

2 DESIGNING AN ONLINE STUDY

Chapter summary

- Conceptualizing and operationalizing a study
- Questions related to method selection
- Sampling
- Selecting a technology
- Service Level Agreements (SLAs)

Getting started and conceptualizing

Like any other research endeavor, online research begins with interests and ideas and various theoretical perspectives that inform the development of a project. Before thinking through technological issues and challenges for a given study, researchers should spend time working through the specifics of their research endeavor. The types of issues include project timing, clarity of the research problem to be studied, objectives for the research, activities and methodologies to be undertaken in the research, anticipated outcomes and, when appropriate, available funding. Of course, none of this is new to a researcher.

Where online research begins to deviate from traditional research is in conceptualizing and operationalizing the research endeavor. Meanings can be slightly different and nuanced in online environments. Mann & Stewart state: "CMC has characteristics which do not fit within more traditional modes of data collection and which may challenge some standard assumptions about language use, interpersonal relationship and group dynamics" (2000: 3). As such, care should be taken in conceptualizing the research effort so that all language and core constructs are clearly defined and understood. For example, "flaming" can be an adjective describing something that is on fire, in American culture it can be descriptive slang for a homosexual male perceived to be flaunting his sexuality, and online it refers to posting hostile or insulting messages. These different meanings, illustrate the need for clarity in language used in online research.

Some social scientists study group dynamics. The research methods of interviewing and focus groups often depend on interpersonal dynamics. While the online environment offers opportunities, it also presents challenges for an

interviewer or a focus group moderator. For example, in the context of a focus group, people often express a feeling of being in a bubble. They know a researcher is evaluating the group dynamics. But they also note that it's one thing to see the two-way mirror in the research lab and know someone is watching, and yet another not to see anything but have the feeling that you're being watched in a study.

Another group dynamic challenge for a researcher managing an online focus group is the fact that it's possible to recruit participants from a wide range of cultural backgrounds. Understandably, most welcome the richness that will come from the data. However, few will consider the fact that participants coming from different cultural perspectives may require more work in facilitating a group dynamic. Once a group interacts well together, there can be a greater emphasis on the point of view of the participants rather than the researcher's perspective, limiting researcher bias. With that benefit, however, comes the potential for the researcher to lose some control of the discussion, creating management challenges. Another challenge for researchers is the potential for participants in an interview or a focus group to respond or send an additional response before receiving or reading a previous message. This can complicate the management of discussion threads and can lead the discussion into a different direction. It can also be awkward for participants, who may not know how to re-enter a discussion that has shifted into two different directions (Gaiser, 2000). These are issues that should be considered as your research is being designed.

Operationalizing a research study refers "to the concrete steps or operations that will be used to measure specific concepts" (Babbie, 2007: 106). At this stage in research design, the challenge is to determine the best ways in which to attack a research question. The researcher needs to determine what needs to be illuminated and in what ways the research should be conducted. Ultimately, operationalizing a project should lead to clarity regarding data collection.

Tips 'n Tricks

Guidelines

Think a study through from beginning to ending

- Think through research goals.
- Choose a research method.
- Analyze methodological challenges and issues (legal requirements, issues of privacy, etc.).
- Determine an appropriate technology to meet your research needs.
- Think through implementation of the technology, including any analysis needs.
- Think through implementation of the overall study.

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As you begin to formulate your study, it's useful to keep a few general thoughts in mind. Online it is tempting for people to think they are playing a game, many people interact online as a form of entertainment. As Busiel and Maeglin (1998) point out, it's easy to lose sight of your purpose. They also note that it's easy to get lost in a vast amount of information. The internet has massive stores of data which grow incrementally each day. It's easy to become overwhelmed or simply to use the first thing you find, whether or not it's the best resource for your particular purposes. In some cases, there can be a learning curve for both the researcher and the participant. Throughout this book, we will recommend basic technologies and advice for easing the learning curve. Finally, while technology is changing the face of the planet, there still is a digital divide and, unfortunately, the online environment still reflects the socio-economic and other realities of society. All of these issues will have some impact on the decisions you make as you begin to develop and conduct an online study, and so will be discussed in the following pages.

