

While a city's extensive ICT infrastructure can be a key factor in establishing it as a Smart City, the citizens as users will be the driving force behind the city's shift to the "Smart" paradigm. CLC researchers Zhou Yimin, May Ee Wong and Koo A Mi discuss how Seoul, under Mayor Park Won-soon, has continued to transform itself into a Smart City by putting citizens at the core of the Smart City development process.



Elected in 2011, Mayor Park has taken a consultative approach to governance. His pledge to listen to the people is represented by an interactive "Big Ear" sculpture installed outside Seoul City Hall. *Image credit: Seoul Government*

Smart City, Smart Residents: Seoul's 'Smart' Transformation Accelerates Under Mayor Park

South Korea's capital city, Seoul, has made significant strides in its smart city transformation under Mayor Park Won-soon, since his election in 2011. Three major programmes under Mayor Park's 'smart' strategy stand out — and should be considered by other cities looking to leverage on technology to improve the lives of their citizens.

The first is an open data approach that makes the sharing of government data the default rather than the exception. The second is very active interactions with citizens via e-platforms, including almost daily city-wide voting on municipal issues via a smartphone app. The third is the systematic mining of big data to improve municipal services — including,

for example, the optimisation of night bus routes through an analysis of citizens' mobile phone data.

Seoul's latest moves break new ground in the way they link top-down government processes to bottom-up citizen participation in a dynamic and synergistic way. While open data is provided by the government, citizens can play around with datasets, create interesting visualisations and then share them on the same government website. And the e-voting app created by the municipality to test upcoming government proposals allows citizens to put up their own proposals for e-voting — with citizen proposals ultimately outnumbering government ones.

Seoul's smart efforts predate Mayor Park. Since the 1990s, the Seoul government has been gradually digitising its information systems and putting more of its services online. In recent years, the city of 10 million residents has been consistently placed at or near the top of global smart city rankings. Internet penetration rate in South Korea is close to 100%, and smartphone ownership in Seoul stands at 88%. The city is also home to leading international players in the info-communications industry, such as Samsung and LG.

But Mayor Park's vision and leadership have been notable. The former human rights lawyer was elected under the slogan "Citizens are the Mayor", and believes strongly in the benefits of citizen

Seoul's latest moves break new ground in the way they link top-down government processes to bottom-up citizen participation in a dynamic and synergistic way.

participation in the city's decision-making processes. The 2030 Seoul Plan, Seoul's urban master plan, produced in 2013, saw more citizen participation than any previous plan did. Observers say his administration has moved beyond 'informing' and 'consulting' residents to 'collaborating with' and 'empowering' them.

Mayor Park has, furthermore, boldly stayed the course when faced with daunting difficulties — ranging from the resistance to change among the city's public servants, to stinging public criticism when classified documents were inadvertently published on an open data platform.

THE MAYOR'S THREE 'SMART' PROGRAMMES

Open Data. In 2012, the Seoul government launched the 'Open Government 2.0' policy. Under this policy, all data, except for confidential or personal data, should be freely and openly shared on one of the municipality's digital platforms.

The Open Information Communication Plaza is the website (<http://opengov.seoul.go.kr>) through which municipal documents are made public by the Seoul government and its affiliated organisations and institutions. In October 2016, about 8.8 million government reports and documents were available on the website for searching or browsing.

Documents uploaded to this portal include notes of meetings, policy documents and government proposals. The level of confidentiality for each document is indicated with a label (e.g. 'public', 'partially public'). Notably, when a document is confidential, the name of the document is still listed on the website,

번호	제목	등록일	조회수
1918	경제민주화위원회 구성 및 운영 계획 서울시 부분공개 경제민주화위원회 구성 및 운영 계획 경제 지역경제>지역경제지원	2016-09-06	15
1917	Evidence Work 2016 정부를 위한 글로벌 포럼... 서울시 공개 Evidence Work 2016 정부를 위한 글... 행정·기타 정보통신정책>행정정보정책	2016-09-04	29
1916	인천 앞바다 및 한강 서울구간 쓰레기 처리사업 비... 서울시 공개 인천 앞바다 및 한강 서울구간 쓰레기 처...	2016-09-	15

Open Information Communication Plaza web interface. Citizens can access public policy documents and meeting notes on this platform. Image credit: Seoul Government

though its contents cannot be accessed. This gives members of the public the option of making a formal appeal to access the document.

