efficiency of bureaucratic procedures (e.g. online investment licences application) – the Haidian government has also established an e-governance cloud platform since May 2013. Outsourcing to the largest e-commerce company in China, the *Alibaba Group*, the Haidian Government stores all their citizens’ data collected via multiple channels on the cloud platform. For instance, data collected via their existing online platform includes marriage registration, application of ID cards for persons with disabilities, or demographic data collected via applications for having an extra child under the previous “one-child policy”.
- **Smart Health Initiative:** With the cloud platform in place, the Haidian government has been building



digital infrastructures to establish a smart network for all hospitals and medical facilities in the district since 2013. The goal of the *Smart Health Initiative* is to use technology to improve the service quality of small and second-tier medical institutions, in order to encourage people to receive treatment from a nearby medical facility, instead of overcrowding the top-tier hospitals. The initiative plans to establish an online medical history for each patient. With the consent of the patient, the medical record will be shared with doctors to provide better informed medical treatment. The initiative also plans to design a mobile application for patients to retrieve their own medical record, make appointments with hospitals in the district, seek medical advice and pay outstanding medical bills. An annual

budget of 100 million RMB has been designated to the project and 300 million RMB has been invested so far. Furthermore, the government plans to work with academic institutions to explore how to use the big data collected for R&D work in the field of medicine and public health.

- **Smart Education Initiative:** Similar to the *Smart Health Initiative*, the Haidian government has started the *Smart Education Initiative* to build a smart network for over 300 kindergartens, primary, secondary and vocation schools since 2013. With an annual budget of 200 million RMB, the initiative wishes to push forward the development of e-learning courses and Massive Open Online Courses (MOOCs) in Haidian District. All data collected from the initiative will be uploaded to the E-Governance Cloud Platform for a potential big data project to improve the district's education service

- **Public Consultation and Accountability**

Initiative: In 2013, the government of Haidian started an initiative to collect people's opinions to decide on the priorities of work of the government. After collecting people's comments via different online and offline platforms, the government lists out the key priorities and promises on its website, as well as the corresponding departments who are in-charge-of implementing the work. The government then reports on the progress of their promises at the end of the year. For example, the priorities set for 2015 are:

- **Providing 13,000 units of subsidized housing for citizens, and increasing the amount of rental subsidies to 100 million RMB**
- **Improving the self-governance and management of old sub-districts in Haidian**
- **Improving waste-recycling facilities in Haidian and promote bio-waste energy generation in some areas**

CASE 5: Shenzhen Digital Volunteer Certificate System (Shenzhen)

"*Volunteer in Shenzhen*" is an initiative by the Shenzhen Youth League to encourage volunteering. Volunteers that officially register with the Youth League are issued chip cards that given them access to an online platform that provides information on volunteer opportunities and social support from other volunteers and volunteer management. Opportunities are also send out over the Weibo microblog platform and there are plans to develop an App (although *Weibo* is so successful, the Youth League is now debating whether this step is necessary). The chip card records their volunteer hours which entitle card's owners to insurance and worker's



compensation as well as discounts on public transit, for financial services with the Bank of China and in partner stores.

CASE 6: Shenzhen Digital Volunteer Certificate System (Shenzhen)

The *Star Rental Management System* in Panyu District, Guangzhou, is a pilot project to incentivize household registration for migrant workers as well as develop a rating system for rental housing. Guangzhou has one of the highest numbers of migrants of any city in China and was dealing with large numbers of unregistered migrants as well as illegal and slum housing.

Rental housing is registered on the system and issued with QR codes. Housing inspectors, police and other government officials have access to the housing database and give points to houses that are well-maintained and have residents that are properly registered. Migrants who download the APP can scan the QR code and have their residency updated automatically reducing registration time



from an average of 25 minutes (not including travel) to 3 minutes. Landlords and tenants who have registered will earn points which can be redeemed for services such as access to libraries or free movie tickets.

Most housing in Panyu is now registered on the system and the model is being used in other districts in Guangzhou. Enabling factors include the development of an integrated database for all municipal departments after the 2010 Asian Games. This integrated platform allowed the development of projects such as the *Star Rental Management System* which relies on the integration of data from the household registration system, housing inspectors, public safety, neighbourhood committees etc.

