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Comparing Three Online Civic Engagement Platforms using the "Spectrum of Public Participation" Framework

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Abstract
Online civic engagement platforms accessed via desktops or mobile devices can provide new opportunities for the public to express views and insights, consider the views of others, assist in identifying innovative ideas and new approaches to public policy issues, and directly engage with elected leaders. Existing platforms vary widely in their approaches to: assessment, engagement, ideation, evaluation, and deliberation.

Weconsider three online platforms: the Living Voters Guide, including its earlier iterations Consider.it and Reflect; the Open Town Hall; and the California Report Card. We compare them using the International Association of Public Participation's "Spectrum of Public Participation" framework. Using a 10-point scale, we evaluate the user interface of each platform in terms of how well it supports the Spectrum's levels of civic engagement (*inform, consult, involve, collaborate,* and *empower*). Results suggest how user interface design affects civic engagement and suggest opportunities for future work.

1. Introduction

Online civic engagement platforms offer new opportunities for the public to express views and insights, consider the views of others, encourage action on political or social issues, and directly engage with elected leaders (Aitamurto, 2012; Aitamurto & Landemore, 2013; Graham & Wright, 2014; Hemphill & Roback, 2014; Himmelroos & Christensen 2014; Kriplean et al., 2012a,b; Rainie et al., 2012). While these platforms hold great potential, the design of the user interface has a significant impact on the platform's effectiveness.

In this paper we review three online civic engagement platforms: the Living Voters Guide (Kriplean, 2012a,b), the Open Town Hall (Vogel, Moulder, & Huggins, 2014), and a platform we designed and deployed in 2014, the California Report Card (CRC). We utilize the International Association of Public Participation's "Spectrum of Public Participation" framework (IAP2, 2007) to compare and contrast the levels of civic engagement afforded by each platform's design. Design aspects are assessed according to whether they promote ideation, collaborative evaluation (e.g., voting), and/or higher-level civic engagement like deliberative communication.

The paper is organized as follows: Section 2 summarizes key concepts in online civic engagement and describes the "Spectrum of Public Participation" (IAP2, 2007); In Section 3 we summarize and compare three online civic engagement platforms using the "Spectrum of Public Participation"; In Section 4 we give more details on our experience with the California Report Card; In Section 5 we discuss the benefits and drawbacks of certain design choices in online civic engagement platforms. Conclusions and future work are presented in Section 6.

2. Online Civic Engagement

Recent research in civic engagement explores how public involvement in civic affairs can be facilitated or enhanced through online platforms. In this work, we understand civic engagement as opportunities for members of the public to participate in the political process, not only by voting but also by examining one's own and others' viewpoints (see Smith, 2009; Fung & Wright, 2001). Scholars (Smith, 2009; Fung & Wright, 2001) hypothesize that civic engagement can be improved through collaborative methods that promote deliberation, accountability, and empowerment such as neighborhood councils and citizen report cards/community scorecards (see World Bank, 2014; Smith, 2009). Incorporation of these methods into online civic engagement platforms may encourage knowledge sharing and discussions between communities and elected leaders, facilitate feedback through voting or deliberative communication, and help to generate ideas and coordinate collective actions (see Coleman & Moss, 2012; Wright, 2012; Kies, 2010; Anduiza, Cantijoch, & Gallego, 2009; Smith, 2009; Brabham, 2008).

Several papers (Wright, 2012; Wright & Street, 2007; Towne & Herbsleb, 2012) highlight the importance of the engagement process afforded through online platforms. Wright and Street (2007) consider how user interface design, such as use of moderation or deliberative polls,

support higher-level engagement in discussion forums. Similarly, Karlsson (2011) observed that higher-level participant engagement (e.g., engaging in deliberative communication) positively contributes to whether an individual will consider another participant's views.

While technology offers new opportunities for civic engagement, it also presents new challenges. Civic engagement platforms are often criticized for neither engaging a representative sample of participants (e.g., Graham & Wright, 2014, Graham, 2008; 2012) nor encouraging interaction between individuals who hold dissimilar viewpoints (Zuckerman, 2014; Pariser, 2012; Adamic & Glance, 2005; Sunstein, 2002). A critical challenge is developing new approaches that help participants take others' points of view into account, engage in peer-assessment of contributions, or deliberate on issues. Earlier research explores and evaluates other online civic engagement platforms (e.g., Dahlberg, 2001; Jensen, 2003; Macintosh et al., 2003; Graham & Wright, 2014; Graham 2012; 2008) and explores novel approaches and interfaces (Kriplean, 2012a,b; Klein, 2012). Two previous studies (Wright & Street, 2007; Karlsson, 2011) study participant behavior.

