

Changing Roles of Planners in Smart Neighborhood Practice: A Case Study of Sidewalk Toronto Project

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ABSTRACT

This paper examines how urban planners' roles change with the development of "smart"/digital technologies within cities. Specifically, the study aims to examine urban planners' roles in Sidewalk Toronto/Quayside project implementation process (in which Google Inc.'s sister company Sidewalk Labs serves a major planning function), including new digital technologies and tools. The study is both empirical and qualitative, scaling in the city of Toronto to compare the current planning process in Quayside project with prior/traditional neighborhood planning methods and decision-making process in Toronto. Qualitative information is generated through interviews with professional urban planners involved with the case study project and/or with neighborhood-level planning projects broadly in Toronto to supplement the analysis of official documentation about Quayside planning process. The result of this research has identified some changes of urban planners' roles in the early implementation and planning stage of Quayside project, compared with the prior neighborhood planning projects. Sidewalk Toronto planners' roles as technocrats and information providers, negotiators and mediators, as well as design visualizers are emphasized in the Quayside project, while their roles as specialists and generalists do not change at this early project implementation stage. While in terms of city planners, their new roles as data privacy advisors and governors as well as development coordinators and project advisors are generated in the Quayside project, whose roles as regulators and examiners, however, do not seem to change much at this stage. Future research on smart neighborhood project planning process and urban planners' roles in such process are needed to further examine whether the development of technologies and application of data would change urban planning process, the roles of urban planners, and people who execute the planning activities and functions. Moreover, further studies on the reasons causing these changes of the physical planning process and urban planners' roles are necessary, through which we can identify the factors having impacts on urban planning practice and better predict the changes that would happen in the future planning field.

KEYWORDS

Smart City, Smart Neighborhood Planning, Urban Planning, Urban Planner Roles, Smart and Digital Technologies

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Figure 2: Collaborative Framework for Digital Governance between Waterfront Toronto and Sidewalk Labs Source: Sidewalk Labs

LIST OF ABBREVIATIONS

Canadian Housing and Mortgage Corporation (CHMC).

Geographic Information Systems (GIS)

Information Communication Technologies (ICT)

Information Technology (IT)

Innovation and Funding Partner Framework Agreement (Framework Agreement)

Innovation and Development Plan (MIDP)

Internet of Things (IoT)

Integrated Planning Act 1997 (IPA)

Neighborhood Planning Offices (NPOs)

Ontario Municipal Board (OMB)

Sidewalk Labs LLC (Sidewalk Labs)

The Ontario Planning Act (the Act)

The Greater Toronto Area (GTA)

Toronto Waterfront Revitalization Corporation (Waterfront Toronto)

Waterfront Toronto Digital Strategy Advisory Panel (DSAP)

Waterfront Revitalization Initiative Intergovernmental Steering Committee (IGSC)

CHAPTER 1 INTRODUCTION AND BACKGROUND

Smart City and Smart Planning

Over the past decades, the drive towards using digital technology, information and analytic systems to manage and plan the city leads the evolution of urban governance into a technocratic mode. The application of all such “smart” technologies like Information Communication Technologies (ICT) and the Internet of Things (IoT) has emerged to fulfill urban efficiency and development (Hollands, 2015). Urban problems are believed to be solvable and optimizable through computation and all other technical solutions including real-time analytics, which might be referred by Morozov (2013) as “solutionism” or what we now called - “smart city solutions”.

According to Hollands (2008), the word ‘smart’ can also mean ‘wired’, ‘digital’ and ‘intelligent’. Smart city is defined by Dirks and Keeling (2009) as a city that applies technologies to optimize urban system and thus the implementation outcomes based on limited resources; by Viitanen and Kingston (2013, p. 1) and Gabrys (2014: 44) as a city strategy that seek technological innovation solutions to deal with complicated political, environmental and other urban issues; and by Washburn et al. (2010) as a city that takes advantage of real-time analysis to make better and more efficient decisions for city. While smart planning is regarded as a new dimension of urban planning involved with both procedural innovation and technological innovation. The former refers to the innovation in territorial management, while the latter refers to creating a new “digital environments” based on the generation, collection and application of big data (Papa, Fistola, & Gargiulo, 2018). The characteristics of a smart city include using networked infrastructure and Information and Communication Technologies (ICTs) to achieve urban connectivity and development; focusing on businesses and entrepreneur-emphasized urban development (Hollands, 2008, p. 308); socially inclusive urban development (Caragliu, Del Bo, & Nijkamp, 2011)); high-technical and creative industry-

focused urban development (Glaeser, 2005, p. 593); and social capital and environmental sustainability development (Coe et al., p. 2001).

Cities are experimenting “smart city”

Cities have been treated as a relational system that must be considered as a whole rather than a composition of space (Ingallina, 2007, cited in Stufano, Borri, Camarda, & Borgo, 2017). Planning, in between, tries to manage the complexity of city through urban project, plan or strategy over time while maintaining identity and uniqueness recognition (Gargiulo & Russo, 2018). Also, planning plays a significant role in the governance and structure management of various possible urban actions (Marzukhi, 2017).

There is great interest around the world to explore technological innovations in planning and building smart city or neighborhood, for which city managers and policymakers tend to transform abstract and elusive smart city concepts into tangible strategies and actions, either for the purposes of enhancing city management, governance democracy, service effectiveness, city competitiveness or quality of life (Taylor & While, 2017). The wave of such explorations and experiments starts with governments looking for qualified and capable private partners such as private companies and entities to promote technological innovations and solve urban issues. They invest and integrate ICTs and IoTs into people’s daily life in various ways, trying to create economic, social and political benefits (Chin et al., 2010; Viitanen & Kingston, 2013). Initiatives and programs like IBM’s global Smarter Cities Challenge (IBM, 2010), Cisco's City Infrastructure Financing Acceleration Program (CIFAP) (Cisco, 2018) and Microsoft CityNext Initiative (Microsoft, 2014) can be typical examples for these private sectors having significant impacts on smart city experiments.

“Smart city” changes urban planning and urban planners’ roles

The urban environment has close a relationship to our ways of producing, commuting and communicating. As the traditional industries were reoriented with the development of technology industry and the emergence of various private technology companies, new kinds of infrastructure that helps process and store information and bridges that create seamless connections between digital world and physical world are introduced by the advanced digital technologies and electronic language, which significantly affects the development of city and its society (Albrechts, 1991; Kitchin, 2014). As the industries of technology and technical innovation boomed, the discourse of ‘smart city’ further sprouted in the urban planning field, in which respect, urban design and planning have also made different responses, either for the purpose of improving the quality of city life or creating a more efficient and sustainable living environment (Kitchin, 2014).

Before digital technology “overwhelms” various fields in the world, the city planners are not very much exposed to the aggregation of the notions of scientists and technologists, instead, they use their own evaluation, planning and design skills to assess socio-economic context and make a planning decision (Kinsley, 2014). They are reminded of complicated social impacts and how those impacts should be included and harmonized in dealing with the city problems. While in response to the development of digital technology, a new spatial order has emerged when code, software and computational calculation are used as modulators in the set of recreating space experience (Kinsley, 2014; Webber, 1963:54, cited in Harvey, 2009). Code is organized into a wide range of public, private and public-private sectors as well as logistics and mobility systems (Graham, 2005, p. 562). Computational software, as pointed out by Amin and Thrift (2002), runs in a variety of computing systems and devices to saturate the urban landscape, the functions of which range from excessive Internet-based services to public transportation, water and sewage management. While the algorithm has become the foundation of the computing system that provides action grammar for automatic calculations, computational power and digital storage capacity enhancement (Agre, 1994). As such, the urban planning process and thus urban planner’s role certainly change when people turn to digital technology for the answers of urban issues.

Research Purpose

The research purpose of this thesis is to examine how urban planners' roles change with the development of "smart" technologies within cities. The term "planners" used in the research refers to both people who are actually making plans and who are making decisions relating to these plans, including those planning, negotiating, analyzing, researching, and surveying urban development projects. This research inspects the changing roles (if any) of traditional urban planning including planning activities and functions that are usually executed and filled by the traditional planners, rather than whether urban planners are replaced by other professionals with other types of expertise other than planning expertise. Specifically, the study aims to examine urban planners' roles in Sidewalk Labs' Quayside project implementation process, including new (if any) digital technologies and tools. The study compares the current planning process in this project (in which Google Inc.'s sister company Sidewalk Labs serves a major planning function) with prior neighborhood planning methods and decision making in Toronto.

Research Significance

For those previous research studies exploring urban planner's roles and their changes in the nationwide and citywide scales, or in the discourse of protecting cultural diversity, sustainability, water resources and mitigating flood hazard, some of them applied theoretical approach, while some of them applied case study and supplemented it with the interviews and surveys with professional planners. However, there are few previous research studies exploring urban planner's roles and their changes at the neighborhood planning scale, especially in the discourses of technology innovations and "smart" neighborhood development. To fill such gap and highlight the value of this research, the paper examines how urban planner's roles change with the development of "smart" technologies within Sidewalk Labs' Quayside Project in Toronto, compared with prior planning methods and decision making in Toronto.

Although there is a large number of research studies talking about the roles of urban planners in the large scale, either nationwide or citywide; there are few previous research studies examining the urban planner's

roles in the neighborhood planning context at the local level. In addition, even though there are fierce theoretical debates arguing the changing roles of urban planners in the discourse of smart city development, there is no solid evidence and specific study tied to a smart city or neighborhood project at the local level. This research fills such gaps by inspecting whether the roles of urban planners are impacted or changed with the development of smart technology and digital innovations applied for planning and building the city.

