

Agora2.0: Enhancing Civic Participation through a Public Display

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ABSTRACT

Providing a common place for the civil society to gather and discuss topics of mutual interest is a growing challenge for social and collaborative computing. Web-based tools for civic engagement, while promising, are still disconnected from meaningful physical locations where citizens usually meet and might limit the involvement of a considerable portion of the citizen population. We propose a system, Agora2.0, designed to recover the useful function that public places have had in the past in promoting and regulating citizens' participation in public decisions. Agora2.0 is inspired by the old concept of the Greek agora, or public square. It is composed of an onsite interactive public display and an online site. We present the project, the analysis of the requirements, the system prototype, and its evaluation during deployments in a university and in a public relations office of a European city.

Author Keywords

Public displays, situated displays, e-government, deliberation, community computing, urban informatics, social informatics.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

Digital tools that support a democratic participation in the deliberation process are at the forefront of worldwide initiatives to support engagement in public deliberations [11]. In recent years, the use of Web-based platforms where people can share, vote, and comment on ideas, has surged as a way of encouraging a more direct dialogue between the public administrators and the citizens [11, 18]. On the other hand, large public displays have been used to support social interaction and promote a sense of community engagement in real-world scenarios, where the goal of their application is usually to foster the discussion of themes of interest for

the general public or specific communities [e.g. 12, 16, 20, 22, 23]. These two trails of research have run in parallel, somewhat overlooking the benefits that could be gained by incorporating their outputs in the design of one platform that supports both online and onsite participation.

In this work, we present Agora2.0, a system that aims to foster the dialog between citizens and their political representatives and administrators. Agora2.0 is a platform composed of two equally relevant features: an online system for voting ideas based on the proprietary platform IdeaScale [10] and an interactive public display deployed in a public space that is relevant to the community, a public relations office. The aim of the design is to combine the advantages of online and onsite technologies in one platform to grant ease of public access and promote civic participation.

The main contributions of this work included:

- The design and the development of a civic platform characterized by two entry points: an online website and an onsite interactive public display.
- Findings from a pilot deployment in a university setting and a realistic deployment in a public setting, where the system was used by actual citizens and their public administration

RELATED WORK

Within the research area of Computer Supported Collaborative Work, there is a long history of exploration of interactive displays in community contexts [22]. Many studies have highlighted how interactive displays can augment the traditional noticeboard experience supporting dynamic information sharing within communities [1, 12, 22]. As e-participation tools, public interactive displays may also serve to reduce the digital divide between people who can access the Internet and those who cannot, improving accessibility and expanding the applicability of the Web to support deliberation by civic communities.

Online deliberation services may provide benefits with respect to the more traditional face-to-face participation [4]. They can support many-to-many communication, allow sharing of information across the Internet and give direct control over the content generated to the citizens

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themselves. At the same time, Web-based participation may over-represents a certain portion of the population, considering a narrow variance of views across demographic and political lines [18]. Focusing solely on online tools is then likely to exclude the involvement of an important portion of the citizen population, which in turns limits actual democratic participation [4, 11]. Moreover, current Web tools require that users seek information but do not provide them with the peripheral awareness that distinguishes public displays. Therefore, the deployment of interactive public displays can reduce this limitation by lowering the barrier for adoption by citizens.

Public Displays and Civic Participation

The strategy of promoting civic participation through interactive public displays is gaining increased attention within the academic community. Many studies have investigated the impact of public displays for promoting civic engagement among young people [8, 20]: for example, Hosio et al. [8] presented Ubinion, a public display system with the aim to connect teenagers and young adults with the city administration. The system allowed users to simply take a picture of themselves, augment it with a comment and send it to the local office of youth affairs. The picture with the comment could be then distributed via social network websites (i.e. Twitter and Facebook), allowing other members to comment and discuss the content.

Recent implementations have also considered using public displays to involve a more wide audience in civic participation. Some examples include Viewpoint [23], which is a public democracy tool that was deployed in a disadvantage community in the UK, and Discussion in Space [20], which is a display system deployed in Australia for promoting issues posted by the local government and encouraging citizens to provide onsite feedback. Both of these related systems used public displays for promoting specific questions from the local government to the citizens, allowing them to provide responses in situ through buttons on the public device or the use of a private mobile phone (e.g. using text messages or online services like Twitter).

