

# **The Creating Community Connections (C3) System Project**

## **US Department of Commerce – Ars Portalis Final Report**

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### **Introduction**

One of the challenges associated with community networks which has received considerable attention recently, is the provision and maintenance of community content, or the availability of material that is relevant and interesting to a specific target audience (e.g., low-income residents) to encourage and motivate the use of technology (Lazarus & Mora, 2000). In their recent report, *Online Content for Low-Income and Underserved Americans*, Lazarus and Mora (2000) of the Children's Partnership identified the following content-related barriers for the residents of low-income and underserved communities (among others): 1) a lack of local information or information about their communities, and 2) a lack of cultural diversity or Internet content generated by ethnic communities themselves or organized around their unique cultural interests and practices. They also presented the following recommendations (among others): 1) build new online community resources, 2) build community information portals or "one-stop, interactive online center[s]", and 3) enlist local talent in building these resources. It is clear from their findings that there are very few examples of web resources that adequately address the content needs of low-income and underserved communities, particularly given the many challenges associated with maintaining quality content services.

Community content can be classified along many dimensions, including active vs. passive. A passive disposition toward the delivery of content is static, unidirectional and often described as one-to-many. It typically manifests itself in the form of one-way databases and repositories of information that can be accessed by audience members. An active disposition toward the delivery of content is dynamic, bi-directional and often described as many-to-many (Shaw & Shaw, 1999). It typically manifests itself in the form of multiple-way, interactive communication and information exchange between audience members. Furthermore, a passive disposition relies on a core set of individuals who must manage services for the end-user, whereas an active disposition decentralizes and distributes this responsibility across multiple individuals who can provide services amongst each another. An active disposition not only provides a mechanism for greater sustainability, but also ensures that the content being generated is by the community, for the community, and socially and culturally relevant to the community.

Consequently, I advocate a class of technological tools that engage community members as the active creators and producers of their own information and content, rather than the passive consumers or recipients. Such an approach requires a reorientation as to how we address these populations through information and communications technology. Rather than seeing our role as designers, we must see our role as designers for designers – or meta-designers (Resnick, 1996) – who provide a set of tools or a virtual construction kit for the end user (Resnick, Bruckman, & Martin, 1996). This orientation is grounded in the theory of sociocultural constructionism (Hooper, 1998; Pinkett, 2001; Shaw, 1995), an extension of the theory of constructionism (Papert, 1993), which is a design-based approach to learning, drawing on research showing that people learn best when they are active participants in design activities (Papert, 1993), and that these activities give them a greater sense of control over (and personal involvement in) the learning process (Resnick,

Bruckman, & Martin, 1996). Sociocultural constructionism argues that individual and community development are reciprocally enhanced by independent and shared constructive activity that is resonant with both the social setting that encompasses a community of learners, as well as the cultural identity of the learners themselves" (Pinkett, 2000).

The Creating Community Connections (C3) System is a web-based community building system designed to establish and strengthen relationships between community residents, local businesses, and neighborhood institutions (e.g., libraries, schools, etc.) and organizations. C3 is a sociocultural constructionist tool, specifically designed to engage low- to moderate-income residents as the active creators and producers of their own information and content, as opposed to passive consumers or recipients. The methodology for deploying C3 is informed by the theory of asset-based community development (Kretzmann & McKnight, 1994). Asset-based community development is a particular model, or technique, for community building, which assumes that social and economic revitalization starts with what is already present in the community – not only the capacities of residents as individuals, but also the existing commercial, associational and institutional foundation (Turner & Pinkett, 2000). Asset-based community development seeks to leverage the resources within a community by "mapping" these assets and then "mobilizing" them to facilitate productive and meaningful connections.

C3 was first prototyped as part of a pilot study at Northwest Tower, a federally-assisted, affordable housing development, in Chicago, Illinois, in collaboration with Nicol Turner at the Asset Based Community Development Institute at Northwestern University (Turner & Pinkett, 2000) in December 1999. The latest prototype of C3 is one component of a broader initiative known as the Camfield Estates-MIT Creating Community Connections Project. Started in June 2000, the Camfield Estates-MIT project has successfully placed state-of-the-art computers, software, and high-speed Internet connectivity via cable modem, in the units of 60 out of 80 families at Camfield Estates, a predominantly African-American, low- to moderate-income housing development in Roxbury, Massachusetts.

This report summarizes the results of a focused, four-month research study that examined the design and implementation of the C3 system toward building community at Camfield, particularly given the aforementioned technological infrastructure. The study was focused on the 31 families who were first to use C3 beginning in December 2000 until April 2001, having completed a comprehensive, eight-week training course at the Camfield Estates Neighborhood Technology Center (NTC) on the premises, and received their computers and Internet service one month earlier. The study's objective was to identify design principles, a detailed methodology, lessons learned and recommendations for how to deploy C3 and related systems, in similar contexts in the future.

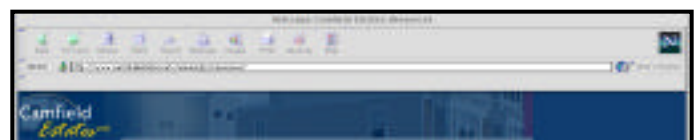
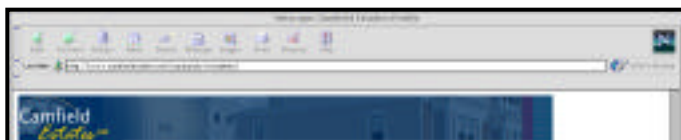
This report includes an overview of the C3 system, a description of the research design and methodology, a summary and discussion of the results obtained via one-on-one interviews with each family conducted in August 2000, as well as follow-up site-visits with a targeted sample of families during the months of March and April 2001, and finally, lessons learned and a step-by-step recommendations for future initiatives.

## **C3 System Overview**

Table 1 describes the primary modules that comprise C3. C3 serves two primary functions. First, as a community intranet, C3 facilitates community communication and information exchange. Second, as a community extranet, C3 facilitates asset-mapping and asset mobilization among residents, organizations, and businesses.