2.1. The Spectrum of Public Participation

Researchers assess the quality of online participation platforms using factors such as: design, process, outcomes, government involvement, and participants' experiences (NDI, 2014; Nam, 2012; Leiner & Quiring, 2008). Several frameworks have been proposed to categorize civic engagement and civic engagement platforms (e.g. Arnstein, 1969; Rowe & Frewer, 2005; Chadwick & May, 2003; IAP2, 2007; Nabatchi, 2012). These models examine the influence of participants on final outcomes of civic engagement processes and explore who controls the agenda. These frameworks have been used to classify government civic engagement initiatives (AbouAssi et al., 2013; Chadwick & May, 2003) andto engage public officials in discussions (Carson, 2008).

In this work, we apply the "Spectrum of Public Participation" (henceforth, the Spectrum) developed by the International Association of Public Participation (IAP2, 2007). The Spectrum specifies five levels of government/participant engagement and expected outcomes: *inform*, *consult*, *involve*, *collaborate*, and *empower* (see Figure 1). At the lowest end of engagement is *inform*. At this level, a platform provides information to assist public understanding of a complex issue. The next level is *consult*. At this level, a platform obtains feedback from participants on proposed government decisions. The third level is *involve*. At this level, a platform actively collects stakeholder feedback for the express purpose of ensuring that stakeholder concerns are considered by governments. The fourth level is *collaborate*. At this level, a platform facilitates direct communication between government and the public. The highest level in the Spectrum is *empower*, whereby decisions offered by participants through a platform are implemented in practice.

While the Spectrum provides a comprehensive framework to analyze civic engagement platforms, some scholars have challenged this model. Carson (2008) criticized the terminology

and differences between the categories, discussing if provision of information (i.e., the *Inform* level) constitutes participation and questioning the differences between the *Involve* and *Collaborate* levels. Nabatchi (2012) argues that the Spectrum has a bias toward direct democracy as the goal of public participation, whereas such a framework should be more value-neutral. To overcome these challenges, Nabatchi (2012) extends the Spectrum to include additional factors relating to the level of communication between government stakeholders and the public and highlights that instead of describing levels of participation, the right side of the model presents increased authority in decision-making. Nabatchi emphasizes transitions in engagement on the Spectrum from one-way communication to two-way communication to deliberative communication (see Figure 1). Deliberative communication can be understood as "an endeavor to ensure that each individual takes a stand by listening, deliberating, seeking arguments, and evaluating, while at the same time there is a collective effort to find values and norms on which everyone can agree" (Englund, 2006, p. 503).
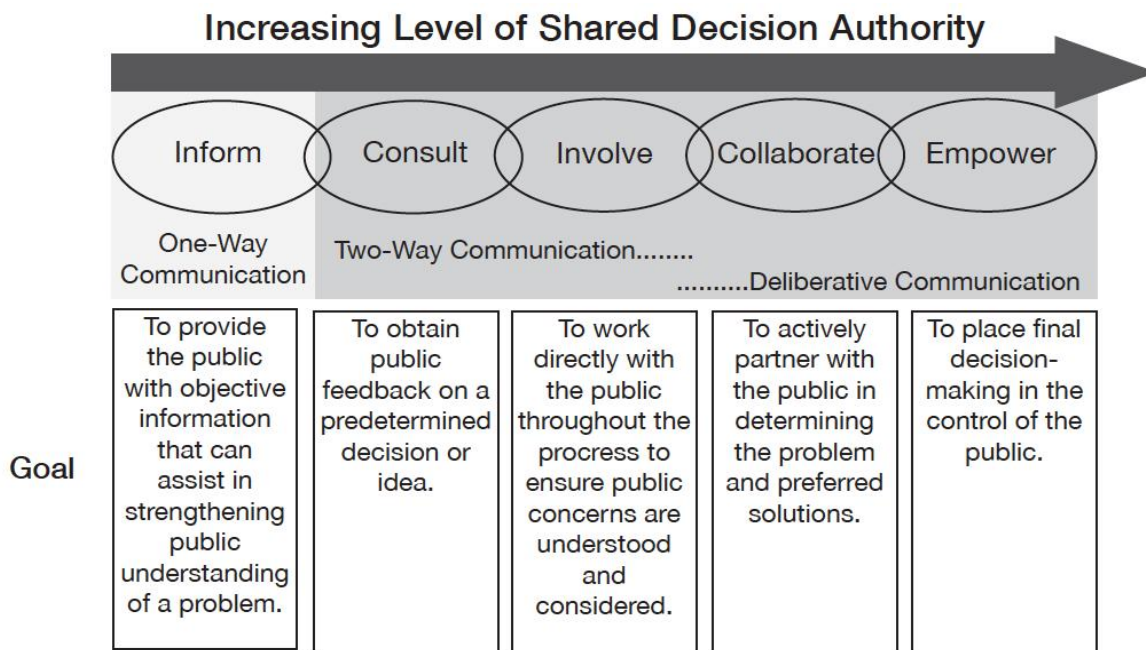

