

How Could Participatory Design be Catalyzed by Social Media?
Improving Co-Design Efficiency and Effectiveness

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Abstract

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With the development of the Internet and information technology, online participation is becoming an important gateway for civic engagement. Social media, with the ability to mobilize people without minimal time and spatial limitations, has been increasingly integrated into participatory design projects in recent years. However, the actual ways in which social media help improve the efficiency or effectiveness of participatory design still needs more discussion. This thesis examines two cases of community engagement projects in Seattle incorporating social media for engaging the public, combined with several in-depth interviews with related stakeholders, and looks through existing social media applications for civic engagement. This research suggests that for projects with different scales and engagement purposes, social media should be used differently. In addition, when and how social media should be utilized for getting public input is discussed. Finally, targeting the weakness of current public participation with social media, a public engagement roadmap for using social media is proposed, which offers guidance of designing public participation from examining the project to picking the appropriate social media.

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Chapter 1 Introduction

This chapter will give a brief introduction to the research conducted for this thesis, including clarifying some key terminology in this paper, putting forward the core research questions, identifying the overall research methodologies as well as summarizing the overall achievements and products.

1.1 Research Background

Originating from grass-roots democracy, participation in the United States is linked to the community-based struggles of the 1960s (Sanoff 2000). Participatory Design (PD) focuses on the design process rather than the design style itself and is an approach to actively involve different stakeholders in the landscape design process to ensure the design result meets their needs and is usable. Social media, such as blogs and forums, have been “increasingly used for public information sharing and opinion exchanges nowadays.” (Ibrahim, Wang, and Bourne 2017). In addition, since it helps build online communities, the community engagement professionals’ begin paying more attention on using social media for public participation. Today, the governments and design firms have been increasingly paying more attention to social media for public engagement in urban planning and landscape design projects. With the big trends in the new big generation of engagement including measuring up, video everything, growing data, growing animation, virtual reality (VR), augmented reality (AR), and gamification, (Ezez. 2019. «Our top 9 predictions for engagement in 2019». Articolous. <https://articulous.com.au/our-top-9-predictions-for-engagement-in-2019/>.) PD is faced with new participatory design opportunities.

Social media, with the popular representatives of Facebook, Instagram, etc. are actually the “forms of electronic communication through which users create online communities to share information, ideas, personal messages, and other content” (from *Merriam-Webster*). In summary, there are two key aspects of social media: 1. social connection in the virtual community; and 2. digital media embedded in the online platform. In terms of the social connection feature, it empowers social media to mobilize and engage the public quickly and extensively, which meets the requirements of PD to engage people widely. While for the embedded digital media, it offers PD more abundant tools to get public input via the various medium as well as the information and communication technologies.

Thus, in order to get a better understanding of how PD could be catalyzed by social media, there are three main research questions driving this thesis:

- Platform - Does social media help improve the efficiency of PD?
- Digital Media - Does integration of digital media help improve the effectiveness of PD?

- Platform + Digital Media - How should social media be utilized to serve PD?

1.2 Research Methodology

There are two parts to this research work in total, literature review and case studies. Since the research topic is related to social media, online research sources are also included. Overall, the literature review sources consist of books, journal papers, online documents from the government and the institutions' website, and some blog posts from the design firms working on public engagement. For the case studies, the first step of work is getting inspiration from the key stakeholders. A total of 10 interviews have been conducted with the City of Seattle and EnviroIssues, including seven in-depth interviews, organized in the group discussion format and three short interviews. The second step of work for case studies includes examining current social media use in the cases, via observation, photo documentation and mapping for both the offline and online participation.

1.3 Outcomes

In all, there are two parts to the outcomes in this research: 1. key analysis on current social media use for PD from the case studies, which addresses the first two research questions regarding "efficiency" and "effectiveness"; 2. proposal on how to use social media for PD, including a roadmap and two prototypes, which addresses the third research question "how." The analysis for the cases not only generates current challenges of using social media for PD but also provides a framework for future researchers studying the cases in this field. For the proposal part, the roadmap offers a full guideline for designing public social media participation in PD, in the following framework:

Identifying the project type, based on its scale and engagement purposes → Finding the potentials and opportunities in the current project phase → Formulate the participants and build the use scenario → Designing the social media participation engine, combining several desired medium, text, image, voice, etc. → Pick the platforms to release the project with a considerable multi-platform strategy

Chapter 2 Literature Review

This chapter reviews the theoretical background of participatory design (PD), including the theory development history and key facts of PD as well as its current trend of using digital tools. Then, current PD achievements and dilemmas of digital PD in the urban / landscape design field is addressed. Besides, PD measurement, which is in high demand, especially that of the effects of digital tools is highlighted. Through the literature review, this thesis gets theory support in landscape participatory design and validates the research value in the interdisciplinary scholarship of landscape PD and digital tools, as well as sets the basic research method framework.

2.1 Digital Trend in Landscape and Urban Design

Changing Concepts of Places and Place-making

With the development of information technology and the fast-growing Internet, the understanding of the “space of place,” that is, as a material-based object has been shifted into “spaces of flows.” In addition, the metrics of analyzing a city have also been updated to patterns and processes, interactions, flows, and networks, etc. (Batty 2013). Tracking the movements of the flows could help improve our understanding of the city. Currently, the urban researchers mainly focus on tracking the flows of energy transformation, such as air quality, temperature variation, or physical movements, such as transportation and population migration as well as the information exchanges, such as residents’ semantic data on social media. All of these data is closely tied to public health, in the process of environmental assessment, urban planning, and urban participatory design.

The major topics of today’s built environment design have also changed. As a sociologist, architectural and design theorist, Ben Bratton (2009) notes that “one-half of all architects and urbanists in the entire world should, as of now, stop designing new buildings and new developments altogether. Instead, they should invest the historical depth and intellectual nuance of their architectural imaginations into the design and programming of new software that provides for the better use of structures and systems we already have. It is a simple matter of good content management. The other half, the control group, may continue as before.” (92) The future of the “informational city” might lead to a new form of information system rather than new types of urban form. Neil Leach (2015) argues that the best solution of the building or urban design might have already existed and the most important work for built environment design might be finding it out, instead of putting efforts in designing from the beginning. Thus, information and communication technologies are becoming the most important tool for urban

design, which could help both in explaining the mechanism of a healthy urban area and in finding a good solution for the healthy built environment.

Along with the popularity of the terminology “smart city,” how technology could serve us to build better urban environment is raising hot debates. Information and Communication Technology, not only connecting people to one another but also connecting people to the physical environment, could be utilized to build the needed information infrastructure for participatory community design and management, in the aspects of publishing community information, getting communities’ feedback and potentially building customized city environment based on the individual’s needs.

2.1.1 What is Information and Communication Technology (ICT)

Definition of ICT

ICT means information and communication technology. For users, there might be web-based or mobile-based ICT applications, but looking at the whole procedure of applying ICT involves more on the information infrastructure, computing ability, etc. According to Batty (2013), in the near future, the core enabling technologies of ICT in the new wave of computing, namely digital sensing devices, data processing platforms, cloud computing, infrastructures, middleware architectures, and wireless communication network will be the dominant mode of monitoring, understanding, analyzing, evaluating and planning sustainable urban forms. Moving into the era of Web 2.0 with the development of the participatory online content generation, social media has become an important ICT tool, mainly functioning as a means of virtual social connection. Though the public might know social media mostly through Facebook, Twitter, etc., ICT as the basic technology of social media, might have more potential for user participation than the current few popular social media platforms. For the process of participatory design, ICT could be applied to the early phase of engaging communities’ ideas in many ways, either via the offline connected digital sensing devices (the community moves the blocks on the offline interactive model and the revising idea would be updated online and all the others could view that) or online user active input gateways (using the hashtag in Facebook would allow the communities to a community design issue discussion conveniently). Besides, the processing of public input data is also crucial, which involves the concept of data processing platform and cloud computing. Thus, looking into the possibility of extending the current social media participation, this section provides a brief review of ICT technologies for built environment design, including its impacts.

Current ICT Applications

The relationship emerging between ICT and people can be better understood by focusing on the creation, spread, and usage of mobile and smartphone apps. These apps are tools provided to citizens and other stakeholders aimed at encouraging their participation, improving the

availability of information, and, in general, enhancing their sense of community (Lee and Lee 2014).

There are four popular ICT concepts, UbiComp, Aml, IoT, and SenComp. Aml describes the completely calm and invisible rendering technology for customized citizen experiences. For example, the kids would view a project page with more images, compared to the adults and participants with concerned topics would get notifications of more comments about that topic. SenComp denotes the use of sensing devices to observe and monitor and computing devices to perceive (recognize and interpret) the physical environment and react to it. It is the idea that computer applications can be made more perceptive and responsive by becoming aware of and reacting to their surroundings. For example, the traffic light system could sense different traffic congestion levels on different roads and adjust the traffic signal accordingly to alleviate the traffic jam. This also applies to several application areas of Aml as the smart environment. But Aml goes beyond the physical context to include other types of context such as cognitive, emotional, social, behavioral, conversational, and spatiotemporal, to underscore the difference between Aml and SenComp (Bibri and Krogstie 2017).

2.1.2 ICT for Built Environment Design

Overall, utilizing ICT for built environment design could supporting decision-making in the following aspects: city governing and economic planning, energy saving and environment assessing, transportation planning and safety, social equity achieving and livability enhancing. Some of these impacts relate more to policies, while some are more related to physical space design. From the perspective of design practice in the built environment, in summary, there are three main areas influenced by ICT: Environmental and sustainable design; Responsive design; Participatory design. Each of these will now be addressed in further detail.

Environmental and Sustainable Design

In terms of environmental design, first, ICT can be used as a substitute for physical processes and this is about “moving bits instead of atoms.” (Weber, Koomey, and Matthews 2010) For example, e-books can substitute for paper books, e-commerce for traditional retail, online streaming music for physical supports like CD, e-learning for lectures or video conferences for physical meetings. Secondly, ICT can help to improve the efficiency of existing activities and therefore decrease their environmental impact. It can, for example, improve the efficiency of lighting in buildings, waste collection, water distribution, the use of fertilizers in agriculture or the energy use in manufacturing systems (Bonvoisin et al. 2014).

For urban sustainability, ICT also plays an important role in addressing issues in the current city environment, including overexploiting resources, inadequate services, and increased pollution (Bifulco et al. 2016), which are some of the main factors threatening urban sustainability and have a negative impact on public health eventually. First, ICT helps build the theory of sustainable city form, as well as to conduct environment assessment. Second, ICT builds the

city information infrastructure, which prepares for the smart city, in the fields of smart mobility, environment, living, and people. For example, the framework of optimized service for urban waste collection based on a city-scale wireless sensor network could aid ecodesign a lot, which helps improve urban sustainability. Specifically, ICT helps build an integrated environmental assessment method that provides a framework for the application of life cycle assessment (LCA) to optimize services as well as a step-by-step ecodesign method (Bifulco et al. 2016).

Responsive Design

The customized built environment, which is responsive to different behaviors of different individuals could be realized through ICT. This is based on context-aware computing, where “adaptation” is based either on pre-programmed heuristics or real-time reasoning capabilities (Bibri and Krogstie 2017). Applying to the real world, this might be real-time virtual rendering and smart monitoring with an automatic response.

First, ICT leads to physical transformation in a city environment since the city is growing into a type of mixture of reality and virtuality with the impact of the internet and mega digital information. In the future, when the technology of virtual reality and the ability of ubiquitous computing develop more, the concept of Aml would become true. It describes an era when ubiquitous computing, communication, and intelligent user interfaces will function in such an unobtrusive and seamless way as the rendering technology become wholly invisible, with each citizen enjoying an experience of interaction with the environment that anticipates and intelligently responds to their needs and desires (Bibri and Krogstie 2017).

Second, public lifestyle will be influenced by information and communication technology, which results in reduced transportation needs and increased time spending on digital products. Also, the two basic elements of urban public space, streets, and squares would be transformed. For streets, with GIS and smart transportation control tools, public transportation and parking would be more convenient and there would be fewer traffic jams. Besides, with smart digital monitoring and urban furniture equipped with digital systems, public safety would be increased on the streets (Ghorbani et al. 2013).

Community Participatory Design

“Human beings are not perfectly designed decision makers. Instead, we are what the economist Herbert Simon called ‘boundedly rational’. We generally have less information than we would like. We have limited foresight into the future. Most of us lack the ability-and the desire-to make sophisticated cost-benefit calculations” (Surowiecki 2005, 14).

The needs of design democracy are growing rapidly, with the aid from emerging e-participation and e-governance. ICT-enabled innovations can enhance public engagement in community design and permit a wider audience to simultaneously contribute to the political debate. Through the process of public participation, urban design or urban governance processes are promoted to be more socially inclusive so that more diversified urban issues could be addressed. Particularly, the concerns of underserved people could arguably be better served through ICT.

The key reason is that ICT makes more information more accessible to more people, which helps all of the people to see social inequity issues. In other words, raising the public's attention to the facts about social inequity would increase the opportunity of these problems to be addressed and would finally help improve the lives of underserved people (Khan et al. 2014). Therefore, the overall community design would be more community-centered with ICT.

2.1.3 Impacts of ICT

ICT and Urban Form Computing

ICT has become pervasive, located anywhere and everywhere across urban environments, i.e., data sensing, information processing, and wireless communication networking has become more and more combined with infrastructure, architecture, ecosystem services, human services, and even citizens' bodies. We can speak of cities getting smarter to address environmental, social, and economic problems as well as providing services to citizens to improve the quality of their life. In the near future, the core enabling technologies of ICT in the new wave of computing, namely digital sensing devices, data processing platforms, cloud computing, infrastructure, and wireless communication network will be the dominant mode of monitoring, understanding, analyzing, evaluating and planning sustainable urban forms as sustainable cities to improve their contributions to the goals of sustainable development (Batty et al. 2012).

ICT and Environmental Assessment and Ecodesign

First, ICT can be used as a substitute for physical processes. For example, e-books can substitute for paper books, e-commerce for traditional retail, online streaming music for physical supports like CD, e-learning for lectures or video conferences for physical meetings. Second, ICT can help to improve the efficiency of existing activities and therefore decrease their environmental impact. It can, for example, improve the efficiency of lighting in buildings, waste collection, water distribution, the use of fertilizers in agriculture or the energy use in manufacturing systems (Bonvoisin et al. 2014). Third, the traditional understanding of place, which considers places as single, integrated, unitary, material objects have been challenged by a new concept, namely "spaces of flows" or spaces of relations (Batty 2013). Last, with the development of wireless technology and its infrastructure network, technological and socioeconomic trends are gradually changing the concept of ICT-oriented urban planning strategies from the virtual city to the ubiquitous city (Huang 2012).

Evaluate Participation using ICT

One of the central characteristics of participatory pathways conducted online is the ease of the ability to track people's contributions. The eventual dialogue between participants is visible to all in precisely the same terms used by participants, without the need for interpretation by a facilitator, thus rendering several modes of analysis (Rotondo and Selicato 2012).

E-Democracy

E-democracy means electronic democracy, which is also known as “digital democracy or Internet democracy” which utilizes ICT to promote democracy via providing opportunities for every adult citizen to participate in city governing (“E-democracy.” Wikipedia. May 16, 2019. Accessed June 05, 2019. <https://en.wikipedia.org/wiki/E-democracy>). In this way, ICT makes information more accessible, which helps people to see social inequity issues. In addition, the needs of design democracy are growing rapidly, with the aid from emerging e-participation and e-governance. ICT-enabled innovations can enhance public engagement and permit a wider audience to contribute simultaneously to the political debate. Through the process of public participation, urban design or urban governance processes are promoted to be more socially inclusive and diversified urban issues could be addressed (Khan et al. 2014).

2.2 Participatory Design (PD)

Background History of Participatory Design

“Citizen involvement in local authority planning dates back to the 1870s in the USA and, as planning policy arose in the 1960s, it came to the European continent via the UK” (Wulz 1986, 153). Starting in the 1960s, the grass-roots democracy brought more civic participation, often in the form of community-based struggles. The Community Action Program, funded by the US Office of Economic Opportunity (OEO) provided institutional support and political legitimacy for the formation of urban grass-roots organizations in support of the demands of poor neighborhoods (Sanoff 2000). Specifically, the Freedom of Information Act [1967] and the National Environmental Policy Act [1970] strengthened this participation because citizens became more aware of, and gained greater control over, constructing their own information to counter government or corporate misinformation and malfeasance (de la Peña, et al. 2017).

During the 1970s and 1980s, as the information processing conception of human-centered computing emerged, and eventually became the dominant view in North America, participatory design became highly developed throughout northern Europe and the US. At this time, participatory design was informed by Activity Theory (Ibrahim and Amin 2015). Then the concept of participatory design spread more widely in many fields, including software design, product design, etc. Participation of the intended users in technology design is seen as one of the preconditions for good design (Reyes and Finken 2012).

2.2.1 What is Participatory Design

Concept of Participation and Participatory Design

In general, participation is associated with involving local people in social and physical development via different forms of co-decision. Participation is contextual and varies in type, level of intensity, extent, and frequency and for different groups of people, it has various meanings (Wulz 1986, Sanoff 2000, Enrich 2000).

Participatory design shifts the definition of landscape design by de-centering the role of the professional designer and moving to a more inclusive user-oriented design paradigm. Participatory approaches to landscape design also shifted from “technical and ecological management” to “giving benefits to the users,” which is also considered a strategy for achieving sustainable environments (Hensley 2004, Carroll and Rosson 2007, Jansson and Lindgren 2012, Srdjevic, Lakicevic, and Srdjevic 2013, Ibrahim and Amin 2015, de la Peña, et al. 2017).

Who Should Participate

From the perspective of design democracy, people who will be affected by design and planning decisions should be involved in the process of making those decisions (Sanoff 2000). So those who are most affected should have the greatest voice in that decision. Besides, the general public should be informed about an issue so that people can decide whether to participate.

From the perspective of the participants' tendency, people participate in issues in response to some perceived interest and remain involved as long as that interest persists. People need to participate at their own levels of interest and expertise and the involvement varies depending on differences in technical expertise, roles in the community, and willingness to commit time and energy (Sanoff 2000).

Advocates of participatory design argue that various groups of the public should participate, including youth and those with disabilities. For youth, participation in the city development process could help enhance their roles in society and children have the capacity to renew creativity in adults (Sanoff 2000). For people with disabilities, according to the Stockholm Government's plan “Stockholm, A City For Everyone - Participation programme for people with disabilities 2011-2016”, success in creating a city for everyone can be measured by the proportion of people with disabilities who find that they can access and understand the city's information, the proportion of the city's e-services that are accessible to them, and the proportion who find that they can influence the design of the services.

The Expected Outcomes for Participation

Participation might not necessarily need to lead to a strict consensus and the PD process itself is also part of the expected outcome of public participation. Sanoff (2000) questions what professionals wish to accomplish with the participation process and he offers several possibilities for participation; for example, to generate ideas, to identify attitudes, to disseminate

information, to resolve some identified conflicts, to review a proposal, or merely to serve as a release for pent-up emotions. In other words, the main outcome of the community organization is the organization itself, its influence, its representativeness, and its internal democracy.

2.2.2 Purpose, Value, and Impact of Participatory Design

Purpose: Decentralization and Transformation

Originating from the idea of democracy, the main purpose of participatory design is to decentralize power and make transformations to the city or local environment. Originated from empowering citizens, defined by Arnstein in 1969, “participatory democracy is about decentralization, local control, and consumer power” and then the purposes have been more modestly defined to include information exchange, resolving conflicts, and supplementing design and planning (Sanoff 2000). Overall, the goal of participatory design is to transform the city, individually, socially and physically (de la Peña, et al. 2017). Specifically, involving the public in the decision-making process could help increase their trust in, and understanding of, the design idea and therefore enhance the decision and service delivery. Also, a sense of community could be curated through participation (Sanoff 2000). Besides, designers can start a process, but they can not make it meaningful themselves; this is the task of community members (Androski and Wilson 2011). The public, as the users of city space, are the ones who can finish the space creation.

Value: Crowdsourcing, Shared Information, and Hybrid Community

“Human beings are not perfect decision makers. Instead, we are what the economist Herbert Simon called ‘boundedly rational’.” Thus, PD helps us gain the wisdom of multiple people, of community members, which is also known as collective wisdom. Every community has experts with primary knowledge of the social, cultural, political, and physical environment in which they live. Yet, the people who are typically recognized as “the experts” - especially during design work tend to be from outside the community (de la Peña, et al. 2017, 73).

In terms of the information exchange, after entering the era of information and communication technology (ICT), scholars working on the science of the city also support the value of PD from the following three aspects: 1. System behavior is limited by the system structure and the pattern creation is limited by the information structure; 2. Hierarchical organization from the bottom up is essential for evolving systems and that hierarchical structure is the way nature and society develop robust and resilient structures; 3. Urban design language which is also open to the public could provide long-term equilibrium to the system, borrowing the concept from the open programming language (Batty 2013).

In addition, the process of PD also contributes to the construction of a physical-spiritual-hybrid community, which means the concept of community is not only linked to the physical region but also related to its representation in the communities’ mind. Actually, the representation of the

city in the citizens' mind is influenced by the carefully designed information published on media (Hanzl 2007). Citizens would like to see their influence on the city development and building people-centered city has become an unavoidable trend (Sawhney, de Klerk, and Malhotra 2015). With the development of ICT, the hybrid community is becoming a reality gradually, with the combination of hacking the physical and digital spaces together. Furthermore, connecting with VR and AR technology, the customized virtual landscape could also be generated finally. For example, communities with different aesthetic tendency could view different building facades via offering different input in the community design participation.

Impact: Shifted Profession

Decentralizing power also means taking away some power from urban design and planning professionals, which might lead to a shift in the field of built environment design. "Democratic design redistributes power" and "participatory design threatens to devalue that distinction" between the professional designers and the general public (de la Peña, et al. 2017). Participatory design integrates two radical propositions about design, a moral one and a pragmatic one, and they both fundamentally challenge conceptions of design as a profession and what it means to be a designer (Carroll and Rosson 2007). The professional's job is no longer to produce finished and unchangeable solutions but to develop solutions from a continuous dialogue with those who will use the designer's work. In all, the impact of PD could be summarized in three aspects: 1. Challenge the conception of design as a profession; 2. Challenge the role of a designer; 3. Improve the chances of a successful design outcome (Carroll and Rosson 2007).

2.2.3 Process and Methods of Conducting Participatory Design

The main process through which participatory design is conducted consists of the following phases - mobilization of people and resources, expertise identification, information interpretation, design co-generation, construction engagement, evaluation & test (de la Peña, et al. 2017). To achieve design consensus, it is important to establish partnerships between private and public sector leaders and community groups by providing effective ways for individuals to use and develop their skills and creativity on behalf of their community (Sanoff 2000). Besides, "Problem Based Learning", as a type of participatory design, could share some experience in PD organization (Barrows and Tamblyn 1980, Schmidt and Moust 2000, Christensen 2004): 1. Forming a new learning group and creating an acquisition problem; 2. Starting the acquisition problem; 3. Implementing problem-solving; 4. Outcome presentation; 5. Reflection on the learning outcome.

In order to organize the PD, there are many methods for informing the public, engaging discussion, generating ideas, or displaying results. Specifically, there could be a newspaper advertisement, questionnaire, focus group, public forum, design charrette, or open house, etc. (Sanoff 2000). Furthermore, in the actual PD process, there are three big challenges: 1.

Mobilizing public and encouraging discussion; 2. Asking the right questions for effective input; 3. Measuring and assessing public input.

First, people will join the design process if change can and will occur. For this to happen, dialogues between citizens and the government are necessary, but this does not imply that there is no longer a role for the institutional leader. Sanoff (2000) suggests the following ways that designers and local governmental leaders can still play a role:

- Raising people's awareness of an issue via news media or walking tours
- Using surveys or questionnaires to gather information
- Hosting and facilitating group interaction activities and encouraging group discussion
- Provide open-ended participation channels, such as participatory cable television or planning ballot

Second, from the blog of Articulous (<https://articulous.com.au/asking-the-right-questions/>), the following techniques for asking effective questions are listed:

- Ask unusual questions, especially about the topics that the community might be passionate about though they might be difficult
- Ask questions for deliberative input rather than just an opinion
- Ask complex but understandable questions for a meaningful answer
- Let the public feel they are in charge by putting them into the role of the decision maker
- Ask trade-off questions for the public to weigh
- Be open to new ideas
- Provide images which are related to the questions for aiding understanding

Third, there are ways to address concerns about how best to assess people's input in the PD process. For example, a classic approach to measuring qualitative public input is called the Nominal Group Technique, first developed by Andre Delbecq and Andrew Van de Ven, which allows every participant to generate his or her own list of ideas first, and then the group discusses and ranks all the ideas (de la Peña, et al. 2017). It is a good technique only for measuring the input from a small group of participants but it is not applicable to measuring thousands or even millions of ideas from the large group of citizens who participate online. In that way, hiring professionals to read all these comments and merge similar ideas as well as extract key points would be necessary.

2.2.4 Meeting the Challenges of Current PD

As noted in the previous section, there are several challenges to the current practice of offline PD - mainly engaging people, getting public input, and interpreting the input. However, many of these barriers might be overcome by the use of online tools and social media.

For the PD organizers, involving users in person is time-consuming and more expensive while for the participants. It is also challenging to take the time to travel to attend design meetings and workshops. However, providing participation portals via social media could largely help dissolve this problem and it will enable the PD project to reach to more participants with a diverse background.

Another important challenge happens during the process of collecting public input. Due to limited visualization and graphics skills, input from most participants is limited to written or verbal feedback while the professionals proceed to the drawing board or desktop to develop the actual design. Without meaningful interactions and information exchange, or solely relying on the professional's interpretation, participants remain consumers rather than partners (de la Peña, et al. 2017). In addition, because people have different motivations, skills, and resources, their willingness to participate is not equal (Sanoff 2000). To address these challenges, the public could use social media to express their ideas more easily and conveniently.

Last, barriers to participation could be generated by the process itself. The people who participate might not represent the majority but are, rather, citizens who represent special interests. Also, false assumptions about participation by some professionals can also be a barrier. First, some professionals think PD is unnecessary and public participation might threaten their roles as experts. Second, they believe it is too hard to generate useful information from public participation because everyone has different ideas or people are very similar and their needs are undifferentiated. Last, everything is likely to end up as a compromise (Sanoff 2000).

2.3 Social Media Application in PD

Background of Social Media Applications for PD

With the popularity of the concept of DIY and DIWO (Do it with others), public participation has gained more important roles in three domains: the spatial, technical and social (Caldwell and Foth 2014). Participation in the spatial domain is also known as placemaking, and the purpose is to create physical space that is more appropriate to meet the needs and desires of local citizens in their everyday settings. Constrained by the physical region, place-oriented participation is an important characteristic of this type of participation practice.

With the development of Web 2.0, the public's abilities to share information, ideas, and creations has been increased and more participation and collaboration is encouraged (Gauntlett 2011). In this context, participation in the technical domain, which focuses on the participation tools emerged. Paulos (2012) calls on technologists and engineers to shift their thinking towards more participatory collaborations and innovations and encourages ubiquitous computing researchers to enable participation from the everyday citizen to address global issues such as

climate change, famine, and poverty. Participation addressing these issues in the social domain mainly includes two types of participatory practice, DIY citizenship, and DIY urbanism. DIY citizenship means creating global communities with shared contents, ideas, and information in various fields, such as political action, design, science, and technology, while DIY urbanism is proposed by Iveson as a link between the small actions and the larger vision affecting the city's socio-cultural experience (Caldwell and Foth 2014).

