

Digital Innovation with VoiceYourView: Contributions to Knowledge and Lessons Learned

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VoiceYourView (*vYv*) (EP/H007237/1) has developed and studied the ViewKi platform, which integrates state-of-the-art technologies to allow users to leave short comments and gain instant feedback on comments left by others, wherever and whenever it occurs to them. ViewKi is a type of collaborative wiki with text processing platform designed to tag, group and display comments contributed by the public. It has associated SMS, voice, web, mobile app and social media integration enabling any-time anywhere capture of spontaneous commentary on public spaces and environments. The platform uses a combination of classifiers, taggers and rule based estimation to automatically analyse the text comments and categorize them by topic, sentiment scoring and actionability content. The *Wmatrix* natural language processing system is used to tag each comment according to taxonomy of word usage in general English language (cf. corpus linguistics), from this tagging, likely category or topic are estimated. The lexicon-rule based sentiment tool, *Senora*, is used to estimate the sentiment along a continuous dimension of positivity and negativity, and a classifier based system has been built to estimate the *actionability* content of comments.

The principle behind *vYv* is that the public constantly makes observations about the world in which they live, but that most of these observations are not communicated to authorities because they are forgotten about before they are written down. The hypothesis is that a public space can be improved if there is better feedback on how the public use the space and what the public likes/dislikes about it. *vYv* thus enables the public to capture these observations immediately as they occur. A key element of *vYv* is real-time feedback to users. This has been achieved using public displays to broadcast a series of glowing orbs. Each semantic tag is represented by an orb: the larger the orb, the more comments there are about that theme; and orbs glow different colours depending on whether the average sentiment is positive or negative.

LANCASTER LIBRARY TRIAL

Over a period of 6 weeks, we installed the *vYv* system in a metropolitan library that had recently undergone a major refurbishment. The public were invited to freely express their view about the redesign using *vYv*; a total of around 2000 comments were collected from 600 people. We presented 5 sets of results exploring issues related to the use of such systems “in the wild”. Firstly, we investigated the accuracy of automatic theme tagging on the kind of short comments received and found that an acceptable theme was discovered 78% of the time. Since 100%

accuracy is not necessary to create a reasonably faithful picture of what people are commenting on, this result suggests that automatic theme tagging is of practical use in these kinds of systems. It also has relevance to techniques that mine public online sources, e.g. Twitter, for actionable data. Secondly, the ability for users to comment on “anything they like” potentially allows *vYv* to collect unanticipated data but may result in lower quality data because people may not know what to comment on or may comment on aspects that are irrelevant. Our results provide evidence to suggest that prompted versus unprompted comments generated no indication of degraded quality, suggesting that systems that do not ask specific questions are just as valuable as traditional questionnaires. This initial trial provided evidence of positive benefits of *vYv* in gaining access to views from those that would otherwise not be heard; helping to solicit more positive comments since the real-time feedback display can encourage positive views that might otherwise go unrecorded and collecting actionable data from the public who are able to provide meaningful and succinct design critiques. Thirdly, we compared actionability of *vYv* and traditional written responses and found a statistically significant higher actionability from the latter. This is explained by the fact that *vYv* solicits a higher number of neutral or positive comments, which are less actionable but still useful. Indeed, this result suggests further research is necessary to understand whether gathering public opinion using technology (cf. e-Government) are inferior or superior to traditional survey methodologies. Fourthly, we investigated whether varying the form of feedback to users affected their type of response and found no significant difference. This issue requires further investigation. Finally, we reported on a number of observations regarding user engagement with the system. We plan further studies to transfer what we have learnt and to re-evaluate it in the context of mobile computing where the commenting technology will not be fixed but will be available everywhere.

DERRY DISTRICT CONFIDENCE IN POLICING TRIALS

This second trial contributes to the literature on public confidence in policing from two angles

1. We reviewed existing methods used for measuring confidence in police services across the UK.
2. We studied the level of satisfaction and confidence in policing in the Derry/Londonderry region in collaboration with the Derry District Policing Partnership (DDPP). The main contributions from the

work were i) to propose the design of a new map-based interface to present such summaries in a useful and interactive fashion for use by authorities / policymakers, ii) to develop an automated approach extracting quantitative data from free-text questionnaires responses designed to measure public confidence and satisfaction in policing within the Foyle District Area. Recommendations are to increase the number of police officers on the street, and for the police to be seen to be dealing with issues that are important to residents in order to increase the level of confidence and satisfaction of the public, iii) in terms of impact, the DDPP have adopted our free text style of collecting feedback on their service, simply because the conventional checkbox style survey replies did not match the free-text sentiment that we obtained.