Our work draws also on prior research on community displays and applications between digital and physical social spaces. In fact, another important characteristic of interactive public displays is the potential to bring the richness of online social software into a shared physical space [13]. This allows supporting awareness about online social activities in a physical place by integrating online information with the activity traces generated at that physical place [5]. With Agora2.0 we wanted to extend this concept in the civic participation domain, combining an online platform with a physical display deployed at the heart of a community's life. The aim of the project is to encourage civic engagement bridging a virtual space for public deliberation with a physical space typically used by the community to discuss local issues.



Figure 1. Two pictures from the introductory field study: notice boards are common informational tools adopted by citizens (left) and newsagent's boards are non-interactive public displays that attract the attention of passers-by (right)

DESIGN AND DEVELOPMENT OF AGORA2.0

Our research approach was inspired by the Interacting Places Framework [14] and encompassed the exploration of three research challenges, namely:

- i) Identify the stakeholders involved;
- ii) Identify and design a suitable instrument for Agora2.0;
- iii) Understanding the factors affecting the citizens' usage of Agora2.0.

Requirement Analysis

As proposed by Alt et al. [1], we decided to ground the requirement analysis of Agora2.0 in common practices surrounding public notice areas relevant for the civic life (like notice boards, event displays and wall hangers) and on the way in which citizens engage with the public administration. The purpose of this initial research was to inform the design of Agora2.0, to identify the possible interlocutors and to determine a physical location for the deployment.

The research started off with a field study in the city of Trento where we collected photo logs and interviews to investigate current engagement practices around traditional public displays used for community communication (e.g. in the municipality buildings, city hall, public library and public squares).

Consistently with prior studies [1, 9], our investigation pointed out that areas of public boards are characterized by a strong interplay among the location in which they are deployed, the stakeholders (content viewers and providers) and the information displayed. The local community largely uses public notice boards to post information, advertisements and news (Figure 1), but they primary serve as tools for conveying unidirectional information, making it impossible for citizens to give feedback or collaborate.

When examining municipality buildings, we found that the facilities did not provide clear means for citizens to share ideas or discuss matters of public interest. The only means for citizens to give suggestions and provide feedback to

their political representatives were suggestion boxes and face-to-face interactions with the staff.

Motivated by this, we investigated more in detail the activities of the public relations office (URP, Ufficio per le Relazioni con il Pubblico) of the City of Trento. As part of the city's communication service, this office is in charge of improving and simplifying communications between the citizenry and the administrative staff by providing a wide range of services, for instance, receiving and handling citizens' complaints and supplying information on municipality activities.

We interviewed the URP staff investigating their role and activities in the relation between the citizens and the municipality. The aim was to understand how Agora2.0 would fit into the URP staff duties and if it was perceived to be a useful integration to the set of tools available to those very people who have to daily liaise with the public on the behalf of the City Council. The meetings with the URP's staff highlighted the interests and the needs that the administration would like to push forward with the use of Agora2.0. The public administration appeared interested in giving better channels for citizens to create and respond to survey on relevant topics and allowing the results to be displayed for public discussion but was also keen on making explicit that no further action would be required on their behalf. The administration was also willing to explore new tools that could call for helpful ideas from citizens or collect their opinions regarding specific issues.

On the basis of these requirements, we designed Agora2.0, a system that allows the public administration staff and the citizenry to post polls and gather opinions about local issues through questions that are answered online or onsite.

System Design

The results from the field study and the interviews guided the design of the Agora2.0 platform (Figure 2 and 3). The platform extend IdeaScale [10], which is a commercial ideas management software that allows organizations to let their community of employees or customers to propose, rank, discuss, and vote for ideas. Similarly, in a civic setting, citizens and administrators can use this type of

platform to post and select ideas as a community. In order to aid this new form of large-scale civic deliberation, we developed a new prototype for extending the Web-based IdeaScale platform. According to our design, citizens can contribute, comment, and vote for ideas online via the original IdeaScale website. In addition to that, people can vote for the ideas that were posted online, also on the public display. However, the public display does not support posting of new ideas, as new ideas can only be posted online due to technical limitations. Figure 2 outlines the system architecture of our platform.

