The Use of Electronic Participation Tools in Urban Planning Projects in Toronto, Ontario

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Abstract

The public's involvement in urban planning projects has been a contested and evolving topic. In this paper, I address how planners have changed their approach to participation in planning and how they are incorporating electronic participation tools into that process. I have adapted the assessment framework by Tambouris, Liotas and Tarabanis (2007) for the use of electronic participation tools in public policy consultations to urban planning projects. I evaluated eighteen active urban planning projects in Toronto, Ontario, comparing how these projects are using electronic participation tools to engage the community. I found that electronic participation tools are, for the most part, being used to inform members of the community rather than for drawing feedback and that these tools are not being used to create opportunities for the community to make substantial changes to the projects. Members of the community who are using the electronic participation tools are self-selected participants and therefore tend to be more likely to engage in planning processes generally. The main take away from my research is that urban planning projects in Toronto are integrating electronic participation tools into their participation strategy, but the electronic participation tools are not being used strategically to remedy current barriers and gaps to participation.

Foreword

For my MES programme, I have studied community building in urban planning, specifically addressing how the community can influence their built environment. The key terms that I have been focusing on through my studies are urban planning, community engagement, and collaborative planning. This research directly addresses this topic by studying how planners in Toronto, Ontario, incorporate the use of electronic participation tools in urban planning processes. One of the key objectives of my degree programme was to understand the relationship between the community and the planning process, specifically how the community can influence the built form through the planning process. My research achieves this objective through my evaluation of how community members use electronic participation tools to provide feedback and engage with their local government through the planning process. I contextualize the use of electronic participation tools in the urban planning process by doing an overview of the evolution of participation in urban planning projects. This contextualization provides a narrative on the development of contemporary urban planning topics and issues. Understanding contemporary topics and issues in urban planning and understanding the tools and techniques used to encourage the public participation in urban planning processes are key components of my MES programme and speak to the key the urban

planning outline in my plan of study. My research directly addresses these key learning objectives through the study of current electronic participation tools and platforms, as well as the gaps and barriers associated with current public participation practices. Understanding the gaps and barriers to public participation in the planning process is a critical part of understanding collaborative planning. This major paper combines the knowledge of urban planning and participation that I have gained through my coursework with my practical experience working at the City of Toronto into a culminating document to reflect my planning education experience.

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Introduction

Public participation in urban planning is a contested topic. Participation has been perceived as a good and virtuous activity which is juxtaposed to the bureaucratic and technical nature of urban planning. Historically urban planning has been dominated by a select few experts who took a top-down technocratic approach to the study and practice of urban planning. This technocratic approach to urban planning has been questioned and critiqued in tandem with the development of a counterculture. Through this critical process, the question of what constitutes good public participation in urban planning has developed. Although my research does not aim to directly answer this question of what constitutes good planning, it does address the concept through the evaluation of current public participation practices in urban planning.

My research evaluates the use of electronic participation tools in public participation processes for urban planning projects in Toronto, Ontario. I trace the evolution of participation in urban planning, particularly the transition from participation as a legislated necessity to an activity that planners have taken an active role in facilitating. I use this discussion of the evolution of participation in planning to highlight the gaps and barriers to participation in the urban planning process that electronic participation tries to fill. Like many cities, Toronto is integrating technology into urban planning to improve the public participation process. In this research paper, I identify which electronic participation tools are being used to overcome some of these barriers

and gaps, at what stage of the planning process electronic participation tools are being used, who is using the electronic participation tools, and what level of participation is achieved through using electronic participation tools.

I evaluated the public participation process of 18 active urban planning projects in Toronto using an adapted version of a public participation assessment template created by Tambouris, Liotas and Tarabanis (2007). The assessment template addresses the participation area, methods employed for participation, ICT area used, tool category, level of participation addressed, stage in the policymaking process, technology category used, and users of the tool. I use this framework to categorize the various elements in the participation process and compare the planning projects. The assessment framework created by Tambouris, Liotas and Tarabanis was originally intended for evaluating public participation processes in the development of public policy and I have adapted it to specifically address urban planning.

My results demonstrate that there remain opportunities to use electronic participation tools to further enhance the level of public participation in urban planning processes. While most of the cases I reviewed support information sharing and some level of consultation, most do not involve, collaborate with, or much less empower the public in the decision-making process. In addition, most of the projects limited their use of electronic tools to the analysis and policy creation phases of the planning process but I think there is a future opportunity to explore how these tools might enable public participation in more phases of the urban planning process. I focus my research on how these tools were used in Toronto, but assessing these tools would be even better in

other contexts such as other Canadian or international cities. I believe that participation

has improved as the urban planning discipline has evolved but my research shows that

there are still gaps within the field.

Literature Review

Introduction

My interest in public participation in urban planning began with a desire to

understand the relationship between communities and their built environment. Through

my studies, I have strived to understand how communities could affect the built

environment that they live in and how their built environment affects communities. This

desire naturally brought me to the area of public participation in planning. I studied the

changes to how planners approached the public's involvement in the planning process

to gain a better understanding of why barriers to public participation continue to exist. In

this section, I address how urban planning has evolved from a discipline where the

decision-making power was held by a small group of people considered experts in the

field to a discipline that takes an active role in encouraging public participation. I

address the perspective and purpose of participation including whether participation is

always an inherent and unlimited good. I cover how electronic participation tools fill the

gaps and overcome barriers in the traditional public participation process. Finally, I

compare literature on how public participation is being integrated in urban planning

projects in various cities. All of the projects that I evaluated were from Toronto, but this

comparison to projects in other cities will contextualize the different approaches to urban planning.

Urban Planning and Participation

In this section, I outline how the approaching to the public's involvement in planning as changed as the role of the planner has been questioned and critiqued. I do so by contextualizing the transition from the view that the planner was external to the planning process to the perspective that planners take on the role as advocates for the public. This overview of the evolution of public participation in planning provides the context for the further discussion of the gaps and barrier in public participation in the planning process.

Early approaches to urban planning were top-down with the decision making power being focused either on a small group of people or an individual, which further entrenched the hegemony of these decision-makers. Lane (2005, p. 289) describes the science-based, technocratic approach of blueprint planning as assuming "science to be all-seeing and the planner omnipotent". This omniscient, omnipotent perspective was reflected in the development of a comprehensive master plan without the consultation of people who would be directly affected by the implementation of that plan. Since then, the view that the planner is external to the planning process has been critiqued and with

that came the question of what role the planner should take. One of the preeminent thinkers within early urban planning to approach public participation was Patrick Geddes who focused on the civic survey. The civic survey was an exercise to account for and record all the aspects that made up the existing town including the physical characteristics such as topography, vegetation and wildlife, the means of communications and transport, the existing industries and economy, the population, and the existing built form (Welter and Whyte 2002, p. 110). Part of the survey of the population was for the planner to walk through the community and observe and interview the residents. This was the only public participation in the planning process in this blueprint approach to planning. The public's participation was given equal weight to the physical characteristics of the landscape. I believe that the scientific, technocratic approach to planning was perceived at the time as a more fair approach to planning because the intent was to not let the bias of the planner dictate the development of a space. It did not ultimately function as an unbiased practice. This perspective of the limited involvement in the planning process was maintained until consulting the public became a legislated part of the planning process.

The formalization of planning into law and the explicit legislation of public consultation was intended to mandate that members of the public affected by a plan be consulted; what instead occurred was the engagement of only the people who understood the legal process and alienation of people without the legal knowledge to take part in the planning process. In the United States, the passing of *The Standard*

Zoning Enabling Act (1926) and *The Comprehensive Planning Enabling Act* (1928) created planning commissions and required official plans by municipalities and these two pieces of legislation defined the importance of public participation in the planning process while setting the minimum expectations for that participation (Lane 2005). The Standard Zoning Enabling Act outlined that "no such regulation, restriction, or boundary shall become effective until after a public hearing in relation thereto, at which parties in interest and citizens shall have an opportunity to be heard" (United States Department of Commerce 1926). This legislation helped frame the acknowledgement of the impact urban planning can have on the freedom of individuals and it formalized the necessity for the public to have an opportunity to share their opinion and for their opinion to be heard. This approach was limited by the assumption that consulting those individuals affected by a planning decision was sufficient to reflect the views of the public at large. The underlying perspective was that there was a unitary public interest that could be sampled. However, the concept of unitary public interest assumes a homogenous population, which in practice is the prioritization of views of the dominant culture (Keirnan 1983, p. 77). The result is that public participation practices predicated on this assumption further entrench the dominant group and alienate marginalized populations from the planning process.

Early attempts to moderate the hegemonic systems created through the formalization of urban planning emphasized mutual learning through the planning process. Transactive planning was formed in response to the unitary public interest as it focuses on mutual learning, communication and an ongoing dialogue (Kinyashi 2006,

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p.8). This was a departure from the technocratic approach to planning, as it is predicated on an interactive process between planners and the public rather than the top-down approach. Davidoff viewed that "appropriate planning action cannot be prescribed from a position of value neutrality, for prescriptions are bused on desired objectives (1965 p. 423). This position that planners were not a neutral external actor in the planning process is what preempted the role of the planner as an educator and an advocate. While planners were expected to educate the public on the principles of planning through the public participation process, the concept of mutual education implies that the planners are also learning from the members of the public through the open dialogue and sharing of information. Mutual education is also seen as a way to break down systemic barriers to the public's involvement in the planning process (Friedmann and Hudson 1974, p. 7). By contrast, I believe sharing of information aims to build mutual trust and to emphasize planning on a smaller, more local scale. This sharing of information decentralizes the planning process and redistributes some of the power back to the general public. The beginning of the redistribution of power becomes the catalyst for advocacy planning.

Transactive planning, advocacy planning, bargaining planning, and communicative planning all view participation as the redistribution of who holds the knowledge of the planning and decision-making processes. Advocacy planning sees the redistribution of who holds the knowledge as a redistribution of power and that redistribution of power as being the ultimate goal of participation. Advocacy planning became prominent in the 1960s at the same as the civil rights movement in the United

States, and it took on similar principles of promoting equity. The bargaining power of different groups, the access to the system and underrepresentation of specific groups are some of the inequities identified in the planning system (Mazziotti 1974). Participation is the hallmark of advocacy planning as participation is seen as a fundamental objective, rather than an instrumental planning technique. In advocacy planning, planners must consider the perspective of the public and amplify the perspectives of those who are not currently represented in the decision-making process. One alternative to advocacy planning is bargaining planning, which sees the public participating in the planning process through their elected officials and representative community groups (Lane 2005, p.295). Another alternative is communicative planning which is described by Patsy Healey as focusing on planning with "inter-subjective" communication (1992, p.150). Communicative planning also strives to push public involvement in the planning process beyond the surface level of consultation. It aims to have the public take an active role in the decision-making process as a form of deliberative democracy. Deliberative democracy is defined by Bohman and Rehg as (1999, p. ix): "the idea that legitimate lawmaking issues from the public deliberation of citizens ... it presents an ideal of political autonomy based on the practical reasoning of citizens." Arnstein also approaches planning as a form of deliberative democracy but focuses on how power is distributed to those who are not directly involved in the political and economic systems (1969, p. 216). Arnstein's defined participation as "citizen participation is a categorical term for citizen power. It is the redistribution of power that enables the have-not citizens, presently excluded from the political and economic

processes, to be deliberately included in the future" (1969, p. 216) and this definition is

still used as a foundational explanation in the evolving definition of participation. I see

understanding the distribution of decision-making power as foundational in evaluating

participation within planning projects. Understanding how public participation in planning

has developed provides context for the purpose of public participation.

The Purposes of Participation

   The purpose of public participation in planning is to engage the public in

collaboration in the decision-making process through ongoing dialogue and the sharing

of knowledge. Innes and Booher identified a common purpose for participation as

enabling decision-makers to understand the public's opinions and preferences (2004, p.