Who is researching what online?

In the early 1990s, it was difficult to find an online study that had been published. Today, there are a number of studies and books in various disciplines that provide some guidance as to what might constitute an online study. Communication theorists, for example, have focused on the linguistic status and characteristics of forms of computer-mediated communication (Davis & Brewer, 1997; Herring, 1996). Some social theorists focus on the impact of computer-mediated communication on social interactions and the presentation of self online (Hine, 2000; Turkle, 1995). Others focus on the cultural anthropology of the environment and the impact of that culture on daily life, if any (Horn, 1998; Rheingold, 1994; Turkle, 1997). Educational researchers are interested in knowing what role the internet plays in education, the quality of internet-based educational models, specifics of the delivery of education online, and the shifting roles of teacher/trainer and learner (Coiro et al., 2008; Comeaux, 2005).

Many studies have come from the discipline of psychology and have been conducted in a controlled environment (Dubrovsky et al., 1991; Weisband et al., 1992), evaluating whether or not computer-mediated environments provide an equalizing effect on status levels for participants. Many have also been in relation to employment issues (Bishop, 1993; Forester, 1992; Rifkin, 1995; Zuboff, 1988), focusing on organizational concerns, worker autonomy and the transformation of social relations in the workplace. Some have also focused on gender differences, or lack thereof, both in acquiring technological knowledge (Zubrow, 1990) and in use of computer technology (Nassr, 1990). Research

has varied methodologically, with many studies being quantitative (Kraft, 1987; Walther et al., 1994) and others being qualitative in the ethnographic tradition (Clodius, 1994; Turkle, 1995; Zubrow, 1989). Sherry Turkle, for example, on the Massachusetts Institute of Technology faculty, conducts interviews with participants, looking at the psychological implications of the infusion of computers into our daily lives. In particular, Turkle's work pursues the relationship between our interactions with computers and the ways in which we perceive our sense of self. In her early work, she examines how information technology affords individuals an opportunity for reflection, suggesting it provides a lens through which we can reconsider ourselves, hence a "second" self (1984). In later work, Turkle highlights the ways in which individuals reconstruct their identities to participate in a computerized culture, both on and off the screen. She describes "how a nascent culture of simulation is affecting our ideas about mind, body, self, and machine" (1995: 10). In her work, she suggests that the computer not only provides an opportunity for users to reflect, but also provides opportunities for people to reconstruct their identity.

Other researchers have analyzed and evaluated interactions and issues regarding the way people communicate online in an attempt to move toward an understanding of what might be conceived as community. Steven Jones edited a collection of essays focused on assisting "its readers to become aware and critical of the hopes we have pinned on computer-mediated communication and of the cultures that are emerging among network users" (1995). Participant experiences of online group activity have been analyzed against a typology of various communal forms to illuminate an understanding of what might be referred to as the social form of online community (Gaiser, 2000).

There have been a number of books and papers written on the subject of emerging communities enabled by computer-mediated communication. Some of the literature is case-study oriented (Rheingold, 1993; Smith, 1992), while other publications are anthologies that begin the search for new social forms in cyberspace and raise sociological questions regarding their nature (Jones, 1995). As noted by Jones, "just because the spaces with which we are now concerned are electronic is not the case that they are democratic, egalitarian, or accessible, and it is not the case that we can forego asking in particular about substance and dominance" (1995: 23). Like other social scientists, Jones raises questions about these new social forms online and calls for researchers to evaluate them.

In education, researchers are attempting to expand educational models beyond the standard modes of assessment. In assessment of online educational venues, the lines between learning and evaluation are often blurred, where the focus is on the creation of knowledge (Burnett & Roberts, 2005: 55–6). The threaded discussions, or rather, chronological listing of participants comments, employed by Burnett and Roberts in their research with Australian undergraduates function as a type of unmoderated focus group. In this case,

the group was given some orientation statements and a task. They collectively produced knowledge in the form of a new “guiding principle model” for teacher education (Burnett & Roberts, 2005: 58).

