

A Preliminary Investigation of
Information Consumption, Production, and Need in
A Minority-Serving University Student Organization:
A Case Study of the University of Illinois at Urbana-Champaign Section
of the Society of Women Engineers

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April 26, 2005

Student organizations provide a unique opportunity for students to socialize with like-minded peers and pursue activities that allow them to enjoy and share their common interests. Like their traditional non-profit counterparts, these organizations have distinct and intertwined organizational and information-based needs. ¹

In order to conduct their business efficiently when dealing with the external world, student organizations have a strong need to maintain a consistent identity. Since a great deal of communication in the modern era takes the form of electronic mail, this need often manifests itself in the form of shared or “branded” information streams that allow multiple members of the organization to communicate in a way that abstracts them from their role as a representative of that organization and instead places their information into the realm of an official response from the organization, alienated from its originator. ²

This use of online communication has become an increasingly-important tool for student organizations to communicate both with their members and the external world. The organization’s Web site and mailing lists are one of its most important assets for external communication. They are used both to increase its visibility on campus in order to communicate events and news items to current membership and to recruit new members by enticing them with information about its activities and goals. ³

While a Web site and mailing lists provide the primary mouthpiece of the organization, these official information channels need to be supplemented by forums in which members can speak informally amongst themselves. Regular meetings are one of the most popular methods of providing this informal interaction, which provides a

secondary level of information transfer that more closely addresses the individual information needs of each member.⁴

As organizations evolve, their information needs form a developmental continuum that closely tracks the evolution of the organization itself. Early-stage organizations need an *incubator* to spawn, encourage, and see new ideas to fruition, while ones in the later stages of development require *shaping*, and established ones need political and informational *stability*. Faculty advisors are the primary source of this incubation, shaping, and stability, and are relied upon to provide the critical experience and knowledge at each junction in the organization's development.⁵

While all student organizations share a basic set of needs, minority-serving student organizations face a unique set of challenges beyond those of their peers. They must provide an island of common interests and information sharing within the context of an indifferent or discriminatory environment.⁶ Gender and race-based organizations play the role of social networker and inwards-looking information provider, while cultural organizations add a layer of cultural preservation on top of these needs.⁷

The information needs of student organizations thus paint a picture of an entity with a strong need for uniform identity, a rigid hierarchy of information transfer, the ability to juggle official and informal information channels, reliance on external counseling to provide stable information streams of evolving nature in response to the organization's growth, and, in some cases, the requirement to fulfill an additional role as information provider in the face of indifferent or discriminatory environments. Student organizations often fulfill many of these needs through a strong online presence, including Web sites, mailing lists, and electronic mailing addresses. As Frieze and Blum

emphasized,⁸ online communications mediums are critically important as both external and internal information channels. However, the complexity and expense of these electronic mediums often present a significant hindrance to their effective use.⁹

Online information technologies are a cornerstone of a student organization's communications mechanism, yet they are often hard to utilize effectively. This raises the question of how these technologies might potentially be adapted to better suit the needs of student organizations. To answer this question, a mapping might be constructed between the communication (both acquisition and production) expectations that a student organization places on its electronic mediums and the actual results it obtains. This could be performed through surveying a number of student organizations and asking how they use current online information technologies, along with concerns about currently available software and suggestions for software enhancements. While such a mapping and the broad survey approach used to build it would be a valuable resource, they would only provide the *what* and not the *why*. To truly understand the problem, however, the *why* must be more clearly understood, and such information can only really come from the type of in-depth analysis provided by a case study.

Over the last year, the local section of the Society of Women Engineers orchestrated and launched a sweeping initiative called Align by '09. Of its five primary goals, two of them relate directly to the information-provider role of a minority-serving organization. One of the goals, to *develop and host an annual engineering design competition for girls in grades 4 through 6*, specifically targets younger girls considering a career in engineering. Its primary informative mechanism will be through one-on-one interaction and mentoring between UIUC female engineering students and these girls.¹⁰

While the importance of one-on-one interaction on information transfer with young children cannot be overlooked, the short duration of the contacts in this project severely limit the potential of their long term impact and suggest the future potential of electronic media (such as the Society's Web site) to sustain these outreach contacts.