The municipality also launched the Seoul Open Data Plaza (<http://data.seoul.go.kr/>), for quantitative datasets that are made public. Data is displayed in graphical form, but the website also encourages the public to create different visualisations for the data and to upload those visualisations, to present the data in different perspectives. In October 2016, there were 4,529 datasets available on the portal, which is accessed 950 million times a year.

The Seoul government says that making public data more accessible can enhance the public's understanding of and interest in municipal policies as well as potentially

generate new insights and unexpected opportunities for businesses, researchers and others.

In providing open data, Seoul is also encouraging citizens and the private sector to develop applications that would help tackle municipal issues. Towards this end, the municipality set up the S-PLEX Centre, an IT and digital media building that encourages the learning of coding, application development and data analysis skills. The government says it has a vision of Seoul as an 'open data lab' where citizens have access to an eco-system that equips them to collaborate with the government to solve the city's problems using ICT and data.

The shift towards an 'open' government was not entirely smooth sailing. As the

The Seoul government says that making public data more accessible can enhance the public's understanding of and interest in municipal policies as well as potentially generate new insights and unexpected opportunities for businesses, researchers and others.

Seoul government was changing its municipal information dissemination approach drastically, many public servants working for the municipality were not eager to embrace the idea of full-scale public information disclosure. To make matters worse, some classified documents were mistakenly made public in the initial phase of the launch of the Open Data Plaza, resulting in the temporary suspension of the platform. As for the Seoul citizens, the sheer amount of public data suddenly available to them was overwhelming, and they were not clear how to access the data and make use of them.

In the lead up to the changes, the Seoul government carried out a massive consultation exercise to better understand concerns and possible implications of the move, using insights from that exercise to establish rules and guidelines for the disclosure and protection of information. It conducted education and training for its employees on the data disclosure procedures and personal information identification and masking methods. It also repeatedly held across-the-board 'awareness sessions' to persuade government employees to come on board with the new open data approach. To educate the public about the initiative and how they could leverage on it, videos and posters on the usage of Seoul Open Data Plaza were broadcast across various channels.

Online Engagement. The second major smart initiative by Seoul is the use of digital platforms to solicit citizen ideas and opinions on municipal matters.



Listed everyday on the main page of the OASIS website are the number of public suggestions, the number of opinions contributed by the public, the number of votes registered, and the number of reviewed proposals. Image credit: Seoul Government

The city has made use of a citizen engagement website set up in 2006, "Oasis of 10 Million Imaginations," (<http://oasis.seoul.go.kr>), to extensively engage Seoul residents and to encourage them to express their opinions about the government's upcoming proposals. After a proposal is uploaded, a government committee and a group of citizens will evaluate the proposal and discuss ways that the proposal can be operationalised. Official responses to citizen feedback are posted on the website.

The city also promotes public engagement through social networking sites. The

government's Seoul Social Media Center (<http://social.seoul.go.kr>) is a central platform that integrates the government's 44 social media accounts, including the Mayor's accounts, for greater efficiency in handling citizen queries, opinions and requests. For example, Mayor Park's social media account receives more than 100 suggestions a day on average. The centralised system enables the government to process a large and increasing volume of feedback made through social media in a systematic and efficient way. The center also disseminates messages to the public in the event of weather or transport emergencies.

In the lead up to the changes, the Seoul government carried out a massive consultation exercise to better understand concerns and possible implications of the move, using insights from that exercise to establish rules and guidelines for the disclosure and protection of information.

