

Smart Technologies, Smart Governance and Smart Cities: Garbage Governance in Jamia Nagar, Delhi

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ABSTRACT

This writing attempts to make a case for community involvement in creating information systems for Governance. Proposing effectiveness as an ingredient of "smartness", it suggests that an insight into the ways in which people use and interpret technology in their day-to-day lives can shape the design of effective information systems. It also recommends understanding the needs and priorities of the communities involved as a precursor to technological intervention.

The paper draws on an experimental project involving the use of mobile (sms) technology in garbage collection in a small, marginalized community in New Delhi, India to demonstrate that building an effective eGovernance system is inherently a sociotechnical enterprise which entails collaboration and interaction between different communities.

Using the "Activity Theory" approach to gain a social understanding, it suggests that the notion of activity or the purposeful action of a "subject" with "objects" can provide a common model or framework applicable across diverse areas of local eGovernance.

CCS Concepts

• Applied computing~E-government

Keywords

eGovernance; Activity Theory; Information Modeling; UML Extensions

1. OVERVIEW

1.1 Activity Theory

Activity Theory, also called Cultural, Historical Activity Theory (CHAT) has been seen as providing a common language or a shared conceptual framework across disciplines. [1] The basic idea is that for people or "actors" across diverse walks of life, the performance of "activity" is common; thus, while the activities, roles, motivations and the tools used may be different, it is possible to view and analyze activities cross different areas of governance, using a common framework.

1.2 Modeling Local eGovernance

Second generation activity theory, informs the approach used in the project. This approach involves not just the subject, the object or

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the "objective" - or what is to be accomplished - and the technological tools as suggested by first generation activity theory, but also helps in identifying the communities, rules and the division of labour[2]. The subject or doer, object, desired outcomes, tools used, communities involved, the division of labour, and the rules (implicit and explicit) are shown in Figure 1 below.

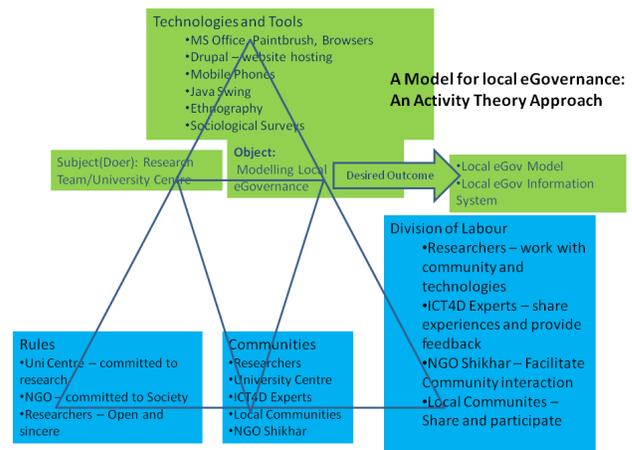


Figure 1: Modelling Local eGovernance as an Activity

The approach used, i.e. the identification of subject, object, expected outcomes, divisions of labour (who is to do what), technological tools used etc is that of activity theory.

2. PROJECT ACTIVITIES AND OUTCOMES

An overview of the main activities in the project is shown in the diagram below.

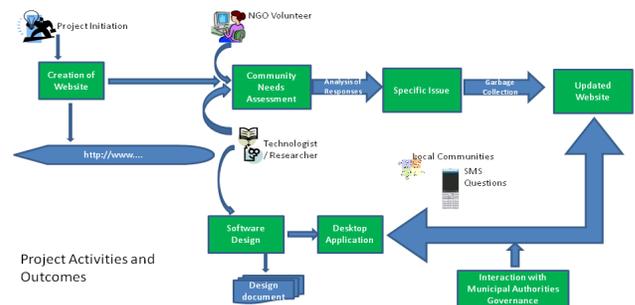


Figure 2: Project Activities and Outcomes

A brief description of the activities and their background and rationale follows.

