SYSTEMS MAPPING:
ACCESS TO UNDERSTANDING, COOPERATION, AND ACTION

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ABSTRACT

Systems Mapping uses qualitative research methods to capture and display, in graphic and narrative form, the workings of a system of human activity. In the past, Systems Mapping has been used singularly for program and systems development, for conducting research and evaluation, for guiding and informing policy development, for identifying system linkages, for designing and promoting collaborative systems efforts, and for informing funders, stakeholders, policy makers, and citizens. The purpose of this study was to use Systems Mapping to tie many of these diverse elements together, facilitate the successful redesign of a municipality’s tourism and events promotion program, and to assess Systems Mapping’s contribution to the process. Most Systems Mapping projects have unfolded in a relatively straight-forward manner. The current case required adapting and modifying the use of the Systems Mapping process. The differences and departures may have had a significant impact on the results for a number of reasons. Moreover, the mapping itself was stopped due to the identification of sensitive political issues that could not be resolved through a participatory process such as Systems Mapping. The Systems Mapping data were assessed using a version of Lincoln and Guba’s (1985) criteria for establishing trustworthiness, and participant interviews were conducted to assess Systems Mapping’s contributions. This use of Systems Mapping did produce some access to understanding and action, but not cooperation. There were a
number of lessons learned, both cautionary and confirmatory regarding the use
of Systems Mapping in this or other similar contexts.
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CHAPTER 1: INTRODUCTION

Program designs and descriptions can be complex and difficult to follow. Grant applications and proposals can be thorough and yet fail to inform grantees clearly about how a proposed project will actually function. Policies and procedures manuals can be comprehensive and still fail to convey vital operations. Needs assessments can contain so much information that they become overwhelming. Problem and issues analyses can get lost in detail of narrative. Because of the need to capture their contexts completely, program evaluations, systems analyses, and best practices descriptions can become cumbersome and difficult to transfer to other settings. Legislative briefings on complex issues often result in conveying only a small part of what is needed to promote support and further action.

In the usual frame of reference, all of these types of documents have something in common. They all take pages and pages of narrative to accurately inform and persuade a particular audience that certain actions will produce certain specific results (or in some cases, will keep undesirable results from occurring). Yet, there is an axiom that cuts across all of these situations: no one in a policy decision position would ever read the reams of material that came across their desk. Thus, if it couldn’t be said in a brief summary—the “gold standard” being two pages at the most—it wouldn’t be read. Embedded in the gold standard was the KISS rule: “Keep It Simple Stupid.” Yet, how can a document dealing with the complex issues presented in each of these situations be effectively summarized in two pages?
This question is not the only one facing people who engage in the above activities. Even if an executive summary was effective in producing approval, there always remains the frequently daunting task of implementing and operationalizing the often lengthy and complex descriptions contained in the narratives in question. Enter Descartes and the Cartesian mechanistic approach (Kuhn, 1970). Break the overall process into component parts and allocate them to different program or project functions. In large part, this translates to assigning like tasks to specific people, divisions, departments, or even different agencies. In the realm of human services with human beings as the product, or more accurately, the result, this approach has led to programs and projects designed for intervention and prevention that at best, if successful in and of themselves, are difficult to generalize to other populations and places. Moreover, there is growing evidence that only those programs and projects that are comprehensive, creative, collaborative, and go beyond the bounds of a single discipline tend to be effective in increasing the well-being of the participants (Schorr, 1988). Systems analysts, thinkers, and researchers all concur in one form or another with the importance of interconnections, understanding, and coordinated action to produce effective and sustainable results (Senge, 1990; Argyris, 1990; Checkland, 1981; Checkland & Scholes, 1990). Yet, that persistent question remains: how can we describe human services systems in a way that displays and describes these complex interconnections and activities without pages and
pages of narrative? How can we do so in a way that allows for ready access to understanding how the systems work together?

In 1994, a team of three enterprising researchers was faced with these questions as they were working on an evaluation of the Family Centers project funded by the State of Hawai`i. On the surface, the project might have sounded straightforward. Develop four Family Centers to provide family support services on each of four of the state’s islands. What made the project complex was that all of the Centers were to be developed using a community-based development model. These kinds of grassroots models called for development of programs and services based on community context and input. There was no template for the “right way” to develop and deliver services other than that developed in the community involvement process at the outset of the project. The obvious result was that each of the four Family Centers had its own structure, functions, and character. This had important ramifications for the overall evaluation of the project in terms of how to evaluate the overarching results and impacts of using a community-based approach.

The project evaluation had followed the basic structure of Jacob’s Five Tiered Evaluation methodology (Jacobs, 1988). This approach calls for evaluating a program or project with a framework for assessing each of five phases of program development. The research team was working with the particular phase that calls for capturing the results of the work of the four Family Centers. Specifically, they were working on a cost-benefit analysis of the effort.
An important aspect of community-based efforts is how well funds and resources can be leveraged (Mayer & Scheie, 1989). There seemed to be evidence that the Family Centers had produced a considerable array of value-added activities from volunteers, agency support, and business community involvement. However, they were faced with how to capture, display, and analyze these activities. It turned out to be fortuitous that one of the three researchers had an extensive background working in the private sector. She was familiar with a relatively new approach for capturing and analyzing business and production practices called “process mapping.”

Process mapping introduced the use of standardized symbols to graphically display—that is, map—a business or production process from start to finish. Process mapping has developed as a systematic process itself, though with varying degrees of application and complexity. Process mapping was first developed and used by the General Electric Corporation as part of an integrated system of strategies to improve their bottom-line performance. General Electric’s innovation heralded the beginnings of process mapping’s relatively widespread use in the “organizational re-engineering” efforts of the 1980s and 1990s and has been employed successfully by a number of major corporations (Hunt, 1996).

The basic tenants of process mapping include the identification and definitions of business processes, gathering the data to develop maps of the processes from both interview and written sources, developing graphic images to display processes, and refining the results through mapping team and user reviews.
Since its inception, process mapping has been supported by the development of computer software which now ranges from easy-to-use graphics programs to more sophisticated process simulation and modeling software (Hunt, 1996).

Process mapping has used a fairly standardized set of symbols that have assisted in distinguishing processes, decision points, preparation requirements, documentation, actions, and parallel activities. Other symbols used have assisted the viewer (an executive, a manager, a worker, an analyst) to get a clear picture of the connectivity and directionality of various features of a process.

Using this business derived methodology in a human service sector environment such as the Family Centers project was a unique application of process mapping. The result of the research team’s process mapping efforts allowed them to eventually identify several hundred thousand dollars of value added activities and support that the Family Centers project had generated. Because the methodology used called for involving program people in the development of the process mapping, the team was able to discover avenues of support and benefit that, in a more traditional cost-benefit analysis, might well have been missed. This use of process mapping was one of the first uses of mapping done in the human services arena, and it generated the spark for the development of what is now called Systems Mapping.
Systems Mapping's Roots

The most proximate roots of Systems Mapping were derived from process mapping. However, both can trace their heritage back much farther than the development of the methodology by General Electric. These roots can be traced back to the first systematic attempts to describe, plan, and measure (albeit in a limited way) processes of human activity. These attempts began to be codified in the early 20th century with the development of “science management” and the work of Frederick Taylor (Checkland, 1981). Taylor believed that workers were naturally lazy and would engage in “soldiering” which he defined as doing the minimum amount of work necessary to get by on the job (Taylor, 1911). In his publication *Principals of Science Management* (1911), he described how science management measured the processes that workers engaged in and made them more efficient. He further claimed that this increased productivity and reduced the number of workers needed to produce the work. The tradeoff for workers, according to Taylor, was that they were able to earn higher wages. The benefit to manufacturers included lower overall labor costs resulting in a reduced cost per item produced.

Several of Taylor's contemporaries and colleagues took science management in other directions. Frank and Lillian Gilbreth pioneered the field of motion studies by analyzing the methods that workers used to perform their jobs. They developed these studies further to use motion pictures for micro-motion studies which broke work down into fundamental elements (International Work
Simplification Institute, 1968). Henry Gantt, who worked for Taylor at one point, originated the still widely used Gantt Chart. This chart is a visual display used for scheduling work and is based on time, though unlike Taylor's work, does not include measurements of quantity, volume, or weight (2000Accel-Team, n.d.).

According to Checkland (1981), science management and other similar reorganizations of the way work was done (e.g., Henry Ford's assembly line) were early attempts at systematic approaches to work. It was not until the 1950s, however, when the field of engineering took began to move toward a systems view of the man-machine relationship. This led to the development of "hard systems" approaches to engineering which, in Checkland's view was the immediate ancestor of systems thinking and his "soft systems" approach to human activity settings. Systems Mapping has been influenced by such approaches in that systems thinking literature freely and frequently uses graphic display and illustrations to convey systems relationships. Moreover, systems thinking also is very much concerned with transforming human activity systems. (Checkland, 1981; Checkland & Scholes, 1990; Senge, 1990; Senge, Roberts, Ross, Smith & Kleiner, 1994). Senge, et al (1994) note the possibility of combining systems thinking with process mapping though they go on to say that process mapping "tends to be a static picture of what's going on, unlike the systems thinking view which always looks at dynamic interrelationships (p. 184-185)." From its inception, Systems Mapping has focused on conveying systems relationships and on using the resulting maps for both informative and
transformative purposes, including systems level transformations and the program/project level change associated with program evaluation methodologies.

Systems Mapping’s first evolutions developed from its early use in program evaluations. As such, its roots can be traced to program evaluation theory and practice as well. In his call for an “experimenting society,” Donald Campbell created the foundation for much of what was to follow in terms of social science research and program evaluation (Patton, 2002). Initially, Campbell and his colleagues proposed that true experiments (which they admitted were difficult to implement in social contexts) and quasi-experiments were desired pathways to discovering the real nature of the human condition in society (Lincoln & Guba, 1985). These notions were tempered over time through Campbell’s growing recognition that social science dealt with complex phenomenon, and that there were multiple systems of knowledge and belief, i.e., paradigms, that could explain social systems in multiple ways (Patton, 2002). In his comprehensive work on qualitative research and evaluation, Patton (2002) has asserted that, among his many accomplishments, Campbell made significant contributions to qualitative research and evaluation by calling for the use of multiple methods in social science and evaluation research, and for his creation of the notion of “triangulation” as a way of testing and ensuring the reality of a study. As Patton describes them, these contributions helped finally lay to rest the question of whether quantitative or qualitative methods used singularly represented the best approach to research and evaluation. Now the question has become which
methods, in which circumstances, and in which combination are mostly likely to produce the best and most reliable result.

Systems Mapping clearly fits into the category of qualitative research and evaluation methodology. Patton (2002) has described the units of analysis for qualitative studies. Using his categorization schema, Systems Mapping practice has occurred primarily in structure focused contexts in mapping programs, projects, and organizations. Some people focused work has been done with individuals, though it was done with the intention of using individual accounts of activities to assist in capturing the operations of an organization. Systems Mapping has also been done in a combination of geography focused (community and county) and activity focused (family support) contexts which ultimately led to the use of the term “systems mapping” rather than the narrower process mapping term. Patton also reviews the sources of data for evaluation field work. Many of these sources are those that come within the purview of Systems Mapping, including descriptions of settings and environments, program activities, unplanned activities, archival information, and documenting outcomes. Since Systems Mapping is really a “work in progress,” there may be other sources of data that can be included as well.

The mapping process is dependent on what people say about a program, project, or system. As such, this requires that the mapping team be skilled listeners and interviewers, in both individual and group settings. Whether operating from an emic or etic perspective, the team conducting the mapping
must not only listen with intention to what is being said by participants but also must observe how information is being communicated. This level of observation requires sensitivity to what may be behind a communication (e.g., an issue, divergence of values or views, emerging ideas, etc.) and a willingness to check with participants to validate what they think they are hearing and observing.

Systems Mapping has usually, though not exclusively, been conducted in the field—that is, where the system being mapped is located. Conducting the process where the system exists has the advantage of providing the mapping team with the opportunity to observe the context within which the system exists and to include that information in the inquiry process.

In addition to interviewing and observation, Systems Mapping methodology relies heavily on what Strauss (1987) calls “participant review.” This review calls for participants to examine and comment on the products of the Systems Mapping process which include both the maps themselves and the accompanying narrative. In this part of the process, the mapping team and the participants thoroughly assess the accuracy of the data and clarify any changes or additions that are needed. This participant review when combined with skilled interviewing and observation provides Systems Mapping with an internal triangulation that is built into the mapping and narrative process. However, I would caution that Systems Mapping not be viewed as a stand alone choice of methodology. Many systems studies, whatever their purpose, can benefit from
using multiple methods external to the mapping process that are designed to
capture and triangulate the workings of that system.

One of the more recent roots of Systems Mapping, and a part of Systems
Mapping methodology, comes from a learning method developed by Tony Buzan
(1989) called “Mind Mapping.” Mind mapping is a technique for taking notes that
is different from what is usually thought of as note taking. In terms of its
conceptual contribution to Systems Mapping, mind mapping involves identifying
key words and ideas in what people are saying (or have written) and then
mapping those onto a page. In a traditional map, locations are linked with
different roadways. Just like a traditional map, key words and concepts are
connected to other key words and concepts. In a traditional map, we may want to
get a picture of the whole city and how to get around. A mind map takes a
concept or idea and maps out how to get around with the concept. It is possible
to use mind maps to record people’s stories (e.g., in school, the teacher’s lecture)
or to record the important points of something that is read. The illustration in
Figure 1 is a brief example of a mind map of this paragraph. This map identifies
and connects the key words and ideas that are used.

Mind maps are supposed to be creative. The use of pictures or "meaningful
doodles" that illustrate a point is encouraged. Mind maps are supposed to be
subjective and personal. One person’s mind map won’t look like someone else’s
mind map of the same thing. The point of a mind map is to provide whoever is
creating the map with a guide for remembering the ideas and connections
Figure 1. Sample Mind Map
(routes if you will) in a particular area. In Systems Mapping, the mind map is used to provide the mapping team member with a guide for remembering how the system is organized. This mind map is converted into a Systems Map by using standardized symbols for the processes, decisions, preparation, actions, and connectors. Like mind maps, a Systems Map can include illustrations, pictures, and other graphics that assist in making the map understandable and interesting.

The conventions of flow charting have contributed many of the symbols and some of the structure used in Systems Mapping. Flow charts illustrate the sequence of a process and have been used in a broad array of situations and circumstances for a long period of time. When and who first used flow charting is not known (Davis, A., Fashion, D., Francis, O., Fowler, J., & Geddings, E., 1995). Finally, the roots closest to the development of Systems Mapping are those of process mapping. As an outgrowth of process mapping, Systems Mapping has some significant similarities with its immediate predecessor. Systems Mapping has used, as a convention, many of the same standardized symbols. It frequently, though not exclusively, has been used to map a time path from the entry into a system through various transformations to an end-point or result. Systems Maps have been developed through a team process, and have been reviewed in many of the same ways that have included internal team reviews and reviews by the process or system users. Moreover, the both forms of mapping
have used both verbal and written material as a primary source of data. Both have also produced graphic maps with accompanying narratives.

Process mapping was developed in a business context to improve or initiate the manufacture of a product or development of a business process (e.g., including ordering, billing, accounting and other processes). On the other hand, Systems Mapping has grown up in a research and action, planning, and evaluation environment in terms of focusing on organizational relationships involving human beings in systems of service delivery. Because of these additional “roots,” Systems Mapping has differed from process mapping in some significant ways as well.

Systems Mapping uses qualitative research theory and methods to capture and display, in graphic and narrative form, the workings of a system of human activity. The term “Systems Mapping” was adopted because it denotes a more encompassing view of how the mapping methods have been used with human service systems. Thus Systems Mapping includes not only processes that a program or project may engage in, but also can include a systems perspective of the connections and contexts in which they operate.

Not unlike process mapping, Systems Maps have been created by taking what people say about a program or system, and mapping this description. However, the Systems Mapping process itself has been, in most instances, much more participatory in engaging the users of the systems in the development of the maps. With Systems Mapping, the mapping process begins as a way of
collecting data using Mind Mapping techniques (Buzan, 1989) and not as a completely separate activity which occurs after data has been collected as is suggested in descriptions of process mapping methods (Hunt, 1996; Jacka & Keller, 2002).

Many of the graphics in Systems Mapping and process mapping are found in standard flowchart and decision-tree processes. These symbols are easily learned and recognizable across a number of disciplines. For example, Total Quality Management and even Information Technology analytics use many of the same symbols to represent their workings (as can be seen in the graphics symbols for each in a computer software program such as Microsoft Visio™ Graphics). Systems Mapping has evolved into also using figures from computer clipart and other creative representations to assist in giving them a sense of context, clearer understanding, and to make them more interesting. The use of color to distinguish various aspects of the map, such as transitions or different phases of a system, has been another development in Systems Mapping as well.

Systems Mapping engages people or human systems. In other words, they are “soft” rather than “hard” systems. As described by Checkland (1981), a soft system is one that is open and fluid because it involves human beings, and their ideas and activities. As such, an analysis of soft systems is different from systems analyses found in engineering, manufacturing, and many of the sciences – that is, “hard” systems. Soft systems have differing and changeable contexts. There are no hard edges to a soft system in that there are a multitude
of internal and external influences that shift and change the system. Methods for analyzing a soft system, of necessity, involve people engaged in a dialog about their organization or community. This dialog includes identification of the purposes, goals, and issues that exist in their efforts that can include the following:

- the processes and decisions that they are engaged in
- the actions they are taking or planning
- the sequencing of their activities
- the people responsible for the actions and activities
- the information they are using and keeping
- the connections among the various aspects of their efforts

Because the analysis derives from this dialog, soft systems lend themselves to naturalistic (Lincoln & Guba, 1985) and qualitative forms (Strauss, 1987; Patton, 2002) of research. Systems Mapping combines a number of qualitative research methods to produce analyses that can be used for research, planning, and evaluation purposes.

Systems maps and narratives are produced using a participatory design that engages people from an organization or community in focus group dialog (Morgan, 1988) to address an issue or concern that the participants are interested in studying, analyzing, and taking action on. The first step in Systems Mapping is to have an organizing meeting with participants to define the parameters of the study. The task of the first focus group is quite similar to that
used in Concept Mapping (Trochim, 1989) in terms of clearly defining what the area of inquiry is to be. As with Concept Mapping, this step involves coming up with a statement (Trochim, personal communication, 1992)\(^1\) that will provide the framework for generating the information needed to map the area of inquiry in a concrete and meaningful way. The role of the researchers in this process is to facilitate the dialog to produce the generative statement, and to identify research questions that might be used later to assist in obtaining a complete picture of the system under study.

Systems Mapping uses other features important in qualitative research as well. Systems mapping is iterative in that the maps and narrative are produced after each session with participants, and then are reviewed at subsequent sessions. This provides a form of memoing (Strauss, 1987) and participant review (Lincoln & Guba, 1985; Strauss, 1987). Input and suggestions for revision are incorporated into subsequent iterations of the systems map and narrative. Additional memoing is also used in the form of summaries of sessions and an indication of next steps in the process that are provided to participants in the interim between mapping meetings.

The systems mapping process also incorporates standards of research practice that accrue to the use of qualitative research methods. With quantitative

\(^1\) Using a statement rather than a question or series of questions to generate the focus dialog was found by Trochim and his colleagues to be more productive. Our experience has been similar.
research, the standards that are used to determine if a study tells anything meaningful are (very briefly) as follows:

- **Validity (or internal validity)**—does the information provided by the measurement give us an accurate picture of what we are looking at?
- **Reliability**—can the measurement be counted on to give us an accurate picture each time we use it?
- **Generalizability (or external validity)**—if we conduct the same study somewhere else, will it produce the same results?
- **Objectivity**—is the measurement impartial and free from bias?

The standards for determining whether qualitative data tell us anything meaningful are a bit less clear and are less agreed upon. However, we have found it useful with Systems Mapping to think in terms of the following guidelines adapted from Lincoln & Guba (1985). They call for establishing the “trustworthiness” of the data. It is important to note that the criteria proposed focuses on the data, not the investigator or methods employed.

- **Credibility (for “internal validity”)**—Credibility is the “truth value” of the study. This can be established through *prolonged engagement* and *persistent observation* with the participants, program, etc. It is also established by *triangulation*, which involves looking at the same situation from different perspectives with different observers. It can also be

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2 The use of italics in this section denotes terminology used by Lincoln & Guba throughout their discourse on establishing trustworthiness.
established by using *multiple sources, methods, investigators* and *theories* in the study.