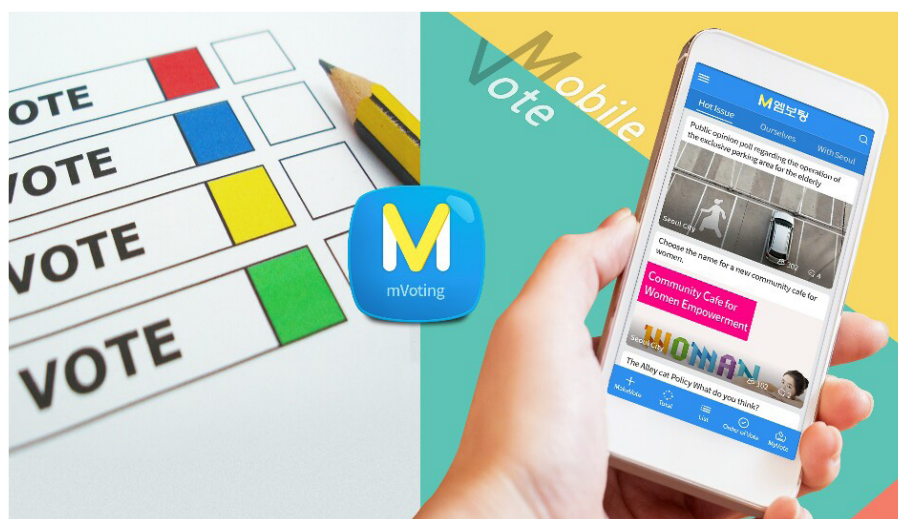
Seoul citizens also have the option of voting for policies and proposals on their mobile phones using a smartphone app, M-Voting. Given the high levels (88%) of smartphone usage in Seoul, the app enables the municipality to reach out to many residents — which it has done on a wide range of municipal matters.

The app features QR-based voting and GPS-based voting options that guide smartphone users to vote on issues related to their current geographical location. It also functions as a channel of public opinion for the government, as users can pose poll questions to their fellow residents.

Provisions have also been made in the municipal budget for projects worth up to 50 billion won (approx. S\$60,000), which citizens can decide on through M-Voting. Citizens can propose projects, which are reviewed and approved by citizen budgeting committees before they are polled on via the M-Voting platform.

In 2015, statistics showed that 3,828 voting agendas had been posted on M-Voting — 3,571 by citizens, 257 by the government — and 610,000 citizens had participated in voting. There have been at least 154 cases in which M-Voting results have contributed to the formation and implementation of policies. For example, the government implemented a set of incentives for encouraging energy conservation, after these incentives underwent the M-Voting process and prevailed.

M-Voting is regarded more as a tool that is helpful in finding out what citizens think



The M-Voting smartphone app developed by the Seoul government allows citizens to vote on municipal issues. In the examples shown above, citizens vote to decide on the specifics of a policy to reserve parking for the elderly, as well as the name of a new community cafe for women. *Image credit: Seoul Government*

on everyday matters, than as a platform to disseminate and debate complex policies. It has proved a useful means of obtaining citizen opinion for incorporation in city projects.

Another app that the Seoul government uses to identify common problems in the urban environment and to improve service delivery is the Seoul Smart Complaint Center. This application allows citizens to register municipal complaints and geo-tag them. The complaint would be forwarded to the relevant agency if it requires action, and the citizen can subsequently track the resolution of his complaint in real time.

Big Data. The third major smart city programme that the Seoul government has been working on is the use of big data to improve the provision of public services.

Big data-related projects have jumped from just 1 in 2013 to 19 in 2015.

One such project is the establishment of routes for the Owl Night Bus, Seoul's night bus service. Prior to its launch in 2013, commuters found returning home after midnight costly and inconvenient due to the lack of cabs on the road. Through the various citizen engagement platforms, this issue was identified as a salient one, and the government began to plan for pilot bus routes.