To provide a long-term information channel to both aspiring young female engineers and also college students and professionals, the UIUC SWE section has determined *to become a primary source of information on engineering and careers for women of all ages...two major avenues of knowledge dispersal will be a website dedicated to these issues and an online networking program amongst alumnae, faculty, and members.*¹¹ While work has already begun on initial information gathering for this new site, a fundamental unanswered question remains as to the final scope of the site and the way in which the site ties in with the organization's local goals and existing information technology use. Many student organizations focus their information-providing efforts on their local audience of members and potential recruits, and do not even contemplate creating broader or even national-scale information resources.

This initiative provides the unique opportunity to study in considerable detail the information needs of a single organization, ranging from its internal communications to its desire to become a significant external information provider. While the results of a large-scale survey would be extraordinarily useful towards addressing the general technological needs of student organizations in general, conducting a case study on a single organization will provide a better understanding of the *why* behind those needs and a more detailed picture of the information needs being satisfied through technological means, as well as those that are currently satisfied through more traditional mediums.

Within the scope of such a case study, three primary questions become apparent. The first relates to electronic mailing lists and their role as an official information channel. To what extent do the expectations placed on this channel by officers equate to the actual satisfaction that recipients derive from the lists in terms of meeting their information needs? For example, many organizations publish a weekly newsletter that contains a list of upcoming events for that week. By publishing this weekly calendar in the newsletter, officers are expressing an expectation that the “push” nature of the medium will encourage greater readership, but to what extent does the membership read that section of the newsletter and how much does it affect their scheduling for the week with respect to other mediums such as the Web site or other published calendars of the organization? The second question relates to the Web site and its role as official information stream. Similar to mailing lists, the expectations and realities of this information stream will be examined, but the possible use of such a site to complement the informal interaction of regular meetings will also be analyzed. Would the creation of bulletin boards or private areas of the site dedicated to specific topics and not moderated by the organization’s officer board provide a viable alternative to regular meetings as a peer-to-peer information source in the context of student organizations? Finally, the role that the Web site plays as an outreach information source and its relationship to the organization’s local outreach goals will be investigated. In particular, the question of “branding” will be investigated, and how such a site should or should not be differentiated from the other information channels used by the organization.

Taken together, these three questions represent a cross-section of the electronic information needs of a single student organization. The interrelatedness of each of the

mediums investigated (mailing lists, local Web site, and national Web site) emphasizes the continuum of information transfer through electronic mediums in these organizations and hopefully will unveil some hidden relationships between them.

To address these questions, it was decided to conduct a series of 30-minute interviews with SWE officers and active members. Due to the author's existing informal relationship with SWE, subject acquisition was not expected to present any significant difficulties. SWE officers are required to maintain weekly office hours, where they must be present in the SWE office for at least 2 hours. During this time, the officers perform various tasks related to SWE, and, given the ongoing work of the Align by '09 initiative, these office hours present an ideal time during which to interview the officers, when the topics of this interview are fresh on their mind. Initially, the author planned to use the officer roster¹² to identify current officers and contact them. After contacting one officer and interviewing her, the President coincidentally was present in the SWE office at the same time and the author was able to interview her immediately following the first interview.

It is also during these office hours that the most active non-officer SWE members are present in the SWE office. These members are traditionally the most well-informed regarding SWE activities, which is ideal for the purposes of the interview, since many of the questions ask the participant's knowledge and interaction with various SWE resources that a non-active member would most likely not be aware of. Active members often use the office as a social nexus between classes to connect with other members about both SWE and non-SWE issues. While in the office, SWE-related topics invariably come up in conversation, and the SWE office presents an ideal location for

selecting non-officer members in guerrilla fashion to participate. The author often frequents the SWE office on a social basis, and initially planned to use this presence to randomly select members and ask them to participate in a quick 30-minute interview. By selecting member participants from among active members, the data derived from these members will be more representative of the true information needs and uses within SWE.