- **Dependability (for "reliability")** – This test of trustworthiness examines the how much the study can be *counted on*. It addresses the issue of *consistency* as well. In other words, if the research were conducted with similar participants in the same way, would you get the same results? Dependability also looks for those things that can be considered *predictable* as well as identifying those things that are *unpredictable* (which goes beyond the “reliability” test in quantitative analysis by describing the things that can’t be known for sure). One of the more thorough ways of establishing the dependability of a qualitative or naturalistic study is to engage in an *Inquiry Audit*. Lincoln & Guba describe such an audit in detail. For our purposes here it is enough to know that it involves an examination by an *outside person* (inside outsider possible) of *processes* (process notes, instrumentation, intentions, proposals, expectations), of *products* (data, findings, interpretations, and recommendations) and of *records* to determine their *coherence* and *fit*.

- **Transferability (for "external validity" or "generalizability")** – Transferability addresses whether a study is applicable – or useful – in other contexts or settings. This criterion can be met by providing *"thick"* or detailed data and descriptions of the research so that questions as to whether it can be applied in other settings can be answered.
• **Confirmability (for "objectivity")** – another way of stating this is to ask if the study was conducted in a way that was *neutral*. This addresses whether the data are *unbiased, factual, confirmable or confirmed*, and so on. Confirmability can be established using the same methods used in an *Inquiry Audit* and by engaging the other standards involved in establishing trustworthiness.

There are other features of qualitative research as described by Strauss (1987) that are built into Systems Mapping. The first feature is that of using regular team meetings to review the progress and products of the mapping. These meetings are a necessity in systems mapping to review the progress of the maps themselves and to coordinate the mapping with the narrative descriptions of the systems in question. The second feature is that of using graphic representations as a form of memoing. In and of themselves, the maps are graphic representations. The process of producing the maps tends to highlight areas where the data collected either fit or don't. The iteration and review process is the ultimate litmus test of whether the data are understandable and in a form that accurately reflects the descriptions and intentions of the participants. There is also one noteworthy departure from grounded theory practice. This departure has to do with the process of open coding proposed by Strauss.

Systems Mapping uses a form of coding, however the framework for coding is generally pre-established. This framework involves sorting and
graphically displaying data generated as processes, decisions, documentation, actions, and the like. It should be noted that this process has much more flow and ebb to it than might be readily evident. In team meetings and sessions with participants, there has been some rather spirited interaction over how a piece of information should be coded (e.g., as a process, or a decision, or an activity or action). These moments are generally resolved through a dialog leading to consensus.

Systems Mapping's Multiple Uses

As a research, evaluation, and planning tool, Systems Mapping can be used to review and graphically display the delivery system of a program. Using mapping techniques can help an organization develop a clear picture of:

- The sequence of service delivery
- Where decisions are or should be made
- What activities are involved in the system
- Who is responsible for what
- Points where information is or should be documented
- Overlaps and duplication of services
- Things that are missing in the system
- Differences in perspective from one part of the system to another
- How different parts of the system are connected or affected by other parts
Community, organizational, program, and project leaders can use systems mapping for:

- Training new staff
- Giving funders, community members, policy makers, program participants and other stakeholders a clear idea of what the program or system actually does.
- Reconciling what "should" be going on (according to funding or procedural guidelines) with what "really" goes on, which can mean:
  - Identifying activities that work better in practice than the original plans called for.
  - Identifying activities that are not consistent with what the program is trying to accomplish.
  - Identifying unanticipated results of activities -- both positive and negative.
- Shaping program services to meet the existing and changing context of the people, families, and communities served.

Systems Mapping is Participatory and Iterative

Systems Mapping, in its standard form, is participatory. The mapping process is dependent on the people who are providing the information and the results are based on their input. While the products of the mapping (i.e., the maps and narrative themselves) may be constructed by evaluators or
researchers, the shaping and content of the maps are largely created by the participants.

Systems mapping has several levels of review built into the method. Each completed map usually goes through a minimum of two iterations before it is considered reasonably accurate and complete. We have found that most applications of systems mapping have needed at least three iterations to account for the complexities of the systems being mapped and to give the participants adequate time for review and input. This review process is important to creating a usable and meaningful product.

The areas above are a few of the uses for systems maps that have been discovered during the development and use of Systems Mapping. There certainly are others. Systems mapping is a tool that can be used on an on-going basis to monitor and evaluate delivery of services for all involved – from program participant to policy maker. It is a tool that can be used to display many levels of organizational activity, from the overall service system to smaller facets or divisions of the services. It can also be used to map multiple systems of services across a broad area of concern. For example, we have used systems mapping to uncover and display all of the systems of service for families with children from conception through age five, with applications of the information across the lifetimes of all of the members of a community (including all local, county, state, and federal service systems involved). So far, we have described “what” Systems Mapping has and can be used for, but “how” is Systems Mapping done?
Systems and Mind Mapping

The person doing the mapping in a Systems Mapping project literally draws on paper what people are saying. It is possible to do this using the systems mapping symbols and connecting them as people describe the narrative. Most people who use the mapping techniques develop this skill naturally over time. However, the most effective way discovered to date to create the beginnings of a Systems Map has been to use the Mind Mapping (Buzan, 1990) technique described in the section above.

There are three basic reasons for using Mind Mapping first. For one, using Mind Mapping provides experience and practice in identifying and recording key concepts and words. This is important in being able to pull out the significant information that is being given by the participants. Secondly, Mind Mapping is a tool for connecting those key thoughts and concepts in a meaningful way. Start with the key concepts or ideas – or the sequence of delivery of services – and connect them in a way that makes sense. The third reason for using Mind Mapping is that participants provide information in a natural way that can be very non-linear. People generally don't talk and give information in the same way as a book presents a narrative. For example, they remember things that they wish they had said earlier, or they bring in an idea that affects something they hadn’t thought of before. The beauty of using Mind Mapping is that these things can be added to the mapping and connected without having to start over or note them
for insertion later. Most importantly, Mind Mapping is a skill that moves naturally into Systems Mapping methods and results.

Buzan's book, entitled *Use Both Sides of Your Brain* (1990) is an interesting, easy to follow, and highly instructive book that allows the reader to learn the technique with several hours of concentrated study and practice. It also covers a number of other applications for the mind mapping technique that are quite valuable in a variety of contexts.

It was stated in the opening paragraphs of this study that a way was needed for describing human services systems so that complex interconnections and activities can be displayed and described without pages and pages of narrative, and in a way that allowed for ready access to understanding how systems work together. A “gold standard” was described and a rule of simplicity was invoked. Systems Mapping has the potential for meeting these concerns in a variety of contexts. However, it might be said “the proof is in the practice.” The sections that follow describe much of that practice to date, and culminate in a Systems Mapping project and study that was designed to bring together a number of uses into one research and action effort. These sections are presented as “evolutions” because the development of Systems Mapping has been: an evolutionary process.

*Process and Decision Mapping – The First Evolution*

In mid-1995, the Institute for Families in Society was engaged in an extensive review of research on prevention of child abuse and neglect. One of
the findings in the research had been that home visiting programs had been successful in significantly reducing child abuse and neglect (U.S. Advisory Board on Child Abuse and Neglect, 1993). Because of the apparent success of such programs, the Institute had been funded by the state to locate the home visiting programs in the state, identify the exemplar programs, evaluate these effective programs, and develop transferable models of best practices. Institute faculty identified four exemplar programs home visiting programs in the state, and undertook the evaluation and modeling task using and developing process mapping techniques. Participants attended an orientation meeting that presented a general overview of purposes and design of the processes to be using in the study. Mapping sessions were conducted at the program sites that were in different parts of the state, one in a metropolitan area and the other three in rural locations.

The mapping done with these four programs was analyzed on two levels: on the program level and on the mapping process level itself. On the program level, all of the programs had definite strengths ranging from being highly supported by their communities, to being sought out by potential service recipients on a “word-of-mouth” basis, to having numerous instances of successful results that the mapping helped highlight. The mapping and narrative also suggested areas for further inquiry that might be available to further strengthen the programs. Most of these latter suggestions involved clarification of specific procedures and service components. Two programs revealed
operational tensions that surfaced more substantive issues, one of which was discovered through extensive changes in the maps from one iteration to the next.

On the mapping level, it proved possible to analyze the trustworthiness (Lincoln & Guba, 1985) using the mapping and narrative iterations as data. The range of trustworthiness varied from marginal in one instance, to moderate in another, to having substantial confidence in the mapping and narrative with two of the programs. The limits and strengths of the mapping process as a research and evaluation tool were also assessed. The findings suggested that process mapping served best when combined with other forms of evaluation including the use of archival information, program design considerations, policy and procedural guidelines, information from program participants, and results and impact data. The maps and narrative were able to help point to a more complete description of the systems of service delivery if used in conjunction with these other considerations. They were best used in building a rich description of the actual working of a service program from which a thorough and meaningful evaluation design might emerge. In terms of their utility, it was found that the mapping provided a clear and integrated view of the processes and decisions throughout the provision of services. Using the expertise and language of the people engaged in the services, they provided a picture of linkages between a program's systems and structures and did so in the context of the program itself rather than from the context of an outside researcher. Finally, the process and decision maps provided a concise and connected visual display of program features that
was used to engage the participants in active and energetic dialog regarding their work. Thus the mapping appeared very promising from the standpoint of evaluation, systems analysis and design, and organizational development and change (Ahlen-Widoe & Williams, 1996). A detailed account of this evolution can be found in Appendix B.

*From Process to Systems – The Second Evolution*

"We have a large number of family-serving programs, but our services are scattered and unconnected. We think that’s our major problem.” This two sentence declaration from an agency director led to the first systems-level project and ultimately to re-naming the mapping process. The project involved creating a map of the systems of family support that existed in an entire community. Though the name came later, this project marked the evolution of mapping systems or Systems Mapping.

The community involved had successfully undertaken an effort to lower infant mortality rates and had broadened their organization into a Healthy Communities initiative. The issues they identified paralleled those found in the family support research literature. They were concerned about what services and supports existed (Wasik, Bryant & Lyons, 1990; Carnegie Task Force on Meeting the Needs of Young Children [Carnegie], 1994; Barnett, 1993), with the accessibility of services (Halpern & Lamer, 1988; Brunner, 1994), with the levels of services (Olds & Kitzman, 1993; Barnett, 1993), with the linkages of services
(Carnegie, 1994; Wasik, et al, 1993; Zigler & Weiss, 1985), and with the context and attitudes of service provision (Powell, 1993; Wagner, 1993; Weiss, 1993).

The community and the mapping team produced a completed Systems Map of the family support system over a 13 month period (Ahlen-Widoe & Leonhardt, 1997). The systems map ended up with six distinct but developmentally connected systems of family support services. These were: family planning and pregnancy prevention, pregnancy services, childbirth or delivery services, services for the baby at birth, family supports from birth to age three, and supports for families and children from age three to five.

This Systems Map showed that the community's family support system had a varied array of services available for their at-risk population. Access to services had the problems similar to those of other rural areas, e.g., distances between settlement areas and lack of transportation resources for people in poverty. The levels of services emerged as adequate to good though limited resources and funds had a dampening effect on how broad the support net could be cast. Linkages and collaborative connections among services in each of the six “system-of-systems” ranged from 5% to 25% of the possible connections among agencies, many unidirectional. This last finding essentially confirmed the hypothesis the community members had posed at the outset of the study. Family supports were available but few were linked in any meaningful way. While the context and culture of services emerged as technically competent, concerns were expressed over the contexts of service delivery and the lack of cultural
sensitivity (including a sensitivity to the culture of poverty that existed in parts of
the community).

One of the unforeseen results that occurred with the systems mapping
process was the development of intersubjectivity (O’Donnell & Tharp, 1990)
among the participants as evidenced in their spending longer periods of time at
the beginning of the sessions interacting, making plans, conferring about mutual
problems, and setting up collaborative meetings. The systems map also resulted
in a six month community-wide initiative to transform the systems of support to
families using a version of soft systems analysis modified for community use

In addition to evolving to a systems level with this project, there were
several other aspects of the mapping process that emerged as well. The first
involved the use of color to designate different aspects of the map. The map
created in this effort was large and complex, making it somewhat difficult to
follow. A suggestion was made and adopted to use color in the different
developmental systems of the map. This improved the understandability of the
map considerably. Another improvement was to map the formal and informal
linkages among services, and their directionality, which assisted in assessing
one of the major concerns of the participants. The third was the development of a
separate “Issues Map” which could be overlaid, via transparencies, onto the
larger map to capture the numerous issues involved without cluttering the map
itself. Details of the complete mapping process with this evolution can be found in Appendix C.

Policy and Planning – The Third Evolution

Policy and Healthy Communities. Using Systems Mapping for policy and planning purposes began as part of a consultation and partnership role with the Healthy Communities Initiative for the State of South Carolina. The first use was to help define and communicate what the Institute’s overall role was with the Initiative. The Systems Map developed for this purpose was used to help define what our work entailed and also to communicate what we were producing to State administrators and policy-level people (i.e., State department heads and members of the Governor’s Cabinet). Since we were doing complex work, and were actively involved in the decision and policy environment, we needed a complete yet concise way to communicate on this level – some version of a “gold standard” summary.

The second policy and planning Systems Map was created to assist in the development and implementation of a new State program: the “Investing in Healthy Communities” initiative. This program was designed to address issues of capacity building, citizen participation, leadership, leveraging of resources, identification and utilization of community assets, and evaluation of results produced. Included in the design was an Advisory Board of executive directors, Governor’s Cabinet members, department heads, and other officials who were able to provide resources and expertise in support local community efforts. The
project needed a simple and elegant way of communicating how the system
would work. The result was a Systems Map used in briefings, community
orientation sessions, and on site visits to ensure understanding of the program,
its processes, and goals. Appendix D details the development of Systems
Mapping for this purpose.

Program Planning and Grants. In 1999, California jails were experiencing
very high numbers of offenders with mental illness. As a result, the state issued a
request for proposals for demonstration programs addressing the crime reduction
needs of these offenders. One of the more difficult parts of the proposal was
gaining and expressing clarity in a project that would involve a number of
different agencies. In this instance, the Systems Map became a planning tool for
displaying several iterations of what such a program might look like. The program
planning team was made up of representatives from mental health, law
enforcement, alcohol and drug intervention, the courts, legal counsel, and social
services. The key questions in the intervention design were what would occur
(the steps of the intervention), when and where it would occur (sequencing), and
who would be responsible. Several iterations of Systems Mapping were used to
help gain the needed clarity on these issues. The map was also used as a part of
the proposal and in the presentation made before the granting authority's
Advisory Committee. Details of this use of Systems Mapping are contained in
Appendix E.
*Policy and Funding Purposes.* Systems Mapping has been used to provide information in graphic and pictorial fashion for policy and funding purposes. In one mapping project, a Systems Map was developed from the narrative of a consulting project to identify and describe the types and availability of medical insurance for people with HIV/AIDS. This involved communication and several iterations between consultants located in different states. Unlike any other mapping project, the consultant on the other end provided the participatory reviews by sharing each iteration with both her project partners and the clients involved.

There were several developments of note that occurred during this evolution involving policy and planning uses for Systems Mapping. In addition to using the standard symbols for mapping, the use of pictorial representations increased considerably. Development of Systems Maps in this arena seemed to require ensuring that the maps were more creative and interesting. There was a different level of "packaging" required to emphasize key points in the maps. Systems Mapping in the policy area in particular has required much more attention to the organization of the various facets of the mapping. For example, when considering information displayed for a policy briefing, close attention had to be paid to not only what was displayed but also what kind of understanding the display would invoke. In other words, this type of Systems Mapping has called for a cognitive resonance not just with the material but with the intended audience.
and message as well. The Systems Mapping process described in Appendix F illustrates many of these newly arrived features of the mapping process.

*Legislative Briefings.* Systems Mapping has been used to provide information for several committees of the New Mexico State Legislature on a very complex (and some would say convoluted) project. The Navajo/Gallup Water Supply Project has been in existence for over 40 years and the issues associated with the Project seem to have been beyond number. The purpose of the Project is to find the most desirable solution to supplying "wet water" (i.e., water to people for their use, as distinguished from “paper water” which deals with water rights and ground water supply issues) to the City of Gallup and a large portion of the Navajo Nation. One stakeholder having a key to unlocking a part of the solution is the New Mexico Legislature (the Senate and House of Representatives). The Northwest New Mexico Council of Governments has been involved with this project for approximately the last 12 years and decided to use Systems Mapping in presenting legislative briefings to two key Legislative Committees – the Indian Affairs Committee and the Legislative Finance Committee, both joint committees of the Legislature. Systems Maps were used to capture the needs and complexities of the diverse systems and inter-agency relationships involved in the Project. This use of Systems Mapping is described further in Appendix G.

The presentations, which included the Systems Mapping, were shortly followed by a $1.4 million allocation from the Legislature to support the efforts to
produce a solution. Given the protracted intractability of the situation, this action may have been an indication of some result produced by the use of Systems Mapping. The Chairman of the Indian Affairs Committee, a long-time Senator and himself a Navajo, reported that the briefing was the most interesting, easily understandable, and comprehensive briefing on a complex situation that he had seen in his years of service. If that were the case, hopefully the Systems Mapping contributed to that assessment.

The Next Evolution: Multi-Faceted Systems Mapping

The importance of collaborative efforts and partnership among governmental and community agencies, non-profits, and citizens’ organizations has been well documented. (Rappaport, 1977; Heller, Price, Reinhartz, Riger, & Wandersman, 1984). However, even when the need to cooperate and collaborate is clear, the actual designing and establishing of viable partnerships is not easily accomplished. This is particularly true in contexts where competition for limited funds has been the norm.

Approximately one year ago, a city located in a rural area of the country recognized a problem in an area they dealt with every year. They decided to do something about it. Annually, the City Council was faced with deciding how to allocate over $800,000 tourism-related dollars from the their Bed Tax Fund (funds that the state returned to the city from taxes added to hotel/motel use). The allocation process used to this point had involved various activities and events competing in open meetings, and often behind the scenes, for money to
support their singular needs. As one person put it, “We ask these people to come to a public meeting, bare their souls, and beg for money. That’s not right.” City elected officials and administrators believed that the current competitive process has produced conflict and fragmentation. A little over half of the Bed Tax Fund has been allocated to support a Visitors Bureau. While the remaining amount doesn’t seem like much money in today’s scheme of things, using the money effectively has been seen as very important to the city’s scheme.

Directly and indirectly, tourism has been a highly significant industry in both the city and the state. The Bed Tax Fund was established by the state’s legislature to support the growth of this industry. Tourism income hasn’t simply taken the form of “heads in the beds,” which has been one of the primary goals of the Bed Tax Fund. Throughout state and particularly in the city, the economic well-being of the area has been dependent on tourist-related spending which includes local arts and crafts, people wanting to experience historical sites and the natural environment, and other activities and events that the area has become known for.

There are unique demographic, and cultural factors that come into play when attempting to design a workable plan for promoting the area. The city population has a very diverse ethnic makeup which affects how business is conducted in both the public and private sectors. A little over one-third of the city population is Native American, primarily deriving from people who have migrated to the city from two Indian reservations located in the region. Approximately
another one-fifth of the city population is of Hispanic origin. Members of these two groups have been active civically and have been elected and/or appointed to local councils, boards, and commissions. Compared to other areas its size, the city has a rather significant population of people with Middle Eastern origins who tend to be successful entrepreneurs and who generally have not been very involved socially or politically outside of their own group. Less than two percent of the population are of African-American and Asian decent combined. The remaining population is primarily white and of mixed European ancestry. Some members of this group hold significant amounts of financial and political power in the city and throughout the region.

While there is considerable interaction among most of these groups, there is also a large amount of suspicion, mistrust, and competition. Though not exclusively so, insider-outsider groups tend to fall along ethnic lines. When mobilized to action, the ethnic groups can have a significant impact on local the political power structure. The distribution of and disparity in wealth in the area generally falls along ethnic lines (white, Hispanic, Native American in descending order) which further aggravates the situation. While cooperation to address the needs of the area is critical, the underpinnings of a cooperative context are inclined to be tenuous at best.