Social media application integrates the participation practices in both the technical and social domains. Utilizing the Web 2.0 technique, it incorporates social issue discussion into online social connection and builds the virtual community, which shapes the city cultural experience.

2.3.1 What is Social Media Application in PD

Definition of Social Media

Although Facebook or Twitter might be the very first answer to the question of what social media is, social media actually has a broader definition. According to Wikipedia, social media are interactive computer-mediated technologies that facilitate the creation and sharing of information, ideas, career interests and other forms of expression via virtual communities and networks. In short, social media are interactive Web 2.0 Internet-based applications which connect social networks. In the literature review done by Reyes and Finken (2012), there are several closely related terms, such as social software, social technologies and web 2.0. Social media could be defined as a set of applications enabled by the Internet that has made it easier for individuals to gather, communicate and share information.

Current Development of Social Media for PD

It is broadly acknowledged that information technology has offered new potentials of citizen participation in urban design and planning. New media are providing a communication platform which suppresses a barrier of non-professionalism, allows for distant contacts and enabling participatory process management (Hanzl 2007). Furthermore, over the past decade, ubiquitous computing, social media, and mobile technologies have become integral parts of our social lives and work practices, as well as shaping the way we make sense of our cultures and engage as citizens (Foth 2011). Currently, Facebook is the most commonly used online tool for engaging communities online.

Categorized Social Media Applications for PD

Based on multiple sources on participatory design, social media applications for landscape PD might be categorized into the following table:

Representation and Perception	Participatory Planning GIS (PPGIS)
	Interactive Images
	3D models - Simulation Games, Augmented Reality (AR) Tours, etc.
Communication and Discussion	One-way Communication - Basic WWW Project Website, Survey, Live Polling
	#Hashtag Communication in Social Media of Narrow Sense - Facebook, Twitter, etc.
	Online Discussion Forum
	Game-Context Communication
	Two-way Communication - Videoconference
Collaboration and Co-decision	Collaborative Mapping
	Online Interactive Games

Major Trends in the New Generation of Engagement

From the blog post of predictions for engagement in 2019 by Articulous (<https://articulous.com.au/our-top-9-predictions-for-engagement-in-2019/>), the most ground-breaking engagement and communication consultancy in Australia, there are several big trends in the community engagement field:

1. Measuring Up

Evaluation and measurement will continue to grow and there will be more measurement in the engagement professions, including the assessment of performance and satisfaction among participants, as well as the impacts of the participation on the final design decision.

2. Video Everything

Due to limited time or shifting information processing habits, the importance of video would be improved and there might be more video information in community engagement processes. Videos taken by citizens could be used as the part of the city documentation, which both records the physical space of the city and the cultural life within. Besides, there might also be some engagement activities in the format of the video, which allows the public to take and upload a video according to a given topic.

3. Growing Data

The sheer amount of data we are exposed to has grown fast in recent years and it will continue to be empowering so that more human dimension would be paid attention to. On social media, the virtual place the communities share their daily life, exchange ideas about the community life and participate in the community development, there is a lot of data to be extracted, which could be used to serve better either passive or active participatory design.

4. Animation Will Grow

It is likely that moving forward animation will be used more widely in conveying and presenting ideas and there will be more animation in the future mobile and web applications.

5. Virtual Reality (VR) & Augmented Reality (AR)

The rise of VR technology provides new possibilities in storytelling and new ways to impact people. Probably the best way to elicit empathy is to provide a person an opportunity to wear another's shoes. VR could help this to become a reality. VR has the potential to enable people to experience, understand, and even change their behavior. VR is promising as a tool in the co-design process, as it can allow people to visualize potential changes and achieve consensus in what changes/designs to implement.

6. Gamification

Although some people might assume that games are developed for children and youth, they are popular among people of all ages (Allaire et al. 2013). The benefits of gaming for engagement is promising. Online games have to potential to:

- Reach a larger and geographically diverse audience
- Provide real-time data and geotracking outputs
- Generate interest in topics
- Allow sharing information and encourage sharing

2.3.2 Advantages of Using Social Media in PD

There are four main advantages of using social media in PD: 1. increasing the level of participation, 2. enabling more convenient documentation, 3. accelerating information connection and sharing, and 4. providing diverse application scenarios.

1. A Greater Level of Participants

Social media could increase participation in several ways. First, there would be fewer limitations of time and space since social media enables people to provide input without having to travel to a community center or other physical gathering space which also means that participation via

social media can also be less time consuming and more convenient for participants. Social media as a medium for public practice is particularly useful because of the ways in which it mixes scales and time scales. Social media posts are hyperlocal, individual broadcasts that have the potential to become public, to extend over time and space through attention, exchange, reference, annotation, reposts, and likes (Warner 2002).

The “Guide to Online Participation” (2007) asks, what is different about online participation? Public participation is not new, but online participation can offer some unique and novel tools, such as interactive maps or online discussion forum, which can help overcome longstanding obstacles of time, disability and distance.” For the interaction part, two advantages are noted:

- different media are available -- you can present ideas and policies using various media instead of just written material -- audio (podcasts), visual (written and video), touch (multi-input touch screens).
- sharing knowledge and creating ideas among many people -- you can build on other ideas and content directly and conveniently, for example, people all over the world could co-edit the wiki page and co-generate the wiki knowledge community together.

Further, online participation can enable more frequent and intense participation. While online, some people self-disclose or act more frequently or intensely than they would in person, due to “dissociative anonymity, the invisibility of personal activity, minimization of status and authority” (Suler 2004), though anonymity can also be problematic as people can be hostile or do inappropriate things when anonymous. Besides, personal participation status is more viewable and the recorded participation might encourage participants to feel involved in the PD process.

In addition, more customized participatory experiences can be created for diversified participants. The web 2.0 applications and social networking systems offer an arguably more open, collaborative, personalizable and therefore more participatory Internet experience (Foth 2011). For example, the VoiceOver mode for some webpages allows those with visual disabilities to “read” other participants’ comments. Besides, some project website might have a “kid mode,” which contains more images and animations, which is more user-friendly for children.

2. Convenient Documentation

In the project #OurChangingClimate, social media were used to create “a hybrid online-in real life (IRL) space where participants could gain understanding about the causes and impacts of climate change and network within and outside their community.” Thus, social media helps people document everyday experiences and share knowledge and perspectives with each other (Simpson, Napawan, and Snyder 2019). However, the abundance of user-generated information can also create the challenge of generating misleading or false information, and interpreting diverse information can also be time-consuming.

3. Connected and Shareable Information

The extensive use of social media enables people to be more connected and therefore the information and knowledge is more accessible and shareable in society, The user-generated content (UGC) such as wikis help open up the innovation process for external ideas and solutions (Hagen and Robertson 2009, Füller, Hutter, and Faullant 2011).

4. Diverse Application Scenario

Social media could have many different use scenarios, combined with the physical world and run on mobile devices. Although there are many arguments that social media has very negative impacts on human offline communication and social connection, since now more hybrid online-offline media appear, some researchers now argue that social media can be used to “extend and solidify existing social relationships and public that often exist in place” (Boyd 2014; Boy and Uitermark 2017; Simpson, Napawan, and Snyder 2019). Besides, for the convenience of mobile applications, more advantages could be utilized with sensors, location-based services, and context-awareness. Therefore, social media are going to play an increasingly important role in social activism and public engagement (Foth 2011). The newest emerging application scenario may include interactive environments, citizen science sensor networks, robots, and drones (Caldwell and Foth 2014).

2.3.3 Challenges of Using Social Media in PD

While there are many assets to using social media in PD, there are a few challenges that are emerging as this technology has become more pervasive in the following five aspects. In time, these can be addressed well, but at this time they remain challenges.

1. Self-Actualization and Solipsistic Introjection

The online environment has a missing feeling of community for certain people because they would like to see fellow participants in person in order to build trust among communities. Besides, the feeling of being responsible is also reduced when online. According to Carroll and Rosson (2007), users more typically talk about their own interests without caring for other people’s concern. Another issue is solipsistic introjection, which means human often perceives the reading as a voice in their head so while the participants read the posts from other participants, they feel they are talking to themselves rather than with another person (“Solipsistic Introjection.” Home. Accessed June 07, 2019.

<https://anonymityinternet.weebly.com/solipsistic-introjection.html>).

2. Reduced Authority and Quantitative Emphasis

Online users might not be considered as serious stakeholders as those showing up in the in-person meetings. Further, due to the lack of face-to-face communication, the quantitative

results are more likely to be emphasized and the quantitative information, as well as the debating or discussion process, may not be as rich as traditional on-site meeting or workshops.

3. Not Accessible or Acceptable to All Communities

Some communities may not have good access to either mobile devices or internet and some might feel reluctant to use the devices for fear of new technology, accuracy, anonymity, or similar factors.

4. High Cost of Platform and Human Resources

In the blog “Top Fears for running Online Community Engagement”, a post by Articulous on August 23, 2016 described the high cost of building a participation platform, recruiting a project manager who knows how to engage people through digital participation and training the current project team to use social media to gather community input are among the top fears/concerns regarding organizing public engagement online. Setting the online participation platform, which connected to multiple social media is never an easy task. In order to save the costs of building the platform, and extracting complex online participation data, many PD organizers only utilize the existing popular social media, such as Facebook, to send out a short survey, which is an easy but also shallow way for the public to participate.

5. Similar Weaknesses with Offline Participation

These challenges for using social media for participatory design are not special cases that only apply to online participation. They also exist widely in today’s offline participation. First, public participation is short lived. Documented by some research, participants’ enthusiasm for participation decreases gradually along with the phases. Second, the public is afraid to offer input when they know their input would be visible to the general public. Also, since the public has a very different knowledge level of city design or development, the very open and transparent participation might make some person feel hesitated to participate. As Reyes and Finken (2012) note, “I feel like a bit of an ‘amateur’ from reading the comments, and that the other participants seem to be on a different level than I am.” Third, the participation rate is low. Though it might be a little contradictory to the more participation point in the advantages of using social media part, actually, not all of the participatory design projects using social media got success in attracting more participation. For example, if the designers created their new closed system, which is not connected with the broadly used social media such as Facebook or Twitter, they might end up with relatively low participation (Simpson, Napawan, and Snyder 2019).

2.3.4 Demanding Research in PD using Social Media

Tools, as the foundation for exploring interfaces, methods, and practices in PD, are crucial for implementing PD. For different application situations, social media could be used differently in collaborative projects, blogs, content communities, social networking sites, virtual game worlds,

virtual social worlds (Reyes and Finken 2012) and more research is needed in exploring the different use of social media in organizing a PD project. Full-featured community platforms, rather than single idea submission websites, are required to attract creative users to submit their ideas and designs (Füller, Hutter, and Faullant 2011). It is therefore necessary to archive and analyze all these available tools as well as combine them into the hybrid platforms, considering the real-use scenarios based on actual PD projects. Besides, measurements of participation are in high demand and there is no detailed model that can guide decision makers during its application, especially for PD in communities with a diverse group of people with different income and social level (Ibrahim and Amin 2015).

2.4 Participatory Design Measurements

2.4.1 Participation Level Measurements

Different participation scholars have devised different theoretical models and ways of describing different degrees or levels of participation. One of the oldest and most well-known is Sherry Arnstein's (1969) ladder of participation. According to her classical theory of "Degrees of Citizen Participation", there are the following eight levels of participation, "manipulation, therapy, informing, consultation, placation, partnership, delegation, citizen control", which could be put into three large participation categories, from bottom to up, "nonparticipation, tokenism, citizen control".

More recent conceptualizations of public participation types and degrees were developed by the International Association for Public Participation (IAP2) that there are five main levels: inform, consult, involve, collaborate, and empower, which is widely used by PD organizers all over the world.

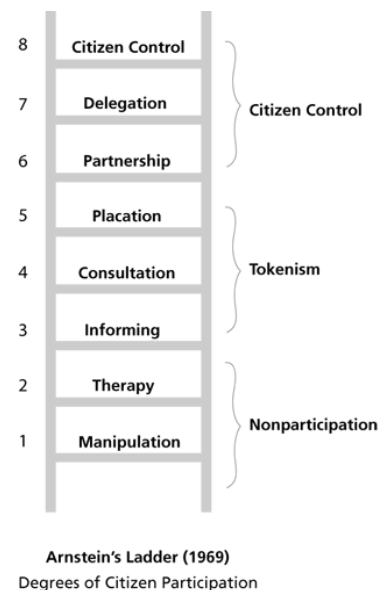


Figure 1. Arnstein's Ladder of Citizen Participation (<http://www.citizenshandbook.org/arnsteinsladder.html>).

INCREASING IMPACT ON THE DECISION

	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, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	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.

Figure 2. IAP2 Spectrum of Participation

(https://cdn.ymaws.com/www.iap2.org/resource/resmgr/pillars/Spectrum_8.5x11_Print.pdf).

Last, there is a power law of participation developed by Ross Mayfield in 2006, assigning different PD activities (for example, reading material, identifying a favorite place or aspect, tagging sites, or offering comments, etc.) to different participation levels from what he calls collective intelligence, which is a low threshold of participation, to collaborative intelligence, which is a high degree of engagement of people. Also cited in the ICT government website (<https://www.ict.govt.nz/>), the power law offers a good example of assessing the engagement level of the online activities.

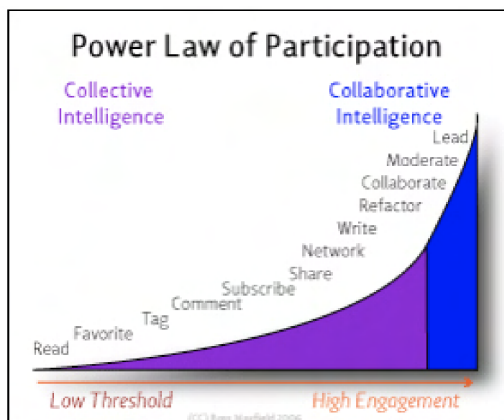


Figure 3. Power Law of Participation

(https://ross.typepad.com/blog/2006/04/power_law_of_pa.html).

2.4.2 Participation Success Measurements

The public involvement literature shows there are several key indicators of the value of participation (Lach & Hixson, 1996; Sanoff, 2000).

- Opening the process to stakeholders
- Receiving a diversity of viewpoints
- Enabling meaningful participation
- Integrating stakeholder concerns
- Information exchange
- Saving time
- Saving and avoiding costs
- Enhancing project acceptability
- Mutual learning
- Mutual respect

Specifically, looking at these indicators, we might have the following possible quantitative measures (from US Public Participation Playbook: <https://participation.usa.gov/>).

- Total number of participants
- The number of participants needed to establish a representative sample size, as well as primary and secondary groups
- The number of participants from primary and secondary target groups
- The number of new participants
- The number of returning participants
- The percentage of participants satisfied with the “customer experience”
- Rates of conversion, e.g. from contacts > visitors > signups > contributions
- The volume of sharing, recruitment activity or other promotion
- The quality and effectiveness of participation, e.g. relevance of feedback.
- The value and in-kind services donated by public/private partnerships, e.g. air-time, printing, advertising, or prizes
- Numerical comparison of current participation with previous efforts and non-partnership activities

In addition, the satisfaction and gains of the participants are also important metrics to measure. For example, Problem Based Learning (PBL) collaboration, as a kind of PD, offers insights on some potential measuring criteria, from the following perspective of the participants (California Critical Thinking Disposition Inventory (CCTDI)) Margeston 1994; Maudley and Strivens 2000).

- Truthseeking
- Open-mindedness
- Analyticity
- Systematicity

- Critical Thinking
- Self-confidence
- Inquisitiveness
- Cognitive maturity

In this chapter, I examined the overall digital trends in landscape and urban design, which mainly describes the influence of ICT on current built environment design and demonstrates the needs and requirements of PD. The review of the foundational theories in PD emphasizes the value of PD in realizing design democracy and crowdsourcing, the main process and strategies of PD, as well as the challenges in current offline PD, in the phases of engaging diverse people, getting rich input, and interpreting that input to generate “meaningful” co-decisions. Combining the two fields of ICT and PD, this chapter then goes through the current PD practices using social media, including both the advantages and disadvantages and also finds that measurements of the participation effects regarding different social media applications are in high demands. Last, according to desirable research needs, participation measuring methods are reviewed, from the perspective of the value of participation and satisfaction level of the participants. In the next chapter, two public engagement cases would be examined to gain an in-depth understanding of the current use of utilizing social media for PD.

Chapter 3 Case Studies: Public Engagement Project

To get deeper insights into the process of participatory design and the methods applied to community engagement, I have conducted case studies as my research method. This chapter provides an overview of various community engagement projects and their connection with the participatory design will be addressed. Then, two cases -- Crown Hill Urban Village and Imagine Greater Downtown -- are selected as representative community engagement projects in the Seattle area for the specific case study. The case study analysis uses interviews to gain insights from different stakeholders, as well as archives and data analysis to assess the effects of social media using on the two projects.

3.1 Public Engagement Projects Overview

Public engagement is involved in many aspects of public life, including participatory design, official elections, and some policy and legislation processes, etc. As an important way to inform the public and get their input, public engagement is a big theme of PD, from the phase of identifying issues, making a conceptual design to the phase of design implementation. For different landscape projects, the purposes and methods of doing public engagement might vary from one to another. This part offers a short overview of all these projects and selects two Seattle-based projects for the case studies.

3.1.1 What is Public Engagement Project

There are many different public engagement projects but they can be placed into two general categories: Issue-based and Location-based. In terms of landscape design, both types of projects are crucial, but they might happen in different phases. For example, issues are more likely to have an impact on the design at the earlier strategic scenario testing phase and could be open-ended dialogue, while locations offer the key design elements at a more specific design phase. However, this is not always true. The profession of the landscape is built upon space-specific design, so understanding a site from a different scale is the key to successful landscape projects. Along with the process of zooming in and out from the site, the need for public input to identify issues or locations are interconnected a lot, because the issues discussed by the public might guide the landscape designers to pay attention to a site which could address the issue, and at the same time, public input on specific locations might eventually generate a new topic around an issue.

In recent years, because of increasing accessibility to the Internet, participation opportunities are more visible to the public and it is also more convenient for them to participate. For one thing, there appear to be many impactful institutions working on PD, for example, Australia IAP2, OpenGov Foundation, US Public Participation Playbook (<https://participation.usa.gov/>).

For another thing, more and more local governments offer many participation opportunities on their government website, which is also impacted by the “open government” activity. For example, collaborated with the digital media lab in local colleges, Boston government uses online games for PD (<https://www.boston.gov/departments/new-urban-mechanics/community-planit>) in the Chinatown. Paying much attention to public art, NYC government introduces participation media (<https://www.youtube.com/watch?v=RL1B2y6i9U0>) for PD to the city museum and build the future city lab for continuous PD practices. Meanwhile, the Seattle government has also put a lot of effort into making public participation more accessible. In July 2016 the Seattle mayor at the time Edward B. Murray issued a bold and aggressive agenda to continue the city’s commitment to inclusive citizen participation. Continuously striving to make participation more accessible, Seattle has become one of the leaders in solving urban issues via neighborhood participation work.

3.1.2 Current Trends in Community Engagement

Current Interests in Public Engagement Profession

IAP2 (International Association for Public Participation) has conducted a large online engagement survey in early 2019 (Figure 4), which is also one of the largest ever online surveys to evaluate and measure the state of engagement processes across Australasia.

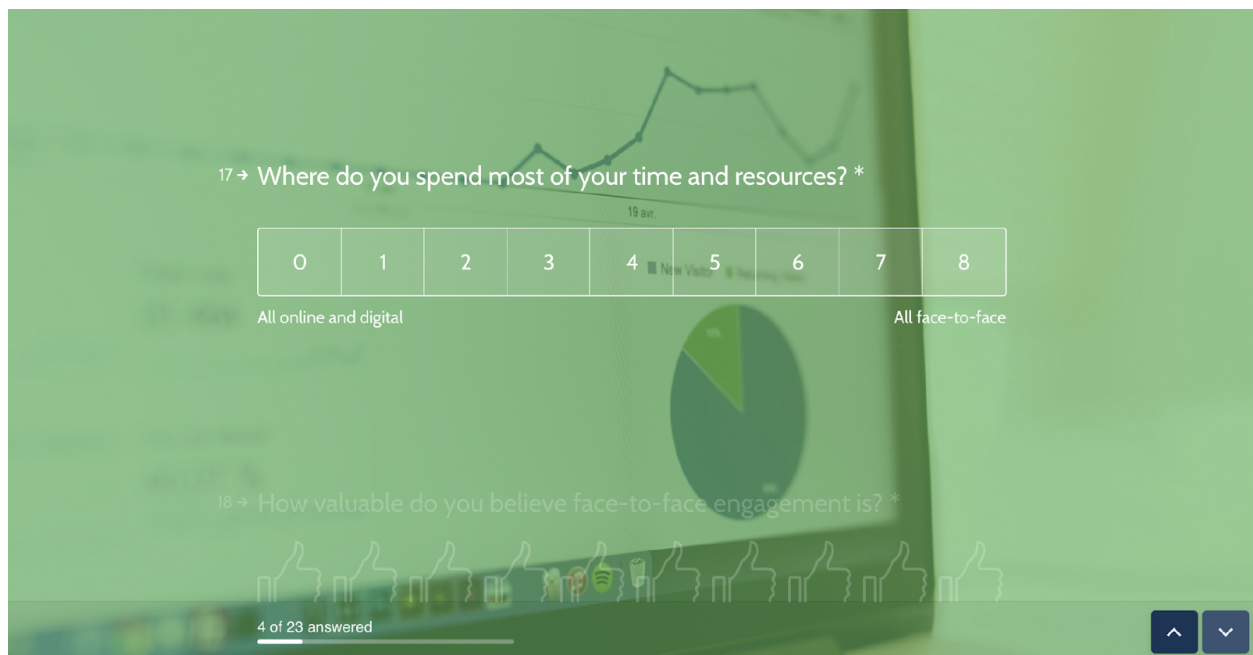


Figure 4. Screenshot of IAP2 Community Engagement Survey (<https://articulous.com.au/state-practice-survey/>).

According to the questions in the survey, the following insights in the public engagement professional field are evident:

1. Working Scale

According to the answer options, there are two engagement working scale, either an urban setting or a regional setting. In this way, there might also be two types of engagement projects, regarding the project scale, either citywide or more community-based.

2. Working Institution

There are many institutions working for community engagement: the government, including local government, state government, and the federal government, as well as the private sector and consultancy.

3. Working Area

In terms of the working field of community engagement professionals, except for the fuzzy city policy and more specific community development projects, some also work on organizational change and community behavior change.

4. Purpose of Engagement

Besides the common purposes of engagement, such as informing and educating the public, legal compliance, identifying problems and opportunities, generating new ideas to improve existing policy, strategy and plans, a key purpose of participation is developing a relationship between local governments and decision-makers with local citizens. In particular, public engagement helps us to:

- Understand public reactions
- Generate support for action
- Act for communities' behavior change
- Build community capacity and capability

5. Other Particular Interests

Particularly, the engagement methods used for the following two purposes are highlighted by IAP2, which also reflects the main focuses of many community engagement practitioners:

- Building relationships with the community and stakeholders
- Generating useful information to guide better decision making

While the comparison of online and face-to-face engagement methods, the following two aspects are emphasized:

- Time and resources spending
- How valuable does the engagement organizer think of the methods

In addition, the IAP2's survey shows research interests in the participation level and interest of community and stakeholders in the frequent engagement practices. The total engagement period length and budget is also something worth investigating.

3.1.3 Seattle-based Community Engagement Projects

In Seattle's Department of Neighborhood, there is a rule called *Early Community Outreach for Design Review*, which requires "developers to begin a conversation with community members before building project designs are complete." On the department official website, they offer a list of how communities can add their voice in the outreach and engagement process, which mainly includes housing/planning/land use, parks/open space, transportation, and privacy. In recent years, a new office was established in the department, called Office of Planning and Community Development (OPCD), to support thriving communities and lead collaborative planning with a cohesive vision.

Seattle has active community engagement projects and many landscape participatory design practices. As evident from the requirements above, his public participation process is well incorporated in city planning practices. Because of this, Seattle is among the five case study cities featured on the *Public Engagement Roadmap platform*. Created by the *Engagement Lab at Emerson College* in collaboration with *City Accelerator*, *Citi Foundation*, and *Living Cities* (Figure 5) this platform offers systematic guidance in community engagement. The team on the Seattle Public Engagement Roadmap program includes the director from the Seattle Department of Neighborhoods, the Strategic Advisor from OPCD and people from the City Accelerator. Because of this collaboration, it is useful to examine Seattle-based projects for the case study.

Another reason why Seattle has suitable soil for conducting public participation is the policy requirement for community development. Environmental impact statement (EIS), under United States environmental law, is a document required by the National Environmental Policy Act (NEPA) for certain actions "significantly affecting the quality of the human environment". An EIS is a tool for decision making. (Wiki EIS). To satisfy EIS needs, the project needs to develop several alternative plans and the City of Seattle usually includes public voices in determining the alternatives when doing EIS.

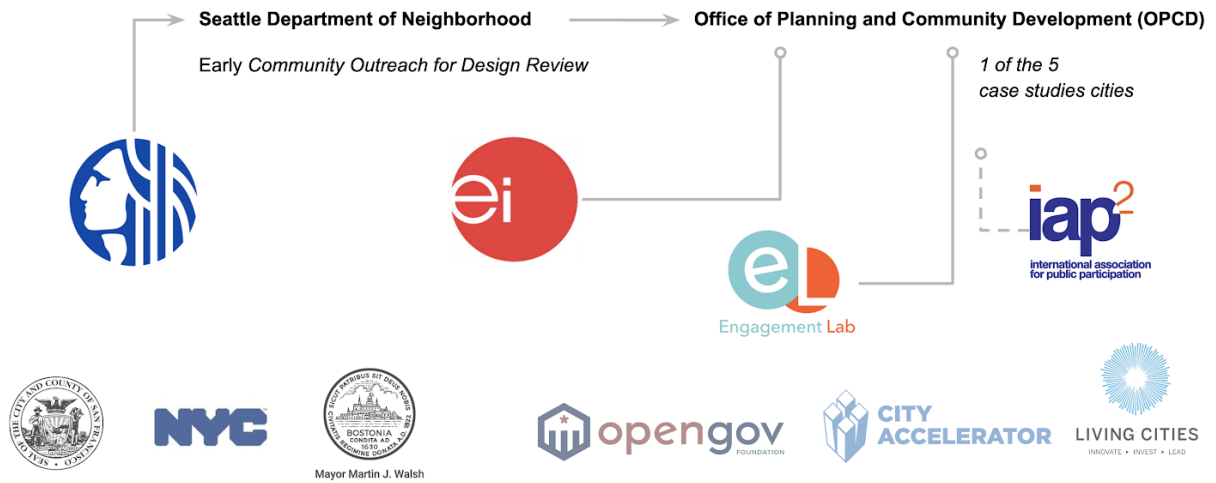


Figure 5. Common Stakeholders in Participatory Design in the US.