**Table 1: Creating Community Connections (C3) System Modules**

| <b>Module</b>                                   | <b>Description</b>   |
|---|--|
| <b>Resident Profiles</b>                        | Users can enter contact, demographic, education, and employment information, as well as enter and update their formal and informal skills and interests (e.g., plumbing, photography, web design, etc.) according to what they "can perform" or what they would "like to learn." Users can also upload a picture to their profile. A screen shot of the resident profile module is shown in Figure 1.  |
| <b>Web-Based E-Mail</b>                         | Users can check e-mail from any web browser.   |
| <b>Calendar of Events</b>                       | Users can manage and contribute to personal or group calendars, and view their calendar(s) by day, week, month, or year. Events can be categorized according to a pre-defined typology and repeated according to a specified interval (e.g., the first Monday of each month).  |
| <b>Discussion Forums</b>                        | Users can create discussion forums (bulletin boards) in a commentary or question and answer format. Users can also configure automatic e-mail notification/receipt of messages when posted according to a specified time interval (e.g., instantly, once per week, etc.). Discussion forums can also be configured as moderated or unmoderated.  |
| <b>E-Mail Lists (Listservs)</b>                 | Users can create e-mail lists as public or private and moderated or unmoderated. Users can also receive messages according to a specified time interval (e.g., instantly, once per week, etc.). Web-accessible message archives are available for each list.   |
| <b>Chat Rooms</b>                               | Users can enter a predetermined selection of chat rooms. Communication options include text postings, a limited range of audible postings (e.g., "Hello"), and images/emoticons (e.g., an image of a smiling face). Access to ICQ channels can be granted or denied.   |
| <b>File Storage</b>                             | Users can upload files and assign read/write/edit permissions to users and user groups. The system also tracks file versioning.  |
| <b>News and Announcements</b>                   | Users can post news and announcements. Postings can be moderated or unmoderated.   |
| <b>Organization and Business Database</b>       | Users can contribute entries to the database including contact information, and products/services (businesses) or programs/services (organizations) according to a predefined typology (e.g., Restaurants or Youth Organizations). Users can also append comments to database entries.   |
| <b>Geographic Information System (GIS) Maps</b> | Represents geocoded information (e.g., organization and business database) in the form of a geographic map with hyperlinked symbols for various resources (e.g., red squares for churches, blue circles for child care facilities, etc.). Users can zoom, pan, and select resources to obtain their full database record in a popup window, or link to a relevant website (if applicable). A screen shot of the GIS module interfacing with the organization and business database is shown in Figure 2. |
| <b>Job and Volunteer Postings</b>               | Users can respond to job and volunteer opportunities by interested employers/organizations. Employers and organizations can view user's responses to their postings. Postings can be submitted and sorted according to a predefined typology.  |
| <b>Surveys</b>                                  | Users can create online surveys and obtain automatic compilation of survey results.  |
| <b>Online Résumés</b>                           | Using a template, users can create an online résumé including fields such as objective, education, work experience, special skills, and more. Users can also make their résumé available for employers to view in reference to a job posting.  |
| <b>Personalized Web Portals</b>                 | Users can manage their own personal web portal that highlights system content such as quick links to web-based e-mail, their profile, upcoming calendar events, recent discussion forum postings, etc.   |
| <b>Site-Wide Search</b>                         | Users have the ability to conduct a full site-wide search, or a search specific to one of the following modules: resident profiles, calendar of events, discussion forums, news and announcements, organization and business database, job and volunteer postings, and online résumés.   |



### **Figure 1: C3 Resident Profile Module**

### **Figure 2: C3 GIS Maps Module**

As shown in Figure 3, C3's core architecture is built using the ArsDigita Community System (ACS), a publicly available, open-source software platform comprised of TCL (scripting language), AOL Server (web server), and Oracle Enterprise Server (database) running on Redhat Linux (operating system). Many of the core ACS modules such as the discussion forums, calendar of events, personalized web portals, and news and announcements were reprogrammed and repurposed for C3. The ACS user permissioning schema was also employed and allows C3 to track who is logged on, their membership status in various user groups, and their contributions to the system. The resident profile, organization and business database, job and volunteer opportunity postings, and online résumé modules were custom-designed specifically for C3. The e-mail lists (listservs) module was custom-designed using the Mailman list manager software package. The chat room module was implemented using the JPilot jIRC applet. The geographic information systems (GIS) and asset-mapping module was custom-designed using ESRI's ArcIMS (Internet Map Server) software package.

As shown in Figure 4, C3 uses a dual-server architecture. All of the modules, other than the GIS module, are served from a Penguin Altus HA Tower computer with the following specifications: 700 MHz Pentium II Processor, 256MB RAM, 36.4 GB HD.

The GIS module is served separately from a Dell PowerEdge 2300 Tower computer running the iPlanet Web Server Fast Track Edition (web server) on Microsoft Windows NT (operating system), with the following specifications: 450 MHz Pentium III Processor, 1 GB RAM, 9 GB HD. The distinction between which pages are served by the main server or the map server are transparent to the user. Using HTML frames, the HTTP (web) requests for maps are serviced by the map server, whereas all remaining HTTP requests are serviced by the main server.

To access C3, only an Internet accessible computer with a web browser is required (e.g., Netscape Navigator or Internet Explorer). C3 is being delivered to Camfield Estates by MIT as an application service provider (ASP) – a third party that offers individuals or organizations access to applications (such as software) and related services via the Internet. Camfield residents create and maintain the content, while MIT administers and maintains the associated hardware and software.