But which routes should the buses ply? To ensure bus routes were chosen to maximise impact, the Seoul government analysed 3 billion late-night phone calls and identified areas of activity based on phone call volume. The government also tracked and analysed the number of

To ensure bus routes were chosen to maximise impact, the Seoul government analysed 3 billion late-night phone calls and identified areas of activity based on phone call volume.

passengers getting on and off at bus stops in the high call volume regions to refine new bus routes. The result is that there are now 9 Owl Night Bus routes, and the service was voted as the best public service initiative of 2013.

Another example of a big data project is the planning of leisure and welfare facilities for the elderly. Data on citizens over 60 was analysed by gender, district, income levels, and the use of existing leisure and welfare facilities to help the city determine which facilities should be built and where, in order to maximise their use.

CONCLUSION

The Smart City movement comes with a purpose of leveraging on and integrating resources to better manage the complexities that a city presents. Many cities pay a great deal of attention to the 'hard' aspects of the smart city concept, such as improving infrastructure and technical efficiency. Seoul's example demonstrates that 'softer' aspects, such as citizen participation, can matter just as much. Citizens, as the real agents living in the urban system, will bring greater possibilities to look at the complex urban issues in novel ways.

Cities start becoming smarter not merely by getting more systems and tools or by putting out more data, but by making good use of them to address real problems. And the way that Seoul has done this is by engaging citizens sincerely and inviting them to participate in smart initiatives, so as to make those initiatives meaningful and successful.



Using big data, including an analysis of 3 billion late-night phone calls, the Seoul government identified 9 night bus routes that would achieve maximum impact. Image credit: Seoul Government

The city now has a much keener sense of what residents are thinking, as well as where municipal issues are and how they can be fixed. Using technology, it has significantly widened the pool of people who can potentially work to tackle the problems that the city faces.

The role of Mayor Park in Seoul's smart journey has also been key, highlighting the importance of leadership. His unique insight in combining the top-down aspects of smart city governance with the bottom-up ones has, in retrospect, been a true exemplification of his slogan, "Citizens are the Mayor".

Contributor



Zhou Yimin

Prior to his secondment to CLC, Yimin served in the Urban Redevelopment Authority (URA) as a planner, working on local planning and Master Plan preparation, implementation of land use policies and development initiatives, and data analytics driven planning. He was also involved in the planning of Jurong Lake District as Singapore's 2nd CBD and setting up the Digital Planning Lab in URA. Yimin holds two Bachelor degrees in Science and Arts respectively, and a Master's in Urban Development.



May Ee Wong

May Ee Wong did her internship in CLC recently. She is a PhD candidate in the Graduate Group in Cultural Studies at the University of California, Davis, with a designated emphasis in critical theory. Her current research examines epistemologies and ideologies of contemporary ecological and complex systemic discourses pertaining to the global sustainable city.



Koo A Mi

A Mi is a public official of the Seoul Metropolitan Government. She has been attached to CLC as an exchange fellow since May 2015. After studying Biology (Bachelors) and Environmental Studies (Masters), she has worked mostly in the environmental sector of the Seoul Metropolitan Government. Before joining CLC, she was the Head of the Seoul Water Institute.

Acknowledgements

The authors would like to thank Mr Elgin Toh from the Centre for Liveable Cities and Mr Lee Song Yi from the Data and Statistics Division of the Seoul Metropolitan Government for their contribution to the report. For feedback on this article, including on errors and omissions, please contact ZHOU_Yimin@mnd.gov.sg.