There are other economic factors that affect the area in general and the tourist industry more specifically. Both unemployment and poverty rates in the region are high. On average, these rates are two to three times the national
average rates. According to 2000 US Census maps, there are large rural areas of the region where unemployment ranges as high as 70 to 100% and where the percentage of people at or below the poverty rate is as high as 79%. There are a number of services, both governmental and non-profit, located in the area designed to address these issues. However, the directors and workers of these services consistently report that there just are not enough jobs available in the region to support their job readiness and training efforts. Those jobs that are available, as elsewhere in the country, tend to be low paying service jobs related to the retail, food, and hospitality industries. One of the commonly voiced beliefs is that these industries provide sub-standard service and, as such, adversely affect the tourism industry.

Another effect of the difficult economy affecting tourism is that there are a number of run down and deteriorating areas of the city. Even though the region enjoys a natural environment and historical significance that draws tourism, many of the views both from the highways and through the city itself suggest blighted and inhospitable conditions spotted throughout the area. While the conversation about these conditions on the civic level ranges from denial to critical, there is a commonly held commitment to improving the image and marketability of the area. However, the limited tax base and other pressures on the city's resources have constrained the types and amounts of actions available.

One such pressure has been that the city is the largest destination for goods and services in the region. Estimates are that the population of the city
more than doubles on the weekends and that it is center of commerce for a population over five times its own population. Thus for planning and infrastructure purposes, the city has to take into consideration a population of from two to five times the number of its actual residents. The upside of these expanded numbers is the influx of money to the local economy. The downside is the strain on the city's infrastructure, which doesn't allow for additional support in developing and promoting, or even fully identifying, the assets of the community and surrounding area. This further adds to the importance of designing an effective Bed Tax allocation and utilization system.

In addition to these “rational” reasons for revisiting the Bed Tax process, the drive to revise the Bed Tax allocation process had come from a number of other sources. The most recent and obvious source had been the City Council session during which the current year's allocations had been made. The meeting had been described by a number of people as confrontational and rancorous. Several months prior to the end of this study, one of the City Council members told me that he had been the primary source of most of the discord. In the meeting, he had demanded that representatives of groups requesting money show how their events and activities brought any benefit to the city. He further said that the session had been quite heated. Though reported privately by nearly everyone involved in the revision process, the issue of conflicts of interest was an underlying source of dissatisfaction with the process. In point of fact, two of the City Council members were leaders for two of the organizations requesting
funding. Moreover, three members (a majority) of the Advisory Board charged with making funding recommendations to the City Council were key members and leaders of groups requesting funds. Another undercurrent source of dissatisfaction, again communicated privately, was with the allocation of over half of the funds to the Visitors Bureau. In the initial phases of the study, this discord seemed to be the product of personality conflicts with the director of the Visitors Bureau and other stakeholders. We were later to find that there was more to the story. Publicly these factors were communicated as a need to reduce competition and fragmentation in the process. Privately, they came out in polite terms such as "special interests" and not so politely as the "fox in the hen house." One of our mapping team members later summed it up as, taken together, these issues were "like the elephant in the living room that no one talks about."

One other factor seemed to be significant to the mix of issues. As stated earlier, the city is in a largely rural area. Most of the significant players in the situation were born and raised in the city or the immediately surrounding area. As a result, the relationships and networks that existed were long-standing. To an outsider, these networks were not always obvious. Moreover, many of the networks were at odds with one another, vying for power and influence. On a number of occasions, I found myself listening to unsolicited stories about how someone involved in the process had disrespected or selfishly put their own interests before that of others (and implicitly, the public good).
The foregoing, some of which was discovered as the study progressed, was the context within which the revision of the Bed Tax allocation process was to occur. The public response to address the issues related to the use of Bed Tax revenues was for the City Manager, Mayor, and City Council to form a Bed Tax Revision Committee (referred to as "the Committee"). The Committee was made up of key city officials, members of the Advisory Board on the use of the tax, and the stakeholders who were applying for funding. The city was a member of the region's Council of Governments and, as part of its task orders with this organization, had requested the Council to facilitate the committee meetings and write both progress reports and the resulting Allocation Plan. Over an eight month period, five meetings had been held with the Committee. The initial guidelines for the planning effort were put forth as reducing the competition in the process, eliminating fragmentation where possible, providing for maximum leverage of the funds and benefit to the community, and designing a cooperative planning process for both an annual and a five-year allocation plan.

Two Council of Governments staff, both of whom had a long standing history with the city and with the Bed Tax process, took on responsibility for the project. I didn't join the project until approximately midway. Given the need to promote cooperation, staff had determined that an interactive and inductive committee process would be used, and that ideas would be collected and ultimately organized into a plan that could then be presented to other city administrators and the City Council. The thought was that a draft planning
framework could be developed from the initial meeting, and then added to and modified in subsequent meetings. In actuality what happened was that many of the major stakeholders did not attend after the first meeting, i.e., even before a draft planning structure could be presented. Speculation on the matter was that, because some of these stakeholders had benefited from the current practice, they may have had little or no desire to see the process change. Another possibility was voiced by one of the participants: “Some folks believe that things are pretty much the way the always were and they’re pretty much going to stay that way.” Overall attendance at meetings dwindled and had been sporadic except for three or four people who have attended all meetings (in addition to one city official and Council of Governments staff).

An interesting dynamic seemed to emerge from the Committee meetings. When the planning documents and reports from prior meetings were reviewed in subsequent meetings, the reaction from meeting to meeting can best be described as “No that’s not it, this is it.” This reaction may have been in part due to the shifting attendance and in part, the inertia from some stakeholders. Speculation has also been that the changes also may have derived from not knowing exactly how to create a new way of thinking about the use of Bed Tax funds. Whatever the reason, the planning and policy recommendations were largely at a standstill.

Nevertheless, the prevailing opinion was that there had been some value to the work that had already been done. The meetings had been fruitful in terms
of defining the some of the issues that needed to be addressed in a redesigned
Bed Tax process. In short form, these issues were as follows:

- There was a need to regain and increase the city’s market share of
tourism dollars generated in the state. While the Bed Tax fund had
remained constant, market share has been decreasing over the past four
or five years.

- Accountability systems were weak and needed redesign to ensure that all
Bed Tax dollars were being collected.

- One of the top priorities was maximize the leveraging of Bed Tax funds
through coordinated and cooperative efforts among activities and events
with a focus on overall benefit to the community. Reducing the
fragmentation and competition that currently existed was thought to be the
only way to accomplish this.

- Increasing participation and leadership from residents in the community in
an activities and events system was a desired result.

- Another priority was the development of a culture of “service” throughout
the public and private sectors in the community and surrounding areas so
that visitors felt valued and well cared for.

- A multi-level evaluation system was needed to evaluate the redesigned
allocation process. Specifically, the program should be evaluated on a
systems level (the overall program processes, policies, and results), and
an activity and events level (results-based along with formative information as well).

- Any plan must include a recognition of the varied cultural heritage and values that existed in the city and the surrounding area, and long range plans must include other parallel interests in the region (e.g., ethnic and cultural interests)

- Overlaying all of the above was the need to develop an Operating Plan that accounted for these factors, that provided for effective short and long-range planning, that guided policy development in a meaningful way, and that furthered the purposes and goals of the Bed Tax fund.

At the point that I entered the revision process, both the Council of Governments team and city officials were beginning to express frustration with the lack of progress in coming to agreement on a plan that could be recommended. Our team considered several alternatives at this point. The first was to continue as we had and meeting more frequently with the Committee in hopes that some agreement and a solid plan would develop. This alternative included making more concerted efforts to increase attendance through individual and personal contacts. I also introduced the idea of using a dialoging process (Senge, et al, 1994). The thought was that dialoguing might allow for deepening the interaction to uncover the sources of the inability to reach convergence on a revised process. There were two drawbacks we ultimately saw with using a dialogue process. First, dialoguing depends on participants learning
and accepting the guidelines as a way of communicating with one another. To be effective, dialogue requires building trust in the process and among the participants, which can require some time to accomplish. The second drawback was that we weren’t clear about what political and interpersonal risks might be associated with the lack of agreement to date. In other words, we felt we might open up conflicts that we were not in a position to handle.

Another alternative we considered was meeting with stakeholders individually to collect their recommendations and then looking for themes of agreement from their individual inputs. This alternative had the advantage of addressing a growing number of comments that we had started receiving about domination of the Committee meetings by one or two people. However, it had the disadvantage of being time intensive.

As a third alternative, I introduced the possibility of using a Systems Mapping process. Systems Maps have the advantage of taking key concepts and relationships and displaying them graphically. Our team had recently used this approach to clarify and communicate, with some success, what seemed to be a much more complex system than the Bed Tax revision presented. Moreover, Systems Mapping has the advantage of being designed to be highly participatory and iterative. This factor might have the advantage of ensuring higher levels of Committee agreement and ownership in the final product.

In the final analysis, we chose to engage in the Systems Mapping process. We felt that it held the most promise for developing a clear, concise plan
that everyone might be willing to agree to. Moreover, time was an important consideration in our choice. City officials were pressing for a resolution to the situation so that a new process could be approved and used during the current fiscal year. The other alternatives might have required more time than was available.

To date, Systems Mapping had been used singularly for program and systems development, for conducting research and evaluation, for guiding and informing policy development, for identifying points of linkages – both actual and potential, for designing and promoting collaborative systems efforts, and for informing funders, stakeholders, policy makers, and citizens. Because of the complexities of the Bed Tax situation and the multiple-sector participants, we thought that using Systems Mapping with the redesign of the planning and implementation process would provide an opportunity to combine many of these uses into a single mapping project. I hoped this use of Systems Mapping could benefit the community as well as provide an opportunity to assess the utility and results of using this process in a multi-faceted context. The purpose of the study below was to tie all of the diverse elements together, facilitate the successful design of the Bed Tax process, and to assess Systems Mapping’s contribution to the process. What actually happened was unexpected, though interesting and instructive with regard to the uses of Systems Mapping in this kind of an environment.
CHAPTER 2: METHOD

The intention of this study was to use standard Systems Mapping methods as they had evolved to develop the Systems Maps needed and to evaluate the trustworthiness of their content with the Bed Tax revision. In order to address the identified factors and needs of the revision and operational plan, we planned to use Systems Mapping in a multi-faceted approach to the development and adoption of a revised Bed Tax system for the city. We recognized that the development of a revised program was already underway when the Systems Mapping process was initiated. What we didn't recognize was that this factor was to have significant ramifications for the methodology actually used. Another unforeseen factor impacting the method used had to do with our professional relationship to the owners of the process, i.e., the city officials involved. In doing work for the city, our relationship is as quasi employees of the city. This factor later proved to shift the locus of who was in charge of the process occurring from our working team to the officials themselves. We knew from the outset that we would have some deviation from standard Systems Mapping methods, but we couldn't foresee the extent to which this would go.

Standard Systems Mapping Method

In brief, the steps in standard Systems Mapping methodology include the following:

1. Preplanning meeting. Usually a preplanning meeting is held with the owners of the system being mapped. Owners may be program or
organizational leaders, or community leaders depending on the context of the study. The owners are those people who can ensure that the Systems Mapping process can be completed or not. This meeting is used to clarify the parameters of the process, to identify who should be involved, and to generate questions and issues to be addressed. In many instances, particularly when all of the participants are involved, this meeting serves as an organizing meeting in which the operating statement that drives the mapping is developed. When broader groups are involved, a separate organizing meeting may be necessary in order to engage all of the participants in the process.

2. **First Iteration Systems Mapping.** In standard Systems Mapping method, this step involves the participants in an interactive process of describing the system. This process is similar to that of a focus group although it is generally more free flowing and open ended. One mapping team member uses mind mapping techniques to capture the key concepts and activities of the system. The second team member records a narrative of the various points in the system using standard field notes. Both team members facilitate the process. Once the data has been collected and the session ended, the respective team members convert the mind map into a Systems Map and the narrative into a word processing version.

3. **First Iteration Review.** This review is usually scheduled approximately two weeks after the first session, and involves all of the participants in
reviewing and providing suggestions for improving the accuracy of the Systems Map. In practice, changes are generally numerous at this point. Participants also review the narrative, primarily for content. The mapping team records additions and corrections to the map and narrative. Changes to the map are usually made on the current version using mind mapping techniques, though on occasion a new mind map may be needed to capture more extensive revisions. Between this meeting and the next, the mapping team uses the products of this session to create the second iteration Systems Map and narrative. The team also meets internally to make sure that the mapping and the narrative are in sequence with one another.

4. **Second Iteration Review**. Participants review the revised version of the map and narrative. In many instances on a program or project level, this review involves relatively minor changes in the map and narrative. In this session, the mapping team and participants focus more on synchronizing the sequencing of the narrative with the map than in the previous session. The mapping team uses the same procedures for recording changes and producing the next iteration map and narrative as in the first iteration review.

5. **Third Iteration Review**. In the majority of Systems Mapping processes done to date, this step has involved a final review and approval of the map and narrative. While it is not unusual for participants to provide some "fine
tuning” detail, major changes in the map and narrative at this stage generally signal that something else may be going on with the system or participants that is not being addressed. Such major changes call for the mapping team to explore the situation with the owners and participants in more depth to find the causes of the variations. Until the current study, this condition had only emerged in once in previous Systems Mapping processes.

6. **Using the Systems Mapping.** Once the Systems Map is considered complete by the participants and owners of the system, the map and narrative are used for whatever purposes the mapping was undertaken. These purposes might include evaluating the system, implementing a plan based on the mapping, providing informational briefings, transforming the system, or a combination of these.

*The Method of This Study*

In most Systems Mapping projects, the methodology has unfolded in a relatively straight-forward manner, though the results have varied considerably in some instances. The current case proved to be much more complex, which required adapting the overall approach to developing a revised program and modifying the use of the Systems Mapping process as well. The differences and departures may have had a significant impact on the results for a number of reasons.
Preplanning Meetings

The first variation in the planned methodology occurred almost immediately. It had been generally customary and desirable to conduct a preplanning meeting with the "owners" (Checkland, 1979) of a project, i.e., with those who have the responsibility for and the authority to implement a final result. Before such a meeting could be scheduled, the primary owners of a revised program, i.e., city appointed and elected officials, initiated individual meetings with various members of our working team (Council of Governments staff). All of these officials had taken an active role in reviewing the work of the committee and expressed a desire to move the revision process along more expeditiously. It thus seemed advisable to forego a combined meeting.

The result was that the preplanning process became dependent on the working team's internal communication with one another, and on piecing together the intent of the individual communications and perspectives. The team met on three occasions to combine impressions and notes, and to review the progress of the project to date. The first iteration Systems Map and narrative were then produced.

First Iteration Systems Mapping

There had been a considerable amount of narrative produced from the previous meetings of the Revision Committee, including text and simple diagrams of various facets of possible change. While these had not produced the desired revisions, the narrative seemed to provide some broad ranging insight
and ideas into factors involved in the Bed Tax process and the direction of the revisions. Additionally, given the amount of time and effort put into this project to date it was seen as doubtful that participants would be willing to engage in a first iteration Systems Mapping session. It was considered likely that they might see such a session as “starting over.” In order to expedite and facilitate the process, the first step in the actual mapping was to use the existing data from the committee work to produce a first iteration Systems Map. This first iteration was guided by the results of piecing together an analysis of information provided by officials noted in the individual meetings they initiated.

This iteration of the Systems Map was developed similar to the process used in the HIV/AIDS project described in Appendix F. The key concepts and processes were mapped using the existing data. As the mapping member of our team, I first developed a mind map of the system. This use of mind mapping, which was a significant departure from its standard use in a participatory process, was the only significant mind mapping done in the study. As attempts at the development of a revised plan unfolded, the lack of an open, participatory process precluded any extensive use of mind mapping. From this mind map, I used MS Visio 5.0 to develop first iteration Systems Map using standard symbols and connectors, and added additional graphics to enhance the understandability of the map and to make it more interesting. Our team developed a narrative that included a synthesis of the existing data and direction provided by the officials noted. The first iteration Systems Map and narrative were then ready to be
submitted for review as a “Proposed Bed Tax Plan.” At this point, another intervening event occurred that shaped the way in which the review was done. City officials requested that the presentation be made, preferably in the form of a PowerPoint presentation that put forward recommendations for completing a plan. This required showing the Systems Map more or less in component parts. Displaying Systems Mapping in a PowerPoint venue had been done before with the legislative briefings noted above and had contributed to a positive result. Moreover, narrative and recommendations had been inserted between the informative and recommendation portions of the legislative briefings, seemingly without detracting from the overall result. The presentation was developed and delivered along with the presentation equipment to the appointed meeting place.

First Iteration Review

The review of the first iteration Systems Mapping, a proposed Bed Tax Plan, was held in the City Council chambers. The chambers are configured similar to a lecture hall with seating theater-style and each row higher than the next. The chambers are designed to accommodate 65 people total. At the front of the room is an elevated rostrum that extends in a semi-circle across the width of the room. There is seating for the Council members, the Mayor, the City Manager, and the City Clerk. The screen for viewing the presentation was set up in front of the rostrum and the presentation equipment (computer and projector) in front of the first row of seating for the audience.
Eleven people total attended the session. This included the three members of the Council of Government’s working team, three City officials, four of the Revision Committee members, and a member of a stakeholder group who was attending for the first time.

The mapping symbols used were reviewed at the beginning of the meeting, and participants were provided with a printed legend defining the significance of the symbols for their reference during the session. Changes in the mapping and narrative were recorded during the session by recording changes on a printed version of the map. The results of this session were then used to produce the next iteration.

The Second Iteration

At this point, the working team met to review the issues and changes that had been surfaced during the review session. As with previous sessions with the Revision Committee, the changes had been substantial in that there was at least one major component of the suggested system that had been eliminated and there were a number of other changes suggested. The working team then reviewed the changes and proceeded to develop the next iteration. The team was aware that numerous changes, particularly after so many attempts at presenting a viable proposal, might be an indication that further exploration beyond the mapping process itself may be necessary. For example, it was thought that there may be a lack of congruence on the part of the people involved as to the purposes and goals of the project or that there were some issues and
agendas that were not being expressed openly (Ahlen-Widoe & Williams, 1996). It was thus decided that the next iteration would be based not only on the material from the review session but also on internal brainstorming based on the experience and data that had been collected from previous sessions. This seemed particularly appropriate since I was producing the mapping and had not been involved in several of the first Revision Committee sessions. The brainstorming was completed and the next iteration produced. This iteration included a five page Systems Map produced on standard letter sized paper (8 by 11 inches). It included an introductory section that explained the purposes and general findings of the Revision Committee process, the Systems Map, and a narrative that provided details of the systems operations.

The Second Iteration Review

City officials were notified and the next iteration package delivered to them. Another departure from standard Systems Mapping processes occurred at this point. The officials requested that we meet with them alone to review this iteration and that the revised proposal not be distributed to the Revision Committee. Two members of the working team subsequently met with two of the City officials. The changes recommended were noted and it was requested by the officials that the next iteration proposal be submitted and reviewed by them directly again.
The Third Iteration

The changes suggested were incorporated into a third iteration of proposed revisions to the Bed Tax program. The bulk of the changes that were made were to the Systems Map, primarily because we had been told in the above session that the five pages of mapping had been difficult for some to follow. The Council of Governments had recently purchased a wide-carriage color printer, so the Systems Map revisions were made in an 11x17 inch format. This reduced the number of pages for this iteration. Initially, the revised system was contained on one page. However, it was decided to include a cover page that displayed an overview of the proposed operating principle for the Bed Tax program, the program purposes and goals, the roles of the Bed Tax Advisory Board, and an abbreviated graphic version of the steps in the proposed program. A gray-scale legend with the systems mapping symbols was also included for easy reference.

The narrative was then revised to reflect the changes in the Map. In addition, the introductory section was expanded to add more information on reasons why the revision of Bed Tax program had been undertaken. Just prior to our completion of this iteration, it was requested that an organizational chart displaying the relationships of the various entities involved be included. We completed the chart based on our current understanding of the relationships and included it with the proposal.
The materials were packaged into presentation folders and five copies were delivered to the City officials. It should be noted that our team had become concerned that the Revision Committee had not been included in the process, and had not participated in the changes made in the last two iterations. As a result, we included a cover letter recommending that the report be considered confidential and that it not be shared beyond the officials involved and the Mayor and Council, i.e., before it was shared with the Revision Committee. We also recommended that the Revision Committee be brought back into the process.

The Third Iteration Review and an Intermission

The next review was held in an office in the City Hall with two members of our team and the same two City officials involved in the previous review. During the meeting, one of the officials decided that the marketing consultants retained by the City should be included in the review process before any further steps were taken. The package of materials was to be submitted to the consultants and we would reconvene when their suggestions had been received. No further changes to the proposed program were made in this session.