As planning is about the vision of the future, alongside which there are continuing urban changes either in terms of social, economic, political or environmental aspects, urban planners are required to always think about the changes and adapt the plan to different situation caused by various and complicated relationship between built environment and urban entities (Marzukhi, 2017). As digital technology emerging and developing, no matter in the better or worse way, there are questions being raised: if the relationships between city and technological innovations as well as private technology companies increase, what do city planners need to be preparing for? What does that mean in terms of how we see urban planning and its practice? Would urban planners still stand in the same position as in the past or would their roles in the urban planning process change? What are the implications of such changes? All these questions are worth to be answered. The reliable and integrated methodology is essential for the urban planners to transform and impact the physical attributes or urban areas, which, however, differs between different countries, cities and even neighborhoods (Formato & Russo 2014; Francini, et al., 2018; Gregotti 2004, cited in Stufano, et al., 2017). Therefore, It is important for the planners to be open-minded and take potential changes of future into account so that they will know in which ways, by which tools, for which systems they should be working to adapt to different contexts and systems.

Research Design

This research is conducted based on the review of previous research studies on the evolution of technology in the urban planning practice, the emergence of smart city development as well as the critiques about smart

city dialogues. The literature review also includes previous research studies on the roles of urban planners with respect to neighborhood planning and technology. There are previous research studies on the roles of urban planner in the scale of nation and city and in the context of protecting cultural diversity, sustainability, water resources, flood hazard and public health. For the purpose of tracking back, historical planning records, official documentation, papers and articles are selected and incorporated to provide a solid foundation for this research.

In order to answer the research question of how urban planner's roles change with the development of "smart" technologies within cities, the study is both empirical and qualitative, scaling in the city of Toronto to compare the current planning process in Sidewalk Labs' Quayside Project with prior or traditional neighborhood planning methods and decision making in Toronto. It firstly focuses on the review and analysis of the traditional neighborhood planning process in the city of Toronto before Sidewalk Labs started its smart neighborhood project in Quayside. Through examining a typical neighborhood planning project called Bathurst Quay Neighborhood Planning project, this research describes the traditional neighborhood planning process in Toronto including prior planning methods and decision-making process, and provide background information for its later comparison with the planning process in Quayside project.

Secondly, the study is mainly based on the qualitative analysis of Sidewalk Lab's Quayside Smart Neighborhood Project. Quayside, now at its early stage of development, will be a new planned neighborhood located at Parliament Slip, adjacent to Downtown Toronto. The project is proposed and implemented by the Sidewalk Toronto that is a joint platform by Toronto Waterfront Revitalization Corporation (Waterfront Toronto) and an Alphabet's company called Sidewalk Labs LLC (Sidewalk Labs). According to the proposals and visions released since 2017, the project is a 12-acre piece of land of Toronto waterfront, which will be a new type of mixed-use and complete neighborhood built from an undeveloped area with the best people-centered urban design and the latest digital technology. It will not only adopt new construction methods but also other urban technological innovations (Sidewalk Labs, 2017a). Quayside

project, as a new kind of smart city/neighborhood project, could be a typical example of applying technology and urban innovations in urban planning. The publicly available official documentation, previous journals and articles about the Quayside planning process are reviewed as part of the research to examine urban planners' roles in this project's implementation process, including new (if any) digital technologies and tools.

Semi-structured interviews with professional urban planners who are involved with the case study project and/or with neighborhood-level planning broadly in Toronto are conducted to supplement the analysis of the official documentation about the urban planning process in Toronto as general and in the Quayside project as well. Using the publicly available information on county and organization web pages, interview subjects are contacted via email addresses listed and asked whether they would be willing to participate interviews. Interviews are conducted either in-person, via telephone, or via Skype. Telephone or Skype interviews obtain verbal consent (after supplying the consent form electronically), whereas in-person interviews include written informed consent.

Facilitated by a brief questionnaire with follow-up questions, they are asked to talk about their roles in the project or their positions in the Toronto City Planning Department. They are asked to talk about their involvement with the project as well as any different experience they have had in this project compared with prior neighborhood planning methods and decision making in Toronto. Their experience relating to the conflicts between digital technologies and planning practices are asked during the interviews as well. Follow-up questions are asked based on the positions and experience of the interview subjects, which differs between different interview subjects, which, however, contains no sensitive information and only the statement of fact.

In the findings section, the analysis of both Toronto's prior neighborhood project and Quayside project, including the analysis their published documentation, public-private partnerships, internal planning

decision making processes, public engagement processes, the planning procedures as well as the toolkits and analysis methods used by their urban planners, lead to the comprehensive comparison between these two. The research goes through these aspects respectively to identify the changes happening in the planning process and corresponding roles of the planner with the development of smart technology. While in order to figure out whether the changes identified in this research are a matter of accelerating or deconstructing the planning processes, following the previous analysis, in the discussion section, the implications of those differences and changes are analyzed in terms of what can be learned; how urban planning practice will be affected if the relationships between city and technological innovations as well as private technology companies increase; would urban planners still stand in the same position as in the past or would their roles in the urban planning process change; and what do city planners need to be preparing for in the respect of planning tool-kits. In the discussion and conclusion chapter, such investigations also serve as the ground for a more in-depth discussion in further research as this research only examine the planning practice in the early stage of the smart neighborhood project.

CHAPTER 2 LITERATURE REVIEW

The roles of urban planners

Talking about the roles of urban planners, there is a large number of previous research studies providing insights into the urban planning system, analyzing the evolution of it and the changing roles of urban planners. There are four main conceptions that summarize the changing roles of urban planners. The first is the pluralist conception that regarded planning as a form of intervention (Dunleavy & O’Leary, 1987, p. 45) and planners as mediators and guardians of the public welfare who dealt with the imbalances between different stakeholders (McGuirk, 2001). The second is the managerialist conception that treated planners as bureaucrats who provided technical and professional advice of state interests (Beckman, 1964; Campbell and Marshall, 2002). The third concept is the reformist conception that viewed planners as advocates who secure the interests of marginalized groups and community. While the fourth one is the neoliberalist conception that viewed planners as entrepreneurs who facilitate the interests of private sectors (MacLaran & McGuirk, 2003).

The transformation of such conceptions about urban planner’s roles came together with the transformation of economy and society. One of the most significant change happened in the last century was when the economy transformed from Fordism emphasizing state intervention to Post-Fordism highlighting invisible hands and the functions of the market’s self-adjustment. As a consequence, the attitude about planning system changed correspondingly - urban planning was regarded as being less effective, compatible and excessive costly in terms of operation in the late 1980s (Albrechts, 1991; Piore & Sabel, 1984; Scott & Storper, 1986). Planners, after experiencing huge macro-level socio-economic transformation and technical development, have to change their ways and toolkits to deal with urban issues and think about how to plan rather than what is the outcome of planning (Forrester, 1989). Traditional tools like welfare policies,

incentive strategies, and zoning regulations also became less effective in dealing with the changing and complicated urban issues at the 1990s (Albrechts, 1991).

In the meantime, when emphasizing the market, private sectors started to be involved in the urban development process and planning activities: public sectors consulted and cooperated with private sectors, seeking for their expertise, skills, knowledge and cheaper consulting fee (Fordham, 1990; Healey, 1985; Davoudi & Healey, 1990; Higgins & Allmendinger, 1999; Campbell & Marshall, 2002). As the social and economic context transformed, the planning system had been restructured and decentralized to the private sectors. The concept of planning changed from managerialism to entrepreneurialism, in other words, instead of being the managers and regulators of the city, urban planners' roles were likely to be weakened and become the deal makers and entrepreneurs in the urban planning process (Fainstain, 1988).

In many countries, prominent development decisions concerning the physical environment are not necessarily supported or influenced by the professional planning knowledge, which limited planner's right to provide advice and ability to address handle land development challenges. In many situations, the rights for city's land allocation, planning and building permits are beyond the rights of urban planners whose expertise and profession ethic would be overshadowed by political factors (Cavrić, 2004). Additionally, urban planners holding different positions at different organizations would also have different impacts on the urban development and planning process, for example, planners of city government only have restricted ability to initiate a new development project as they need to be very cautious about the regulations and interests of authorities and organizations at the community level. While planners form community level working for the community council or associations have more power to affect project decision makings and planning through constituency support, but less administrating power as they still need the approvals from the city and higher-level government sides.

The roles of planner have been switched among decision makers, administrators, urban managers, technocrats, information providers, regulators, land development coordinators, negotiators, mediators, facilitators, development initiators, advisors, designers, and advocates since the emergence of planning concept in the early 20th century (Cavrić, 2004). Planners are expected to play different roles during the planning practice process, including as generalists with all-round expertise or as specialists focusing on particular aspects of urban development. While according to Batey (1994), recent planners who just started their career are more likely to specialize in particular planning aspects like environmental planning, urban design, economic development or housing development. In addition, current planning practice is required to have a comprehensive understanding of the complicated social, economic, environmental and political context so that it could apply more science-based methods.

In addition, the development of Information Technology (IT) and Geographic Information Systems (GIS) have been supporting urban planners for decades, which changed the ways planner implement and present planning activities. The technocrat is one of the most conventional roles that urban planner plays in the urban development and planning process. They help provide information and data as solid evidence to support and give advice to the decision makers, usually the council officials, and use it to persuade community during the public meetings (Randolph, 2004).