Selecting a method (from a technological vantage point)

Understandably, a method is determined by the nature of the research project and the specific questions that will be addressed in the study. Some considerations reflect potential legal challenges, such as those pertaining to an individual’s privacy. In the United States, the Health Insurance Portability and Accountability Act (HIPAA) regulates how private details about an individual are to be protected. For example, someone designing an online study that looks at mental health issues, should take note of HIPAA regulations prior to beginning the research. The kinds of questions that might need to be considered include:

- Can participant security be guaranteed? Anonymity? Protection of the data?
- Can someone ever really be anonymous online? And if not, how might this impact the overall study design?
- Can someone “see” a participant’s information when s/he participates?
- Can someone unassociated with the study access data on a hard drive?
- Should there be an informed consent to participate? If so, how might online security issues impact the informed consent?
- If a study design calls for participant observation, is it okay to “lurk”? Is it always okay? If not, then when? What are the determining factors?
- Is it okay to deceive online? What constitutes online deception?

These types of questions will impact the specifics of a chosen method and how it is implemented online. For example, IP (internet protocol) addresses can be tracked, providing information about a user by identifying the source of a given email. Thus, some might argue that it is impossible to “guarantee” anonymity or participant security. That is not to say that reasonable precautions and attempts cannot be made, as is outlined in the following pages, but rather to indicate that an honest, informed consent form should provide some specific details regarding the issues and how the researcher will attempt to address them. This knowledge might impact the online method, for example, in that a synchronous chat might be selected over the asynchronous method of email participation in a listserv discussion, to maximize control of the content and limit exchanges of information via potentially unsecured email channels.

Similarly, it is important to consider who you want to participate in your study. Some adults might be excluded in a study, because of a limited access to a chat room, while youth might be prevented from participating by parental controls set on a computer.

Tips 'n Tricks

Questions to ask when considering sampling

- Who is online?
- How do you reach a certain population of participants?
- How do you attain a random sample?
- Does it matter who participates?
- Will you want to collect demographic details?
- How will you recruit participants?; "What's in it for them?"

Many of us in the United States recall the incorrect poll findings of the Literary Digest that predicted that Alf Landon would defeat President Roosevelt in 1936 (Squire, 1988) and the Gallup Polls of 1948 that predicted Thomas Dewey's win over incumbent Harry S. Truman (<http://www.loc.gov/exhibits/treasurestrm145.html> accessed on 21 March 2007). In each case, the samples were skewed by the over-inclusion of wealthy individuals. To use an online example as an illustration, it is unlikely that an online study of society's readiness to accept, and adapt to, a new technology will yield accurate results, as a disproportionate number of individuals online are likely to be more willing to accept a new technology than the general population. The point is that not every study is appropriate for the online environment, for any number of reasons. In addition, there may be specific challenges that need to be recognized regarding accessing a particular population before designing a study.

There are a number of issues to consider when thinking about a research sample for any study. Designing an online study simply compounds the questions and issues. Consider who you want in the study and where you are going to find them. Who is likely to frequent your type of online environment? How can you get participants to participate in your site? How might a researcher best engage a particular population? What technologies do sample participants use, or are more likely to use? So, for example, if the goal is to reach a young, technology savvy population likely to pursue high-tech jobs, then game rooms and gaming interactive technologies are a likely place to start pursuing research participants. These are the types of issues regarding sampling that need to be considered prior to designing the technique for data collection.

Selecting a technology or technologies

After determining what kinds of challenges are most crucial in the research design, the next question is which technologies will enable you, the researcher, to complete the tasks at hand while also addressing your research concerns and challenges.

Tips 'n Tricks

Typical questions to consider regarding your choice of technology

- What is most appropriate to my particular research need?
- What will facilitate and ease the process of data analysis?
- What will be easy to use and develop for research purposes?
- What will be easy for participants to use?
- What will be most cost effective (what's the cost/benefit analysis)?