Interface Layout

In order to design the interface, guidelines for public display interface development were followed [1, 9].

The interface should appear familiar to common public and be consistent through all of its states. The responses of the system should be helpful for the user and the system should be easy enough to use even for people that may not be proficient in use of computers. Since the aim was to allow access to a wide range of population of the city, the system would need to be self-explanatory, in order to support all of the above points. The initial mock-ups of the system were basic and depicted a newsagent board. This design choice was informed by the fact that news agent boards are popular non-interactive public displays that attract the attention of citizens passing by, as revealed by the field work study. These existing boards use a visual style that is common, clear, and minimalist in helping readers to quickly identify the main headlines. The display area was then arranged similarly to a newsagent board and the interface was designed with a big header and large fonts in a way that is visually different from a traditional computer interface. For a situated display, it is also important that the interface is not only attractive to the public, but it presents all relevant information, about the system itself as well as its use, in a concise and clear manner. To address these issues, the instruction on how to vote and a side bar with information about the project were included in the interface (Figure 3) in the final design.

Interaction

Previous studies [2, 20, 23] have reflected on the types of interaction employed that would aid in the communication between users and the public display. These works involved the use of either a touchscreen or a mobile device as the input method. Due to technical constraints and feasibility, the use of a touchscreen display was not possible. Although most citizens have a mobile phone, the use of mobile devices as interaction method was seen as a potential complication in the use of the public display [23], which was going to be used by people from all spheres of life and ages. Thus the idea of using mobile phones for an interaction technique was also eliminated in favour of a more inclusive way of interaction. For easiness of use and of implementation, we decided to make people interact with the public display through buttons of a classical mouse, offering a basic and low-entry barrier method of interaction.