Our working team contacted the marketing firm consultant assigned to work on their review of the proposal as requested. The contact was made via a conference call to the firm’s office in a metropolitan area several hours away. The background to the situation was communicated to the consultant, and the parameters of the request for review were communicated. Essentially, the review was to include an analysis of the feasibility of the proposal and suggestions for
improving or revising the Bed Tax process further. It was decided during the conference that the package of materials would be sent to the consultant electronically via e-mail, after verifying the appropriate format. Immediately following the conference call, the Systems Map was inserted into a MS Word document so that they could be received and read by the consultant, who did not have access to the Visio graphics program used to produce the Map. The materials were then sent to the consultant along with a request to send our working team a copy of their suggestions when they were sent to the City officials.

Then there was a lengthy “intermission” in the process. The development process ended up being at a standstill for over three months. During that period of time, members of our working team contacted the City officials involved at approximately two week intervals to inquire about any progress and to see if there were further steps we should undertake. However, the process remained on hold until the report from the consultant arrived. Once a report did arrive, the process was held in abeyance for approximately three more weeks. Our team was then contacted and it was requested that we prepare an additional 15 copies of the materials to be distributed to the City Council and other City officials. We delivered the copies as requested.

The following week we were informed that the Bed Tax revisions had been calendared for the next City Council Information Session. The City Council Information Sessions are official meetings of the Council that are held for
information gathering purposes only. While presentation at these sessions is required for any item that is to be scheduled for Council approval, no vote or official action can be taken by the Council in the Information Sessions. These sessions are designed to have a free flow of information, questions, and answers among the Council, the presenters, and the public in attendance (the sessions are advertised public meetings). By request, we participated in the Information Session to discuss the Bed Tax revision process.

The Information Session Review: Back to the Revision Committee

Two members of our working team participated in the Information Session. The four Council Members, the Mayor, the City Manager, and the City Clerk were in attendance. Concerns were expressed by several members of the dais that the Revision Committee process had not been utilized to develop and review the current iteration proposal. Ultimately our team was asked for a recommendation on how to proceed. Because of our concern that there might be unspoken issues and agendas, we recommended a three-step process for re-engaging the Revision Committee, which was approved.

The first step involved sending the current iteration package to all members of the Committee and to request their individual comments and reactions via written response or by contacting us in person. It was thought that this method might allow Committee members to respond more freely without pressure from others in the group setting. The second step involved a systematic analysis of the comments by our working team including identification of key
categories of issues, concerns, and recommendations. The third step would entail reconvening the Revision Committee to, if possible, present a final report that at minimum provided alternatives for a more workable Bed Tax process for the City. Once these steps were completed, the matter would be rescheduled for another Information Session. This approach was approved by consensus of the Council Members and other officials in attendance. It was also requested that the steps be taken as expeditiously as possible.

The proposal under consideration was reproduced and sent via standard mail to all of the members of Bed Tax Committee. A turn-around response time of 10 days, calculated from the time of receipt of the package was requested. Three responses were received, including two organizational responses and one from an individual member. The former were written responses and the latter was via an hour-long phone conference during which field notes were recorded. Two additional responses to the proposal were obtained. One was from a City Council Member who was speaking as a representative of one of the stakeholder groups, and the other was from two members of an organization that requests Bed Tax funds for their on-going services annually.

The comments were recorded into a word processing document in an open-coding format (Strauss, 1987). This format calls for using wide right-hand margins, which provide space for coding hand written comments used to develop key categories of the data. Based on this analysis, we could see that many concerns and issues that had prompted the creation of the Revision Committee
were still unanswered in the current iteration proposal. This prompted the working team to take additional measures to attempt to clarify the situation.

A Retrospective Analysis and Map

The first measure involved compiling all of the notes from the early sessions of the Revision Committee, i.e., from sessions that identified concerns, issues, and needs that should be addressed. These sessions were those that pre-dated the use of Systems Mapping, which had to this point been used primarily as part of the process of proposing a revised Bed Tax program. The resulting data was converted into a text file, which was analyzed using the ATLAS**Ti** program. This analysis yielded categories of problems, concerns, issues, and needs that proved to be consistent with many of those provided in feedback from the Revision Committee. This led to our taking a second measure which involved revisiting the current Bed Tax system.

In process mapping methodology used with businesses, the mapping process starts with mapping and analyzing the current operations (Hunt, 1996; Jacka & Keller, 2002). Egan (1988) places a clear and accurate description of the current scenario in an organizational process as the first in a multi-step process for managing change and innovation. In soft-systems analysis (Checkland, 1981; Checkland & Scholes, 1990), two of the phases involved in transforming a system are to account for the problem situation or issue in both its unstructured form and as it is expressed in operation. In all previous Systems Mapping projects – whether for evaluation, informational, or transformational purposes –
the first step had been to map the target systems as they currently existed. We had overlooked this step in the current instance because the mapping had started in the middle of the revision process, i.e., as the Revision Committee was developing its recommendations for a revised program. Because of the lack of agreement regarding a proposed revision to this point, we decided to create a Systems Map of the existing Bed Tax system. The resulting Systems Map displayed the current system and, consistent with a soft-systems approach (Checkland, 1981; Checkland & Scholes, 1990), we located the major issues associated with the system on the map where these issues occurred. This Systems Map was reviewed internally by the other two members of the Council of Governments working team. These team members had been involved with the Bed Tax program in the City in one form or another for a number of years, and were quite familiar with the process and associated issues. Moreover, they were the staff in attendance when the City had commissioned the Council of Governments to facilitate the Bed Tax Revision Committee and report on its recommendations. The additions and suggestions from the team were incorporated into the map. At that point, our intention was to have the map reviewed in meetings with City officials, the Revision Committee, and ultimately with the Mayor and City Council in a Information Session meeting. However, because a number of the issues had the potential for being politically charged, we decided to submit the map of the current system to the City officials and request a private review with them before proceeding further.
A Final Review

We subsequently met with the officials involved and reviewed the current status of the revision process using the Systems Map of the current system as a guide. The officials decided that there were significant issues that needed addressing before any revision process could continue, and that continuing to involve the Revision Committee as a course of action would be inadvisable at this point and perhaps in the future as well. Further action was to be put on hold indefinitely and a letter was to be drafted to the City Council informing them of the general nature of this change in plans. Because it could not be predicted either when or if Systems Mapping would be appropriate to use with future developments, this part of the Systems Mapping study was terminated.

Assessing the Contribution of Systems Mapping

There were two methods used to assess the contributions of Systems Mapping to the Bed Tax revision process. The first method was to use the guidelines noted earlier from Lincoln & Guba (1985) as a template for establishing the “trustworthiness” of the data. These guidelines were restated as questions to be answered as follows:

- Credibility – was the “truth value” of the study established through prolonged engagement and persistent observation with the participants and by triangulation – looking at the same situation from different perspectives with different observers? Was it also established by using multiple sources, methods, investigators and/or theories?
• Dependability – how much can the study be counted on and how consistent is it? Does it include those things that can be considered predictable as well as identifying those things that are unpredictable? Was there an examination of the data conducted by either an outside, or an inside outside person of processes (process notes, instrumentation, intentions, proposals, expectations), of products (data, findings, interpretations, and recommendations) and of records to determine their coherence and fit?

• Transferability – is the study applicable – or useful – in other contexts or settings by providing detailed data and descriptions of the research so that its applicability in other settings can be determined?

• Confirmability – are the data unbiased, factual, confirmable or confirmed, and so on, as established by using the above methods for determining trustworthiness?

The second method was to obtain an assessment of Systems Mapping's contributions from participants involved with the Bed Tax revision. Interviews were conducted individually and involved City officials (appointed and elected), members of the Revision Committee, and stakeholders who self-identified themselves as a result of their attendance at the City Council Information Session (see Appendix H for interview questions). These assessments were obtained from 10 participants. The sessions were designed to obtain their
impressions of the Systems Mapping as used in the process in the following areas:

1. Their overall reactions to the use of Systems Mapping.
2. Their thoughts about what worked well with the Systems Mapping.
3. Those things that they felt didn't work well and any changes they would recommend.
4. Whether the Systems Maps accurately reflected the activities and systems involved.
5. Any thoughts that they had about the strengths and weaknesses of using Systems Mapping in a situation like the development of a Bed Tax Plan.
6. Any other comments and reactions they had about the use of Systems Mapping.

The inquiry in practice was free flowing and sufficiently open-ended so that many of the participants’ comments addressed more than one of the areas in the structure above. The participants’ responses were recorded in field notes. The identities of the participants were kept completely anonymous in that the notes contained no identifying information, nor were any list and coding of participants produced. The responses obtained were transferred to a word processing file in open-coding format for later analysis.
CHAPTER 3: RESULTS

This study was conducted to produce results on two levels. The first level was designed to provide access to understanding, cooperation, and action in the revision of the Bed Tax program through the use of Systems Mapping. That is, based on input and review of the various participants in the revision process, iterations of Systems Maps would be produced which would be progressively more refined and lead to a viable program. It was hoped that this level would result in agreement among the Bed Tax Revision Committee, other interested stakeholders, and the City elected and appointed officials as to the policy and procedural changes that would effectively address the issues that had prompted the revision effort. The second level of desired results was designed to assess what contribution the Systems Mapping had made to the revision effort. This result was the product of interviews with participants who had been involved with the Systems Mapping process. Additionally, there were spontaneous expressions related to the Systems Mapping as we engaged in the process that were recorded and used in the assessment as well. This section will engage the results of these two levels in turn.

First Iteration Systems Mapping

The first iteration Systems Map was a product of the working team meeting to identify the key elements of the Bed Tax proposed revisions that had been recorded in earlier sessions with the Bed Tax Revision Committee. Once these key elements were identified, the first iteration Systems Map was
developed. This map was then reviewed and refined by the team members to reflect our understanding of the issues and suggested revisions that had been proposed to date. Since many of the symbols used in Systems Mapping have a standard meaning, we also developed a handout identifying the meaning of these symbols. This handout acted as a "legend" to the mapping and was used throughout the various phases of development in the project to inform and remind participants of the symbol meanings. Figure 2 shows the symbols used in the legend. The Systems Map resulting from our working team's development process can be seen in Figure 3. This first iteration map was distributed at a Revision Committee meeting in a printed version, and was broken down into a PowerPoint presentation shown to the participants. A printed version of Systems Mapping symbols was also distributed and reviewed with the participants to increase their understanding of the map. The narrative portion of the mapping was interspersed throughout the presentation to provide detail for the proposed system. The key categories of activity were identified as coordinating, capturing available funds, evaluating the processes and results, using funds effectively, and allocating funds in a manner that would account for who would be involved and how. Issues affecting the system that had surfaced to this point were also included in the map.
Figure 2. Systems Mapping symbols
Leveraging resources

Collaborative
Marketing

Minimize FRAGMENTATION

Research & assist in development

PLAN Year-to-year 3 to 5 years out

ISSUE: Will this actually account for that much increase?

Design & Implement an auditing program

Account for accuracy of data

Monitor & enforce

CAPTURING AVAILABLE

COORDINATING

Information to & from all groups

PLANNING

VISION

BED TAX

Figure 3. First iteration systems map
BED TAX
Domains of Activity (continued)

ISSUE: Scope of evaluation -- how much to share.

Figure 3 (continued). First iteration systems map
Using Bed Tax Funds Effectively

Collecting usable data → Analyzing results and impacts

Model of coordination with users

Planning & Vision driving

Allocating resources

Managing finance

Decisions about priorities

Budget

Issues:
- Turf issues: collaboration is an action, not just a nice word
- Business climate: what's needed is "one for all and all for one"
- Marketing the whole community: guests here see it all, not just parts
- Who approves the plan & uses a flag bearer is needed so the rest of us can salute

Figure 3 (continued). First iteration systems map
Figure 3 (continued). First iteration systems map
First Iteration Review

During the review session, a number of changes in the system as presented were suggested. The most significant changes made were in the Allocation Plan Process and the idea of a "Cooperative Marketing Consortium." The first change suggested was that the "Governments and Other Funders" component be removed. The concern expressed here was that the other governments were not contributing funding to the Bed Tax program. Moreover, negotiating and gaining approval for shared funding was seen as a highly complex issue, particularly with the involvement of sovereign tribal governments. The idea was thought to be a good one on a long-range basis but one which was considered beyond the reach of the current revision efforts. The elimination of this component meant that there was no need of a "Core Group" function as well. Another change made was eliminating the inclusion of a "Planning and Advisory Group" made up of stakeholder groups. Though there was a strong desire to make the program more cooperative and "friendly," members of the group predicted that the costs in time of this level of involvement by stakeholders would far outweigh the benefits. Thus the addition of this component seemed to add an unneeded additional layer to the system. There were additional questions as to how the revised program would be administered, though these questions largely remained unanswered during the session. The final result of the review session was that the idea of developing a cooperative marketing process was a good one. The notion of
forming a consortium seemed too complex and unwieldy to warrant pursuing at this point.

There was general concurrence with the "Domains of Activity" part of the system as shown on the Systems Map. One of the changes suggested was that evaluation on the "Event Level" was something that should be left up to the special events organizations themselves. It should be encouraged, but the effectiveness of supporting special events in the Bed Tax system would more likely to be significant on the "Systems Level" than in any attempt at evaluation on an events level. The other components of this part of the system were seen as needed and were recommended for inclusion in the revised plan. One important factor remained at the forefront however. The lingering question remained: how was the Bed Tax plan to operate and what were the roles of the various entities involved to be? It was left up to our Council of Governments working team to develop the next proposal for revision of the program.

The Second Iteration

The second iteration Systems Map was actually the product of a series of internal iterations with our working team. We held several meetings to sort out what we thought we heard – what should be kept and what should be changed. This process was quite similar to the memoing process described by Strauss (1987) for developing grounded theory about a program. This memoing process led to the development of an interim iteration map, which
we again reviewed and added to. It seemed clear that the issue of cooperative development was a needed component. This most probably would be in the form of a cooperative marketing plan. Because this was a departure from the past practice of events and services applying individually for funds, we thought it important to include a mechanism for the stakeholder groups to have a collaborative voice in the development of the plan.

The operations of the Bed Tax system also needed to be delineated, from front end collection of Bed Tax revenues through the processes of making allocation decisions, through the evaluation of results, and on to using identified results to inform the next allocation cycle. One of the ideas that surfaced in thinking from an operational standpoint was that the purposes and goals of the Bed Tax program should be the guiding force behind the operations, and that the operating principles behind the system should be clear. Thus we decided to list the purposes and goals on the second iteration map, in addition to building them into the processes. It was also clear that this next iteration needed to spell out the steps, roles, processes, and decision points of the proposed system. These considerations were all built into the second iteration Systems Map and a narrative to provide more detail was developed which coincided with the progression of the map. We also added a brief introductory section to the narrative to account for the issues and problems that had been identified in the early Revision Committee sessions.
The second iteration Systems Map of the Bed Tax proposed revision can be seen in Figure 3.

*The Second Iteration Review*

Before a Revision Committee meeting to go through this next iteration could be scheduled, City officials contacted us and requested that our team meet alone with them. They had shared the materials with several of the elected officials and wanted to provide some direction outside of the Revision Committee process. The feedback on the second iteration was that the proposal was too cumbersome, with too many steps, and that, according to one Council member, the Systems Map had been difficult to follow. Part of the difficulty proved to be that the Map had too many pages which created a problem in trying to follow the progression of steps from one page to the next. Additionally, one part of the system, which called for an interactive session involving stakeholders and the Bed Tax Advisory Board, seemed to be excessive and unnecessary. It was decided in this meeting that the Orientation and Application processes would be combined into a facilitated interactive session wherein the stakeholders would be taken through steps that would promote cooperation and joint marketing efforts that could be funded by Bed Tax revenues.

Because of the proximity to the end of their fiscal year, the officials requested that a “transition year” option be included in the next iteration. The reason given was that the proposed program would be heavily weighted
Systems Map of Proposed City Bed Tax Fund Annual Cooperative Marketing Plan

AUDIT PROCESS
Periodic review of practices
Increase & improve sample
Information sessions for Bed

ISSUE:
Capture of all available dollars

PURPOSES
• Increase tourism & lodging use
• Increase revenue
• Promote City
• Support local economy

GOALS
• Collect available dollars
• Increase tourism dollars, lodging income, market share
• Increase capacity of events, activities
• Leverage Bed Tax funds
• Reduce fragmentation & promote cooperation
• Create & sustain a service culture
• Evaluate results

Figure 4. Second iteration Systems Map
Bed Tax Operational Plan

**Operating Principle:**
Maximize and leverage the use of Bed Tax dollars through a coordinated and cooperative marketing program that produces increased lodging use, benefit to the community, and measures the effectiveness of Bed tax funded efforts.

**Bed Tax Advisory Board**

**MEMBERSHIP (5)**
- 2 Lodging owners/operators
- 2 Tourism owner/operators
- 1 Resident representing the general public

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Non-voting members
Convened by City Finance Director
City Council member liaison

**ADVISORY BOARD ROLE**
- Appointed by the mayor & answerable to the mayor & City Council
- Meets, confers on, & recommends Annual Bed Tax Allocation Plan
- Makes recommendation on extended-year plan & strategy
- Reviews and recommends plan for capturing available revenue
- Makes recommendations based on evaluations of Bed Tax activities & results

**Chairperson determined from & by membership**

Required by statute

Figure 4 (continued). Second iteration Systems Map
**Annual Cooperative Marketing Participation & Concept Proposal Process**

**Operating Principle**: Events and activities will apply for inclusion and participation in the Cooperative Marketing Plan. In general, funds will not be allocated directly to an event or activity for their exclusive use, though the Advisory Board may recommend otherwise in appropriate and unique circumstances.

**PUBLIC NOTICE & MAILINGS**

**ORIENTATION**
- Mandatory
- Overview of purpose & goals
- Overview of application process
- Walk-through of requirements & proposal process

**PARTICIPANTS**
- Potential stakeholders
- Bed Tax Advisory Board
- City Council liaison
- City Finance Director
- Technical assistance from Marketing Consultant COG

**BED TAX PARTICIPATION & CONCEPT PROPOSAL**
- Organization & contact information
- Proposal for inclusion in Cooperative Marketing Plan
- How activity/event will increase lodging use
- Evidence of coordination, cooperation, & increase resident participation
- Benefit to community
- Proposal for promoting event/community, "service" culture, building capacity, furthering Bed Tax goals, evaluation.

**Events**

**On-going Activities**

**Public Notice & Mailings**

**Orientation**

**Participants**

**Bed Tax Participation & Concept Proposal**

**City Finance Director**

**ISSUE**: may want to consider negotiating deadline with participants

Figure 4 (continued). Second iteration Systems Map
Figure 4 (continued). Second iteration Systems Map
Figure 4 (continued). Second iteration Systems Map
toward a cooperative marketing program that moved away from funding special events. There was no reluctance expressed over the emphasis on cooperative marketing in the new plan. However, there was concern that the special events that had traditionally been funded directly might not have adequate time to adjust their fiscal processes to account for the change. They also said that, once the next iteration was completed, it should be submitted back to them and then a decision would be made at that point on how to proceed, i.e., whether to reconvene the Revision Committee or to submit the proposal to the City Council at an Information Session.

The Third Iteration

The third iteration Systems Map reflected the concern for lowering the level of complexity, and reducing both the steps in the system and the number of pages in the map. The interactive session with the Bed Tax Advisory Board was eliminated in favor of providing an interactive and cooperative structure embedded in the Orientation process. The number of pages for the Systems Map was reduced to two. The first page provided an overview of the Bed Tax system, including purposes and goals, Advisory Board membership and roles, and an abbreviated version of the proposed Bed Tax program cycle. The second page contained the proposed Bed Tax system itself including the progression of preparation points, processes, decision points, documents produced, and people involved. This was possible in part due to our newly acquired ability to produce the maps in a larger,
11x17 inch format. It was hoped that this change would, at minimum, increase the understandability of what was being proposed. The third iteration Systems Map of the proposal is contained in Figure 5.

The third iteration map was produced after a single meeting of the team to ensure that the direction was clear. As with other iterations, the narrative was revised to reflect the changes in the map, and a few more paragraphs were added to the Introduction to emphasize further the reasons identified for revising the current system. Just prior to our completing the package of materials, we received a request from the City to include a proposed organizational chart that would reflect the proposed relationships among the various key entities involved. We met as a team and determined what really amounted to our “best guess” as to how the organizational chart might look. The resulting chart was added to the package and can be seen in Figure 6. The completed package was reviewed and approved by the team, and this next iteration delivered to the City as requested.