Figure 1. The "Spectrum of Public Participation" developed by the International Association of Public Participation (IAP2, 2007) and adapted from Nabatchi (2012).

2.2. Spectrum of Public Participation Rating Scale

We extend Nabatchi's (2012) version of the Spectrum to assess three online civic engagement platforms. Following Gibson and Ward's (2000) example, we provide rating guidelines on features used on each level on the Spectrum. In similar fashion we propose certain characteristics for each level and assess points for them, indicating the weight of each of these characteristics on the contribution level. We assign points using a 10-point scale from 0 to 9 to assess to what degree the platform supports each of the levels of civic engagement (see Table 1 for details).

The *inform* level addresses the quality of description and external references provided. To achieve of 9, the platform must provide a clear description of the issues with references to external materials for verification.

The *consultation* level focuses on feedback. In terms of system design, *consultation* is achieved by allowing participants to submit some form of input. This is the only requirement to achieve this level, *consultation* does not require processing participants' contributions nor does it require making the contributions visible to other participants. Thus, a score of 9 is achieved if the platform allows participants to submit feedback.

The *involve* level includes engagement from elected leaders to ensure that "public concerns are understood and considered" (Nabatchi, 2012, p. 702). We assign the score of 9 if the system enables citizens to highlight critical issues and the public administration ensure they've understood these correctly. We conseptualize this as (1) elected leaders can clarify meaning by engaging in two-way communication and responding to participants' contributions, and (2) a voting mechanism or other method is available for participants to evaluate each others' contributions.

The *collaboration* and *empower* levels require interaction among participants and between participants and elected leaders. We consider that there are two elements in this, first seeing other's contributions and seonclyd, being able to comment/provide feedback on each other's contributions. Thus, to receive a 9 on the *collaboration* level, the platform must foster peer-to-peer engagement.

Last, to receive a 9 on the *empower* level, the platform should facilitate implementation of contributions collected through the platform in real-world decision-making. Civic engagement platforms that facilitate participant engagement with elected leaders in the formation of solutions and alternatives as part of the decision-making process are also believed to foster participant empowerment (Black & Neyestani, 2014; Head, 2007). Thus, platforms that serve this purpose are rated more highly for their ability to contribute to empowerment on the Spectrum.

Table 1. Rating scale for each level of the Spectrum of Public Participation

	Points given if this feature is present
Inform	
A description of a societal problem is given (note, this is different from a task description)	4
Factual material is provided or linked to support the description of the sociateal issue	5
Consult	
Submitting a new contrbution is possible	9
Involve	
Elected leaders or public administration can response to contributions	6
The system can highlight which contributions are seen as important through a voting mechanism or other method	3
Collaborate	
Participants can read each others contributions	2
It is possible to comment on the contributions	4
The interface supports the sense making process	3
Empower	
A formal decision-making mechanism is implemented and promoted in the system	9
Maximum Total Points Possible	**45**

3. Comparison of Online Civic Engagement Platforms

We compare three online civic engagement platforms that permit peer-to-peer exchange of ideas: The Living Voters Guide, including its earlier iterations Consider.it and Reflect (Kriplean et al., 2012a, 2012b); the Open Town Hall (Vogel, Moulder, & Huggins, 2014); and the California Report Card. Each civic engagement platform is first described and then categorized according to the level of civic engagement enabled on the Spectrum (see Table 2). Achievement of each level of civic engagement on the Spectrum is categorized on a 10-point scale from "0 - 9", with "0" indicating that the platform does not support that level of civic engagement to "9" the platform fully supports that level of civic engagement.