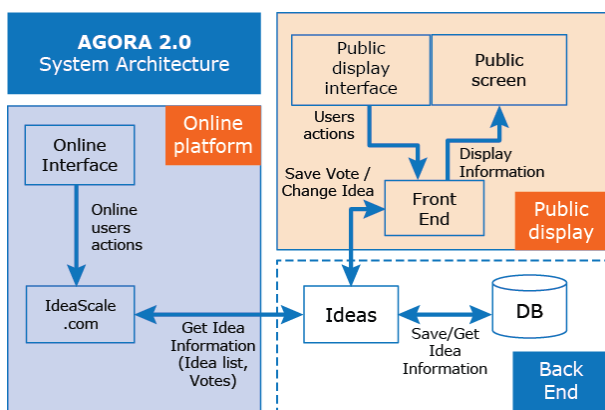


Figure 2. The Agora2.0 system architecture

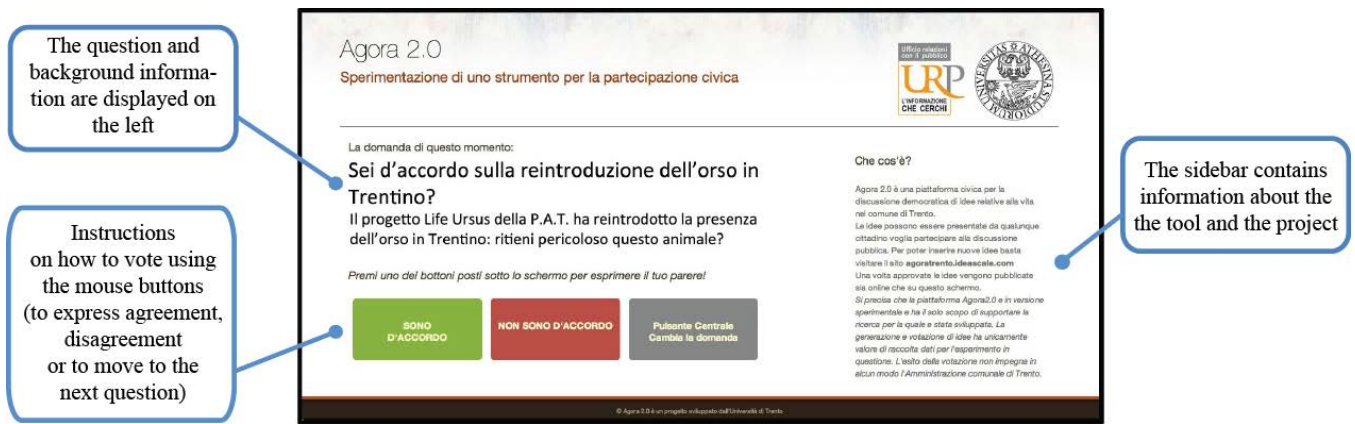


Figure 3. The public display interface contained three main sections showing the question, instruction and side information. As input device, a user would use the buttons of a mouse placed next to the screen.

A mouse was then fixed right next to the public screen and the buttons were colour coded to match the possible choices on the screen and to make the voting task even easier (Figure 4 and 5). The left-most button, colored in green, was assigned to express agreement with the question, the right-most one, coloured in red, to indicate disagreement and the middle button was used to skip the question.

Furthermore, in order to discourage manipulations in the voting process, after a vote was cast the system would display a random question out of the set of all the possible questions stored. This strategy, suggested also by research in social data collection [19], was meant to prevent possible manipulations from users, given that respondents could not choose which ideas they will see but, instead, this choice was made randomly at the system level.

DEPLOYMENT OF AGORA2.0

Pilot Deployment in an University Setting

The development process was informed by a parallel formative evaluation: the public display was deployed for 7 days in the hall of the Department of Computer Science at the University of Trento (Figure 4), where the system was used by the university community. The population addressed in this pilot study was mainly composed of university students, faculty and staff. During the pilot study, which was the first occasion to evaluate Agora2.0, a researcher was regularly present to observe the behavior of individuals around the public display. The researcher assessed the level of involvement directed towards Agora2.0 using an observation technique, called *micro-shadowing* [21]. For each passer-by, his level of involvement exhibited was measured by recording if one of these behaviours occurred:

- *Ignore*, if the person completely ignored the display;
- *Glance*, if the person glanced the display in some noticeable way;
- *Stop*, if the person stopped in front of the display to look the content displayed;

- *Vote*, if the person eventually interacted with the system and voted for an idea.

Results

During the pilot deployment, a total of 2225 people were observed and 100 of them (4%) interacted with the system (Table 1). The observed level of participation is consistent with those reported in other studies [7, 21, 9] and gave an important insight into the degree to which the student community reacted to Agora2.0 public display.

A total of 575 votes were collected through the system. A deeper analysis, which considered the time when the votes were collected, showed that during two different days, when the researcher was not on site, the number of votes were higher (about 50 votes in one single hour), suggesting a potential misuse of the system.

People who interacted with the display were interviewed in order to gather their comments and opinions on the Agora2.0 platform, its interface and the interaction technique.

Level of involvement				Total
Ignore	Glance	Stop	Vote	
1398 (63%)	558 (25%)	169 (8%)	100 (4%)	2225

Table 1. Distribution of levels of involvement of 2225 passers-by in response to the public display during the pilot study.

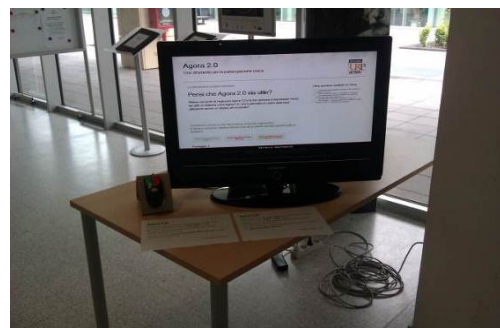


Figure 4. A first prototype of the public display of Agora2.0 during the pilot study.

Users' feedback led to following improvements and tweaks to the prototype: adding support for skipping questions and providing background information to the displayed idea.

During the pilot deployment, a total of three users entered the online community and posted six new questions, all related to the student life. Given the limited of the pilot study, the overall participation to the online community was encouraging about the usability and utility of the Agora2.0 prototype.

The results of the pilot study helped us to plan a longer field deployment of Agora2.0 in a public space located in the city of Trento's city center.