We next met with the two officials from our previous meeting to review the third iteration. This is when the whole revision process went into a kind of “Intermission.” One of the officials decided that the emphasis on marketing indicated that the City’s marketing consultant should be involved in the review process. Inasmuch as the marketing firm was located in several hours distant, this would mean contacting the firm, identifying which consultant would be reviewing the proposed system, and sending the materials to that consultant.
PURPOSES AND GOALS

**PURPOSES**
- Increase tourism & lodging use
- Increase revenue
- Promote City
- Support local economy

**GOALS**
- Reduce fragmentation & promote cooperation
- Increase tourism dollars, lodging income, market share
- Leverage Bed Tax funds
- Collect available dollars
- Increase capacity of events, activities
- Create & sustain a service culture
- Evaluate results

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**OVERVIEW**

Proposed City Bed Tax Plan

Operating Principle:
Maximize and leverage the use of Bed Tax dollars through a coordinated and cooperative marketing program that produces increased lodging use and revenue, expanded market share, benefit to the community, and effective evaluation of results.

**ADVISORY BOARD ROLE**
- Recommends Annual Bed Tax Allocation Plan
- Recommends extended-year plan & strategy
- Reviews & recommends plan for capturing revenue
- Makes recommendations based on evaluations of Bed Tax activities & results

**SYSTEMS MAPPING SYMBOLS**

- Process
- Document
- Decision
- Predefined Process
- Preparation
- Sub-Program
- Connector & direction
- Parallel mode

Figure 5. Third iteration Systems Map
**BED TAX OPERATING PLAN**

**Annual Cooperative Marketing Proposal Process**

**PUBLIC NOTICE & MAILINGS**

**Mandatory ORIENTATION**
- Overview of purpose & goals
- Overview of proposal process - emphasis on building cooperation
- Walk-through of requirements & proposal process

**PARTICIPANTS**
- Potential stakeholders
  - Bed Tax Advisory Board
  - City Finance Officer
- Technical assistance from Marketing Consultant COG

**COMMUNITY MUNICIPALITY**

**TRANSITION YEAR (02/03)**
- Proposal should include increased cooperative marketing in addition to event/ activity support
- Subsequent years will focus on cooperative effort & benefit to community

**BED TAX PARTICIPATION & CONCEPT PROPOSAL**

**DECISION CHART PREPARATION**
- Marketing Consultants
- COG staff
- City Finance Officer

**DECISION CHART**

**INFORMATION SESSION**
- for Council on
  - Recommendations
- Bed Tax Advisory Board

**DECISIONAL MEETING**
- Review re: purposes & goals
- Develop recommended plan
- Staffed by Marketing Consultant & COG

**BED TAX ANNUAL COOPERATIVE MARKETING PLAN**
- Recommendations to City Council

**IMPLEMENTATION PROCESS**
- Involving City Finance Officer
- Staffing assistance from COG Marketing firm consultation
- Funded Activities & Events

**OVERSIGHT**
- Financial reports
- Audits
- Evaluation reports
- Technical assistance

**EVALUATION**
- Technical assistance from COG
- Data from Marketing Consultant

**COMPLETE CYCLE**
- Evaluation reports & recommendations to City Council
- Use evaluation materials to improve next cycle

**BEGIN NEXT CYCLE**

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Figure 5 (continued). Third iteration Systems Map
Figure 6. Organizational chart proposed to the City
As noted in the “Methods” section above, this was accomplished via phone conference and e-mail. And then nothing happened for approximately three months, except our phone calls at regular intervals to the officials to inquire as to the progress on receiving the feedback from the consultant and any other steps that needed to be taken. We were “on hold.”

The Information Session Review: Back to the Revision Committee

We were notified by one of the City officials in one of our contact calls that a package of materials had arrived from the marketing firm. The interlude in the revision process continued for several weeks however, and we were told that the firm’s response was being held pending further review. Then events began to move rapidly.

We were asked to provide an additional 15 copies of the third iteration package for distribution and use at the next City Council Information Session, which was approximately two weeks hence. We were also requested to attend the session to answer questions regarding the proposal and to provide any further recommendations we might have. After delivering the additional packages, our team met briefly to review our participation in the Information Session, which we saw primarily as speaking to how the process had progressed to this point, answering questions on the revised system, and foremost recommending that the Revision Committee be reinserted into the process.

In the interim, an interesting result occurred from having delivered the package to the City. Copies of the proposal had been distributed to all of the City
officials who were involved. Additional copies somehow found their way into the hands of some of the stakeholder groups that were represented on the Revision Committee. All of the members of our team were individually contacted, and even visited, by some of the officials and several of the stakeholder representatives. Each in their own way expressed concerns over the content and process that had been used to arrive at this juncture. Some of the contacts were sufficiently emotionally charged to cause us to document the conversations, more for political concerns than as a part of the process. This further reinforced our resolve to request that the Revision Committee process be reinstated.

The City Council Information Session was held as described above in the “Methods” section and resulted in a decision to send the package of materials to the Revision Committee members. The Council requested, as we recommended, that the Committee members be given an opportunity to respond individually within a reasonable but brief period of time. Moreover, we were to compile the results of the feedback and decide whether to reconvene the Committee for further recommendations. The ultimate goal expressed was to bring the results of this process back to the City Council in another Information Session within a relatively short time.

We sent out the package of materials as requested, along with a memo explaining the purpose of the request for feedback. We offered multiple ways of providing feedback which included written response, e-mail contact points with our working team members, phone and fax numbers, and included an option of
meeting individually with anyone who preferred to provide feedback in person. We received two written responses, one hour long phone contact, and conducted one in-person meeting. The over-riding content of these contacts was that the latest proposal was unsatisfactory. Moreover, all but one response tended to reflect the perspectives, positions, and interests of their specific stakeholder groups. The remaining response was from a participant was somewhat more removed because of no longer being involved as a member of a stakeholder group. This person’s response was detailed and unequivocal: developments to this point should be scrapped and the whole revision process started over.

After using an open coding process (Strauss, 1987) to analyze the categories of responses, we decided to revisit in a systematic way the material from the early Revision Committee sessions where the issues, problems, and needs associated with a Bed Tax revision plan had been identified. I conducted this analysis by creating a hermeneutic unit in the ATLASi software, creating key codes, and conducting string and pattern searches with the primary documents that had been converted to text files and loaded into the program. In reviewing the result with our team, the analysis led us to believe that there were key issues unresolved that matched the concerns of the feedback we were getting on the third iteration proposal.

*The Retrospective Analysis and Map*

At this point, our team decided that there may be some benefit from developing a Systems Map of the current system which had been identified as
problematic. The results of the mapping were reviewed internally by our individual team members and revised. The results of mapping the current Bed Tax system can be seen in Figure 7.

At this point, our mapping team met to discuss recommendations and strategy for proceeding with the whole Bed Tax revision project. Using the Systems Map of the current system and the feedback from reviewers of the proposed system as a basis for our discussion, it seemed evident that the issues that ultimately must be addressed to resolve the Bed Tax situation were beyond the scope of Systems Mapping. One of the very first Systems Mapping projects came to mind in that the lack of any agreement and the numerous changes suggested the existence of issues, or perhaps issues within issues, that remained under the surface. We thus concluded that it might be best to postpone action on our recommendation to reconvene the Revision Committee and to take other steps explore the situation further.

Our conclusions were confirmed in an informal meeting I had with one of the key City officials who had been actively involved in the revision process since its inception. During the meeting, the official reviewed the Systems Map of the current system (Figure 6) and reached the conclusion that it was not likely that the Bed Tax system could be successfully revised without resolving the issues that had not been addressed. Even though the issues themselves were a matter of public record in the reporting from the early Revision Committee sessions, it seemed unlikely that these issues would be addressed openly
Figure 7. Systems Map of the current Bed Tax system
APPLICATION FOR BED TAX FUNDS

Bed Tax Advisory Board

Recommendations for allocation of funds

City Council

ISSUE: Members on the Advisory Board who have a vested interest in their own events funded in part by Bed Tax funds

ISSUE: Public embarrassment, "ripping apart" applicants in meeting, having to "beg" for the funds every year

ISSUE: "Benefit to the community" - needs defining

ISSUE: Conflicts of interest

ISSUE: "Micro-managing" the use of funds in some instances

ISSUE: Consistency with Bed Tax purposes & goals

ISSUE: Competitive and divisive process

City Council Meeting on Bed Tax Allocation

Decision on Funding Levels

Figure 7 (continued). Systems Map of the current Bed Tax system
Figure 7 (continued). Systems Map of the current Bed Tax system
because of the political ramifications involved. It was apparent that there were issues within issues.

In addition, other considerations surfaced that were weighing against continuing the revision process as had been originally intended. The timing of the process had shifted with the new fiscal year. The revisions to the Bed Tax process were not as pressing since the old system was used for determining the current year’s allocations. Moreover, an upcoming municipal election was immanent with several Council seats in the balance and the Mayor’s position changing due to term limits. Resolving some of the more controversial aspects of the current system seemed politically inexpedient. Furthermore, several prominent citizens had stated directly that putting a new Bed Tax program into place prior to the election would only result in the process being significantly altered or overturned after the election. If this were the case, then there might be no conclusion anywhere close at hand.

The Final Review

After this meeting, our team met briefly to discuss the next step. As an organization, we were, after all, originally charged with writing and presenting a revised plan to the City. We decided to request a meeting with key City officials to accomplish two objectives. First, we wanted to review the current system map on an issue-by-issue basis with the owners of the system, including the feedback we had received on the latest revision proposal. Secondly, we felt we needed some further direction as to how to proceed.
A meeting with the officials was convened and we reviewed the issues associated with each area of the current system. The session proved to be quite candid in that many of the sensitive issues were discussed openly and in much more depth than had previously been the case. In several instances, they identified issues which were embedded within any revision effort and which, if resolved at all, would be beyond the scope of a Revision Committee to consider.

There were several conflict of interest issues related to membership on the Bed Tax Advisory Board. These were not easily resolvable due to the number of applicants that had recently applied for three of the five seats on the Board. The City was bound by a statutory application process — as most municipalities are — in filling Board, commission, and other committee positions. The only three people who applied were incumbents who were also involved with events that have received Bed Tax funds. As one of the officials pointed out, "That's life in a small town — the people who get involved are involved in lots of things." Another highly sensitive issue that arose was that there was considerable turmoil and polarization over the use of the entire fund, not just the events and on-going activities portion. This issue was apparently somewhat long-standing and involved both contractual and administrative issues, which could not be easily unraveled. The fallback position on the part of the officials was to suggest that whatever evaluation process was approved by the Council be broad-based and cover the entire Bed Tax fund usage. This might at least address some of the questions and issues that had remained unanswered. There were also issues
related to relocating some of the on-going activities into one easily accessible site in order to leverage both funding and personnel resources.

In essence, these were seen primarily as administrative issues, with several having far-reaching political ramifications for the City. Ultimately the officials decided to forego further Revision Committee involvement indefinitely, to report back to the City Council that there were issues that had surfaced which needed resolution before continuing a revision process, to suggest an extended timeline for resolving issues and moving ahead with any revision, and to request that the Council of Governments act as the point-of-contact agency for the development of an evaluation process for the use of Bed Tax funds over the next year. This decision effectively postponed indefinitely the use of a Systems Mapping process in the revision effort.

All of these considerations were not to say that there were no valuable conclusions to be reached regarding the use of Systems Mapping in this or other similar contexts. There were a number of lessons learned, both cautionary and confirmatory that are described in the “Discussion” section below. There remained, however, another step in assessing the results of this part of the study — an analysis of the trustworthiness of the data according to the template suggested by Lincoln and Guba (1985).

Assessing the Contribution of Systems Mapping

The Assessment of the Level of Trustworthiness. The analysis of the trustworthiness of the data in the Systems Mapping process was conducted
using a version of Lincoln and Guba's (1985) criteria with the following results. These results were analyzed by the individual criterion followed by an overall assessment of the combined level of trustworthiness.

Credibility. The "truth value" of the study was assessed by reviewing the amount of prolonged engagement and persistent observation with the participants. This analysis showed that engagement of the participants had been uneven and sporadic at best. Excluding our working team, only a small number (i.e., three or four) of the 19 members of the Bed Tax Revision Committee had been engaged in the process from the beginning. Prior to the submission of a proposal to the City Council Information Session – which originally was intended to lead to the acceptance of a revised program – the Committee members were left out of the process altogether. The Committee was then reengaged with the result that the proposal was seen as unsatisfactory from multiple standpoints. Additionally, the credibility of the proposal was called into question openly in the Council Information Session because the result to that point had not been submitted to the Revision Committee for reconsideration and approval. Credibility from the standpoint of the data accurately reflecting a viable proposal was marginal at best when using the test of prolonged engagement and persistent observation.

As a test of credibility, looking at the same situation from different perspectives with different observers – triangulation – seemed to exist in the end. The result of multiple observers produced a diversity of responses, many of them
quite divergent. This was consistent with the finding that the proposal itself had low levels of credibility.

**Dependability.** The results produced in the Systems Mapping process across iterations were inconsistent and could not be counted on to accurately reflect a product that represented agreed upon recommendations. Including unresolved issues in the iterations assisted in identifying those things that were unpredictable. However, reactions to the third iteration map from all sides suggested that there was little predictability in the result. There was considerable examination of the data conducted by outside people. Moreover, the team memoing sessions on the mapping iterations included inside outside person review of the processes, products, and records to determine their coherence and fit in that most of these materials were developed by two team members and reviewed by the third. The analysis of dependability suggested that the Systems Mapping iterations may have been moderately dependable from the standpoint of development at each point in time. However, in combination with the reactions to each iteration, dependability of the data overall was low.

**Transferability.** Whether or not the Systems Mapping would be useful in other similar contexts or settings was difficult to gauge. We provided detailed data and descriptions of the processes and products of Systems Mapping use. Because of the high amount of variability encountered in this project, the applicability of using Systems Mapping in other similar settings might be best determined more through an analysis of lessons learned than by trying to extract
only any positive result in the Bed Tax revision process. From a perspective of using Systems Mapping as it was conducted in this instance and the results produced, the possibilities weigh in on the side of a low level of transferability.

Confirmability. Whether the data were unbiased, factual, confirmable or confirmed could certainly be called into question. At the point the Systems Mapping was ended, the data seemed inexorably intertwined with the issues that remained unresolved. The divergent feedback and high number of changes in subsequent Systems Mapping iterations indicated that something was being reflected in the process. This assessment was further confirmed by the varying and largely negative reactions to both the third iteration map and through the use of the Systems Map of the current Bed Tax system. Though a limited number of responses were received, the written and verbal feedback received on the third iteration contained expressions such as “conflict of interest,” “protecting turf,” “dominating the meetings,” “out for their own interests,” “too many issues left unresolved,” and even “throw it out and start over.” This was suggestive of a finding that the data were not unbiased and were only factual insomuch as they were reflective of perspectives based on self-interest.

Trustworthiness Overall. Based on the criteria above, the products of the Systems Mapping process in providing a viable proposal for a revised Bed Tax program were not trustworthy. The engagement of participants was uneven, sporadic, and even missing. The Systems Maps could not be counted on to accurately reflect the recommendations of the Revision Committee. Whether or
not the processes, as they were used here, could be used successfully in other similar contexts was certainly questionable. Finally, there were strong indications of bias, influence, and self-interest in the data as it was presented across the process. In summary, the analysis suggested a high amount of caution be exercised in considering the data to be trustworthy from the standpoint of the products produced. What the data say about the process of Systems Mapping and its utility in these kinds of contexts may be another matter. However, before a consideration of that question, we will move on to the results of the participants’ assessment of the Systems Mapping process.

*Participant Assessment of Systems Mapping.* Several difficulties arose in assessing the contributions of the Systems Mapping to the Bed Tax revision process. The most obvious difficulty was that the Systems Mapping process did not lead to a viable product, i.e., to a final iteration that was agreed upon for submittal. It had been hoped that the participants in a final iteration review session would participate in an assessment of the mapping process using a focus group format. This study was ended before such a product could be developed, and at that point, it was unclear whether the revision process would continue in its present form at all. Another difficulty was that there were only a few people who participated in the Revision Committee process after Systems Mapping was initiated. Of those, there were even fewer who engaged in the iteration review process through each of the three iterations. The smallest
number of people actually saw all of the iterations (i.e., including the final “Current System” iteration) before the study was ended.

The responses from participants were as divergent and varied as the rest of the results had been. The analysis of the comments received proved to be best categorized along the lines of the intended inquiry as outlined in the methods section (e.g., what worked, what didn’t work, overall impressions, etc.), though there were a few surprises along the way. The variance in answers ranged from complete dislike of the Systems Mapping to finding it to be a useful tool. With this level of variance, it next seemed most useful to analyze the assessment from the standpoint of how the comments themselves might inform future uses of Systems Mapping in similar and other contexts. Thus the unit of analysis became the comments and not a categorization schema, although there were comments that could be considered categories in that they represented a common thread of comment across a number of respondents. These informing comments and common threads were listed and distinguished as noted below.

- Two very straight-forward comments indicated a complete dislike of the use of Systems Mapping. They indicated a strong preference for text-only versions of the proposals. One comment indicated that this was strictly a matter of personal style and that “most of the world might relate well to it.” One of the comments related to the dislike was surprising yet significant and cautionary regarding the use of Systems Mapping. The comment was that Systems Mapping could, at least in the current project, be
dangerous." The reason given was that the mapping made the third iteration proposal look more organized and well thought out than it really was.

- One thread seen throughout many comments was that the Systems Maps could be too complex to follow. This comment was often expressed in relation to the second iteration Systems Map, though not exclusively so. Complexity was also noted in relation to having too many linkages, directions, and interactions tied to a process as well.

- Another comment indicated ambivalence about the use of Systems Mapping in that it had neither helped nor seemed to hurt a process which remained unresolved.

- There were several comments acknowledging that the symbols used in Systems Mapping had meaning, but that there had been little opportunity to become familiar with them in this project. The provision of a “legend” and a brief review of mapping symbols had been insufficient for the symbols to have meaning for the participants.

- Another comment critical of the Systems Mapping was that the third iteration narrative and the Systems Map did not match. The comment included specific examples which, when reviewed by one of our team members, proved to be accurate. The lack of correspondence between the map and the narrative had not been identified in our team reviews during the development of this iteration.
• The importance of providing adequate information on the maps inside the symbols (particularly processes) was noted in several comments which indicated that this helped greatly in understanding the various steps involved in the system displayed. The lack of adequate detail was noted in one instance with regard to the evaluation process which was reduced to almost no detail by the third iteration. Yet the evaluation process was noted as one of the more important features needed in the revision.
• Key elements identified early on that should have been included in the revised Bed Tax program were left out. These were things that did not show up prominently in the notes from the early sessions.
• A number of comments included the phrase “a picture is worth a thousand words.” This was described further as the Systems Mapping having the ability to condense materials, portray relationships that would take large amounts of text to describe, and having the potential to present a complete picture of the key elements of a system.
• Participation was another common thread in a number of comments. In most, the importance of participation in the process was noted. Most of these comments revolved around the lack of participation in the development of the last two iterations. One comment went on to say that participation implies an open dialogue among equals, and that the process up to this point had indicated that some participants had much more influence and say-so than others.
• Several comments indicated that Systems Mapping has the potential for being useful even in the current instance if the process could be deepened to include the actual roles and relationships intended. These comments also noted that there was neither the time nor the opportunity for this to occur given events as they unfolded.

• Two other comments indicated that it was not possible for the Systems Mapping to accurately reflect the activities and processes of a revised system because of the dynamics and underlying issues that could not be addressed.

The results of the participants' reactions to the Systems Mapping process and the assessment of the trustworthiness of the mapping data suggest that there may be some valuable lessons to be learned about the use of Systems Mapping in a multi-faceted political policy environment and in other contexts as well.
CHAPTER 4: DISCUSSION

There are a number of cautionary notes about the uses of Systems Mapping that can be derived from this study. Paradoxically, these cautionary notes may also be confirmatory with regard to how Systems Mapping works best.

Pre-Planning Sessions

The methodology used in the Bed Tax revision process did not follow the usual progression of steps that most Systems Mapping projects have used to date. There was no pre-planning meeting with the "owners" of the revision effort or with the Bed Tax Revision Committee. Pre-planning meetings serve several purposes, among them to gain a clear picture of what the mapping is to accomplish and how the mapping will be used. A pre-planning meeting can also serve the purpose of deciding whether Systems Mapping is appropriate to the effort at hand, or not.