Table 2. Comparison of Online Civic Engagement Platforms

	Consider.it	Reflect	Open Town Hall	The California Report Card
Inform	9	9	9	4
Consult	9	9	9	9
Involve	0	3	6	3
Collaborate	2	9	9	2
Empower	0	0	0	0
TOTAL	20	30	33	18

Note. Achievement of each level of civic engagement on the Spectrum is assessed using a 10-point scale from 0 (Not Supported) - 9 (Fully Supported).

3.1. The Living Voters Guide

What is currently known as the Living Voters Guide[1] originiated in two different works: the main concept in Consider.it (Kriplean et al., 2012a) and an extension of this work exploring peer-to-peer interaction in Reflect (Kriplean et al., 2012b).

Consider.it first presents participants with a contentious public issue then asks participants to assess their standing on this issue using a scale of "support," "neutral/undecided," and "oppose." This first poll provides a baseline assessment for each participant's initial position on

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[1] https://livingvotersguide.org/

an issue. Participants deliberate on the issue and then assess their standing on the issue to observe whether participants changed their position due to deliberation. In Consider.it, each issue is presented with a long and short-form objective description of the proposed legislation with links to factual material.

In Consider.it, the consideration phase encourages participants to submit a list of both pro and con arguments on the proposed legislation. Participants are shown the high-impact pro and con arguments from other participants in browsable lists. Participants can either enter their own pro and con arguments or they can pull from the available list of arguments. Participants compare and contrast others' reasoning to encourage each participant to further develop his/her own position (see Figure 2). After crafting a customized list of arguments and developing a position, participants are asked to reconsider their view on the issue using a scale of "support," "neutral/undecided," and "oppose."
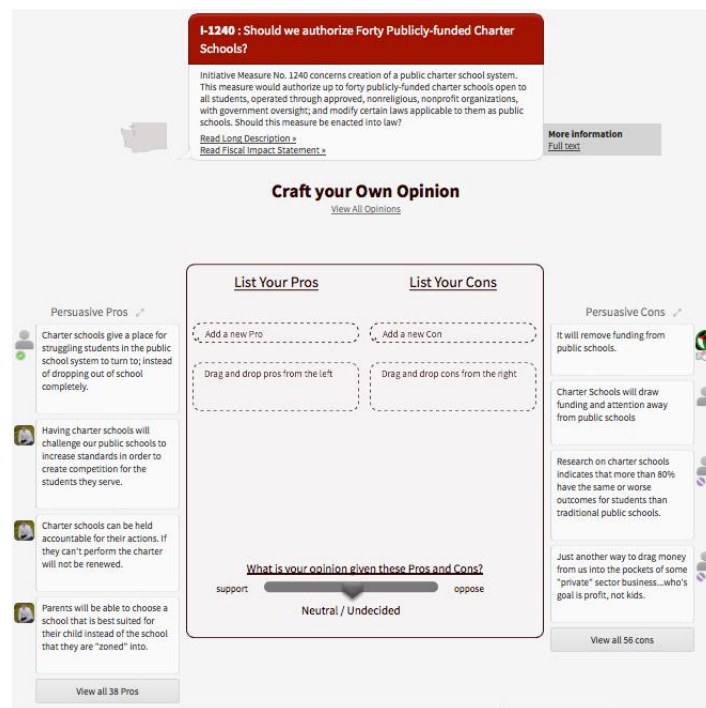

Figure 2. The Living Voters Guide User Interface

Peer interaction is further developed in the Reflect system where participants are asked to clarify the pro and con arguments by restating the points made by others. Participants are asked to clarify their points based on others' restatements. Other participants evaluate these restatements using a qualitative grading scheme (e.g., "Does this summary elegantly distill meaning?; "Does this uncover a good point?"). These evaluations are used to filter restatements that are not effective at distilling further meaning, or are restatements that may be personal attacks or off-focus remarks.

These platforms aim to help the participant craft a position, but do not facilitate engagement between participants and elected leaders nor engage participants in formal decision-making processes. Consider.it can be categorized at the lower-end of the *collaborate* level: participants can review others' contributions, but communication is one-way and the goal is to help participants form their position on the topic. Reflect, on the other hand, fosters two-way communication and includes elements that highlight whether responses are correctly understood. The latter exhibits civic engagement at the high-end of the *collaborate* level.

