SMART CITY: OPPORTUNITIES AND CHALLENGES IN PUBLIC SERVICES AND ITS RELATION TO THE PROTECTION OF RIGHTS AND PRIVACY IN BIG-DATA ERA

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Abstract

This article investigates *Smart City* program with the utilization of internet technology that government assumes as means to solve problems every city encounters, such as traffic jam, retribution, public security, and trash dumping. To provide public service, *Smart City* collects and manages personal data information of citizens from the intended city and puts it into a Big Data base. This program with *Big Data* technology has been successful addressing problems in cities. On the other hand, a consequence on how to protect public's electronic-based personal data should be taken into account as well. Collecting, Processing, and Saving Information of public personal data may carry on particular risk, including violation on individual's rights and privacy, when it is not well managed and set under a very clear policy, especially when its *big data* server is outside the territory of Indonesia. In general conclusion, the government needs to enact a regulation in constitutional and national level and/or regional regulation which specifically sets on how to prevent the misuse of electronic-based personal data and what law that regulates any violation against individual rights and privacy, as well as a regulation called *privacy by design*.

Keywords

smart city, security, electronic data

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Introduction

The utilization of internet technology in this current era is a kind of global phenomenon that people may not be apart from. Following Internet World Stats research (IWS), by March 2017, it found a fact and data that the number of internet users in the world was 3.739.698.500 among the total population at 7.519.028.970 people (http://www.internetworldstats.com/stats.htm). The most users was in Asia, reaching more than one billion users (i.e., 1.874.136.654 people) or 50.1% of the total users in the world. It was much increasing compared to 2006 which reached 364.270.713 users (the growth percentage between 2000 and 2007 was 1.539,6%). (Budhijant,2017:135). The second most users was in Europe, reaching up to 636.971.824 users in 2017, compared to 2006 which only reached 290.121.957. Latin America was on the third rank with 385.919.382 users, much increasing from 79.033.597 user in 2006. Furthermore, Africa was the next continent with much increasing users from 22.737.500 in 2006 to 353.121,578 in 2017. The next one was the North America with 320.068.243 user. This country ever reached the third position in 2006 with 225.801.428 users (the growth percentage between 2000 and 2017 was 8.6%). Overall, the total number of users on 31st December 2017 was 4.050.247.538 user (see Figure 1).
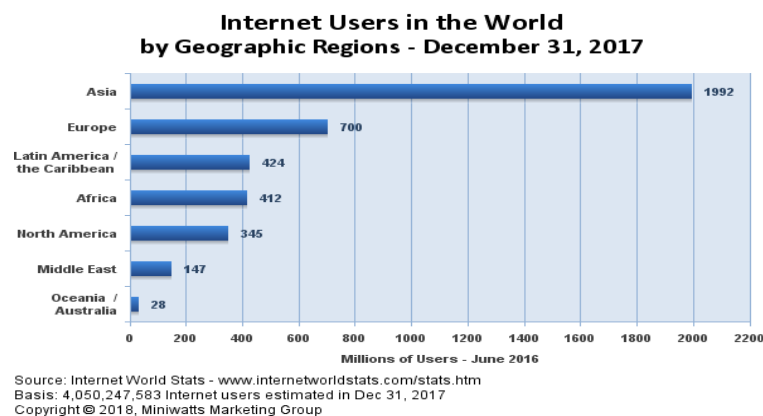

(Figure 1, source: www.internetworldstats.com/statsmarch31)

The utilization of internet technology that currently develops to build a city in terms of facilitating public services is an innovation of *smart city* program (Supangkat, 2014: 8). Basically, cities with *Smart City* program may see any problems within, understand on how the condition is, and manage the existing resources they have in more effective and efficient way to optimize their public services.