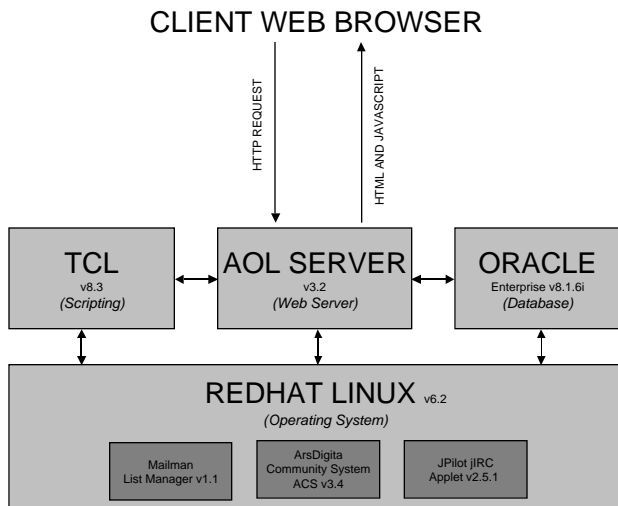


Figure 3: C3 Core Architecture

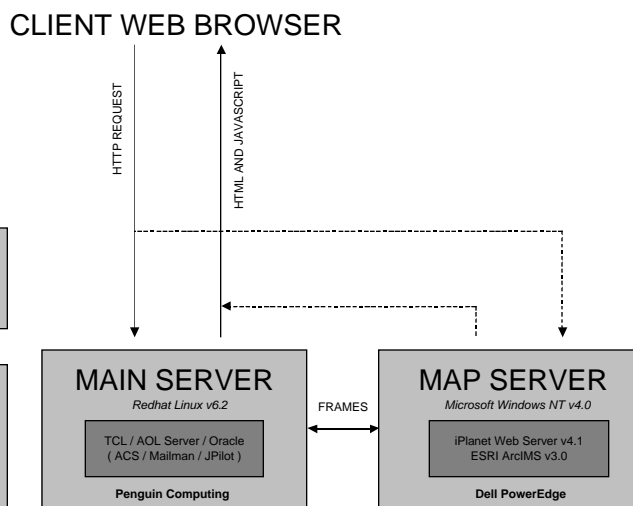


Figure 4: C3 Dual-Server Architecture

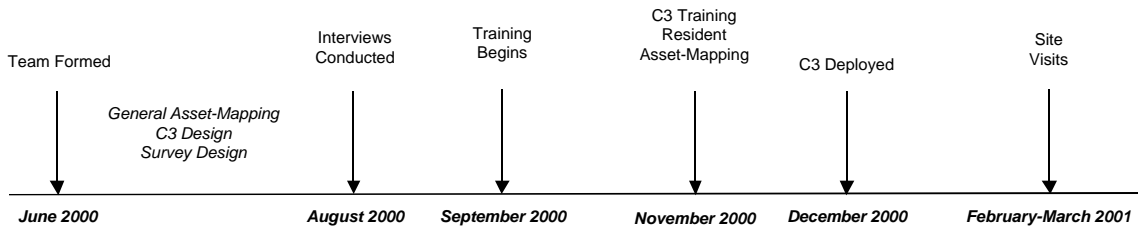
## Research Design and Methodology

### Research Site

Camfield Estates, formerly Camfield Gardens, is a predominantly African-American, low- to moderate-income housing development in the Roxbury section of Boston, Massachusetts. Camfield is a participant in the US Department of Housing and Urban Development's (HUD) demonstration-disposition or "demo-dispo" program. Demo-dispo was implemented by HUD in 1993, as a strategy to deal with its growing inventory of foreclosed multifamily housing, much of which was in poor physical and financial condition (MHFA, 2001). Through this national demonstration program, approved only in the City of Boston, the Massachusetts Housing Finance Agency (MHFA) was designated to oversee the renovation and sale of HUD properties to resident-owned organizations. As a result, the 136 low- to medium-rise apartments of Camfield Gardens were demolished in 1997 and residents were relocated throughout the greater Boston area. Reconstruction of the property was completed in 2000 as residents returned to Camfield Estates - 102-units of newly built town houses. The renovated property also includes the Camfield community center which houses meeting space, management offices, and the Neighborhood Technology Center (NTC) – a CTC and HUD Neighborhood Networks site, managed by Williams Consulting Services, and supported by MHFA. Finally, in 2001, HUD disposed (transferred ownership) of the property to the non-profit Camfield Tenants Association, Inc. (CTA), making Camfield the first of several participants in the demo-dispo program to successfully complete the process.

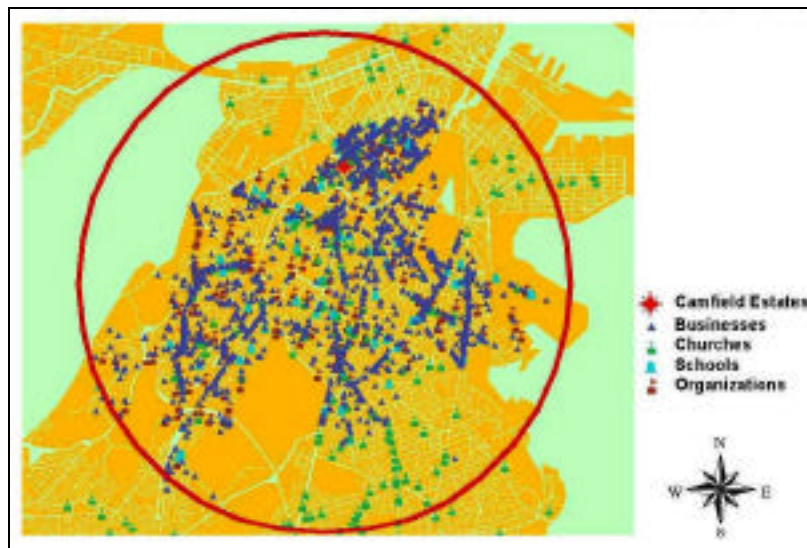
## Project Methodology and Timeline

The project timeline is shown in Figure 5.



**Figure 5: Project Timeline**

During the summer 2000, per the asset-based approach to community development, a team of four Camfield residents and two MIT researchers (including the author) led a general asset-mapping initiative. This consisted of mapping all the organizations, institutions (e.g., libraries, schools, etc.), and businesses within an approximately 1.5-mile radius of Camfield, as shown in Figure 6. This broad attempt to identify community resources was done to obtain local information of potential benefit to residents that would eventually be made available through C3, and as a preparatory step for more specific asset-mapping to be conducted after analyzing the results of the interviews (described below). Not surprisingly, the mere process of gathering this information served to heighten residents' awareness of assets in their own neighborhood. For example, the first-pass general asset-map was conducted within a few square blocks of the property. Residents soon discovered there were very few organizations and institutions in this catchment area, and only a small cluster of businesses. The decision was then made to expand the radius of the asset-map to 1.5 miles, which captured approximately 757 businesses, 178 organizations, 67 churches, and 29 schools.



**Figure 6: Camfield Estates Catchment Area**

Also during the summer 2000, the project team held weekly meetings to discuss design considerations for the Camfield website including the site-map, graphics, layout, and user interface. An important component of these discussions was determining which of the C3 modules would be incorporated into the first release of the site, given the community building objectives for the project. Eventually, the following modules were selected: resident profiles, business and organization database, GIS maps, calendar of events, discussion forums, news and announcements, e-mail lists, chat rooms, file storage, and site-wide search. Scheduled for later introduction were the job and volunteer opportunity postings, and possibly the personalized web portals and web-based e-mail.

During the months of June and July 2000, the team developed a survey instrument which was administered via face-to-face interviews with the head-of-household from 31 out of a possible 66 families participating in the Camfield-MIT project's first round (36 of 102 total units were vacant at the time).

In November 2000, these 31 families learned how to use C3 during the final two weeks of their ten-week introductory course at the Camfield Estates Neighborhood Technology Center (NTC) that began in September 2000. As part of these sessions, residents also conducted an asset-mapping of their individual skills and interests. Using a pre-release of the C3 resident profiles module, residents entered their formal and informal skills and interests, by selecting from an inventory of more than 150 items. This same month, residents completed the introductory course and received a state-of-the-art computer, software, and high-speed Internet access. With their expressed, written, permission, a proxy server was also configured at this time to log the web traffic coming in and out of the development (aggregate patterns of use only, and not individually attributable).

In December 2000, the first release of the Camfield site with C3 was made available. Finally, during the months of February and March 2001, site visits with a targeted sample of the families (13 families, primarily members of the tenants association) took place.

### **Data Collection and Analysis**

The survey instrument covered the following areas: *community interests and satisfaction, social networks (strong and weak ties), neighboring, awareness of community resources, community satisfaction, community involvement, empowerment, self-sufficiency, computer experience, hobbies, interests and information needs, assets and income, and demographics*. The survey was designed for three purposes. First, to provide strategic direction for the Camfield Estates-MIT project by identifying the interests and needs of residents. Second, to inform future releases of the Camfield website by providing insight to the social and cultural environment at Camfield. Third, to provide baseline and formative data for a comparative analysis of a similar data set to be conducted approximately one-year later.

The survey was partially based on the following instruments: *Community Networking Initiative (CNI) Survey* (Bishop, 1999), *Netville Wired Suburb Survey* (Hampton & Wellman, 1998), *Building Social Capital in Public Housing Survey* (Saegart & Thompson, 1994), *Social Capital Community Benchmark Survey* (Minicucci, 2000), *Who's That? Survey of Neighbors in Southeastern Michigan* (Resnick, 2000), Rothenbuhler (1991) and Stamm's (1985) measures of community involvement, *Blacksburg Electronic Village (BEV) Community Survey* (Patterson & Kavanaugh, 1999) and the *Neighborhood Study Questionnaire* (Mueller, Briggs & Sullivan, 1997).

The survey instrument was piloted with eight members of the tenants association at Roxse Homes, a neighboring housing development to Camfield Estates. The modified, final survey instrument was administered at Camfield by three members of the project team including the author, another MIT graduate student, and the project leader, a Camfield resident. Each interview took place either in the interviewees residence or in the meeting room at the Camfield community center, and lasted between approximately one and five hours. Site visits were conducted by the

author, all of which took place in the interviewees residence and lasted between 20 minutes and two hours. A typical site visit included a review of the C3 modules and a few basic questions to understand their use of the system to-date. A few visits also required a review of the material from the training course (e.g., basic computer and Internet use) before covering items specific to C3.

