

Challenges Encountered When Identifying Remote Stakeholders

Ban Al-Ani

Donald Bren School of ICS,
University of California, Irvine
Irvine, CA 92697-3440 USA
+1(949) 824-2776
balani@ics.uci.edu

David Redmiles

Donald Bren School of ICS,
University of California, Irvine
Irvine, CA 92697-3440 USA
+1(949) 824-2776
redmiles@ics.uci.edu

ABSTRACT

Stakeholders play a major role in the adoption and acceptance of a software product. We find there are different perceptions of who is a stakeholder and different approaches to promoting their participation in software development. However, we also find that there the software engineering community does not address how stakeholders are identified in remote regions despite acknowledging that locality and culture typically have an impact on a software product. We discuss these issues in this paper.

Author Keywords

Stakeholders, remote regions, software development, participatory design.

ACM Classification Keywords

D.2.1 Requirements/Specifications, H.1.2 User/Machine Systems, *Human factors*, K.6.1 Project and People Management

BACKGROUND

Robertson [10] states that the term stakeholder encompasses sponsors (needed for organizational commitment), consultants (knowledgeable either in technical aspects or the problem domain), and influencers (culture, law, inspectors, competition...etc.). Finally, she extends the term to include users who she defines as one of many *consumers*. She adopts the term *consumer* to refer to the many different roles that a person may take and the impact they have on the success of the product, namely that of the buyer and users. People who play the role of *buyers* are those who decide whether or not to buy the product. Whereas, she identifies *users* as people who come into direct contact with the product.

Researchers also use the term stakeholder to refer to subsets

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 to redistribute to lists, requires prior specific permission and/or a fee.

CHI 2009, April 4–9, 2009, Boston, MA, USA.
Copyright 2009 ACM 978-1-60558-246-7/08/04...\$5.00

of these categories. For example, it has been used to refer to the people involved in the software development process as either managers or software engineers [14]; while others have used it to denote both product developers and product consumers [1]. We use the term to refer to everyone who is affected by or has an impact on the software product, in line with Robertson [10]. In this paper we discuss some of the challenges developers may encounter in identify stakeholders in remote regions.

REMOTE STAKEHOLDERS AND ASSOCIATED SOFTWARE ENGINEERING CHALLENGES

Early work within the software engineering communities typically focused on identifying stakeholders whose requirements need to be incorporated into the software product in an attempt to increase consumer satisfaction [11] [9]. More recent work within the participatory design community recognizes the importance of involving a range of stakeholders and the application of sustainable strategies to increase the likelihood of stakeholder involvement [2].

Various aspects of participatory design have been studied for several years and its relationship with ethnography [6] [1] [15]. However, we generally do not find evidence of the work reflected in popular software engineering and requirements engineering communities. For example, a review of software engineering development processes revealed that the type of system, amount of domain knowledge available, etc were factors which could help software engineers determine which process to adopt (e.g. [12]). Here, we find that changes in location are rarely specified even though globalization and cultural effects on products are known to be important [13].

We did find work which discusses various methodologies that can be adopted to gain a better understanding of stakeholders. Some of these include normative vs. ethnomethodical, interpretive vs. positivist...etc, which have been defined and utilized across several domains including software engineering (e.g. [4] [5] [7]). There is an underlying assumption that the stakeholders are readily identifiable. However, there is a greater likelihood of inaccurate stakeholder identification when the locality of software development is skewed [13]. This is a critical

issue as “using the system changes the users, and as they change they will use the system in new ways” [8]. Thus while we find the importance of involving stakeholders has been promoted, the means in which software engineers can determine how stakeholders can be identified remains largely unaddressed.

Stakeholders in familiar domains can be identified readily enough. The challenge lies in identifying those that exist in poorly documented and/or poorly understood domains which are remote to software engineers. Some suggest that in such cases product development could include ethnographic fieldwork and other nontraditional qualitative research methods to identify key stakeholders [3]. However, they also state that travel to the target domain may be prohibited or interacting with the stakeholders is problematic because of conflicting views of who constitutes a stakeholder. Furthermore, cultural differences may also inhibit the process and little is known within the software engineering communities of which approaches are best suited to the different cultures.