Smart City program build an integrated information platform, as follow(Supangkat, 2014: 8)

    a. Integrating the existing information in a database of the local government;

    b. Facilitating smart and immediate decision-making based on accurate information;

    c. As the development basis of integrating other services in the future.
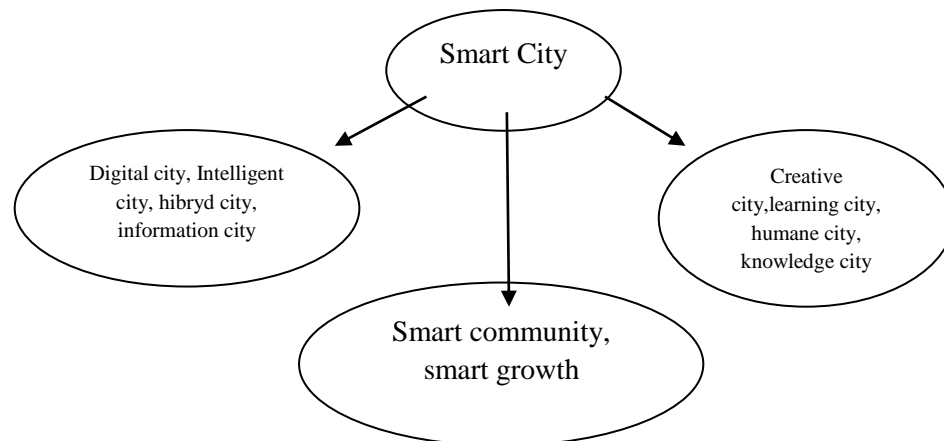
(Figure 2: Fundamental *Smart City*, Sumber: *Smart City* Indonesia, 2014)

Smart City program is supported by a number of ministries as well. Indonesian Ministry of National Development Planning (i.e., *BAPPENAS*) and Presidential office of the Republic of Indonesia agree to initiate a 100 *Smart City* movement in Indonesia, started from 25 selected cities/regencies. In the process of assessment, the Ministry of Communication and Information Technology involves 19 experts as assistants to assess the readiness of each region for this initiative of smart city program, and also to provide guidelines to the local government in designing a roadmap and implementing the initiative of *smart city*. It is expected that, in 2019, Indonesia may have 100 local governments successfully implementing *Smart City* program (http://tekno.kompas.com/read/2017/05/03/12420237). The concept of *Jakarta Smart City* (JSC) is one of the examples. JSC is organized to improve public services and assure a better life for the people of Jakarta. *Smart City* for public services is by developing more sophisticated and better infrastructures through *Big Data* (Ekowati, 2016).

In addition to Jakarta *Smart City*, Surakarta also gets ready for being Smart City in 2018. One attempt to get the readiness is by improving their IT-based public services. *Solo Destination* application is expected to be the key for Solo to be Smart City 2018 (www.surakarta.go.id). Yosca Herman Soedrajad (The Head of Transportation, Communication, and Information Department in Surakarta) argues that the application (i.e, *Solo Destination*) has a number of services and information features, including e-ticketing, e-retribution, e-*kelurahan*, e-test, Solo traffic info through CCTV, and etc. when *Solo Destination* is downloaded and opened, some features will be displayed in one folder named Public Services. When we click the folder, we may see four kinds of services we need such as license of IMB, e-PKB (an online service for vehicle test or *keur* test), people administrative service, and e-retribution (which is still specific in market retribution) (Soedrajad, 2016).

The role of *Big Data* technology for the development of a *Smart City* is very fundamental. Given a huge number of data from many sectors to be proceed, it needs a sophisticated technology to analyze, integrate, and work in real time. Those processed

data will become the basis to take particular strategic actions, such as allocating appropriate subsidy for the people. In transportation sector, the application of this data processing technology may help people to get information more effectively about the condition and location of public transportation they need in particular routes.

Toward the program of *Smart City*, security is a crucial issue for smart city system. As it covers all data of a city, the threat on security should be very seriously addressed. The more connected systems, the more complex the handling is. Security for individual's personal data is one factor that should be taken into account in organizing *smart city*, especially those integrated to the *big data* in *smart city* system. Security for people privacy and rights over their personal data may reflect the freedom of individual's development and actualization (Tejomurti a, 2017).