423). This definition is reminiscent of the blueprint planning approach and Geddes's

civic survey. This approach to public participation also differs from Arnstein's approach

as it maintains the power of the decision-makers. Other purposes for participation

described by Innes and Booher are to gain local knowledge from the residents, gain

legitimacy for public decisions, and to incorporate principles of fairness and justice

through legislative means (2004, p. 423). Understanding the purpose of participation is

essential for evaluating how participation methods achieve that purpose and to define

what is effective participation. Innes and Booher describe effective participation as

involving collaboration, dialogue, and interaction (2004, p. 422). While the evaluation

methods used in my research are not directly defining the effectiveness of the

participation in the urban planning projects, meaningful participation depends on the

level of participation achieved. If a participation process involves meaningful

collaboration, an open and ongoing dialogue between the participants and organizers,

and interaction amongst members, then I believe that the process will reach higher

levels of effective participation.

Participation in Planning - A Contested Concept

Diane Day explains how planning is inherently a "bureaucratic activity with an

emphasis on technical expertise and impartiality" while also being a "democratic, social

and political system" (1997, p. 421). I do believe that this dichotomy exists within the

planning discipline and that this is a source of tension between different approaches to

urban planning. A common perception of participation is that it is inherently good and

virtuous (Day 1997, p. 424). Day outlines the rationales supporting the view that

participation is inherently good including: it educates those who participate in it, it builds

consensus through collective decision making, it creates more responsive

representatives and administration, it decentralizes the bureaucracy, it redistributes

power to those alienated from the decision-making process, and it creates better plans

through incorporating local knowledge. I do see these beneficial aspects of the public's

participation in urban planning projects, but that does not mean that the benefits of

participation are unlimited.

Day also addresses the negative aspects of participation, including: more conflict rather than consensus building with more people involved, knowledge gaps between experts and laypeople, overrepresentation of one group's opinion if the people participating are not reflective of the overall population, and the likelihood for people to engage in opposition to a plan rather than support (Day 1997, p. 425). One of the major concerns with participation is that if the public does not feel as though their concerns are being considered and that they are able to have influence over the end result, they will resent the participation process in general and feel apathy towards future involvement. I see this potential apathy as the greatest risk to public participation. My recommendation for avoiding poor participation strategies and ultimately public apathy is to continually evaluate public participation strategies to address gaps and areas for improvement. In the methods section, I will address how these evaluations can take form.

Who Participates

Whether a public participation process is effective and meaningful is dependent on who is involved in the process. There are multiple different groups of people who participate in urban planning projects, but the important factor is that they are reflective of the demographics of the area affected. A major section of public participation literature discusses who constitutes "the public" and who should be engaged in the decision-making process in urban planning projects. Many of the earlier writers on

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public participation described the public as citizens (Day 1997). This concept of the public as citizen comes from political engagement and is not sufficient to urban planning as there is an implied immigration status requirement. Innes and Booher explain how various groups including residents, interest groups and organizations, planners and public administrators should all be involved in the consultation process (2004, p. 422). This emphasis on multiple groups interacting with one another in the planning process is what differentiates Day's approach of two-way discussions between citizens and the government from Innes and Booher's multi-way discussion approach. In the framework created by Tambouris, Liotas and Tarabanis there are multiple different users of the participation tools outlined including expert administrators, elected representatives, professional stakeholders, lay stakeholders, randomly selected recruits, non-randomly selected recruits, and self-selected participants (2007). This range reflects the approach taken by Innes and Booher and I think it is a more accurate representation of the different groups involved in urban planning projects. Tambouris, Liotas and Tarabanis acknowledge that the group most commonly involved in the participation process are self-selected participants and that this group trends wealthier and more educated than the general population (2007, p. 7). I consider this skewed, self-selecting sample an important problem in current public participation processes.

Levels of Participation

The levels of participation are a measure of the public's active involvement in the planning process and the amount of power the public has in the decision-making.

Arnstein's ladder of participation is considered the foundation for the various levels of participation and is often referred to as the beginning of defining participation by category (Tritter and McCallum 2006). Arnstein outlines the various levels of participation as manipulation, therapy, informing, consultation, placation, partnership, delegated power, and citizen control (1969, p. 217). These levels of participation are further grouped into non-participation, degrees of tokenism, and degrees of citizen power (See Appendix 1). Tritter and McCallum critique Arnstein's emphasis on power as they feel it does not take into consideration the knowledge gaps of participants (2006, p.156). Tambouris, Liotas and Tarabanis incorporated this critique in developing their own levels of participation in their framework, adding an "Informing" level of participation (See Appendix 2). Tambouris, Liotas and Tarabanis adapt their categorization of levels of participation from the core values outlined by the International Association of Public Participation.

The International Association of Public Participation (IAP2) is a multidisciplinary group focused on studying and promoting public participation techniques for governments, individuals and institutions (IAP2 2019). The IAP2 has developed a set of core values for public participation. These core values are:

Public participation is based on the belief that those who are affected by a decision have a right to be involved in the decision-making process.

Public participation includes the promise that the public's contribution will influence the decision.

Public participation promotes sustainable decisions by recognizing and communicating the needs and interests of all participants, including decision-makers.

Public participation seeks out and facilitates the involvement of those potentially
    affected by or interested in a decision.

Public participation seeks input from participants in designing how they
    participate.

Public participation provides participants with the information they need to
    participate in a meaningful way.

Public participation communicates to participants how their input affected the
    decision (International Association of Public Participation 2019).

Given that the IAP2 is a multidisciplinary organization these values are not specific to

public participation in urban planning, and instead they are applicable to the broader

policy development process. These core values can guide how and why governments

and institutions incorporate public participation in the planning process. In my research,

I use these core values to understand if the public participation process that I was

evaluating was fulfilling the main intention of public participation. The belief that those

who are affected by a policy or plan have the right to be involved in the process is a key

concept in public participation theory and this right is essential to a democratic approach

to planning (Day 1997, p. 421). The right to be involved in the decision-making process

extends beyond being simply informed of the planning process. IAP2 uses a spectrum

of public participation to define how the public is involved in the creation of a plan or

policy. The spectrum ranges from Inform to Empower (see Appendix 2). Inform is

defined as "provid[ing] the public with balanced and objective information to assist them

in understanding the problem, alternatives, opportunities and/or solutions", while

Empower is defined as "to place final decision making in the hands of the public" (International Association for Public Participation 2018).

Tambouris, Liotas and Tarabanis adapted the IAP2 levels of participation to focus on electronic participation. The five levels of electronic participation are E-Informing, E-Consulting, E-Involving, E-Collaborating, and E-Empowerment (2007, p.6). These participation levels are what I use when evaluating the participation process in Toronto's urban planning projects. Although I am not aiming to directly measure whether participation in the urban planning projects that I am evaluating is meaningful, I believe that the level of participation that is reached through the process does dictate if a public participation process is meaningful. I also believe that the extent to which the process meets the core values outlined by IAP2 is also an indicator of how meaningful the participation process can be.

Electronic Participation Tools and Online Participation

The main purpose of integrating online participation and electronic participation tools is to close the access barriers created by time and distance. Electronic participation comes from e-democracy which Macintosh (2004) defines as "using information and communication technologies to engage the public in the decision-making process and strengthen representative democracy" (p. 2). Macintosh specifically references internet-enabled technologies as essential to e-democracy. Macintosh then breaks this concept of e-democracy down into e-voting and

e-participation. In my evaluation of urban planning projects, I am focused on e-participation as urban planning projects in Canada generally and Toronto specifically are not voted on by the public.

Barriers to participation are often related to time and distance. Those with more time and who have fewer spatial barriers are more likely to get involved. Information and communication technologies (ICT) work to close the spatial and temporal gaps for individual accessibility (Kwan & Weber 2003, p. 350). The timing and format of traditional participation activities have often been seen as a barrier to increased public engagement (Conroy & Evans-Cowley 2006, p. 371). In my experience in planning the spatial barriers are not limited to distance, but generally to access. A public participation activity such as an open house may be relatively close to one's home, but if there is poor public transit in the area there is a spatial barrier for those who rely exclusively on public transit. It is because of these inefficiencies in traditional planning that planners have tried to find alternatives to engage more members of the public. Planners see electronic participation tools a resource to fill the gaps created by barriers to access.

Another reason for the integration of technology into the planning process is to provide easy access to the breadth of information associated with a planning project. Torben Larsen outlines how information is being created and shared at a fast pace and how ICT allows for the public to access the relevant information in an organized format (2003, p. 1). I see this breadth of access to information as the key way that electronic participation tools can be used to share the knowledge of the planning process and essential to a democratic approach to planning.

How Electronic Participation Tools are Used

The public's involvement can be limited or made easier depending on which participation tools are used in the planning process—and not all tools serve the same functions. Electronic participation tools can be used to convey information in a variety of different formats including visualization software, Geographical Information Systems (GIS), and online survey tools. Kubicek (2007) outlines five main points for how participation tools are used including the first point that e-participation tools come in a variety of forms and that different tools are applicable to different stages in the policy-making process. The other points are that tools that allow for user-generated content have taken many different forms as electronic tools have developed and evolved, but that these tools are particularly important in electronic participation as they allow for the public to provide their own ideas and apply their own knowledge. Kubiecek's third point is that consultation tools are frequently used in electronic participation, although they do not allow for deliberation, they do allow for a simple comparison between user's responses. The fourth point is that electronic participation tools can be used to monitor the progress of a plan and can increase the transparency of the planning process. The final point Kubicek makes about participation tools is regarding e-petitions and referenda (2007, p. 12). E-petitions are often used by community groups as a way to garner support or show opposition to a planning project rather than a tool used by those who are facilitating the planning process directly. How

the public is able to participate and subsequently which level of participation is achieved is determined by the limits or benefit of electronic participation tools used. In my evaluation of the planning projects, I consider how these benefits and limitations were created by how the electronic participation tools were integrated into the process.

Examples of Participation Tools and Urban Planning

As more cities integrate electronic participation tools into their planning processes, there will be new approaches to integration. Evaluating these new approaches will allow for a better understanding of the benefits and limitations of electronic participation tools. In urban planning contexts, electronic participation tools are particularly helpful as spatial information can be made more accessible. Conroy and Evans-Cowley describe how Geographical Information Systems (GIS) are used to share visual representations of proposed land-use patterns to foster discussion (2006, p. 372). Additional electronic participation tools allow users to discuss the information presented using GIS tools. Conroy and Evans-Cowley (2006) completed an evaluation of how 588 municipalities in the United States incorporated electronic participation tools into their municipal government and urban planning processes. Their evaluation is considered one of the most comprehensive reviews of electronic participation and is one of the studies on which my research was based. Conroy and Evans-Cowley found that the majority of the municipalities evaluated used electronic participation tools to share information with the public in a one-way form of communication (p. 375). It is often the

case that municipalities begin with using electronic participation tools to inform the public of urban planning processes, and as the municipality becomes more familiar with electronic participation tools they begin to integrate the tools into further aspects of participation. As previously mentioned all of the municipalities evaluated by Conroy and Evans-Cowley were in the United States. Different countries have different approaches to urban planning and electronic participation.

Canada and the United States use different approaches to urban planning generally and more specifically the use of electronic participation tools in urban planning projects, according to Silverman (2006). The conclusion from Silverman's evaluation was that the Canadian public and local officials were more likely to push for public participation in urban planning projects compared to their American counterparts. Additionally, the Canadians used technology more widely to access their municipal governments (2006, p. 151). Although my research is limited to projects within Toronto, it is helpful to understand how Canadian approaches to electronic participation in urban planning projects compare to American approaches. A non-North American example of electronic participation tools in urban planning is Wei-Ju Huang's case study of Taipei City, Taiwan (2012). Huang found that Taipei used similar electronic participation tools to other cities such as GIS and thematic maps to display information (2012, p. 58). Understanding how electronic participation tools are being used in other cities provides insight into the trends of the use of electronic participation tools in urban planning generally.