3.2. Peak Democracy's Open Town Hall

Developed by Peak Democracy[2], a California-based organization, to encourage widespread and inclusive participation in deliberation, the Open Town Hall platform gathers public input to help government agencies make better decisions. The Open Town Hall platform can be adapted by government agencies to fit their specific needs. The platform typically first presents objective background information on each issue (see Figure 3). Participants are then encouraged to consider the information provided as well as other participants' opinions. Like a face-to-face town hall meeting, participants are allowed to post only one statement, but can engage in deliberative communication by responding to others' comments by indicating their contribution is a response to some others' contribution. All comments posted to the system are monitored to ensure civility and appropriateness. The Open Town Hall platform provides feedback to government agencies by displaying insights gained through the system, including mapping the frequency and location of particular suggestions (Vogel, Moulder, & Huggins, 2014).
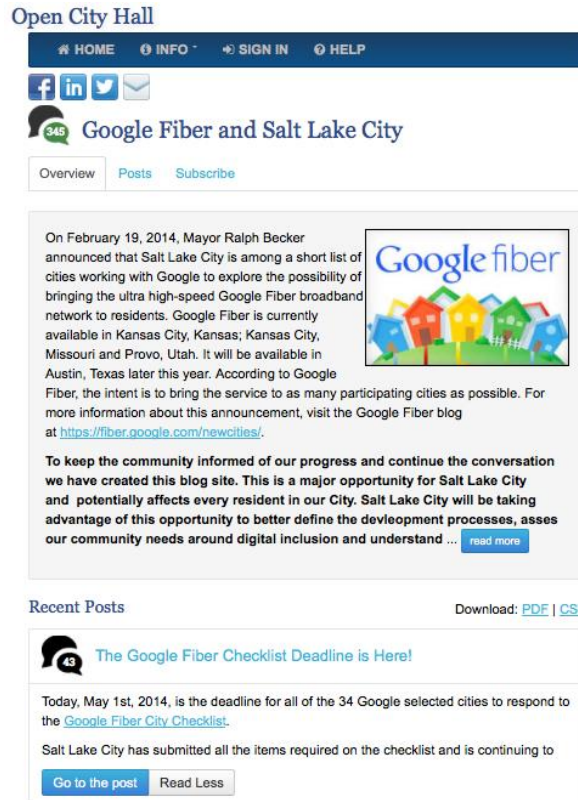
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[2] http://www.opentownhall.com/

Figure 3. Open Town Hall User Interface

TheOpen Town Hall can be tailored to fit the needs and goals of the adopting government agency, to provide   information that enables participants to provide feedback on an issue directly to elected leaders. Elected leaders can utilize key insights and preferred solutions identified through the system to assist their decision-making.

3.3. The California Report Card

Recent research in online civic engagement seeks to support higher-order civic engagement skills, including self-reflection and deliberative communication. Drawing from this research and from deliberative polling, collaborative filtering, and multidimensional visualization, the California Report Card (CRC) includes three interactive phases: assessment, ideation, and collaborative evaluation. The CRC is an adaptive system where participants' contributions in the assessment phase assist in facilitating participant consideration of divergent viewpoints in the ideation and collaborative evaluation phases. This has potential to encourage participants to explore more diverse comments than list-based approaches(Faridani et al., 2010).
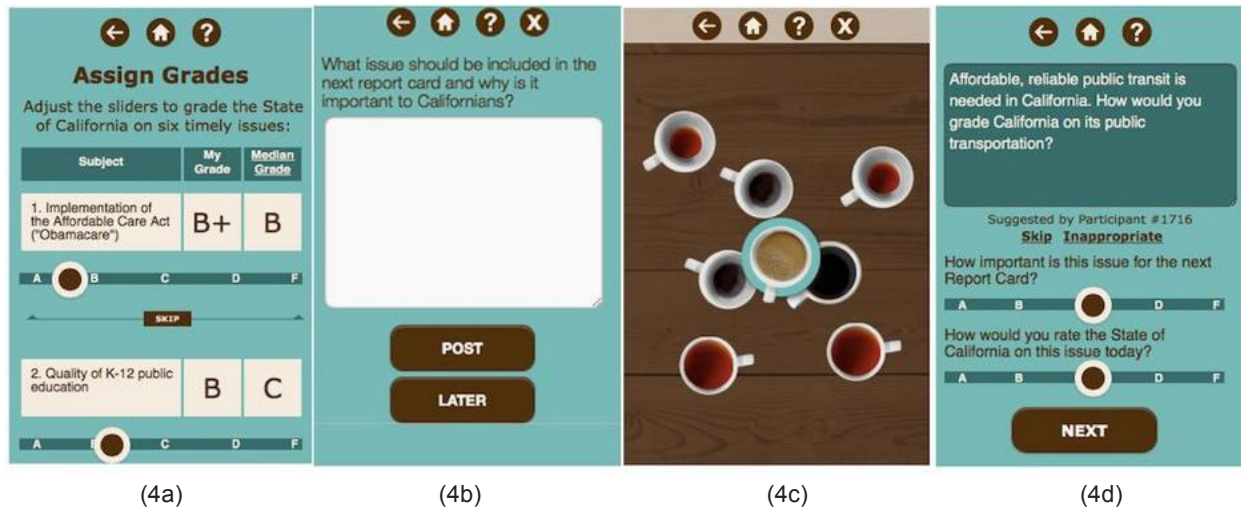
(4a) Assessment: Grading the State of California
(4b) Ideation: Participant suggestion entry
(4c) Collaborative Evaluation: Participants' suggestions visualized for evaluation
(4d) Collaborative Evaluation: Grading of participant's suggestion