Projects Selection

Seattle’s OPCD has an archive called Ongoing Initiatives for all of the community development projects in the city. Overall, there are two types of projects, the more specific one with the exact location, such as “Ballard Urban Design” and “Chinatown-International District,” as well as the more general one with focusing on issues, such as “Outside Citywide” and “Impact Fees.” Project selection considers the following three factors: 1. The project is new and/or the public engagement process hasn’t finished so there is a chance to track the activities and to observe participation; 2. The project involves online participation; 3. The projects include different categories of projects so that the participation methods and effects could be compared. As a result, this research selected two projects for the case study:

1. Community-Based Project: Crown Hill Urban Village (CHUV) - Planning with the Crown Hill community to shape growth and coordinate investments in livability
2. Citywide Project: Imagine Greater Downtown (IGD) - Generating big ideas for the heart of Seattle

3.2 Inspirations from Interviews

For this thesis, I conducted ten interviewees in total. Among the ten people, seven were involved in the format of in-depth discussion and three participated in the format of short Q&A. The in-depth interviews were done with members of the City of Seattle's Office of Planning and Community Development (OPCD), Seattle Department of Transportation (SDOT) and EnviroIssues, which is the local firm working on the public engagement. These interviews offered critical insights that informed my research and they help build the structure of the current community engagement process analysis. Comments from the urban planners, and the community engagement coordinator are inserted in the case study, for supporting arguments.

The interviews were conducted with the key stakeholders in the selected projects and the interview results were used to access more project resources, including useful links, documents archive, and some key points in the community engagement process. The technique for deciding the interview sample quantity is called data saturation "Building on the findings of Guest et al. (2006) and others, which means if three consecutive interviews don't generate new themes, you can stop the interviews." (Bernard, Wutich, and Ryan 2017).

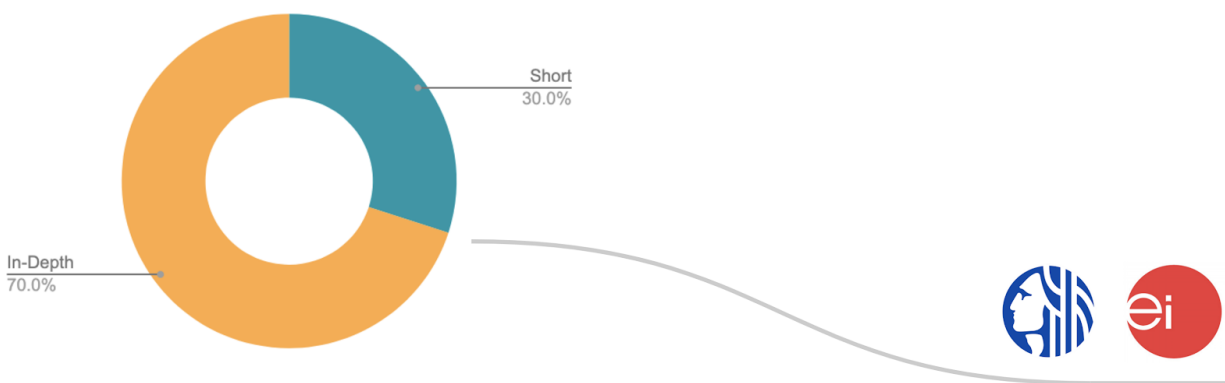
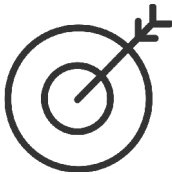


Figure 6. Interview Range.

3.2.1 Survey

Survey Design

This research uses a short survey as an aiding method for the interview to elicit key ideas from different interviewees on public engagement in urban planning project. To have a quick view of different stakeholders' perception of community engagement and their basic attitudes towards online and offline community engagement methods, there are three questions as follows:



1. The purpose of public engagement (rank): the options are summarized from the introductions of community engagement on the City of Seattle website and the literature.



2. Phases for valuable public input (rank): the options are pulled from the timeline description of Crown Hill Urban Village webpage on the City of Seattle.



3. Online and offline community outreach comparison (Likert Scale): efficiency and effectiveness are the two metrics used in this research.

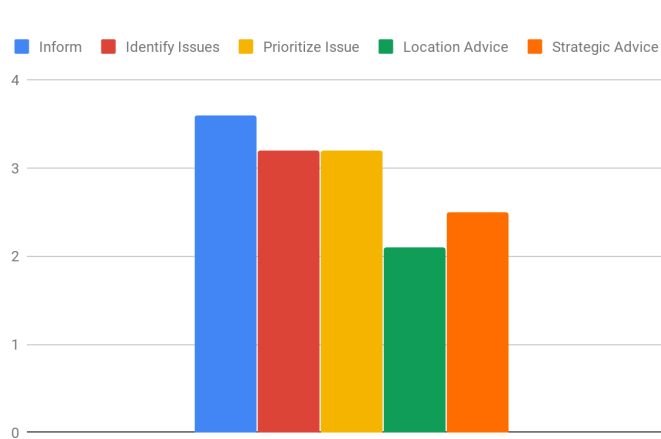
Survey Results

There are only 10 survey responses in total but they still provide some findings which could offer some insights into current professionals' perception of public participation. To generate a quick view of the survey results, this paper uses the quantitative method to evaluate the total tendency of different survey answer options.

Summarization of the survey feedback

Table 1. Survey Results - Purposes of Public Engagement (Rankings on a scale of 1 to 5).

Pseudonym	Stakeholder	Inform	Identify Issues	Prioritize Issues	Program Location	Strategic Advice
Andy	OPCD	5	1	0	3	2
Bill	OPCD	5	4	3	1	2
Betty	OPCD	1	2	5	3	4
Cindy	OPCD	1	4	5	2	3
Christoph	SDON	5	4	3	1	2
Dan	SDOT	4	5	2	3	1
Emily	EnviroIssues	1	4	5	2	3
Fiona	EnviroIssues	5	1	2	3	4
George	EnviroIssues	4	5	3	2	1
Hanna	Resident	5	2	4	1	3



In order to show the priorities of the purposes more intuitively, the numbers in the table are also reported in Figure 7. Here we can more readily see the main reasons why city agents engage the public in their project. For example, Andy ranks “inform” as the 1st purpose of public engagement in the raw table and it is transformed to the value of 5, showing the importance of this purpose more intuitively in the bar chart.

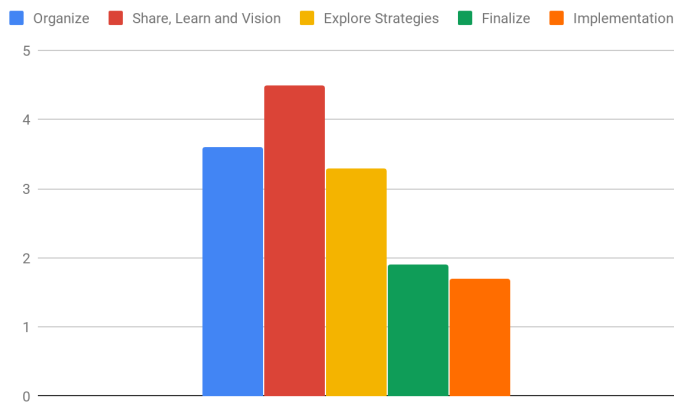
Figure 7. Survey Results Summary - Purposes of Public Engagement.

Survey respondents identified informing the public and learning about people’s priorities as the top two reasons for public engagement. Informing people received three very low ranks from respondents and the reason might be the negative description of this option. For example, one participant ranked informing people as the least important priority, but she names “letting people know what is going on” as the first priority, which is very similar to “informing”. Surprisingly, no one put getting location suggestions for a program in their top 2 important choices. Whether getting strategic advice from the public is important or not is debatable. It is interesting that Identifying issues gets very various ranks among people and it deserves more discussion.

Table 2. Survey Results - Phases for Influential Public Input (Rankings on a scale of 1 to 5).

Pseudonym	Stakeholder	Organize	Share, Learn and Visioning	Explore Strategies	Finalize	Implementation
Andy	OPCD	3	5	4	2	1
Bill	OPCD	5	4	2	1	3
Betty	OPCD	3	4	5	1	2
Cindy	OPCD	4	5	2	1	3
Christoph	SDON	5	4	3	2	1
Dan	SDOT	4	5	1	2	3
Emily	EnviroIssues	2	5	4	3	1
Fiona	EnviroIssues	3	5	4	2	1
George	EnviroIssues	5	4	3	2	1
Hanna	Resident	2	4	5	3	1

Similar to Table 1, the ranking number in the raw statistic table is also transformed into the different values in Figure 8.



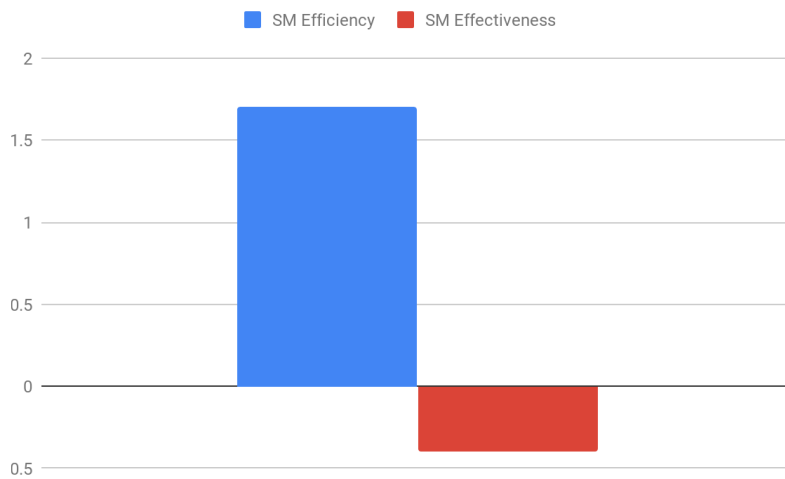
Share, Learn and Vision is definitely the most popular strategy among those surveyed for getting influential public input while organizing phase and explore strategies phase are among the top 3, although they might have more variations in feedback from different participants. It reaches the consensus that in the finalize and implementation phase, it is very unlikely to get influential feedback from the public, which is also very understandable.

Figure 8. Survey Results Summary - Phases for Influential Public Input.

Table 3. Survey Results - Comparing SM with Offline Workshop (Rankings from -3 to +3).

Pseudonym	Stakeholder	Social Media Efficiency	Social Media Effectiveness
Andy	OPCD	3	1
Bill	OPCD	0	0
Betty	OPCD	0	0
Cindy	OPCD	1	-1
Christoph	SDON	-1	-1
Dan	SDOT	3	-1
Emily	EnviroIssues	3	-1
Fiona	EnviroIssues	3	-2
George	EnviroIssues	2	-1
Hanna	Resident	3	2

Most participants of the survey hold positive attitudes towards the efficiency of social media for community engagement, while showing concern about its effectiveness for valuable feedback. Some participants think the results might vary in terms of phases and projects so it is hard to compare and they just selected the neutral.



For example, one respondent highlights that although she offers a rating of -1 for the effectiveness of social media, she could see its increasing tendency for greater public engagement online in recent years. For final phases of a project, it is agreed by some participants that social media could really help them to reach out to more people more efficiently and help serve the phase purpose well (Figure 9).

Figure 9. Survey Results Summary - Comparing Social Media with Offline Workshop.

Key Findings

1. Purpose: According to survey respondents, the main purpose of participation is to inform people and understand people's priorities regarding urban issues. These are considered the top purposes of current public engagement while getting strategic design idea or suggestions for a program are not very important purposes now.
2. Phase: Overall, public outreach should be early. A project is more likely to get influential public input at the early stages, and it is especially important to engage the public in the Share, Learn and Vision phase, which happens exactly after figuring out the key stakeholders.
3. Compare: For public engagement, social media is more efficient than the offline workshop, although it might be a little bit weaker in getting valuable feedback effectively and there are increasingly better social media platforms for community engagement which are promising.

3.2.2 Interview

Interview Design - Organizing Public Involvement in the Project

Table 4 outlines the questions that I asked interviewees regarding how they organize public involvement in the previous PD projects. The questions address issues such as the strategies to attract people to participate and get effective input, how social media is used in the project, comparison of offline participation with participation via social media, and all the social media tools they plan to use.

Table 4. Main Topics of Interview Questions - Organize Public Involvement.

Domain	Questions
Attractions v.s Effectiveness	Online participation and offline workshops, which one attracted more people and which way generates more valuable ideas finally? How about your expectations?
Functions of Social Media	What is social media's role-playing in the project? Besides acting as the publishing channel, what are other functions fo you use it for?
Compare Social Media with offline	How do you think of the difference between online and offline participation? Could you identify the advantages and disadvantages of each?
Tools Pool	What social media tools for public engagement do you plan to use?

Project Experience	Which project do you think is the most successful in reaching out to the public and get the most effective feedback? Which one do you think is the most unsuccessful one? Do you know the reasons?
--------------------	--

Interview Design - Envisioning Participatory Design Process

Table 5 outlines the questions that I asked interviewees regarding how they understand and imagine the participatory design process in their projects. The questions address issues such as the purpose of the public participation, the degree to which the information gathered is sharable to other projects, the strategies they employ to gather public input and how they interpret the public voice.

Table 5. Main Topics of Interview Questions - Envisioning Participatory Design Process.

Domain	Questions
Purpose	How do you think about the collaboration between urban planners and the public? Which content do you think is more “suitable” for public input, for example, identifying issues, deciding locations and developing strategies? How do you get the current issues for a project and would you usually append or update the list according to public voice? For OPCD, what is your final goal for public engagement?
Sharable	Different urban planning and design projects would also share many common planning principles, under Seattle’s overall planning, so some key planning word like “walkable communities” might happen in every project recently. Do you use or do you agree with a general issue framework for public input?
Get Public Input	Public input is very tricky sometimes since it is not always valid. Do you have any strategies to encourage more effective public input? Can you describe any specific participant type and feedback that contributes effectively to the engagement? Can you share any less effective public feedback? Can you share any strategy to encourage more effective public input?
Interpretation	How do you evaluate or interpret public voice? Will you evaluate them quantitatively, like weighing the issue more people showing interests more? How do you think of the value of a small number of public opinions? Will they still work?

Key Findings

1. Different Engaging Purposes for Different Phases

Both interviewees from OPCD and Enviroissues agree that for different phases, the purpose of public engagement is different and for some phase, for example, the phase to launch a project, the main purpose is to inform people and raise their awareness about the project. For a typical planning project, OPCD describes the purposes for different phases as follows: the first phase is to identify issues and opportunities, and the next phase is to ask them to evaluate some alternatives and give us cons about some particular actions or proposals. Then it moves into a more legislative process. At some points, the project will be passed to the council and they hear directly from people, while the planning department waits to be informed and mainly work on making people aware only.

Furthermore, building trust with the public is very important. Since it is hard to see a project that everyone is completely happy with and we cannot really make complete consensus among neighborhoods, it is crucial to keep the public on the same page and make sure they can accept the process, even if they might not fully support the solution. Specifically, people from OPCD argues that optimistically we think people's opinions will change as we go through the process as we give them more information but generally they do not. However, participation still improves their understanding and acceptance of the project.

2. Different Engagement Methods for Different Purposes

People from OPCD state that project focusing on the design principles are super fuzzy and that it is hard to crowdsource something like that. Face to face meeting or discussion in small groups with staff might be best for this type of project. Specifically, The video, image methods would be easier for a physical project and they are not very suitable for projects with more fuzzy policy. Besides, many public engagements occur in a very informal way but there is also very formal public engagement that is required to do by law, as a public hearing.

3. Different Participants' Behaviors via Social Media and Offline Participation

People from EnviroIssues think it is generally easier to get people online than getting them in person and online mechanisms are becoming a better place to build community and trust. However, the popularity of current inter-activities on OPCD's Facebook and Twitter account depend on the topic but are generally low. Even the most successful poll of their online survey got about 500 responses but there are 700,000 people in the city, according to OPCD.

In short, social media could help engage more people, although it might offer less rich and more shallow responses. Basically, few people will attend offline engagement opportunities but face to face conversation is longer and more honest. However, people from Enviroissues holds a positive attitude towards future social media for PD that there are some newer online tools,

where the quality of public feedback is good and the volume is high. Also, since offline methods provide opportunities to engage public sentiment input, which is important for understanding the true meaning of public feedback, people from Enviroissues argue that in almost every case, online methods and offline methods are integrated with each other.

4. Asking “Correct” Questions for Effective Public Input

As respondents from the OPCD state, people feel more comfortable to identify issues or problems rather than opportunities. Compared to the identifying phase, people feel less comfortable in evaluating alternatives and give cons to specific actions or proposals. Since the public is bad at balancing tradeoffs and for different proposals, they might just say neither is good enough. Thus, staff from Enviroissues noted that it is very important to figure out what the public could affect and have input on, and what they cannot. So the questions for public input need to be asked very considerably and skillfully. Based on interview data, the following techniques are recommended for effectively asking questions of citizen participants:

1. Do not ask questions related to personal preference, for example, aesthetic tendency.
2. Asking what the public cannot accept would be a strategy to get the design benchmark.
3. It is good to ask questions related to group value and local identity, such as a cultural icon.
4. Sometimes images might help convey ideas.
5. For some projects, breaking down the topics and highlighting key changes, such as top 10 issues for the public is necessary.

5. Challenging Public Input Interpretation

It is commonly agreed that interpreting public input is challenging, due to unavoidable personal biases, as well as vague public input, for example, images, which reduce the barriers for public participation although they add difficulties for extracting useful ideas. Further, it also reaches a consensus that public engagement is not a voting process and simply showing the voting statistics is not what the public want. Specifically, for OPCD, the online survey that I conducted is not statistically significant because of the small sample size. However, the staff at Enviroissues believe that qualitative data would offer feedback with greater depth compared to quantitative data. However, the qualitative data, are time intensive to collect and analyze.

As people from Enviroissues argue, it is still the designer’s responsibility to pick what is best for design, despite public input, a. Similarly, OPCD states that sometimes they will not use public input anyway since they would combine public input with the technological analysis together for planning consideration, and the elective officials would weigh that. There is a technique used by people from OPCD to deal with the various public input, that to put public input into different baskets based on the previous project information - support, against, or append new.

3.3 Case Study 1: Crown Hill Urban Village (CHUV)

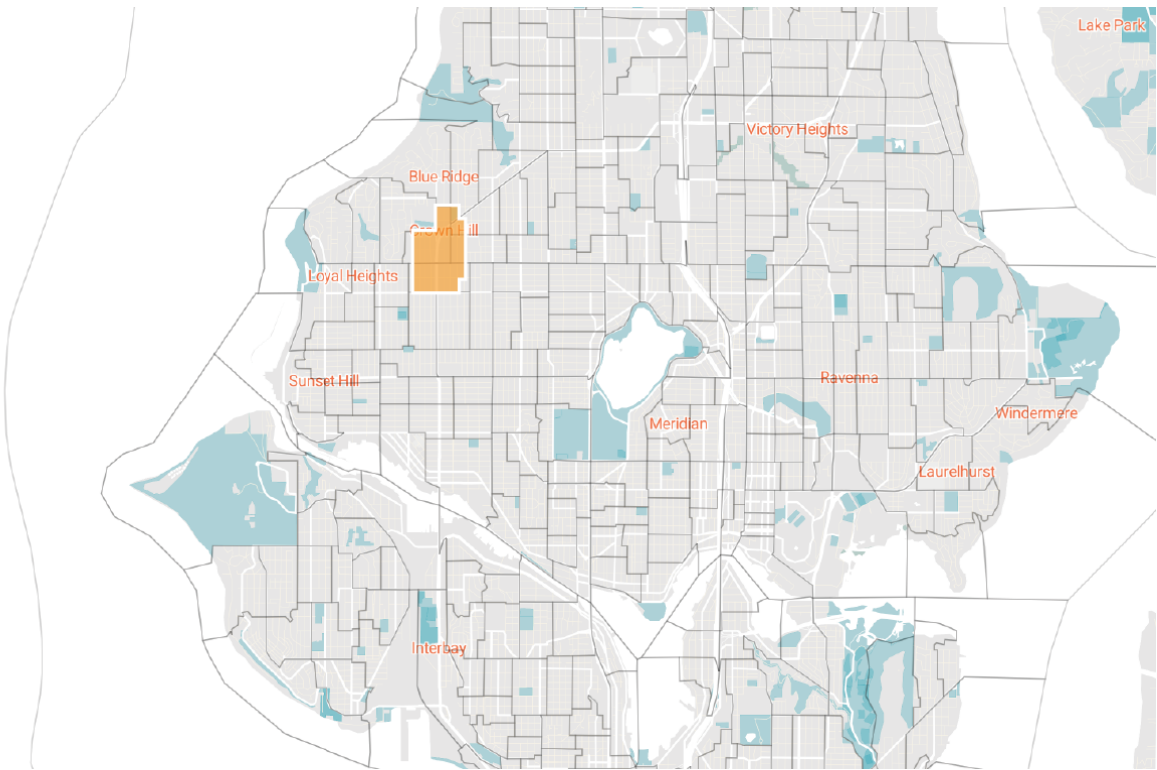


Figure 10. Crown Hill Urban Village Project (CHUV) Site Map.

CHUV is one of the urban villages and centers designated in Seattle's Comprehensive Plan and it is home to approximately 2,500 residents, as well as many businesses, services, and facilities that serve and bring people in from the surrounding neighborhoods (Figure 10). Currently, neighbors in Crown Hill are working with OPCD and City partners to develop a long-range vision for the CHUV and explore strategies for implementation. The project started in June 2018 and is expected to run through the end of 2019. It has already reached the “prioritize & design” phase, and the main PD activity focuses on getting communities’ feedback and strategic advice on the big design ideas in the following three themes: urban design and public realm, transportation, building community and neighborhood identity. Both offline and online engagement methods are used in this CHUV PD project.

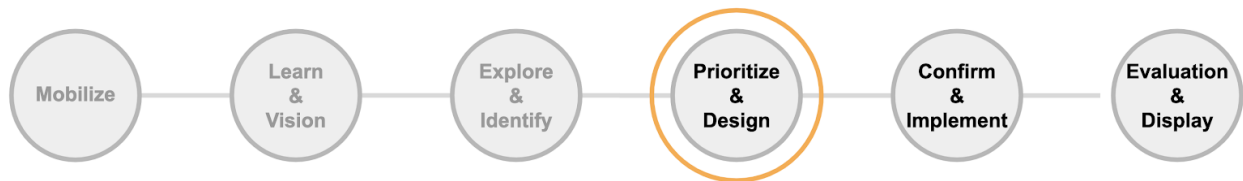


Figure 11. CHUV Public Engagement Phase.

3.3.1 Offline Engagement Observation



Figure 12. CHUV Main Hall Overview.

Basic Information

Engagement Activity

Crown Hill Urban Village Planning Workshop 2

When

Mar 3, 2019 | 12:30 - 2:30 pm

Where

Crown Hill Center (9250 14th Ave NW, Seattle, WA 98117)

Phase

The 3rd Phase - Explore Strategies (Jan - May): Develop and explore emerging strategies and tools with community and agency partners

Objectives

1. Confirm what you told us is important to you
2. Get feedback on draft priorities that will be the focus of the plan
3. Explore and prioritize ideas and directions for the plan
4. Update you on the process and timeline

Participants

For each workshop station, there was one facilitator and one note-taker from the City of Seattle, so there were 6 people from the government who participated in organizing the workshop discussion directly. For the communities, 40 people came to participate in total, which included 2 younger people and 3 middle-aged people.

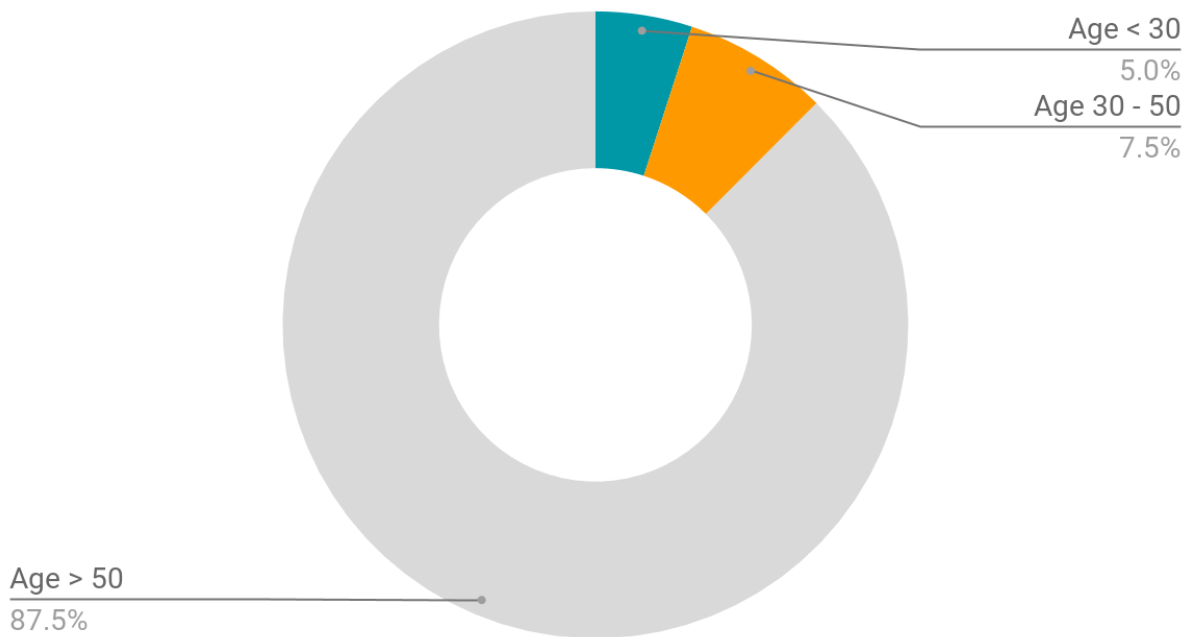


Figure 13. CHUV Workshop Participants' Demographic Analysis.

Table 6. CHUV Workshop Agenda.

12:30 - 1:00 pm	Introduction & Background Materials
1:00 - 1:30 pm	Work Session 1
1:30 - 2:00 pm	Work Session 2
2:00 - 2:30 pm	Work Session 3
2:30 pm	Wrap-up

Workshop Observation

Workshop Organization

The Crown Hill workshop that I observed was basically organized with a Reception Desk and Main Hall. For the main hall, boards of different thematic ideas (Figure 14) were placed around the room and a large desk with the community satellite map (Figure 15) is put at the center of the room, with tracing paper provided. For each of the three workshops, there is two staff from OPCD, one for organizing discussions and putting sticky notes on the board (Figure 16), the other one responsible for writing key ideas to the note board, next to the presentation board (Figure 17).



Figure 14. CHUV Presentation Board.



Figure 15. CHUV Community Map Table.



Figure 16. CHUV Workshop Facilitation.

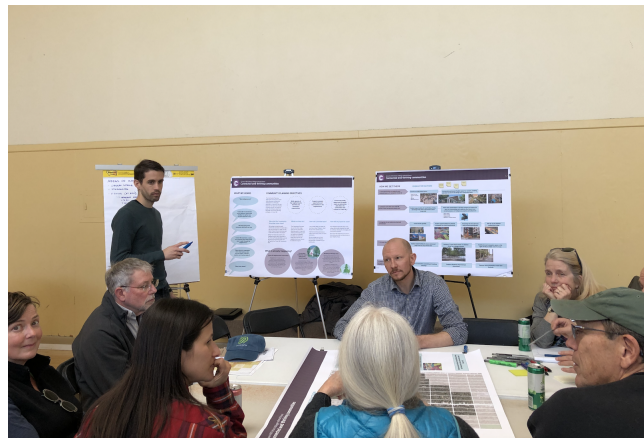


Figure 17. CHUV Workshop Note Taking.