Conclusion

Overall the adoption of electronic participation tools in urban planning projects is increasing and municipalities are finding new ways to engage the public in the urban planning process. As I examined here urban planning as a discipline has been seen a bureaucratic, technocratic, and exclusionary practice, while participation is currently viewed as inherently good and virtuous. Over time and through the critique of existing urban planning practices, the discipline has evolved to incorporate the public's opinions and redistributed some of the decision-making power. Electronic participation tools are new avenues for planners to engage with the public, but not all tools and not all public participation processes are created equal. As I discussed there are varying levels of participation and a variety of tools used in electronic participation. Electronic participation tools can bridge gaps in the public participation process, but planners must be mindful that the tools not be used to perpetuate exclusionary systems. To continue to address the barriers and gaps within the process, we must constantly be evaluating our methods. In the next section, I discuss the methods used in evaluating how urban planning projects in the City of Toronto use electronic participation tools.

Methods

Introduction

To evaluate how electronic participation tools are used in urban planning, I conducted research using mixed methodology made up of a sampling review and an application of an assessment framework. I chose Toronto, Ontario as the location for my review and specifically focused on projects that were ongoing at the time of study in Summer 2019 as the relevant information on the electronic tools was available online and therefore accessible to be reviewed.

Sampling Review

Through the sampling review, I identified the projects for evaluation. Sampling reviews involve the purposeful sampling of typical instances of the phenomena under study, in my case where electronic participation tools have been used in urban planning projects (Cook, Campbell and Shadish 2002, p. 23). Sampling reviews assist with identifying the size and scope of the target population (O'Sullivan, Rassel, and Berner 2016, p. 134 - 135). I conducted the preliminary search through the City of Toronto portal that includes all projects within Toronto that have public consultation opportunities. The list includes more than 34 projects. I then refined my research selection through a sampling review to projects that fit the defined parameters of my research. In the case of my research, the general population was active, ongoing

projects located within Toronto with online public consultations underway during my research period (Summer 2019). These projects were identified through two search mechanisms the primary search: through the City of Toronto's online public consultation portal "Get Involved", and a keyword search using the Google search engine. Keywords included: "planning", "development" and "community". The target population was specifically urban planning projects that were using online public consultations. The "Get Involved" public consultations portal is a dynamic list of current and past public consultation opportunities that are being facilitated by the City of Toronto. These opportunities are not limited to urban planning projects and include consultation on City of Toronto programmes and services such as the Toronto Public Libraries, the Biodiversity Strategy and the Pet-Friendly Design Guidelines (City of Toronto, 2019). The purpose of the portal is to provide an online access point for anyone who is interested in getting involved in the public participation process within the City of Toronto. The online access point allows for a broader distribution of information on upcoming public participation events. The online portal includes a short description of each project and contact information for the lead person on that project. If the project has an online component to the participation, a website link to the project website is included. On the project websites, more details about the projects are included including a history of the stages of the project and timeline and a consultation plan for the project. These consultation plans contain the key data regarding the intended use of the electronic participation tools for the project including the tool category used, the level of consultation and the technologies used.

Private urban planning projects that are being undertaken by groups other than

government agencies were found by doing a keyword search using the Google search

engine. I decided to include private urban planning projects because I wanted the

dataset to be reflective of the broad range of urban planning projects in Toronto and not

just the projects being planned by the City of Toronto. The keywords used to find the

private projects were "urban planning", "Toronto", "public consultation", and "plan".

These keywords produced results for the websites of urban planning projects located in

Toronto and I reviewed each project's website to determine if the project fits with the

original sampling criteria: of active, ongoing projects located within Toronto, that are

specifically urban planning projects, and have a public consultation component. The

private urban planning projects' websites are similar to those for the public urban

planning projects including information on the timeline of the project and the websites

often include a copy of the public consultation plan. The public consultation plan

outlines the goals of the public consultation for the project as well as the activities that

will be undertaken to achieve the goals. I also found that reports after public

consultation events were posted on the websites for the purpose of information and

transparency. These public consultation plans and reports are the main sources for

information used in the evaluation of both the public and private urban planning

projects.

Through the sampling review phase, I identified 18 projects for evaluation.

Seventeen of the projects evaluated were initiated by public organizations such as the

City of Toronto or Metrolinx and one was initiated by a private organization, Sidewalk

Labs. Of the 18 projects evaluated 14 were found using the "Get Involved" web portal

on the City of Toronto's website, while the other four were found through Google's

search engine. In the next section, I will outline the framework used to evaluate these

18 projects.

Assessment Framework

For the purpose of assessing the public participation process in the urban

planning projects, I have used the *Framework for Assessing eParticipation Projects and*

Tools created by Tambouris, Liotas and Tarabanis (2007). Their framework was created

to assess the use of eParticipation in the development of policy in the European Union. I

have adapted their assessment framework to support my assessment of the use of

electronic participation tools specific to urban planning projects.

Tambouris, Liotas and Tarabanis's framework aims to "categorize efficiently

eParticipation projects and tools in a simple and efficient manner" (2007, p.2). They do

this by evaluating the participation areas, categories of tools, and technologies used for

participation. Appendix 3 shows how the three layers of analysis integrate with one

another and relate to the overall concept of e-participation. Tambouris, Liotas and

Tarabanis (2007) developed their assessment process into two templates analyzing

participation projects and e-participation tools respectively (p.2). I have combined and

adapted their templates to tailor them to urban planning projects specifically.

The first section of the assessment framework that I adapted was the "Funded

Under" section. In the original assessment framework, all of the projects that were

assessed were part of various European Commission co-funded research projects, the "Funded Under" section is used to indicate which programmes within the European Commission provided funding for the projects. I changed this section to "Organization" and allowed for multiple entries. The purpose of this change is to identify the organizations that are involved in the development of the plan that is the subject of the consultation.

I also adapted the Participation Area by reducing the participation areas down to the six most relevant options: community building, participatory spatial planning, policy processes, consultation, deliberation, and information provision (Tambouris, Liotas and Tarabanis 2007, p. 3). My definitions for each of these participation areas are included in the glossary. These six participation areas either directly relate to the urban planning process, such as in the case of participatory spatial planning and community building, or they are relevant to the steps that are involved in urban planning indirectly, as with information provision, policy processes, consultation, and deliberation. The participation areas that are excluded from my adaptation, such as citizenship education, polling, voting, campaigning, electioneering, and cultural politics, are relevant to the political process but not the urban planning process. Additionally, participatory law-making, mediation, and citizen journalism participation areas are specific to their respective disciplines and are not involved in the formal urban planning process.

In my adaptation of the assessment framework, I retained the Methods Employed for Participation and the ICT Areas Used sections from the original framework, as they are relevant to understanding how electronic participation tools are used in urban

planning projects. The Methods Employed section included three options: traditional

methods only, ICT only, and mixed-use of traditional methods and ICT methods

(Tambouris, Liotas and Tarabanis. 2007, p. 5). The projects that I analyzed all

contained some ICT methods in the public consultation process, and I wanted to ensure

all three types of methods were represented in my assessment.

The participation tools included in the original assessment framework by

Tambouris, Liotas and Tarabanis (2007) were maintained in the adapted version of the

assessment framework that was used in this research. I did not make any changes to

the list of participation tools as the ones listed effectively represent participation tools

that are currently used. I included an option to "add other" participation tools to allow me

to include new tools that were not in use when the original framework was developed.

Including this open "add other" option for other participation tools allowed for the

freedom to include new tools without making an assumption as to what those new tools

would be.

To evaluate the projects I converted my framework into a Google Form following

Weikem et al. (2018) who also used a Google Form for simplified data entry and to

easily transfer the data to a Google Sheet (See Appendix 4). The Google Form I

created includes checkboxes, short answers and long answer question formats to

accurately record the data collected in the sampling review. The short answer text box

questions address the information that is unique for each project such as the project title

and the organizations involved in the project. The short answer question type has the

flexibility to accommodate the different organizations that are associated with all the

projects evaluated. The long answer question type was used for a notes section at the end of the data entry Google Form. This question type allowed for me to enter any additional information not covered in the assessment framework and was relevant to the understanding and evaluation of the project. The checkbox question type was the most used question type in the data entry Google Form because the checkboxes replicate the checkboxes from the original assessment framework most accurately and the checkboxes allow for multiple selections in the same category. This was especially helpful for the participation tool category as it allowed me to select multiple participation tools that were used in one project.

The Google Form for data entry organized the data into a Google Sheets spreadsheet automatically and it processed some of the preliminary results into charts. The charts produced automatically by the Google Form included counts of the various selections within each category: comparing how many times each participation tool was used, the number of times each participation area was involved in the total projects, the ICT areas used, the level of participation, the stage in the policy-making process and the type of participation tool. The automatically-generated charts enabled quick processing and visual analysis of the data. These comparison charts are used to understand and evaluate the data produced during the sampling review and the application of the assessment framework. Use of Google Docs and Forms made the analysis of data easier to work with and to visualize and I would recommend the software to others for similar research.

Although I had originally intended to interview organizers of public participation for each project, I did not have time. I would have liked to discuss my evaluation, questions, conclusions, and recommendations with people in the field and this would be a good avenue for future research.

Results

Overview of Projects

I analyzed a total of 18 active urban planning projects with the earliest project beginning in 2012. Table 1 below shows the 18 projects and the organizations leading the projects and appendix 5 shows further details of the projects. Fourteen of the projects were found on the City of Toronto's "Get Involved" web portal which had 34 total active projects. Of the 18 projects, 17 were led by the City of Toronto either independently or in partnership with other governmental organizations such as the Toronto Transit Commission or Metrolinx. The remaining project was led by Sidewalk Labs, a subsidiary of Alphabet Inc., in partnership with Waterfront Toronto. Waterfront Toronto is a corporation tasked with renewing Toronto's waterfront and it is funded by the City of Toronto, the Government of Ontario and the Government of Canada (Waterfront Toronto 2019).

Table 1 - List of Projects Evaluated

Project Name	Organization
Relief Line South	City of Toronto; TTC; Metrolinx
Six Points Interchange Reconfiguration	City of Toronto
Sidewalk Labs	Alphabet; Waterfront Toronto

Project Name	Organization
Unilever Precinct Planning Study	City of Toronto; Metrolinx; Toronto Transit Commission
Laird in Focus Planning Study	City of Toronto
ConsumerNext Open House	City of Toronto
Second Units - Draft Official Plan Amendment	City of Toronto
Golden Mile Secondary Plan Study	City of Toronto
Future Park at 60 Howard Park	City of Toronto
Zoning for Secondary Suites	City of Toronto
Official Plan Review:Public Realm and Built Form policies	City of Toronto
City and TTC Transit Review	City of Toronto; Toronto Transit Commission; Province of Ontario
King-Parliament Secondary Plan Review	City of Toronto
Sherway Area Study Draft Secondary Plan	City of Toronto
Keele Finch Plus	City of Toronto; Metrolinx; Toronto Transit Commission
Relief Line North	City of Toronto; Metrolinx; TTC
Eglinton Crosstown	Metrolinx
Eglinton East	City of Toronto; Toronto Transit Commission
Project Name	Organization

Participation Area

My framework for analysis drew upon the participation areas as defined by Tambouris, Liotas and Tarabanis (2007, p. 3) as " the specific area or areas of citizen engagement and involvement in the democratic process". In my evaluation of the urban planning projects all but one fit within the Participatory Spatial Planning participation area see Figure 1. There were two projects that qualified as both Community Building and Participatory Spatial Planning and these were the Eglinton Crosstown and Sidewalk Toronto. While the Eglinton Crosstown project is primarily a Participatory Spatial Planning project because it is a land-use project for the development of a light rail transit system, the project also has a public art program associated with the development of the rail stations (Metrolinx 2019) which qualifies as community building. Sidewalk Toronto is a land-use development project on Toronto's waterfront. It too is primarily a Participatory Spatial Planning project, but it has developed online communities associated with supporting and opposing the project (Toronto Star 2019; Block Sidewalk 2019) which again fits the criteria of community planning.