Figure 4: The California Report Card User Interface

In the assessment phase participants are provided objective information on timely issues. Participants are asked to evaluate their standing on a number of issues using the A+ to F grading schema standard in the United States. (see Figure 4a). This scale is based on the World Bank's "Citizen Report Cards," which have been used in India and other developing economies to provide constituent feedback to government leaders (Ravindra, 2004).

Participants are also given the option to skip assigning a grade to an issue. If a grade is assigned, the median grade is displayed providing instant feedback to the participant on their position in relation to others'. Participants can change their grade at any time, even after seeing the median. Since awareness of the median value is prone to "social influence bias", whenever a grade is changed the system records the before and after grade for subsequent analysis (more on this, see Krishnan et al., 2014).

The ideation and collaborative evaluation phases allow participants to voice their concerns and collaborate on setting the system's agenda. Participants contribute qualitative feedback on public policy by providing their suggestion for an issue that deserves increased priority at the state level and should be included on future versions of the CRC. For the idea submission, participants enter their suggestion into a free-form text entry box (see Figure 4b).

Participant suggestions are displayed in an adaptive two-dimensional space, visualized in this iteration as "coffee mugs" on a cafe table (see Figure 4c). Each mug represents a participant-submitted idea. Each participant's mug is positioned so that mugs in closer proximity represent participants who assigned similar grades to the initial six issues in the assessment phase; mugs that are farther apart represent participants who graded the initial six issues dissimilarly. We apply Principal Component Analysis (PCA) to the six assessment questions, and use the first

11

two principal components to place the mugs into a two-dimensional space. The first two principal components are features of the assessment questions that best explain differences between participants.

Our choice on the two-dimensional display of participant suggestions arises from problems related to list-based approaches: suggestions at the top of a list may receive greater attention, mitigating deliberation/comparison of responses located far apart and identification of patterns and insightful ideas drawn from the entire dataset (e.g., Ghosh & Hummel, 2011). Creating a systematic and robust method for categorizing and displaying ideas in a non-linear representation is necessary. Furthermore, we utilize a sampling model that facilitates participant interaction with divergent viewpoints. When participants arrive at the CRC collaborative evaluation phase, they are presented with a sample of participant suggestions to evaluate, including suggestions from individuals who hold similar and dissimilar positions on the initial six issues. Participants do not have control over which suggestions are shown. To select the sample, we utilize an uncertainty minimizing sampling algorithm. Each suggestion is weighted by its standard error, which incorporates both the variance and number of ratings received. Suggestions with higher standard error are more likely to be sampled.

In this work, we extend this algorithm to incorporate manual topic tagging to diversify the suggestions presented to participants (see Krishnan, 2013). Initial results suggest the combination of sampling and PCA are successful as the system is resistant to manipulation, ratings are more evenly spread, and participants are more likely to be exposed to and consider divergent viewpoints (Krishnan, 2013; Krishnan et al., 2013; Wong et al., 2011; Faridani et al., 2010)

Participants are encouraged to collaborate in identifying important issues to be included on the next CRC. Participants evaluate others' suggestions by assigning letter grades (from A+ to F) to each suggestion on two dimensions: (1) how important the suggestion is to include on the next Report Card and (2) the current performance of the State of California on the suggested issue (see Figure 4d).