Presentation Boards

Overall, there are two parts of the engagement activity. Accordingly, there are two stations with printed boards for that, as well as for background information and the workshop.

1. Background Information Station

Background Information stations are used to provide workshop background and to educate the participants about the work of community planning and the site information, including the previous public input results and the key focus and priorities identified by the City staff. So this part is organized in the following four steps:

What is Community Planning → Background Data → What we have heard → Overview of Draft Community Priorities

2. Workshop Stations

There were three work stations set up each focusing on the major topics of concern. The community members could rotate among the three stations to participate in all of the three themes discussion: A. Urban Design and & Public Realm - CHUV should be a distinct neighborhood with great destinations and a vibrant public realm; B. Transportation - CHUV should have streets that encourage walking and make it easy to get around; C. Building Community & Neighborhood Identity - CHUV should support connected & thriving communities.

Key Findings

Knowledgeable Communities with Different Specialties

Communities are more knowledgeable about community planning than some designers without community engagement experience might assume, and community members do have different specialties and topic interests. Some are good at offering bold imagination, some tend to give doubts or critiques on specific design ideas, and some are really good at identifying location-based issues. For example, in workshop station A, one participant proposed a 6-story parking garage, with mixed use of shopping mall and roof gardens. Then another quickly offered feedback that the garage was too high and it would block the views so she suggested putting the three levels of parking space underground, which got support from many other participants.

Educating Communities is a Big Content in Participation

That the communities are well informed during the participation activities is one of the big reasons why they are so knowledgeable about ongoing community projects overall. For one thing, educating the community about the city and basic concepts of urban planning and design is a requirement in community engagement, and it is often the main purpose of the first phase of the engagement. For another thing, education is a purpose embedded in the whole participation activities, for example, in the open house through the information boards, and the workshop through discussion.

Leave Early or Participate a Lot

Through observation in the workshop as well as short interviews with the residents and the engagement coordinator there, it is clear that most of the people who attended the workshop participants in many public participation activities. According to interviews and conversation with workshop participants, there are two common participation scenarios in CHUV Project. First, a certain amount of participants just leave after the first participation activities. Second, the participants who participant many times in this project might also be interested in participating in other community engagement activities nearby.

Participants with Weak Visualization Skills

Although most communities know a lot about the communities and could talk a lot with good ideas, they have very weak visualization skills and they even hesitate to summarize and write down their ideas, so the workshop has a note taker for every workshop station. Without training experience in drawing, very few communities go to the map desk in the center of the room. Even trace paper is provided, communities just do not know what to draw on the base map.

No Children Participation

Children are not targeted participants for this workshop. Some of the children came to the workshop with their parents, just because of lacking supervisors. Kids just sit on the ground, doing their homework or looking at their tablets and no one feels that they are participants in the workshop. When I asked them whether they understand what is going on here, they knew nothing about the project or the workshop.

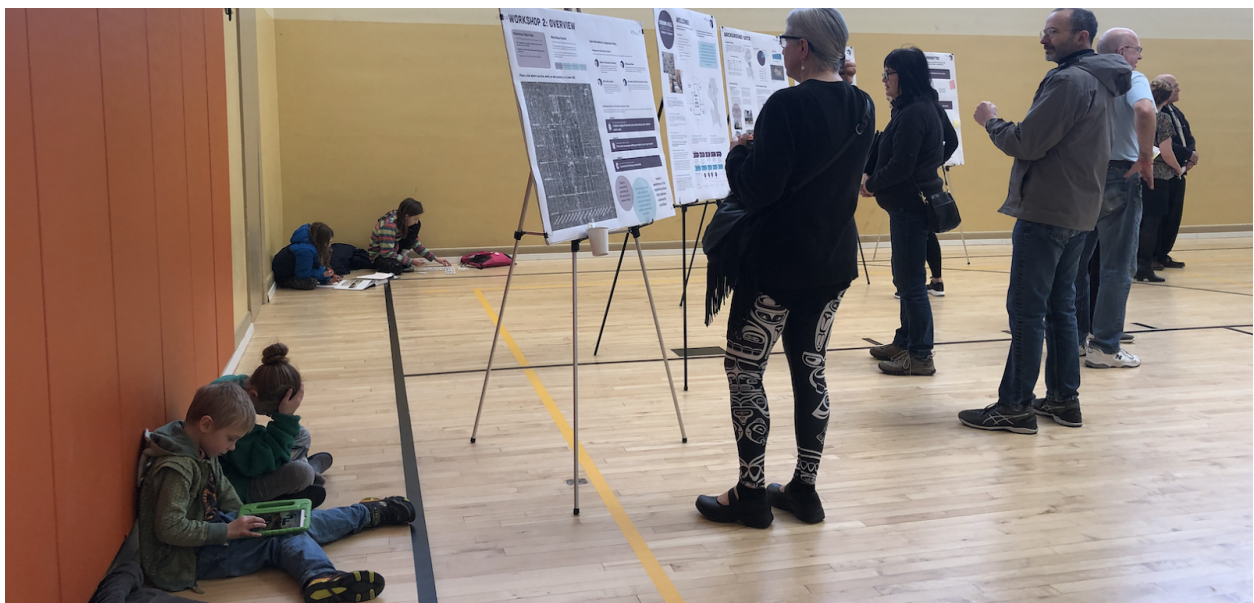


Figure 18. Kids in the Workshop, writing homework or playing on their tablet.

3.3.2 Participation via Social Media

In terms of the community engagement feedback loop, there are three main procedures, doing community outreach, getting communities input, publishing participation results.

1. Community Outreach

To reach the community, CHUV mainly has its own project page on the OPCD website, under the page of ongoing initiatives (Figure 19). On this official project page, there's a link which connects to an individual story website for CHUV (Figure 20), which basically introduces the project background information in a narrative form, as well as provides a map for public input. Also, there is a CHUV committee website (Figure 21), publishing the offline engagement activities from the perspective of the community representatives.

Seattle.gov
Mayor Jenny A. Durkan

Office of Planning & Community Development
Samuel Assefa, Director

Home / Ongoing Initiatives / Crown Hill Urban Village

Crown Hill Urban Village

Planning with the Crown Hill community to shape growth and coordinate investments in livability.

MAR 18 MON 2pm
City Council
Council Chambers

MAR 20 WED 9:30am
CANCELED - Planning, Land Use & Zoning
Committee

MAR 21 THU 8:30am
CANCELED - Design Commission
Meeting

See All Meetings & Events »

Ask Us
Katy Haima, Senior Planner
CrownHillPlan@seattle.gov
(206) 727-3886

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email address

What & Why | Get Involved | Project Documents | Background | Timeline

Figure 19. CHUV OPCD Project Page (<https://www.seattle.gov/opcd/ongoing-initiatives/crown-hill-urban-village>).



Figure 20. CHUV Interactive Story Website Homepage

(<https://seattlecitygis.maps.arcgis.com/apps/MapSeries/index.html?appid=9aade6a346444e3fb88546b96e6bb0d6>).

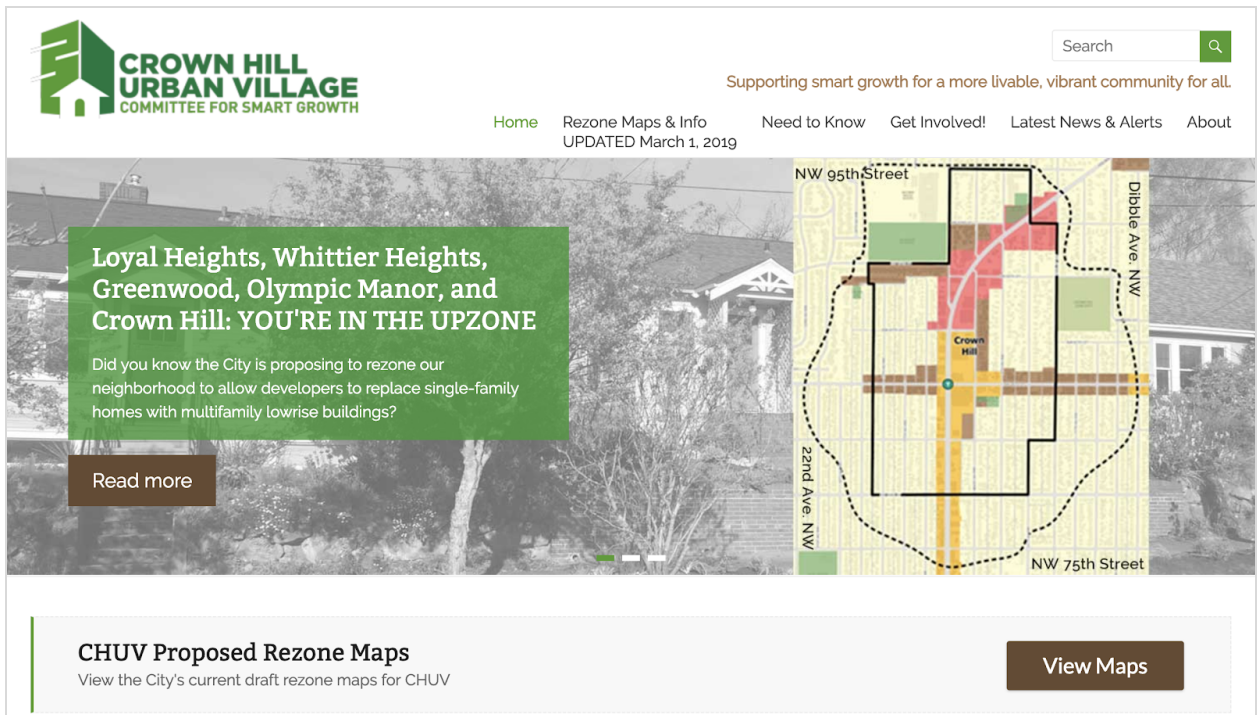


Figure 21. CHUV Committee Website Homepage (<https://crownhillurbanvillage.org/>).



Figure 22. CHUV Project Facebook Post (https://www.facebook.com/pg/SeattleOPCD/posts/?ref=page_internal).

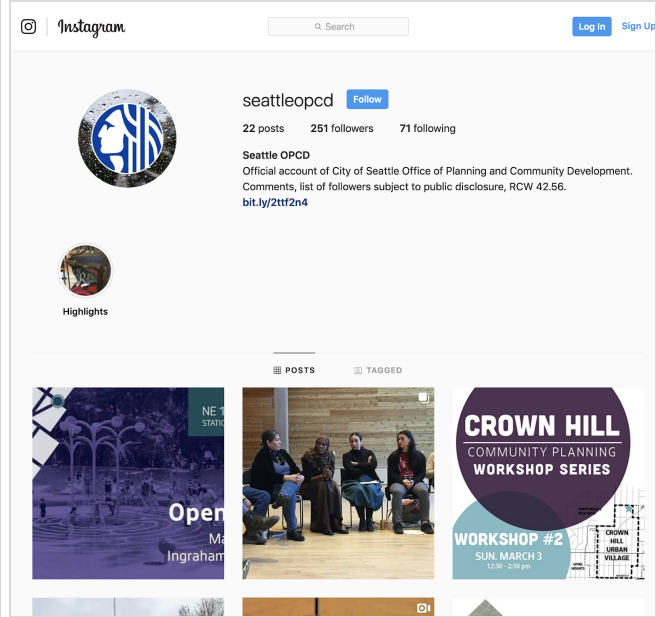


Figure 23. CHUV Project Instagram Post (<https://www.instagram.com/seattleopcd/>).



Figure 24. CHUV Project Twitter Post (<https://twitter.com/SeattleOPCD/status/1044256659034558464>).

The popular social media Facebook (Figure 22), Instagram (Figure 23), and Twitter (Figure 24) are also used for “advertising” the offline participation activities, for example, the workshop on Mar 3, 2019.

2. Get Community Input

Interactive Map

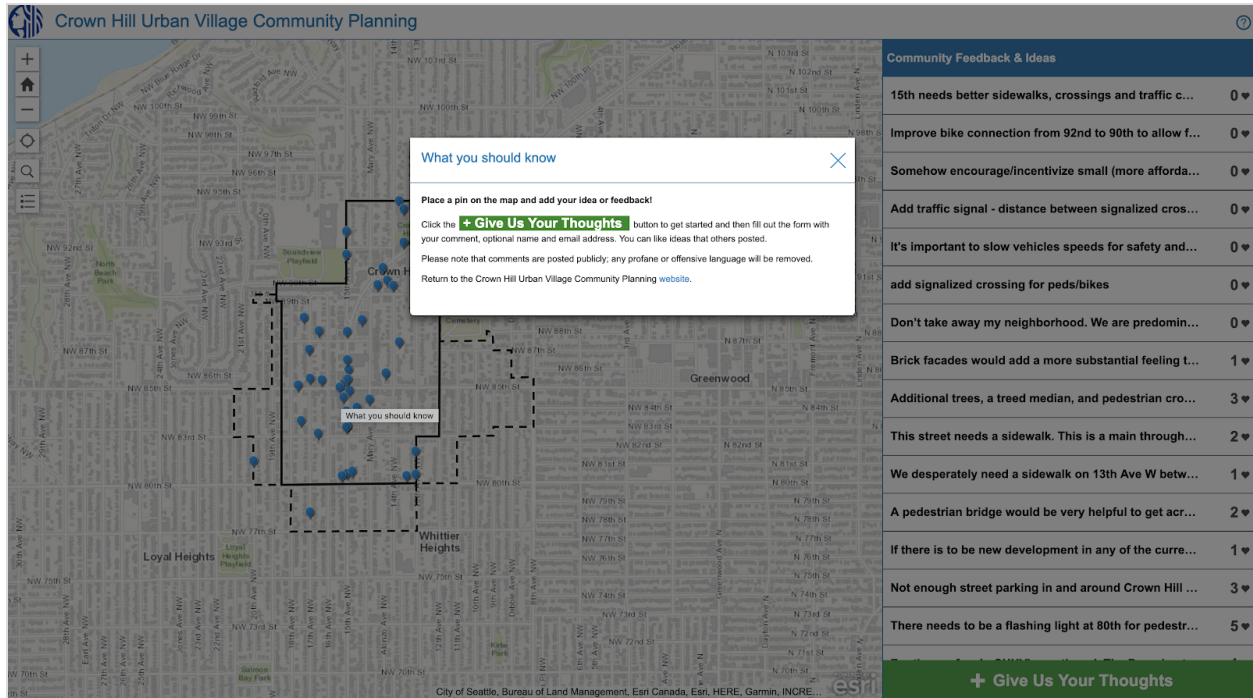


Figure 25. CHUV Interactive Map

(<https://seattlecitygis.maps.arcgis.com/apps/CrowdsourcingReporter/index.html?appid=cc6f2071ce704d708ea05344b9ca89f6>).

Besides direct email, the map (Figure 25) is the main online participation portal for the CHUV project and it received 54 comments in total, until March 20, 2019, which is not a lot. Furthermore, looking closely at the comments, I found that there are long intervals between several very closely posted comments. It appears that a few people might post several comments continuously, which matches the participants' behavior discussed in the interview, that most people do not write a comment but very few people would even write an essay.

Strictly, this interactive map should be considered as an online digital media for public participation since it does not really allow communication between participants and the social connection within the virtual community is not built.

3. Publish Participation Result

What & Why

Get Involved

Project Documents

Background

Timeline

Project Documents

Community Planning in Crown Hill Brochure
Learn about what community planning is, and our timeline for community planning in the neighborhood.

Community Workshop #1: Learn, Listen & Vision

- [October 13, 2018 Workshop Flyer](#)
- [October 13, 2018 Workshop Presentation Boards](#)
- [October 13, 2018 Workshop Notes](#)

Online Survey: Community Assets, Issues and Opportunities

- [Summary of survey results](#)

Figure 26. CHUV Project Participation Results Page from OPCD Project Page (<https://www.seattle.gov/opcd/ongoing-initiatives/crown-hill-urban-village#projectdocuments>).

SUMMARY OF SURVEY RESPONSES

A full version of the responses to each survey question are included at the end of this document.

1. What do you like about Crown Hill that makes it unique?

Many respondents noted that the area is lacking in great destinations or elements that make it unique, some of the community assets listed are as follows:

- Small and local businesses and services including restaurants, cafes, retail, grocery stores
- People and community
- Quiet residential areas
- Location on top of a hill well connected to other neighborhoods
- Parks & Open Space: Soundview Playfield, Baker Park, Crown Hill Glen, Crown Hill Cemetery
- Medical and health services
- NW 17th Avenue Greenway
- Tiny House Village, Labateyash Youth Home, senior housing, Seattle Housing Authority housing
- Community events, including markets, art markets
- Crown Hill Center
- Architecture, scale, and pattern of existing single-unit houses, including front yards

2. What are your favorite places in the Crown Hill Urban Village?

Participants favored both parks and open space and local businesses/retail as their favorite spots to go.

- Local businesses and retail
- Parks and open space
- Health services
- 17th Ave NW Greenway
- Tiny House Village
- Alley
- Crown Hill Center
- Local events, including the market

3. Where do you think the "town center" of Crown Hill should be? What should be there? What should it look like?

Many respondents noted that while the intersection of 15th and 8th seemed like a logical location due to the access to transit, other areas in the neighborhood might be better suited for a quieter, pedestrian-oriented "village" shopping district. Some noted that a secondary hub would help serve most people.

- Car-free and pedestrian friendly, like a European plaza/meet for strolling
- A commons for gathering and events, with some covered space for markets and vendors, food trucks
- A lively shopping district with restaurants, retail, small shops, vendors

COMMUNITY WORKSHOP #1: SHARE, LEARN & VISION
October 13, 2018
9:30 - 11:30 @ Crown Hill Center Gymnasium

Summary: Common Themes

1. **Safer, better connections for pedestrians:** More sidewalks, especially to make it safer for children and seniors. Concern over using on-street parking. Desire to slow down traffic on major streets for safety and to improve pedestrian experience; others have concerns about keeping traffic moving efficiently.
2. **More green:** Desire for retaining and adding both trees and open spaces.
3. **Variety and affordability of homes:** More family-sized, affordable housing. Desire to maintain existing smaller scale detached houses. Concern about price of new construction. Concern about displacement of existing residents.
4. **Design aesthetic & scale:** Desire to shape the quality of new buildings (setbacks, light and advance distinct design (setbacks, light, and air access, etc.). Concern over contemporary architecture and scale of new development.
5. **Fostering a "center" and business district:** Desire for a walkable "center" with mix of retail uses. May need two smaller nodes to serve the whole village. More small and/or affordable spaces for local businesses. More "public life" and improving safety.
6. **Drainage:** Improve flooding controls, especially in areas where pooled water during times of heavy precipitation impacts pedestrian safety.
7. **Transit connections:** Desire for more frequent, more convenient bus service, including safe pedestrian pathways to get to bus stops.
8. **Public life and community identity:** The Dane, Dick's, Crown Hill Park (and skatepark), pedestrian overpass, Taxi's, Baker Park, Turtle Coffee, were mentioned as places people like. However, there is a desire for more local retail, and to create a distinct identity that is not "tooth/Balard". Concern over public safety, especially in parks and at night.

The notes below are transcribed exactly as written by community members at the workshop, except where handwriting was difficult to read. Images of the workshop boards with notes are available.

1. SHAPING GROWTH

1a. Where and how could new development help foster a strong "center" for the urban village?

- Look at 70', Delaney's etc. as an example
- More neighborhood (not destination) businesses and retail
- Consider even more active uses at Crown Hill Center
- Better and faster transit
- Look at better plan to implement trees/greenery in a cohesive way for entire area
- Improve pedestrian experience

Q1 What do like about the Crown Hill Urban Village that makes it unique?

Answered 127 / Skipped 0

#	RESPONSES	DATE
1	Hilltop has great views and is centrally located between Greenwood/Balard/Portages commercial hubs	12/3/2018 7:32 AM
2	Convenient location to stores, nice trees, homes with yards, neighbors know each other (except for new apartment building)	12/6/2018 6:04 PM
3	Value village	11/30/2018 10:42 PM
4	It's quiet and not dense! It's park like walking around the neighborhood, with its single story houses and trees. Our little concrete in its island features and we have other middle here in our neighborhood the banks, woodpeckers, raccoons, song birds and even the occasional frog. This are the edge of Park Creek watershed.	11/30/2018 10:59 AM
5	City transit when short walk from my neighborhood. Great decrease of density moving out from 15th. Revolving of multi-family develops on single family Mad Maximize when other, smaller homes are torn down. Bicycle lanes and "paid streets" with traffic circles and crosswalks. Carve Park and other Greenways protected and accessible.	11/30/2018 8:07 AM
6	Close to Carver Park and Swanson	11/30/2018 4:07 AM
7	Adding strategic mixed use, planning for both residents and businesses.	11/27/2018 10:04 PM
8	What do "you" like... what other you mean? Nothing moves in urban right now.	11/27/2018 7:23 PM
9	Closest urban area to large wealth of NW Seattle. Easy bus access.	11/27/2018 5:44 PM
10	The Crown Hill Urban Village is still under development, so it is hard to judge what will be favorable about it. Community & doesn't feel very defined, or unique.	11/27/2018 3:20 PM
11	I don't like it and think it should be left as is.	11/27/2018 1:23 PM
12	Mom & pop restaurants, small businesses	11/27/2018 10:10 PM
13	It's a research hub great the main arteries that cross there - and a old close to parks and open areas.	11/27/2018 9:46 AM
14	I like that it is walkable and feels safe.	11/27/2018 8:46 AM
15	I don't like it	11/27/2018 5:41 AM
16	Here's what I like about Crown Hill as it is today: Quiet streets and friendly neighbors with cozy old houses and yards filled with happy kids and gardens.	11/26/2018 11:10 PM
17	Absolutely nothing. You have taken everything and the you're going to make a waste. Bring back the Crown Hill hardware store.	11/26/2018 9:53 PM
18	It's no better... that the trees and the people who live here.	11/26/2018 9:34 PM
19	Four people who bought their house 50 years ago live here, which is unique.	11/26/2018 8:34 PM
20	Nothing. It is not a village, nor is it an urban core.	11/26/2018 8:31 PM
21	Keene density contained to blocks connected to main arterial where transit is available.	11/26/2018 8:00 PM
22	More retail that meets the needs for kids and families.	11/26/2018 8:00 PM
23	I don't know yet. So far, unless you make the core no cars, all I foresee is more traffic.	11/26/2018 8:00 PM
24	Nothing.	11/26/2018 4:37 PM
25	nothing makes it unique	11/26/2018 4:26 PM
26	It is a fat area at the top of a long hill. This could really serve as a lever for increasing density.	11/26/2018 1:07 PM
27	The parks and streets to create a walkable community by putting in thoughtful street scape and retaining single unit houses for new construction.	11/26/2018 1:40 PM

Figure 27. CHUV Participation Results Files - Survey Summary (https://www.seattle.gov/Documents/Departments/OPCD/OngoingInitiatives/CrownHill/Survey1_ResultsSummary_full.pdf).

The participation results are archived with the other project documents (Figure 26) together, including the project background information, which are not very visible. In addition, public input summarized in the list of notes (Figure 27) is not very friendly for the public to read.

3.3.3 Public Social Media Engagement Evaluation

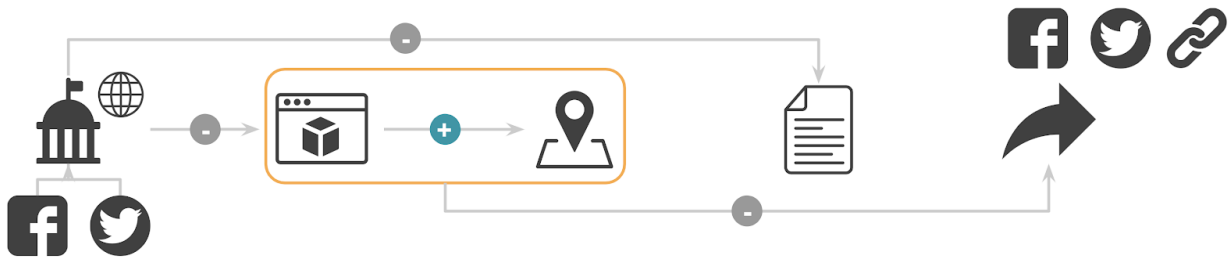


Figure 28. CHUV Social Media Engagement Evaluation.

The overall information flowing from one online platform to another is shown in Figure 28, in which “+” means convenient and active information flow and “-” means the opposite. On the first stage of finding the project website, OPCD’s Facebook and Twitter would post the link to the official project page on OPCD’s website. Then a not very noticeable link embedded on the project page would link to the project’s individual story website, which provides clear access to the interactive map for public input. However, all the participation results, including both online and offline, is posted on the project page on OPCD’s website rather than the project’s individual website. Thus, the processes of input and result display are separated, which hampers the continuous and long-lasting participation experience. Besides, the process of sharing via social media is not activated in the overall PD process, which means the advantage of social media’s public mobilization in a virtual social network is not utilized.

3.4 Case Study 2: Imagine Greater Downtown (IGDT)

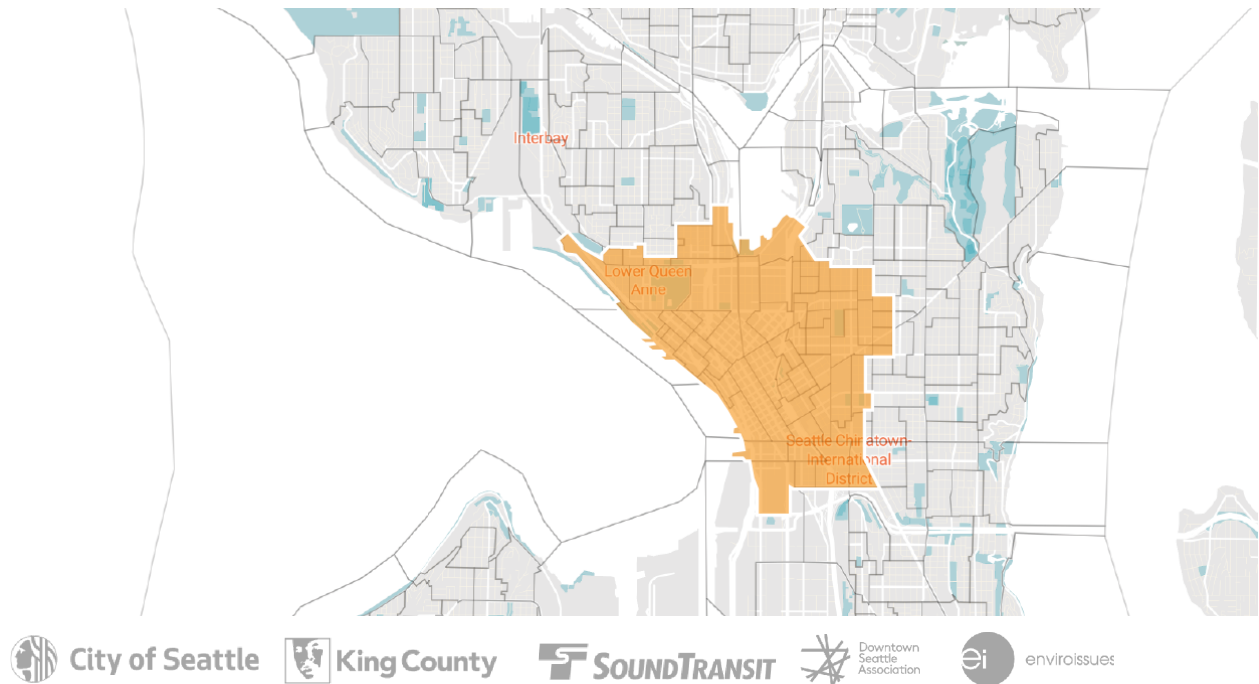


Figure 29. Imagine Greater Downtown (IGDT) Project Site Map.