In some big cities such as Makassar and Jakarta, the process of data collection reveals that Makassar has used a massive *closed-circuit television* (CCTV). The local government of Makassar has installed 300 units of CCTV of the total number planned at 3.000 units across Makassar. This number is less than Jakarta which has installed 6.000 CCTV, as news-reported. As we see, Jakarta is under the program of Smart City (Sanjaya, 2017, 12). As a part of Smart City operationalization, in 2017, the government of Makassar has utilized social media to monitor the activities of their people. This monitoring is conducted to see the hot issues their people talk about. Such monitoring of social media is used as reference on which the government wants to make a policy. Every recorded data in this monitoring system is saved in a server cooperated with the third party.

A concern on violation against people rights and privacy, as well as any leakage of personal data to the third party with particular interest is common. It is found from several evidence in Indonesia. For instance, people were shocked with internet network hacking on two internet-based companies. On March 2017, a middle school student, Haikal (19) was successful hacking an online commerce website (tikel.com) and stole 4.1 billion rupiahs from that site. He also hacked more than 4.600 sites and some of which were the website of central and local polices, foreign websites, and online transportation websites. On April 2017, another hacker had been successful hacking two most prominent telecommunication companies in Indonesia. Two years ago, a middle school age in Pemalang, Central Java, hacked the credit card of someone just for buying a hat in an online shop (Tejomurti b), 2017).

Not only Indonesia, some developed countries such as Russia ever encountered the similar cybercrime. In 2008, the government of Estonia faced an extraordinary cybercrime and it began from its international tension of political relationship with Russia, especially on Russian ethnics. At that moment, Russian ethnic people were angry when the government of Estonia replaced the monument of Soviet war heritage in Tallin. After replacing the monument, the Estonians encountered a cyber-attack which made their news websites hacked and destroyed. It almost stopped all their internet-based business, societal, defense, and security activities,

In relation to the security and protection of individual personal data, Cannataci argues that as people feel that their personal data is protected, they may have an option to live with motivation and authentic reason, not a manipulation and distortion from others (Cannataci, 2017). Personal data is generally in the form of personal information for administrative purposes, such as for social media, bank account, and credit card. Therefore, the basic protection system on *Smart City* should protect both the infrastructures of *Smart City* and people personal data.

Based on Article 12, the UN's Universal Declaration of Human Rights, it mentions that:

> "*No one shall be subjected to arbitrary interference with his **privacy**, family, home or correspondence, nor to attacks upon his honor and reputation. Everyone has the right to the protection of the law against such interference or attacks*".

Furthermore, Article 28G of the Constitution of the Republic of Indonesia 1945 mentions that:

> "*Everybody has rights to get protection for themselves, family, pride, prestige, and assets they belong to, and rights to feel save and protected from any fear of doing or not doing things as their human rights.*"

From those two national and international acts, it clearly states that everybody has rights to have protection for their personal life, including their personal affairs and data from any harm.

Research Problem

Following the research background, this study tries to analyze a research problem of how is the assurance of protection over individual rights and privacy in the implementation of *Smart City* program?

Research Method

This study is juridical-normative with descriptive analysis. The data collection was through library and field researches. The library research was conducted to seek for secondary data using primary, secondary, and tertiary legal resources. In this stage, a review on a number of laws in some countries relevant to the research problem was conducted as well.

Result and Discussion

1. Smart City, Big Data, and Public Service

In Indonesia, some big cities have expected the concept of *Smart City*, including Solo, Jakarta, Malang, Bandung, Makassar, and some other big cities. This concept is constructed based on 6 pillars: *Smart governance, smart people, smart living, smart mobility, smart economy, and smart environment*. The function is addressing the problems of big cities by improving public services using internet-based technology, such as collecting data and making applications to address traffic jam and providing space for

communication that improve public participation on giving suggestions and criticisms to the government.