Quantitative data from the interviews were entered in real-time into a pre-formatted Excel spreadsheet, while qualitative responses were entered in real-time into a pre-formatted Word document. A suite of Visual Basic scripts were then developed to electronically process, tabulate and summarize the quantitative data, as well as collate the qualitative responses into a single Word document for subsequent coding. The summarized quantitative and coded qualitative results were captured in a final series of Excel spreadsheets and a Word document. These results were supplemented by field notes resulting from direct observation during the site visits and other visits to the property including attendance at CTA board meetings, CTA general meetings, social events on the premises, etc.

Proxy server logs were obtained using Squid, a free, open-source, UNIX-based, web proxy cache, in the Squid log file format. These files were uploaded to the Camfield web server on a monthly basis by a representative of RCN. The logs for the Camfield Estates website and C3 were generated automatically by the web server software, AOL Server, in common log file (CLF) format. To analyze the proxy server and Camfield website/C3 log files, the Webalizer, a free web server log file analysis program was employed. The Webalizer is capable of analyzing CLF, WU-FTP xferlog, and Squid log file formats, and produces highly detailed, easily configurable usage reports in HTML format. Using this tool, proxy server logs were processed approximately once every three months, while web server logs were processed nightly. Once compiled, both reports were automatically published directly to the Camfield website.

Based on the results from these various sources, an overall analysis was conducted to synthesize the findings.

## **Results and Discussion**

### **One-on-One Interviews**

Highlights and observations from the one-on-one interviews include the following:

- *Generally speaking, residents enjoy living at Camfield.* 96% of residents think Camfield is a good place to live; the top reasons residents enjoy living at Camfield are its convenient location (71%) and the new building/living conditions (19%).
- *The most important issues at Camfield are, in order: 1) lack of activities for youth, 2) lack of community communication/interaction, 3) safety/security, and 4) employment.* These issues appeared consistently throughout the interviews. Education and a lack of activities for seniors also stood out in the data.

*YOUTH: Residents believe there are not enough things for youth to do and there are too many rules restricting what they can/can't do.* The top ranked choice for problems facing Camfield was not enough activities for youth/too many rules (42%); the top ranked choice for ideas to improve Camfield was more activities and events for youth (39%); the second choice for community organizations residents desired to be more accessible was youth-oriented organizations (19%).

*COMMUNITY: Residents would like more social interaction with their neighbors and would like to improve communication between residents, and between CTA and residents.* 79% of residents wish they had more contact with neighbors; the second and third ranked choices for ideas to improve Camfield were to organize

more social events (39%) and improve communication at Camfield (29%); the second ranked item residents wanted to see on the Camfield website was information about other residents.

*SAFETY/SECURITY: Safety, security and the environment at Camfield were regularly identified as important issues. Residents would like to improve relations with security and the police as well as their responsiveness. Problems that were expressed during the interviews included drugs, noise due to neighbors, vandalism, and preferential treatment by security, management, and CTA (i.e., targeting certain residents and not others). Safety/environment was ranked first by residents in terms of issues deemed important to them; safety-related information was ranked fifth by residents in terms of items they would like to see on the Camfield website.*

*EMPLOYMENT: Residents would like to see more employment opportunities at Camfield including job postings, job training, and using the Camfield-MIT project and NTC to improve residents technology skills and employability. Employment was ranked second by residents in terms of issues deemed important to them; employment opportunities was ranked first by residents in terms of items they would like to see on the Camfield website; employment opportunities was ranked third by residents in terms of information they wanted to share with others by using computers and the Internet (13%).*

- *There is a strong desire to obtain and share community information, however, residents rated their awareness of community resources relatively low. 78% and 74% of residents wanted to use their computer to obtain government and community information online, respectively; 100% of residents planned to use their computer to access community information; the community information most desired by residents is community events and activities (32%) and social services and programs (29%); the top ranked information residents wanted to share with others using computers and the Internet was information about community organizations and programs (19%), and community activities and events (19%); several items connected to community information ranked high on the list of items residents wanted to see on the Camfield website including employment opportunities (1<sup>st</sup>), resident's information (2<sup>nd</sup>), local news (4<sup>th</sup>), and government information (6<sup>th</sup>); however, the majority of residents rated their awareness of community resources as low ("somewhat/not informed") in seven out of nine categories including a low awareness rating for the following items: employment opportunities (79%), skills and abilities of other residents (75%), community projects, activities, and events (71%), and community organizations (68%).*
- *While residents feel a sense of responsibility to give back to the community, they are also extremely busy and lack the time to do so. 75% of residents feel an obligation to make a contribution to Camfield and 63% expressed an interest to participate on a committee to oversee this project; 39% of residents feel they are involved as much as they can be in the Camfield Estates community; the reason cited most often for lack of involvement was "not enough time" (35%).*
- *83% of residents would like to learn web design.*
- *When asked how they would like to see the Camfield-MIT project improve the community at Camfield, residents cited, in order 1) improve community communication, 2) improve residents level of comfort with computers, 3) bring people closer together, and 4) expand access to services/resources for residents.*

Table 2 lists the items residents wanted to see made available on the Camfield website, in ranked order.

Notice that several of these items were already available through the C3 system, such as the resident profiles module, news and announcements module, calendar of events module, and business and organization database module. Noticeably absent was the top choice, employment opportunities, whereas the job and volunteer opportunity postings

module was not incorporated into the first release of the system, particularly in light of the fact that operationalizing this module would require partnering with a local employment agency or other community -based organization to ensure comprehensiveness and sustainability. It was decided to wait until the results of the interviews before doing so. Interestingly, even though this module was not available, a discussion forum was created a few months after the system was released by one of the staff members at NTC to allow residents to post employment opportunities within their purview.

| Rank | Item  | Rank | Item                                |
|------|---|------|-------------------------------------|
| 1    | Employment opportunities                    | 10   | Volunteer opportunities             |
| 2    | Camfield resident's information             | 11   | Organization information            |
| 3    | Education                                   | 12   | Weather                             |
| 4    | Local news                                  | 13   | Sports                              |
| 5    | Safety                                      | 14   | Regional and national news          |
| 6    | Government information                      | 14   | Classifieds (want ads)              |
| 7    | Health care                                 | 14   | Electronic commerce                 |
| 7    | Community calendar of activities and events | 17   | Online forums and discussion groups |
| 9    | Business information                        | 18   | Arts and entertainment              |

**Table 2: What would you like to see made available on the Camfield website?**

Table 3 and Table 4 list the problems facing the Camfield Estates community, from residents' perspective, and the issues deemed important by residents, in ranked order, respectively.

| Response   | %   |
|--|-----|
| Not enough activities/too many rules/youth running around      | 42% |
| Lack of community communication/involvement                    | 19% |
| Safety/security  | 13% |
| Noise due to neighbors   | 13% |
| Escalating rents/gentrification                                | 10% |
| Vandalism and riff-raff hanging out from surrounding residents | 10% |
| Drugs  | 10% |
| Preferential/disrespectful treatment by management             | 6%  |