The City and TTC Transit Review was unique as the only project that exclusively involved the Policy Process participation area and did not include a Participatory Spatial Planning component. The objective of the City and TTC Transit Review was to review the transit responsibilities after the Province introduced Bill 107 - *Get Ontario Moving*

Act (City of Toronto 2019). The remaining projects were exclusively within the

Participation Area of Participatory Spatial Planning.
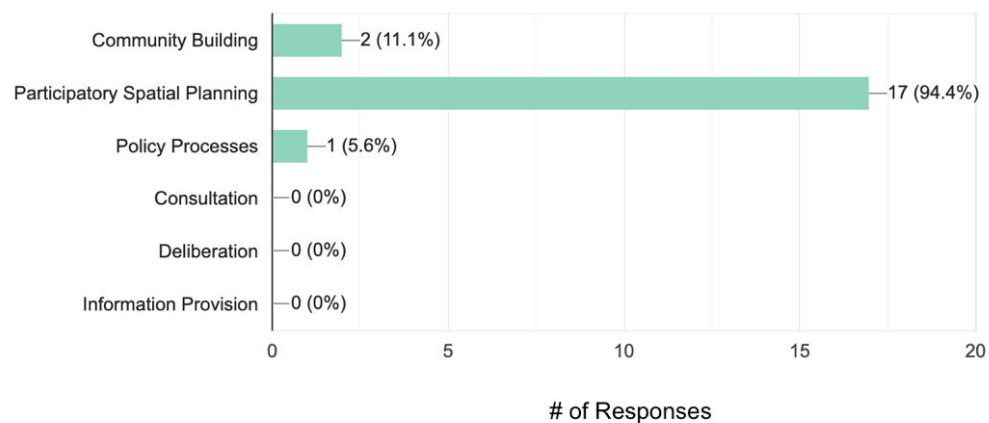
Participation Area

Figure 1 *Participation Areas Evaluated*

Methods Employed for Participation

The three options for methods employed for participation were traditional

methods (non-online methods) only, ICT methods only and a combination of traditional

and ICT methods. All but one of the projects used a combination of traditional and ICT

methods. The one project that varied from the rest was the ConsumerNext Open

House. The ConsumerNext Open House is a review of the proposed Secondary Plan

for ConsumerNext which is focused on improving the Consumers Road Business Park

and the area around Sheppard and Victoria Park Avenues (City of Toronto 2019). The

ConsumerNext project page is an extension of the Get Involved webpage and

presented the summary documents for the participation events. There was no way to

interact with the participation process online and it is for this reason that the

participation process was not a combination of both ICT and traditional participation

methods.

ICT Area, Tool Category, and Technologies Used

Of the seven ICT Areas considered in the assessment, only five of the ICT Areas

were found to be applicable to the projects being assessed. The five areas that were

used were social informatics, knowledge management, citizen relationship

management, geographical information systems, and visualization. Knowledge

management was the primary ICT Area employed by the projects and 16 of the total 18

projects used some form of knowledge management (See Figure 2). Some of the

projects used a combination of ICT areas. As an example, the Second Units - Draft

Official Plan Amendment used as a combination of knowledge management and

citizenship relationship management. The consultation process for the Second Units -

Draft Official Plan Amendment included open houses, an online survey, email

submissions, and round table sessions with advocates, tenants, housing providers.

Citizen relationship management was used to manage the communication between the

stakeholders included in the round tables and residents who participated in the online

survey (City of Toronto and LURA 2019). Within the knowledge management area, file

sharing and email were the most commonly used technologies. Figure 3 - Technology

Category shows that overall file sharing and emails were the most frequently used

technologies. Sixteen of the projects used file sharing and 11 of them used emails. The

greatest variation between projects was with the tool category used. Of the 18 tool

categories, the projects assessed used 14 different tools. Mailing lists/ Newgroups was

the most commonly used tool category with 11 of the assessed projects using some

form of mailing list or newsgroup (See Figure 4). Webblogs were used in 10 of the

projects and WebPortals were used 9 of the projects. Finally, online survey tools were
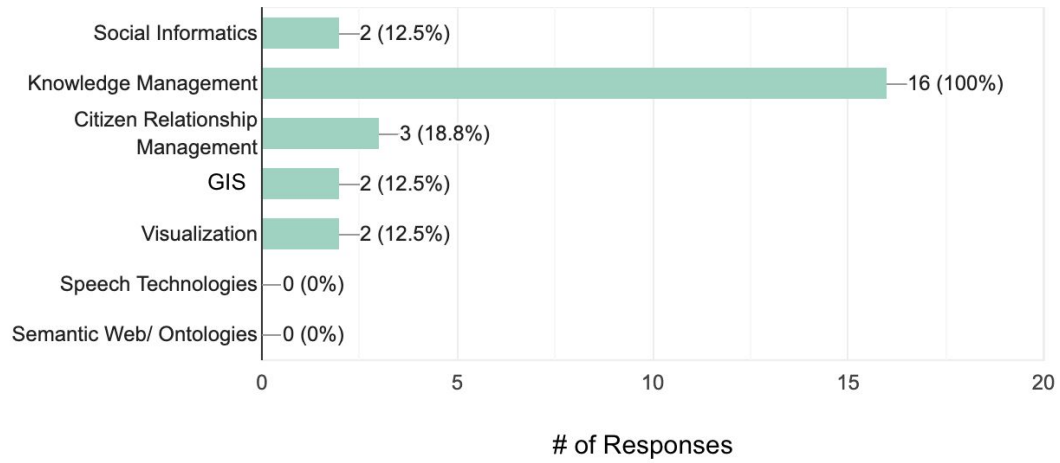
used in 6 of the projects assessed.

ICT Areas Used

Figure 2 *Information and Communication Technology (ICT) Areas Evaluated*

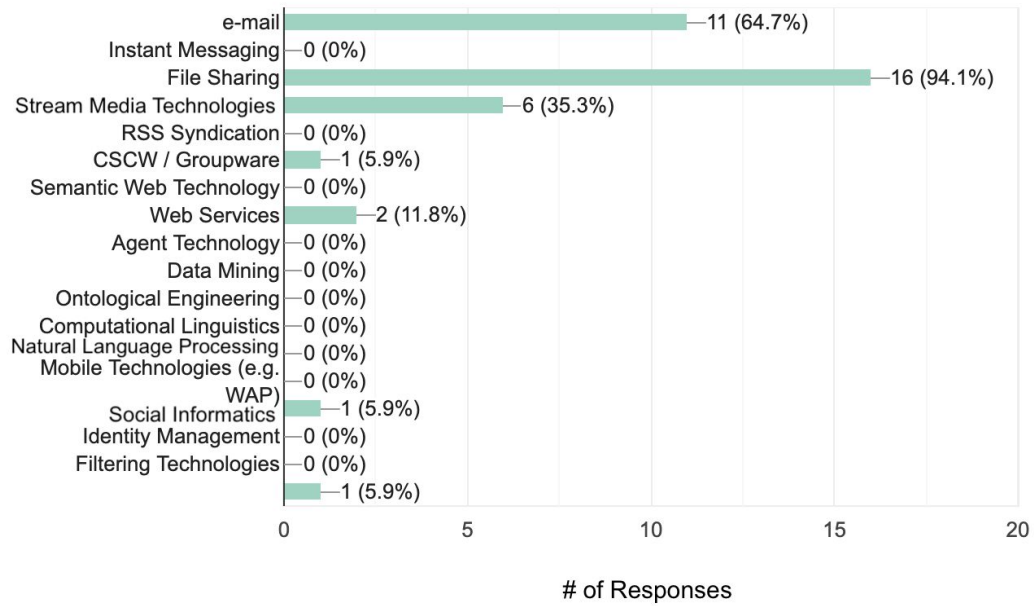## Technology Category Used

Figure 3 *Technology Category Evaluated*

Tool Category
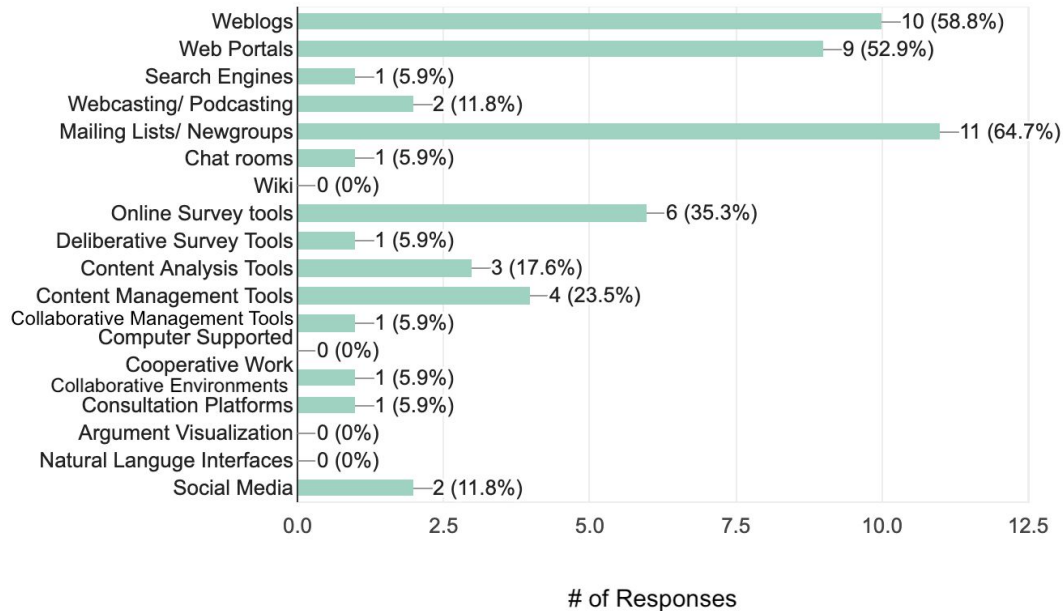
Figure 4 *Tool Category Evaluated*

Participants

In all 18 projects, the users of the participation tools were primarily self-selected

participants. Six of the assessed projects included professional stakeholders in the

consultation process. As an example, the City and TTC Transit Review was one of the

projects that included professional stakeholders in its consultation process through the

creation of an expert advisory panel of advisors. These advisors consisted of academics

in the areas of public policy, urban planning, geography, and transportation, heads of

non-profits, public servants, consultants, and urban planners (City of Toronto 2019).

User of the Tool
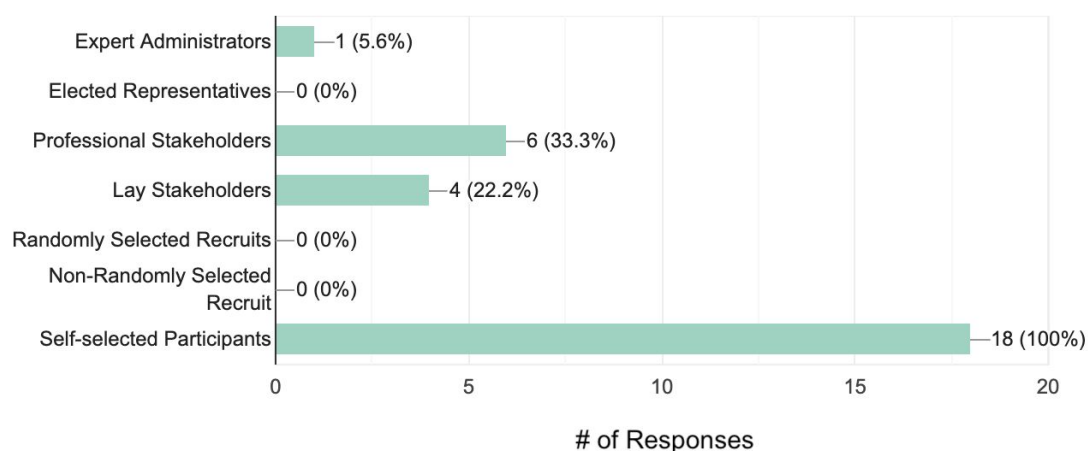
Figure 5 *Participants in the Public Consultations*

Stage of Policy Process

Participation primarily occurred either during the analysis or policy creation

stages of the policymaking process (See Figure 6). Of the 18 projects 13 incorporated

consultation in the analysis stage of the policymaking process. This participation in

analysis took the form of feedback on identified problems and proposed plans.