Solo Smart City

The application *Solo Destination* is a manifestation of Solo as Smart City. This application has a number of service and information features such as e-ticketing, e-retribution, e-*kelurahan*, e-test, and e- Solo traffic which becomes a prominent traffic CCTV, and etc. when people have downloaded and installed this application on their smartphones, they will see a folder named Public Service. In relation to the development of Solo, it seems that the local government has prepared human resources and science as well as technology to realize Solo as a Smart City. The essence of Smart City for Solo relies on the utilization of information technology to improve its public services. Some programs the local government of Solo has implemented in order to bring Solo into Smart City are as follow.

1. The introduction of application *Solo Destination* (www.surakarta.go.id,);

2. Cooperation between PT BNI and Solo government in Public Service Procurement of Banking and property tax payment (www.solo.tribunnews.com);

3. Electronic-based payment of Trans Solo Batik (www.solopos.com/);

4. The organization of hotspot area;

Concrete actions by the local government of Solo to become Smart City still needs many developments, such as traffic handling, people safety, and trash dumping, given that those four program are considered as an effort to be digital city rather than smart city. As being Smart city has more extensive aspects to address rather than digital city, it relies on six dimensions, as follow (Jatmika, 2017).

1. Smart Economy: the higher the new innovation to be improved, the higher the new opportunities will be along with the increasing competition on market share/business, such as the cooperation between Tokopedia and Somato focusing on the sector of Small and Middle Enterprises (SMEs);

2. Smart Mobility (transportation and infrastructure), such as the cooperation among Jakarta Smart City, Trans Jakarta and TRAFI to organize an integrated data to analyze the map of public transportation usage that is useful for developing the policy and planning of the city, as well as its online transportation;

3. Smart People; by organizing e-card (such as Smart Jakarta Card) for citizens

4. Smart Environment: the realization of livable city supported by the management of natural resources, eco-green building

5. Smart living; the utilization of CCTV in some areas for monitoring;

6. Smart governance: a Qlue system technology that is useful for effective public services, especially on bureaucracy and complaint services.

The Concept of Sombere in Makassar Smart City

This concept consists of six elements. First, *smart governance*; optimizing public services by the local government. Second, *smart branding*; improving people awareness on the characters of their city, especially in tourism sector. Third, *smart economy*, organizing a good ecosystem and promoting less cash society. fourth, *smart living*, creating a convenient living and improving people awareness on health. Fifth, *smart society*, constructing an interactive and humanist society. Sixth, *smart environment*, reducing and employing trashes as well as creating better energy sources.

The emphasis on smart city using information technology for daily living is expected to provide excellent public services and address solutions for any problems of cities. The role of *big data* technology (https:datascience.or.id) for the development of a smart city is very crucial, given the huge number of data from various sectors of life in a city. This technology is important for data processing, such as traffic information. Using the existing *Big Data*, the authorized officials may use the information collected to address the traffic jam and create a more efficient route by decreasing the density of vehicles (https://socialmediaweek.org). *Big Data* is potential to provide accurate and structured data. Further analysis on transportation data can be useful for other facets, such as the map of schedule, the parking area, and the density of bus.

On the other hand, *Big Data* is a kind of footprint we leave in digital world. This phrase, for some people, evokes a concern on a world without privacy; on a company that know us more than ourselves, on government that monitors people seen as threat of their power (Eagle, N. dan Greene, K. L., 2014). Some may see that its responsible, respectful, and appropriate utilization of *Big Data* may help people and institutions to make better decision, reinforce the dissemination of useful knowledge, and improve the speed of innovations. Data is collected from information, and information needs energy to move. Therefore, there is information, there is energy, and the vice versa. The change of energy is figured out by various sensors in the form of information and translated into index-able data.

Revealing undiscovered matters is one of *Big Data* purposes. Human behavior in their social, economic and political activities is very interesting for companies' advertising and intelligence body of a country. Lets called Google and Facebook. We, indeed, ever read the terms and conditions of using searching service on those applications. This far, Google has saved anything we have ever searched since the first time it was listed in its historical record(Ariana, 2017).

