

## Ubiquitous Polling for Adaptive Questionnaire Survey in Fieldworks

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Traditional polls and surveys often utilize telephone interviews, face-to-face interviews, and online questionnaire. These activities are time consuming and labor intensive. To achieve innovative urban planning and urbanism optimization, executive bodies need to collect a great diversity of urban information from micro to macro views. Opinions collecting activities, such as field surveys, market research, social science survey, and public opinion polls are all needful mechanisms. However, in many times, specific questionnaires need to be delivered to specific interviewees according to survey goals or user constraints. Traditional techniques can often not satisfy the polling requirements that the concept and architecture of ubiquitous polling and the UbiPoll system proposed in this paper may alleviate the problem.

The advancement of mobile computing, crowdsourcing and GPS positioning realizes the vision of sending right messages to the right people at right time. Many academic and industrial productions are devoted to the mobile survey. For example, the state-of-the-art products include SurveySwipe (<http://www.surveyswipe.com/>), Vovici ([http://www.vovici.com/home\\_index.aspx](http://www.vovici.com/home_index.aspx)), and SurveyAnyplace (<http://surveyanyplace.com/>). To further extend the accomplishment, UbiPoll focuses on Questionnaire generation, Context awareness, Similarity-based life trajectory mining, Ubiquitous tracing, Crowdsourcing and Cloud messaging. The scope of context defined in UbiPoll covers the role, activity, time, location, mobility, and equipment.

The usages of UbiPoll are as follows: 1) Volunteers register as an UbiPoll users by installing UbiPoll App on smartphones or tablets, 2) Pollers construct and manage the questions and questionnaires on the UbiPoll Website, 3) Pollers set the context constraints and incentives for selected subjects, 4) UbiPoll Website transmits the questionnaire to UbiPoll App of volunteers meeting the context constraints, 5) UbiPoll App responses the answers to UbiPoll Server after volunteer finishes the questionnaires, 6) Poller uses the collected results to study their research issues.

The social effects of UbiPoll cover that a) Survey activities will reduce the use of papers, time and labors, b) Urban planning can launch the questionnaires to specific citizens according to the sophisticated context constraints, c) The cohesion among cities, citizens, governments, and urban planners will be improved due to the ubiquitous participant relationships. Meanwhile, UbiPoll is still working on the kernel technology to support urbanism improvement and metropolregion integration.