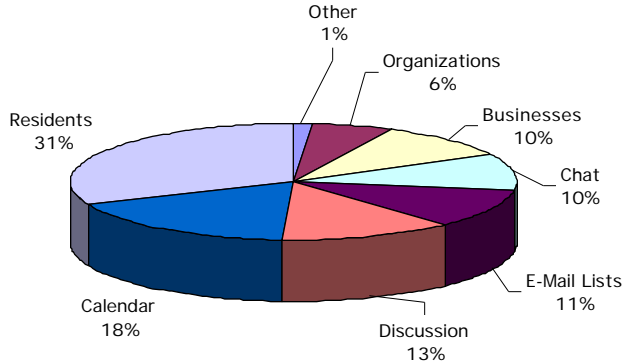
**Table 3: What are the problems facing the Camfield Estates community?**

| Issue                 | Rank |
|-----------------------|------|
| Safety/Environment    | 1    |
| Employment            | 2    |
| Housing               | 2    |
| Education             | 4    |
| Health Care           | 5    |
| Child Care            | 6    |
| Parenting             | 7    |
| Political Involvement | 8    |
| Community Activism    | 9    |

**Table 4: Please rank the following issues.**

## Web Server Logs and Proxy Server Logs

The web server logs revealed that the most popular modules are, in order, the resident profiles, calendar of events, and discussion forums, as shown in Figure 7.



**Figure 7: Camfield Estates Web Server Hits By Module (October 2000 to April 2001)**

Furthermore, the Camfield website ranked fifth among all websites logged by the proxy server, as shown in Table 5.

| Rank     | Domain                     | Rank | Domain          | Rank | Domain        |
|----------|----------------------------|------|-----------------|------|---------------|
| 1        | yahoo.com                  | 8    | nick.com        | 15   | shockwave.com |
| 2        | blackplanet.com            | 9    | oneplace.com    | 16   | uproar.com    |
| 3        | msn.com                    | 10   | wwf.com         | 17   | microsoft.com |
| 4        | espanol.yahoo.com          | 11   | gohip.com       | 18   | simmons.edu   |
| <b>5</b> | <b>camfieldestates.net</b> | 12   | collegeclub.com | 19   | xdrive.com    |
| 6        | boston.com                 | 13   | musicmatch.com  | 20   | nbc.com       |
| 7        | aol.com                    | 14   | hotmail.com     |      |               |

**Table 5: Camfield Estates Proxy Server – Top 20 Domains (January 2001)**

## Site Visits

The site visits corroborated the findings from the web server logs and proxy server logs. These visits also provided further insight as to how these tools were being used.

The discussion forum was primarily being used to post and respond to technical questions and problems in the "Help" discussion forum. When the system was initially released, two forums were already created, the "Help" discussion forum and the "News and Announcements" bulletin board. Since then, three forums have been created including "Jobs," as mentioned earlier, for employment opportunities, "Software and Virus Updates" for the latest browser and virus protection releases, and "Websites" for general postings on good Internet resources. These forums received very little activity when compared to the Help forum. Relatively speaking, this is not particularly surprising given the obvious utility (and often urgency) of the Help forum. The calendar of events was primarily being used to communicate intra-community events such as CTA board meetings, CTA general meetings, resident's birthdays, etc. Residents did not use the calendar to share or advertise activities occurring outside of the development. Residents used the resident profiles to learn more about the skills and interests of their neighbors. This is consistent with the fact that information about their neighbors was ranked second by residents in terms of items they wanted to see made available on the Camfield website. However, it was not readily apparent that residents were making use of this information as of yet. In

other words, while residents were curious to browse through the profiles of their neighbors, very few took the next step of contacting a neighbor in this regard. Finally, the organization and business database/GIS maps were being used by residents to learn more about assets and resources in their community. Furthermore, a few residents had actually contributed new entries to the database for organizations and businesses they noticed were not included, including their own home-based businesses.

The site visits revealed promising activity along the lines of community building. For example, the following is one of the stories that was revealed:

*CTA is always looking to provide opportunities for youth to get involved in the community. Ms. Johnson, a CTA board member, attends a local church that would like to create a website, yet lacks the expertise to build one – she is looking for assistance. Meanwhile, several people at the development have completed the web design course at NTC and are looking for opportunities to apply their skills in a new and meaningful context. Using the C3 system, these residents were able to publicize their skills to the church, while the church was able to easily identify someone with these skills, and notify them via e-mail of this worthwhile opportunity.*

We envision similar scenarios such as parents exchanging their child-rearing practices via e-mail, youth identifying volunteer opportunities from a discussion forum, or adults obtaining a new job from employment postings available online.

Another story that highlighted promising activity was the following:

*Since completing the introductory courses on basic computer and Internet use, Mr. Williams has started his own home-based business on the web that involves direct sales of health-care products. He is interested in developing better marketing materials, in hopes of advertising his business to other residents in the development. Using the C3 "Help" discussion forum, he solicited advice regarding good books on word processing and layout/design. Furthermore, he anticipates using the C3 calendar of events, e-mail lists, and news and announcements discussion forum to publicize his business to neighbors, and announce a reception in the community center where he will showcase his products.*

We envision similar scenarios such as a group of single mothers creating an e-mail list to discuss their experiences, a senior creating a website containing her favorite recipes, the tenants association publishing their newsletter electronically, and the social service coordinator advertising activities on the community calendar of events.

The site visits were also helpful in providing greater insight to the challenges associated with building community online. These challenges can be grouped into three categories: technological, social, and cultural.

### Technological Challenges

The technological challenges of building community online have been primarily centered on skill development. While this is not a difficult challenge to overcome, it is a challenge that requires time to participate in training, and a careful approach to the way courses are structured. At Camfield we have offered a curriculum that is project-based and combines a variety of learning objectives, rather than focusing on narrow skill development such as how to use a mouse or a keyboard. For example, to learn how to use a browser and the printer, participants were instructed to use a search engine to locate information on a topic of interest to them, print out each of their results, and summarize which search

terms and associated results they found to be useful. Despite these efforts, it was observed during the site visits that some residents had either forgotten how to perform certain tasks or were still moving toward a level of technological fluency that enabled them to use C3 comfortably.

For example, a few residents were still unclear as to the difference between their e-mail address (username@camfieldstates.net), the website (<http://www.camfieldstates.net>), and the e-mail list for residents (residents@camfieldstates.net). This had a clear effect on their ability to use these tools effectively.

As a follow-up to the introductory courses, we have already started to offer theme-based workshops at NTC to first-round participants, dealing with topics such as how to find jobs online and other topics that were ranked high among residents during the interviews. These courses are intended not only to address these areas but to also engage residents in a process of continuous learning. Suffice it to say that technological skill development is a necessary, but not sufficient condition for using C3 to build community at Camfield.

### Social Challenges

In order to use technology for communication and other social purposes, users must have an audience of community members to connect with. For example, in order to send an e-mail, you have to know someone who has access to e-mail. Since using e-mail to communicate with family and friends is among the most popular reasons why people use the Internet (Kraut et al., 1997), one of the social challenges at Camfield is that there are residents who do not have a large number of family or friends with Internet access at home or work. Consequently, these residents have not experienced as strong a social or network effect to engage technology, as have some of their neighbors. Another social challenge with respect to community building online is that there has to be a community online to build. At Camfield, there were 31 families participating in the first round of the Camfield-MIT project representing only one-third of the families living in the development as of the site visits. While these numbers are a good beginning point, the community building efforts at Camfield will undoubtedly be enhanced by the 27 families scheduled to complete round two in May/June 2001.