In selecting a technology, advertising and the hottest trend are typically unhelpful and even, possibly, unreliable. Technical support staff within your organization will know all of the most exciting and cutting-edge technologies, but will often lack the sophistication to understand data-analysis needs or be able to help in thinking through a researcher's particular needs. For example, when it became widely known that FileMaker Pro could be used to develop an online survey, faculty members at our university would often consider using it to enhance their research. There would be initial excitement generated by support staff about the supposed "ease of use" and the faculty member's deep desire to enter the realm of online research. Few, however, considered the fact that they had to learn how to configure the application (or hire someone, most often a research assistant), and develop the survey instrument using the application. Few researchers took the time to think through the ramifications of technical support and the need for a server to "host" the survey. Once the faculty member realized that someone needed the technical skills, and/or aptitude, to develop the research instrument using the application, manage data collection, provide technical support to users, and host the application and survey on a server (including all of the issues related to managing through a firewall, etc.), reality inevitably set in.

In some cases, faculty members would be excited about finding and funding a top-notch graduate assistant, who would diligently produce a very fashionable survey instrument, writing useful macros for data management and download, only to discover that students, being transient, were unable to sustain the research efforts after graduation.

Technologies evolve. Technical support can be expensive. New technologies are developed every day. Often basic technologies can meet a specific need. For these reasons and more, it's important to think through a wide range of issues, both technical and non-technical, before embarking on an online study.

Our advice is to do some information gathering and assessment before determining which technology is best for you:

- Speak with colleagues both in and out of your particular field.
- Review what others have done by looking at a variety of publications and online listings:
 - What technology did they use?
 - What challenges did they experience?
 - What do they feel they missed due to their choices?
- Conduct a self-assessment of your own level of technical skill.

Your review of these issues, along with your evaluation of the various available technologies, both as we've outlined in this book as well as elsewhere, should enable you to make an educated and informed decision about which technology is best for you.

To be clear, the preceding comments are not meant to suggest that researchers should relinquish any hope of conducting research online. On the contrary, we offer this book precisely so that you can make educated decisions and get started with ease. The purpose of this text is to help you, the reader, avoid the mistakes we've made or witnessed over the years, and provide you with some of the practical tips we've learned through experience, so that you have at your disposal what you need to make educated decisions.

Data collection

The reason we develop research instruments is so that we can collect data that will help us develop a new understanding. To that end, when using a technology for data collection, it's important to keep in mind whether or not the technology will facilitate data collection, management and analysis. Some applications, such as mIRC allow you to create logs as text-only files. These logs are easily identifiable as #yourchannel_160 222007.log (<http://www.nic.fi/~mauvinen/mircstats/mircstatsfaq.html#multifiles>, accessed 9 April 2007). In addition, you can search through log files, and then prepare them in whatever manner necessary to access them through an analytical program. For example, using an application like HyperResearch might necessitate separating key sections of the discussion with a tilde (~) to make coding and analysis more manageable. In a given study, there may be statements from different participants that should be separated for coding purposes, or a need to break a file due to changes in the discussion thread or different dates. The point to consider is whether or not data are easily cleaned and analyzed, or whether there are complex steps or translations that need to be completed prior to analysis.

Tips 'n Tricks

Data analysis guidelines Some general guides to follow when considering issues of data analysis

- Qualitative data may need to be saved in a **text only** (.txt) or **rich text** (.rtf) format with few extraneous symbols or markings.
- Qualitative data may need to be formatted in a specific way for use in a particular research application (e.g. HyperResearch or NVIVO).
- Quantitative data may need to be “cleaned” so that it contains few, if any, extraneous symbols or markings.
- It may be necessary to be familiar with a spreadsheet application (e.g. Microsoft Excel) to aid simple data cleaning with the ability to search, cut and paste.