Planners have also been acting the roles of considerably influencing and enhancing physical environment and landscape through the formal process of study, analysis, design and other on-the-spot practice in the complicated planning process (Petts & Brooks 2006). They help initiate urban development and, in the meantime, facilitate the development process by building awareness among all interest parties and organizing public participations orchestrating and encouraging discussions on planning problems and challenges. Actually, one of the most crucial roles that urban planner play in the planning process is the negotiator and mediator between different parties and interest holders. According to Hajer and Versteeg (2005), good public participation would encourage a transparent, reciprocal and deliberative dialogue and

a mutual learning process that are accountable and open to all stakeholders with different interests. Planners are often responsible for organizing and supporting public participation process concerning the planning activities and project decision making, in which way they have a huge impact on the public participation process (Tooke, 2003, Blicharska, et al. 2011). During the public participation process, urban planners need to have the understanding about the relevant conservation and public participation in their planning work, consider local knowledge relating to the social, economic and environmental concerns, and act as the mediator between landowners and developers, decision makers and community representatives, and among other different stakeholders. In the meantime, urban planners might need to represent the interests of the organizations he/she has the obligation of, either it is the central, local government, private sectors or the community (Cavrić, 2004, UNECE 1998).

While in terms of the urban design and beautification that have been the roots in the urban planning practice and play as a bridge connecting architecture and urban planning (Cavrić, 2004), planner's designing role is highlighted. Urban design planners show physical environment and landscape through providing city image and visioning, especially, through maps, figures, and other urban scene visualizations, which can help visualize the idea of the project as well as the sense and value of community that project might try to create (Forester, 1989). According to Randolph (2014, p. 32), many urban development projects in cities have lost the design and image visual perspectives but focus more on the rationality and science-based approaches, which results in the loss of creative personality and unique vision for the project and thus the community. Urban design planner is required to combines the concerns of land use development at a small scale and urban policies at a larger scale with urban scene design and visualizations that provide well-visualized information.

Smart City Critiques

Along with the development of digital technologies, there is a fundamental change happening in the urban planning process when the world's largest software vendors and companies come on the scene and regard city governance as a large, profitable and sustaining market for either their technical products or professional services. These companies will usually have the partnership and collaborative relationship with the government at different levels, However, in many circumstances, they are actually in the podium position controlling everything since public administrators, city managers and urban planners can not until they have substantial skills in using digital technology and all other resources to manage city networks (David, McNutt, & Justice, 2018). As such, power shifts from government and community to business companies (Hollands 2008, p. 315). In recent decades, neo-liberalization and marketization of political economy and public services are foreseeable to give a new way for the marketing advertisement and profit of private entities (Hollands, 2008). Technologies and systems behind these vendors' services make them stand in the monopoly positions, which is dangerous when this dependency that government upon can not be reserved or undone (Bates, 2012; Hill, 2013)

There are tons of criticisms about such innovative public-private partnership in the smart city discourse. It was criticized to be problematic due to different interests between public sectors who want to create public welfare and private sectors who want to demonstrate their products and make a profit, there might be a disconnection between their collaboration. The private sectors are likely to come up with universal technological means while the local public sectors might need place-based solutions (Taylor & While, 2017). In addition, it is criticized that private sectors' interests of pursuing profit might increase society polarization as the nature of them will take resources with them and gather in richer areas (Hodson & Marvin, 2010).

The lack of technical knowledge, skills and resources in public sectors will be challenged by such technological transformation. They are likely to lose bargain chips on the negotiation table with skilled and qualified private sectors and thus lose power (Monstadt, 2007; Brown & Potoski, 2003). As the "soft"

human capacity in the process of decision-making is underestimated, technology elites seem to be given the power to control things where city decision makers do not have such capabilities (Taylor & While, 2017; Viitanen and Kingston, 2013:13). According to Bianca Wylie (2007), an open government advocate and associate at open north,

Big technologies are way ahead of the government in terms of understanding technology, working on the technology, coming up with solutions, and most importantly, figuring out ways to make money using technology.

As power shifting from the public sectors to technical private sectors, the outsourcing and privatization of urban management will lead to unknown and uncontrollable consequences (Graham & Marvin, 2001; McFarlane and Rutherford, 2008). Therefore, all technical weaknesses of public sectors discussed before tend to restrict the city's and thus planners' capacities for intervening urban issues and implementing powerful strategies in the discourse of smart city development.

Criticism about such development of technical innovation influencing urban planners' roles has been fierce. It has been argued that complicated social issues can not be easily measured and fragmented into pieces of questions and dealt with by technologies based on limited dataset and wider problems and impacts behind complex cultural, political, social capital aspects on people's lives are not addressed deeply from the root through such ways as well (Kitchin, 2014). Many of these technological solutions end up with the same pattern while ignoring the uniqueness of cities and places as well as their culture and people. Such solutions, in the meantime, create new issues for cities and leave them even more vulnerable and brittle sometimes when viruses and hacks happen to people without such knowledge and skills (Kitchin & Dodge, 2011; Townsend, 2013). Additionally, the technological innovations require city's capacity to receive, process, interact and output data and information among various carriers of different scales and natures, including organizations, infrastructure, people, and living environment. Compared with the rapid evolution of technology, urban planning lacks the capacity to understand and follow those changes. The invisible and

complex form of technology consists of infrastructure like underground cables and fiber optics, satellite-guided telecommunication innovations and networks of the Internet is quite different with what urban planning used to deal with – visible, tangible and organized infrastructure and environment. Therefore, such innovations are hard to be handled by urban academics, designers, and planners. In other words, the development of technology substantially affects the urban environment and challenges the roles of urban planning in a radical and unprecedented way (Da-Mi & Zorica, 2008; Graham, 2001; Talvitie, 2003).

Governments at different levels around the world take cities as laboratories and experimental bases for smart projects and benefit from technological innovations (Viitanen & Kingston, 2013). As such, city is treated as a lab while most people never agree to be part of the urban research (Meisterlin, 2014). According to Luque et al. (2014, p. 75), Evans and Karvonen (2014), and Vanolo (2013), the capability of technology seems to be overstated, whose success, if any, is compromised in certain socio-economic context with well-funded resources. That said, whether the substance of technological innovation will be sufficient for solving urban issues in the reality and whether the integrated smart strategy can demonstrate the issues happening in fragmented and complicated society are still questionable (Luque et al., 2014).

The methodology of previous research on the roles of urban planners

There is a large number of research studies examining the roles of urban planners in the larger scale, either nationwide or citywide or in the context of mitigating flood hazard mitigation, advocating public health, protecting cultural diversity, water recourses and sustainability. To understand how previous research studied urban planner's role and its changes in the urban planning process, papers and articles are reviewed, with results being summarized as followed.

Luthlen (1998) in his article “The Gravity of Information: A New Order of Cities and the Role of Urban Planners” explored a new informational mode of development in which city became a knowledge-concentrated place for information production, innovation, and consumption, and under the impacts of such

mode, the changing purpose of planning and agenda for planners. He conducted theoretical approach to analyze the technological forces and their impacts on the urban system including globalized spaces, technically determined local places, and a new urban hierarchy due to the emergence of new industries and communication system. The author also questioned the roles of urban planners in the circumstances of the marketing and privatization of cities in a global market, and recommend changes to avoid making our urban system fall apart because of the criteria of profit and multinational corporations. Likely, Qian (2016) explored the transition of urban planner's role by studying two cases in a typical developing country (Bangladesh) and a typical developed country (UK) to conclude that the urban planners are becoming organizers and mediators in the urban planning and decision making process. Additionally, Perlstein and Ortolano (2015) also investigated three cases of plan-making in satellite city, industrial area, and open space respectively to identify Chinese urban planners' roles and their inputs into the local development projects – negotiators between their expertise and government officials. They also conducted interviews with 12 professional planners at the Beijing Institute, 10 planners at local entities in other cities, 14 local planners at departments of municipal governments and 19 planning academic and local government officials to provide the in-depth context of China's overall planning system and Chinese planner's roles.

Although there has been a large number of discussions about the roles of planners from different theoretical perspectives including the pluralist conception, the managerialist conception, the reformist conception and the neoliberalist conception, rare studies have explored the self-perceptions of the urban planners and their own views in terms of such discussions. To fill the gap, Fox-Rogers and Murphy (2016) conducted open-ended and semi-structured interviews with 20 local urban planners from four different local authorities in the Greater Dublin Area, Ireland to explore their views of their roles as urban planners. The interview results suggested that 8 of these 20 urban planners regarded themselves as mediators who dealt with the conflicts between different stakeholders, instead of advocates and facilitators of urban development.

In order to argue that the role for urban planners has become hybrid due to the high neo-liberalization of contemporary Australian governance, Steele (2009) grounded the notion of hybridity in the real world

through a case study of Queensland, Australia to examine the performance-based planning under the ‘Integrated Planning Act 1997’ (IPA). The author also supplemented the research with 53 in-depth semi-structured interviews with professional urban planners in South-East Queensland, asking their understanding of the performance-based planning in Queensland and describing their experiences with the IPA. She concluded the research that in Australia, urban planners became independent agents of public value working across diverse entities of different interests and sharing public, private and community responsibilities in the complicated ways because of the emphasis on the market principles in the planning decision-making process.

Previous research investigating urban planners playing as market actors in UK’s urban regeneration practice was conducted by Heurkens, Adams, and Hobma in 2015, the authors examined two city center regeneration projects in Bristol and Liverpool to cross-compare urban planners’ conceptual and their empirical roles and instruments in these two projects. By comparing two projects, they concluded that planners did act inside markets since various planning instruments and tools enabled local planning authorities and planners to influence the decision environment for the private sectors.

To explore planner’ roles in planning sustainability and their alternative roles in such process, Briassoulis (1999) created a schema of the analysis. Firstly, he translated the notion of sustainable development into operational questions, issues and parties involved in the sustainable development process; secondly, he identified the political system, decision making system, planners’ actions and approaches that influenced the planning outcomes; Finally, he also discussed the alternative roles for planners in such process. Furthermore, to look at the role of city planners in dealing with cultural diversity, Sharifi Sadeghi (2015) took a theoretical approach through reviewing previous literature. Five common models of handling diversity, their policies and approaches were analyzed to identify the roles of the planner in the practices.