The interview instrument incorporates questioning for both officers (in which case it expands to address expectations) and members (in which case it focuses primarily on satisfaction). From the standpoint of the questions being posed, these two categories represent the two primary classes of information provider and information consumer. The success of mailing lists and the Web site as an information channel between officers and members may be readily examined through the eyes of these two subject classes, as can the potential effectiveness of the Web site as an informal information channel. The Web site as an outreach instrument, however, places both officer and members together as information provider through the single actor of SWE and places the outside world as the consumer. The number of classes of consumer that would have to be addressed as the audience of this site make studying the consumer side of the Website, and hence the analysis of its *content*, beyond the scope of the single interview instrument used for this paper. Instead, the interview instrument focuses on the extent to which the local organization integrates its Web-based outreach efforts with the local information goals of that site, and to what extent the organization itself considers branding a concern. Hence, by focusing on the site from a *producer* standpoint, the emphasis will be on the *process used to create* the site as opposed to the content of the site.

By conducting a broad survey of student organizations' information technology use, a generalizable set of mappings could be obtained that provide a direct basis for software implementation. However, the narrow focus of these findings would not provide a supporting framework within which they could be explained. If a particular expectation-application-outcome theme was discovered within the data, further work would be required to situate that finding within the greater information needs of the organization to determine whether it was a genuine shortcoming of the technology application, or if it was an artifact of unrealistic communication demands. Often, by examining the larger context of a communication exchange, subtle secondary needs may become apparent, such as a newspaper journalist using multiple clippings archives not just to collect details of a story, but also to see the various angles that have previously been used to present it.¹³ Instead, by performing a detailed case study of the ways in which technology is used to meet the information needs of a single organization, the generalizability of such a broad survey is sacrificed, but the outcome may be placed within an operational context, providing a bigger picture in which it may be analyzed not only with respect to the needs that are and are not fulfilled, but also on the appropriateness of the technologies used to fulfill those needs.

Hence, after receiving Institutional Review Board approval, three participants were interviewed during the first two weeks of April 2005. It was decided that to maximize the scope of the collected data while minimizing the number of participants, it was important to interview the President, one other officer, and one active member, preferably one involved heavily with outreach. If the study was to be conducted at full scale, it would be important to interview all 16 SWE officers to capture the

continuum of expectations by officers placed on the electronic communications mediums being evaluated. At the time of participant solicitation, it was expected that the President would provide a good example of someone with extremely broad information needs, while the officer and member would provide examples of more focused information consumers with limited production roles.

The timing of the study, which coincided with the end of the semester and the onset of University final examinations, proved to be the largest complication in conducting the interviews. The subject pool consists entirely of students enrolled in the University's engineering curriculum, which is known for a grueling final project and examination schedule. Many potential participants were already preoccupied with finals preparations. This made it difficult to locate subjects who were able to spare the time for an interview and suggests that in future, the academic schedule must be taken into account when determining the best time to schedule interviews.

While officers are required to spend at least two hours a week in the SWE office conducting office hours, there is no such requirement for members. In the author's previous experience, members were often to be found between classes spending their time socializing and studying. However, the author was unable to find any members in the SWE office during the course of the study, which made soliciting members for interviews very difficult. After discussing the situation with one of the officers, it became apparent that members often congregate in the office in high numbers at the start of the school year and their presence tends to fall off heavily through the course of the year. This was attributed by the officer to new students wanting to get to know SWE better and meet other members and officers at the beginning of the year, while those who

stayed with the organization through the year spent more of their time in committee and other meetings, rather than congregating in the office.

Whatever the causative, the lack of members made it more difficult to find a volunteer for the interview. Instead, it was suggested by one officer that officers with committees should be asked to suggest one or two active members from their committees that might be interested in participating. This proved to be an excellent suggestion and the author was particularly lucky in that the first officer he asked suggested a member who was an ideal candidate for the interview.