Consultation in the policy creation process happened in 12 of the 18 projects evaluated.

Stage in the Policy Making Process
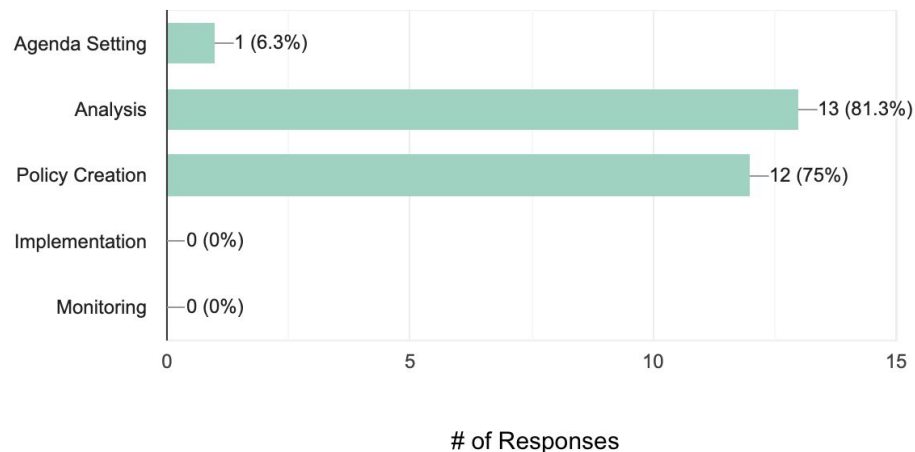
Figure 6 *Stage in the Policy Making Process*

Of the 17 projects that used electronic participation tools as part of the

consultation process, only 7 projects went beyond the e-inform participation level (See

Figure 7). This means the 7 of the evaluated projects involved a two-way exchange of

information between the participants and the decision-makers in the planning process.

Three projects reached the e-involve level of participation and two projects went beyond

the e-involve level of participation to reach the e-collaborate level of participation. None

of the projects assessed met the criteria for the e-empower level of participation which

is defined by the decision making power to be in the hands of the public (Tambouris,

Liotas and Tarabanis. 2007, p. 7).

Level of Participation

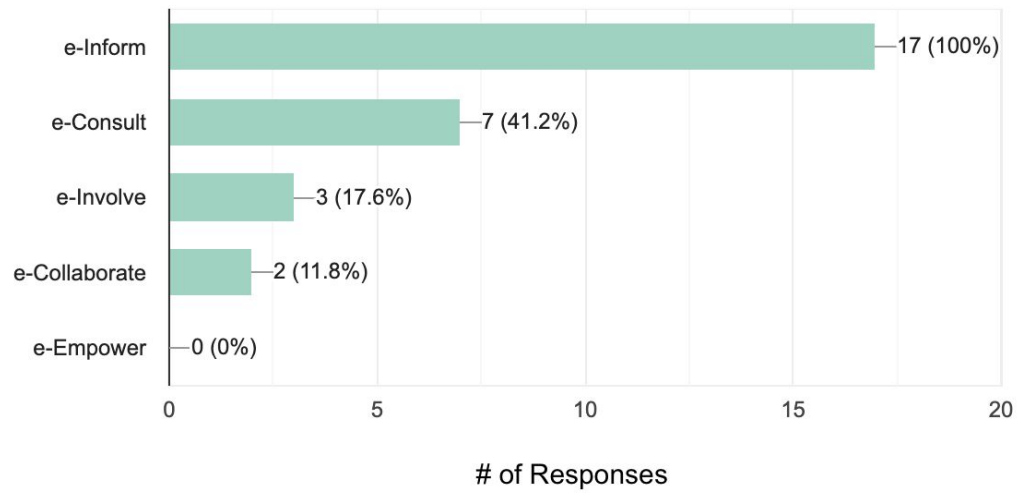**Figure 7** *Level of Participation Achieved*

Discussion

Participants

The knowledge developed in the public participation process is only as comprehensive as the breadth of the people engaged in that process. Limitations in the scope of those who are involved in the participation process cannot be augmented by using electronic participation tools. As noted, the primary users of the participation tools in all of the 18 projects were primarily self-selected. This is an important caution for policy makers when deciding upon participation tools and relying on the results of the process to inform their decision making. As mentioned previously self-selected participants as a group are often not reflective of the population at large. Those who participated represent a narrow group of the 'public' specifically those who are capable of using the tools, have an interest in the consultation process and are willing to give the time to use the tools. I believe that all who wish to participate should be able to, although there needs to be steps taken to make sure those who are not currently represented in the participation process are invited to take part. This can be done by including more non-randomly selected recruits who are part of underrepresented demographics. Some projects did bring in external experts as a way in which to broaden the expertise that was informing the policy process. This can be a valuable input into the process but does not replace or represent broader public input. Through my evaluation

of the projects, it is clear that a concerted effort on the part of the planners must be taken in recruiting participants whether it be experts, stakeholders, or lay people to get a broad perspective on the planning process. Electronic participation tools build on the knowledge of the participants who are using them and cannot make up for the narrow scope of that knowledge.

Stages of the Policy Process

As a result of my assessment, I observed that participation was primarily confined to two stages in the policymaking process specifically the analysis and policy creation stages (see Figure 6). By contrast, the public was not consulted at the beginning of the process during the agenda-setting stage, and they are not involved in the latter and ongoing stages of implementation and monitoring respectively. The consequence of not involving the public in the agenda-setting stage meant that they are limited in being able to define the scope of the consultation and the process of planning for the consultation. How the public would be consulted and what they would be consulted on would be decided by the planners. Thus it allows for participation but not empowerment for the public. For the public consultation to meet the criteria for the empower level of participation, the public would have to be involved in the decision-making around how the consultation process would occur.

Similarly, by not using participation tools during the implementation of the project, the public is limited in their ability to be involved in the final decisions around a project.

In all of the assessed projects, the final decision making was exclusively within the purview of the organization. The result was that though the public was able to provide feedback to those leading the project and that they were able to have a conversation about the key themes and concerns, but the public was excluded from the final process of approval of the plan. Again, the conclusion is that these projects, while enabling public participation in the projects, stopped short of supporting public empowerment.

The final stage of the policy creation process is the ongoing monitoring that provides the critical feedback loop to enable project leads to adjust the project as needed through the implementation process. For the public to be engaged in this stage of the policy process there must be ongoing access to the participation tools. However, for the projects assessed the online engagement tools are not available once the consultation report has been completed. None of the consultation reports addressed consultation in the ongoing monitoring of the project. This is a significant oversight and it can lead to implementation failure. By failing to provide an ongoing process of public participation, decision-makers lose access to critical information regarding how the implementation of the project is unfolding. Further, as noted, even the most perfect planning alters when it goes through implementation, and the ongoing public feedback is imperative to ensure that the project implementation remains in line with the public expectations around the project.

The fact that all 18 projects assessed only used public participation tools in two stages of the policy making process reveals the limited scope of the consultation efforts and the overall participation of the public in the planning process. Public participation tools such as ICT tools have the capacity to overcome some of the potential barriers to enable public participation in all stages of the policy process. For example, by keeping the tools open and online, the public has a portal through which to participate and provide ongoing feedback, in contrast to a meeting. In addition, by maintaining a consistent open presence online, the project expands the opportunity for a broader reach into the public who did not participate during the initial stages. The cost of maintaining an open online presence would be less than the time and resources required for the ongoing use of traditional participation tools such as town halls. My recommendations to City of Toronto staff and the staff of the partnered organizations would be to incorporate public participation in every stage of the planning process. This would allow the public to become involved in the decision of how the planning process will take form. It would also provide valuable feedback to support the implementation and monitoring process. Not only would a higher level of participation be achieved by empowering the public's involvement in all stages of the process but as noted, it creates the opportunity for more public engagement.

Superficial Level of Participation

As discussed in the previous section, the majority of the projects assessed involved the public in the most passive level of participation which is e-Inform. My observation is that while attempts to facilitate public participation were made, they were very limited. E-inform as a level of engagement involves primarily one-way exchange of information between the facilitator of the consultation process and the members of the public (Tambouris, Liotas and Tarabanis 2007, p. 7). It does not provide the public with an opportunity for feedback nor does it allow for the public to have capacity in the decision-making process. Mailing lists and weblogs were the most commonly used participation tools. They were also most frequently the *only* tools that were used in projects that achieved simply the e-inform level of participation.

For the projects that went beyond e-inform and involved the e-consult level of participation, the tools included online survey tools. Online survey tools allow for a two-way capacity of communication. However, that communication is still limited within the strictures of the survey process which by necessity require respondents to answer specific questions and leave only a small opportunity for general feedback. Further online survey tools do not allow an opportunity for an iterative or continued discussion between the public and the organizers of the project.

E-involve expands beyond the two-way pathway of information to include discussion between the organizer of the project and the public as it allows for the public's feedback to be taken into consideration (Tambouris, Liotas and Tarabanis

2007, p.7). The Eglinton East project was the only project to reach the e-involve level of participation but did not go further to the e-collaborate level. The Eglinton East project incorporated the use of content management tools which facilitated the opportunity for open-ended feedback, but the consultation in the Eglinton East project did not allow for alternatives to be suggested. What this means is that people were able to give unincumbered feedback, but they were not able to work collectively as a group to suggest alternative planning options.

E-collaborate is defined by the public being able to suggest alternative options and specify preferred solutions (Tambouris, Liotas and Tarabanis 2007, p.7). Only two of the projects evaluated met these criteria and those projects were the Relief Line South project and the Unilever Precinct project. Both of these two projects used a variety of participation tools such as web portals, content management tools and online survey tools. The Relief Line South project used nine different electronic participation tools in the participation process, which was the most of any of the projects. This variety of tool categories allowed for various forms of participation and for the public to take a more involved role in the planning process. My observation from the assessment is that a greater variety of avenues for participation allows for a more involved level of participation.

The Role of Social Media

Social Media is one tool category increasingly becoming an important tool in public participation in planning. The Relief Line South project, the Unilever Precinct, the

Sidewalk Labs project, and the City and TTC Transit Review project included social

media in their consultation plans. This use of social media included promoting the

project on social media platforms such as Twitter and Facebook, which was the case for

the City and TTC Transit Review (City of Toronto 2019). The Sidewalk Labs project

included webcasting consultation meetings online for the public's viewing and

participation in the form of online commenting (Sidewalk Toronto 2019). Social media is

a valuable tool in participation as there is a limited barrier to entry given that many

people already use these technologies. From my assessment, I conclude that social

media technologies will continue to be used public participation process and that their

use will increase as it has increased within the general population.

Operationalizing these results

My recommendations for taking these results and incorporating them in future

public consultations would be generally to expand the number of tools and techniques

used to engage the public in any one planning process. The results of this research is

that a wider variety of tools corresponds with a higher level of participation achieved. I

believe the reason for this is simply that a variety of tools provides a variety of ways for

the public to engage with the process. When planners are considering how to facilitate a

consultation plan they should be cognizant of how tools allow the public to engage.

Care should be taken to include a spectrum of tools that allow for one way and

multi-way pathways of communication, plus opportunities for providing alternative

solutions.