The interviews Jackson (2018) did for 14 urban planners in Toronto, asking about their experience in planning and in general, what was important to them to understand how urban planners adjust to the

neoliberalism, were concluded with the statement that urban planners did understand the situation of liberalism and rather than planners, it was actually the Federal tax policies and the pressure from developers driving the development of city. Urban planners in Toronto were found to be able to learn and adapt to the situation and kept living their lives as urban planners (Jackson, 2018).

CHAPTER 3 CASE STUDY

General neighborhood planning in Toronto

The Ontario Planning Act and Section 37. The province of Ontario used to adopt two-level government system, where the upper-level government took charge of planning at the metropolitan scale, public transportation and social strategies while the lower-level government focused on physical services and local development (Frisken 1999). The Ontario Planning Act (the Act) is the provincial legislation that regulates the basic rules for land use planning in Ontario. The Act safeguards provincial interests such as natural resources protection, provides ground rules for official plans, policies and tools at lower government level, offers municipals with local autonomy power, ensures the local citizens' rights to be informed about the planning, and encourages early public involvement in the planning process (Government of Ontario, 2018). While Section 37, as a part of the Act, is authorized to permit the increase in local density and building height, in return for the provision of public facilities and services, referred to as community benefits (The City of Toronto, 2014a).

City-wide Official Plan. The municipals of State Ontario take responsibility for preparing local planning documents like the Official Plan that articulates municipal's general planning goals, and Zoning By-Laws that sets the regulations controlling land uses, lot sizes, building heights, and development location, and making sure these regulations are consistent with the Ontario Planning Act, Provincial Policy Statements¹ and other provincial plans process (Government of Ontario, 2018). In Ontario, each of the 25 incorporated municipalities of the Greater Toronto Area (GTA) has its own Official Plan in accordance with Ontario's provincial planning policy (Jackson, 2018).

¹ Under the Planning Act, the Minister of Municipal Affairs may issue the Provincial Policy Statements on matters of provincial interest. The Provincial Policy Statements contains provincewide policies on land use planning matters.

The most recent Toronto Official Plan taking effect in June 2015 aims to realize the full potential of the city in terms of its transit system, land use, and environment. The first five chapters of the Plan articulate future vision and development principles for the city of Toronto, regulate the development structure and strategies for city growth and management, set out policies and designations for decision making and land use development, and formulate guidelines for the implementation of the Plan and local development. In the fifth chapter, it also contains policies and core principles ensuring sensitive development in neighborhoods, community or districts of the city of Toronto, referring to the secondary plans, community improvement plans, and development permits. These policies, together with a range of other policies, offers various mechanisms suited to different local contexts and issues (The City of Toronto, 2017).

Neighborhood planning offices. To embrace the new model of place governance that coherently focused on the place itself, Toronto city decentralizes the planning power into Neighborhood Planning Offices (NPOs) located in the areas undergoing development pressure and changes. With the opening of the first NPO in 1974, the City Planning Department continued to handle city-wide zoning and urban issues, while most local problems were decentralized to the NPOs, the detailed regulations of which was guided by the “secondary plan” for the neighborhood that was developed together by one or two planners in the office and a neighborhood residents and businessman. NPOs became the places of contact and connection for the community to engage with the plans implemented in the area, apply for development and seek for education and other various services (Storring, 2016).

Secondary plans. Secondary Plans set out policies to guide the creation of new local development and growth in a defined area of the City and in the meantime, and ensure adequate provision of public infrastructure and appropriate protection of local environments. Secondary Plans also help realize the overall objectives of the Official Plan through fitting policies, land use designations and approaches into local contexts because they reflect the unique local background and offer suited policy framework for future neighborhood development and growth (The City of Toronto, 2017). The preparation of secondary plans

will be consulted with the community, for vacant lots, investment-targeted areas, proposed areas or other development sites identified by the Plan. Secondary Plans are determined to be necessary for the new development, without the adoption of which, no amendment to the Zoning By-Law would be allowed (The City of Toronto, 2017).

General Planning Decision Making in Toronto. In Canada, there is limited involvement of the federal government in Canadian planning. Urban and regional planning is mostly legislated by the provincial government while implemented by governments at the local level. Federal's influences on issues related to public housing, home ownership and funding for neighborhood planning are made through the Canadian Housing and Mortgage Corporation (CHMC). Some of the senior planners started their planning careers in the 1970s when the Federal government provided funding to respond to the barbaric commercial growth in the city's downtown neighborhoods (Grant, 2009).

Robust conversations with parties and stakeholders holding different interests and goals are regarded as the core of the planning process by Toronto's local authorities. City Planning Department collaborates with these stakeholders and other city departments to set urban development objectives and policies and provide advice to the city council to ensure that city development is consistent with the interests and benefits of the local communities and Torontonians. City Planning Department is also responsible for reviewing, processing and approving the urban development applications happening on the land of Toronto, based on their professional planning and an urban design skills and knowledge (The City of Toronto, 2019a). Based on the government annual report, in 2017, the city of Toronto has spent 9,455 hours on the Ontario Municipal Board (OMB)² development proposal appeals, dealt with 33 official plan amendments, held 10 design review panel meetings, and collected 1878 feedback comments from Facebook and 5992 comments

² The OMB was an independent, quasi-judicial administrative tribunal that heard cases and made decisions on land use matters such as official plans, zoning by-laws, subdivision plans and other land development issues designated by the Ontario statutes (Environment & Land Tribunals Ontario, 2018).

from Twitter, the collaboration of which enables the city to implement the pillar development projects of the Official Plan while in the meantime ensures the community interests are protected and strengthened as well (The City of Toronto, 2019b)

Bathurst Quay Neighborhood Plan. The City of Toronto has been given the authority to implement a Development Permit Area in the Central Waterfront (extends 3.5km along Lake Ontario and is located near city's downtown business district), which give the city rights to enact the development permit by-laws by allying municipal approval, the zoning by-law, minor variance and site plan approval processes together. The development within Central Waterfront Development Permit Area should show consistency with the policies of the Central Waterfront Secondary Plan, facilitate the renewal and revitalization of the Central Waterfront, provide certainty and flexibility for the development and planning projects, and take into consideration of the public involvement in the project happening in the Central Waterfront (The City of Toronto, 2014b)

In 2014, the city of Toronto initiated a traditional neighborhood plan for Bathurst Quay by collaborating with Urban Strategies for project planning and design, BA Group for the transportation planning and engineering tasks, PLANT Architect for the architecture and landscape architecture tasks, and Vermeulens for construction cost and economics issues. The project is within the authority of Central Waterfront Secondary Plan, the latest version of which was adopted by Toronto City Council in 2003, providing framework and vision to support the decades-long revitalization process of Toronto Waterfront. The core principles of this secondary plan include addressing disconnections of waterfront, building a consistent system for public and green space, enhancing a greener and more sustainable environment and creating more dynamic and diverse communities in Toronto waterfront (The City of Toronto, 2014b).

The Bathurst Quay neighborhood is a diverse and unique community benefiting the existing malting silos heritage. The neighborhood is more residentially characterized as it provides various housing options but

few retails and public services (only has two co-located public schools, the Waterfront Neighborhood Centre and St. Stephen's Child Care Centre). In addition, The Bathurst Quay neighborhood has many open spaces including parks for residents and other recreational sites for visitors. The project aims to create a sustainable neighborhood and also a city destination as the western gateway of Toronto's waterfront, through promoting the existing malting silos heritage, expanding public space, improving existing community infrastructure and adding new facilities. The masterplan of the Bathurst Quay project prioritized the community interests before taking into consideration of Billy Bishop Toronto City Airport (BBTCA) and the Tripartite Agreement that regulates airport operations, via three community consultation meetings held in 2014, 2015 and 2016 respectively, two open houses and two community workshops held in 2015 as well (The City of Toronto, 2014b; Urban Strategies, 2019).

Sidewalk Toronto/Quayside Project

Sidewalk Toronto and the Eastern Waterfront. To respond to a Request for Proposals (RFP) released in March 2017 by Waterfront Toronto that looked for a development partner for the Eastern Waterfront (starting from the pilot project called Quayside), an Alphabet company called Sidewalk Labs proposed and committed 50 million USD funding to the initial phase of planning and pilot project development and was eventually selected among a number of local and international firms who responded. Sidewalk Labs has confirmed their collaborations with the City government to bring the latest digital technologies and urban innovations at Quayside to scale in the Eastern Waterfront, one of North America's largest areas of underdeveloped urban land (more than 325 hectares) owned by public entities (Figure 1). Additional \$1.25 billion CAD funding invested by Canadian federal, provincial, and municipal governments will make food protection, infrastructure provision and land revitalization in the project site possible (Sidewalk Labs, 2017b).