DISCUSSION

We argue that stakeholders determine not only what kind of product will be developed but also if the product will be developed at all; in addition to predicting the likelihood of its adoption to some extent. While we have found work in the area of participatory design, we find that there is a lack of guidance on how to identify who should participate and their role in product inception and development in the software engineering community. Furthermore, there is also a need to explicitly identify the impact that economical, political and other external factors have in remote regions and the role stakeholders play (if any).

Work in this area can help software engineers gain support from local authorities which could be essential to the completion of software project and its adoption in remote regions, for example. It can also help software engineers answer questions that are essential to the development process like how to identify decision makers? How do they communicate and interact with these stakeholders? There are other stakeholders who need to be included in the development process like policy makers and economists. How do we identify them and their role in the development process? We suggest that identifying stakeholders, specifically in remote and possibly marginalized region, is the first step which will bring us a step closer to developing more acceptable software products.

ACKNOWLEDGEMENTS

Research supported by the U.S. NSF under grants 0534775 and 0205724.

REFERENCES

1. Arias, E., Eden, H., Fischer, G., Gorman, A., and Scharff, E. 2000. Transcending the individual human mind—creating

- shared understanding through collaborative design. *ACM Trans. Comput.-Hum. Interact.* 7, 1 (Mar. 2000), 84-113.
2. Dearden, A., “Where is the power located?” Statement for the Workshop on Participatory Design in Development. Accessed 30th Oct, 2008 <http://itcentre.tvu.ac.uk/~jabdelno/ALL%20FIVE%20PAPER%20S.pdf>.
3. Foucault, B. E., Russell, R., Bell, G. 2004. Techniques for researching and designing global products in an unstable world: a case study. *CHI '04 Extended Abstracts on Human Factors in Computing Systems* (Vienna, Austria, April 24 - 29, 2004), 1481-1484.
4. Goguen, J.A.; Linde, C., "Techniques for requirements elicitation," *Int. Symp. on Requirements Engineering*, vol., no., 152-164, Jan 1993.
5. Marcus, G. E. (1992). *Rereading cultural anthropology*. Durham: Duke University Press.
6. Muller, M. J., Retrospective on a year of participatory design using the PICTIVE technique. *Proc. Conf. on Human Factors in Computing Systems* (Monterey, California, US, May 03 - 07, 1992). P. Bauersfeld, J. Bennett, and G. Lynch, Eds. CHI '92, 455-462.
7. Nafus and Anderson, ‘The Real Problem: Rhetorics of Knowing in Corporate Ethnographic Research’ from *Ethnographic Praxis in Industry Conference 200*.
8. Nielsen, J. (1994). *Usability Engineering*, Academic Press, San Diego.
9. Nuseibeh, B., Kramer, J., Finkelstein, A., Expressing the relationships between multiple views in requirements specification. *Proceedings International Conference on Software Engineering* (Baltimore, Maryland, US, May 17 - 21, 1993), 187-196.
10. Robertson, S., *Project Sociology: Identifying and involving the stakeholders*. The Atlantic Systems Guild Ltd (2000).
11. Robinson, W. N. and Volkov, S. 1997. A meta-model for restructuring stakeholder requirements. In *Proceedings of the 19th international Conference on Software Engineering* (Boston, Massachusetts, United States, May 17 - 23, 1997). ICSE '97, 140-149.
12. Sommerville, I. (2007). *Software Engineering*, 8th ed., Harlow, England: Pearson Education.
13. Sutcliffe, A., Fickas, S., and Sohlberg, M. M. 2006. PC-RE: a method for personal and contextual requirements engineering with some experience. *Requir. Eng.* 11, 3 (Jun. 2006), 157-173.
14. de Souza, C., Redmiles, D.F. The Awareness Network: Should I display my actions to whom? And, whose actions should I monitor? *The European Conference on Computer Supported Co-operative Work* (Limerick, Ireland), Sept. 2007, pp. 99-117.
15. Dourish, P. 2006. Implications for design. In *Proceedings Conference on Human Factors in Computing Systems* (Montréal, Québec, Canada, April 22 - 27, 2006). R. Grinter, T. Rodden, P. Aoki, E. Cutrell, R. Jeffries, and G. Olson, Eds. CHI '06. ACM, New York, NY, 541-550.