Incorporate social media as a lower barrier option for participation. Social media tools are able to be used to inform the public of a project, garner feedback and provide a platform for discussion. Social media tools are also able to be conduits for other tools such as online surveys, streaming technologies and visualization tools.

In order to operationalize these results and recommendations those who are facilitating the consultation process must strive to go beyond just informing the public of a project. The public's input must be included at the beginning with the agenda-setting stage and continued beyond the decision making stage to the monitoring stage. Opportunities for discussion and the option of alternate solutions must be created. The decision making power must be re-distributed to include the public.

Conclusion

Future Research

One area of future research related to the evaluation of electronic participation tools in urban planning projects would be to look at the demographics of who is using the electronic participation tools. It would be important to understand if the demographic of who is using the electronic participation tools is reflective of the demographics of the overall population of the city. One concern that I have with electronic participation tools and self-selected participants is that the electronic participation tools just provide more avenues for those who already have easy access to participate more readily. This would result in the opinions of the older, wealthy and more educated to continue to be prioritized. This gap of electronic participation tools that would need to be addressed before relying on electronic participation tools exclusively for the public consultation process of urban planning projects.

Another potential area of research would be to compare how Toronto uses electronic participation tools in urban planning projects to other cities in Canada such as Vancouver or Montreal, as well as to other cities in the world. This comparison would help to identify gaps in the way that Toronto uses electronic participation tools in urban planning projects, as well it could identify potential areas to improve the public participation processes in Toronto. This research could take a similar form to that of

Robert Silverman's (2006) research comparing the Niagara area of Canada to Buffalo, New York in the United States.

A third potential further research area related to this research would be how specifically social media tools are being used in public participation processes in urban planning projects. A few of the urban planning projects evaluated through my research specifically mention incorporating social media tools in their public participation process. With the growth of social media tools, it would be interesting to see how that is being integrated into the public participation process and potentially how it is influencing urban planning projects here in Toronto and elsewhere.

Summary

The results from this evaluation are that most e-participants were self-selected which tends to not be representative of the general population, the participation most frequently occurred in the middle stages of the planning process (analysis and policy creation), and the passive level of participation being e-Informing was the most common level of participation achieved. Overall the City of Toronto has taken a concerted effort to incorporate electronic participation tools in the public participation process for their urban planning projects. This begins with the Get Involved web-portal where all active public consultation events are posted. This is the first step to engaging the community

online and to encourage members of the community who have previously not engaged in urban planning projects to engage potentially in person. This first step of the Get Involved portal is a step torwards transparency and by providing a place where members of the public can see public consultations that are happening. Many of the projects evaluated went beyond the Get Involved portal to create their own web blogs or web portals as well as to incorporate mailing lists and newsgroups. These are tools used to further inform the public of the planning project. As previously explained most of the projects evaluated did not go beyond this passive approach to public participation in urban planning projects. This is a clear area of improvement that the City of Toronto and its associated urban planning projects would have to address to be considered as actively engaging the public in the urban planning projects. In order to achieve this, different tools would have to be used to engage the public such as visualization tools, GIS tools and online consultation tools.

Another way to engage the public in active participation would be to begin engaging the public at the beginning of the urban planning project. This would mean that the public would be involved at the agenda-setting stage to be able to have decision-making power on how the public consultations would be carried out. The public would then have to continue to be consulted through all stages of the urban planning process including the monitoring stage once the plan has been executed. It is also important to consider who is participating in these public consultations. In most of the projects assess the participants were self-selected and potentially not reflective of the overall demographics of the city. Further research that would need to take place on the

demographics of who is participating in public consultations using electronic

participation tools for planning projects.

Overall my adaptation of Tambouris, Liotas and Tarabanis (2007) assessment

tool for policy processes to urban planning projects allowed me to gain insight into the

similarities amongst projects and it allowed me to see potential gaps in how public

consultation is being formatted for urban planning projects within Toronto. This

assessment tool allowed me to take account of the current status of public consultation

for urban planning projects in Toronto. This account of the current status is important

information when compared to how public participation in urban planning has changed

and evolved. I anticipate that the discipline of urban planning will continue to evolve and

with it so will how electronic participation tools are used in the public consultation

process urban planning project. I see the evaluation of public participation in urban

planning project as an ongoing task in a way to achieve more effective and better

representation for the public. Taking a critical lens to our current practices is the only

way to improve and strive for public participation in urban planning to become more

equitable and fair.

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Appendices

Appendix 1 - Arnstein's Ladder

(Arnstein 1969, p. 217)
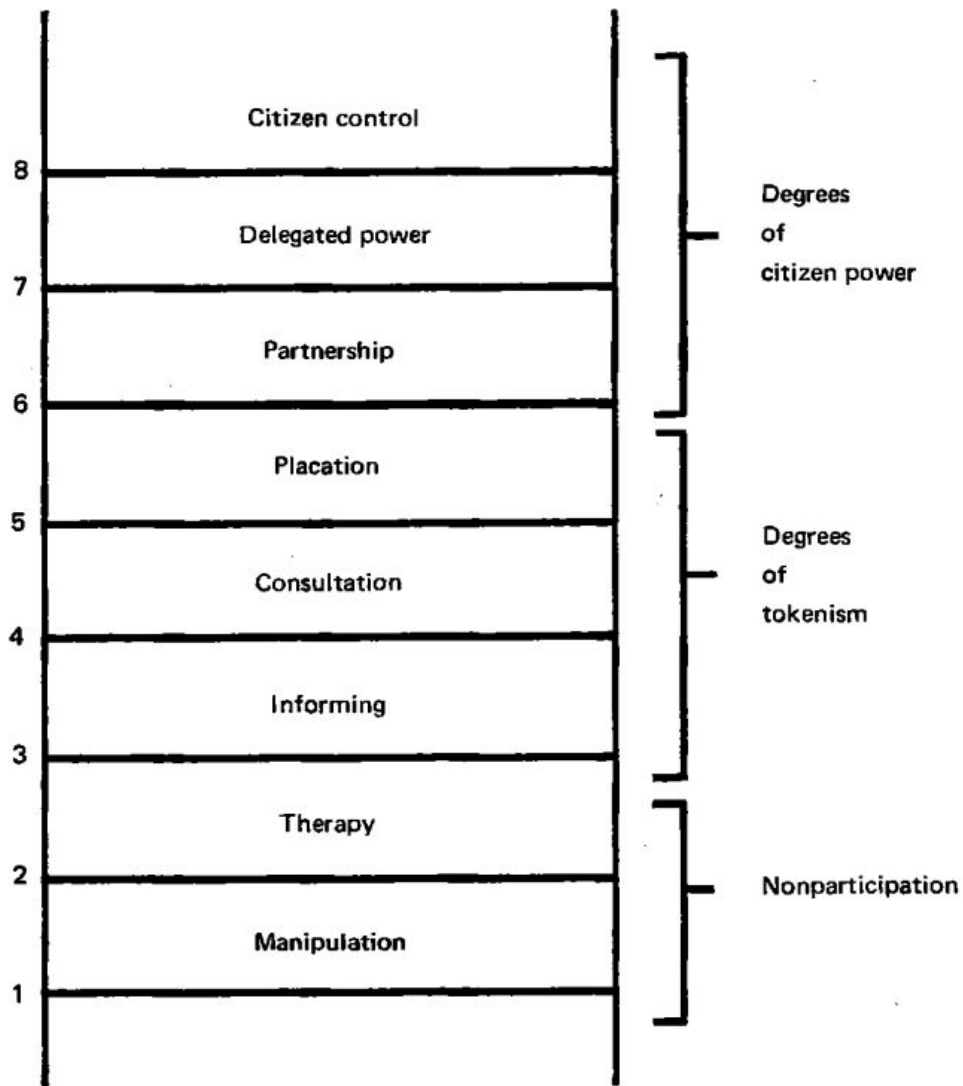
Appendix 2 - Spectrum of Participation

(International Association of Participation 2018)

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives and/or solutions.	To obtain public feedback on analysis, alternatives and/or decision.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision-making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

Appendix 3 - Three Layers of Analysis

(Tambouris, Liotas and Tarabanis 2007, p. 2)
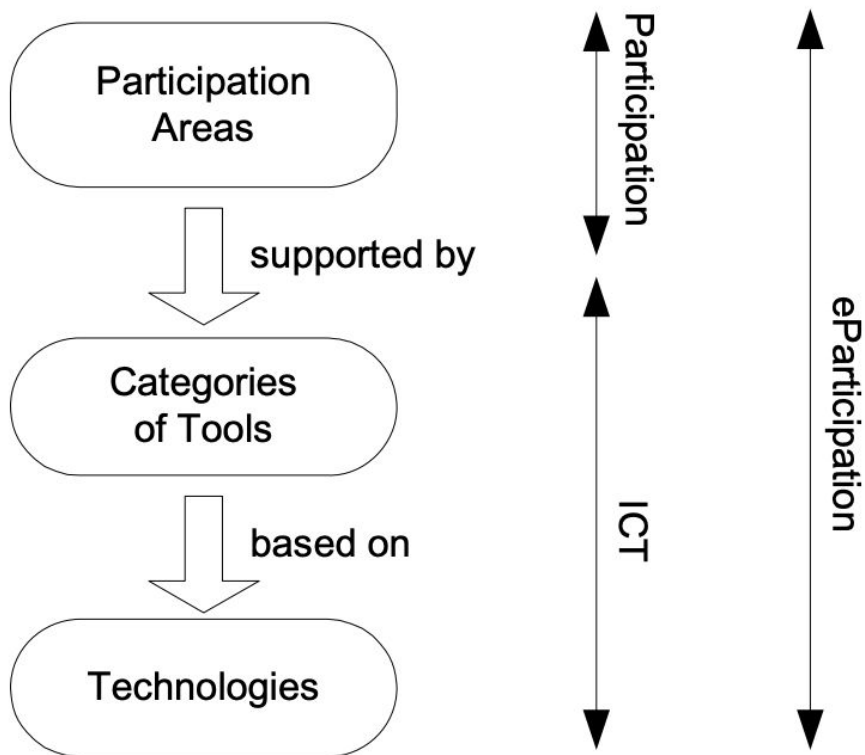
Appendix 4 - Adapted Assessment Framework

Participation Assessment

Project Name

Your answer

Organization

Your answer

Objective

Your answer

Start Date
Date

yyyy-mm-dd

End Date
Date

yyyy-mm-dd

Contact Information

Your answer

Participation Area

- ☐ Community Building
- ☐ Participatory Spatial Planning
- ☐ Policy Processes
- ☐ Consultation
- ☐ Deliberation
- ☐ Information Provision

Methods employed for Participation

- ○ Traditional Methods only
- ○ ICT only
- ○ Mixed use of traditional methods and ICT

ICT Areas Used

☐ Social Informatics

☐ Knowledge Management

☐ Citizen Relationship Management

☐ Geographical Information Systems

☐ Visualization

☐ Speech Technologies

☐ Semantic Web/ Ontologies

Tool Category

- [ ] Weblogs

- [ ] Web Portals

- [ ] Search Engines

- [ ] Webcasting/ Podcasting

- [ ] Mailing Lists/ Newgroups

- [ ] Chat rooms

- [ ] Wiki

- [ ] Online Survey tools

- [ ] Deliberative Survey Tools

- [ ] Content Analysis Tools

- [ ] Content Management Tools

- [ ] Collaborative Managment Tools

- [ ] Computer Supported Cooperative Work

- [ ] Collaborative Environments

- [ ] Consultation Platforms

- [ ] Argument Visualization

- [ ] Natural Languge Interfaces

- [ ] Other:

Level of Participation

- [ ] e-Inform
- [ ] e-Consult
- [ ] e-Involve
- [ ] e-Collaborate
- [ ] e-Empower

Stage in the Policy Making Process

- [ ] Agenda Setting
- [ ] Analysis
- [ ] Policy Creation
- [ ] Implementation
- [ ] Monitoring

Technology Category Used

- [ ] e-mail
- [ ] Instant Messaging
- [ ] File Sharing
- [ ] Streaming Media Technologies
- [ ] RSS Syndication
- [ ] CSCW / Groupware
- [ ] Semantic Web Technology
- [ ] Web Services
- [ ] Agent Technology
- [ ] Data Mining
- [ ] Ontological Engineering
- [ ] Computational Linguistics
- [ ] Natural Language Processing
- [ ] Mobile Technologies (e.g. WAP)
- [ ] Social Informatics
- [ ] Identity Management

- [ ] Filtering Technologies

- [ ] Other: _____

User of the Tool

- [ ] Expert Administrators

- [ ] Elected Representatives

- [ ] Professional Stakeholders

- [ ] Lay Stakeholders

- [ ] Randomly Selected Recruits

- [ ] Non-Randomly Selected Recruit

- [ ] Self-selected Participants

Notes

Your answer

SUBMIT

Never submit passwords through Google Forms.