Participation

With few exceptions, Systems Mapping has been a very participatory process in that the initial and successive iterations of the maps have been developed with the people who were involved in the systems. With the Bed Tax Program revision process, involvement was marginal and those who were involved had unequal power relationships, though this fact was one that surfaced but has not been addressed as yet. The Revision Committee generated the areas of concern early in the revision process, but was largely taken out of a large portion of the picture until reinserted through the City Council Information
Session. The result was unanimous dissatisfaction on some level with the product from those who submitted review comments. All of the responses commented on the absence of Revision Committee involvement. The lack of a participatory process in this instance points to the importance of participation to a meaningful Systems Mapping process.

Caution should be exercised in using archival or narrative data to develop Systems Maps. In the one previous use of this kind, there had been a relatively high level of participatory review with the users of the system involved (albeit from a distance and via a team member in another location). In the current instance, this level of review was missing. This caution may be an indication that continual engagement of and review by the participants is a sine qua non of the effective use of Systems Mapping.

Whether or not the revision process can be retrieved, it seems clear at this point that Systems Mapping is not the tool that will make the difference – at least until all of the unresolved issues are addressed in some other fashion. Given the potential political impacts of the issues involved, it may be likely that both elected and administrative officials will need to engage in a dialogue (Senge, 1990) to address the issues. Much of this dialogue will need to take place first between the individuals involved. It then may be possible for policy directions and decisions to emerge without posturing and political rancor. Certainly the proximity of the upcoming election may weigh heavily against the prospect of political risk-taking at this point. Another fruitful approach may be to focus on and emphasize
the importance of an overarching evaluation process for the Bed Tax system. A well thought out, comprehensive and results-based evaluation process may provide sufficient data to resolve many of the outstanding questions and issues. Such a focus has the obvious drawback of timeliness in that it will take considerable time to develop, implement, collect meaningful data, and analyze the results of a broad based evaluation. However, it may also provide a long range solution to unanswered issues. It does seem likely that a participatory process involving both insiders and outsiders with unequal power and status is not likely to work well in this instance.

*Mapping the Current System*

We missed an important step in the Systems Mapping process when we did not map the current system from the outset. It may be that the map of the current system could have provided a clearer picture of the directions any revision of the Bed Tax program must take. There are indications that the map of the current system had some explicatory power in relation to informing those involved as to why the successive iterations of the program provoked a continued “not this... this” reaction from participants. Using the map in a systematic review with City officials prompted a rethinking of the revision process and helped generate some intervening actions.

In the earliest evolution of Systems Mapping, the mapping had uncovered significant tensions in two of the programs mapped. In one instance, the tensions surfaced through numerous changes from iteration to iteration as the maps were
developed. The mapping had been used as part of an evaluation process, and as such served a useful purpose in helping identify an area where a program was stuck and where the people involved might look to resolve a significant issue. In the current instance, the Systems Mapping used in the Bed Tax revision has served the same function. This assertion has been reinforced by the responses from the limited number of people who have reviewed the Systems Map of the current system. However, careful consideration and caution should be exercised as to whether to use this map due to the political risks that may be involved. Additionally, the Bed Tax project was not an evaluation project but was designed as a planning and development project. Given the last meeting with City officials, the mapping at least contributed understanding and awareness that the unresolved issues are stopping the development process.

Use of Mind Mapping

Another departure from standard Systems Mapping methods can be seen in the use of Mind Mapping (Buzan, 1989) techniques in the development of the Systems Maps. Mind Mapping was not used in any significant way in this project. Its use was limited to developing the first iteration from archival data, only narrowly in noting changes on the first two iterations, and for note-taking in several of our internal team reviews. The lack of a viable result in this study confirms the importance of starting Systems Mapping projects with an open session where participants are free to engage their thoughts, and where the job
of the mapping team is to capture those thoughts and translate them into a
Systems Map.

**Mapping Team Detachment**

There is one other factor that should be noted with regard to the
methodology of this project. The mapping was conducted by our working team
from the Council of Governments. Our role in the project was commissioned by
the city by virtue of the city's paid membership in the Council. This placed us in
the position of being accountable to and directed by the city in the process.
Rather than being outside consultants in the process (which has been the case
with other Systems Mapping projects until now), our role has been more as
quasi-employees in the revision effort. This limited our ability to be the keepers of
the methodology, particularly with regard to the inclusion of the Revision
Committee. We were not in charge of the process as it unfolded.

**Sensitivity to Audience**

There are number of lessons to be learned, or re-learned, from the
participant assessments of the Systems Mapping. First, some audiences and
some members of an audience may not relate well to Systems Mapping. In some
of the early work done by my colleagues and I, we cautioned that Systems
Mapping is only one of a number of tools that could be used to describe their
systems accurately. We suggested that multiple tools might produce the most
viable result. That caution seems like good advice for any Systems Mapping
project. Another audience related issue is to be mindful of the importance of
participants having adequate time and opportunity to learn the significance of the mapping symbols. The evidence from this study suggests that this needs to be a conscious part of any mapping team's work.

Appearance of Organization

A new lesson learned lies in the potential for Systems Maps to be “dangerous” in use. Before now, it had not been evident that the appearance of good organization in a Systems Map could present a problem. This lesson speaks directly to the importance of the role of the mapping team whose job it is to accurately reflect what participants say during a mapping session, and to make accurate changes in the maps through successive iterations with participants. It also speaks to the importance of their role as keepers of the methodology. If these conditions cannot be met, the ethical path may be to not use Systems Mapping to keep the mapping from becoming “dangerous” by representing something unintended such as good organization where none exists.

Complexity

Another factor to keep in mind is the level of complexity in a Systems Mapping project. There have been a number of very complex systems that have been successfully described in previous Systems Mapping projects. One of the factors that was present in those instances and absent in this was ready access to a plotter printer. This type of printer has allowed these complex systems to be mapped on one large page. In the current instance, the largest page that could
be printed was 11x17 inches which proved to be better than standard size paper, but still short of desirable. Efforts to simplify the maps in order to fit them into a limiting format are likely to be counterproductive. There is evidence from comments by participants that the roles and relationships in this project would have benefited from deepening and building them out further. Without the ability to portray all of the roles and relationships as a whole, the resulting complexity of multiple pages may have been defeating to the process.

Attention to Detail Through Participant Review

Attention to the correspondence between the Systems Map and the narrative speaks to another important lesson learned. The lack of correspondence in the current project also speaks to another methodological divergence in this project. In nearly all Systems Mapping projects prior to this one, the iteration process has involved taking participants through a systematic review of the mapping iteration and the narrative. This was not available to the Bed Tax project. In response to the absence of a systematic participant review, we relied instead on internal review processes that, in this instance, broke down. This factor, like others, speaks to the importance of participation. Systems Mapping has worked best when high levels of participation were present. Participation thus appears to be a sine qua non in any, if not all, effective Systems Mapping processes.
Exploring Problems Using Other Methods

There were two instances in which direct interviews were held with Revision Committee members once they had received the third iteration proposal. The information gleaned from the interviews proved valuable in assessing the lack of viability of the proposal and included information on what had gone wrong with the process. The Committee members interviewed provided a context, depth, and richness in their descriptions that did not exist to any great degree in the written responses received. In retrospect, the mapping team may have been able to overcome some of the barriers and issues involved by interviewing the other participants with the idea of gathering more focused data on how the process had unfolded and on the viability of the various versions of the revisions. This lesson emphasizes a very early lesson learned during the development of Systems Mapping: when the process seems at a standstill or unable to reach agreement, it is time to use other means to explore the sources of the difficulty.

Increasing Understanding

Finally other lessons re-learned, or perhaps confirmed by the participant assessments are that a picture can be worth a thousand words. Systems Mapping can condense complex information and display relationships in ways that text cannot. Moreover, Systems Mapping has the potential for presenting the key elements of a system and their relationships as an understandable whole. In the current instance, the final Systems Map of the current Bed Tax system
provided city officials with access to the understanding that revising the system could not be accomplished in the manner that had been requested. Political issues, conflicts of interest, and differential levels of decision making simply would not allow for an open, participatory process to occur.
CHAPTER 5: CONCLUSION

One of the things about a largely qualitative research study is that it is okay — or as two of my qualitative research methods professors insisted — even necessary as a researcher to account for yourself and your biases in your work. As principle investigator on this study, I must admit that one of my biases with regard to Systems Mapping has been that it does provide access to understanding, cooperation, and action. That, simply put, was the basis for conducting this study. In the final analysis, such access occurred only on a limited basis in using Systems Mapping with the Bed Tax revision project. Access to understanding was reached with regard to issues that needed resolution, but they were outside the realm of Systems Mapping’s capability to resolve. Using Systems Mapping in this context did not increase access to cooperation, though on some level it may have highlighted the lack of cooperation and suggested where to look to gain it. With the exception of the decisions made in the final meeting with city officials, access to the intended action (i.e., a revised plan) up to the point of ending this study remained beyond reach and was not an outcome of the Systems Mapping process. The last Systems Map developed, that of the current Bed Tax system, may prove to be the most accurate and, if used, help stimulate further action. Whether it is even prudent or appropriate to use this map, particularly in participatory settings which are the hallmark of Systems Mapping, remains a question that only time and careful consideration will tell.
Limitations of the Study

This study had a number of limitations in that the circumstances as they unfolded caused significant changes in standard Systems Mapping methodology. Because the use of Systems Mapping started in the middle of the Bed Tax revision process, significant steps in the process were altered. The pre-planning meeting normally held to inform owners of the process was not held due to the time constraints and communications received by the mapping team from City officials. Because the frustration level seemed high due to the lack of agreement when the Systems Mapping was included, we decided to forego mapping the current system with participation from the Revision Committee. Mapping the current system later proved to be the one part of the process that produced some understanding and action. The mapping itself started with the use of archival data rather than in an open, participatory session with stakeholders. This precluded effective use of the mind mapping process except on a very limited basis. Only one iteration review was held with Revision Committee members and that was in a relatively formal session held in a meeting space that was not conducive to participant interaction (i.e., the City Council chambers). The lack of stakeholder participation overall was undoubtedly the most significant limitation on meeting the intention of the study.

Because of the work relationship with the city, the mapping team was not able to guide the Systems Mapping process due to the intercession of several city officials. Other agendas seemed to prevail including the insertion of the
marketing consultants as participants who never really participated but whose inclusion effectively put the revision process on hold for over three months. The mapping team was present at the session when the marketing consultants were brought in and their introduction into the process at that time seemed to be warranted given the directions the revision was taking. It was obvious that there was a close personal tie between the official who decided to include them and the head of the firm. Over time, this factor and the quasi-employee status of the mapping team limited our ability to keep the process moving. Though these limitations proved to have a considerable impact on the conduct of the study, they contributed to our knowledge of effective use of Systems Mapping and to several of the lessons learned in the study.

Lessons Learned

Overall, this study has pointed to some valuable lessons for the future uses of Systems Mapping. It has pointed out the importance of staying true to the methodology. This means starting with a clear agreement about how the Systems Mapping will be used and to what end. It also calls for participation and participant review embedded throughout the process. Without a clear and sustained commitment to a participatory process, some other method should be chosen because Systems Mapping is likely to have little or nothing of substance to add. It also underscores the need for openness and transparency in the process as well, and a commitment to having the final result be the participants’ result.
The study suggests that it is important to use the tools that Systems Mapping uses best, i.e., the capturing of processes, decisions, documentation, linkages, and so forth using both Mind Mapping and note taking in an open, participatory dialogue. It also confirms the importance of not forcing the result, of listening carefully, of being willing to be wrong in your interpretation of what people have said, and of making changes in subsequent interpretations based on what the participants have said is so.

The use of archival data in the development of the Systems Maps and narratives must be approached carefully and cautiously. This data has been used successfully in one instance with the development of Systems Maps and in a number of instances in developing the accompanying narrative. However, it has never been used successfully without high levels of participant review and never without changes being needed as a result of the review process.

The relationship of Systems Mapping to complex systems and processes requires close attention both in terms of making certain that the complexity is thoroughly yet elegantly accounted for, and in terms of how it is displayed. It may be up to the members of the mapping team to ask the right questions about complexities, to listen carefully to the answers, and to persist in finding an accurate and understandable way to portray them.

Another methodological addition that may have assisted in identifying, if not resolving, the difficulties with the use of Systems Mapping in this context would have been to conduct an audit on the process and results (Lincoln &
Guba, 1985; Patton, 2002). Building an audit into the process would have signaled the need to develop an audit trail which in turn could have prompted closer attention to the necessary detail, record keeping, accuracy of the data, and processes followed. At minimum, having an outside auditor involved in the process may have helped in identifying the strengths and weaknesses of the process, and have assisted in identifying ways of resolving the situation that were not apparent.

Despite the lack of access to cooperation, and action in the Systems Mapping process, this study has a very valuable and affirmative significance. The lessons learned apply to its future uses in contexts involving multi-faceted and multi-sector project. Moreover derived learned from the study are relevant to any Systems Mapping project. The limitations, lessons learned, and recommendations for future uses of Systems Mapping are summarized in Table 1.

**Future Directions of Systems Mapping**

With the above in mind, we are ultimately faced with the question that this study hoped to answer, but perhaps worded differently. Can Systems Mapping provide access to understanding, cooperation, and action in a multi-faceted political and policy environment with competing interests *if the process is conducted in a manner that is consistent with good Systems Mapping practice, including its grounding in sound qualitative research and evaluation methods?* The answer to this question lies in the considered, studied, and thoroughly
### Table 1. Summary of limitations, lessons learned, and recommendations

<table>
<thead>
<tr>
<th>Limitations/lessons learned</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-planning sessions</td>
<td>Always hold these sessions with owners to gain clear understanding of how Systems Mapping works.</td>
</tr>
<tr>
<td>Participation</td>
<td>Ensure owners and participants have an understanding of the ramifications of and a commitment to participation as an integral part of the Systems Mapping process. If absent, explore alternative methods to produce results.</td>
</tr>
<tr>
<td>Mapping the current system</td>
<td>Start with a Systems Map of the current system, even if the process is for revision or transformation purposes. This step ensures better clarity on issues that need addressing.</td>
</tr>
<tr>
<td>Use of mind mapping</td>
<td>Using mind mapping is related to participation. It is best to “start fresh” with participants and mind map their descriptions of the system.</td>
</tr>
</tbody>
</table>
Table 1 (continued). Summary of limitations, lessons learned, and recommendations

<table>
<thead>
<tr>
<th>Limitations/lessons learned</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mapping team detachment</td>
<td>The mapping team should be in charge of the Systems Mapping methodology. This is related to the importance of the owners' commitment to participation and the process.</td>
</tr>
<tr>
<td>Sensitivity to the audience</td>
<td>The mapping team should be aware that some participants may not feel comfortable with the mapping process and address issues related to the discomfort as the process unfolds.</td>
</tr>
<tr>
<td>Appearance of organization</td>
<td>Mapping teams should remain vigilant to the possibility that Systems Maps can give the appearance of organization when they actually misrepresent what participants are saying. Full participant engagement, listening fully, and being open to changes can prevent this from happening.</td>
</tr>
</tbody>
</table>
Table 1 (continued). Summary of limitations, lessons learned, and recommendations

<table>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Complexity</strong></td>
<td>Successful mapping of complex systems can require two capabilities. The first is the ability of the mapping team to identify and address the need to deepen the descriptions of complex features of a system. The second is having the ability to portray complex mapping in an appropriate format, which may require the availability and use of wide-carriage printers.</td>
</tr>
<tr>
<td><strong>Attention to detail</strong></td>
<td>This is another lesson related to the importance of participation. Thorough participant review and mapping team responsiveness are necessary to produce a viable Systems Map and narrative.</td>
</tr>
</tbody>
</table>
Table 1 (continued). Summary of limitations, lessons learned, and recommendations

<table>
<thead>
<tr>
<th>Limitations/lessons learned</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploring problems using other methods</td>
<td>When there are multiple changes between iterations and difficulties in producing agreement on a Systems Map, the mapping team needs to use other methods to explore the problem. Interviewing participants individually is one method that may uncover the sources of the difficulty.</td>
</tr>
<tr>
<td>Increasing understanding</td>
<td>Increasing understanding, along with cooperation and effective action, are possible results from engaging in a Systems Mapping process when the mapping team is in charge of and uses the methodology appropriately. Agreement on who is in charge of the process and how the mapping will proceed should be clear and agreed to by the owners of the system before proceeding.</td>
</tr>
</tbody>
</table>
Table 1 (continued). Summary of limitations, lessons learned, and recommendations

<table>
<thead>
<tr>
<th>Limitations/lessons learned</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Including an audit</td>
<td>Whenever resources allow, the inclusion of an audit in a Systems Mapping process is recommended. At minimum, future uses should pay close attention to developing a thorough audit trail of the process.</td>
</tr>
</tbody>
</table>

reported use of Systems Mapping in similar environments where participation is employed throughout. A wise mapping team had best ensure that the owners of a system fully understand that Systems Mapping is designed to capture how a system really operates or could operate through a participatory process. If the owners are not fully committed to such a process, a wise mapping team had best admit that Systems Mapping is probably not an appropriate method for reaching their goals.

Finally, in all fairness to our mapping team, we had the wisdom to recognize the implications of the high number of changes and issues that were not being resolved in the Systems Mapping process. We presented those issues to the owners of the system and together discussed them in both detail and depth. In the final analysis, the Systems Mapping brought out the conflicts and controversial issues embedded in the system, and thus contributed to
understanding the problems involved and to the possibility of finding alternative ways of resolving them.

I stated much earlier that Systems Mapping is a “work in progress.” As such, many of the future uses of Systems Mapping are yet to be discovered. The mapping process has been used successfully in program, project, organizational, and systems level practice for a variety of evaluation and transformative purposes. Given rigorous attention to method, it may serve well in multi-faceted and research contexts as well. I find the possibility of using Systems Mapping in systems thinking and learning organization contexts intriguing as well (Senge, et al, 1994). A number of mapping projects have produced organizational learning particularly in exemplar programs where the participants were prone to look for ways to improve their delivery of services. It is likely that these organizations may have been learning organizations to begin with and used the mapping information to support their already existing way of thinking. Even that prospect in itself underscores the possibility of combining systems thinking and Systems Mapping. Where Systems Mapping’s uses might take its practitioners may not be known at this point. However, the lessons of this study point to some valuable signposts to follow on the journey.
In most Systems Mapping projects, the researchers conducting the mapping are not familiar with the project organization or system. It is thus important to hold a preliminary meeting with several of the key people in the organization or representing the systems effort to start the mapping process. The purpose of the preliminary meeting is to gather information about the background to the project and to begin formulating some questions that the mapping process might want to address. It is very important to remain open to new material, new questions, new perspectives, and so forth while engaged in this process. As such, it is also important to remember that the preliminary meeting is just that: preliminary. To insure the integrity of the process, it is vital to suspend preconceived impressions and to leave room for input and new ideas from the participants of the mapping process. It is this participatory approach and development that makes the mapping process very useful and powerful.

**Pre-Planning Meeting**

This meeting is most effective when it includes the participants who will be involved in the mapping. However, there are times and circumstances when a smaller, though purposeful, group may be called for. Deciding who should be involved in this meeting is a matter of looking at what the mapping will involve and who can best frame the mapping process ahead. A recommended rule of thumb is: *when in doubt, include as many people as possible.* This tends to lead to more people having a stake in the process.
Purposes. The pre-planning meeting focuses on three basic parameters: what the mapping is designed to accomplish, who will need to participate, and how the mapping will be done. This session is also used to begin to gather information about the research and evaluation questions that might be answered by the mapping sessions. It also is used to develop the "Operating Statement" that will guide the mapping. This statement frames the future work of the mapping, so it is essential to spend whatever time is needed to create a clear and comprehensive version that will facilitate accomplishing the aims of the mapping. Participants should be given an overview of the mapping process and a tentative schedule for the iterations agreed upon allowing adequate time to complete the needed iterations and changes. It is not always easy at the beginning of the process to foresee how long it will take to complete the maps and the changes that will need to be made after each review. The sections below provide more detail on developing the operating statement, research and evaluation questions, and the scheduling of mapping sessions.