2. Protection of Private Data

The concept of data protection requires that people have rights to decide whether they join a society and share or exchange their personal data to one another, as well as a right to determine the conditions they need to follow for such activities. The law of data protection generally mentions the procedures of data protection and allows others

to use the data as long as under particular circumstance (www.privacyinternational.org,).

The concept of privacy right was popular in 1980 when Samuel Warren and Louis Brandeis wrote an essay entitled "*The Right to Privacy*", published by Harvard law Review. They proposed a recognition on individual right "*right to be let alone*" and argued that this right should be protected by the existing law as a part of human rights.

 Therefore, the concept of privacy right has been recognized yet still difficult to define. Privacy, as the part of human right, identifies the protection for personal data as a fundamental right (Dewi, 2009:23). Considering privacy right on data protection is not only important but also seen as the key element of individual freedom and prestige. Data protection is a powerful booster for the manifestation of freedom on politic, spirituality, religion, and even sexual matter. A right to define self-destiny, a freedom to express and privacy are crucial for us as human.

A number of international instruments, as well as national laws, have regulated the principles of data protection. *The Council of Europe Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data (No. 108), 1981; the Organization for Economic Cooperation and Development Guidelines on the Protection of Privacy and Trans-border Data Flows of Personal Data (1980); and the Guidelines for the regulation of computerized personal data files (General Assembly resolution 45/95 and E/CN.4/1990/72)* are some instruments that regulate on data protection.

Data protection refers to a fundamental human right as well. some countries have recognized it as a constitutional right in the form of "*habeas data*"; individual right to get protection over their data and for justification on which an error is found on their data. Portugal is one country that has recognized data protection as a constitutional right under the act on Article 35 of its Constitution. In addition, Armenia, Philippines, Timor-Leste, Columbia, and Argentina are those with different histories and cultures that have recognized the role of data protection in facilitating the process of their democracy and assured such protection under their constitution. *ASEAN Human Rights Declaration* that is currently adopted by ASEAN countries clearly recognizes the rights of private data (Article 21). Recently, at least more than 75 countries have rules that regulate on data protection (Greenleaf, 2011).

Some countries have a specific law that provides protection on privacy and personal data for their people. This is manifested in Europe and United States, which have a specific law to protect the privacy and personal data of their people. However, it has different characteristics on the concept of privacy between Europe and United States. The United States has no regulation to protect privacy and data implemented in specific manner. On the other hand, as an integrated area, the regulation of privacy and personal data protection in Europe is under a supranational policy in the form of *the EU Data Protection Directive* (Rosadi , 2016).

Noted that the concept of personal data protection was first presented in 1960s. then, in 1970s, Germany is the first country applying the law for data protection, which was

subsequently followed by the national law of Sweden in 1973, of the United States in 1974, and of France in 1978. The concept of data protection is often seen as a part of protection on privacy, as like a regulation that provides protection for personal data. Basically, data protection is specifically related to privacy and this idea can be considered as one with more extensive scope rather than privacy. Considering data protection as a part of privacy is consistent to an idea that privacy as a form of confidentiality or the right to either reveal or conceal information, or the right to block individual access, or the right to control information that relates to individual's personal profile. However, there is a fundamental difference in terms of the scope, purpose, and content between data and privacy protection. Data protection explicitly protects the values other than the core of privacy, such as the terms of fair management, consent, legitimation, and non-discrimination. The expression of the concept of data protection is tightly related to the right of respecting personal and collective life.

The regulation of data protection is the core of problem in business and economy, particularly to information-intensive business in this modern era. The practice of modern business these days often involves the manipulation of data, such as customer segmentation, data mining and collection, creating customer profile, consolidation, global data processing, and other business process.