Appendix 5 - List of Projects

This table is a portion of the results from the assessment tool shown above in appendix 4.

Project Name	Organization	Objective
Relief Line South	City of Toronto; TTC; Metrolinx	The proposed Relief Line South, a 7.5km long planned subway line with 8 stations, will connect the Yonge-University-Spadina Subway (Line 1) downtown to the Bloor-Danforth Subway (Line 2). The Relief Line South will help to relieve crowding on Line 1 south of Bloor, at the Bloor-Yonge Station, and on the surface transit routes coming in and out of downtown. (City of Toronto - Get involved 2019)
Six Points Interchange Reconfiguration	City of Toronto	Following more than 10 years of planning, consultation, engineering, and design, the City of Toronto will begin construction to reconfigure the Six Points intersection in March 2017. The reconfiguration supports the development of Etobicoke Centre as a vibrant mixed-use transit-oriented community. (City of Toronto - Get involved 2019)
Sidewalk Labs	Alphabet; Waterfront Toronto	In response to request for proposal from Waterfront Toronto for Quayside space. The goal of the RFP was a climate positive community with a demonstration for how advances in technology and design can yield substantial improvements in quality of life. (Sidewalk 2019)
Unilever Precinct Planning Study	City of Toronto; Metrolinx; Toronto Transit Commission	In October of 2015, City Planning received an Official Plan Amendment from First Gulf for the Unilever site, which sits east of the Don River at Lake Shore Boulevard. (City

		of Toronto - Get involved 2019)
Laird in Focus Planning Study	City of Toronto	The Laird in Focus planning study seeks to create a planning framework to guide the future development of the Laird Drive and Eglinton Avenue East area. (City of Toronto - Get involved 2019)
ConsumerNext Open House	City of Toronto	Review of the proposed Secondary Plan for ConsumerNext (improving the Consumers Road Business Park and the area around Sheppard and Victoria Park Avenues) (City of Toronto - Get involved 2019)
Second Units - Draft Official Plan Amendment	City of Toronto	he draft Official Plan Amendment clarifies the Official Plan second unit permissions across the City. (City of Toronto - Get involved 2019)
Golden Mile Secondary Plan Study	City of Toronto	The City of Toronto is undertaking the Golden Mile Secondary Plan Study, which will develop a vision and comprehensive planning framework for the Golden Mile area. The vision and planning framework will form the foundation for the Secondary Plan, Urban Design Guidelines and other planning tools to be developed by the City Planning Division (City of Toronto - Get involved 2019)
Future Park at 60 Howard Park	City of Toronto	Consultation on the development of a new 1,305m2 park is being designed as part of the development at 575-585 Bloor St. East. (City of Toronto - Get involved 2019)
Zoning for Secondary Suites	City of Toronto	Although secondary suites have been permitted city-wide since 2000, existing zoning regulations, only permit the creation of a secondary suite five years after the primary dwelling is constructed, and do not

		permit secondary suites in all townhouses. The proposed draft zoning framework responds to provincial policy changes to the Planning Act which support secondary suites across the province and seeks to simplify the creation of secondary suites. (City of Toronto - Get involved 2019)
Official Plan Review:Public Realm and Built Form policies	City of Toronto	As part of the five-year review of the Official Plan under Section 26 of the Planning Act, the City is proposing changes to Section 3.1.1, 3.1.2 and 3.1.3 of the Official Plan. These sections contain policies pertaining to the Public Realm and Built Form. Staff are also proposing to add a Block Context Plan as a new complete application requirement for certain development proposals. (City of Toronto - Get involved 2019)
City and TTC Transit Review	City of Toronto; Toronto Transit Commission; Province of Ontario	Review of transit responsibilities after the province introduced Bill 107 - Get Ontario Moving (City of Toronto - Get involved 2019)
King-Parliament Secondary Plan Review	City of Toronto	The King-Parliament Secondary Plan review will build on the Downtown Plan, and provide specific direction on built form, the public realm and heritage. (City of Toronto - Get involved 2019)
Sherway Area Study Draft Secondary Plan	City of Toronto	The City of Toronto initiated the Sherway Area Study to review and update the existing planning and development framework for the area to manage growth and change. (City of Toronto - Get involved 2019)
Keele Finch Plus	City of Toronto; Metrolinx; Toronto	Keele Finch Plus is a City of Toronto Study about planning for the future of the area

	Transit Commission	and how to best leverage investment in subway and light rail transit (LRT) for the benefit of the community and city. The goal is to develop a planning framework to encourage the right kinds of growth and investment in the area and direct investments into broader community improvements. (City of Toronto - Get involved 2019)
Relief Line North	City of Toronto; Metrolinx; TTC	This continuation of the planned Relief Line South will help address a gap in our existing rapid transit network, offer alternative routes and relieve congestion on Line 1 Yonge and at existing and future interchange stations, including Bloor-Yonge and Eglinton. (City of Toronto - Get involved 2019)
Eglinton Crosstown	Metrolinx	The Crosstown line will run underground for more than 10 kilometres, from Keele Street to Laird Avenue, then at surface to Kennedy Station. A new regional rapid transit network with 25 stations. (City of Toronto - Get involved 2019)
Eglinton East	City of Toronto; Toronto Transit Commission	The Eglinton East LRT is based on the previously approved 2009 Scarborough Malvern LRT Environmental Assessment. This study is being undertaken to complete additional planning and design work needed to progress the Eglinton East LRT.(City of Toronto - Get involved 2019)

Appendix 6 - Key Terms

Participation Areas

Community Building

"This involves the support to individuals in order to come together and form communities as well as the empowerment of such communities" (Tambouris, Liotas and Tarabanis 2007, p. 3).

Participatory Spatial Planning

"The process of acquiring the opinion of the public or specific stakeholders in decisions related to the development and the use of land" (Tambouris, Liotas and Tarabanis 2007, p.3)

Policy Processes

"This involves the participation of the public in the policy cycle, i.e. agenda setting, analysis, creating, implementing and monitoring the policy" (Tambouris, Liotas and Tarabanis 2007, p.3).

Consultation

"This area covers the process of seeking views of individuals and groups (usually between those proposing a course of action and those likely to be affected by it)" (Tambouris, Liotas and Tarabanis 2007, p.3).

Deliberation

"This area addresses the participation in a public exchange of opinions and the formation of solutions in order to achieve consensus on politics developed from this exchange" (Tambouris, Liotas and Tarabanis 2007, p.3).

Information Provision

"This area has to do with providing access to information to the public" (Tambouris, Liotas and Tarabanis 2007, p.3).

ICT Areas

Social Informatics

Original definition and use widely in research

A serviceable working conception of "social informatics" is that it identifies a body of research that examines the social aspects of computerization. A more formal definition is "the interdisciplinary study of the design, uses and consequences of information technologies that takes into account their interaction with institutional and cultural contexts." Original (Kling 1999, p. 1) Updated (Kling 2007, p. 205)

Knowledge Management

"Knowledge management is the process of continually managing knowledge of all kinds to meet existing and emerging needs, to identify and exploit existing and acquired knowledge assets and to develop new opportunities" (Quintas et al 1997 p. 388).

"Knowledge Management is the management process of creating, sharing and using organizational information and knowledge" (Girard and Girard 2015, p. 14).

Citizen Relationship Management

"CRM in the public sector has been defined as a strategy that enables technology to focus on citizens and their needs and encourages citizen participation with their government" (Reddick 2010, p. 88).

Geographical Information Systems

"Geographically oriented computer technology, integrated systems used in substantive applications" (Maguire 1999, p. 9).

"Three key components: GIS technology (hardware and software), a GIS database (geographical and related data) and GIS infrastructure (staff, facilities and supporting elements)" (Maguire 1999, p. 11).

Visualization

"We define as visualization context the main influencing factors that impact the visual appearance and interaction behavior of visualizations. To reduce these factors in an abstracted and comprehensible way, we classify three main influencing categories:

Data: Data is essential to visualize information on the screen. In dependency of the data, different visualization types, e.g. hierarchical, temporal or graph-based, are appropriate. The data mainly limits the range of applicable visualization. Only if the data provide the required attributes for a specific visualization type the underlying information can be visualized. For instance, if there is no temporal data, it is impossible to use timelines and visual spreads over time.

Task: The second main influencing factor is the task to be solved. We define tasks in visualization context as an iterative process of perceiving visual information and interacting with visual entities for achieving a wished target, goal or awareness. The solving of a task is more efficient, if the visualization is dedicated designed to the achievement of the goal.

User: The user is the third main influencing factor. All aspects of this human computer-interaction situation aiming on the provision of a more efficient and effective interaction. In perspective to visualizations, the users' behaviors are a major influence factor that needs be considered. The perception of visualization can vary significant between two different users. In consequence, the user with her behavior, expertise, pre-knowledge etc. needs to be considered as a main influence factor for the visualization" (Burkhardt et al. 2013, p. 111).

Speech Technologies

"Speech technologies can help increase the accessibility of ICTs to those who are not literate. Speech technologies include speech recognition technologies, speech synthesis and speech encoding. Some examples of these include speech to text and text to speech tools" (Sherwani and Rosenfeld 2008, p. 2).

Semantic Web/ Ontologies

Ontologies serve as metadata schemas, providing a controlled vocabulary of concepts, each with explicitly defined and machine-processable semantics. By defining shared and common domain theories, ontologies help people and machines to communicate

concisely—supporting semantics exchange, not just syntax (Maedche and Staab 2001, p. 72)

Tool Category

Weblogs

"Weblogging technologies are used mainly to create rolling pages of frequently updated, chronologically listed links and commentary. Blogging is seen by some as a form of mainstream web entertainment, with its star performers and its popularity ratings" (Colemane and Gotze 2001, p. 34).

Blog, in full Web log or Weblog, online journal where an individual, group, or corporation presents a record of activities, thoughts, or beliefs. Some blogs operate mainly as news filters, collecting various online sources and adding short comments and [Internet](#) links. Other blogs concentrate on presenting original material. In addition, many blogs provide a forum to allow visitors to leave comments and interact with the publisher. "To blog" is the act of composing material for a blog. Materials are largely written, but pictures, audio, and videos are important elements of many blogs. The "blogosphere" is the online universe of blogs (Dennis 2007)

Web Portals

"Websites providing a gateway to a set of specific information and applications" (Demo-net 2019, p. 13).

Search Engines

"Web applications to support users find and retrieve relevant information typically using keyword searching" (Demo-net 2019, p.12).

Search engine, computer program to find answers to [queries](#) in a collection of information, which might be a library catalog or a [database](#) but is most commonly the [World Wide Web](#). A Web search engine produces a list of "pages"—computer files listed on the Web—that contain the terms in a query. Most search engines allow the user to join terms with *and*, *or*, and *not* to refine queries. They may also search specifically for images, videos,

or news articles or for names of Web sites. (Encyclopedia Britannica 2012)

Webcasting/ Podcasting

"Podcast, a "radio-style" program, usually in the MP3 digital format, disseminated over the Internet, that includes a system for subscribing to it on a World Wide Web page in such a manner that future programs are automatically downloaded" (Encyclopedia Britannica 2019).