### Cultural Challenges

What is essentially taking place at Camfield is a cultural shift, or re-orientation toward technology as a result of introducing C3 and the associated infrastructure. Culture refers to the values, beliefs, and practices that influence the way an individual interprets the world (Gee & Green, 1998; Lee & Smagorinsky, 2000), whereas residents are now beginning to see the value, or relevance of technology to their lives, their families, and their community. However, as is typically the case with any new user to computers and the Internet, the speed with which this transformation takes place is influenced by a number of factors including their level of technological fluency and the nature of their social milieu, as mentioned previously. Needless to say, it is a transformation that does not happen overnight and was observed during site visits to necessitate the traversal of various stages.

For example, one of the staff members at the community center was interested in organizing a summer sports team. Having completed the eight-week introductory course he decided to create a flyer on the computer which included graphics, text, and images – a flyer more elaborate than he had designed previously. He then proceeded to place a copy of the flyer in the doorway of each unit at the development, whereas it never occurred to him to couple this distribution strategy by sending an e-mail to the residents' e-mail list. Notice that he had begun to utilize technology to build community by creating the flyer on the computer, but he had yet to go the next step and communicate the opportunity using C3. When asked why he did not do so, he replied, "It never even occurred to me."

From among the plethora of tasks one can use computers and the Internet to perform, it appears that building community often falls into the category of important, but not urgent. As evidenced by the results of the interviews, residents have a strong desire to improve communication at Camfield and share community information. However, as evidenced from the site-visits, even these activities which can be facilitated via C3 were sometimes subordinated to other computer-related tasks such as paying bills online or online banking. Stated differently, using technology to build community was sometimes perceived as a vitamin instead of an aspirin.

This describes the cultural shift that is gradually taking place. At the heart of the cultural challenge, in this context, is not only residents' reorientation toward integrating technology into their daily lives, but rather, residents' reorientation toward integrating technology *and* community building into their daily lives. In certain cases, the former may precede the latter. It is anticipated that as the technological and social challenges are addressed via continuous learning and greater penetration of computers and Internet connectivity amongst the families at Camfield, the cultural shift will similarly be advanced as residents deepen their understanding of how C3 can support community building.

## **Application of Findings**

Based on the analysis of the results there are a number of strategies we can employ looking forward, some that are specific to C3 and others that are not. At the time of this publication, the strategies being evaluated by CTA and the project team include the following:

- *Youth and Seniors.* Offer more activities at Camfield for youth and seniors; create a space on the Camfield website where youth can post and share projects online using the C3 file storage module; create a C3 discussion forums for seniors.
- *Community.* Continue to organize social events and activities at Camfield where families can meet one another; combine online activities with offline activities as a way to encourage residents to interact with each other and engage technology.
- *Safety/Security.* Ensure that the security guards at Camfield are being responsive and held accountable for the safety of residents; make safety-related information and statistics available to residents via C3 (e.g., regular postings of safety briefs using the discussion forum module or regular uploading of safety reports using the file storage module).
- *Employment.* Partner with existing community organizations that conduct job training and placement (i.e. local employment agencies) or the Empowerment Zone to heighten residents' awareness of job opportunities, by adding the C3 job and volunteer opportunity postings module to the Camfield site.
- *General.* Offer the following courses at NTC as a follow-up to the introductory course: 1) web design, 2) how to find and share community information online, and 3) how to find and share jobs online. Expand the project team to include residents who expressed an interest in joining the committee; dedicate time for the committee to further strategize around the aforementioned issues.

## Lessons Learned and Recommendations

The following three steps are offered as a guiding framework (see Figure 8) for low- to moderate-income, underserved, and other physical communities seeking to build community online and offline. They are not presented as strict rules to follow, but rather lessons learned and recommendations so as to build upon our experience in deploying C3 at Camfield.

### Step 1: Conduct an Assessment to Guide System Design and Implementation

The following are my recommendations for conducting an assessment to guide system design and implementation:

- *Understand the Social and Cultural Environment.* The results of the interviews has been invaluable. They data has provided tremendous insight into the social and cultural environment at Camfield and how C3 can support the efforts deemed important by residents. While certain results can probably be abstracted to other contexts, such as the desire to obtain and share local information, and the desire for information about employment opportunities, there are other results that are clearly specific to Camfield, such as the problems faced by residents and the ideas they have for improving the neighborhood. Any group seeking to conduct a similar initiative, would benefit from understanding these community-specific issues. Our survey instrument included more than 250 questions for research and benchmarking purposes, however, we have found the following seven questions to be of the greatest value toward understanding the nuances specific to Camfield:

*What is the best thing about living in Camfield Estates?*

*What are the problems facing the Camfield Estates community?*

*What ideas do you have for making Camfield Estates a better place to live?*

*Please rank the following issues in terms of their importance to you? (Choices listed in Table 4)*

*What would you like to see made available on the Camfield website? (Choices listed in Table 2)*

*What topics would you like to see addressed through training?*

*Is there any information you would like to share with others by using computers and the Internet? If so, what?*

In other words, short of conducting a very elaborate assessment, which can be costly and time consuming, these few questions require little effort while delivering worthwhile results toward understanding a particular social and cultural milieu.