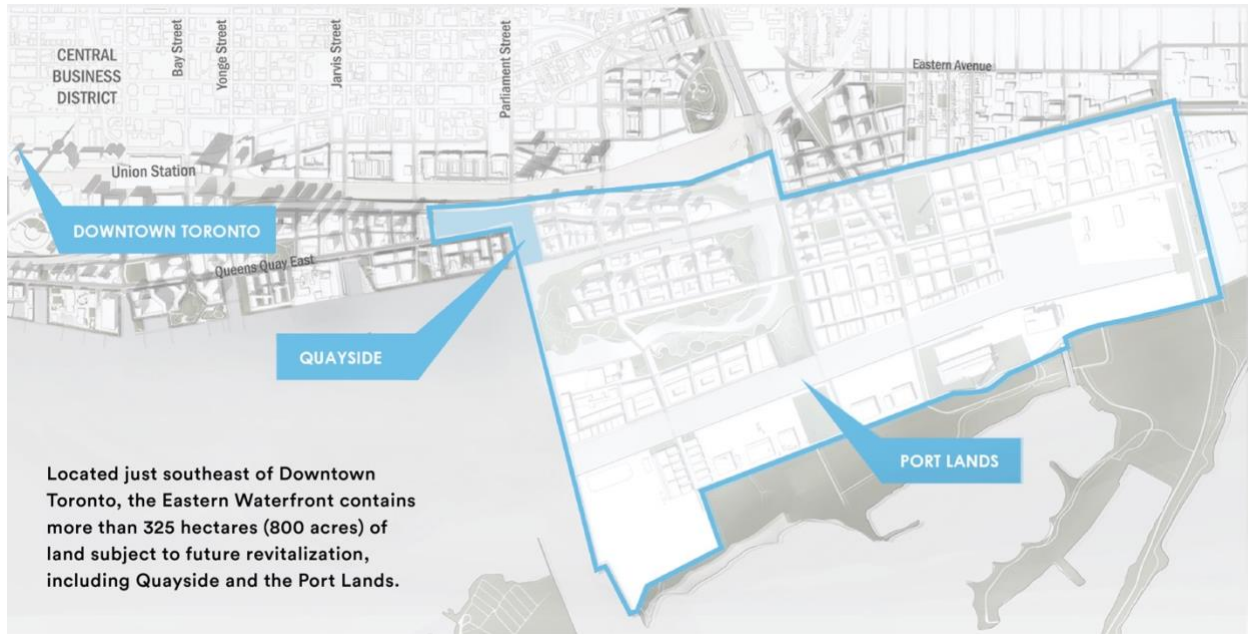


Figure 1 Sidewalk Labs has released the vision and announce that they will work with the City government to bring the latest digital technologies and urban innovations at Eastern Waterfront including Quayside and the Port Lands. Source: Sidewalk Labs.

The revitalization and development of Eastern Waterfront including Quayside and the Port Lands is planned to accommodate tens of thousands of people to learn, work and live, with advanced climate-positive energy and waste systems, self-driving transit systems, and new models of building construction to improve citizens' life with more sustainable, more connected, more convenient, safer, and lower-cost and more welcoming living environment (Sidewalk Labs, 2017b).

Quayside/Sidewalk Toronto project. Quayside/Sidewalk Toronto project is the starting pilot project for the revitalization of the Eastern Waterfront. It is located at Parliament Slip in the southeast of Downtown Toronto. It is about the development of a 5-hectare neighborhood that can house around 5000 residents. This pilot project aims to update the urban innovation platform and create a combination of the physical layers of buildings, mobility, public realm, infrastructure and the digital layers of accessibility, connectivity and data integration. The new modes of digital layers would reimagine the ways of delivering services, building infrastructure, providing mobility services, and designing public space in the city (Sidewalk Labs,

2017a). An ideal Quayside would be a successful prototype addressing issues of sustainability, housing affordability, transit system, building innovation, and economic development, which could also be scaled across the entire Eastern Waterfront and even other cities all over the world.

Master Innovation and Development Plan. The development of Quayside project is guided by a Master Innovation and Development Plan (MIDP)³ that will outline the vision for the site on the matters of housing affordability, mobility, architecture, sustainability, public space, public facilities, and digital governance. MIDP will be prepared together by Waterfront Toronto - a tri-government organization by the Government of Canada, Province of Ontario and the City of Toronto as well as Sidewalk Labs who aims to improve city life by developing and incubating urban technologies to address urban issues like cost of living, efficient transportation and energy use. Specifically, Sidewalk Labs would be the main author of MIDP while Waterfront Toronto plays more roles in reviewing the plan. Sidewalk Toronto is a joint platform by Waterfront Toronto and Sidewalk Labs.

Innovation and Funding Partner Framework Agreement. A collaborative relationship of creating the MIDP is included in the Innovation and Funding Partner Framework Agreement (Framework Agreement) that will contemplate project budget and expenses, Eastern Waterfront development plan, public engagement guidelines, movement of Google's Canadian headquarters to the waterfront, innovative approaches addressing housing affordability issues, investment opportunities in Canadian companies and the establishment of an Urban Innovation Institute in the MIDP to provide anchor tenants for the area. When the planning work included in the Framework Agreement is achieved, the result would be the MIDP as a comprehensive and overlay plan for the project taking account of urban design, infrastructure and technology strategies.

The Framework Agreement does not provide rights of land development but it offers up to US\$10 million funding provided by Sidewalk Labs before the stage of achieving any "initial plan milestones," and up to

³ Quayside is the first pilot of which the technologies and planning strategies will be included in the MIDP.

an additional US\$40 million funding provided by Sidewalk Labs between the stages of achieving any initial plan milestones and the approval of the MIDP in the circumstances that the milestones succeed to have governments' commitment of CAN\$1.25 billion for the Port Lands flood protection; re-affirmation of Waterfront Toronto's mandatory role for the development of the Eastern Waterfront; alignment of the parties in terms of a Business and Implementation Plan required by City Council; alignment of the parties in terms of the MIDP; and agreements by Waterfront Toronto and Sidewalk Labs on future actions standards including openness and fairness in procurement (Sidewalk Labs, 2017b). In addition, the Framework Agreement also allows the termination of the agreement by either party if the "initial plan milestones" are not met within six months, or the MIDP is not approved within a year. Specifically, Waterfront Toronto has a unilateral right to terminate the partnership before the completion of the first stage (Sidewalk Labs, 2017b).

Both Waterfront Toronto and Sidewalk Labs show their good faith in their partnership and collaboration through jointly developed MIDP within the deadline included in the Framework Agreement. Any subsequent implementation is subject to the parties' mutual decisions and needs to be approved by MIDP (Sidewalk Labs, 2017c).

Collaborative Framework for Digital Governance. There is also a collaborative effort of Waterfront Toronto and Sidewalk Labs to frame digital governance. As shown in Figure 2, Sidewalk Labs Digital Governance Group will be preparing digital platform, designing mobility, community services and public realm, improving sustainability, and assisting with the early pilots. While Waterfront Toronto Digital Strategy Advisory Panel (DSAP) will be responsible for guiding and incorporating data privacy and governance, intellectual property security, and cyber security in the next phase of waterfront revitalization. It also advised Waterfront Toronto on the initial policies and strategies related to the Quayside project announced in Fall 2017. All concerns and issues surfaced with regard to data in the Quayside project will need to be presented to and discussed with the DSAP, the collaborative results of which will be further developed into the MIDP.

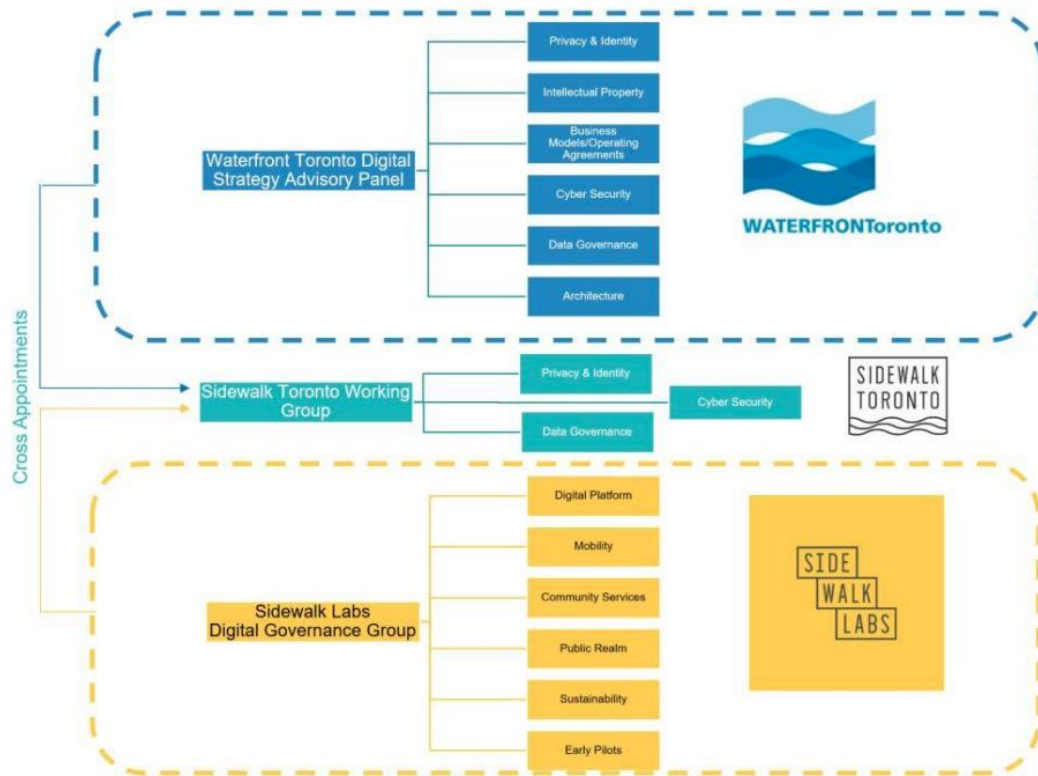


Figure 2 Collaborative Framework for Digital Governance between Waterfront Toronto and Sidewalk Labs Source: Sidewalk Labs

City Involvement with the Quayside project. The City of Toronto will neither be a party to the Framework Agreement between Waterfront Toronto and Sidewalk Labs nor an author of the MIDP. However, although Sidewalk Labs acts as the main author of MIDP and Waterfront Toronto plays an even more important role as the first plan editor before the plan moves forward to the City Planning for various approvals including planning approval, building approval, environmental approvals, right-of-way permits and affordable housing requirements, city planners still provide advice for the purpose of encouraging the development of the proposal, ensuring the MIDP is built upon the city policies and objectives, and assisting with defining candidate pilot sites (The City of Toronto, 2018b). City staff will be working with the two organizations to ensure the MIDP is consistent with the city-issued policies and regulations including the city-wide official

plan, Central Waterfront Secondary Plan, City issued Precinct Plans, and in-force Zoning By-laws (The City of Toronto, 2018a). Specifically, while Sidewalk side breaks down the project in the traditional way and has teams dealing with buildings, transportation, public ground (park and open space), technology, sustainability and environment (garbage, waste, etc.), Toronto's City Planning Department have corresponding experts on its side as well. According to the interviews with an urban planner at Waterfront Secretariat, City planners will have meetings and discussions with Sidewalk Labs teams together talking about the project.