Field Deployment in a City Setting

A field study was conducted to assess how regular citizens would interact and respond to Agora2.0. The system was deployed at the foyer (entrance) of the URP office of the City of Trento (Figure 5). The hardware consisted of a computer connected to the Web, a 47-inch display that was already situated at the venue and was facing the office's surrounding and the mouse used for interacting (see Figures 4). Before this study, the screen was rarely used by the office and thus turned off. The foyer consists of a public passage that connects two main city roads as well as gives access to many public offices that have their entrance around this area. Agora2.0 was made available on weekdays from 9am to 6pm, during the URP office hours, for 20 working days over a full month. Concerning the content of Agora2.0, we agreed with the URP staff on initially publishing 5 ideas all related to local civic issues and that would be posted both online and onsite. The ideas were phrased as yes or no-answer questions and were presented along with a description of the context of the debated issue (Table 2).

Question	Votes	Agree	Disagree	Skip
1. What do you think of the cable-car plans for connecting Trento and Sardagna?	58	36 (62%)	22 (38%)	29
2. Do you agree with the reintroduction of brown bears to Trentino region?	63	38 (60%)	25 (40%)	31
3. Do you think that shops should remain open on Sunday?	51	30 (59%)	21 (41%)	18
4. Are you able to recycle your waste correctly?	66	46 (70%)	20 (30%)	24
5. Did you like the topic of the last edition of the Festival of Economics hosted by the City of Trento?	54	25 (48%)	27 (52%)	30
Total Votes	290			

Table 2. Ideas phrased as questions in Agora2.0 and the votes

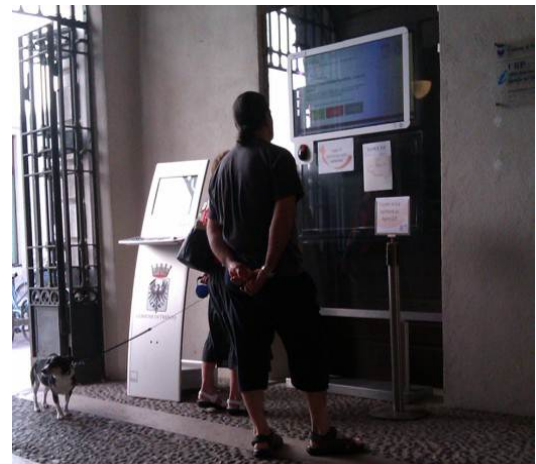
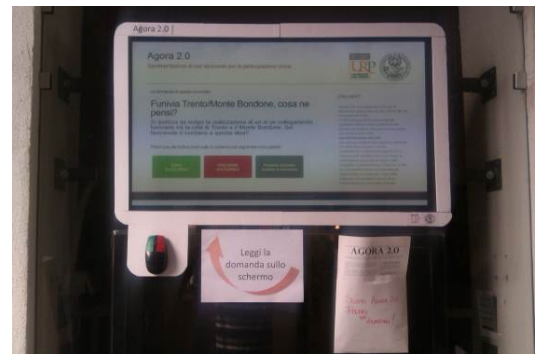


Figure 5. Agora2.0 at the URP foyer. The upper figure shows the screen, the mouse and the leaflets containing information about the project.

The evaluation data included:

- Usage data and system logs both from the public display and the online platform;
- Observations and notes from the field, following an observation reference schema;
- Semi-structured interviews to both users and passive-users (i.e. people who stopped to look at the display but who did not interact). The interviews investigated the demographic of the user, their civic engagement experience and the motivations for interacting (or not) with the system.

Results

290 votes were cast on the public display by approximately 250 users, with an average of 14 votes per day.

The five questions received an average of 58 votes and the 'change question' button was pressed quite often compared to the vote collected (on average 26 times per question)

During the deployment of Agora2.0, the URP staff took note of the number of people who physically come to the office, reporting a total of 1074 citizens. This information gave an estimation of the number of citizens who visited the office at the time of the deployment.

Field observations indicated that passers-by were mainly middle-age citizens, between 20 and 50 years old, and the distribution of gender was almost equal.