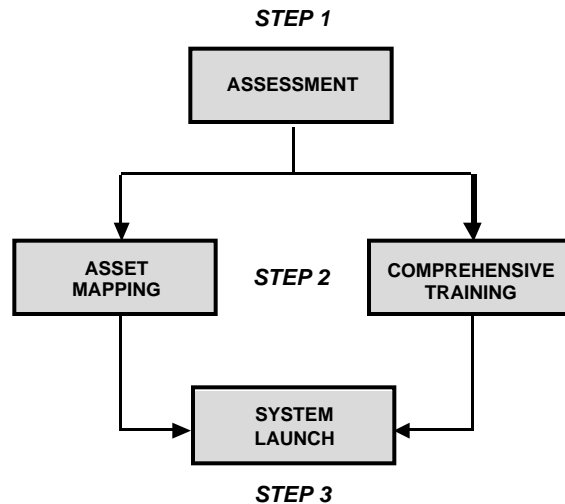


Figure 8: Three-Step Guiding Framework

**Table 6: Creating Community Connections (C3) System Recommended Modules and Notes**

| <b>Modules</b>                                      | <b>Notes</b>  |
|---|---|
| <b>Resident Profiles</b>                            | Useful for highlighting resident's skills/interests and making this information available in a manner that is easy to browse, update, and search.   |
| <b>Organization and Business Database/ GIS Maps</b> | Useful for highlighting community assets such as child care facilities, employment agencies, afterschool programs, etc. along with a visual/geographic reference of the location and proximity of these resources. Also useful when users can attach evaluative comments to organizations or businesses based on first or second-hand experience.   |
| <b>Calendar of Events</b>                           | Useful for communicating scheduled or regular activities and events (e.g., a meeting, a class, or a birthday). The news and announcements forum is perhaps better suited for communicating one-time events (e.g., a march or emergency meeting) if simultaneously posted to the calendar of events and cross-posted to an e-mail list for the target audience.  |
| <b>Discussion Forums</b>                            | In commentary format, useful for discussing themes that are relevant to communities of interest (e.g., photography enthusiasts), communities of practice (e.g., a tenants association board) or simply posting information (e.g., good websites). In question and answer format, useful for posting and responding to questions pertaining to specific topics (e.g., technical problems, questions posed to a tenants association board) or frequently asked questions (FAQs). In either format, useful for archival purposes and online access to information repositories.  |
| <b>News and Announcements</b>                       | Useful for communicating news items and general announcements. Also useful for communicating one-time or atypical events (e.g., an emergency meeting) particularly when simultaneously posted in conjunction with the calendar of events and cross-posted to an e-mail list for the target audience.  |
| <b>E-Mail Lists (Listservs)</b>                     | Useful for maintaining e-mail communication to/from/amongst a target audience or group (e.g., seniors, youth, parents, etc.). Also useful when used to receive cross postings from discussion forums of relevance to the group. While the e-mail lists are archived, the discussion forums are better suited when users would benefit from the ability to access old postings since the discussion forum postings are searchable, while the e-mail list postings are not. In fact, this is often the only distinguishing characteristic between a discussion forum and an e-mail list other than the added convenience of posting a message to an e-mail list, when compared to a discussion forum, which requires a web browser. |
| <b>File Storage</b>                                 | Useful for storing, maintaining versioning, and sharing files among users or user groups. Also useful when used in conjunction with other modules such as the discussion forum and calendar of events by enabling users to attach files to messages and events.   |
| <b>Job and Volunteer Opportunity Postings</b>       | Useful for brokering connections between users and interested employers/organizations. Also useful when cross-referenced with the skills and interests captured by the resident profiles to match residents well-suited to particular opportunities. Note that the job and volunteer opportunity postings module requires partnering with a local employment agency or other community -based organization(s) to ensure comprehensiveness.  |
| <b>Web-Based E-Mail</b>                             | Useful for providing web-based access to e-mail. Recognizing that e-mail is still the "killer application" of the Internet, web-based e-mail can dramatically increase the stickiness of a site as a result of user's regular visits to C3.   |

- *Limit Features and Functionality then Scale According to Use.* Table 5 lists the ten modules I would recommend as a minimum or core set of functionality when using C3 or similar systems to build community, along with notes describing the conditions I have observed each module to be particularly useful. In recommending these modules, it is important to note that during the early stages of an online community building initiative it is often better to start small and provide additional functionality in a fashion commensurate with the size and needs of the audience. This is particularly true when dealing with a population of users that is relatively new to technology. For example, when we first introduced C3 at Camfield, there were only two areas where residents could submit postings, the "Help" forum for technical questions and answers, and the "News and Announcements" forum for general commentary. As users have grown more comfortable with the tools and gradually increased their use, additional forums have been added for "Jobs," "Software and Virus Updates," and "Websites." I will elaborate on this point below in Step 3 in the context of launching the system and the overcoming the challenges of starting an online community.

## **Step 2a: Conduct an Asset-Mapping of Local Resources**

The following are my recommendations for conducting an asset-mapping of local resources:

- *Obtain Asset-Mapping Workbooks and Materials.* There are several publications available from the Asset-Based Community Institute (ABCD) at Northwestern University pertaining to asset-mapping and asset-mobilization, including the following: *Building Communities from the Inside Out: A Path Toward Finding and Mobilizing a Community's Assets* (Kretzmann & McKnight, 1994), *Creating a Neighborhood Information Exchange: Building Communities by Connecting Local Skills and Knowledge* (Kretzmann, McKnight & Punttenney, 1998), *Mapping and Mobilizing the Economic Capacities of Local Residents* (Kretzmann, McKnight & Punttenney, 1996), *Voluntary Associations in Low-Income Neighborhoods: An Unexplored Community Resource* (Kretzmann, McKnight & Turner, 1998), and *Mapping Local Business Assets and Mobilizing Local Business Capacities* (Kretzmann, McKnight & Punttenney, 1996). These publications include a step-by-step methodology for asset-mapping as well as sample survey instruments, questionnaires, and case studies of successful initiatives.
- *Conduct a General Asset-Mapping to Identify a Broad Range of Resources.* We conducted our asset-mapping in two phases: general asset-mapping and specific asset-mapping. General asset-mapping consisted of identifying all the associations, institutions (e.g. libraries, schools, etc.), and businesses within a 1.5-mile radius of Camfield, and gathering basic information about these entities such as their contact information and a description of their programs, products, services, etc. Recognizing that much of this information was likely to already exist, we did not want to reinvent the wheel. Consequently, we conducted our general asset-mapping by gathering as many relevant and up-to-date publications, directories, listings, and databases as possible, with a particular focus on gathering these items in electronic format to avoid unnecessary data entry. The process also involved telephone outreach to verify some information, as well as limited data entry when required. Once gathered, this information was formatted and entered into an Excel spreadsheet that could be easily uploaded to C3. This was not necessarily the best approach to gathering community information in terms of keeping it up to-date, especially since it is likely to be subject to change and rendered obsolete. Nonetheless, we have found both the process of residents exploring the assets in their community, and the product of the resulting database to be very useful. Alternatively, many municipalities and cities are known to offer and maintain similar databases. This is an option we have yet to explore.
- *Conduct a Specific Asset-Mapping that is Linked to Outcomes.* Specific asset-mapping consisted of cataloging the formal and informal skills and interests of residents at Camfield Estates, as well as a targeted sample of the institutions, associations, and businesses previously mentioned. The determining factor of which skills to catalog and which entities to map at a more detailed level was governed by the results of the assessment. In other words,

these decisions were shaped by the outcomes we were seeking to achieve. In the case of Camfield, employment was identified as an important issue. Consequently, we were sure to include skills of interest to potential employers from among the inventory of skills being cataloged. Looking forward, we can now obtain detailed information on the job training programs and employment agencies already identified during general asset-mapping. Furthermore, we can partner with these organizations to design a follow-up training curriculum that meets the demands of the job market, filter their job opportunity postings through C3, and even match these postings against the skill profiles of residents.

- *Seek Balance between Process and Product.* The ABCD publications listed above are an excellent resource for understanding how to conduct an asset-mapping and asset-mobilization initiative. However, they make little reference to the role of web technology in supporting these efforts. Because technology can dramatically improve the efficiency with which information is gathered and disseminated, one must take into consideration the means by which this information is obtained. Stated differently, there is a tension that often arises between *process*, or capacity-building activities that build relationships, and *product*, or tangible outcomes such as the final, completed database (The Aspen Institute, 1997). For example, resident's skills and interests were entered directly into C3 as part of the introductory courses at NTC. We found this method to be extremely efficient as it bypassed the need for paper-based records and data entry. The disadvantage to this approach is the lost opportunity of residents interviewing other residents to obtain this information, which can heighten their awareness and appreciation of their neighbor's abilities. As a general rule, one should attempt to find as much balance as possible between process and product given the available human resources, money and time.