Although the City of Toronto does not have the actual relationship with Sidewalk Labs, they have formal relationship with the Waterfront Toronto. For the most part of the project development process, City is in the context of their relationship with Waterfront Toronto who is in charge of defaecating formal process and building discussions. City's year-long involvement in the project is facilitated by the Waterfront Secretariat and supported by city divisions including the City Manager's Office, City Legal, City Planning, Corporate Finance, Financial Planning, Real Estate Services and the Toronto Realty Agency (The City of Toronto, 2018b). According to the interview with an urban planner at Waterfront Secretariat, Water Secretariat's role within City Planning is to advance waterfront revitalization on behalf of the city, where city planners do work with different departments and agencies including city information and technology group and take charge of the ways city want in the project. For example, when the development ideas come back to City Planning, Waterfront Secretariat will give the team feedback on whether they are going to the right direction or not based on strategy documents and vision plans including waste strategy, garbage strategy, and urban design guidelines.

The project will eventually get evaluated through the city's standard planning and evaluation process by the city planners (The City of Toronto, 2018b). The first draft of the MIDP is expected to be released and presented to the public and the City in early 2019, by then there will be additional public inputs to be considered for the final MIDP prepared by both Sidewalk Labs and Waterfront Toronto. On receipt of the submission of the MIDP, City planners will review the plan and hold public meetings with the communities

and different stakeholders, the results and recommendations of which will be reported to the Committee and City Council (The City of Toronto, 2018a). Furthermore, the project will require various approvals at community, city and governmental levels as its implementation process goes. (IBM., n.d.). Only If the MIDP is approved by the Boards of Directors of Sidewalk Labs and Waterfront Toronto, and is subject to numerous approvals of governments including the City of Toronto, the Province of Ontario, the Canadian federal government, long-term relationship and development plan could start to realize the project vision (Sidewalk Labs, 2017c). Both Waterfront Toronto and City Planning will need to consult with governments at Federal and Provincial levels through the Waterfront Revitalization Initiative Intergovernmental Steering Committee (IGSC).

Public Engagement. The Framework Agreement requires robust public engagement and inputs, which is the high standard of project implementation so far. Sidewalk Toronto aims to incorporate people, private companies, academic entities, and local organizations into the development of Eastern Waterfront, taking advantages of Toronto’s already-thriving technology sectors and developing urban innovations. Since 2017 when partnerships were established, Waterfront Toronto and Sidewalk Labs have been having long-term planning and extensive consultation with community and stakeholders in order to enhance the development of public infrastructure, transportation systems, new models of affordable housing and retail uses, and the legislation of data protection and privacy. Such bottom-up strategies started with a community Town Hall held on November 1, 2017 (Sidewalk Labs, 2017b).

Sidewalk Toronto provides lots of different ways for people to get involved in the project, including attending public talks (or get live stream online) on topics like sustainability, technology, accessibility, mobility, and urban design; joining public roundtable meetings about the updated project process and information; attending neighborhood meetings held by local organizations, visiting Sidewalk Toronto Pavilion to learn technological innovations, visiting local pop-up station nearby, serving on a 36-member Reference Panel to supervise the project process, attending design jam and CivicLabs to brainstorm possible urban solutions, sending your children to YMCA-Sidewalk Toronto Summer Kids Camp, or applying for

Sidewalk Toronto Fellows Program etc (Sidewalk Labs, 2017d). All insights, perspectives and feedback generated from these public meetings and events will help the development of Master Innovation and Development Plan (MIDP) proposed by Sidewalk Labs (IBM., n.d.).

CHAPTER 4 COMPARISON ANALYSIS AND FINDINGS

The way of practicing urban planning have been changing over the decades and they are still developing while we try to solve new urban issues and adopt new planning paradigms. That is being said, planning today is not the same as the one in the past and it will not be the same as the one in the future as well. According to Jackson (2018), Toronto Waterfront planners are changing from government-employed planners into more entrepreneurial planners and site-specific planners, which is largely affected by the increasing public-private project partnership. According to Cavrić (2004) who categorizes seven different fundamental roles of physical planning that planners are involved in, six particular roles of urban planner in the Quayside project are categorized below for the purpose of analyzing and comparing how urban planners in this project and Toronto traditional neighborhood planning project act differently or similarly. Some of the lessons learned through the comparison can be adapted to other smart city/neighborhood development projects within the city and even around the world in the future.

Planners as specialists or generalists

The way Toronto's City Planning works in conventional neighborhood planning project is that they have specialized teams including transportation planning team, urban design team, as well as environmental and sustainability team, and they also have planners who concentrate more generally and act as the generalists. Beyond the City Planning Department, there are also planners and officers at the Waste Management Department, Water Management Department, and Transportation Service Department who specialize in certain types of planning activities. However, these teams will have many interactions and collaborations with each other to ensure the city is functioning well. For example, according to the interview with the urban planner at Waterfront Secretariat, City Planning will have the transportation-specialized person at the meetings talking about sustainability in the circumstances that the stormwater has the impacts on the roads.

For the Quayside project, as the main author of the MIDP, Sidewalk Labs side does have certain people on their team with professional planning background, but there are more people with mixed backgrounds compared with the City Planning Department. Their demographics have more people working in technology and development, who also don't have professional planning training and have not been dealing with the core of urban planning practice. However, the interview subject at Waterfront Secretariat thinks that Sidewalk Labs team dedicated for the Quayside project is not more specialized than other conventional neighborhood planning project teams in Toronto.

Planners as data privacy advisors and governors

In the Quayside project, Things are complicated in terms of thinking about how technologies can be involved in the planning process. Compared with the traditional neighborhood planning project in Toronto, the unusual thing in the Quayside project is the much more involvement with data and technologies. The collaborative effort of Waterfront Toronto and Sidewalk Labs through Sidewalk Labs Digital Governance Group and Waterfront Toronto Digital Strategy Advisory Panel to frame digital governance and incorporate the intellectual property and cybersecurity in the project planning process shows project's determination of applying data and technologies.

Actually, the city has had a lot of works on data gathering and rules set in terms of how data can be collected, stored and simulated. They have gathered data on the waterside and environmental sites before and planners working on energy perceptions already had data protection procedures as well. In addition, the city has already had planners deal with technologists in terms of how to manage things better and how to make better decisions. But in terms of the data gathering in public space like shopping malls, courtyard and building lobbies, it is still a discussion within city planning. Urban planners work collaboratively in terms of different issues. Data governance and privacy are the new ones that both Quayside team and the City of Toronto are figuring out to fit in the standard planning process right now and in the future. In the Quayside project, the discussion about data governance and privacy is partnering across the city. According to the

interview with the urban planner at Waterfront Secretariat, in fact, part of Waterfront Secretariat planner's job on the Quayside project is to understand where should be the interactions between urban planning and technology and whether integrating more technology discussion in the existing planning process matter? There are discussions of how and to what extent technologies should be in their ways of managing the city as the city does not have a lot of history and experience on talking about the technology policies and security issues. And the Quayside team, in particular, is trying to have those discussions integrated with the project development and planning process, the attempt of which includes considering what kinds of policies and data they might want to capture, how they might use it, and what applications might be. At this early stage of the Quayside project, the team might not get much involved with talking about the technology yet, but it is a tricky challenge as the team is in their process of making sense to apply technologies to the Quayside project.

In this respect, planners' roles as data privacy advisors and governors are more emphasized in the Quayside project. According to the interview subjects at Waterfront Secretariat: "It is definitely appropriate for urban planners to be thinking about such matters and rules (about data security and governance) and whether they need to be advanced or improved to fit better future planning process as the leading component." However, it is not the whole urban planning process given technology excuses, therefore, whether such thinking and attempts will require planners to act differently or require guidelines and policies change in the future is still unclear. Planners might need to define their formal relationship with information and technology in the planning process on particular aspects or applications first before anything else.

Planners as technocrats and information providers

According to the interviews with a community planner at Toronto and East York District, all projects, whether it is the Quayside project or the prior neighborhood planning projects in Toronto, are evidence-based, and every project will need transportation analysis, engineering analysis, urban design analysis, shadow and wind analysis. And in this respect, he believes there is not much difference between the

Quayside project and conventional planning projects. However, compared with the outputs including the published documentation and public presentation materials of the traditional neighborhood planning project, the Quayside team show some distinctions in terms of providing project planning information. One of the conventional neighborhood planning projects called Bathurst Quay neighborhood project show only a few quantitative analyses in its published documentation and public presentations materials in its three community consultation meetings held in 2014, 2015 and 2016, two open houses and two community workshops held in 2015. While Sidewalk Toronto team in the Quayside project uses a larger number of colorful maps, image sets, and charts to show their massive quantitative analysis with a large amount of information and data. Therefore, in this respect, it seems like Sidewalk Toronto team interprets their roles as technocrats and information providers much harder, through which they are eager to show their science-based and data-based approaches to the public and provide a solid basis for decision makers with direct evidence to gain their support.

