

## **Defragmenting the Organization: Disseminating Community Knowledge through Peripheral Displays**

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### **Introduction**

A number of trends are contributing to increased fragmentation within organizations: the globalization of the economy and workforce, leading to colleagues being increasingly distributed across geographical locales; the dynamic nature of project-oriented workgroups, leading to the formation and dissolution of teams with relatively short durations; and flexible work arrangements such as telecommuting that permit people to work outside of the office on a regular basis. As a consequence of these trends, more people are spending less time collocated with a core group of colleagues for extended periods of time, and are becoming less aware of what kinds of activities other people in their group are involved in. This reduced awareness results in missed opportunities for collaboration, referrals and sharing of relevant knowledge, as well as leading to a diminished sense of community among the group members (see Naylor, *et al.*, [1996]).

We are undertaking a study of community knowledge, which we define as knowledge about the activities and interests of other members of the community, and the design of tools that will help promulgate this knowledge. We are seeking a better understanding of three aspects of community knowledge, as they relate to our group at Accenture Technology Labs:

- What kinds of information do people want about other members of the community?
- How can this community knowledge best be acquired?
- How can this community knowledge best be disseminated?

In the remainder of this paper, we will briefly describe the community under study, then report on some initial findings and hypotheses in this study.

### **The Community: Accenture Technology Labs**

Accenture Technology Labs<sup>1</sup> is an organization of approximately 150 people distributed across three locations – Northbrook, IL and Palo Alto, CA, in the United States, and Sophia Antipolis, France – whose mission is to create visions of how technology will affect the way we live and work in the future, and to utilize these visions in helping our

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<sup>1</sup> Formerly, the Center for Strategic Technology Research (CSTaR®).

client, alliance and venture companies determine how they can best succeed in the new economy. The Labs are further subdivided into four groups according to different activities revolving around technology – research, development, awareness & communication, and client workshops. This paper will focus on the research group, which has approximately 50 members distributed among the three locations, as this is the initial focus of our work; we plan to extend our study and design process to other groups within Accenture Technology Labs in the future.

The research group at the Labs is a rather loosely-knit collection of researchers and support staff. Project teams typically have one or two people on them, and the topics and scope of these projects span a broad scope, given the broad range of business interests in which Accenture is engaged. Although this group is primarily involved in research<sup>2</sup>, members are increasingly called upon to engage in other activities, such as pursuing commercialization opportunities for research, performing due diligence technology assessments for our Accenture Technology Ventures organization, and assisting in the establishment of alliances with other companies, universities and standards organizations. Many of these other activities involve travel, leading to more work time spent away from the main labs, reducing the contact with colleagues and diminishing the awareness of what people are doing.

While this focus on our own group is somewhat narrow, we expect that many similar issues would be involved in other distributed and dynamic groups, and that the tools we design and build will be of more general interest to other loosely-knit communities.

### **What People Want to Know about their Community**

We have conducted a number of individual interviews, and held small-group and large-group discussions about what kinds of knowledge people want to have about the other members in their community. These can be partitioned into three primary categories:

- Where are people?
- What activities are they engaged in?
- Which other people and organizations (internal or external) are they interacting with?

People have indicated an interest in knowing the whereabouts of their colleagues, e.g., wanting to know whether someone is at the office, telecommuting, away at a conference or meeting, or on vacation. We have a tool, ACTIVEMAP [McCarthy & Meidel, 1999], which superimposes pictures of people on a blueprint-style map of the workplace over the locations in which they were last seen (using a network of infrared badges & sensors); while this helps provide awareness about colleagues' locations when they are in the office, it does not provide any information about where they are when they are away.

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<sup>2</sup> Research at Accenture Technology Labs typically consists of creating a vision of a technology-enabled future, building a prototype to provide a glimpse of that future, and communicating that vision through papers, presentations and demonstrations of the prototype.

One of the most oft-cited areas of awareness deficit is that of other research projects and their status. Although we have weekly meetings in which a research team reports on a single project, there are long gaps between presentations on any particular project. People would like to know more about when new projects are initiated and when milestones are reached (prototypes completed, papers written and/or published, presentations made, “media hits” – project mentions in the popular, business or technology press – achieved). People also expressed interest in knowing which projects were at which stage of commercialization.

Other knowledge deficits involved various types of contact between people in the community and other groups in our organization or others. People are interested in which market units were being courted as potential commercialization avenues, which companies were the subject of technology due diligence assessments, and which companies are we seeking alliance opportunities with, and which universities are we seeking to establish relationships with.

In addition to all this work related community knowledge, some people expressed interest in knowing more about people outside of their work activities. For example, people were interested in knowing about where people were traveling (business or pleasure), and whether such travelers could recommend restaurants, hotels and things to do and see. People are also interested in learning more about who in the group shares their interests in things like fine wine, volleyball and fringe movies. We have already built a tool, GROUPCAST [McCarthy, et al., 2001], to help share this kind of information through public displays that are aware of the presence (and interests) of passersby, and hope to be able to utilize this tool in our effort to disseminate more work-related community knowledge.