## **Step 2b: Offer Comprehensive Training that is Project-Based, Theme-Based and Outcome-Based**

The following are my recommendations for training:

- *Link Training to Projects and Themes.* As mentioned earlier, the introductory courses at Camfield were project-based, while the follow-up workshops were theme-based. We believe a project-based curriculum is well suited to infusing a broad set of skills within a meaningful context. We believe a theme-based curriculum is well suited for addressing specific topics deemed important by participants. The next bullet expands on this point.
- *Link Training to Desired Outcomes.* One of the areas we improved upon between the Round I courses and the Round II courses (presently underway at the time of this publication), was linking the curriculum to our desired outcomes. The Round I curriculum was more generic when compared to the Round II curriculum, which achieves greater depth with respect to how technology can support community building. First, we are dedicating more time to learning the C3 modules. For example, after participants learn how to use a browser, they are required to post subsequent technical questions to the "Help" discussion forum as a way of establishing this habit and acclimating residents to the system. We believed the "Help" forum was a natural entry point due to the inevitability of technical problems. This facilitated a natural transition from a familiar context into other contexts such as the "News and Announcements" or calendar of events modules. Second, we are exploring how the various modules can improve communication at the development during the class sessions. For example, as part of the introductory courses, each class creates an e-mail list so they can stay in touch, and each participant adds their e-mail address to their class e-mail list and the residents' e-mail list. Third, we are encouraging more resident interaction during classes. For example, in classes where we have observed a marked skill-differential amongst participants we have facilitated peer mentoring to build relationships.

Now that the results of the assessment are available, we can further refine the curriculum by organizing certain project and theme-oriented sessions around the areas of youth, safety/security, community and employment, given their

expressed importance to residents. These strategies, and others like them, address the technological, social, and cultural challenges discussed previously by promoting comprehensive skill development, establishing and strengthening the social ties between neighbors, and helping to foster new patterns of use, respectively. In summary, we believe a project-based, theme-based, and outcome-based curriculum is one that clearly demonstrates relevance, and does so in a way that is resonant with the individual and collective interests of the community.

### **Step 3: "Launch" the System and Promote Ongoing Use**

There are two key points for launching the system that have already been mentioned, but bear repeating. First, to keep the number of modules and features at a minimum so the system can scale and adapt in a way that is commensurate with its use. Second, to provide a natural and recurrent entry point to the system, vis-à-vis the "Help" forum in this case, prior to system launch. The following are my recommendations for launching the system and promoting ongoing use.

- *Orchestrate a System Launch.* Another challenge associated with building community online is jump-starting the online interaction. At times, it is a chicken-and-egg phenomenon. Community members won't join if there isn't a critical mass online, and there won't be a critical mass online until community members join. To overcome this hurdle, we found it useful to orchestrate a "launch" of the system, which designates an official day for eligible users to interact with one another online. In doing so, we hoped to create an immediate audience by registering as many people as possible in a relatively short period of time, as opposed to a gradual audience resulting from intermittent or sporadic registrations over a long period of time.
- *Identify or Designate a Group of Lead Users.* It is also helpful to identify or perhaps designate a few lead users who can encourage and engage other community members to contribute. I have tried to work closely with the members of the CTA board in this regard by including them in the initial cohort for site visits and by attending several of the CTA board and general body meetings to offer my thoughts and observations. For any initial momentum to continue, a core groups of early adopters, in this case Camfield leadership including CTA board members, NTC staff, the resident social service coordinator, and property management, must take an active role in utilizing and promoting C3 as a tool for community communication, interaction and information sharing.
- *Cross-Reference Postings when Possible.* Once the system was launched, a simple strategy we employed to promote use was to cross all of the discussion forum postings with the residents' e-mail list. In other words, all of the postings to the discussion forums were automatically sent to the residents' e-mail lists.
- *Integrate Online with Offline.* The true power of building community online is that it can enhance, rather than supplant face-to-face, or offline community interaction. Therefore, perhaps the most effective strategy for building community online is building community offline. The leadership at Camfield has continued to organize a number of social events and activities at the development including receptions, holiday parties for youth, seniors, and adults, and more. As good example of integrating online and offline was the recent Black Family Technology Week celebration at Camfield. Before the week, a Black History contest was conducted online. During the week, a day was designated for seniors and youth to work together face-to-face at NTC searching the web for additional Black History facts. At the end of the week, a dinner was organized to recognize participants. After the week, pictures were posted to the Camfield website to capture the event. In summary, the integration of online strategies with offline strategies brings together the best that both worlds have to offer.

## **Conclusion**

The Creating Community Connections (C3) System, like other technological tools, can never be separated from the social and cultural context surrounding its use. Technology is often seen as a neutral, self-contained tool (DuPont, Hooper, Pinkett & Smith, 1999). Yet, research indicates that there is a culture of tool use that is a derivative of the culture of the community and the affordances of the tool (Brown, Collins, & Duguid, 1989). When a tool is brought into a community, it has meaning to the extent that activities are designed to define how it will be used. These activities have the potential to change the user's view of the world and impact the belief system of the community (Brown et al., 1989) but only if they resonate with existing social and cultural practices.

To ensure a social and cultural resonance with the communities where it is deployed, C3 offers a modular architecture, which provides as much flexibility as possible for the end user. This enables the system to serve a variety of purposes for a variety of groups in a variety of contexts including: asset-mapping, asset-mobilization, and community communication and information exchange – amongst residents, organizations, institutions, and businesses – in low- to moderate-income, urban, and rural areas alike. For the work described herein, C3 was deployed for the purpose of building community amongst the residents at Camfield Estates and its surrounding environs, using a particular subset of the available modules deemed relevant to this objective. Similarly, one can imagine C3 being deployed using a slightly different configuration to achieve a markedly different outcome.

For example, an employment agency would benefit from the user profiles (to catalog the skills of trainees), job postings, and the business database modules, as a means to broker connections between job seekers with job providers efficiently. A non-profit organization might be interested in the user profiles, calendar of events, discussion forum, and e-mail lists modules, to provide members with a means to connect with one another toward strengthening their capacity to work together. Lastly, a community technology center would likely enlist the web-based e-mail, organization database, business database, and personalized web-portal modules, to provide access to local community information and better address the needs of their constituents.

C3 is specifically designed to engage community members as the active creators and producers of their own information and content, rather than the passive consumers or recipients. Thus far, I believe C3 has been successful in this regard, particularly in light of the fact that all of the system's content has been generated by the Camfield community, for the Camfield community. The resident profiles were created by community members as part of the introductory course at NTC. The business and organization database/GIS maps are the result of residents' efforts in mapping the assets within a 1.5-mile radius of their property. The calendar of events, discussion forums, e-mail lists, file storage, and chat rooms constitute an information and communications infrastructure that has been defined, redefined, and utilized by members of the Camfield community. However, there is still room for improvement toward providing a broader range of ways for residents to express themselves. Many of the existing mechanisms available via C3 are text-based or form-based, which does not exploit the expressive power of images, audio, and video. Fortunately, and in response to the interview results, a website design course will be offered during the summer 2001 for first and second-round participants of the Camfield Estates-MIT project. This course will serve as an excellent opportunity for residents to begin sharing information and ideas with one another, while also providing an avenue for expression that leverages the multimedia affordances of web technology.

Given these and other future prospects, we are only beginning to witness the wonderful stories that will emerge from Camfield as a result of their experience with C3. I am now investigating ways to provide C3 for other communities so they can tell their stories too.

## **Notes**

For additional resources on community technology and community building, the following resources are recommended:

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