One of the benefits of an in-person interview is that it frees the respondent of the task of physically manifesting his or her response in writing and provides a more natural response environment than a phone call. The resulting stream-of-consciousness response often provides the truest possible coverage of the subject matter, but at a cost of fewer participants per time expended. The limited pretest results showed a number of strong trends relating to information access. If further interviewing reaffirmed these trends, then it might be worth creating an online survey version of the interview and complement the limited number of interviews by fully capturing the nuances of these trends through the much broader reach of an online survey. It would appear that an online survey would be one of the few ways to reach the broader member audience, as subject acquisition proved to be more difficult than anticipated for members, and establishing a representative population of members would most likely be too difficult when expanding beyond the confines of a limited pretest scenario.

Despite the difficulties in finding interview subjects, the data derived from the pretest subjects was extremely insightful and, in the case of the President, unexpectedly

illustrated how closely information production and access needs often follow organizational structure. It was expected from the outset that the presidential role would include very broad information needs as part of her duties in shepherding the organization. What was discovered, however, is that she also serves as the primary entrance point to the organization for many types of external information streams and her access needs revolve around keeping tabs on the overall “state” of the organization, helping to facilitate information exchange as necessary, and ensuring that information streams are properly utilized.

The President cited the weekly mailing list, known as the *SWEekly*, as her primary source of information for SWE as an officer and that the *SWEekly*, combined with her committee mailing lists, were her most important source of information when she was a member. She cited the fact that it is a push medium as being the primary reason that it serves as her major information source. The types of information she looks for include events that need volunteers, checking on what other officers are doing, looking for potential problems, and keeping tabs on the general “state” of SWE. She also facilitates out-of-band information exchange as necessary, helping event coordinators locate volunteers, trying to head off problems, and assisting officers as needed. The *SWEekly* is also her medium for publicizing events from other student organizations that may be of interest to SWE members, but which they would not otherwise have heard of. In this way, she acts as the primary conduit for external student organizations to publicize their events to SWE.

The President also makes “weekly” use of the Web site, but does so not to satisfy a content-related information need, but rather to check that it is being updated on a

frequent basis and that relevant notices are making their way from the SWEekly to the Web site. It was interesting to note that she listed the Web-based calendar at the bottom of her list of information sources. When asked about this, she commented that she gets all of the information she needs about events from the SWEekly and the calendar requires one to actually go out and seek it, while providing no additional information over what is present in the SWEekly. This ended up being a common theme among all three interviewees and suggests that the role and functionality of the calendar should be revisited.

When asked about the potential of Web-based bulletin boards, USENET newsgroups, and private sections of the site as ways to leverage information technologies in support of SWE, the President suggested that Web-based bulletin boards would have tremendous implications for improving communication in the various SWE committees. Committees in SWE currently augment their meetings with a mailing list and a section on the SWE Web site. However, both of these mediums are one-way communications channels that only the officer in charge of the committee can post to. When attempting to host discussions, the mailing list is often bypassed and a large “to” field with all of the members’ email addresses is used instead, to allow members to communicate freely. In all cases, however, the inner communication of the committee is not visible to the rest of SWE, making it much harder for outsiders to get a feel for the committee and to learn about opportunities to volunteer. Web-based bulletin boards offer the promise of allowing all members of the committee to post to their board, archiving for future reference, and transparency in allowing members outside the committee to see what’s going on within.

Finally, the President believed that the branding of the national AB09 Web site should remain the same as the local section. She believed that if different branding was utilized, it would promote confusion as to the relationship of the site with the local section.

In addition to the President, it was necessary to interview one other officer to examine the needs of a more traditional officer role. It was determined that the Fundraising officer would provide a role with significant information production (publicizing fundraising opportunities and events) and consumption (being generally aware of SWE activities) roles to provide a representative cross-section of officer needs. Similar to the President, the Fundraising officer recalled that in her earlier days as a committee member, the committee mailing list and SWEekly were her exclusive sources of non-face-to-face information. She also cited the SWEekly as her primary source of information today, largely because it is pushed to her, versus the Web site, which requires her to actively seek it out. She too cited the calendar on the Web site as not being an important information source to her, again largely because she has to take action to view it versus the event list in the SWEekly which is pushed to her. She did comment that the calendar had the value-add of presenting the events in an easy-to-view format making it easier to see where events lay with respect to others, but that the added burden of having to seek out the calendar negated much of those benefits.