The Operating Statement. Working out what and for whom the system being mapped is intended sometimes takes time to complete. One of the more effective ways of approaching this is to have the participants come up with an operating statement (for some reason, statements work more effectively than questions) that reflects what they want to map. The role of the researcher in this is to facilitate the creation of a statement that most comprehensively and completely covers the area of concern. For example, in one systems process
with a county-wide effort, the participants wanted to come up with a comprehensive picture of services for families with children from conception through age five. In order to capture the most comprehensive view of the systems involved, the group finally decided that their operating statement was best put as "Describe all of the services available to teenage mothers with children from conception through age five." This statement seems narrower than "all families," yet the group’s reasoning was that focusing on teenage mothers would likely capture the broadest picture of the service systems and their linkages.

Research and Evaluation Questions. When doing the systems mapping for research and evaluation purposes, the mapping team also prepares a list of questions that might be important to have answered in the sessions. The organizing session helps frame the areas for the questions, but may not cover areas of potential inquiry that the outside researcher may see. This list is used primarily as a check list during the session to make sure that all areas are covered. The list should not be considered all inclusive, nor should it take precedence over the participants’ sense of direction. Moreover, we have found in practice that it is best not to use the list until the end of the sessions to highlight areas that may not have been covered. In most instances, they will have either been answered or are likely to be answered in subsequent sessions. The important point to remember is not to allow the research and evaluation list to limit the results of the mapping process. Another way of putting this is that it is
important for the Systems Mapping team to have faith in the people and the process, and to only insert themselves where there are obvious gaps or circumstances that warrant such actions. There are times when such insertions are needed and should be accounted for when looking at the timing of meetings.

*Scheduling Mapping Meetings.* Generally speaking, it takes from two weeks to a month to create the initial program, project, or systems map. Revisions can sometimes be as complex as the first version, particularly after the first review. Revisions after that tend to take less time. If the third iteration maps and beyond require major revisions, this may be an indication that there is something else to consider. In instances where an extended number of sessions have been necessary, the primary considerations that we have run into have been: 1) all of the people who should have been at the table throughout the process have not been, and/or 2) there may a great deal of confusion or conflict about what the program or system is and should be, or 3) the system may simply be too complex for that length of time, as in the case of a system-of-systems level mapping effort. In any of these instances (or others that may surface as a result of continued major changes), it is important to have an exploratory conversation with those involved before continuing. The goal here is to have everyone get clear about what the experience to date may indicate and to take appropriate steps for the future of the mapping. As noted above, these instances may call for a more active and assertive role on the part of those leading the
mapping. There are examples of when it is appropriate to step out of the facilitative role in a later chapter.

In terms of scheduling work, we generally have found it best to schedule the first session and then set up the next sessions at the end of each mapping meeting. It is easier to gauge the time needed between sessions once a review has uncovered the revisions necessary. The ranges of time have varied from between one week up to one month between sessions. We caution against going beyond one month in scheduling if possible, otherwise there can be a problem maintaining the momentum of the mapping. When scheduling, it is a good idea to consider the context of participant in the mapping as well. People involved in an agency or organizational mapping project may be very focused and want to complete the mapping as soon as possible. They may be able to build session time into their work schedule. Working with multiple groups, agencies and individuals in a community-based systems mapping project may be far different. Meeting more often than once a month for such a group may be very difficult to accomplish. It’s best to follow the lead of the participants – while still allowing plenty of time to complete the interim mapping work that must be done.

The first meeting should include everyone who will be involved in describing the system. Experience has shown that planning three hours for this meeting seems to be the appropriate length of time needed. It almost always takes about three hours to produce the first rough map, and rarely takes more than that unless the services are very complex. If the latter is the case, multiple
meetings are recommended, rather than trying to have a longer meeting.
Experience has also shown that the three hour duration is about all that
participants can sustain. There have been exceptions to the three hour limit, but
only in instances where the participants themselves have requested to continue.

Preparation for the Sessions

It is important to emphasize that the meeting room be set up and ready to
go before the participants arrive. This accomplishes two things. It keeps the first
part of the session from being distracting and appearing disorganized. More
importantly, it gives the mapping team members the freedom to greet people as
they arrive and set the tone for the comfortable interaction that is needed during
the session.

Materials. The following are materials that are needed for the meetings.

For the maps:

- a large sketch pad (at least 11" x 14") or a flip chart pad. In most
instances, we have found the flip chart pad to be the most useful because
of the room available to sketch out and add to the map.
- felt tip pens or markers in a variety of colors
- a table large enough for drawing on the pad. We have found that using
an easel tends to distract from the needed dialog in the session.
Moreover, doing the work on the table seems to be a bit less formal and
more friendly.
For the narrative:

- A standard note pad and pen or pencil.
- A tape recorder that is able to pick up the conversation reasonably clearly. A high quality tape recorder and a transcriber are recommended for research and evaluation work. The transcriber is rarely used to transcribe an entire session, but proves very useful for picking up valuable quotes and stories. It is also much easier and more comfortable to use when checking the narrative for accuracy or for something that was missed in narrative notes. This can also be done using the tape recorder if the luxury of a transcriber is not available.
- Plenty of tapes (cassettes or micro-tapes depending on the type of recorder).
- At least one extra set of batteries for the tape recorder.
- Conference microphones (if available) for use with the tape recorder in large groups.
- A written protocol for informing the participants of the use and limits of the tape recording (some of the protocol will depend on the context of the mapping). This protocol should include at minimum how the tapes will be used, limits on confidentiality, and what will be done with the tapes after the narrative has been completed.
Mapping Teams

Working in teams of two people is recommended for the mapping process. One person does the mapping, the other takes notes for the narrative. Both team members facilitate the process to insure that the particular type of information they are recording is clear and accurate. At some point, particularly with a very large group, it may work best to have a third person conduct the facilitation while the other two concentrate on their tasks alone. This has not been necessary in our experience to date, and in the limited number instances where we have used a third person, the mapping sessions did not flow as smoothly. We suspect it may have been a case of "too many cooks...."

Insisting on using a team approach is not a hard and fast rule either. There are instances where this may not be possible, necessary, nor appropriate. There are some drawbacks to one person taking on the entire mapping process, however we have encountered situations where that was the only way to accomplish the project on time, and other situations where it was more appropriate. Examples of these situations will be provided in more detail in the case studies described later.

The First Mapping Session

Once everyone has arrived for the session, it is best to provide a brief orientation as to what will happen in the mapping process. The meeting then starts with the operating statement developed with the participants. For example, if with a program, it has been phrased something like, "Describe the full range of
services that you provide in your program. Start with how people get into your program and describe the services, activities, decision points, and reporting that is done with program participants until they leave your program." It is important to have done the groundwork with the operating statement ahead of time and to use the agreed upon statement that was developed with the mapping participants.

Both members of the team act as facilitators of the process. This means that both are active in asking questions, requesting clarification, and reflecting back to participants the information has been given. It is very important to listen fully to what is being said. The job of the team members is to insure covering the ground as thoroughly and completely as possible, even though the first iteration map will only be close (if lucky).

The Mapping

There are a number of lessons learned during the mapping sessions that have evolved over time (mostly from learning the hard way) that help in guiding the conduct of the mapping. The first of these is one that overrides all others and that is incontrovertibly connected to the standards for conducting rigorous and trustworthy (Lincoln & Guba, 1985) qualitative research. The person doing the mapping must be willing to suspend any attachment (i.e., ego involvement) to the results they produce, particularly with regard to the first iteration map. Ending up with a first iteration map that is complete and accurate is highly unusual. It has happened only once in the past seven years of experience with Systems
Mapping, and that was with a relatively straight-forward map done on an individual level. Other lessons learned were to:

- **Use mind mapping techniques** to create the rough version of the map. Trying to incorporate Systems Mapping symbols slows down the process. Capturing what people are saying in key words and connecting them in a sequence that makes sense is time consuming enough. The mind map need only make enough sense to allow the mapping team member to create the “official” computer graphics version using the standard symbols between sessions.

- **Allow plenty of room** on the paper to add ideas, thoughts, processes, etc. Participants will come up with things that they missed and they will correct themselves. This process doesn’t happen in a linear fashion, even if mapping a step-wise or sequential process or system. A good rule of thumb to follow is to figure out how much space will be needed and then double it.

- **Be creative.** Adding pictures, “meaningful doodles,” or graphic symbols along the way can help stimulate ideas for creating a computer version that is expressive and interesting. One of the advantages of Systems Mapping is that the maps communicate using a variety of forms. It’s not necessary to be a “good artist” either. The computer graphics can assist greatly in developing a polished product.
• **Use different colors** to denote different features of the program or system on the map. Colors are a good way to show that a transition has been made from one facet of a system to another.

• **Keep track of issues** that are mentioned during the session. One way of doing this is to use a specific color to distinguish issues. Locate the issues in the area that they come up. If there are enough issues, or important enough issues, that arise, it may be best to consider doing an Issues Map as an overlay, or along with the map.

• **Ask plenty of questions** when unclear about a particular sequence, process, or linkage. At the same time, remember that subsequent reviews of the different versions of the map will clear up things that didn’t turn out as participants intended or things that were missed. While this may seem a bit “messy,” it is one of the more powerful features of systems mapping.

**Recording Narrative**

The person recording the narrative sets up and checks the tape recorder ahead of time. The team member responsible for the narrative generally makes sure that all areas (including the list of evaluation questions) are covered thoroughly. Moreover, this person also is responsible for reviewing the taping protocols including:

• Informing the participants that the session will be taped and why. It is generally only necessary to remind participants in subsequent sessions,
unless you are dealing with new members or particularly sensitive information.

- Explaining any confidentiality guidelines about the use of the tapes. Generally speaking, it is most common to inform participants that they will not be quoted directly in any document without first obtaining their permission. Tapes are usually erased after they have been used to check the narrative.

- Letting participants know that they can request to have the tape recorder turned off for any statements they don't want recorded. This happens only very rarely, but it does happen; and having the option seems to promote greater comfort about the use of the recorder.

The narrative team member also takes field notes on the information provided by the participants and is responsible for making sure the tape recorder is running and recording during the session. These notes are in the standard narrative form that most of us were taught in school (not mind mapping). It is important to be thorough while still balancing the notes with the need to listen carefully and be clear about what participants are presenting. Just as with the mapping, initial versions of the narrative will not be accurate and complete.

**Completing The First Session**

The first session ends at the time designated unless it is possible to complete the first iteration mind map and narrative with just a few more minutes work. No session should be extended without the permission of the participants.
In more complex systems, it can take three or even four sessions to complete the first iteration. Keeping people beyond three hours can be done, but there is a risk of losing the cohesion of the group from people who have to leave, and from people becoming fatigued and pressured to complete the map -- both of which can lead to inaccuracies and features that are missed.

As the session is completed, the team and the participants set up a time for the second meeting or first review of the Systems Map. The second meeting tends to take approximately as long as the first (i.e., three hours). If additional sessions are needed to complete the first iteration, the steps are the same for each session as the first.

*Developing the First Iteration Map And Narrative*

After the meeting, the team members convert their mind maps and records into systems maps and narrative respectively. There are a number of graphics programs that have flow charting and other needed capabilities for creating the systems maps. Right now, we are using a program called *VISIO 5.0* (1998) from Microsoft Corporation. We have used the program feature that allows the user to create their own stencil by putting together graphic items from several pre-existing stencils (e.g., the Flow Chart, the Map, the Clip Art, and the Connector stencils to name a few). This feature makes it possible customize the Systems Mapping stencil as needed. Figure A-1 shows some of the symbols that are commonly used in developing the map. There is no single preferred way for a systems map to look. It takes time, consideration, creativity and some old
Figure A-1. Sample of symbols used in Systems Mapping
fashioned "trial and error" to come up with a map that will make sense to both the mapping team and the participants. Unless the mapping team is working solely on the Systems Mapping project, it is important to allow plenty of time between iteration sessions to construct the map. This is true of all iterations, but even more so for the first iteration Systems Map. Even with a team experienced in Systems Mapping, a two week turnaround between sessions can be difficult to complete for some mapping efforts.

The narrative portion is developed using any standard word processing program. The tape recording is generally used to check the accuracy of the narrative, to clarify items that notes did not cover fully, and to add things that may have been missed. Usually for the first iteration, it is not necessary to spend much time trying to the map features and the narrative into the same organization or order. The first review of the narrative is generally concerned more with content than with form.

The First Iteration Review

The next step in Systems Mapping is to prepare for the second meeting to review the results. For the sake of emphasis, it is important to be reminded of an important perspective for the second meeting: whatever was produced in the interim -- whether narrative or systems map -- will only be close at best. It is practically guaranteed that it won't be perfect, or perhaps even close. Too strong an investment in the map produced can lead to the researcher inadvertently
contributing to an atmosphere of discomfort where people feel reluctant to provide needed corrections to the maps and narrative.

During the first iteration review, the map and narrative are generally reviewed together. There have been times when a narrative review was not included in this session – usually only when time was a consideration. To date, putting off a narrative review in the first session has not led to any major difficulties as long as there has been both a second and a third review where the narrative was included. When reviewing the map and narrative together, the process that has worked best has been to start with a step or phase of the map and then review the narrative for that phase before moving on to the next step or phase. For example, if the Systems Map starts with a program referral process, it is recommended to first verify that the map is accurate for that process and then review the narrative for referrals. This is repeated for the next phase of the map. With this "double review" process, it is highly recommend that some time be allotted at the end of the session to conduct a review of the map in its entirety so that participants can see if the flow and connections of the map make sense to them.

The third review meeting is determined at the end of the second meeting. In many instances, particularly on a program level, this will be the final review session and changes from this review will not be as drastic. The length of time needed for a final review has a tendency to vary depending on how much everyone is in agreement about the program or system. The range of time
needed varies between two to three hours. However, if some things continue to be difficult to describe or are unclear after the second review, the third session may take a longer period of time. This will call for a "best guess" when scheduling the length of time for the meeting. A good rule of thumb is to schedule more time than anticipated. If the session ends early, so much the better.

Second Iteration Map And Narrative

This step is essentially the same as that in the first iteration. The map and narrative are modified as indicated from the review process. This may require some major modifications. In one or two instances, we have found that starting "from scratch" has been easier than trying to modify a first iteration map that needed a lot of addition and modification.

If it looks like the mapping work may be close to a final product with the second iterations, this phase is where the narrative and the map are coordinated to flow together. With some Systems Mapping projects, it has proved beneficial to number the major features of the map to coincide with numbering the major categories of the narrative. With some mapping projects, numbering the map feature and the narrative has enhanced the clarity and utility of the Systems Map. In other instances, particularly systems level work, numbering proved cumbersome and counterproductive.

Second Iteration Review

This review uses the same processes as the first iteration review. A review of the map and the narrative together is essential at this point. The existence of a
large number of changes emanating from this session at this juncture might indicate that there is something going on in the process that needs further exploration. In one research and evaluation project we conducted, exploration of the disparity from one iteration of the Systems Map to the next uncovered a major barrier that the program was faced with. Left unattended, this barrier was having a very destructive effect on the program, and left unattended might have proved fatal to an otherwise exemplar program.

Third Iteration Map And Narrative

This stage, in many circumstances, will involve final touches to the maps and narrative. It is important to have coordinated the map and the narrative by now so that they have the same flow and order. Now is the time to number or otherwise symbolize the map sequence or sections, and do the same with the narrative if that is how they are to be displayed. If numbering seems appropriate, it is usually only necessary to number the major steps, sections, or sequence points on the map and narrative. Numbering each of the items on a map tends to make the end product too complex and difficult to follow.

The Completed Systems Map

There are two steps involved with the completed Systems Map. The first involves delivering the completed map and narrative, and encouraging one last brief review to insure that the products accurately reflect the process. The final step in Systems Mapping is to assist the participants in using the maps and narrative. As noted previously, there are a number of intended and potential uses
for Systems Maps: research and analysis of programs and projects, evaluation, assessment of flow of services, identifying missing areas or duplications, training, informing various constituencies, organizational or community change efforts, and so forth.

Systems Mapping Over Time

In addition to the "right now" uses, the entire Systems Mapping process can be used iteratively as well. This involves using the entire process again at appropriate intervals. What is appropriate will vary depending on intended use of the systems mapping and where the program is in its development. For example, a new program just starting may develop a Systems Map of services as a planning guide first. Next the services may be mapped again to see if implementation is consistent with planning, and to assess whether changes are in the desired direction (more effective rather than less). This could take place three to six months after the program has started. Then Systems Mapping can be used after a longer interval (e.g., one year) to review and improve service delivery as part of an internal formative evaluation process.

One of the advantages of Systems Mapping as an evaluation and assessment tool is that it provides multiple levels of review of the actual service delivery system. As such, the mapping techniques provide a broader dimension to the more usual methods used for assessing program utilization, improvement, results and impacts.
APPENDIX B: HOME VISITING PROCESS MAPPING

When I arrived at the Institute for Families in Society in mid-1995, there was a major project underway related to the application of findings from an extensive review of research on prevention of child abuse and neglect. This review had been conducted over a several year period by the National Council on Child Abuse and Neglect. The director of the Institute for Families in Society, Gary Melton, had been a major contributor to this effort in his role as a member of the Council and as co-author of several of the annual reports detailing the results of the research. One of the findings in the research had been that home visiting programs had been successful in significantly reducing child abuse and neglect. Because of the apparent success of such programs, the State of South Carolina had funded an effort by the Institute to locate the home visiting programs in the state, identify the exemplar programs, evaluate these effective programs, and develop transferable models of best practices. By the time I arrived, faculty had identified 69 home visiting programs in the state and four exemplar programs. One of my colleagues and I were assigned to the evaluation and modeling task. We were charged with using and developing process mapping techniques to do so.

Prior to home visitation project staff coming on board in October 1994, a Home Visitation Advisory Committee comprised of a cross-section of agencies, organizations and home visitation programs from throughout South Carolina had
already been convened. The committee was assigned the task of developing a concept paper for the home visitation project. That concept paper:

• provided state and national health data on children;
• addressed the role for home visitation in preventing child abuse and neglect and promoting improved developmental results in children;
• suggested pilot site guidelines;
• addressed funding of those sites; and
• made recommendations for geographic location of pilot sites (hereafter referred to as demonstration programs or partners).

The concept paper also included recommendations for home visitation demonstration programs in six counties. These were to be programs with which the Institute would partner for purposes of research and program development. The programs were recommended for a variety of reasons. These ranged from being in rural areas and having limited resources to being a pilot site for the Healthy Families America initiative.

Building on the Committee's work, Institute home visitation staff surveyed all known early childhood home visitation programs in the state. Visits were made to selected programs, literature on home visitation was reviewed, and an inventory of all identified programs was created in order to determine the amount and nature of home visitation in South Carolina. This combined effort resulted in six programs being chosen as partners with which to work intensely during the first one to two years of the project.
While the Institute planned to do a series of network building activities with all known early childhood home visitation programs in the state, it also planned to do careful program development, evaluation and research work on issues surrounding what kinds of home visiting strategies service what kinds of populations and in what ways. Thus, there was a need to select partners that appeared to have fairly strong and effective home visiting programs, and who were willing to mentor other programs or groups in the state. A selection criteria was designed and implemented.

Initially six to eight demonstration programs looked like a manageable number of programs to use as a starting point, with other programs to be added as necessary and practical. The long term goal for South Carolina has been to establish a system of voluntary universal home visitation programs for families of infants and young children. This was to be done in such a way that any community that wanted a home visitation program could have a program based on creditable research, proven interventions and access to a network of technical advisors and mentors. Four programs ended up participating in the process and decision mapping sessions.

The established criteria was used to find the strongest willing partners for progress toward our goal. Matching partners based on those criteria led to a broad diversity in partnerships. An abbreviated version of the selection criteria was as follows:
1. A program philosophy compatible with that of the Institute's — home visiting service "with" families rather than "for" families.

2. A conceptual model of home visiting articulated that is either a health, education, social support, psychosocial or some combination of these models.

3. A definite base of service exists and is distinctive enough from other partners' programs for comparative analysis.

4. Services are articulated well enough to allow for replication and the service package is unique enough to use as an optional model for other communities to consider.

5. The program is tied to other kinds of services for families and children, and the is intentional enough to be articulated and studied.

6. The program services a unique demographic mix that is somewhat different from the other partners so that models can be examined that best fit certain kinds of locations and populations.

7. Variation in service provider models (e.g., paraprofessional, professional, mixed model).

8. Willingness to participate in a partnership and play a role as mentor to programs in other locations in the near future so that a network is more quickly formed and serviced.