The CRC facilitates higher-level civic engagement by enabling deliberative communication between the public and elected leaders. Participants collaboratively identify problems and preferred solutions to assist elected leaders in their formal decision-making processes. However, the CRC does not allow participants or elected leaders to provide comments on others' suggestions. Therefore, the CRC received fewer points on the *involve* and *collaborate* levels (see Table 2).

4. Deployment of the California Report Card

In this section we provide more detail on initial results with California Report Card version 1.0. It was launched in late January 2014. From its launch to July 2014, there have been 9,124 unique visitors to the application who have assigned over 30,000 grades and suggested over 500 issues to be included on the next Report Card. The initial six issues included were chosen

because of their importance in the State of California and because it was believed these issues would facilitate participant contribution in the ideation and collaborative evaluation phases. The six issues presented on CRC v1.0 were:

1. Implementation of the Affordable Care Act (ACA)
2. Quality of K-12 public education (K12)
3. Affordability of state colleges and universities (College)
4. Access to state services for undocumented immigrants (Immigration)
5. Laws and regulations regarding recreational marijuana (Marijuana)
6. Marriage rights for same-sex partners (Marriage rights)

Descriptive distribution of the grades on these issues are shown in Figure 5. illustrates significant multi-modality, suggesting a bias toward giving whole letter grades as opposed to +/-.
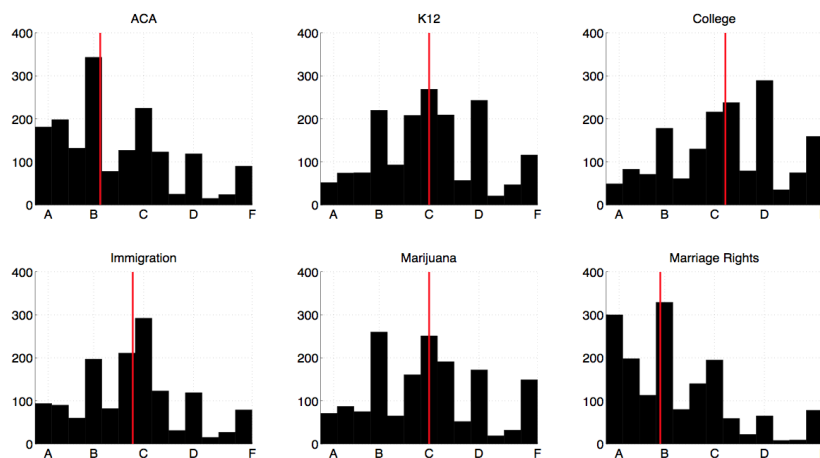

Figure 5: Histogram of grades for the six initial issues. Median grades from first 5-month deployment are marked in red.

The CRC is designed to enable collaborative evaluation on the importance of issues suggested in the ideation phase. We used the initial six assessments provided on government performance to categorize participants. Participants were intentionally exposed to suggestions from individuals who may hold similar *and* dissimilar viewpoints. This method enabled greater understanding of which issues were considered important across a broad cross-section of participants.

We examined if participants were more likely to perceive ideas presented by individuals who graded the first six issues similarly to them as more important than issues suggested by participants who graded the first six issues dissimilarly. We observed that an individual's initial

position on the six issues was unlikely to affect the grading of issues presented by participants who held similar or dissimilar positions on the initial six issues (Pearson Correlation corr = 0.04).

We also note that suggestions varied widely in focus. Each suggestion was assigned a tag that identified the topical focus of the suggestion. A third of the suggested issues focused on education and the environment. Additional issues included healthcare, transportation and urban planning. We asked participants to grade each other's suggestions on the importance of each issue for the next Report Card and the state's current performance on the issue. On average, participants graded 6 peer suggestions. The distribution of grades given is as follows: 48% of participants giving 0 grades, a median of 2 grades, and 25% of participants giving more than 6 grades.