Supporting the research participant

Too often when preparing to conduct an online study, researchers focus on their own needs and issues of ease of use and neglect the needs of participants. For example, a market researcher may consider conducting a focus group using a shareware chat application to conduct a study with a group of corporate clients. While focusing on logging capabilities and ease of management for conducting the focus group, the marketer may neglect to consider that some corporate policies will not allow staff to download applications on a company computer. Others may have firewalls configured to prevent an individual from participating in a chat session. In other cases, participants may have limited, if any, technical skills, requiring the researcher to do a great deal of virtual hand-holding to facilitate participation. In the end, assuming the study proceeds, it may be more prudent to consider these types of user issues prior to embarking on a study.

The technical cost/benefit analysis

If money were no object, everyone would have access to a variety of technical tools and have ample technical support. Alas, however, this is not the case, particularly in academia. Therefore, a researcher needs to consider a cost/benefit analysis when investing in a research study. When conducting self-administered, mail-in surveys, most people know how to budget. In

most cases, researchers know the going rate for a research assistant and can determine the time it takes to administer a questionnaire. Generally, using technological solutions will prove to be considerably less expensive than more traditional methods. However, a mistake or poor investment can also be quite costly. For example, it probably doesn't make sense to buy a server (\$2,000), install the necessary system and application software (\$2,000), and pay for management of the server (@ \$25–\$75/hr) to run a basic survey when it would be much more cost effective to create a simple survey instrument that can be emailed or one using an online service such as Survey Monkey (www.surveymonkey.com).

Tips 'n Tricks

AVOIDING EXPENSIVE MISTAKES

Types of mistakes that can derail a study and/or lead to considerable expense

Mistake #1

... allowing an energetic and technically savvy assistant to write a unique program for your research that becomes central to your data-collection efforts. If the program stops working after your assistant has graduated or taken a different position and moved on, having to change your technology in mid-study or, worse, having to pay a professional programmer to reverse-engineer your application or fix it can be extremely expensive.

Mistake #2

... becoming dependent on an expensive and complex application that requires advanced-level skills that are costly to access in the open market. A colleague might be right that an Oracle database is the most robust, or MySQL makes for a great online survey ... but Oracle and SQL programmers often command a high salary in the job market, and database programming, SQL server management, etc., all tend to cost money. Again, you may have a colleague or high-end assistant now, but what happens when they are no longer available to you?

Mistake #3

... using the first application that appears to meet an immediate need without thinking through all relevant issues specific to a given study. A particular application recommended by one of your assistants or a colleague may be a good place to start your research preparation. But it is little use to you if the functions needed are inadequate or non-existent. Begin with the advice of others, but proceed by thinking through your specific needs *before* pursuing the use of a recommended technology.

When thought through carefully, technological solutions for online research can be highly cost effective. Often, return rates are as high if not higher than traditional mailed surveys, there are no costs for transcription or data entry, and many research applications are freeware, shareware or relatively inexpensive. Applications that are purchased have a useful life beyond any given study and can usually be upgraded for a fraction of the original cost.

Highlighting the potential for costly mistakes is not meant to dissuade you from venturing into technological waters, but rather to encourage you to pause and reflect, with the information we've provided, so that, ultimately, your experience can be more productive.

Service Level Agreements (SLAs) ... “I don't know what I don't know”

A service level agreement is one of those things few know anything about, or even know that it's worth knowing anything about. If you accept that there are times when you “don't know what you don't know,” then we encourage you to read on. This is probably one of those occasions.

What is a service level agreement (SLA)? Isn't that a business thing? Well, yes ... and also no. An SLA is an agreement that makes explicit the expectations of two parties, formally defining a certain level of service. A formal SLA is most often found in business arrangements. For example, a bank that receives technical services for its online banking through an outside vendor would have, as part of its overall contract, an SLA that defines the specifics of its relationship with the vendor.

So then why is an SLA discussed here? Why should someone who isn't working in a corporate environment care about an SLA? The most direct answer to that question is that anyone who deals with anyone else to support their research efforts should consider having some type of SLA. You may be a market researcher using one of your business servers (whether in-house or externally) to host a chat and store data. You probably have a technical support person, who is probably a jack of all trades when it comes to technical matters, who has been happy to help with set-up, installing software, configuring applications, etc. Then one day your application crashes in the middle of heavy use. You have focus groups scheduled. You panic, because things aren't working correctly. You call your technical support person for assistance, and he replies that he needs to finish installing the updated version of Windows on a colleague's computer before he deals with your server issue. To you, it's a crisis. To him, it's another task on a long list. Negotiating an SLA prior to embarking on your study will help

manage the expectations of both of you. You will have a clear sense of what you can expect for support, and he will have agreed to some level of priority for your technical needs.