Mailing Lists/ Newsgroups

"The e-mail list management software deliver millions of messages to millions of internet users every day." While newsgroups are Internet-based discussion group similar to a bulletin board system (BBS), where people post messages concerning whatever topic around which the group is organized. (Coleman and Gotze 2001, p. 25)

Chat rooms

"The advantage is that it is possible to gather and interact with a group for a very low cost" (Coleman and Gotze 2001, p. 25).

Wiki

"Web applications that allow users to add and edit content collectively" (Tambouris 2006 p. 12).

Online Survey tools

"Web-based, self-administered questionnaires, where the website shows a list of questions which users answer and submit their responses online" (Tambouris 2006, p.13).

Deliberative Survey Tools

"Deliberation is an approach to decision-making in which citizens consider relevant facts from multiple points of view, converse with one another to think critically about options before them and enlarge their perspectives, opinions, and understandings" (Gregory et al. 2008, p. 3).

Content Analysis Tools

"A broad definition of content analysis as, "any technique for making inferences by objectively and systematically identifying specified characteristics of messages" (Holsti 1969, p. 14).

Content Management Tools

"The set processes or practice of developing in an organization the ability to create, acquire, capture, store, maintain and disseminate the organization's content" (Ngai and Chan 2005, p. 890).

Collaborative Management Tools

Collaborative management tools are more than technologies for information sharing and collaboration: it also includes the creation and sustainment of communities of practice, coping with behavioral and cultural aspects of people, and creating trusted and validated content. Collaborative management tools allow people to share documents, make comments, engage in discussion, create schematic diagrams, and so on can be valuable aids to support organizational learning. (Jones 2001, p. 2)

Computer Supported Cooperative Work

Computer supported cooperative work is a community of behavioral researchers and system builders at the intersection of collaborative behaviors and technology. The collaboration can involve a few individuals or a team, it can be within or between organizations, or it can involve an online community that spans the globe. CSCW addresses how different technologies facilitate, impair, or simply change collaborative activities. (Grudin and Poltrock 2013)

Collaborative Environments

"A collaborative system and method allows members of a group to collaborate on a project. A set of tools and techniques are provided in order to facilitate negotiation and execution of complex instruments. Multiple environments can co-exist on the same physical network of computers" (Miller et. al. 2005).

Consultation Platforms

Consultation platforms constitute interactive "tell-us-what-you-think" on-line
platforms where ordinary citizens, civic actors, experts, and politicians
purposively assemble to provide input, deliberate, inform, and influence
policy and decision making. Initiated by political institutions, non-state
actors (or jointly), e-consultations vary in approach, goals, selection of
target groups, breadth of themes or issue areas, in the use of technical
tools and administrative level at which they are launched (Tomkova 2009,
p. 2)

Examples of consultations platforms include Place Speak and Commonplace.

Argument Visualization

The AVT is intended to support the work of relevant actors by enabling them to
navigate through arguments contained in relevant consultation and policy
documents. To adequately achieve this goal, the AVT will be based on the
state-of-the-art methods and tools in the field of computer-supported
argument visualization (CSAV). (Benn and Macintosh 2011, p. 61)

Natural Language Interfaces

"Natural-language (NL) interfaces built so far have primarily addressed the problem of
accessing information stored in conventional data base systems" (Hendrix 1982, p. 56).

Level of Participation

e-Inform

"E-inform is more about the one-way channel that provides citizens with important
information concerning policies and citizenship online" (Tambouris, Liotas and
Tarabanis 2007, p.7).

"Informing is a one-way relationship in which government produces and delivers
information for use by citizens"(Macintosh 2004, p. 2).

e-Consult

"E-Consult is a limited two-way channel that has the objective of collecting public feedback and alternatives (Tambouris, Liotas and Tarabanis 2007, p.7)"

"Consultation is a two-way relationship in which citizens provide feedback to government. It is based on the prior definition of information. Governments define the issues for consultation, set the questions and manage the process, while citizens are invited to contribute their views and opinions" (Macintosh 2004, p. 2).

e-Involve

"E-Involve is about working online with the public throughout a process to ensure that public concerns are understood and taken into consideration" (Tambouris, Liotas and Tarabanis 2007, p.7).

e-Collaborate

"E-Collaborate is a more enhanced two-way channel between citizens and government since partnering with citizens in each aspect of the decision is essential while citizens are actively participating in the development of alternatives and the identification of preferred solutions" (Tambouris, Liotas and Tarabanis 2007, p.7).

e-Empower

"E-Empower is the placement of the final decision in the hands of the public, thus implementing what citizens decide" (Tambouris, Liotas and Tarabanis 2007, p.7).

"Empowering is concerned with supporting active participation and facilitating bottom-up ideas to influence the political agenda. The previous topdown perspectives of democracy are characterized in terms of user access to information and reaction to government led initiatives. From the bottom-up perspective, citizens are emerging as producers rather than just consumers of policy. Here there is recognition that there is a need to allow citizens to influence and participate in policy formulation" (Macintosh 2004, p. 3).

Stage in the Policy-Making Process

Agenda Setting

"Agenda setting is establishing the need for a policy or a change in policy and defining what the problem to be addressed is" (Macintosh 2004, p. 3).

Analysis

"Analysis is defining the challenges and opportunities associated with an agenda item more clearly in order to produce a draft policy document. This can include: gathering evidence and knowledge from a range of sources including citizens and civil society organizations; understanding the context, including the political context for the agenda item; developing a range of options" (Macintosh 2004, p. 3).

Policy Creation

"Policy creation is ensuring a good workable policy document. This involves a variety of mechanisms which can include: formal consultation, risk analysis, undertaking pilot studies, and designing the implementation plan" (Macintosh 2004, p. 3).

Implementation

"This can involve the development of legislation, regulation, guidance, and a delivery plan" (Macintosh 2004, p. 3).

Monitoring

 "This can involve evaluation and review of the policy in action, research evidence and views of users. Here there is the possibility to loop back to stage one" (Macintosh 2004, p. 3).

Technology Category Used

e-mail

"E-mail, in full electronic mail, messages transmitted and received by digital computers through a network. An e-mail system allows computer users on a network to send text, graphics, and sometimes sounds and animated images to other users" (Pallardy 2012).

Instant Messaging

Instant messaging (IM), form of text-based communication in which two persons participate in a single conversation over their computers or mobile devices within an Internet-based chatroom. IM differs from "Chat," in which the user participates in a more public real-time conversation within a chatroom where everyone on the channel sees everything being said by all other users (Rafferty and Larson 2016).

File Sharing

"Computing the practice of making files available to other users of a network; (now esp.) the (often illicit) sharing of music or video files via the Internet; frequently attributive" (Oxford Dictionary 2014).

Streaming Media Technologies

Designating forms of technology which allow video and audio material to be transferred over a computer network or (less commonly) to and from a disk as a continuous, real-time stream of data; (now esp.) designating video or audio material transferred over the Internet in this way, as streaming audio, streaming media, streaming video (Oxford Dictionary 2008).

RSS Syndication

An RSS feed is a set of instructions residing on the computer server of a Web site, which is given upon request to a subscriber's RSS reader, or aggregator. The feed tells the reader when new material—such as a news article, a blog posting, or an audio or a video clip—has been published on the Web site. The aggregator monitors any number of sites' feeds and centrally organizes and displays the new material for the user. The user then has a single source where all of the latest content is automatically available. (Hosch 2009)

CSCW / Groupware

Collaborative software, also called groupware, type of computer program that shares data between more than one computer for processing. In particular, several programs have been written to harness the vast number of computers connected to the Internet. Rather than run a screen saver

program when idle, these computers can run software that lets them collaborate in the analysis of some difficult problem. (Hosch 2008)

Semantic Web Technology

Semantic Web, extension of the World Wide Web (WWW) in which data are given meaning (semantics) to enable computers to look up and "reason" in response to user searches. The two keys to developing a truly useful repository of information required the inclusion of metadata, or information about the information found on the Web, that could be read and "understood" by machines and the attachment of "values" to relationship hyperlinks that computers could use to direct searches. (Hosch 2009b)

Agent Technology

Agent, also called softbot ("software robot"), a computer program that performs various actions continuously and autonomously on behalf of an individual or an organization. For example, an agent may archive various computer files or retrieve electronic messages on a regular schedule. Such simple tasks barely begin to tap the potential uses of agents, however. This is because an intelligent agent can observe the behaviour patterns of its users and learn to anticipate their needs or at least their repetitive actions. Such intelligent agents frequently rely on techniques from other fields of artificial intelligence, such as expert systems and neural networks, and aim to achieve complex goals. (Augustyn et. al. 2016)

Data Mining

Data mining, also called knowledge discovery in databases, in computer science, the process of discovering interesting and useful patterns and relationships in large volumes of data. The field combines tools from statistics and artificial intelligence (such as neural networks and machine learning) with database management to analyze large digital collections, known as data sets. Data mining is widely used in business (insurance, banking, retail), science research (astronomy, medicine), and government security (detection of criminals and terrorists). (Hosch and Curley, 2009)

Ontological Engineering

Ontological Engineering, which is defined as the set of activities that concern the ontology development process, the ontology lifecycle, the principles, methods and methodologies for building ontologies, and the tool suites and languages that support them (Corcho, Fernandez-Lopez & Gomez-Perez 2007 p. 44).

Computational Linguistics

Computational linguistics, language analysis that makes use of electronic digital computers. Computational analysis is most frequently applied to the handling of basic language data—e.g., making concordances and counting frequencies of sounds, words, and word elements—although numerous other types of linguistic analysis can be performed by computers. (Encyclopædia Britannica 2019)

Mobile Technologies (e.g. WAP)

WAP, in full Wireless Application Protocol, an open, universal standard that emerged in the late 1990s for the delivery of the Internet and other value-added services to wireless networks and mobile communication devices such as mobile phones and personal digital assistants (PDAs). WAP specifications encouraged the creation of wireless devices that were compatible with each other, regardless of the manufacturer or service provider. WAP was not a true protocol in the sense of the Internet Protocol (IP) or the Secure Sockets Layer (SSL); rather, it was a set of communication networking- and application-environment specifications that mirrored functions similar to those performed by more common ones associated with the Internet, such as Hypertext Transfer Protocol (HTTP) and Transmission Control Protocol (TCP). Because of slow and unreliable wireless connectivity and costly WAP services when phones emerged in the early 21st century that could handle the technical requirements of HTTP and TCP, WAP was supplanted as the standard for delivering the Internet to wireless devices. (Ramirez and Gregersen 2016)

User of the Tool

Expert Administrators

"This category of users refers to technical experts selected by the politicians" (Tambouris, Liotas and Tarabanis 2007, p. 7).

Elected Representatives

"This obviously refers to those elected to represent citizens' interests" (Tambouris, Liotas and Tarabanis 2007, p. 7).

Professional Stakeholders

"These participants are paid representatives of organized interests and public officials" (Tambouris, Liotas and Tarabanis 2007, p. 7).

Lay Stakeholders

"This category refers to unpaid citizens who have a deep interest in a public concern and are willing to represent those having similar interests or perspectives but choose not to participate" (Tambouris, Liotas and Tarabanis 2007, p. 7).

Randomly Selected Recruits

"This group addresses the problem of descriptive representativeness of the general population" (Tambouris, Liotas and Tarabanis 2007, p. 7).

Non-Randomly Selected Recruit

"This group is used in exercises to enhance participation especially among subgroups that are less likely to participate" (Tambouris, Liotas and Tarabanis 2007, p. 7).

Self-selected Participants

"This means that a participation exercise is open to all those wishing to participate. Although this is the most frequent case, it fails to represent the larger public since wealthier and better-educated people tend to participate more" (Tambouris, Liotas and Tarabanis 2007, p. 7).