When asked about additional technologies that could be used to enhance the SWE Web site, she thought that Web-based bulletin boards would be the best choice of those listed. Like the President, she thought that the transparency of the boards and the

democratic posting process would encourage discussion and lead to greater participation by outsiders.

One of the primary information roles of an officer in SWE is to mediate information transfer and act as the gatekeeper, producing the information that is transferred to the lower levels of the organization. To incorporate the perspective of the lower, largely consumer levels, it was important to interview an active member. The author was extremely fortunate in that the officer interviewed suggested one of her committee members as a potential interviewee and the member turned out to be not only an extremely active member, but also heavily involved with outreach, which provided an opportunity to address the outreach questions on the interview.

Like the President and Fundraising officer before her, the member cited the mailing lists as her primary source of information, due to their push nature and compact form. Due to her heavy involvement with multiple committees, she rated her committee mailing lists as her top information source, since they provide her all of the working information she needs, while the SWEekly helps her learn about other activities and opportunities within SWE. Unlike the others, she also checks the Web site weekly to supplement the SWEekly in getting a better feel for what else is going on within SWE. Due to the SWEekly's fixed size, only a small number of events are able to be listed each week. Thus, this member uses the various committees' pages on the Web site to learn about other opportunities that did not make it into the SWEekly. Overall her information seeking behavior in this regard went beyond even the proactive approach of the President.

The member's use of the Web calendar can best be summed up with her quip that "apparently events are listed on the calendar too". This followed the responses of the

other two officers in the calendar being among the bottom of their information sources. She mentioned that she has a paper calendar that she uses to schedule her events so that she has no need for another calendar, as her own calendar provides her the same viewing format benefits.

The member had previously used a bulletin board for an engineering class and commented that her biggest complaint was that when people responded, they would often give the minimal possible response with no supporting explanation. For homework questions, they would often simply post the solution formula rather than any kind of tutorial or further information on how to go about solving the problem. Despite this frustration, she believes that Web bulletin boards would have tremendous implications for transforming online committee communications from one-way announcements by officers to multiway dialogues and ongoing discussions by the members. She also brought home the power that transparent discussion would bring in terms of allowing external members to see the ongoing dialogues of the committees and find opportunities to volunteer and help out as needed. She said that the current model of subscription-based mailing lists makes members that are not on the committee feel like “outsiders” and makes it much harder for them to find out about volunteer opportunities within the committee, which the transparency of bulletin boards should avert.

The member was the only one of the three interview subjects who had been heavily involved with outreach. In her mind, there is a distinct difference between recruiting new members from campus, which to her is the job of the Social Committee, and K-12 education, which to her, is the mission of the Outreach Committee. When asked whether a national outreach side should be branded differently than the local site,

she was at first indifferent and leaning towards branding it the same, much as the other two subjects desired. However, after considering the differences between the needs of a local community school looking to have SWE host an event, and a parent on the other end of the country searching for information on how to encourage her daughter towards the sciences, it became apparent to her that separate branding was necessary. She decided that while the two sites should carry different branding, there needed to be a strong connection from the national site back to the local one to enforce the local section's identity.

Despite the limited sample size, several themes emerged quite readily from the interviews. The first was the importance of mailing lists as almost the lifeblood of the organization and the relatively low importance of the Web site and especially the online calendar. All three interviewees noted that the committee mailing lists were their most important source of information as an active member, as much of their participation revolved around knowing what was happening within their committees, while the SWEekly trailed closely behind, keeping them abreast of developments across the rest of SWE. The push nature of these two mediums were cited as the primary reason for their importance, with a compact version of all of the important news items presented to their virtual front door each and every week.