We once supported a researcher in developing an online survey. Although online survey services were available to her, she decided it was better to develop her own tool on local systems. She had concerns about security and also had a more complicated survey instrument than the average online service could provide ... at least, that was the case at that time. We had little trouble developing the instruments, because there were ample techies at our disposal willing to do the development work for her interesting and challenging research instrument. Over a short period of time, various surveys became active, data collection commenced, and she was very happy with her research project. One evening, during part of a routine system back-up, everything came crashing down. All of the instruments went off-line and required manual restarts. All were in locked server rooms, on servers with administrator passwords that were unknown to her or any of the survey developers. When she was finally able to track down the system administrator, she was reminded that everything in the organization had gone down and her surveys weren't top priority. While she has continued to use the survey services and has worked with the same support personnel for other projects, from that point forward she has negotiated an SLA for every project.

When conducting an online study, part of the process of preparation should include creating an SLA. In most cases, the researcher will not be hosting his or her own research instrument or research environment. In some cases, such as with an online chat tool, services may be web based and widely available. In other cases, such as in the development of a survey instrument, if not using an online service then hosting will likely be on a locally managed server. If the server is not owned, operated and actively managed by the research team, an SLA is warranted.

Essentially, an SLA is an arrangement between two parties with regard to a provided service. In the technical world, an SLA is a contract between a customer and a service provider. Although this may sound a bit formal for agreements within an organization, which it is, it's still an optimal way to ensure proper support. Given that technical staff are rarely, if ever, dedicated to a particular project, their obligations and commitments are divided between a number of customers. Therefore, which priority should the research project be? Should it be first, because the researcher thinks his/her work takes precedent? Should it be second, because research isn't the top priority of the rest of the institution? The point is that an SLA enables everyone to develop shared understandings and be clear on expectation, something that's prudent and beneficial in any relationship.

Tips 'n Tricks

Elements of a Service Level Agreement (SLA)

- Identify and define your needs.
- Provide a framework for shared understanding.
- Simplify complex issues.
- Reduce potential areas of conflict.
- Encourage dialog in the event of disputes.
- Eliminate unrealistic expectations.

Source: The Service Level Agreement Zone (<http://www.sla-zone.co.uk>), accessed on 9 April 2007

An SLA should embrace a wide range of issues. The most immediate and obvious issue pertains to what services are to be provided. Do services include data back-up and at what intervals (daily, weekly, monthly)? In the event of system failure, at what priority level will a survey instrument be restored? Who, specifically, is responsible? If you are using an application that requires a manual restart, who is responsible for restarting the research instrument? If and when the server requires routine maintenance, how will maintenance be planned, scheduled and communicated and who will be responsible for doing each step? Likewise, if the application being used for research requires an update, what is the process for acquiring the update and installing it? Who is responsible for performing application updates, including any necessary testing to ensure the system is fully operational after installation?

Researchers often fail to consider issues like tracking, reporting and performance until they are engaged in the research effort. It is easy to be focused on operationalizing a study and not thinking about the technical details. Then, as the study commences, the researcher begins to ask questions such as, "How many people have accessed my site?" and "Is it possible for me to determine how long it takes people to complete my survey?" These, and others, are useful questions. But it is important to keep in mind that, as noted previously, many technical employees have other obligations. They have better things to do than spend time accessing system statistics for one individual. It might be possible to automate some of these statistics so that the research team can access regular reports. It might also be something that can be included in the tasks of the technical staff, if negotiated up front. Although the kinds of things needed may not be known until the study gets under way, it is useful to include some general thoughts on performance statistics when crafting the SLA.