Sources

- An, J., and Kim, J. (2015). 2030 Seoul Plan: Urban Foresight Focusing on Reflexive Governance and Resilience. Paper presented at True Smart and Green City? : 8th Conference of the International Forum on Urbanism, Incheon. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.713.2271&rep=rep1&type=pdf>.
- Citie (2015, May 19). Big Data Solves Even the Smallest Grievances: Lessons from Seoul. Retrieved from <http://citie.org/stories/datavore-story/>.
- Cities Alliance (2014). Seoul's "Owl Bus" based on Big Data Technology. Retrieved from <http://www.citiesalliance.org/sites/citiesalliance.org/files/Seoul-Owl-Bus-11052014.pdf>.
- CNET (2012, July 23). South Korea hits 100% mark in wireless broadband. Retrieved from <http://www.cnet.com/news/south-korea-hits-100-mark-in-wireless-broadband/>
- Hwang, JS (2010). u-City: The Next Paradigm of Urban Development. In Symonds J. (Ed.), *Ubiquitous and Pervasive Computing: Concepts, Methodologies, Tools and Applications* (pp. 1601-1612). Hershey: Information Science Reference.
- ITU-T Technology Watch (2013). Smart Cities Seoul: a case study. Retrieved from https://www.itu.int/dms_pub/itu-t/oth/23/01/T23010000190001PDFE.pdf.
- New Cities Alliance (2015, June 4). ICT Changes the Ways We Can Deliver Welfare Services. Retrieved from <http://www.newcitiesfoundation.org/ict-changes-the-ways-we-can-deliver-welfare-services/>.
- Pew Research Center (2016, February 22). Smartphone Ownership and Internet Usage Continues to Climb in Emerging Economies. Retrieved from <http://www.pewglobal.org/2016/02/22/smartphone-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/#fn-35095-1>.
- Rutgers SPAA (2014, September 22). Seoul Achieves Top Ranking in Rutgers-Newark Municipal E-Governance International Survey for Sixth Consecutive Time. Retrieved from <http://www.newark.rutgers.edu/news/seoul-achieves-top-ranking-rutgers-newark-municipal-e-governance-international-survey-sixth>.
- Seoul Metropolitan Government (2016, February 25). Seoul Launches "Global Digital Seoul 2020." Retrieved from <http://english.seoul.go.kr/seoul-launches-global-digital-seoul-2020/>.
- Seoul Metropolitan Government (2014, April 28). The SMG taps into Big Data for more Customized Policy. Retrieved from <http://english.seoul.go.kr/smg-taps-big-data-customized-policy/>.
- Seoul Metropolitan Government (2014). 'The Sharing City Seoul' Project. Retrieved from <http://english.seoul.go.kr/policy-information/key-policies/city-initiatives/1-sharing-city/>.
- Seoul Metropolitan Government (2014). Sharing City, Seoul. Retrieved from <http://www.slideshare.net/cckslide/sharing-cityseoulenglish>.
- Seoul Metropolitan Government (2014). Seoul e-Government. Retrieved from <http://citynet-ap.org/wp-content/uploads/2014/06/Seoul-e-Government-English.pdf>.
- Seoul Solution. (2015, June 25). Let's open, collect and share Seoul public data: Seoul Open Data Plaza. Retrieved from <https://seoulsolution.kr/en/content/let%E2%80%99s-open-collect-and-share-seoul-public-data-seoul-open-data-plaza>.
- Seoul Solution. (2015, June 25). Quick question and answer citizen-centered call center: 120 Dasan Call Center. Retrieved from <https://seoulsolution.kr/en/content/quick-question-and-answer-citizen-centered-call-center-120-dasan-call-center?>
- Seoul Solution. (2015, January 23). Making public all administration information to promote the citizens' right to know government business. Retrieved from <https://seoulsolution.kr/content/making-public-all-administration-information-promote-citizens%E2%80%99-right-know-government?>
- Shin, J-W (2016). Smart Seoul Status & Strategies. Retrieved from https://seoulsolution.kr/sites/default/files/gettoknowus/Smart%20Seoul%20Status%20%26%20Strategies%20for%20e-Government_201604.pdf.