The Web site scored very low in that, while it presents further information not present in the SWEekly, it requires the user to explicitly navigate the site and seek out the information needed. Its primary purpose seemed to be for gathering extended information on the state of SWE, both for diagnostic purposes (in the case of the President) and for extended seeking behaviors (in the case of the active member). Hence,

one could speculate that regular users of the Web site fall primarily into the demographic of the most active SWE members, who use it to keep extended tabs on the general “state” of the organization. If supported by further research, this would have implications on the types of information and services that should be made available on the Web site.

The online calendar fared the worst, which was attributed to the fact that not only does it require explicit action, but it provides no new information beyond that given in the SWEekly. Its primary purpose is to present the information in an alternative viewing format, but in some cases (such as the active member), users already have alternatives that provide the same interface.

The Web bulletin board emerged as the most useful potential information technology addition for the SWE web site. All three interviewees agreed that allowing all members of the committee to post, versus the current officer-only posting model of the mailing lists, would encourage true dialoging and ongoing discussion. The transparency of the bulletin boards in allowing external members to view messages and potentially participate in discussions has the potential to encourage fluidity in members being able to look for opportunities in all areas of SWE, rather than just the committees they belong to.

While the given dataset is not large enough for accurate generalization on outreach, one can potentially speculate that the more active one is in outreach, the more support one may have for separate branding of national and local outreach Web sites. Of the two subjects with outreach experience, the one with minor outreach experience thought it was very important to maintain consistent branding between the local and national sites to reinforce the identity of the local section. Given that her presidential role

includes the responsibility to perpetuate the SWE identity, however, her response may be biased along those lines, rather than purely representing the thoughts of a semi-active outreach member. The subject that was heavily involved with outreach found that it was important to be able to differentiate the information needs of local and remote users and to separate the two sites with separate branding. However, she, too, pointed to the importance of identity when she suggested that the national site needed strong ties back to the local site.

Overall, the themes exposed by this limited pretest fit very nicely with the results of previous studies with regards to maintaining a consistent identity and one-to-multiway communications channels.

Muller and Gruen ¹⁴ found that student organizations have a strong need to maintain a consistent external identity. This was proven out by the insistence by the interview subjects that a strong link be enforced between the national and local outreach sites. Even the subject who found a need for separate branding on the national site insisted that there be strong linkage from the national to the local site, touting the creators of the site.

Frieze and Blum ¹⁵ found that one-way official information channels need to be supplemented by forums in which members can interact informally and engage in multiway dialog. While they cited regular face-to-face meetings as one of the most popular methods of meeting this need, the author found that interviewees expressed similar needs being met through the introduction of Web bulletin boards. This suggests that some of the face-to-face dialogs of meetings could be mediated through these online

channels, where they would also be captured for future reference and promote transparency of committee activities.

These trends support and expand upon the previous literature and, if further data collection continues to support them, suggest several possible directions for adapting the present online presence of SWE to better suit its user demographics. Redesigning the SWE site (or at least offering a special version of it) to better address the needs of “power users” is one such modification that might promote greater use by making it more relevant to the needs of those who use it. It is apparent that the calendar in its present form is not sufficiently useful to active SWE members. If the calendar were to be redesigned to allow members to integrate it with their personal calendars that they check on a more frequent basis and hence make it into a more “push” modality, it might be possible to increase its utility. One possible solution is already being tested with SWE and the results of that test may provide basis for further research.

Finally, the enthusiastic preliminary response regarding Web-based bulletin boards suggests they have the potential to change the way in which committees conduct business and offer a conduit to allow members to participate in the organization in a far more fluid role than previously possible. This opens to the door to a far more democratic and fluid organizational structure, in which members can float between committees, participating in any event that appeals to them, rather than restricting themselves to a single committee. Such a structure has many exciting implications for improving the quality of services offered by the organization and the experience for its members and the pursuit of the technologies enabling this structure should be a high priority for future online development by SWE.

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