Imagine Greater Downtown is a partnership between the City of Seattle, King County, Sound Transit, Downtown Association and it is in coordination with the Port of Seattle and the Washington State Department of Transportation. In addition, the online participation platform is designed by EnviroIssues. Targeted at collecting big visions of Seattle downtown in 2035, the project started in 2018 summer and is expected to post the vision plan in 2019 summer. No specific design implementation would be done for IGDT. The project website is the main portal of online participation, which was launched at the beginning of the PD project, allowing the public to view the project and offer feedback. Meanwhile, there are also offline participation opportunities, including the open house, workshop, and advisory group meeting, etc..



Figure 30. IGDT Public Engagement Phase.

3.3.1 Offline Engagement Observation



Figure 31. IGDT 2nd Open House Overview.

Basic Information

Engagement Activity

Imagine Greater Downtown Open House

When

Feb 28, 2019 | 6:30 - 8:00 pm

Where

Seattle City Hall, Bertha Knight Landes Room (600 4th Ave, Seattle, WA 98104)

Phase

The 3rd Phase - Prioritize Big Ideas

Objectives

Inform the public the current big ideas and get feedback

Participants

There were about 50 participants in total, and a large percentage of people come from the project team and the advisory group.

Observation

Open House Organization

The whole organization of the open house could be shown in the following flow chart:

1. Reception Desk

Get brochures → to have basic ideas of the project and do simple participation (“choose the images that best represent what you want to see in the heart of Seattle in 2035 and tell us why”) → sign up.



Figure 32. IGDT Open House Reception Desk.

2. Main Hall

Boards of different thematic ideas were put around the room and a large desk with paper to “share your ideas” is put at the center of the room. No formal presentation was offered for the

open house, but for each theme station, there was a person from the project team, such as the City of Seattle, to explain the boards for the audience and answer questions from the participants.



Figure 33. IGDT Open House Presentation Board. Figure 34. IGDT Open House Ideas Table.

Presentation Boards

There are two main categories of the boards that were provided to participants during this particular open house.

1. Project Background Introduction (6 boards)

why imagine greater downtown → the unique neighborhoods → 2035 vision of Seattle → current challenges for downtown area → how do we get to the big ideas and what are the big ideas

2. Big Ideas Illustration (15 boards)

Seven big ideas were presented by the City of Seattle on the presentation boards in total, which are extracted from the following public engagement process: engagement events, hosted community conversations, community meetings, online open house, the advisory group of engaged stakeholders meeting. The advisory group is composed of 34 Center City residents and workers, which represent different non-profits, commercial businesses, neighborhood groups, races, ethnicities, and abilities. The underserved or marginalized groups of people, for example, communities of color, ethnic minorities, and low-income individuals, in some of the previous community engagement projects are included in this project.

The 7 big ideas are “connect us to the water”, “stitch the I-5 divide”, “greening greater downtown”, “great places for community life”, “streets we love, streets that work”, “excellent transit experience”, “major hubs, great places”.

Key Findings

Purposes of Public Engagement

The main engagement goals for IGDT project include the following three aspects: 1. Improve the transparency of the citywide project, educate the public about the project, letting them know what is happening and why that is happening. 2. Collaborate with the public with different specialties to achieve better results and look into the future of downtown Seattle together, in an open-ended dialogue. 3. Get public input and feedback from different groups of people.

Professional and Educated Public

For one thing, the public are also professionals in other fields, who could provide helpful advice and resources, so the engagement process is also the way to look for and build collaboration with the public for a better city future. For another thing, there are community participation liaisons which helps form the community advisory group, to better pull out public ideas and get the most desirable and influential comments from the community.

Broad Public Targeted V.S Limited Public Involved

It is hard to balance between the breadth and depth of public participation. Targeting people with various identities, the open house is open to everyone in Seattle, even the visiting people, and kids. However, no kids showed up in the open house. But there are also specific activities targeting kids which are held at school.

Difficulty in Retaining Participants and Getting Continuous Input

Table 7. IGDT Open House Comments Statistics.

Number of participants for the open house on Oct. 18	60	216 comments on boards
Number of participants for the open house on Feb. 28	50	102 comments on boards

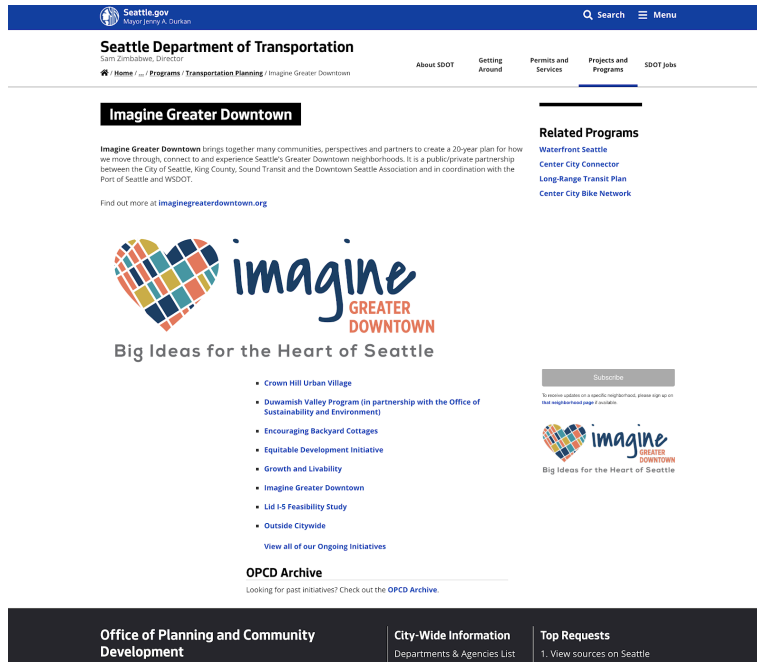
Looking into the data shown in the above table, we get less and less active participants along with the PD project going on. According to the short interviews, it is hard to continuously catch the public's attention to the project and retain them to actively participate.

Weak Expression Skills

In the open house, although there was a big table for writing or drawing big ideas, very few participants visit the table and offer ideas. Blank board without any "base idea" or "background image" increases the barriers for the public to input their ideas.

3.4.2 Participation via Social Media

1. Community Outreach



The project page could mainly be found via the “programs” page (Figure 35) on the Seattle Department of Transportation (SDOT) website or via the corner of the “ongoing initials” page on the Office of Planning and Community Development (OPCD) website, which are all bind with the City of Seattle official website.

Figure 35. IGDT OPCD and SDOT Project Page (<http://www.seattle.gov/opcd/>).



OPCD’s Facebook page (Figure 36) introduces the project with a link to the advertisement video, but it does not provide access to the main project website for participation.

Figure 36. IGDT Project Facebook Post (https://www.facebook.com/pg/SeattleOPCD/posts/?ref=page_internal).



Figure 37. IGDT Website Homepage Before 2nd Open House.



Figure 38. IGDT Website After 2nd Open House (<https://imaginegreaterdowntown.org/>).

The project website could be shared with others via Pinterest, Facebook, Twitter, Email and many other social media channel. With the help from “Add this” (<https://www.addthis.com/>) tool, the total social media platforms for sharing are 182.

2. Get Community Input

Interactive Map

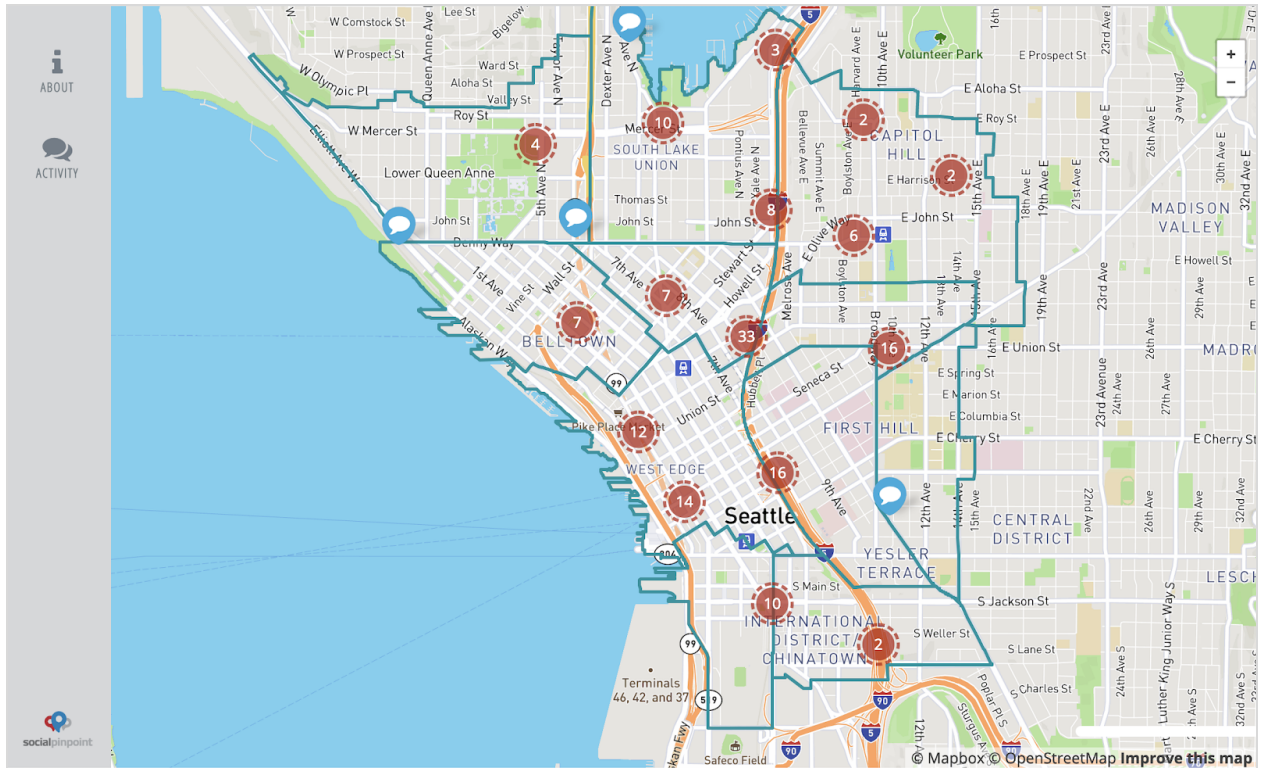


Figure 39. IGDT Interactive Map (<https://imaginegreaterdowntown.org/>).

A total of 156 comments were gathered and the “popular” areas could be easily viewed through the number of comments for different areas on the map.

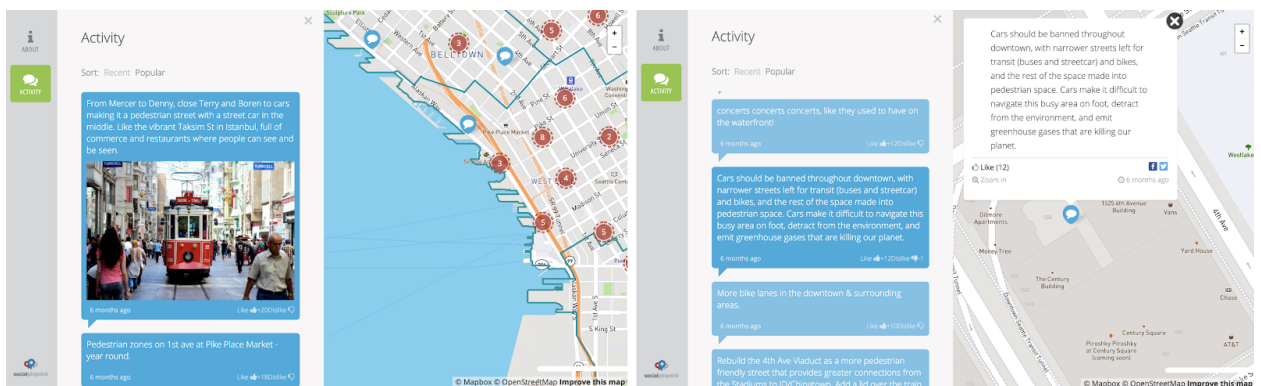


Figure 40. IGDT Interactive Map Comments (<https://imaginegreaterdowntown.org/>).

This comment box on the interactive map allows uploading images, too and many comments get responses from others. For example, there is one comment using an image of Taksim St in Istanbul to propose a pedestrian street with cars in the center got 20 likes in total. Furthermore,

in the total 156 comments, there is only one dislike, and it might be impacted by the interface design to some certain degree since in on the comment box located on the map, there is only “like” function. In addition, all the comments will show up in real-time which allows faster responses and discussion.

Image Gallery

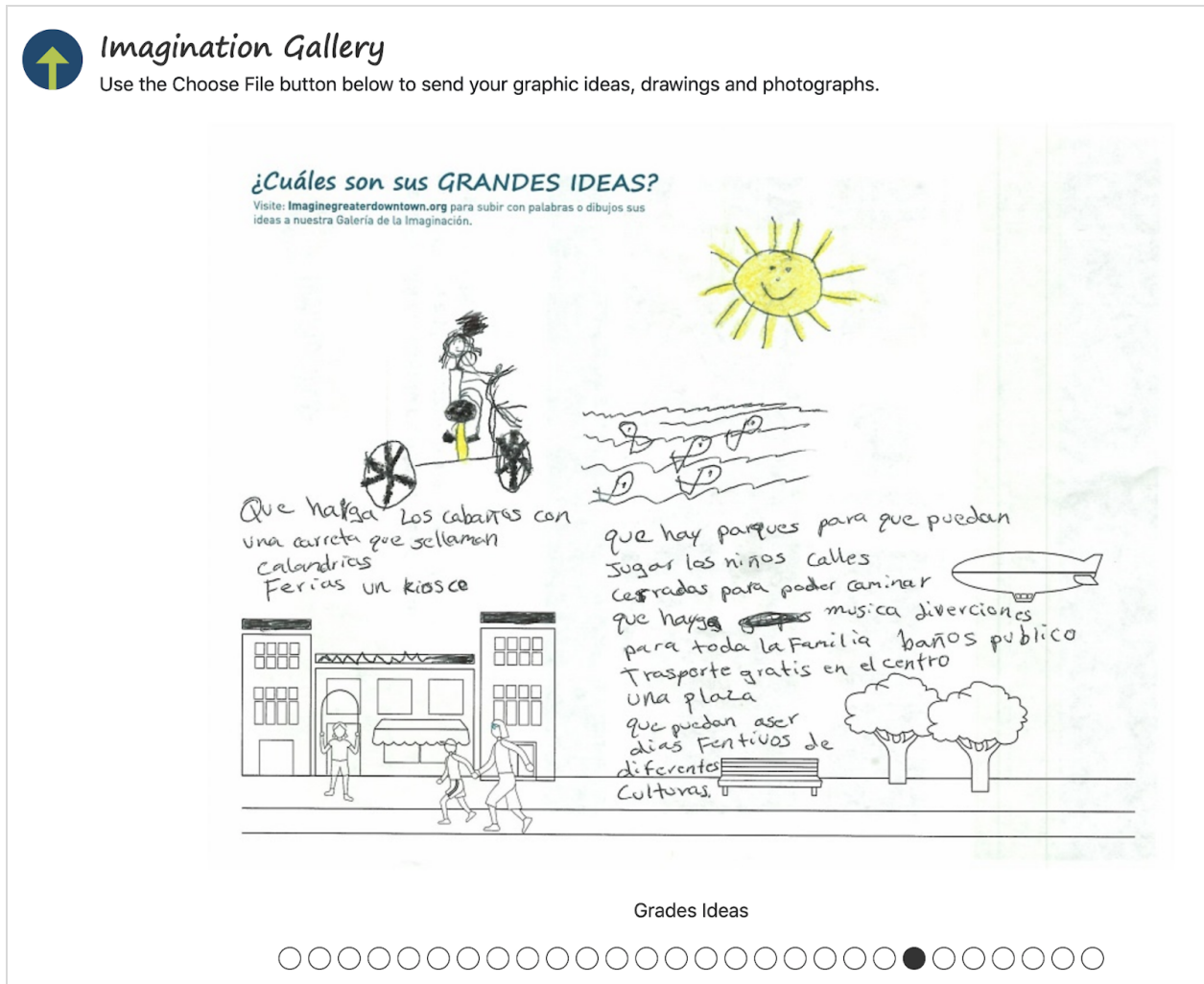


Figure 41. IGDT Image Gallery (<https://imaginegreaterdowntown.org/>).

About 28 images are uploaded to the image gallery in total. Some of them are photos, some use standardized context images with doodling, which the participants got from offline reaching-out activities. All of them have captions which help us to understand the ideas behind the images. Besides, the image gallery is not a real-time gallery and all the images need to get approve from the website manager before showing up in the gallery.

3.4.3 Public Social Media Engagement Evaluation

Table 8. IGDT Social Media Comments (by March 22, 2019) v.s Open House Comments (Feb 28. 2019).

Big Idea Page on Website	Comments	Big Idea Board in Open House	Comments
People-first street	48	Connect us to the water	16
Transit	25	Stitch the I-5 divide	10
Water Access	13	Greening Greater Downtown	8
Neighborhood	10	Great Places for Community Life	20
Park/Nature	11	Streets we love, streets that work	20
Jackson Hub	9	Excellent transit experience	14
Networks	13	Major hubs, great places	14
Freeway Stitch	11		
Carbon Neutral	15		
New Mobility	9		

Comparing the number of comments for different big idea topics, I found a big difference between online and offline. Since the distribution of comments for different big idea pages varies largely from one to the other on the website, the result might be caused by participants' impatience of clicking every subpage for the big ideas. However, for the offline open house, it is easier for the public to quickly go through all the boards and pick the one they are most interested in to leave comments. Thus, the distribution of comments on different topics is much more equal.

Table 9. IGDT Social Media Data Summary by March 22, 2019.

Number of Visits		
Number of IGDT website visits Sessions	4,770	
Number of Unique Users	3,160	
Number of sign-up from IGTD website	1162	
When was it open or close	Open	Close
Whole IGDT Website	August 20, 2018	N/A
Interactive Map	August 20, 2018	December 12. 2018
Imaginary Gallery	August 20, 2018	N/A
Big Idea Page - People-first street, Transit, etc.	December 12. 2018	March 8, 2019

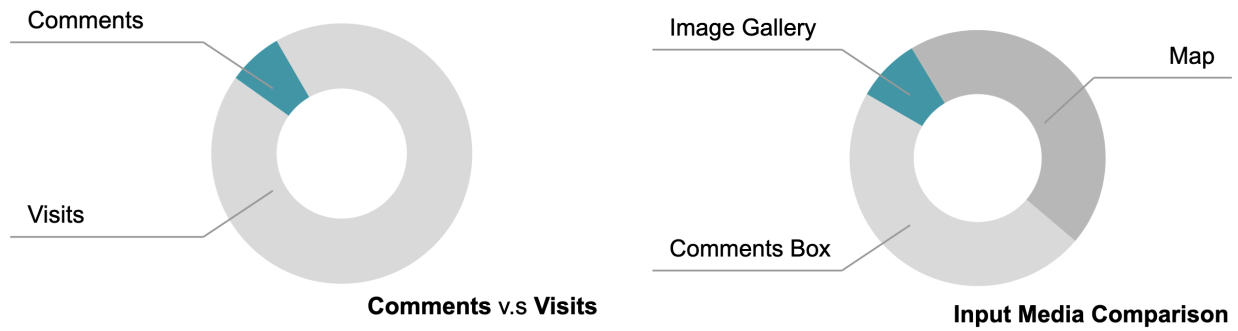


Figure 44. IGDT Social Media Data Analysis by March 22, 2019.

For the offline open house on Feb 28, 2019, The city received 102 comments from about 50 participants. Comparatively, only 7.3% of website visits leave comments. In other words, most participants look through the project website shortly and leave with no input. Specifically, among all the input, most participants use the comment box and the interactive map, while only 8% of participants successfully used the image gallery to input ideas. For one thing, it is nice to see that the interactive map is almost as acceptable as the traditional comment box, which is a good sign that the public is adaptive to the new medium. Further, it is disappointing, while not surprising, to see that there is still a long way for the image to catch up with text and become the main participation medium. The main reason is that it is a little dangerous to allow public upload images freely so the image would be inspected by the website manager before appearing on the gallery, which prevents it from becoming a real-time interaction and blocks some either offensive or confusing pictures.

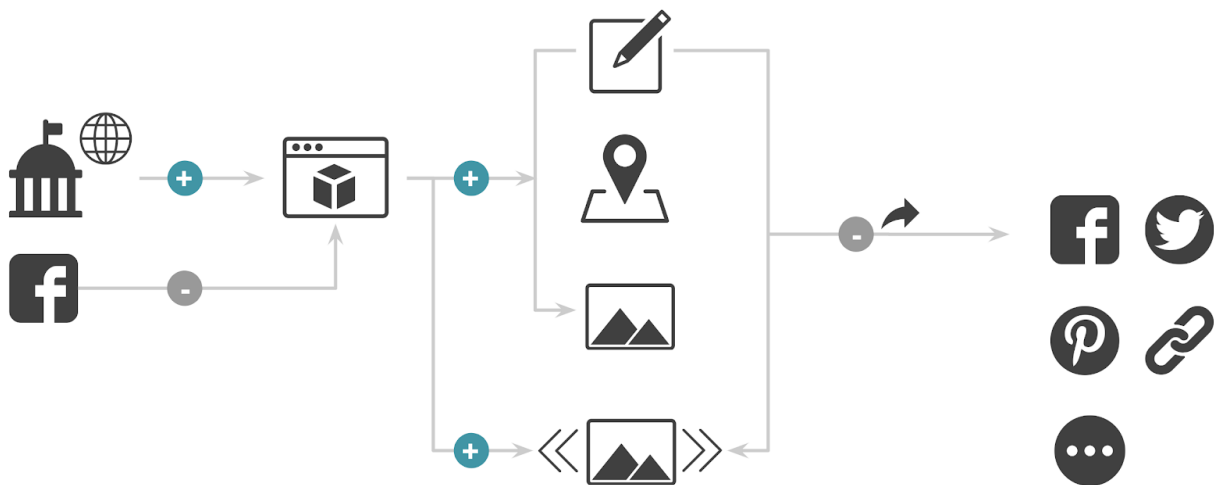


Figure 45. IGDT Participation Information Flow Chart.

The overall information flowing from one online platform to another is shown in Figure 45, in which “+” means convenient and active information flow and “-” means the opposite. On the first stage of finding the project website, the government website provides easy access, while Facebook only advertises for the project, linking to some introductory video rather than the project itself. Fortunately, on the stage of participating on the project website, it combines the public input process with the PD result display process together, which makes the whole PD more transparent and accessible. However, on the last stage of sharing, although many different sharing options are provided, actually, sharing is not highlighted within the overall PD process. Since it is hard to find other participants’ shared PD entry, it is not possible to reach to more participants via the social network effects, which means the positive engagement loop has not been realized.

3.5 Conclusion

For both of the two cases, CHUV and IGDT, the advantages of social media in improving the efficiency of mobilizing people to participate in an activity and encouraging communication among people from diverse groups are not fully utilized. The major reason is the popular social media, for example, Facebook is not well connected to the project website, which is the main online participation platform. In addition, the participation results are not shared across all the social media platforms, so the participation loop could not be formed and it is hard to reach out to more people. Therefore, learning from the two cases, the future PD via social media should build more direct and easier information flow between different online platforms, especially from the existing popular social media to the project participation website.

In addition, observing online participation helps demonstrate the disadvantages of social media in getting effective public input. Without the professional facilitator to organize the conversation and keep extracting the key points, it is harder for participants to discuss the center topic rather than their own interests. Furthermore, the anonymity of online participation may also bring issues, such as rude, irresponsible comments, and less feeling of being involved, which leads to shallow participation. Compared to offline participation, no real-time feedback is also a big barrier for the public to have in-depth participation. Thus, besides the common activities via social media, such as commenting and replying, the PD organizers could also hold real-time online activities, such as the online open house, which could also help improve the participants' feeling of virtual community.

Last, though staying at the same PD phases of "prioritize & design," CHUV and IGDT should use social media differently, as they appear to be already doing. For one thing, CHUV as a community-based project, communities living in the nearby neighborhoods are the main participants, even though the tourists and some businessmen are also included in the PD project, according to its project goal of smart growth. So reaching out people widely across Seattle, or even across WA state, is not necessary for this project. However, social media still offers a good alternative way for the communities who do not have sufficient time for the offline meetings to get updated information about the project and make some comments. However, for the citywide project IGDT, social media could contribute more to the overall PD process because it could help broadcast the project efficiently and create the opportunity for different groups of people to share their visions about Seattle downtown without the difficulty to find a meeting schedule that works for everyone, and design the offline activity that best fits all different groups of people.

Chapter 4 Proposal: Public Engagement Roadmap & Landscape Design Participation Interface

From the literature review and case studies, this thesis has already examined the current participatory design theories and practices with social media. Extracting the key points from the interviews that have been conducted among different stakeholders working in public engagement as well as two case studies, the research has summarized insights from two main perspectives in the landscape participatory design process: 1. WHY - engage people; 2. HOW - to engage people via social media. The final products are shown below.

Proposal - Public Engagement Roadmap

To have a more efficient, effective and inclusive PD utilizing social media, a public engagement roadmap for different engagement purposes at different project phases is offered, offering suggestions in planning engagement medium, engine, use scenario, and platforms with the potentials and opportunities in current PD practices.

Prototype - Landscape Design Participation Interface

Two prototypes of Landscape Design Participation Interface (LDPI) for two types of PD projects, site design or city documentation will be offered in this section, as the examples of designing the engagement engine for social media using the roadmap.

4.1 Public Engagement Roadmap

4.1.1 Why Engage and Why Participate

Originated from balanced social-economic power for democracy, public participation also generates the function for information exchange gradually. To be more specific, for the professionals, the reasons why they would like to engage the public include respecting public power, easing conflicts through dialogues and getting a better understanding of city issues to aid city development decisions. For the public, they would like to learn something about the city, share experiences and knowledge with others, and most importantly, define their own space. Especially in the digital age, online public participation itself is creating the future hybrid city, mixing the physical world with the digital wealth (Figure 46).