A total of 15 people agreed to be interviewed: 9 of them interacted with Agora2.0 while the remaining 6 were passive users who devoted attention to the public display but eventually did not interact with it. Four respondents were under 20, four between 21 and 40 and seven were over 40. None of the respondents was vigorously engaged in the political life at the time of the interview nor did they consider themselves very involved in civic participation.

The total number of users who accessed the Agora2.0's online version (i.e. the online community on IdeaScale) was very small: only two users signed in on the online platform, voting for the ideas present but without posting new ones.

DISCUSSION

In this research, the pilot study in the university setting served mainly the purpose of refining the design and preparing the platform for the longer deployment in the city setting. This second study, at the office for public relation of the City of Trento, provided a number of useful insights into how general public would or could use Agora 2.0, given a public space and a large community. While the two deployments had different goals, the findings from the field observations and the interviews made during both studies helped us to identify key factors that influenced the citizens to use or not use Agora2.0. We discuss them in this section.

Why did Some People Use Agora2.0?

The field study highlighted three factors that had influenced citizens' interaction with Agora2.0.

The interaction method

The people interviewed during the deployment in the city setting were not heavy technology users and preferred other ways (face-to-face or telephone call) to interact with the City's administration rather than online tools. Nevertheless, the large majority of those interviewed found the system easy to use and enjoyable. Consistently with the findings of previous studies [23], a simple interaction method for placing votes was a good entry point that encouraged participation. The interviewed voters agreed that the system was accessible and easy to use, even if they were not used to the interface with a mouse at the bottom of a large screen. From our observations, citizens were never discouraged from voting because of a difficult interaction with the mouse.

The deployment in the city confirmed that the main issues related with interface design of the public display had been addressed: the interface was intuitive and self-explanatory. Respondents agreed that the information was presented in a clear and concise manner, resulting in a good readability. Moreover, the interface layout and text sizing were effective in guiding users' attention to rapidly parse the content on the screen, i.e. the content of the idea displayed and the instructions to interact with the system and vote. Users appreciated the possibility to find information about the project in the display and in the leaflets, for later reading.

About the voting behavior, we observed that citizens tended to vote for more than one question, continuing to vote as long as a new question would appear on the screen.

Differently from the pilot deployment, misuse was not a problem observed during the city deployment. The strategy adopted to discourage users who wanted to vote multiple times a specific question proved successful. The field observations suggested that nor children neither adults interacted with the display just for fun: the physical location of the screen, the URP office, and the presence of other adults were effective in preventing misuse of the device by children, for example, who could have played with it.

Voting in Groups

We found that many people approached the display in groups of 2-4 people (about one-third of total observed interactions). Before starting to interact with the display, they would usually talk to each other about the topics presented (Figure 6). Since only one person could interact with the system at a time, we observed that the members of the group tended to rotate and take the role of voter in turn. Interestingly, whenever a group approached the display, almost all the members interacted with Agora2.0 and took the voter role. This group behaviour, named *role rotation*, has been observed in studies of the interaction with public displays [3] and it gains a particular importance in the context of civic participation. Whenever a group discussed on how to vote to a particular question, role rotation tended to occur so that all the members were given the opportunity to interact. The group members would then vote either on behalf of the group or for themselves.

Specifically, the most frequent interaction pattern observed was the following: one member of a group would read the topic to the other members, a short discussion within the group would follow along with the decision on agreeing or not, and eventually one member would interact with the display to submit the vote. Usually, the group would continue to talk about the topics after the members submitted their vote.



Figure 6. A user (left) and a group of users (right) interacting with Agora2.0

Interest to the topic

Among the citizens interviewed, people who voted reported that they were motivated mainly because they were attracted by the topic of the question displayed (N=6). If the passers-by noticed the display, then they would approach the screen, read the questions and submit the vote(s). Less frequently, people approached the displays just because they were attracted by the technology (N=2) or because they were guided by the notice boards (N=1).

Analyzing the votes collected (Table 2), we found that for four out of five polls the citizens mainly agreed with the questions (questions 1, 2, 3 and 4), while for one poll the number of agreement and disagreement votes were roughly equivalent (question 5).

