

Beyond Users to Communities – Designing Systems As Though Communities Matter

An Introduction to the Special Issue

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Guest-editors

Community informatics was born as an autonomous field of research in the late 1990s from a group of researchers and practitioners concerned to enhance the possibility for communities and individual citizens to contribute to the construction of the Information/Network Society. Community Informatics researchers are looking to develop a corpus of knowledge and action/research projects for enhancing the possibility of the use of Information and Communications Technologies for enabling and empowering communities and individuals.

Community informatics (CI) looks at information and communication technologies (ICT) from quite a different perspective than more established branches of information science and practice, as for example Management Information Systems. For CI the unit of analysis is not the traditional organization, with its typical transaction processing or enterprise information requirements. Rather Community Informatics is interested in how to use effectively these technologies in evolving communities: communities of practice and interest as well as geographically-based communities.

Communities cut across traditional organizational boundaries: Community informatics has not only promoted the empowerment of communities and their members, according to an emancipatory ideal, but it has also come up with issues such as knowledge creation and sharing which are now of outstanding relevance for the whole ICT sector.

In this emerging field, much attention has been paid to principles and practices of community development. What makes communities work? How can communities benefit from ICT, for example by making their members better informed of news which affects their livelihoods? What are the dangers of such technologies, in terms of, for instance, increasing the Digital Divide? However, one topic still relatively ignored concerns *design* in two complementary ways: on the one hand, the design of community information and communication systems; and on the other hand, if and how communities can influence this design process.

Systems design for communities goes beyond just creating some technologies and offering them to user communities, assuming that they know what to do with them. Rather, it entails making explicit the usage context of the technologies: what are the goals, the workflows, the roles community members play? What are the principles, such as legitimacy and transparency, driving their interactions and the articulation of their information and communication requirements? Besides understanding the usage context, a designer also requires a thorough understanding of the affordances and constraints of the technologies. Also, she needs to know how these tools can be linked, configured, and integrated into wholes that are more than the sum of their technological parts, creating systems effectively supporting the information and communication needs of the community stakeholders who are their users. Finally, useful community information and communication systems cannot be created overnight. Requirements are fuzzy, and, as with the supporting ICT, they are in a continuous state of flux. Community information systems' design thus also requires deep insight into the dynamics of the continuous co-evolution of the social and technological systems.

From another perspective, an opportunity, even a necessity, for communities and individuals to play an active role in the design, development and deployment of systems arises from this approach. Nevertheless, this involvement puts forward new questions and challenges, as, for example, how to apply Participatory Systems Design Methodology (which is relatively resource intensive) in contexts where resources such as time or money are limited or lacking. In addition, there is the need for appropriate strategies for systems usability, "learnability", and sustainability, among other issues.

This special issue was created in response to the "*Community Informatics: Beyond Users to Communities – Designing Systems As Though Communities Matter*"-track of the 2005 Human-Computer Interaction International Conference. Selected papers from this track have been revised and extended. In doing so, the authors were asked to consider the following questions: what are community information systems? What systems design processes do they require? What are the inputs and outputs of these processes? By which design principles should they be guided? How can communities of users influence system design?

Bieber et al. discuss the concept of analyzing and designing communities and community support systems and propose a framework for designing "Enabling Communities", i.e., communities that *enable* community members to become more effective, providing opportunities to both realize collective and individual goals and obtain benefits that otherwise would not be possible without such participation. Here community design is an attempt to guide the

development and use of structures and supportive systems that fit (and expand) the community's resources in a way that makes a community and its members most effective.

Dave Bourgeois and Thomas Horan first review the Information Systems Design Theory (ISDT) framework and then create a framework for applying it to community information system design where three kernel theories are identified: Social Capital, Community Centred Development and the effective use of community resources.. The paper then presents the application of the proposed framework to the design and implementation of an online social network, namely a community of undergraduate commuter students at a small Los Angeles-area university, deriving from this experience concrete design recommendations for community information systems.

Roderick Lee and his colleagues consider and conceptualize the concept of *effective use*, defined as "The capacity and opportunity to successfully integrate ICTs into the accomplishment of self or collaboratively identified goals" (Gurstein, 2003) and discuss how the concept of scenarios often used in Human Computer Interaction (HCI) research could inform a design process which in turn would enhance *effective use* in community information systems design projects. The field context is in this case the Underground Railroad Research Community (UGRR) of practice in Pennsylvania, a group of users who share a common practice in that they all work in some capacity related to the preservation of UGRR history.

Aldo de Moor examines how the process of constructing community systems design theory could be improved. He outlines a theory construction methodology for building conceptual linkages between the disparate collection of (proto) theories, heuristics, and empirical data available in CI. The aim of such a methodology is to more efficiently define, select, link, and evaluate theoretical insights about which technologies and procedures to use to satisfy particular (community) information or communication requirements. Simulation by means of system dynamics is used to operationalize the proposed methodology.

Nnadi and Gurstein explore the idea of community information seeking and use. Many traditional information (retrieval) systems focus on satisfying individual information needs. However, information seeking in communities is of a very different nature, as the searching for and evaluation of the quality of information found is a community-driven, collaborative rather than an individual process. The authors examine relevant work in this emerging field, list some challenges of and guidelines for the designing the supporting ICT systems.

While all the above papers give insight into theories and methodologies which support community *systems* design, De Cindio and her colleagues at the University of Milan discuss how communities can help in improving user-centered approaches to online *service* design. They suggest that citizens' online communities can be seen as lead users in the design of effective interactive online public services, support this claim with examples taken from the Milan Community Network and suggest a prospective approach to involving community networks in the process of improving the design of innovative online public services.

These articles provide a fascinating glimpse into the strengths and weaknesses, opportunities and threats of systems design for communities. They present a collection of theories, methodologies and approaches (including participatory design, social capital, community centered development, scenarios, system dynamics) which are worth considering in community systems design and their application to different real-life communities. We are convinced that they will stimulate debate and inspire the reader to think about how to create appropriate technology systems for communities that are both legitimate and useful.