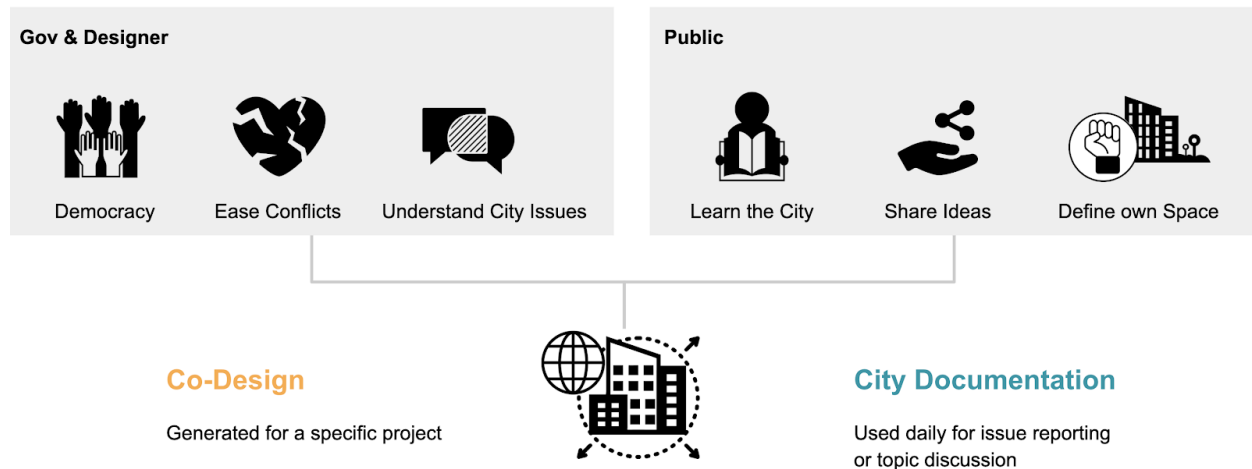


Figure 46. Why Engage and Why Participate.

Project Categorization

If we project the abstract purposes to current specific projects, there are mainly two categories of public participation projects that run by many professionals and governments:

1. City Documentation

This type of project usually exists long and is used daily. This might be an issue-reporting place, such as the website *PublicStuff* (<http://www.publicstuff.com/>) where the citizens could report issues in their neighborhoods and then the government could have a more efficient governing and managing work or *Photo Survey* (<http://solutions.arcgis.com/local-government/help/photo-surveys/>) run by Arc GIS. It can also be a place for more abstract topic discussion among communities, through issue discussion hashtags or embedded into a digital game, such as *Stake* (<https://atstakegame.org/>), the role-playing game or *Community PlanIt* (<https://www.boston.gov/departments/new-urban-mechanics/community-planit>), 3D engine roaming game (Figure 47).

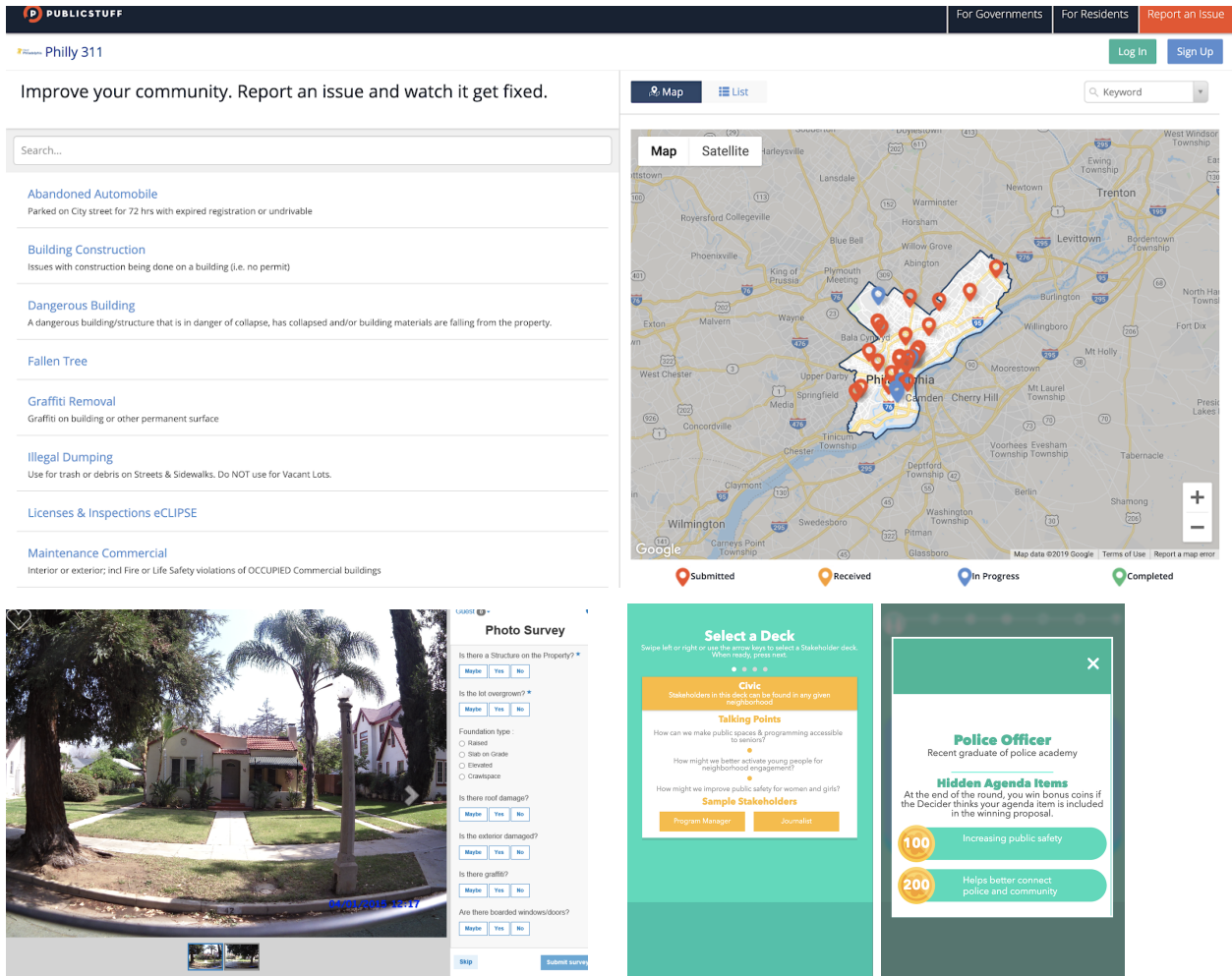


Figure 47. City Documentation Projects Interface (<http://www.publicstuff.com/>; <http://solutions.arcgis.com/local-government/help/photo-surveys/>; <https://atstakegame.org/play>).

2. Co-Design

It is used for the specific city development project. According to the three large phases from exploring to synthesizing, more specifically, there might be the following 6 steps:

Mobilize → Learn and Vision → Explore and Identify Issues and Opportunities → Prioritize and Design → Confirm and Implement → Evaluation and Display

These two types of projects are not separated with each other and actually, they are intertwined in the whole city participatory development process of “exploring, analyze, synthesize (de la Peña, et al. 2017)”. Documentation projects could help the city to identify an issue, which might cause a new landscape development project generation and then evolve to a specific do-design project. Also, in a community co-design project, the outcomes after the synthesizing phase might become the community’s documentation.

4.1.2 Potentials and Opportunities of Using Social Media for PD

According to classic participation experiences theory by Burn (1979), there are four important experiences during the participation process which include awareness, perception, decision making, and implementation. The basic public engagement evaluation standard is the information flows between citizens and governments. So from mobilizing to getting public input, the potentials and opportunities of using social media for public engagement might be shown below, considering the three main processes of collective creativity, exploring, analyzing, synthesizing.

Explore - Get More Participation and Be More Inclusive

Children and people with disabilities should be all be included in the public participation process. However, the current dilemma is that neither of them is engaged in landscape design very well, due to lacking suitable participation methods or attractive participation activities. Besides, the other underserved groups such as the low-salary workers or the homeless may not have enough time or good access to needed devices or network to participate.

"Public" Social Media (Figure 49)

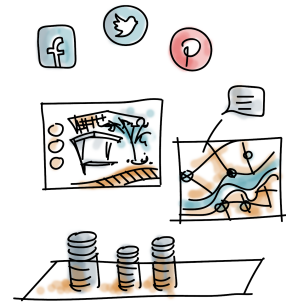
The city should offer more medium for public engagement in public spaces, which could provide free learning and participation. For example, the participatory gallery in the Future City Lab of the Museum of the City of New York, allows the participants to create their own city from the landscape elements pool and view it in real-time on the screen (Figure 48).



Figure 48. NYC Museum - Future City Lab (<https://www.mcny.org/exhibitions/core/future-city>).

Multi-Platform Participation (Figure 50)

To increase the broadcasting of the project, project leaders should utilize the strategy of flexible engagement, which could be conducted on multiple platforms with “a certain amount of openness to the project as participants were generally able to use their existing accounts (Simpson, Napawan, and Snyder 2019)”.



Customized Participatory Experience (Figure 51)



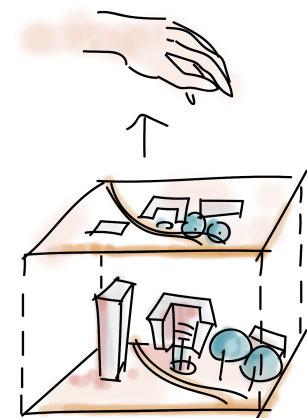
Fully considering different groups of people’s different needs for participation, in terms of the participation space and time, as well as their different participation interests. For example, busy workers might have the ability to digest more information on one page fast, compared to the elders, who might want to view less but more important information at one time. Kids might want more pictures and they need more interesting education about the project, while those with disabilities might have difficulty to view the project information clearly or type in the comments very easily. A good engagement design could provide customizable participation experience for various groups of people.

Explore - Educate Public about the Project

It is a challenge to educate the public about the background information of a project as well as the basic concept or ideas about urban development or community design overall. Currently, the project informing or education phase of a public participation project still relies on the zoning map, region policy and other planning documents which are pretty fuzzy to the public. Therefore, the active public participants are the ones with plenty of time learning these documents and became really knowledgeable about community development and city planning finally.

Architectural Visualization (Figure 52)

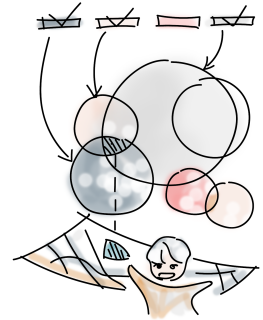
The easy way to learn the city is to view it, rather than read it through the paper. Participants do not have a degree in landscape design or urban planning and we cannot count on too much their ability to understand the written documents, such as zoning or development policy. Interpreting and digesting the jargon or the policy at the top level to the implementation level, which shows the understandable and viewable influence to their living, working and entertaining space should be the work of public engagement designers. Among this interpretation, architectural visualization might be the most direct way



to show the impact, which means “the media in which architects used to communicate the ideas to the clients” (Indraprastha and Shinozaki 2009).

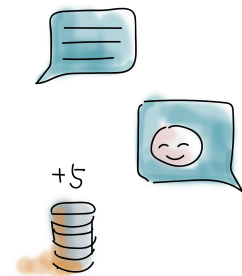
Focused Learning and Discussion (Figure 53)

In order to maximize learning, the community participation process should be clear, communicable, and open (Sanoff 2000). Individual learning through realizing the problem is important in the exploring phase of participatory design and active communication among people with similar interests could help shape the problems more clearly.



Interactive Learning and Cultivate Confidence (Figure 54)

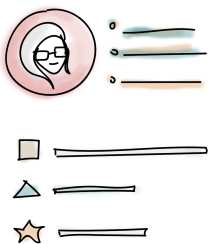
Every participant might have different interests for the project and for participating, they should not need to read all of the project documents. It is helpful to make the participation selectable and the learning process more interactive. For example, linking the key background information with the area map, and allowing participants to explore their own interesting part. Besides, this would make the key points more learnable so that the participants feel confident to jump into participation. This strategy requires better categorization of the core project documents and smarter extraction of the planning or design ideas.



Explore - Build Trust and Consensus among Different Groups of People

It is hard for people to empathize with others and wear another’s shoes, and it is even harder to gather empathy online, without directly connecting to someone or feeling their emotion face to face. Besides, due to the anonymity or invisibility of status online, people’s comments might lose control to a certain degree, which would exacerbate the untrustful situation.

Character and Avatar (Figure 55)



It might not necessary to require the user to use their true name and identity, but it will help a lot to let them choose an avatar and create a character which matches his/her own interests about the project. Learning from the role-playing games, choosing character might make the participants feel more responsibility and more willing to participate. These characters could be generated through the persona analysis from the participant survey, based on their location, current occupation or most concerned issues, etc..

Encourage Discussion among Participants (Figure 56)

It is crucial for building trust and understanding among different groups of people to encourage the discussion among them. Compared to one-way input, discussion among people would help expose the conflicts earlier and

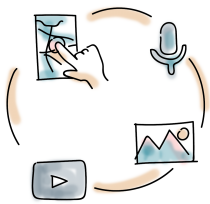


encourage achieving consensus in issue awareness earlier. As Sanoff (2000) noted, by openly expressing their opinions, it is also good for people to make necessary compromises, so that not only the product is strengthened, but also the user group is strengthened as well by learning more about itself. Except for preventing big conflicts at the later design phase, this also in saving design resources by focusing the design key points earlier.

Analyze - Encourage Participants to Contribute More Ideas

There might be many participants for the public engagement project, but it is still hard to get many input ideas. It is a common dilemma for current public engagement that participants just walk in and they leave with no comments. Therefore, only the lower level of engagement, which is to inform and educate the participants is realized.

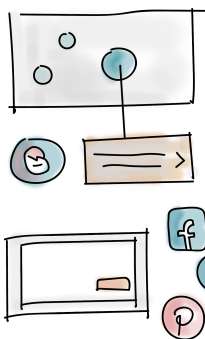
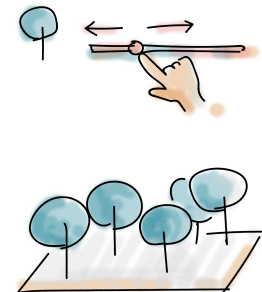
Easy and Interactive Input Tool (Figure 57)



If inputting ideas is hard, no one would offer input. Only offering a small number of input tools will create a participation barrier to a large number of potential people, who might be scared away by the high-threshold inputting methods, such as typing a long paragraph, or uploading a beautiful drawing, etc.. So an easy and interactive input tool should be developed, allowing the participants to offer input with no painful efforts and more conveniently at any places with no needs to sit down and make serious preparation.

Visualized Input (Figure 58)

Design visualization is needed not only as of the culmination of design development but as the input for design strategy as well (Indraprastha and Shinozaki 2009). Visualize the input might help the participants clarify their ideas more and feeling more satisfied with their input.

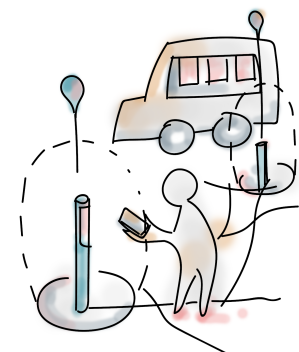


Encourage Feedback (Figure 59)

Although some participants might not have a good idea about the project or have a low willingness to offer input on a totally “blank” vision, it is always easier to offer feedback or critique on the existing ideas. Offering something before asking for input from the participants and encouraging them to offer feedback on others’ ideas would be a useful tip.

Connected System with Physical World (Figure 60)

If the project is linked closely to the real world, there is no reason why participation cannot be linked closely with the physical world even though it is implemented on the social media platform. Taking advantages of the GPS location information and connecting the social

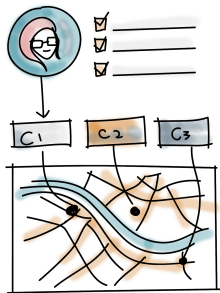


media system with the physical world would be a good strategy. For example, “PoroCity”, proposed the “integrated physical green infrastructure networks and digital social networks to encourage evaluation and dialogue regarding wastewater management on a community scale” (Simpson, Napawan, and Snyder 2019).

Analyze - Let the Participants to Feel Being Involved

For some of the projects, the participant hardly feel they are involved in the participatory design and the project website is more like a project showcase and it is hard to tell whether the participant has participated or not.

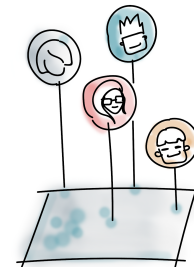
Viewable Participation Status (Figure 61)



No matter how influential the participant’s idea to the final design decision is, it is nice to show the participant’s participation status and connect that clearly with the project’s progress, which could improve the participant’s feeling of being involved. For example, the public engagement designer could provide a clear project timeline and let the participant’s participation and contribution marked on it. Participants might feel disappointed that their ideas are not adopted but it is better to show that than avoid telling their participation at all.

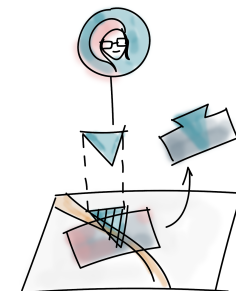
Real-Time Online Activity (Figure 62)

One of the largest advantages of offline engagement is that everything happens in real time and the participants could get feedback immediately from other participants or the designers and they can view the final participation result “on site”. Actually, real-time activity via social media is also possible, and the engagement organizer should host more real-time online events such as live-poll, online open house.



Combine Visualization with Design (Figure 63)

Currently, “the designing process and visualization process is still separated” (Indraprastha and Shinozaki 2009) and it is more like an individual-playing game rather than a co-generating tool. Showing the visualization of “design effects” could help the public to generate the design.

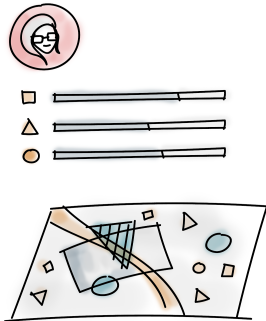


Synthesize - View Personal Impact

More people would wish to participate if they feel they are really contributing to the project, so it’s disappointing if the public’s impact on the participatory design project is not shown clearly at the final synthesize phase. According to the case studies, most of the professionals admitted that it is an important strategy to not show “formal and professional” presentation during public participation because we do not want the public to feel everything is already decided by the

professional designer. However, it is still challenging to show the public's collective impacts in a more clear and persuasive way.

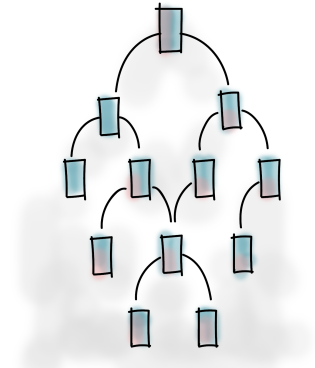
Improve Data Visualization of Co-Decision (Figure 64)



Except for showing the participants their participation during the project process, it is also crucial to visualize public's contributions in the overall co-decision process since "the main source of user satisfaction is not the degree to which a person's needs have been met, but the feeling of having influenced the decisions" (Sanoff 2000). Explanation through public input data visualization is necessary to be combined with the final design result because public needs to know how the design comes from their participation, especially for those who do not have time or energy to keep an eye on the whole project progress.

Public Input Branch Documentation (Figure 65)

For a co-design project, many of the public ideas may not be adopted for this time but they are still valuable resources for the region's future development. Thus, as part of the public participation, public input could be viewed and archived as knowledge branches of the local information archives. This strategy can also help the participants gain proudness and satisfaction to their participation activity, which might encourage them to participate actively and responsibly in the future participatory design project.

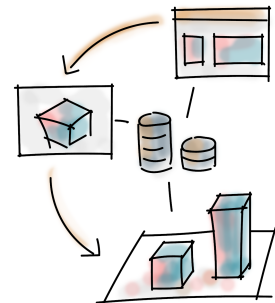


Synthesize - Transparent and Sustainable Project Archive

After the project goes into the construction phases, it seems like the public engagement ends. For many current projects, some of them simply stop accepting new participation, some shut down their project website, some of them disappear totally. Since we do not want digital wastes and we do not want to ruin all the participation resources either. Thus, it is challenging to do a transparent and sustainable project archive, which merges the project into the whole city documentation and keep the core topic conversation alive and transform them into the important city living wealth.

Unified and Shared Documentation System (Figure 66)

All the city development projects should be archived to the same city documentation database based on the location so that each city could have its own Geo-Library with its physical resources as well as virtual resources generated by the public participation, telling its history, culture and all the inspiring stories, which constitutes the virtual city spiritually.

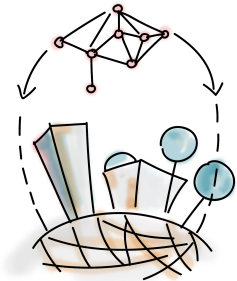


Overall - Maintained Social Connection

People might lose connections with each other when a project online open house ends, while unlikely, in the traditional offline participation, a social connection is maintained. “Technology and crowd-sourcing alone cannot sustain citizen engagement and build solidarity networks (Sawhey, Nitin, et al 2015).” However, in the era of the Internet, would the creation of online social capital be considered as important?

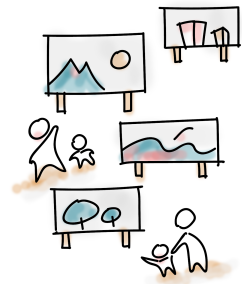
Hybrid Community - Connect Online Activity with Offline Social Connection (Figure 67)

Even the leader of social media started to design for extending online activities to offline, for example, Facebook events. Thus, as a great platform to mobilizing people and catalyzing discussion, public engagement via social media should be designed to extend its participation activities to the offline physical world and help solidify the real-world social connection.



Overall - Retain the Participants to Have Longer and Deeper Participation

It is observed in many engagement projects that the participants are lost gradually along the project’s process and many participants just will not try again after trying once. It is like the situation that one novice player tried the game once and had no patience for it so left forever. Many current mobile Apps face the same challenge and their design strategies could be good reference resources.

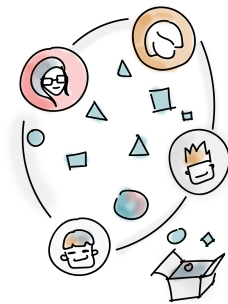


Showcase and Celebrate Public Input (Figure 68)

For example, the engagement organizers could make gallery exhibitions for the images uploaded by the public.

Small Group Activities with Acquaintances (Figure 69)

There is one psychological theory that we could utilize which is “Peer pressure”. If we could design more small group activities that encourage the participants to participate with their families, friends and other acquaintances, then it would be more “stressful” and more fun simultaneously to join the participatory project. With “supervision” from their social networks, it is more likely that the participants would grow to deep-participants gradually.



4.1.3 Public Engagement Platform, Medium and Engine

Engagement Medium

Specifically, there might be the following medium types for engagement.

Text - one of the most commonly used medium, for both offering the project information and asking for public input.

Image - easy for information digesting and commonly used for fast project display.

Map - widely used in landscape projects and the most common way to show geographical information.

One-way Audio/Video - mostly used by the engagement organizers to release project information and very rarely used by the participants to offer input.

Two-way Audio/Video - help create real-time communication.

3D Modeling - easier for understanding the space in an instinctive way.

Virtual Reality (VR) - built on the 3D modeling technique and could be used to provide a real experience for the site.

Augmented Reality (AR) - built on the technique of object sensing, processing and projecting and could help build an interactive real-world experience.

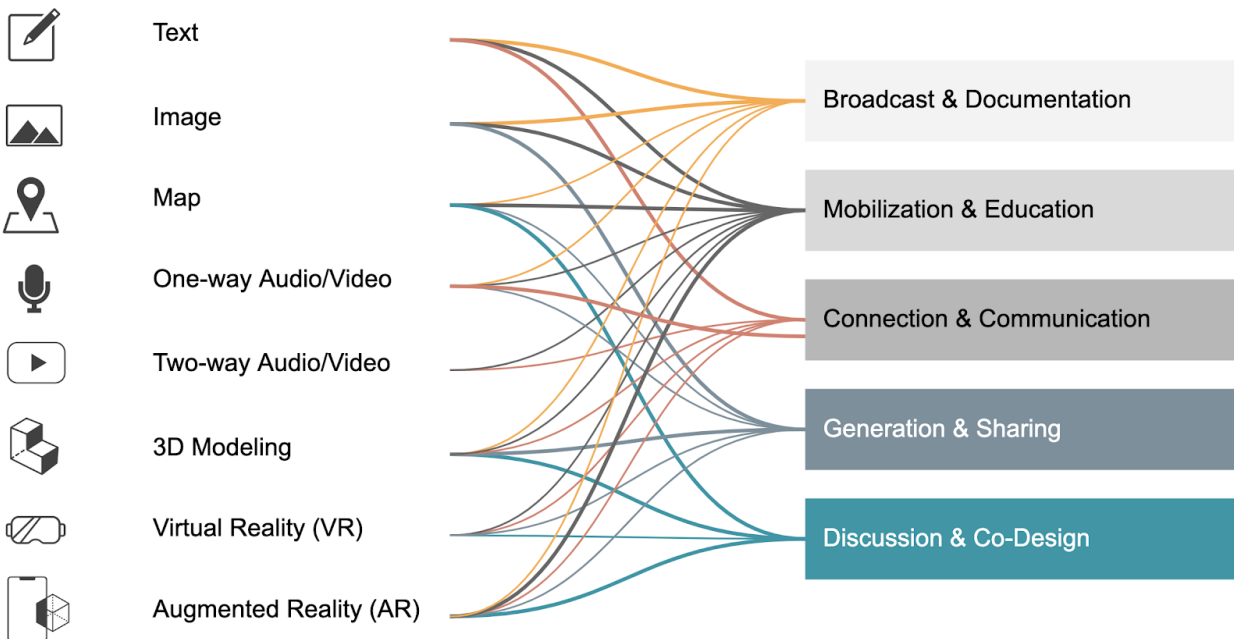


Figure 70. Functions of Different Medium.

Media Engine

The Main Functions of Social Media could be described as Broadcast & Documentation, Mobilization & Education, Connection & Communication, Generation & Sharing, Discussion & Co-Decision. For the specific media engine (combined medium and techniques) which could be embedded into social media for landscape participatory design, according to the participation methods and techniques documented in the literature review of “*Community participation methods in design and planning*” by Sanoff (2000) and “*Design as Democracy: Techniques for Collective Creativity*” by de la Peña, et al. (2017), as well as the techniques observed in case studies, here is the list.

Interactive Image Gallery - Broadcast & Documentation, Mobilization & Education

For an image gallery, there could be two main types of interaction for people to understand the image and use it to understand the site as well as the project. First, the individual image could be interactive, for example, showing the critical information while the user clicks on some areas with special objects or events. Second, the way that the user view the whole image gallery could be interactive. In order to help interpret a landscape design project, the images might either be tied to a physical location or an abstract issue, which means the gallery could be designed to look through via a real map or a topic map. Besides, learning and collaborating from the spatial design in the museum, the interactive image gallery can also be accessed offline as a display and educating corner. Widely used today, many museum like this allows the user to use their social media account to upload a new image and show that immediately, which encourages more participation.