### **Acquisition of Community Knowledge**

In general, the best way to acquire community knowledge – of the sort we are studying here – is in face-to-face discussions with members of the community (see Deutsch [1995]). Several people remarked that their preferred mechanism for learning more about the activities of others is to spend some time with them on a regular basis. Unfortunately, due to the geographical distribution of the three labs, and the increasing amount of time labs’ personnel spend traveling, it is increasingly difficult to do so. Furthermore, there is a scaling problem: if each member of the lab regularly spent a significant amount of time telling every other individual about their activities, little time would remain for actually engaging in those activities. Therefore, we are looking for other ways in which this knowledge might be acquired.

One of the first acquisition methods we studied was to mine information from electronic calendars. We collected information from the Lotus Notes Calendar & Scheduling databases of several members of the Northbrook research group to see what kinds of nuggets we could glean from this source. Some people’s calendars are extremely rich in content, including detailed information about conferences attended, companies and other organizations visited, conference calls and vacations.

We collected nearly 2400 entries from 15 members of our Northbrook research group covering a 6-month period. The most heavily populated calendar contained nearly 800 entries for this time period; three other calendars (of senior members) had 250-300 entries; four others had approximately 100 entries; the rest had a small number of entries. One quarter of the entries had location fields filled in, and these included meeting rooms in the office as well as cities, countries and other non-location information (the field was sometimes used as a generic “extra information” field).

Unfortunately, this brief study revealed that some people do not use their online calendars very much, and there is considerable variability in the format and level of detail in which people create their calendar entries. However, it does appear that more senior members of the community, who tend to be in leadership roles for both research projects and other activities, tend to provide more information in their calendars. Although we won't rely exclusively on calendar information, we do intend to pursue this as a promising source of community knowledge.

We have also considered trying to mine information from email and/or web logs, but we believe it is unlikely that we can gain information that is useful enough information to compensate for the potential privacy concerns people would have. While most people in our lab share their calendars to some extent (at least with the people on their project teams, though most share them with the entire group), people do not routinely provide access to their email or web history files.

In addition to mining activities, which we could do with little or no actions on the part of the users, we are also considering possibilities that would require the engagement of users. We have a mechanism for posting information to a system that then broadcasts visual content to a network of peripheral displays throughout the workplaces – displays that sit near the primary computer workstation but are not used for primary work tasks – using the “announcement” feature of UNICAST (see McCarthy, et al., 2001, for more details). At the moment, this feature is used mostly for announcements of conferences and other external events; however, we believe this could be utilized as a mechanism for sharing information about projects and other activities. We are also looking into the possibility of using an internal web site, where people could have one or more pages on which to post their activities.

It should be noted that although people are generally happy to talk with other people about what they are working on, we are not confident in their willingness to take the time to regularly, actively share information electronically. In part, this is due to the fact that progress on many activities is not linear (milestones are achieved in bursts), and so reporting at timed intervals is not natural. However, we also believe that if the appropriate dissemination vehicle(s) can be constructed, it would provide positive incentive for people to take a more active role. We expect that some combination of passive and active mechanisms will be used.

## Dissemination of Community Knowledge

Assuming we are able to effectively collect knowledge about the activities of people in the community, we have to make some design decisions about how to disseminate this information. At the highest level, we can use a “push” model or a “pull” model.

One “push” mechanism would be to use the UNICAST peripheral displays throughout the workplace, which cycle through a variety of content (including favorite web sites, weather information and shared pictures) in each individual office. One of the “channels” for UNICAST could be a community awareness channel. We could also use the GROUPCAST displays, or OUTCAST displays [McCarthy, *et al.*, 2001], which are embedded in the walls outside of people’s office to provide information to visitors when the occupants are away. Another suggestion from two of our interviewees was to email this content to people in the community (though they had very different views of what kind of content ought to be emailed – one wanted only short items, the other wanted only long items).

A “pull” mechanism would be to augment information from ACTIVEMAP. People who have not been seen recently appear in a “Not Here” pane of the window. The present version of the ACTIVEMAP simply shows when these people were last seen; we envision adding additional information about the activities of these people (based primarily on calendar information). Another “pull” mechanism suggested by some of our interviewees was to create a searchable repository of community knowledge.

## Conclusion

We are seeking to better understand the types of knowledge that members of the community would like to know about their colleagues (and be willing to share about themselves), and to design or augment tools to support the acquisition and dissemination of this knowledge. While such tools will never replace face-to-face or active technology-mediated communications, we hope to beneficially supplement such activities to help reduce the fragmentation that is occurring in our group and many other organizations in the new economy.

## References

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