Planners as project regulators, coordinators, advisors and examiner

In the traditional neighborhood planning project like Bathurst Quay neighborhood project, the project land is owned by the city of Toronto. Therefore, the project planning and building permits are issued and managed by the City of Toronto, with planning and design tasks assigned to Urban Strategies; transportation planning and engineering tasks assigned to BA Group; architecture and landscape architecture tasks assigned to PLANT Architect; and construction cost and economics tasks assigned to Vermeulens. In this respect, planners at city department play the roles as landowners, development regulators, project managers and examiners for city-owned land to ensure that the project is designed and implemented in consistency with the city plans and regulations. In addition, they also act as advisors for the decision makers when they make approval decisions.

While things are different in the Quayside project. The Quayside project led by Sidewalk Lab and Waterfront Toronto is not like a conventional public neighborhood planning project led by the City Planning.

The City has not signed the contract with Sidewalk Labs to be the public designer for the site yet, that is being said, the city of Toronto is not part of the development. Therefore, the Quayside project is more analogue to a developer developing a plan for a large-scale development project and holding public meetings. Compared with the conventional neighborhood planning projects in Toronto which the city has impacts on through the issued official plan, secondary plan, and precinct plans for even smaller geographic areas, Quayside project will be more likely to go through the development project process where the city council will do formal secondary plan process with public meetings and public approvals after the developer – Sidewalk Labs completes their development plans for the project.

In addition, 12 acres of project land (Quayside Parcel) is owned together by Waterfront Toronto (Quayside WT), the City of Toronto, CreateTO, TPLC and private landowners. The development on Quayside Parcel guided by the MIDP requires it to provide business proposals related to these lands to the project Parties for consideration purposes. Unlike planning document of conventional neighborhood project in Toronto, MIDP is not a typical planning document. A lot of documentation like MIDP would be prepared by the private entity and submit to the public entity, which is different than the neighborhood planning project run by the government as well. In terms of this, even though the plan of Quayside project will later be moved forward to the City Planning for further reviews and various approvals, just like the traditional neighborhood planning project, city's planning evaluation process for this project will be also not typical and a little bit unique in this aspect, if not completely unique.

Besides that, the City Planning Department only collaborates with Waterfront Toronto and Sidewalk Labs in terms of providing advice for project development and ensuring it is consistent with the city-wide and community objectives. The involvement of the City with Quayside project is mainly facilitated and supported by Waterfront Secretariat whose role is to advance waterfront revitalization on behalf of the city interests. In this respect, planners at City Department and Water Secretariat not only play the roles as development regulators, project managers, examiners and advisors for approval decisions, but also as the

development coordinators and advisors for the development of Quayside project as one of the main stakeholders.

Planners as negotiators and mediators with the public

Both the Bathurst Quay neighborhood project and Quayside project hold certain types of public participation events during the project development process. Through using the main public participation method – submitted written comments and questions, public inputs are taken into account by the authority before the final decision. According to the case study, the Bathurst Quay neighborhood project has had three community consultation meetings in 2014, 2015 and 2016 respectively, two open houses and two community workshops held in 2015. While compared with it, Quayside project introduces a lot of more different ways for people to get involved with the project. They held much more public events with various forms including public talks, design jams, local pop-ups, neighborhood meetings, roundtable workshops, tech competitions, waterfront pavilion, fellowship programs, kid camps and civic labs, so that people with different interests, backgrounds, and even ages can participate in the project in the ways that they prefer and understand. In this respect, urban planner's role as a negotiator and mediator with the public in the Quayside project has been emphasized as the project focuses more on hearing the public voice and getting them to participate in its development process. In addition, compared with the traditional Bathurst Quay neighborhood project who pay less efforts in informing and collecting information from the public, it looks like the various forms of public engagement events do ensure planners in the Quayside project get more involvement with having real communications among different stakeholders and combining the knowledge provided by "experts" and interests shown by the public. It also seems like the Quayside team shows the greater interest of regarding these public meetings as the opportunities to collect more data that in certain a way helps the team enhance their abilities to sell the project and move it forward.

Planner as design visualizers

Unlike the conventional neighborhood planning project, the Sidewalk Labs is doing in a similar way as the developer, with the new ideas of buildings or complexes and the innovative concept of combining technology and urban planning process. Different than other neighborhood development proposal and complete development application for which city will get architecture plan and site plans with details showing a new design or open space or a new vision of buildings, Sidewalk Labs, analogue to any developer showing their visions, only shows what they think that building should look like – they are showing buildings but without detail drawings of the buildings. The pictures of proposed buildings in their application are unreal architecture drawings but only the concepts. Therefore, the degree of how these the visions and visualizations can be realized in reality is unclear.

Compared with the prior neighborhood planning projects in Toronto that also use good-looking pictures to show the idea of how something can work, Quayside project uses a large number of urban scene visualizations including various kinds of pictures, photos and maps with strong architecture sense and higher level of rendering performance in its published documentation and public presentations. These visual alternatives other than plain words are supported by the use of level-of-detail software techniques that help upgrade the visual quality of the images and other outputs. In the Quayside project, documentation and public presentations are supported by a large amount of more quantitative analysis showing stronger scientific-base approaches of analyzing, planning, designing and implementing process than the conventional neighborhood planning project like the Bathurst Quay project. Instead of using words, many of these quantitative analyses and qualitative analyses are visualized in two-dimensional or three-dimensional figures in their presentations, studies and reports, showing a strong sense of a sustainable, innovative and smart community and branding the uniqueness of the Quayside project as the new set of innovative opportunities concerning open space, buildings and infrastructure, new economic engine for the city of Toronto, new standard of affordable housing project, and new standard of data governance and protection.

Therefore, compared with the conventional neighborhood projects in Toronto, Quayside project emphasizes more on urban planner's designing roles in the project development and planning process, where they not only use the visualizations to inform parties and stakeholders with different objectives and interests but also use them as an effective strategy to sell their ideas of creating a smart and innovative community to the "consumers" – Toronto local governments, Torontonians and even cities and people around the world. Sidewalk Labs wants to show their solutions and the ideas, make products and services that can be applied in other cities and ensure their development in Quayside look good and convincing so that other cities can work with them in the future, although they are still developing themselves and dealing with solutions for the Quayside project. According to an urban planner at Toronto City Planning Department, "they (Sidewalk Toronto team) are attempting to be positive about their design...They definitely have their interests and want to make sure that they have the data and information there to back them up." The Sidewalk team is eager to present what they are believing and supporting for the project, including the ideas, scientific approaches and technologies, and eager to convince people that their methods and solutions to urban issues would be positive and better than before.

CHAPTER 5 DISCUSSION AND CONCLUSION

In the previous chapter, the changing roles of urban planner in the Quayside project were discussed, compared with the traditional neighborhood planning project based on six categories: planners as specialists or generalists; planners as data privacy advisors and governors; planners as technocrats and information providers; planners as regulators, project coordinators, examiners and advisors; planners as negotiators and mediators with the public; and planners as design visualizers.

Based on the findings of this research, planners' roles as specialists or generalists do not change much in the Quayside project compared with the prior neighborhood planning projects. Both Sidewalk team and city planning team have the planning specialists who focus more on specific activities and the planning generalists who have all-round expertise in the urban planning field. This does not match with the research conducted in the late 20th century, which found the planners were more likely to specialize in particular planning aspect including environmental planning, urban design, economic development or housing development. Besides that, city planner' role as project examiner for developments on the city land does not change as all the visions and plans of Quayside project will later be moved forward to the City Planning for further reviews and approvals before they are published to the public, just like the traditional neighborhood planning project, even though they are not prepared by the City Planning Department and thus will be involved with a slightly different city's planning evaluation process.

While compared with the conventional neighborhood planning project in Toronto, planner's roles in the Quayside project as data privacy advisors and governors; technocrats and information providers; project coordinators and advisors; negotiators and mediator with the public; and design visualizers are all to some extent emphasized and accelerated. The essence of the Quayside project that aims to bring the latest digital

technologies and urban innovations to the project did have some impacts on its development and planning process as well as urban planner' roles in such process.

Privacy advisors and governors. In Quayside project, the collaborative framework for digital governance implemented by both Waterfront Toronto and Sidewalk Labs leads to the discussion of how and to what extent technologies should be in their ways of managing the city and what position should urban planner stands for if data and technology are brought in the planning process. According to the findings, planners at Waterfront Secretariat are already involved with such discussion about the interactions between urban planning and technology, the new roles of whom as data privacy advisors and governors are generated specially in the Quayside project compared with other prior neighborhood planning projects in Toronto. This is a brand-new role of planners that no previous research has mentioned before, which add the new responsibility of regulating and monitoring the city datascape throughout planners' years of services in physical planning.

Technocrats and information providers. Another planning role that has been more emphasized in the Quayside project is planner' roles as technocrats and information providers since Sidewalk team put much more efforts for providing massive data and information and showing their large amount of quantitative analysis as well as science-based and data-based approaches in their documentation and public presentations. This is reflected in the previous research that confirmed the development of Information Technology (IT) and Geographic Information Systems (GIS) have been supporting urban planners in terms of providing information and solid evidence to give advice to the decision makers and persuade other stakeholders. Two of the interview subjects said there are not many technologies involved in the current project implementation stage, while Quayside's published documentation and public presentation materials actually show a large amount of quantitative analysis and the ideas of applying new technologies (Sidewalk Toronto team are making presentations about energy efficiency and showing quantitative calculation about things that they intend to build), which suggests that either there are changes of applying new technologies

and approaches in project implementation process but people just don't realize it, or there are not changes of technologies and approaches and it is just the way in which Sidewalk Toronto team present the project to the public. The latter case leads to the public engagement questions as the project team are showing hard numbers and evidence that do not facilitate public inputs but render the ideas instead of presenting quantitative truth even in project's early stage.