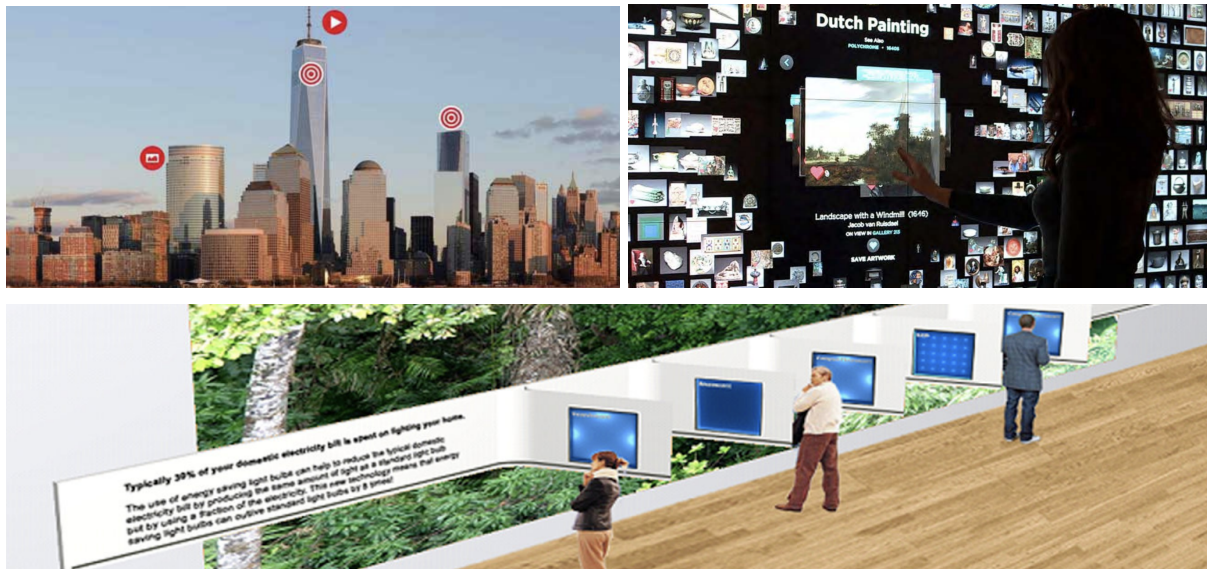


Figure 71. Engine - Interactive Image Gallery

(<http://www.40simpleways.com/create-interactive-images.html>;

<https://mw2013.museumsandtheweb.com/paper/transforming-the-art-museum-experience-gallery-one-2/>; <https://www.coroflot.com/carlosb/Interactive-Gallery-Space>).



Figure 73. Engine - Short Video Recording (<https://seeclickfix.com/>).

Role-playing game Connection & Communication

There is a technique called “participatory budgeting” which ask the citizens to spend the given amount of money on project elements so that they could better understand the cost. There is also another type of role-playing game, just to help public wearing others’ shoes and encourage issue-focused discussion (de la Peña, et al. 2017). “@Stake” is an example (<https://atstakegame.org/play>).

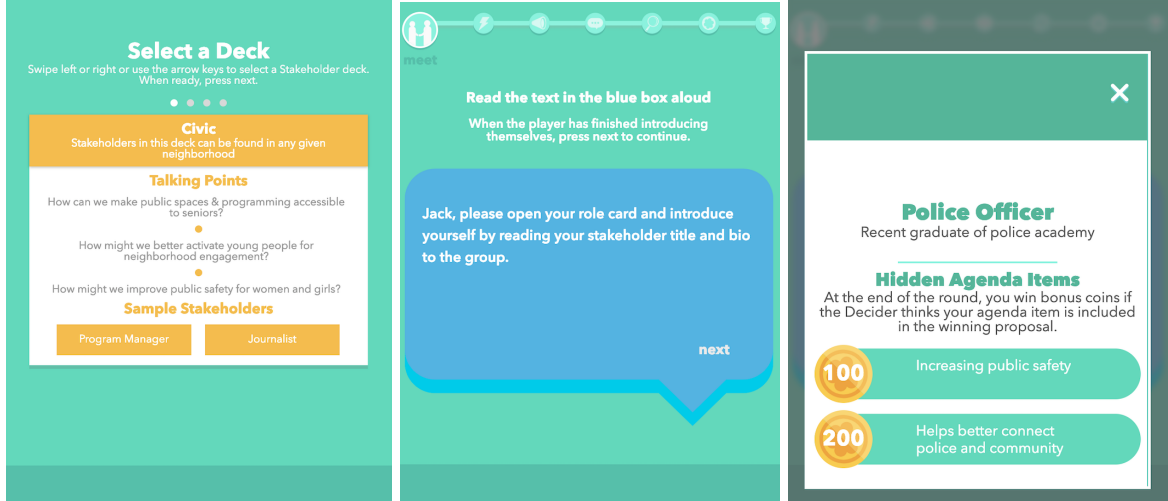


Figure 74. Engine - Role-playing Game (<https://atstakegame.org/play>).

Collage Game - Generation & Sharing, Discussion & Co-Decision

There are similar engagement methods for offline activities, which are inspired from the methods “Picture Collage Game”, “Green Rubber Stamp” and “Design Buffet” (de la Peña, et al. 2017). It is a 2D-design method and it needs to have two resources for design workshop: 1. Design template - blank or existing photos or illustrations; 2. Design ingredients - object for dragging, texture for stamping, material for brushing, etc.



Figure 75. Engine - Collage Game (<https://streetmix.net/-/847901>).

Simulation Game - Generation & Sharing, Discussion & Co-Decision

The game was inspired by Game of Life, a board game created by Milton Bradley Company in 1963, which utilizes the limited resources to create a life scenario. This type of game could be played individually or with some friends to either help understand the site or aid discussion among a small group of people.



Figure 76. Engine - Simulation Game (<https://www.ea.com/games/simcity/simcity-buildit>).

Interactive Map - Discussion & Co-Decision

For landscape design project, the map is indeed the 'space' for a participatory design workshop. According to de la Peña, et al. (2017), there would be four steps of using the map: 1. Prepare the map, including making the map and creating public access to the map; 2. Training the public to use the map, including a. walking them through the map to let them visualize their past memories of the place, the present situation, and their future expectations; b. Ask them to find someplace, such as their home a community plaza, so they can learn the navigation system as well as relate themselves to the map. 3. Generate the issues of topics for public input. 4. Update the map iteratively. After some time of public input, there might be dense input on the map and some of them might be talking about similar things. These similar discussions could be merged into larger comments, for the convenience of both the designers or the public who are going to participate later. Besides, the map should be shown in a people familiar scale at first and it should be connected with their familiar experiences and everyday life scenes that neighborhoods in common.

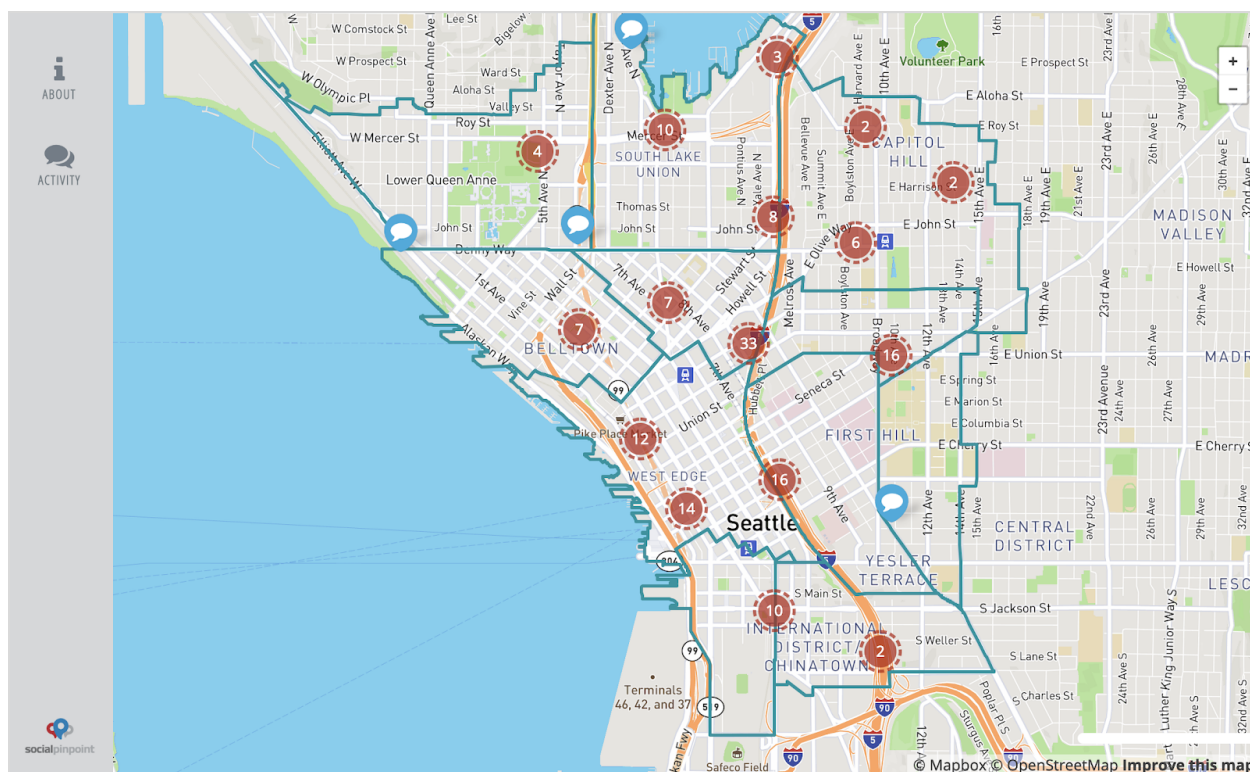


Figure 77. Engine - Interactive Map (<https://imaginegreaterdowntown.org/>).

Interactive Model - Mobilization & Education, Discussion & Co-Decision

According to the de la Peña, et al. (2017), for the interactive city model, there could be three layers: 1. City memory, showing the historical context map - educate the city history and append more stories from the public; 2. City mapping, asking the participants to mark the

current site, either through pinpoint, linear routes or concerned areas - get input for identifying the current city; 3. City building, providing design materials for new elements in the city - get input for envisioning the future city.

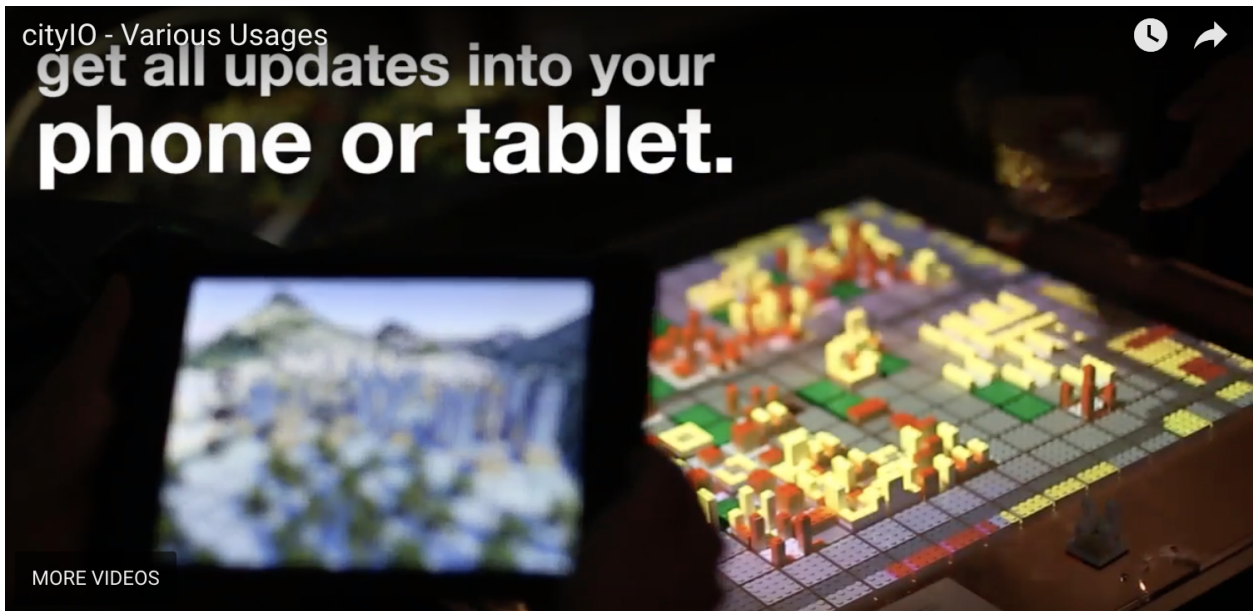
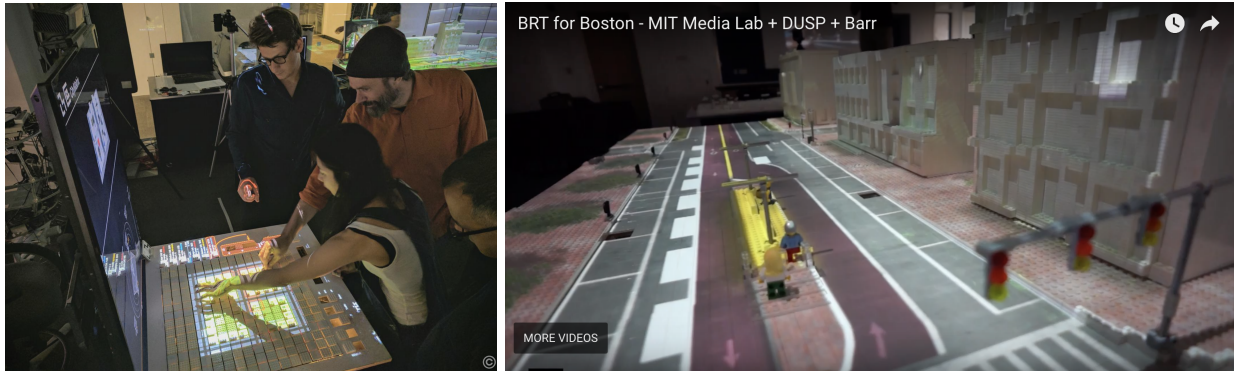


Figure 78. Engine - Interactive Model (<https://www.media.mit.edu/projects/cityio/overview/>).

Platform

Overall, there are two main types of engagement devices via social media, desktop or mobile. They might have different tendencies or preferences for different engagement platforms, but basically, they are all applicable for all of the following platforms:

Social Media in Narrow Sense

In the narrow definition, Social Media means the collections of social connection and communication applications such as Facebook, Twitter, Instagram, etc., which are widely used in large amounts of people's daily life. Since they are so popular, many landscape engagement projects utilize these platforms to raise the public's awareness of the project and mobilize people to participate in the discussion, either via #hashtag or under some project posts (Figure 79).

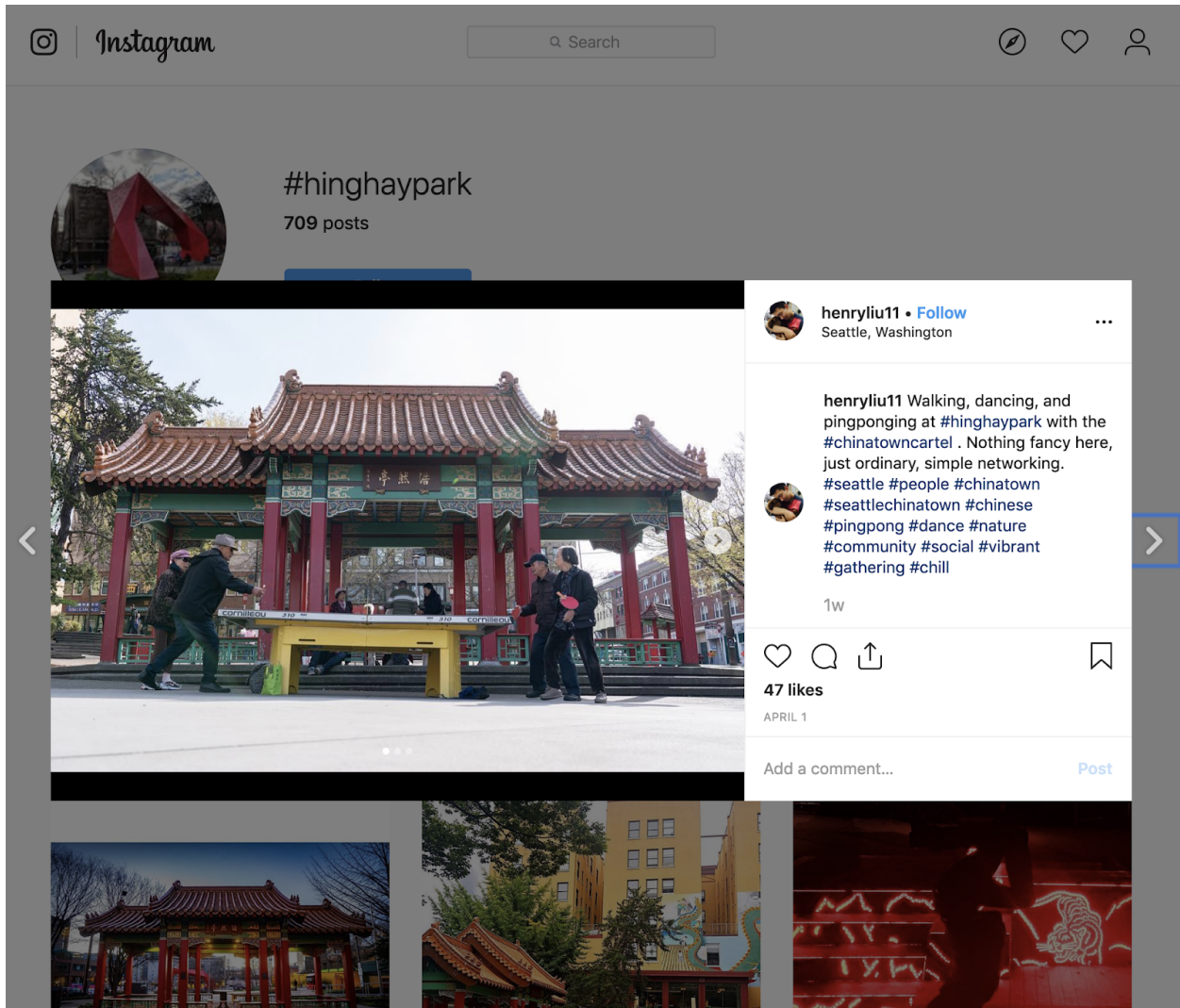


Figure 79. Platform - Instagram (<https://www.instagram.com/explore/tags/hinghaypark/>).

City/Community Website

There are some websites managed by the city government or the community, which are run for daily use, with the function to report issues or make suggestions about the city, for example, City of New York website showed as follows (Figure 80).

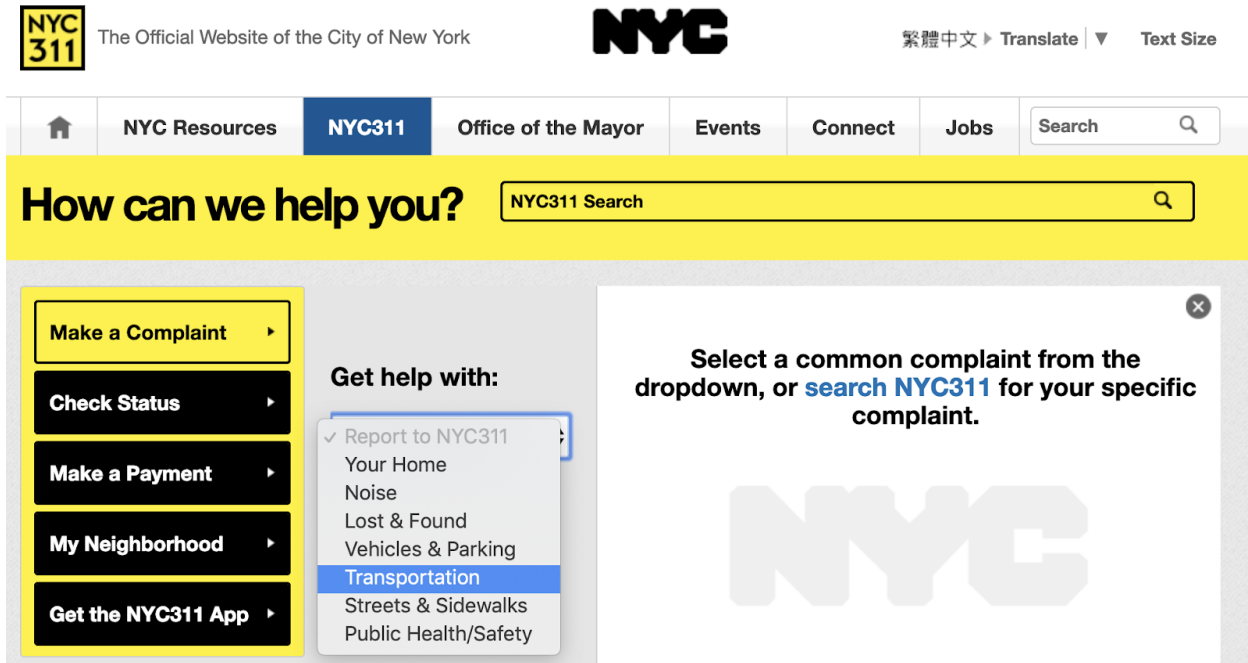


Figure 80. Platform - City/Community Website (<https://www1.nyc.gov/311/>).

Project Website

For some of the engagement projects, they have their individual project website for information display, process archiving and discussion catering, for example, the *Market Street Prototyping Festival* (Figure 81).

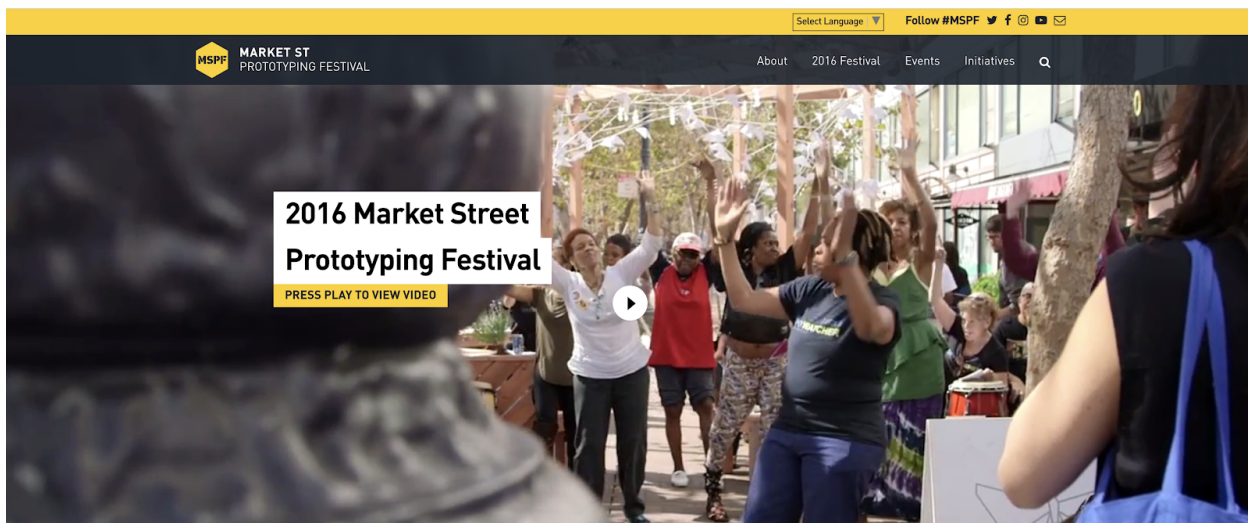


Figure 81. Platform - Project Website (<http://marketstreetprototyping.org/>).

Wearable Devices

Besides desktop and mobile, along with the development of VR and AR technology, engagement via wearable devices would also move into reality. For example, the collaboration between vGIS and Hololens (Figure 82).

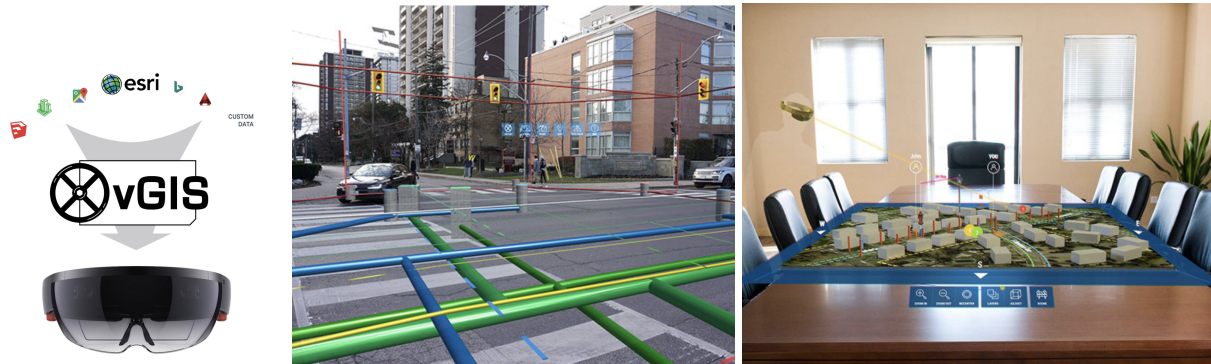


Figure 82. Platform - Wearable Devices (<https://www.vgis.io/>).

Use Scenario

For different people from different socioeconomic backgrounds, participation methods should be different (Ibrahim and Amin 2015). Different groups of people might tend to participate in a different time, either weekday or weekends or only some specific time period during a day as well as space, either on-site, in-meeting or remote. Besides, some group might have special participation requirements.

Table 10. Use Scenarios for Different Participant Groups.

Participant Group	When, Where & Special Requirement
Kids	Feel hard to understand the project documents and cannot type well in a very formal and professional participation way
Young Students	Feel discussing the professional documents and topics is not interesting and hesitated to participate in a formal way
Elders	Usually, have plenty of time to digest the project background information and to participate in the offline activities
Disabilities	Feel inconvenient to participate in the offline open house and some might have dystopia and cannot read the project documents or other participants' comments
Low-Income People	Might not have good access to smartphone and stable internet
Busy Workers	Only have limited time while off work on weekdays or weekends and might have time on the way to work or back home

4.1.4 Public Engagement Roadmap Guideline

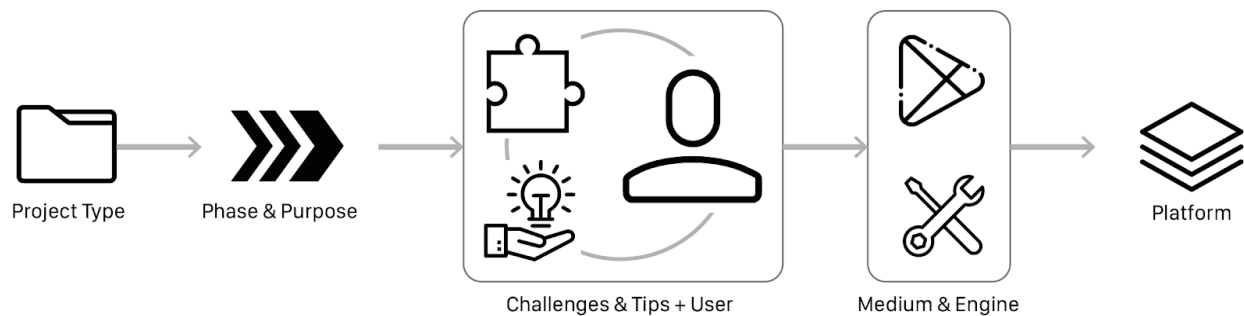


Figure 83. Public Engagement Roadmap.