ARCHITECTURE FOR EVERYONE AT A4E TRIAL

A4E was a nationwide project encouraging young people from Britain's inner cities to pursue careers in Architecture and Design, conducted in collaboration with Places Matter! and the Steven Laurence Trust. The aim was to investigate whether young people's enthusiasm for architecture could transfer to Web 2.0 platforms. We had 4 objectives, as follows:

1. To capture young people's opinions of the built environment using traditional means.
2. To summarise these opinions and use as material for Facebook group and blog.
3. To investigate how young people use a Facebook group in support of a workshop.
4. To investigate any barriers to participating in Facebook group discussion.

Key findings of the study were i) that young people broadly were unwilling to transfer their offline interest in Architecture and Design into the Web 2 discussion spaces. ii) Young people preferred to use Facebook for 'social searching' and continuing offline family and friend connections online. Informal learning and education did not fall within their specific reasons for using Facebook. iii) Facebook groups were useful for arranging meetings and encouraging social interaction between workshop participants. iv) The opportunity to post comments while 'on location' is very important. Our research supports existing literature that young people are using Facebook for social browsing and extending existing networks.

UNIVERSITY CAMPUS TRIALS

This study was in collaboration with the University of Coventry Estates Department to give the staff, students and visitors an opportunity to comment on the physical aspects of the university campus. The scope of the trial was left relatively broad in order to give the campus users the freedom to raise issues of importance to them. The study aimed to measure effectiveness of the different technologies in terms of quality of data, popularity and other factors and engage staff, students and visitors of Coventry University in a consultation about the current state of the campus, together with offering the option to supply ideas and suggestions for the future of the campus. If considered feasible by Estates, these comments would be considered in future plans for the campus. It was agreed that any concerns or issues considered as urgent would be passed to the Estates Department straight away, to be rectified as soon as possible. The methods available for respondents to comment on the campus using vYv were e-mail, text message, online form, and located touch screen kiosk or iPhone application.

Results suggest significant differences between the quality and quantity of comments from different methods. In terms of quantity, there were significant differences in both the number of valid comments submitted and the number of these comments being relevant to the trial. Generally, respondents said they used the system because they had something important to share, they wanted to contribute to improving the campus or they just wanted to try the technology. Those who did not use the system stated that there was nothing of concern to them they would want to raise and they were generally happy with the state of the campus. Those using an iPhone app commented more on their immediate location as opposed to remote locations. Finally, the text message was hardly used at all. The cost associated with running this service was far larger than the benefits. Lessons learned from this trial are; a helping hand is needed – lots of people need to be involved in the trial; avoid too many options in data input; fixed stations may lead to more location-specific comments; most of the emails really had something to say; there was a very limited uptake of SMS and low uptake on iPhone. Finally, feedback mechanisms are an essential component, closing the loop on reporting tools.

TECHNICAL DESIGN FOR THE vYv SPECIALIST DEVICE

The design research team at Brunel University plays the key role in supporting technological development led by Lancaster University and user research led by Coventry University. The main aim of the specialist device development is to identify suitable design strategies for the development of prototype devices, building on knowledge captured through previous trials, namely Lancaster Library Trial and Coventry University Trial.

Key requirements of the vYv specialist device from a product design perspective are as follows;

1. The device should accommodate all groups of users: children, disabled people, older people, etc
2. Elderly people are the most active citizens and also the least engaged with digital networks. Thus, it is crucial to address their specific needs, e.g. ensuring that older people with mobility aids can access the device without any difficulty
3. Key design criteria identified through user research are: compatibility, convenience, comfort, visual impact, practicality and security (vandalism-proof). Emotional issues, e.g. aesthetics, must be taken into consideration, since it is important to attract first-time users to explore and engage with the vYv system.
4. Local authorities have no budget for this type of device. Supermarkets and shopping centres are regarded as the most suitable target, since they have sufficient budgets and can provide 24-hour security. This device can be part of their CSR practices. The design must reflect their corporate identities and can fit in various retail environments ranging from a small shop in a city centre to an out-of-town store.
5. Intuitive design and appropriate marketing campaigns are required to raise awareness about the vYv system otherwise people may use it incorrectly.

In conclusion: The flexibility, accuracy and ubiquity of the ViewKi platform has been designed and extended over the programme, with new input and feedback mechanisms added as it is tailored for each new project trial. Our vYv research has benefited as a result of the synergies arising from the multidisciplinary nature of the programme. We have many challenges ahead and need to apply our problem solving skills in the commercial world.