Project coordinators and advisors. City Planner's roles as project coordinators and advisors are the new roles generated from the Quayside project. Before the Quayside project, city planners are the project manager and examiners for development on the city-owned land. While in this project, the city only owns a small part of Quayside Parcel, with the most of which owned by the Waterfront Toronto (Quayside WT). In addition, the city of Toronto is not part of the project yet as they have not signed the contract with Sidewalk Labs, but only have the official relationship with Waterfront Toronto who has the Framework Agreement with Sidewalk Labs. Therefore, instead of being project manager, city planner's roles in the Quayside project are project coordinators and advisors who will provide advice and recommendations for project development and ensure it is consistent with the city-wide and community objectives. The interview subject at Waterfront Secretariat regarded Sidewalk Labs as the developers while he/she believed it was still the public sectors acting as the decision makers in the Quayside project. However, compared with the previous neighborhood planning project in Toronto where City Planning set objectives, policies and guidelines and conduct the project step by step based on the needs of city and public welfare, Sidewalk Toronto team implements the Quayside project using their own innovative and scientific approaches, with their own interests and purposes other than public welfare, though in consistence with the city objectives in the large picture. In such a process, city planner's roles as development managers and planners are weakened while roles as development regulators, coordinators and advisors are emphasized. While in the meantime, city planners still keep their roles as project examiners who will review the plan, hold public meetings and offer various approvals before the project can be legally developed on land.

Such partnership with the private company for Quayside project seems to change the roles of city planners from project managers to project coordinators and advisors, which is also confirmed by the previous research that identified the trend of shifting government authorization and power to technical private sectors. One of the criticisms of such privatization and outsourcing of urban management discussed in the previous chapter is the different interests between public sectors who want to make site-specific solutions and create public welfare; and private sectors who want to come up with universal technological and make profit instead, the disconnection of which would have uncontrollable consequences as private sectors' interests of pursuing profit might increase society polarization and marginalize vulnerable population more.

Negotiators and mediators with the public. Through large more types of public participation events, planner's roles as negotiators and mediators with the public are increased and emphasized as well. They tailor the forms of public participation to meet people with different backgrounds, ages and interests. For example, they have Sidewalk Toronto Fellows Program designed to young Torontonians between the ages of 19 and 24 who are interested in learning about waterfront revitalization and technology application within the cities; they have YMCA-Sidewalk Toronto Summer Kids Camp aims to hear the voice of children of 9-12 years old who are interested in how cities work and grow; and they also have public round tables, neighborhood meetings, and reference panels welcoming citizens and experts around the world to get involved with the redevelopment of Toronto waterfront. Waterfront Toronto and Sidewalk team put a lot of efforts on making sure the voice and opinions of different groups of stakeholders are taken into consideration during the Quayside planning process. While in this early stage of the project, Sidewalk team, in order to make sure their ideas of Quayside smart neighborhood would be accepted by the public, they play more roles as the negotiators and mediators between decision makers, community representatives and other stakeholders on behalf of the project itself, rather than only represents the interests of its company they have the obligation of. The hope to convince Torontonians and people around the world of their technological solutions and scientific approaches in creating a better living environment for a neighborhood

emphasizes the roles of planners in the planning process even more than the traditional urban development projects.

Design visualizers. Sidewalk team puts lots of efforts on visualizing their large amount of quantitative analysis, which is different with what city planners do for traditional neighborhood planning project like Bathurst Quay neighborhood project but more like the ways developers for advertising their products or projects. A large number of urban scene visualizations with strong architecture sense and high level of rendering performance in Quayside project's published documentation and presentation materials interpret rationality that enable power to define truth and rationality. Instead of synthesized their analysis by using plain words, they use rendering figures and visualizations to convey the progressive ideas about applying digital technologies and urban innovations and create consensus, through which their exercise power of Quayside project can become more legitimized and effective in creating a "better argument". Flyvbjerg (1998) argued that "the greater the power, the less the rationality" as the privilege of power can define the reality without much rationality. Sidewalk Labs' advantages and power on digital technologies and urban innovations can help define the truth and reality they believe for the Quayside project in the ways they want, which is beyond the capacity and knowledge of the City of Toronto and the rest of the world. The interview subject at Waterfront Secretariat believed the Sidewalk Toronto team definitely have their own interests in the project and want to make sure they have data and information there to back their interests up. This is to some degree influenced by the outsourcing and privatization of urban management as the authority power are shifting from the public sectors to technical private sectors where these private sectors are given more power and rights for managing the city and making decisions.

To summarize, compared with prior and conventional neighborhood planning projects in Toronto, the implementation and planning process of Quayside project, even at this early project stage, change some roles planners and particularly, the city planners play in their daily work: compared with planners in the prior Toronto neighborhood planning projects, Sidewalk Toronto planners' roles as technocrats and

information providers, negotiators and mediators, as well as design visualizers are emphasized in the Quayside project, while their roles as specialists and generalists do not change at this early project implementation stage. While in terms of city planners, their new roles as data privacy advisors and governors, as well as development coordinators and project advisors are generated in the Quayside project, whose roles as regulators and examiners, however, do not seem to change much at this project stage.

One of the interview subjects at Waterfront Secretariat would rather regard Sidewalk Labs as a developer who has been preparing a development proposal for the neighborhood than think them as a neighborhood designer or planner. Such thinking would have a lot of impacts on the roles of city planners. Instead of influencing the developers to deal with urban matters on city's land by setting city restrictions and policies like zoning and FAR, and allowing, sometimes with some space for negotiation, desired buildings and infrastructure to get built for citizens, business owners and local tenants, city now becomes the buyers and consumers of development plans, designs and technology solutions provided by a private technology company - Sidewalk Labs. In this respect, Sidewalk Labs is the one doing the planning job for Quayside right now, based on the fact that they are setting all the frameworks and guidelines about the development of the Quayside neighborhood, under the constraints of city-wide objectives and policies though, while anyone else including Waterfront Toronto and Department of City Planning just signs off and approves all the frameworks, guidelines and plans prepared by Sidewalk Labs.

In recent decades, the development of more effective and efficient approaches towards building smart neighborhood and city incentivizes cities all over the worlds to explore the substance of technological innovations and other professional skills in response to the increasing complexity of the urban issues in practice. While the question is where will the smart technology and urban innovations take us to. It is not only the efficiency, technologies and how to make better planning system that have been discussed, but also a far more fundamental change happening in the physical planning as well as planners' roles played in such process. The development of technology and overwhelming application of information and data seem

to point out the matter is who owns and governs the data, information and intellectual property, then who owns the ability and power to create efficiency, which leads to another question of should urban management be privatized. If the trend towards using technology to deal with urban matters continues, a new management structure of physical planning is expected to be created.

This research contributes, in a meaningful way, to the discourse of smart city by pointing out the fundamental changes it brings to the physical planning process and the roles of planners who get involved with the process. It also helps bring up the questions of how such changes could affect the way we think about the public-private partnership and our duty as urban planners in the future. Planning, as the mastering of urban challenges and problems, should always be considered before other professional knowledge or individual key players including architects, urban designers, engineers and technologists, as according to Cavrić (2004), “the game of planning is a mother of resource distribution”. That is being said, urban planners should become the managers in this integrated development process, holding the ability to administrate urban development and planning from a more analytical, scientific and multidisciplinary point of view. With the application of all urban technological innovations, a successful urban planner should develop his/her theoretical and practical skills and become highly acceptable for the new planning theories and approaches in the future practice to be more productive and self-supported.

The development of smart city technology is not for urban planning process per se, while it might be used as a tool that provides urban planners with more options and solutions improving the way they administrate urban matters as well as manage city streets and water infrastructure. Better technologies can give better options so that city administrators, managers and planners can understand our physical environment better. However, whether the development and application of digital technologies in the planning process is a good or bad thing is not clear as it might make life easier and more efficient while it might also cause new issues. Since the application of smart/digital technologies in the planning field is in its early process, the key is that

we apply digital technologies as one of our tools when we start with the problems and issues that we want to address and figure out, rather than use it as a panacea or start it and see what we can do with it.

Since this research examines the planning roles and functions that traditional urban planners play in the planning process, one thing not clear is who are playing those planning roles right now, whether it is still the urban planners or other types of professionals with other types of training and skills implementing planning activities. In addition, this research does not fully examine the causes of these changes and answer whether these changes are because of the development of digital/smart technologies or the outsourcing and privatization of urban management. As the Quayside project is still at its early stage, whose masterplan and guidelines (e.g. MIDP) have not been published yet, and there are not many digital tools and technologies involved with the Quayside planning process so far but only the ideas. Therefore, further research on urban planning activities and urban planners' roles in such smart neighborhood planning project are needed to further examine whether the development of technologies and application of innovative approaches in the planning process would change urban planning process, the roles of urban planner, and people who execute the planning activities and functions. Moreover, further studies on the reasons causing these changes of the physical planning process and urban planners' roles are necessary, through which we can identify the factors having impacts on urban planning practice and better predict the changes that would happen in the future planning field.

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Appendix: List of Contacted Interviews

Individual Positions	Organization
City planner	Toronto Waterfront Secretariat
City planner #1	Toronto City Planning Department - Toronto and East York District
City planner #2	Toronto City Planning Department - Toronto and East York District