CASE 7: The Microblog Service Hall (Chengdu, Sichuan)

The *Microblog Service Hall* was launched by the Chengdu municipal government in August 2013 on the *Tencent* and *Sina* platforms. Officially known as the *Service Hall for Chengdu Municipal Administration Service on Microblog* this integrates a variety of existing municipal service resources including information on services, consultation and complaints. A typical consultation, for example, may be about the procedures and documentation necessary to sell a house. The

service standard set by the service centre is that easily resolved issues will be addressed within 24 hours, more difficult problems within 48 hours and complicated situations within 72 hours. Chengdu has built a four-level government microblog system, including the municipal level, district/county and departments of city government, streets/towns/ departments of district governments as well as villages. There are more than 3200 government microblogs connected with each other. The Service Hall directs inquiries via microblog to the correct department or sub-municipal government as required.



The *Sina* microblog platform has 430,505 fans as of April 2015, 705,913 on *Tencent* microblog, and 7,476 fans on *Tencent WeChat*. It has received 16,496 appeals, 16,491 responses from relevant departments, and resolved or responded 16,482 items. 99 percent questions are responded to in time. 89 percent of citizens are satisfied with the responses. Chengdu Service also has released 26,141 microblog and WeChat posts with each notice read ten thousand times on average. The account has now over 432,000 followers and has received the *Most Promising e-Government Prize for the Open City Category* in the 2nd World e-Governments Organization of Cities and Local Governments (WeGO) Award in 2014.

In addition, the Service Hall also conducts online town hall-type meetings on hot topics. This program has been running since April 2014 and has taken place 16 times. Relevant government officials are available to answer questions on the topic over a period of 2 hours. Usually 150-200 questions are received and 40 or so answered. Other questions will be answered later after the session is over. Recent topics include changes in taxation and low-carbon options for celebrating the Grave Sweeping Festival (where typically paper money is burned in large quantities at ancestors' graves impacting air quality).

CASE 8: The Shuijingfang Service App (Chengdu, Sichuan)

The *Shuijingfang service app* is a collaborative project between the Shuijingfang Sub-district Government Office and a local NGO called IYouShe to connect neighbourhood residents with events, activities and volunteer opportunities in the neighbourhood. The platform was provided by Intel as part of their CSR outreach. The Neighbourhood Committee

also has its own microblog platforms used for information dissemination, complaints and consultations. The NGO, IYouShe, also runs an online charity store where donors can select goods for purchase, such as rice or oil, which IYouShe will distribute to families in need. The recipients then perform some kind of community service such as litter collection in return.

CASE 9: Ningbo Community Service Hotline 81890 (Ningbo, Zhejiang)

Ningbo Community Service Hotline 81890 is government service platform established by the government of Haishu District, Ningbo City in 2001.



The aim of the platform is to resolve the problem of information asymmetry in both public and private service delivery. The hotline operates 24-7 and is accessible in various ways such as telephone, SMS, website or *Weibo*. Similar to other hotlines in cities across the country, the 81890 hotline provides citizens with three major types of services, including 1) a complaint and feedback hotline for citizens to report problems regarding city management, such as noise pollution, fly-tipping, potholes, etc.; 2) an one-stop platform for citizens to access to

outsourced services like haircutting, babysitting and cleaning; and 3) volunteer services provided by citizens for people in need, such as free taxi service for persons with visual impairment.

As of 2013, the 81890 has over 50 operators and on average receives more than 3,000 calls and enquiries every day. The website has over 20,000 hit rates per day and is currently cooperating with over 850 companies and enterprises to provide citizens different types of public and private services.

CASE 10: 'Binzhou-China' Government Online Interview Platform (Binzhou, Shandong)

The 'Binzhou-China' Government Online Interview Platform was established in 2010, when the Binzhou municipal government decided to become the first city in Shandong Province to hold online interviews with government officials. A joint effort by the municipal government and party committee, its aims are to foster more transparent government, better service, closer relationships between government party and people and fostering a mature democratic consciousness amongst the people.⁸¹ In the beginning, the project invited 48 municipal department leaders to participate in online interviews and to answer questions raised by citizens. From the second year of the project, interviewees covered all branches of government: the municipal Party secretary, the members of municipal executive committee, all the deputy mayors, governors of counties, districts and important government departments. Topics include major Party and municipal government work and issues that affect people' daily life. For



example, in 2014 topics addressed by the deputy municipal Party secretary and mayor, Mr. Cui Hong, included the prevention and treatment of air pollution, infrastructure programs, railway construction and the Yellow River Bridge tolls. As of 2015, Binzhou has organized 161 online interviews and responded to more than 5100 questions. A 2014 review found that the breakdown of the 785 questions and opinions addressed online that year was: 35% suggestions, 56% consultations and 9% complaints.