In order to engage the public to participate more efficiently and effectively via social media, participatory designers could go through the following processes:

1. Identify the project type, specific site design or city documentation and make a comprehensive consideration for the whole PD process. For example, if it were a city documentation project, should it collaborate with the government official website, or should it become an individual virtual community website for a specific city issue?
2. Clarify engagement phases and purposes, which decides the level of public participation. For example, does the project stay at the first phase for outreaching people and raising public awareness, or does it reach to the co-design phase, which asking for various public ideas?
3. Have a reference on the potentials and opportunities of using social media for the public engagement. For example, in the analyze phase, remember that viewable participation status and real-time participation could help improve the participants' feeling of being involved.
4. Formulate the participants and build the use scenario. For example, if the targeted participants are the tourists, which might help to develop local tourism, both the current tourists in the city as well as those potential tourists in other cities should be considered. For the tourists in the city, organizing the participation in the popular public space, for example, the city central public library or city museum, could be a good idea. For those potential tourists, linking the project website to some tourism website or some related topics, for example, [#best10PlacesForVisitingInSummer](#) on Facebook or Instagram, might be a strategy.
5. Find the recommended engines, according to the participation level, engagement tips, as well as the users. For example, to inform the kids in the first phase for the PD project, organize a gallery tour to let them interactively learn the project might be an option.
6. Pick the platforms to release the project with a considerable multi-platform strategy. Especially, the way how the project information flow across different platforms is important. For example, if all the main access to the project participation hides in the government official website, it might be hard for some person who does not often check the website to participate.

4.2 Prototype of Landscape Design Participation Interface (LDPI)

As UK graffiti artist Banksy (2002) states, advertising agencies and town planners just take and take, and never put anything back. Like the advantages the Graphic User Interface (GUI) has brought to personal laptop work, actually, we need a City Design Participation Interface (CDPI) to aid the city design process, which allows the citizens to input useful nutrition into the city, with deep understanding the city history and on-going stories.

Looking through tips and current big trends in digital participation, the following key points are addressed in the prototype:

Gamification / Character / Connected physical world / Viewable project changing and personal input / Co-generating / Empowering public with co-decision

Considering the budget and technology constraints for the PD projects in the near future, here two potentially-applied CDPI prototypes are provided, which could be easily embedded into or connected with current social media for active and effective public input.

Prototype 1 Collage Game

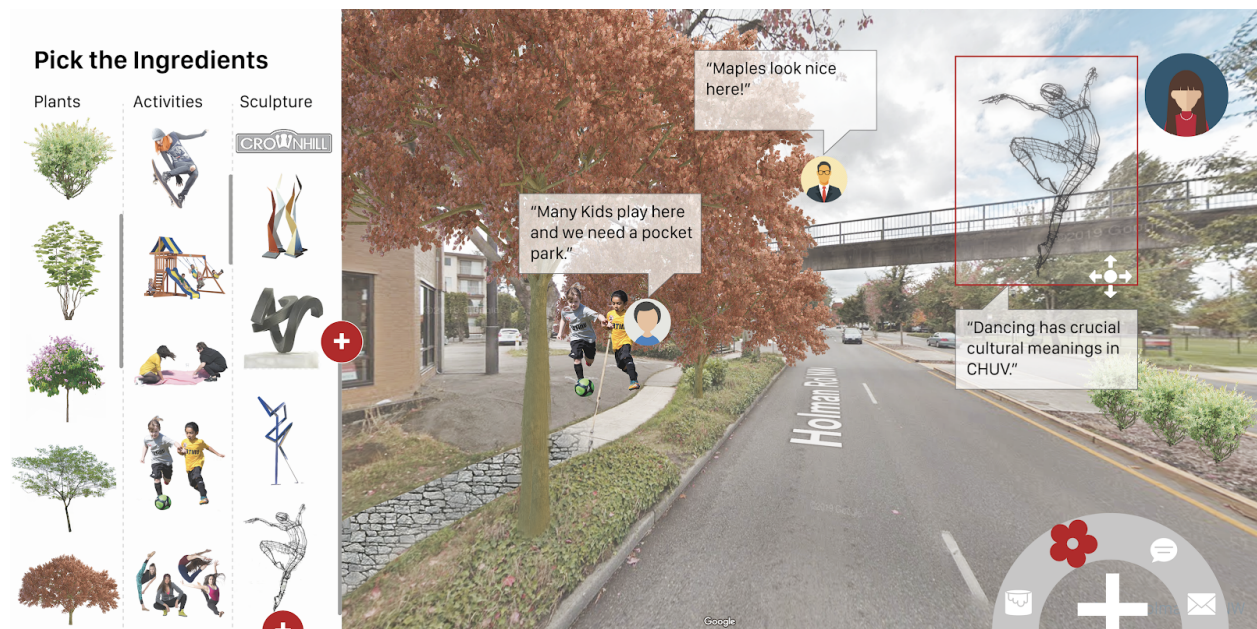


Figure 84. Prototype 1 - Collage Game.

Based on the offline collage game, this LDPI creates a platform for the communities to discuss the community visually and collaborate together. After the professionals selecting the scenario photo based on the objective of the project, the designers could provide basic design ingredients for the public to use for collage. For the participants, they could use the elements

from the ingredients pool to design the space or make a comment on the existing community environment, or view others comments and reply. All the activities are conducted after the participants create their avatar and select their character, for example, an environmentalist so that they are more self-aware of their identity and are more responsible for their online behaviors.

This type of LDPI could potentially be used for projects like CHUV, which has specific site location as well as design topic.

Prototype 2 Interactive Map

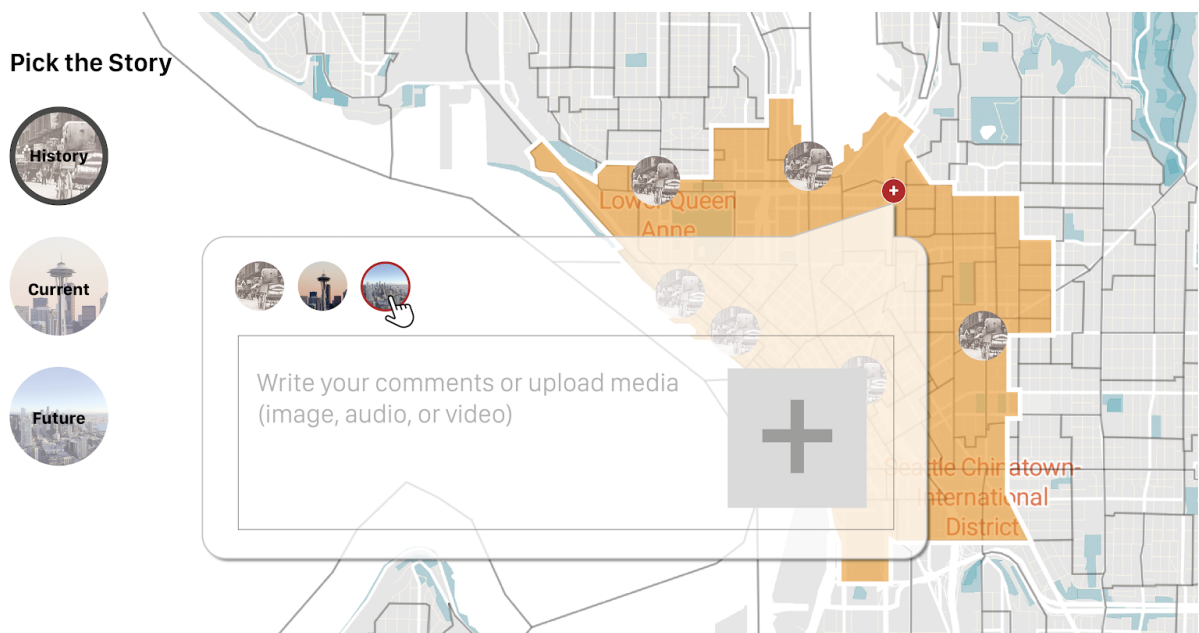


Figure 85. Prototype 2 - Interactive Map.

For a citywide project, it is better to cultivate it to a long-term project for daily city documentation, which is also part of the virtual community. In order to serve for different city development activities, there could be three different layers of public input information, history layer for learning the past stories of the city as well as documenting more city memories, current layer for reporting current city issues, and future layer for contributing more envisions of the future development and working as transparent stakeholder network which is potentially to be used as for future collaboration. For more convenient input, different input media should be offered, either via text, image, audio or video.

This type of LDPI could potentially be applied for projects like IGDT, which targets for long-term city history information education and current information collection as well as open-ended dialogue for the future.

Chapter 5 Conclusion

This chapter summarizes the key points of this thesis, including highlighting the key findings from the interview and case studies, summarizing the value and limitations of the work, as well as proposing the future work in this research field of social media use in landscape participatory design.

5.1 Key Findings

1. Project Scale and Project Type Influences Engagement Purposes

Different public engagement projects with different scales have different objectives so they have different needs or expectations of the participants' identity and input. For community-scale projects, which are focusing more on solving current site issues, like the CHUV project, they need more specific input, either the location or suggestion around the central topics. However, for some city-wide projects, which are focusing on future development scenario, such as the IGDT project, more open-ended conversations are needed for potential projects at potential locations as well as potential collaboration resources for future development.

2. Shifting Concept of Community Leads to the Growth of Virtual Communities

Compared to the traditional community engagement, the concept of community has changed a lot. When the idea of community participatory design first came up, community members tended to know each other well as they not only lived together but also worked together. As such, there was more cohesiveness in the community. At that time, a small group of people in the community is enough for generating effective feedback for community design. So the value of these associations or organizations in the community is highlighted. However, in today's society, people's social network is not constrained by the physical space anymore and the user of the community not necessarily lives there. Thus, the legibility of participants' identities has changed. Even the PD project like CHUV seek broad participants, not only the people who lived there for long. In this way, utilizing social media to build the virtual community has become an important task for a space to treasure its site history as well as envision a future for smart growth, which is also part of digital democracy.

3. Offer Informally Before Expecting Input from Public

Today, the public tend to have more access to information and knowledge and can offer much, either in identifying the city issues, understanding the urban planning process and offering professional opinions or even resources in their own fields. However, before asking any input from the public, it is necessary to offer something first, either the project background information or some preliminary planning concept, which could inspire the participants and help them find their own specialty and interests in the project. For example, providing a background image

before asking the public for drawing their thoughts. A blank page will create a barrier for getting public involvement since it does not offer an easy environment for “doodling”. Besides, there should not be formal speech or presentation before the public offers their own ideas. It is because formal speech will give the public a suggestion of the difference between professional and professional, which will be a barrier for participation. Keeping the participants’ feeling that the plans are not set up yet and their input is really valuable is crucial in organizing a PD project.

4. Combine Social Media with Offline Strategies for Inclusive, Efficient and Effective Engagement

Traditional offline participation and social media participation have their individual advantages and they are more applicable for certain phases, depending on the engagement purposes of the project. Additionally, it is revealed from many different cases that combining offline participation with social media could generate the best PD results, which satisfy both the public and the professionals. For one thing, combining social media with offline strategies helps overcome one disadvantage of social media that the social connection is hard to maintain after the PD ends. For another thing, there is also some time that social media will not work, for example, the legislative process.

5. Build Participation Loop via Social Media

Public engagement can only achieve the best effect while the overall participation experience is organized carefully in a loop, which means there should no experience gap for the participants between the process of getting to know the project, generating ideas, viewing the co-design impacts and checking with the final project decisions. Besides, to start the loop, raising the public’s awareness of the PD project is crucial and it is where the popular social media in the narrow sense, for instance, Facebook and Twitter, would work best. Connecting with the existing social media would extremely increase the exposure and accessibility of the PD project.

6. Need for More Visualization

No matter the way the participatory designers ask for public input or the reality of medium preference the public has for offering ideas, text still dominate the input medium. For one hand, design semantics is important for professional landscape designers. Although drawings can offer a lot of information, especially when communicating with other designers about the ideas, many landscape designers still take design notes in writing. On the other hand, the public tend to have less visualization skills and it is much harder for them to sketch their ideas, compared to talking and writing. However, text is not always reliable. Talking about a beautiful and small garden, there is no means that we could figure out how small the garden is and what should a beautiful garden looks like, which is personal perception unless we ask the person to find an image that matches their imagination or draw it out. Pictures could be effective, but we need to design better participation engines so the participants could utilize images to communicate their ideas.

7. Effectiveness and Accountability of Public Input from Social Media Needs More Attention

Although social media enable participants to participate in the community or citywide design and planning project with greater efficiency and flexibility, in terms of getting meaningful and effective public input, it is still challenging, due to anonymity of users and lack of facilitation in discussions. For example, the participants who would tend to complain about their own issues in the community might continuously and actively post comments, which will dominate the comments area. Though offline participation might also have similar problems, online participation tends to amplify such problem. To avoid rude comments from spreading online, some PD organizers may have to sacrifice the instantaneity of public input and hire staff to filter the public input and decide whether to show some comments or not. In this way, there might be a risk for the public input via social media to be manipulated. Furthermore, less interaction among participants online would lead to relatively shallow participation, and in-depth project discussion is harder to be generated as a result.

5.2 Value of Work

This research develops a framework to make strategic PD planning via social media, from identifying PD project type and engagement purposes, building use scenario with common tips to utilize social media for PD, to designing appropriate participation engines and picking suitable platform combinations. The framework exploratively links the PD project type and purposes to the social media participation strategic planning and offers a meaningful analysis of the potentials of social media application on PD with useful tips.

To manage a PD project, there is a lot of preparation work at the first public mobilization phase, including approximately three types of work, preparing the design team, building networks with the participants and the collaborators, as well as “pretest its standard procedures - from how data are collected to design generation”. (de la Peña, et al. 2017, 9) The roadmap could help prepare the design team with the needed expertise and the techniques needed based on the desirable participation form.

5.3 Limitations

Due to the time limit of the research, both of the two cases could not be studied across the whole participation phases, which would last over a year. Thus, the research heavily relied on the participation result documentation files from the project's website, which missed the information of gradual participation along with phases.

Also, participation via social media is not fully analyzed in this research due to the limited data available. Since no demographic information is recorded online so the comparison of participants' identity between online and offline could not be done. Also, the overlapping

between the online participation and offline participation can only be guessed through the interviews conducted with the professionals for the projects.

Lastly, the research does not have a clear measurement of the effectiveness of those digital media, which is embedded into social media platforms for getting public input, and not fully answered the research question whether digital media help improve the effectiveness of PD.

5.4 Future Work

First, more measurement in social media uses in landscape PD is needed for participatory designers to inspect different engagement methods using social media, for example, calculating the conversion from visits to the participation platform to signing up and to contributions, examining how the public input from social media impacted on the final decision, quantifying the relevance and quality of public input on social media. and the satisfaction degree with the “customer experience” for the participants.

Second, more participation does not necessarily lead to better PD results. Researchers need to investigate further what to get from public input and how to interpret the input. If we could be clear about data needs for specific project development, then participatory designers could then develop better participation mechanisms and techniques for effective co-design.

Last, this research only examines the PD cases in the US and focuses on Seattle cases in particular. More PD via social media case studies in other contexts are needed in the future.

Appendices

Appendix A. Survey and Interview Scripts

A.1 Survey Script

1. What are your expectations or goals for conducting public engagement? Please rank:

- Inform the public what's going on in the city;
- Get public input to identify the urban issues;
- Get public prioritization for some specific urban issues and planning scenarios;
- Get location suggestions for a certain program;
- Get strategic suggestions on certain urban issues;

Other: _____

2. For public engagement in urban planning, which phase do you think that has the most potential for the public to share influential opinions and which phase has the least potential? Please rank:

- Organize: identify stakeholders and community groups --> identify key community concerns
- Share, learn and vision: identify challenges and opportunities --> set priority issues, vision, and goals
- Explore strategies: develop & vet alternatives and solutions --> draft strategies, actions, and tools
- Finalize: prioritize strategies and actions --> set community action plan
- Implement: implement strategies --> early implementation adoption of plan

3. Overall, in terms of efficiency and effectiveness (how many valuable opinions were input) compared to the offline workshop, please circle the score of using social media for community outreach as you understand:

The Efficiency of Using Social Media

much less than			about the same			much more than		
-3	-2	-1	0	+1	+2	+3		

The Effectiveness of Using Social Media

much less than			about the same			much more than		
-3	-2	-1	0	+1	+2	+3		

A.2 Interview Script

Cover Page for all Interviews

Overview of Interview

The interview is related to community engagement process in urban planning project and will especially focus on social media use within, which might be used as part of my master thesis¹. The whole process will take about 60 minutes and the interview will be conducted in the form of a group interview.

No Evaluation

I will not evaluate you in any way, but I will learn from you about the way to conduct community outreach in urban planning or urban design project using social media. With this, I hope I could improve public participation process in urban planning or design project, utilizing the advantages of social media, to get a more efficient and effective public hearing. There are no right or wrong answers to any of the questions in the study and feel free to interrupt me if you have any confusions about the questions. I will conduct this study mostly as a discussion.

Session Process

Here's how the session's going to be scheduled. First, I will ask you to individually fill out a short survey (3 questions), in order to have a basic understanding of your attitudes towards public engagement. Then we will discuss how the community gets involved in the project, including the community outreaching phases, methods, and results as well as the website organizing strategy. During the discussion of organizing community involvement and at the very last, we will discuss your expectations of public hearing of urban planning projects and your envisions of urban planners' roles in the process.

Recording for Only Internal Use

I will record the audio during the procedure so that I can go back and review things later and make sure I get everything right. I won't use your name in connection with the recordings or the results. This audio will only be used internally and never shared with anyone. For the afterward interview note taking script, if it were to be included in the thesis, I would email you the script copy and ask for permission to use as part of the thesis.

Participant Name: _____

Position: _____

Date: _____

Interview Questions - 12/18/2018, OPCD

A. Organizing Public Involvement in the Project

1. Online participation and offline workshops, which one attracted more people and which way generate more valuable ideas finally? Can you describe your own experience about the two public outreaching methods?
 - a. How about people's feedback about these two ways? How many feedback do you expect to get and how many feedback do you get finally? Does the result meet your expectation?
2. Could you tell me about your plan for online public engagement organization?
 - a. What tools will you use, online survey, facebook page?
3. What are your main broadcasting strategies for each of the online and offline public engagement activities? Is the project page on OPCD website the main portal for the public to access to all the digital involvement and do you broadcast the online participation in offline workshops?
 - a. How do you perceive social media's role-playing in this project? Is it mainly a publishing channel or do you have any more expectations?
4. How do you think of the difference between online and offline participation? Based on your previous community outreach experiences, could you identify the advantages or disadvantages of each?
 - a. Online Participation (Social Media + Other)
 - b. Offline Participation (Workshop)
5. Which project do you think is the most successful in reaching out to the public and get the most effective feedback? Which one do you think is the most unsuccessful one? Could you describe your understanding of why it was successful or unsuccessful?
 - a. Successful Project
 - b. Unsuccessful

B. Envisioning Participatory Urban Planning Process

1. How do you think about the collaboration between urban planners and the public? For the three missions, identifying issues, deciding locations and developing strategies, which one do you think is more "suitable" for public input?
 - a. For OPCD, what are your final goal for public engagement? Do you use public ideas mainly to decide the prioritization of different programs or goals?

- b. Every project has a planning background with design principles or guidelines, such as walkable community and affordable housing. Do you expect to get more input from the public to “update” or “append” the current planning goal/principle pool? Or do you expect to get a clearer shape of the existing goals based on the community’s voice, for example, exact location ideas getting from the interactive map?
2. Different urban planning and design projects would also share many common planning principles, under Seattle’s overall planning. For example, there are some keywords such as walkable community, safe connection to parks and schools that would appear for most projects. How do you think of this phenomenon’s impact on community engagement?
 - a. Do you agree that we could set up the basic community input framework when organizing the engagement activities? For example, what if we offer topics while asking for public ideas on the interactive map?
3. How do you evaluate the public voice? Will you evaluate them quantitatively, like weighing the issue more people showing interests more? How do you think of the value of a small number of public opinions? Will they still work?
 - a. Have you used or heard of others using public opinions online to generate useful info for urban planning? For example, using people’s public posts on facebook to generate public emotion map.
 - b. What’s the difference between “passively” getting info from people’s posts and positively getting public input for a certain project?
4. Public input is very tricky sometimes since it is not always valid. Do you have any strategies to encourage more effective public input? Could you describe any specific participant type that offers the most valuable opinions and any specific situation that the public input is really much less valuable to planning?
 - a. Good Public Input
 - b. Less Valuable Public Input
 - c. Strategies to Encourage More Effective Public Input

Interview Questions - 02/08/2019, Envirolssues

A. Organizing Public Involvement in the Project

1. What is public engagement and what is the purpose of engagement in the project?
2. How do you compare the effects of online and offline public participation? Which one do you think attracts more people and which one generates more valuable ideas finally?
 - a. Do they always meet your expectations? Can you describe your own experience about the two public outreaching methods?
3. How do you think of the difference between online and offline participation? Based on your previous community outreach experiences, could you identify the advantages or disadvantages of each?
 - a. Online Participation (Social Media + Other)
 - b. Offline Participation (Workshop)
4. Could you share any successful projects in engaging the public which gets much effective feedback finally? What are your public engagement strategies in that case and do you have any unsuccessful outreaching case or lesson to share?
 - a. Successful
 - b. Unsuccessful

B. Imagine Great Downtown Project

1. In the Imagine Greater Downtown project, there are several public input types, text, image and interactive map. Which one do you expect to get more public input and how about the final results? (Several people use the same background image in the Imagination Gallery. Is this something that being hand out to the public in the offline workshop?)
2. Besides the text, image and interactive map, have you ever imagined any other online public engagement methods? Are the methods applied and if not, why?
3. How were these topics on the big idea page come up? Were they decided by the professionals or were they extracted from the public voice, like through the public voice in some survey or offline workshop?
4. Based on the current feedback we get from the Imagine Greater Downtown, how do you think it helps deliver public voice and create a greater downtown.

Interview Questions - 03/13/2019, OPCD & 03/20/2019, SDOT

A. Imagine Greater Downtown

- Open House
 - *Participants number and identity
 - What community advisory group? Any normal communities?
 - Valuable feedback
- Online Participation
 - Engagement involvement methods or tools used in the project
 - Website: real-time or not? (the map and the gallery)
 - Images Gallery: some used standardized context images, do you hand out that in open house and the participants upload that online? Or do your team upload public ideas?
 - Which engagement methods do you get the most effective involvement?
 - Evaluation of the public input and their impact

B. Public Engagement Methods

- What is public engagement and what's the purpose
 - *any identity differentiation between community and public? (any difference between the participants in Imagine Greater Downtown project and come small community project, such as Crown Hill Urban Village)
- Tools using
 - Compare online and offline public engagement
- Share any strategies used in organizing public engagement?

Appendix B. SM Inventory List

Type	Tool	Platform	Link
Inform and Education	vGIS + HoloLens	Wearing Device	https://www.vgis.io/
Inform and Education	SimiCity	Web (Game)	https://www.ea.com/games/simcity
Inform and Education	Activate	Web (Game)	https://www.icivics.org/games/activate
Inform and Education	Market Street Festival	Web	http://marketstreetprototyping.org/
Issue Reporting	NY 311	Web	https://www.1.nyc.gov/311/
Issue Reporting	Public Stuff	Web/App	http://www.publicstuff.com/
Issue Reporting	Neighborland	Web	https://neighborland.com/
Issue Reporting	Popularise	Web	http://blog.popularise.com/
Issue Reporting	Actipedia	Web	https://www.actipedia.org/
Issue Reporting	MicroAct	Web	http://www.microact.org/
Issue Reporting	Partizaning	Web	http://eng.partizaning.org/
Issue Reporting	SeeClickFix	Web/App	https://seeclickfix.com/
Issue Reporting	Angry Citizen	Web	https://www.angrycitizen.ru/
Topic Discussion	Stake	Web/App	https://atstakegame.org/
Topic Discussion	Interactive Text	Web	https://www.textizen.com/
Topic Discussion	Emerging Citizens	Web	https://emergingcitizens.org/
Topic Discussion	100In1Day	Web	https://www.100in1day.org/

Topic Discussion	Community PlayIT	Web (Game)	https://www.boston.gov/departments/new-urban-mechanics/community-planit
Topic Discussion	Moot	Web	https://www.frontend.com/work/moot-a-new-model-of-citizen-engagement/
Topic Discussion	Open Street Map	Web	https://www.openstreetmap.org/#map=15/47.6072/-122.3256&layers=N
Issue Reporting	Photo Survey	Web	http://solutions.arcgis.com/local-government/help/photo-surveys/
Co-Design	Groundplay	Web	https://groundplaysf.org/
Co-Design	Prototyping Festival	Offline	http://marketstreetprototyping.org/
Co-Design	Online OpenHouse	Web	https://wsblink.participate.online/
Co-Design	PartecipaPUG	Web	http://pug.comune.bari.it/le-passeggiate/
Co-Design	CubIT	Web	http://www.thecube.qut.edu.au/cube-screens/2012/cubit.php
Co-Design	Streetmix	Web (Game)	https://streetmix.net/-/847901
Co-Design	Participatory Chinatown	Web	https://www.youtube.com/watch?v=IDuSVXC7tRM
Co-Design	FutureCityLab	Offline	https://www.mcnyc.org/exhibitions/core/future-city
Co-Design	ParticipationNZ Wiki		https://aarhusclearinghouse.unece.org/resources/participationz-wiki
Toolkit Collection	Roadmap	Web	https://engage.livingcities.org/#get-started-hash
Toolkit Collection	Chart the course	Web	https://engage.livingcities.org/game
Toolkit Collection	CivicSmartCity	Web	https://www.civicsmart.city/
Toolkit Collection	Articulous	Web	https://articulous.com.au/
Toolkit Collection	Civic Idea	Web	https://www.civicidea.org/
Toolkit Collection	Social Pinpoint	Web/Mobile	https://www.socialpinpoint.com/
Organization	City Accelerator	Web	https://www.governing.com/cityaccelerator/
Organization	Engagement Lab	Web	https://elab.emerson.edu/
Organization	EnviroIssues	Web	https://participate.online/
Organization	iap2	Web	https://www.iap2.org.au/Home
Organization	Digital Government	Web	https://www.digital.govt.nz/

Appendix C. Glossary and Acronym List

Aml (Ambient Intelligence): electronic environments that are sensitive and responsive to the presence of people. Ambient intelligence is a vision on the future of consumer electronics, telecommunications and computing that was originally developed in the late 1990s by Eli Zelkha and his team at Palo Alto Ventures for the time frame 2010–2020.

ICT (Information and Communication Technology): an extensional term for information technology (IT) that stresses the role of unified communications and the integration of telecommunications and computers, as well as necessary enterprise software, middleware, storage, and audiovisual systems, that enable users to access, store, transmit, and manipulate information.

IoT (Internet of things): an extension of Internet connectivity into physical devices and everyday objects. Embedded with electronics, Internet connectivity, and other forms of hardware (such as sensors), these devices can communicate and interact with others over the Internet, and they can be remotely monitored and controlled.

PD (Participatory Design): an approach to design attempting to actively involve all stakeholders in the design process to help ensure the result meets their needs and is usable.

SenComp (Sensory Computing): the use of sensing devices to observe and monitor and computing devices to perceive (recognize and interpret) the physical environment and react to it.

SM (Social Media): Web 2.0 Internet-based applications that use interactive computer-mediated technologies to facilitate the creation and sharing of information, ideas, career interests and other forms of expression via virtual communities and networks.

UbiComp (Ubiquitous computing): a concept in software engineering and computer science where computing is made to appear anytime and everywhere. In contrast to desktop computing, ubiquitous computing can occur using any device, in any location, and in any format.

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