5. Discussion

The user interface design of online civic engagement platforms depends on many factors including intended outcome. For Consider.it, the goal is to facilitate deeper understanding of the pros and cons on a policy issue, but the interaction between participants is limited. Kriplean et al. (2012a) suggests that examining the pros and cons in a more structured manner influences participants' standing on the topic, a clear benefit of the approach. Reflect increases interaction between participants by integrating argument assessment into the design; however, it does not allow further development of these arguments based on these assessments. This difference is important when we compare this platform with platforms like Open Town Hall, where participants can collaboratively develop suggestions.

Both the Open Town Hall platform and the CRC facilitate collaboration between the public and elected leaders in identifying public problems and preferred solutions. The CRC provided an additional advantage by ensuring participants considered divergent viewpoints when collectively determining important state issues. The CRC's use of an uncertainty minimizing sampling algorithm and its non-linear display of suggestions enabled a wide variety of suggestions to be displayed to participants. Traditional list-based interfaces favor comments listed at the top or prior comments that have received greater attention, making it difficult to find and compare responses. 5.1. Breaking the "filter bubble" with an adaptive interface

A key challenge for online civic engagement is that the Internet is increasingly polarized with forums specific to certain viewpoints. Internet users may end up in a bubble with like-minded participants, reducing the possibility of heterogeneous dialogue (Adamic & Glance, 2005; Conover et al., 2011; Hargittai, Gallo & Kane, 2008; Pariser, 2012). However, new research suggests that participants are willing to put time and effort to understand different points of view due to a belief that richer understanding can be obtained by comparing one's own position to others' (Semaan et al., 2014).

Civic engagement platforms have a potential to facilitate participant consideration of diverse viewpoints and to create a common ground for participants. This process can be enhanced with

algorithms that select what is shown to participants. The CRC uses such an algorithm using ratings on two dimentions: the participant's initial position on government performance and the topical focus of participant-submitted suggestions. Participants were exposed to suggestions from individuals who held similar and dissimilar viewpoints on the initial six policy issues. Initial results suggest that participants graded suggestions from participants who held similar and dissimilar viewpoints to themselves, suggesting participants are able to understand divergent topics and value ideas from people who hold dissimilar views on government performance.

The challenge inherent in the civic engagement platforms described in this study is that little or nothing is known about participants and their background. These backgrounds influence how participants see the world andwhat they value. We argue that comparedwith other platforms presented, the CRC is novel in that the baseline questions characterize a participant's ideological viewpoint. The CRC encourages collaborative evaluation of the importance of issues suggested across ideological lines, which is integral for mitigating the "filter bubble" and achieving higher-level civic engagement through online platforms.

While the CRC promotes participant access to divergent viewpoints, it employs a relatively low level of peer-to-peer interaction--users are known only by ID numbers and the system does not allow for collaborative elaboration on suggestions ornested commenting. This is primarily motivated by privacy concerns.

A key question is who develops these platforms and what are their motivations? The classic article from Winner (1985) highlights the inherent political dimension in design choices. The most obvious political design choice described here is a lack of shared decision-making authority (i.e., the *empower* level on the Spectrum). We also see design implementations that reflect a variety of goals among the platforms; some highlight deliberative democracy with conversations and self-reflection, while others focus more on voting (see Dahlberg, 2011). We encourage developers to introduce greater transparency (e.g., open data and open-source code) into their systems and design justifications.

Although technical design choices can afford high-level civic engagement, lack of support from elected leaders and public officials can prevent any platform from achieving its intended goals.

6. Conclusions and Future Work

We consider three civic engagement platforms: the Living Voters Guide, including its earlier iterations Consider.it and Reflect; the Open Town Hall; and the California Report Card. The platforms were categorized into different levels of civic engagement using the "Spectrum of Public Participation," highlighting variations between levels of civic engagement enabled through each system's design. We compared these platforms in order to identify ways to improve the CRC and to contribute to the development of the Spectrum as a platform for assessing online civic engagement interfaces.

Results suggest that civic engagement platforms should facilitate participant consideration of diverse viewpoints to mitigate negative impacts that "filter bubbles" can have in democratic processes. The CRC system is one platform that addresses this concern by utilizing an uncertainty minimizing sampling algorithm that strategically displays suggestions from individuals who hold similar and dissimilar viewpoints. This approach should be further tested in its ability to foster collaboration and identification of patterns, trends, and insights within diverse networks. Future work could utilize this design to divide participants more clearly to political groups, such as Democrats and Republicans, and evaluate how exposure to oppositional viewpoints affects engagement with the system.

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