2.1 Community Interaction

The notion of "interpretative flexibility" - or the idea that the same technological artifacts may be used and interpreted differently by

the social groups using the artifacts influenced the community interaction [3]. Further, communities tend to view the same problem-space from different vantage points. For instance, Timothy Mitchell, writing about hunger and poverty in the Nile delta in Egypt points out that the viewpoint of economic experts, the problem of hunger and poverty gets represented as a technical and managerial one - of increasing population and a lack of arable land, whereas from the viewpoint of the people living in the area, it is seen essentially as a political problem of power and inequality [4]. Identifying an area of Concern: the preliminary study

Interaction with the local communities was initiated in collaboration with an NGO working in the area. One of the activities of the NGO was to conduct computer literacy classes for girls and women in the area. The initial interaction started with the researchers sitting in on some of the classes being conducted by volunteers so that gradually, the volunteers became facilitators in the interactions.

Following this, 90 detailed, individual interactions were conducted along with several group interactions between the researchers and people from the local community. Videos, photos and transcripts formed a part of the documentation of this exercise.

A combination of the quantitative data from the detailed surveys suggested that cleanliness or garbage collection was the primary area of concern for residents. Interactions with local municipal authorities formed a part of the study.

As indicated in the Figure 2, the design of the software application continued in parallel with community interaction.

The notion of "interpretative flexibility" - or the idea that the same technological artifacts may be used and interpreted differently by the social groups using the artifacts influenced the community interaction [3]. Further, MPL: Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, or republish, to post on servers or

2.2 Software Design and Community Interaction

Interaction with the communities led to a design more attuned to local requirements. Some of the main findings and the influence on the system are discussed below:

2.2.1 Desktop Vs Mobile Application

While the software development team was initially eager to develop a mobile application, interaction with the local community suggested that most people were not equipped to download, install and use mobile applications. This also meant that there was no need to develop a resource intensive mobile application but instead a desktop application that read and sent text messages would suffice.

2.2.2 Use of Dedicated Mobile

It was decided to use a dedicated mobile phone rather than attempt to use more costly toll-free numbers and gateway api's. The design of the application however was kept flexible so that scaling up to a toll-free number with several lines and subsequently to gateway services could be done optimally.

2.2.3 Mobile Number as Unique Identifier

Seeing that the same mobile was often used by multiple people and there was frequent change of the mobile number used by an individual. It was decided to use an automatically generated number rather than mobile phone as the unique identifier. This offered flexibility so that the same mobile to be used by multiple people and individuals could change their mobile number without losing their poll data.

3. CONCLUSION

While contemporary technologies do open up the possibility of direct democracy, the democratic ideal of a self-governing populace is inter-twined with technical systems being sensitive and responsive to local, social factors.

The project experience suggests that the design of information systems embedded in the social rather than the technical realm may provide an adequate starting point. Better informed and more knowledgeable communities may be a more effective indicator of 'smartness' in governance, rather the use technological devices with some specific "smart" characteristics.

eGovernance can cover a diverse range of human of activity, each of which may entail knowledge of different domains and involvement of different sets of communities. Activity Theory provides a common framework on how to approach the conceptualization and design of these systems.

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5. REFERENCES

- [1] Andy Blunden. 2010. *The Interdisciplinary Theory of Activity*. Brill Publishing. Leiden, Netherlands. 4-5.
- [2] Gregory Bedny, Waldemar A Karwowski. 2007. *Systemic-Structural Theory of Activity: Applications to Human Performance and Design*, CRC Press, Taylor and Francis Group, Boca Raton, Fl. pp 38-39.
- [3] Trevor J Pinch and Wiebe E Bijker Ed, 1987. 'The Social Construction of Facts and Artifacts', in Wiebe E Bijker, Thomas P Hughes, Trevor J Pinch Ed, *The Social Construction of Technological Systems*, The MIT Press, Cambridge, Mass. 1987 pp 28-35.
- [4] Timothy Mitchell. 2002. *Rule of experts: Egypt, Techno-politics, Modernity*, University of California Press, Berkeley, Los Angeles, London. pp 209-220