Overall, positive votes were slightly higher than negative ones, suggesting a tendency of the users to agree with the question displayed. A similar trend was observed in a prior study [23]. This could be the result of different phenomena: the systematic tendency for citizens or study participants to please the asker (in this case the public administration), tendency to agree to any statement (acquiescence bias), and social desirability. These are known biases in psychometrics [6]. This finding suggests that systems such as Agora2.0 could be used to measure (and account for) this type of bias using control questions: e.g. using positive and negative variants of the questions. Another key factor that could have contributed to the pro-agreement bias is that some people implicitly "voted with their feet": i.e., those who disagreed with the question simply skipped the question or ignored the system rather than giving an explicit negative vote. This type could be measured by comparing the level of participation across different questions. Interestingly, the questions with the highest number of negative responses (questions 2 and 5) were also characterized by the highest occurrences of skipping (31 and 30 times, Table 2). Conversely, the question about recycling (question 4) collected the highest number of votes (N=66), the highest percentage of positive votes (70%) and it was skipped less frequently (24 times, Table 2). The higher total number of votes suggests that the population of users considers the topic more interesting.

Therefore, these findings support the idea that while collecting votes (onsite and online) in the long term, Agora2.0 could also be instrumented to build a profile of the biases and interests that is specific to a given community.

Why Some People did Not Use Agora2.0?

From the field notes and interviews with non-users (N=6), we identified some key factors that may have led some people to not use (or stop using) the system.

Location

The location provided both advantages and disadvantages to the field study. Agora2.0 was deployed in a place that was really at the heart of the civic life, especially considering the proximity to the main local office that acts

as the primary link between citizens and the city administration. For the people who noticed Agora2.0 and understood its purpose, it was natural to find such tool in that location.

A major drawback was the vicinity with other offices related to the local administration, like the city's tourist office, that attracted people who were not interested to the questions presented via Agora2.0. A second disadvantage lied in the position of the display. The display used for Agora2.0 was not fully visible from outside the foyer and thus the potentially number of users might have been reduced. Moreover, the protection glass placed in front of the display caused a glare under strong light conditions, making difficult to see the content displayed. These issues were not observed in the pilot evaluation since the system was deployed in an indoor area mainly frequented by students.

The location had thus an impact in the two deployments not only by its relevance to the community but also by its physical characteristics.

Display and Interaction blindness

Some citizens (mainly elderly people) did not even look at the display (*display blindness*) or they believed the screen was a regular television and thus not a device they could interact with (*interaction blindness*). Display and interaction blindness are widely recognized challenges to public display design [9, 15, 16] and the field evaluation confirmed that they affected the number of people that could have potentially interacted with Agora2.0.

Disinterest and Voter Fatigue

Some of the users who noticed Agora2.0 were not interested in the questions displayed and thus did not vote (N=3). This happened mainly with people who were not citizens, such as tourists or non-local students. Differently from the previous point, in this case users have noticed the display and subsequently found no interest in the topic.

Other citizens preferred not to vote because they did not believe that the administration would take their vote into serious consideration (N=3). As reported by Taylor et al. [23], providing a real-time feedback (i.e. immediately display the results after each vote is cast) might affect the system's credibility encouraging participation and willingness to respond. In our investigation, none of the people interviewed raised concerns about the lack of a real-time feedback but they however had expectations of a concrete commitment from the public administration. The fact that Agora2.0 was deployed close to the city administration offices might have lowered concerns about an immediate feedback while raising expectation on a concrete response by the administration. In order to prevent voter fatigue, the administration should consider short-term actions on the basis of the poll results and should state in advance what actions they might take.

Low Participation by Online Users

The online participation was lower than expected and did not allow us to compare the usage of the online version of Agora2.0 to the public display-based version. Such a low participation may be related to resistance to e-voting [17], low Internet literacy or simply low awareness of the online website. It may also suggest that civic participation can be supported more easily in the public space while an online tool would require more time to be advertised and a more efficient promotion campaign both online and onsite. In fact, the online platform, based on IdeaScale proprietary software, was mainly promoted through leaflets made available at the public display's location and through a Facebook Page connected to local blogs and websites related to the Trento's city life.