The regulation on personal data protection in Indonesia is set under the Ministerial Regulation of Communication and Information of the Republic of Indonesia (i.e., *Permenkominfo*) No. 20 Year 2016 about Personal Data Protection in Electronic System (*Permenkominco No. 20/ 2016*). Article 2 subsection (1) of *Permenkominfo* No. 20/2016 mentions that personal data protection in electronic system includes the protection on personal data gathering, collection, processing, analysis, saving, display, announcement, distribution, dissemination, and decimation.

Implementing the regulation as mentioned in Article 2 susbection (1) of *Permenkominfo* No. 20/2016 should be based on the principle of a good data protection, as follow.

a. Respecting personal data as privacy;

b. Personal data is confidential according to the consent and/or under legal regulation;

c. Consent-based;

d. The relevance to the purpose of gathering, collecting, processing, analyzing, saving, displaying, announcing, distributing, and disseminating personal data;

e. The properness of electronic system used;

f. Good faith to immediately inform in written way to the owner of particular personal data about any default of data protection;

g. The availability of internal regulation of processing personal data protection;

h. The responsibility on the personal data under the user's control.

i. The easy access and correction on personal data by the owner; and

j. The unity, accuracy, and validity, as well as the update of personal data.

The organization of electronic-based system must save every personal data in particular period of time as mentioned in Aerticle 15 subsection (2), which is at least 5 (five) years. When a specific rule that regulates this issue is not yet enacted, Article 26 of *Permenkominfo* No. 20/2016 also mentions that the owner of a personal data has right to (a) get confidentiality for their personal data; (b) send a complaint to the Minister for dispute settlement on personal data due to the default protection of their personal data confidentiality by electronic system provider; (c) get access or chance to change or update their personal data without disturbing the data processing system, unless otherwise specified by law; (d) get access or chance to see their historical personal data they have ever submitted to the electronic system provider as long as it corresponds to the regulation applied; and (e) ask for decimation of particular personal data of an individual in electronic-based system by the provider of the system, unless otherwise specified by law. In relation to the sanction, *Permenkominfo* No. 20/2016 has set that whoever gathering, collecting, processing, analyzing, saving, displaying, announcing, distributing, and/or disseminating personal data without having right to do that or not corresponds to the ministerial regulation will be sentenced with administrative sanction as what the regulation has mentioned in the form of: (a) spoken warning; (b) written warning; (c) temporary termination; and/or d) announcement in network site.

Following the regulation of *Permenkominfo* No. 20/2016 about Personal Data Protection in Electronic System, the users of personal data in Solo Smart City should carefully manage their personal data in the mechanism of *big data* of Solo Smart City as it has privacy protected from any utilization out of its original purposes. Private data is an asset or commodity with very high economy value. Therefore, protection on personal data is an important element for an individual's freedom and prestige. It seems to be a strong booster for the manifestation of political, spiritual, religious, and sexual freedom.

Conclution

1. Personal data protection seems to be a powerful booster for the manifestation of of political, spiritual, religious, and sexual freedom. Therefore, the organization of *Smart City* program should consider the safety and the privacy rights of people personal data integrated into *big data of smart city*. *Big Data* in *smart city* is a kind of footprint that we leave in digital world. This phrase, for some people, may evoke a concern on a world without privacy; on a company that know us more than ourselves, on government that monitors people seen as threat of their power. Therefore, the organization of *smart city* may not decrease people privacy rights and their freedom to express as human.

2. In relation to some potential problems due to the misuse of private data processing, it needs a specific regulation called *privacy by design*. It is a private data processing through privacy policy. *Privacy policy* should provide all information that people need on how the providers of *smart city* manage their users personal data so that the users may see to which extent the security and privacy of their personal data will be protected, including to which extent their personal data is used for secondary uses that will usually be exchanged or shared to another company.

3. Ministerial-level regulation with administrative sanction seems to be inadequate to regulate the issue of Personal Data Protection in electronic system. Given the possible risks and huge loss people may suffer due to the leakage and misuse of their personal data, it should have a regulation in constitutional-level with criminal sanction to carry on a deterrent effect to the culprits who irresponsibly use people personal data.

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