Working hard to develop a shared understanding of the research project and mutual expectations does not, necessarily, imply that a project will be conflict-free. A good agreement includes a process for addressing conflict and

dispute resolution. It may be jointly understood that any system updates will be purchased and installed by the technical staff. An update is announced which the research team thinks it's necessary to install, as it is supposed to enhance a certain kind of functionality related to the research effort. The system staff, however, feel the update is unwarranted and have chosen not to make the purchase. How does this dispute get resolved? Who has final authority? While a good SLA limits the likelihood of any major conflict, it is advisable to think through how conflict will be handled before an occasion presents itself. Clarity regarding conflict resolution can mitigate loss of active research time while resolving a dispute.

Routine maintenance and obligations should be spelled out clearly. Who runs regular back-ups? Do system back-ups cover data back-ups or does the research team need to routinely run their own data back-ups? When system patches and updates need to be installed, who is responsible? Does the research team install application patches and the system staff install operating system updates? Does the research team have administrative access to the server? The point is that all duties and responsibilities need to be clearly identified and assigned in the SLA to limit confusion when potential issues arise.

Today people are highly sensitized to issues of privacy and security. Thus, a service level agreement needs to include system security. This information is likely to be necessary for funders and any institutional or professional review boards that evaluate research proposals. Issues related to other operations on the same server, institutional firewalls, and so forth, should all be included and considered. For example, depending on how an institutional firewall is configured, some research operations may be running outside of its confines. It may have been easier for the developer to jump the firewall while configuring an application than to go through the process of seeking permission to run a research project. While the intention was to get a project expeditiously on track, this could be a problem in the long term. Essentially, it could mean that while the front door is bolted shut, the back door has been left wide open. A savvy hacker would be able to find and exploit this security lapse. As such, an SLA should list any and all issues related to security, what steps have been taken to ensure security, and how any security breach will be handled. You should include what you, the researcher, will do as well as what you expect of anyone serving as your technical support. Although the handling of a security breach may seem minor, if an institution's policy is to shut down anything and everything first, and then take its time resolving a problem, this situation could leave your research project offline for many days. This can be considerably frustrating if the researcher has limited knowledge of the problem and considers the problem a minor issue. Therefore, it is advisable to have clarity regarding security issues prior to embarking on a study.

In addition to traditional issues of security, there is a need to be clear on intellectual property rights and any confidential information related to a research project. SLAs should clearly indicate whether or not any information accessible to technical staff is confidential. In addition, anything that would be considered

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intellectual property should also be clearly spelled out in any agreement. This may seem extreme, but it limits the likelihood of research ideas appearing in an unauthorized blog or web site, or your customized research application, developed with your professional insights, being sold on the open market.

Another area that is often neglected and needs to be clearly spelled out is the lifecycle of a study. When does the study end? How long will the system need to be available to the research staff? What should be the process for terminating the project? What final documentation, disks, files, etc., should be provided to the research team at the conclusion of the project? It is considerably frustrating for technical staff to be left wondering about the answers to these questions. Likewise, it can be a source of frustration for a researcher to experience pressure to make decisions s/he is unprepared to make. These issues should be considered and clearly defined prior to the start of a study. It is fine for a study to have a long life. What is important is that everyone understand milestones, how and when decisions will be made about the continued life of a study, when those decisions will be made, and by whom.

A final note on SLAs. Nothing needs to be written in stone. The purpose of the SLA is to give people the means for dialog and shared expectations. Research needs change. System operations change. Staffing needs change. With a working document, these changes can be easily addressed without creating any complications for the overall project or people involved. (A good reference for service level agreements is <http://www.sla-zone.co.uk> which was accessed on 9 April 2007.)

The preceding pages are designed to help a researcher address technical issues early in the study design process. As previously stated, the intention is not to deter researchers from embarking on an online research project, or to make the issues appear insurmountable, but rather to enable researchers to be more efficient and knowledgeable as they move forward in their research design. The following chapter will build upon the issues raised in this chapter by offering additional challenges, unique to the online environment, for consideration; and some practical ways in which to address them.