The low participation via the online website was also the result of additional constraints that must be managed when deploying a system in a civic setting. These include the legal constraints that regulate non-for-profit collaborations between a local government, such as a city administration, and a private firm. Moreover, there are internal legal obligations of the public relation office (the URP office) to monitor any onsite and online activity involving their official endorsement. While receiving excellent support from a city and a firm, we learned that these constraints call for more work for better addressing the legal aspects.

CONCLUSIONS AND FUTURE WORK

We designed Agora2.0, an online and onsite platform running an idea management system, to empower both citizens that privilege remote interaction via the Internet and those who prefer face-to-face interactions when engaging with local government administrators. We presented the insights about the advantages and pitfalls of an Agora2.0-like system for e-government and civic participation that we gathered from a pilot and a field study evaluations.

The interactive public display seemed a promising interface for including a broader portion of the citizens population that might otherwise be left out from civic discussions. Overall, our study found that a public display deployed in a location central to the local political life of a city, can play a valid role in enhancing civic participation. The content of the topics and the type of interaction offered to citizens, have proven to be two critical factors that must be taken into account in designing a participatory tool like Agora2.0. Our findings highlight the importance to choose topics relevant to the local community and to provide an easy way to interact with the voting system. Adopting a question format for addressing civic issues and providing a simple and engaging method for interacting with the system have therefore proven to be successful in promoting public involvement with Agora2.0. The findings of the study confirm that factors as credibility, design and location of voting systems have an impact on the use of these technologies [23]. Furthermore, the deployment of Agora2.0 and the field observations have demonstrated that

a public display can consistently support the interaction of groups of individuals and trigger in-situ group discussions about local civic issues.

Our initial goal was to merge online and onsite civic engagement activities by integrating online and onsite technologies in one platform. However, we did not observe the expected synergy between the uses of the onsite public display and the online community platform. Since the latter was not active enough, we cannot draw any conclusion regarding this aspect of our research, as this subject will be a focus point of our future studies to explore the differences between the online site and the onsite tool interaction.

The deployment of Agora2.0 in a real-world scenario through a public display-based system proved an exceptionally valuable opportunity to work along with a public administration office and offered both parties useful insights for future collaborations. The Trento's URP office appreciated the positive outcomes of the study for what concerned on-situ citizens' engagement via an interactive public display and expressed their interest in continuing the collaboration with us in the near future.

The comparison between the pilot and the field evaluation led to some insights about the effects that the two different settings, the university and the city public office, had on the results. The differences in the communities and in the physical locations affected the adoption of Agora2.0: in the university setting, we observed greater levels of adoption for both the display and the online community compared to the city deployment. The age and technology literacy of the student community were likely facilitators of the greater adoption of the web site. The location of the public display, the high-traffic area, favored its use. Thus, in our future deployment we will privilege a similar indoor location where members of the community gather to socialize and discuss local issues, like the public library or the city hall.

In addition to the properties of the community and the system's physical location, the topic of the questions was another key factor in determining whether the citizens would interact or not with the system. Questions with an interesting topic can in fact motivate passers-by to interact with Agora2.0. Giving to the citizen the possibility to post their own ideas could result in a larger number of potential interesting topics in the system. In a future deployment of Agora2.0, we plan to explore if citizens would respond equally to questions provided by the public administration or by other citizens or peers, investigating differences in participation and voting patterns.

For our future work, we are planning a new deployment and evaluation that will target a specific community rather than the entire citizenry. This future work will aim at deployments within smaller communities (e.g., communities of university students in Trento) in order to better investigate the factors regulating online and onsite participation. Targeting a specific community, as a more defined and coherent group can help limit the obstacles to

participation that we observed during our field deployment (e.g. display blindness, low activity of the online community, issues with the location). The pilot and field deployments pointed to specific aspects of the design that can be improved to increase the adoption of a voting system. These include using more direct ways to promote the online tool, privileging a strategic location for the onsite tool, and add new ways to introduce topics of interest for the community.

The design vision for Agora2.0 is to serve as a bridge between online and onsite communities and leverage new types of synergies between online and onsite technologies in order to promote easier and broader participation.

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