9. An articulated philosophy of program development, or are willing to articulate what they are doing and why.
10. Program's management, leadership and organization are effective enough to be profiled as a model.

11. Program's organization appears sustainable.

12. Program can exist irrespective of any additional money being given to the partner by the Institute.

13. Effectiveness and competence rests on more than one individual.

14. Staff represents a racial and ethnic mix of the location served.

15. Program has been in existence for awhile.

16. Program has sufficient existing community support (coalitions, partnerships, etc.).

17. Existence of multiple funding streams so that the program can contribute to discussions on financing.

18. Program is willing to explore research questions related to program delivery, population characteristics, and in a manner complementary and compatible with that of the Institute.

19. Program and population represent unique service delivery from across the public and private sector continuum.

20. Eligibility requirements are articulated and the target population represents a unique mix within partnerships.

Prior to implementing the mapping sessions, programs selected were invited to a group orientation meeting held at the Institute for Families in Society. In this meeting, Institute faculty presented a general overview of purposes and
design of the processes we would be using in the study. After the meeting, programs were contacted and they identified participants for mapping sessions, and coordinated the timing and location of the sessions. Sessions were conducted at the program sites which were in different parts of the state, one in a metropolitan area and the other three in rural locations.

The results of the mapping done in these four programs were analyzed on two levels: (1) on the program level and (2) on the mapping process level itself. On the program level, participation in the sessions ranged from two to five program people and attendance was consistent in three of the four participant programs across the iterations. In the fourth, only one iteration was completed because of the high amount of change and flux occurring in that program. In all of the sessions, there was a small number of participants though the home visiting staff were well represented. The interaction in all of the sessions was free flowing and everyone contributed. With two of the programs, the staff were very active and energetic, and used the sessions to find and suggest improvements in their service delivery system. In the other two programs, there was evidence of tensions that the mapping process had uncovered and helped identify. All of the programs had definite strengths ranging from being highly supported by their communities, to being sought out by potential service recipients on a “word-of-mouth” basis, to having numerous instances of successful results (which the mapping helped highlight), and more.
The mapping and narrative also suggested areas for further inquiry that might be available to further strengthen the programs. Most of these latter suggestions involved clarification of specific procedures and service components. The two programs where the tensions existed had several more substantive issues. For example, the program that only completed one iteration of the mapping had issues related to high turnover, high workload and stress, and long hours and low pay. All were factors that contributed to the mapping process being stopped. Interestingly enough, the provision and quality of service in the program appeared to be relatively high given the context of the service area and the nature of the services. The leadership of this program opted to address these issues at this juncture, rather than continuing with the mapping process.

The other program with broader ranging issues led us to an interesting discovery about using the mapping. With all programs, there were numerous changes between the first and second iteration maps and narrative. In discussing this occurrence with the participants, we found that this was largely due to context. We were unfamiliar with the program context, and they were unfamiliar with the mapping context. By the time of the first review, we all had a better understanding of each others' context and the mapping and narrative produced was much more accurate. This has consistently been the case with all of the mapping done since that time. However, the one program noted had very significant changes through all three iterations of both the map and narrative.
This led us to have a lengthy conversation with the program administrator about the differences.

In this conversation, we found that the program was experiencing a significant divergence of thinking about the purposes and goals among all of the three major stakeholders. The program design and administration had one version, the funding partners another, and the service delivery staff still another. Interestingly enough, in spite of this divergence, the program was held in very high esteem by the community and had a long waiting list of people self-requesting inclusion in the program (based primarily on their reputation for effective services). The benefit to the program in this discovery was that the results of the mapping process allowed the administrator to address the divergence directly. The benefit to us was that it distinguished the potential source of broad changes in mapping iterations. This was something that we could file in our toolkit for future reference when conducting the mapping process with others.

On the mapping level, there were a number of factors that emerged from our analysis of the process. These were shared with the programs involved in our reports to them. The first factor had to do with analyzing the trustworthiness (Lincoln & Guba, 1985) of the information. In our reports, we provided the programs with information regarding establishing trustworthiness including the criteria for determining credibility, dependability, transferability, and objectivity. It is important to note that the analyses from this standpoint were based on the data
we had collected, and not on the programs themselves. The range of trustworthiness varied from marginal with the single iteration map and narrative to having substantial confidence in the mapping and narrative with two of the programs.

We also looked at the limits and strengths of the mapping process as a research and evaluation tool for the programs. These were shared with the programs in our final report as well. These findings were presented as follows and provide some insight as to the state of development of Systems Mapping as we were nearing the end of this first evolution. All programs were given the following information:

A few words should be said about how the maps may be limited and how they may be useful. Process and decision maps are not a stand-alone substitute for more traditional forms of program description and evaluation. There is still a need to use and review archival information, the intended design, policy and procedural guidelines, information from program participants, and results and impact data to reach a more complete understanding of the service functions in programs. Process maps can help point to a more complete description of the systems of service delivery if used in conjunction with these other sources of information, but they are not a complete alternative.

The maps and other products are limited in the sense that they may only point to other descriptors and indicators that will have to be specified,
measured, and evaluated more completely in other ways. In other instances, they may either confirm or conflict with some of the more traditional measures. This can lead to confusion of the results of a program review or evaluation if not sorted out completely. Finally, the maps should not be considered an evaluation in and of themselves. They are best used in building a rich description of the actual working of a service program from which a thorough and meaningful evaluation design might emerge.

In terms of their utility, process and decision maps can provide a clear and integrated view of the processes and decisions that are made in the provision of services. They are generated from the expertise and language of the people who are actually engaged in the services. They provide a picture of linkages between all features of a program's systems and structures, and do so in the context of the program itself rather than from the context of an outside researcher. The technique as described has built-in and recursive levels of review which engages participants fully in determinations of the dependability and trustworthiness of the information. As such, it points to the possibility of ensuring the reliability and validity of data derived from qualitative sources (Lincoln & Guba, 1985). Process and decision maps have the potential for assisting evaluators in the development of evaluation designs that are much more sensitive to the actual workings and results of service provision because they are
developed with rather than for the programs involved. Finally, the process and decision maps provide a concise and connected visual display of program features which can be used to engage the participants in active and energetic dialog regarding their work. This has been the experience throughout the various phases of the work. The possibilities and utility for this tool appear very promising from the standpoint of evaluation, systems analysis and design, and organizational development and change. (Ahlen-Widoe & Williams, 1996)

The other results of this evolution were, of course the process and decision maps and their narratives. Since the home visiting project participants had been assured of anonymity within the project, the narratives cannot be shared since they clearly identify the programs and the specifics of each feature of the program processes and sequence. One program did provide permission to use their maps as illustrations in subsequent materials as long as we removed specific identifying information from the maps. Figures B-1 and B-2 are the first and third iteration maps that were created during this evolution.

At this point, the maps were created on standard letter size paper as they are seen here. Standard symbols were used, but there was no use of color in lines, text, or fill. There was also only a minimal use of representative figures (e.g., the telephone, the car, and the coffee cup – which was adopted as the symbol for ending the process because “having a cup of coffee” was what the Home Visitors
Sample Program First Iteration

#1 REFERRALS

Health Department
Teen Pregnancy Program
dSS
Council on Alcohol and Substance Abuse

#2 Connect with the parent referred via phone, mail, visit

School Referral Form

#3 INTERVIEW using risk criteria for assessment

#4 NEEDS? SERVE?

No
Wait List

Yes

#5 Make contact with parent

PRIORITY

Teacher

Yes or No (optional)

Parent Education in Classroom

Send Newsletter

Parent decides

Asessment Form: needs, immunizations, parent information, updates

FILE

RELEASE FORM

PROGRAM GUIDELINES Given to parent

HOME VISITS

Travel

Figure B-1. Sample first iteration Home Visiting process map
Figure B-1 (continued). Sample first iteration Home Visiting process map
Figure B-2. Sample third iteration Home Visiting process map
Figure B-2 (continued). Sample third iteration Home Visiting process map
Figure B-2 (continued). Sample third iteration Home Visiting process map
did at the end of a visit sequence). There were enough differences between the first and third iterations to warrant an additional page of the mapping. Most of these changes were made on the second iteration.

There was another activity worthy of note that happened while we were engaged in this evolution with the home visiting projects. One of the faculty at the Institute had been working on a consultation and evaluation project with the South Carolina Council on Child Abuse and Neglect. The Council had requested an evaluation of the services provided by the home visiting division. My colleague requested that I assist by mapping these services. However, she had designed an innovative process for capturing the realm of services. We were to individually interview the six home visitors in the program, and develop the mapping and narrative from these individual session. The instructions to the home visitors involved having them describe, in detail, one of their most memorable visits with someone on their caseload. My initial reaction to this design was that it seemed fairly risky – particularly if the charge was to conduct a comprehensive review of services. The potential seemed high for ending up with holes in the process that we would have to come back and fill later. My colleague’s design (and perhaps not just a little intuition) proved out in the end. Each of the participants independently self-selected a particular visit that was not only rich and descriptive in content, but also involved different facets of the program. That is, one described an initial contact cycle, another an interim contact, another a final visit, and so forth. When taken together, the process maps gave her a very
comprehensive picture of the workings of the entire division – along with some fertile illustrative material. This project produced one other, singular innovation. It was the only time that a first iteration map proved correct and complete, and needed no revision. So far this has been an entirely unique occurrence.
APPENDIX C: THE AIKEN MAPPING—THE FIRST “SYSTEMS” MAP

“We have a large number of family-serving programs, but our services are scattered and unconnected. We think that’s our major problem.” This simple two sentence declaration from a human services agency director led to the most complex project done to date. It ultimately led to re-naming the mapping process as well. The project involved creating a map of the systems of family support that existed in the community of Aiken, South Carolina. This was the first Systems Map to be developed.

The account of family support efforts and initiatives told to us by a variety of leaders in the Aiken community was a story of emerging awareness and commitment to improving the quality of life for its children and families. In the late 1980s and early 1990s, community leaders began to pay close attention to the status of children. We were told that the national and South Carolina Kids Count reports by the Annie E. Casey Foundation during these years provided the impetus for a “wake up call” with regard to the status of children in Aiken County. Particularly disturbing was the fact that Aiken had one of the highest infant mortality rates in the state. By extension, this made their rate of infant deaths one of the worst (highest) in the nation. The civic and agency leaders in the community formed a task force to study and make recommendations regarding infant mortality. Their report was entitled “Growing Into Life,” a name that became synonymous with the task force itself almost immediately. The name stuck and the efforts have continued beyond the original intent. Growing Into Life has itself
grown into a sustained effort to improve not only the lives of children but the lives of all of the citizens. The first product of the task force efforts was an innovative, broad-based structure of inquiry for their fetal/infant mortality review board. They adopted an inclusive definition of health factors, informed by and quite similar to that of the Healthy Cities and Communities initiatives that have grown out of the World Health Organization’s definition of “health.” The result of this broad-based, multidisciplinary approach was that within three years the community had lowered the rate of infant mortality by 40 percent. Two years later – the year we started our work with the community – there were no infant deaths reported in the county for that year. Rather than being content with their success, many of the leaders involved in the Growing Into Life group decided that they wanted to expand their prevention activities to include children from conception through age five and their families. This was the point at which they contacted us and asked for our assistance. Initial and continuing conversations with them made clear the fact that they wanted us to work with them to assess and address all of the myriad features and issues of their systems of support for families. They expressed the hope that they could capture the services available and the issues related to the delivery of services for families with young children across their entire family support system (or more accurately their system of systems). Their vision was that they would transform their current systems into a comprehensive,

3 “Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.” World Health Organization.
integrated, collaborative network of services and supports that would promote the health and well-being of young children and their families. They were quite sure that the mapping processes they had seen us demonstrate would allow them to realize their hopes. To our small team (two of us in the field, one reviewer/consultant to the effort, and two others who were involved at varying points in the process) it appeared that we were being called to partner with the community in a research and action project that could conceivably cover the entire scope of family support services. We shared the community leaders' hopes, but were not nearly as sure that our newly developing mapping processes were up to the effort.

Just before starting this project, the Institute for Families in Society had been conducting an extensive review of the research literature on family support and home visiting services. Institute faculty identified 67 sources of research that were considered seminal in the family support field. These sources were reviewed to identify community-level indicators and descriptors that were significant factors in determining the effectiveness of family services and supports. This review of the literature revealed family support factors that seemed to fall into five categories on a community or systems level. These categories were derived from an analysis using qualitative software (NUD*IST) in a combination of string, pattern matching, and intersection searches to identify common themes. It should be noted that none of these categories actually
operate in isolation. They are all interconnected in one fashion or another. These categories were as follows:

- The existence and/or availability of services and supports.
- Accessibility of services to user populations.
- Levels of services provided.
- Linkages and collaboration among services.
- Community and user attitudes about services, and the contexts and cultural sensitivities of service delivery.

What the community leaders in Aiken had proposed was an inquiry on a number of levels pertinent to their existing systems of support to families. Not surprisingly, the issues they identified paralleled those that we found in the family support research literature. They were concerned about what services and supports existed including duplications of service, and what was missing in their system. They were concerned with the accessibility of services, and whether the levels of services were adequate to the needs of the families in their community. Among their highest priorities was a concern over the connections and collaborative efforts in their systems of services. This priority of concern was also expressed with regard to the context and attitudes of the services as well. As we began this study with the community, we were hopeful that our partnership with them in this study would be able to pull together all of the aspects of these concerns and give the leadership in the community a solid base for improving supports for families that they envisioned.
Pre-Planning

Our first contact with the community regarding the mapping process was a pre-planning meeting held with three community leaders consisting of two directors from family-serving non-profit agencies and a city council member who was the Mayor Pro-tem of the City of Aiken. They expressed their ideas about the possible mapping project, the questions they hoped to answer, and the results they hoped to see from the effort. We took standard field notes, and listed the ideas and questions that were presented. After we all agreed to move forward with the project, we worked with them to set up a framework for the planning meeting itself. We emphasized to them the value of having as many stakeholders at the meeting as possible (Patton, 1986), and the importance of informing the potential attendees of the purpose of the meeting, i.e., planning and creating a structure for mapping their systems of services and supports to families. We agreed that we would do a brief presentation as to what “process mapping” entailed. As it turned out, we would be mapping Systems, with processes being involved only in the narrative and indirectly in the mapping.

An Initial Organizing Meeting. There were 18 community leaders in attendance at this planning session, which was held approximately two weeks after the initial meeting. The people who participated were county government department heads (e.g., from Social Services, Mental Health, Disabilities, Public Health, etc.), directors of non-profit family serving organizations (e.g., United Way, several children-serving agencies), school administrators, and civic
leaders. After our brief systems mapping presentation, a lengthy dialog, in the form of a brainstorming session, was held on how to structure the mapping process. We learned an important lesson about listening rather than talking when we suggested that a visioning process might be a good place to start. Rolled eyes, heavy sighs, and slumping postures told us right away that this was not a good direction to pursue. The ensuing discussion revealed that they had all been involved in no fewer than two or three visioning sessions with their organizations in the past year or so, and that was enough.

*The Operating Statement.* The session led to a generative statement as follows: “Describe the services and supports, and their connections, available in our community for families from the idea of conception through the children’s fifth year.” There were two important factors that surfaced with regard to the statement and the work ahead. Both had to do with the participants’ desire to be clear and concrete about how and what would be mapped. The first was clarifying that they intended to follow what might be called a developmental path with the mapping. That is, they wanted to start with the idea of conception, move to family planning and pregnancy prevention, then to pregnancy and to birth, and so forth up through age five. The second factor had to do with the need to capture all of the services available, and yet be concrete in the process. They finally decided that the best way to accomplish this was to follow an unwed, teenage mother through the path they had decided on. All agreed that this group represented the highest users of services and supports for families in their
community. The statement and clarifying context together with our list of research questions (which were reviewed and validated by community participants in a subsequent memo) formed the focus of our future group sessions.

\textit{Scheduling the Mapping Sessions.} At this point the first mapping session was scheduled. We informed them that our experience had shown that planning for three hour sessions to conduct the mapping had seemed to be optimal. We also came to an agreement that subsequent sessions would be scheduled at the end of each session. They requested that the meetings be held approximately one month apart due to the heavy needs of their work schedules. This schedule gave us ample time to complete the computer versions of the systems mapping and to record the accompanying narrative. Our experience to that point had been that a two week turn-around was a good interval to both complete the mapping/narrative work and still keep the momentum of the effort. However, this project was the most complex we had undertaken, so the schedule seemed to fit. We then thanked the attendees for their participation and for their interest in improving services to families in their community.

\textit{Mapping the Systems}

The progression of the mapping sessions generally proceeded along the lines described earlier. Our team completed the mind mapping and narrative, followed by the computer conversions, and then conducted the reviews of the iterations. However, there was a big difference with this project. It took a total of seven sessions to complete the first iteration of the Systems Map. Each session
engaged in both review of revised map segments and narrative (approximately one-third of each session), and in moving on to additional areas as guided by the generative statement. At the end of the seventh session, we had captured enough information to convert the segments of the maps to the larger combined map. Two other innovations were brought into the Systems Mapping process at this juncture. Creating the combined map was only possible through the inclusion of a wide-carriage plotter printer. This allowed the printing of maps that were up to 36 inches in height and potentially as wide as a roll of printer paper (in practice the widest map produced so far has been approximately 60 inches). The second innovation came when our team reviewed the first combined map that we printed. We all agreed that it was more complete and gave a better picture of the systems than segments of the map on separate pages. However, something was missing. As we were proudly sharing our new creation with other Institute colleagues, one of the professional staff – who also happened to be an artist – rather quietly asked, “What about color?” This led to an energetic hallway brainstorming session about the potential uses of color in the mapping process. We have been using color for highlighting different phases and functions with Systems Maps ever since.

At the same time we were developing and enhancing the combined map, we also began ordering the narrative to fit with the map. To date, we had taken up the practice of numbering the map features to coincide with the narrative. The mapping was too complex and the numbering too cumbersome to work
effectively in this situation. We thus simply arranged the narrative in a way that seemed to make sense to everyone, which involved following an order similar to how items were displayed on the map.

There was one other unexpected event that occurred around the third mapping session of our work with the community. This involved the birth of the idea of creating an Issues Map. This was an idea that came initially from one of the community members who suggested that we develop an overlaying map to locate all of the important issues identified on the systems map that was evolving. Initially, we had thought it might be possible to simply map the issues as a permanent part of the map. Attempts at this showed us that the resulting map would be too crowded with information to be understandable. In reviewing this shortcoming with the community, the Issues Map idea was born and discussion of possible ways to create such a map led to the idea of using the transparency option noted above. This actually required locating the issues in the appropriate places on the mapping segments, backing out any systems feature not associated with an issue, and then printing the result. The one exception to this was large or pervasive issues which were inserted onto the map itself. This way of handling the issues left the community with an overlaying transparency Issues Map that could be used to identify, communicate, and deal with the issues related to specific areas of the systems of family support.
Results of the Mapping

The community and our team produced a completed 36 inch by 36 inch Systems Map of the Aiken family support system over a 13 month period. After combining the segments of the map that were produced initially, we held five more sessions to get the map in a configuration that everyone could agree was completed. The last two of these sessions spent only a short amount of time more or less fine tuning the work, while the balance of the sessions were spent talking about how the map had been used and possible ways it could be used in the future. As the community members put it, the systems map was completed “for now,” which was a recognition of the changeable nature of any such system.

The sessions included participation from a total of approximately 30 community leaders, and attendance at parts of a session from a number of others. There was a core group of eight community members that attended all but one or two sessions, with attendance ranging from 10 to 15 at most meetings. We initially had concerns that the varying attendance on the part of others might have a negative effect on the results. However, people coming in at different intervals and new people attending had the opposite result. They brought a fresh perspective and their input generally added to the mapping, making the process more complete and accurate. For the most part, this varied attendance also tended to produce effects similar to those that might be expected of an inquiry audit (Lincoln & Guba, 1985). The fresh perspectives let to the iterations of the maps (including the narrative) being clarified, corrected, and
reorganized in a way that made sense to everyone involved. This participation helped identify issues related to their family support systems as well.

The systems map ended up with six distinct but developmentally connected areas of family support services. These were: family planning and pregnancy prevention, pregnancy services, childbirth or delivery services, services for the baby at birth, family supports from birth to age three, and supports for families and children from age three to five. This last level of supports was subdivided into two types of services – those specifically for children and those for families with children in that age group.

The systems map itself was, of course, a result of the project. A smaller version of the map arranged by area can be seen in Figures C-1 to C-6. There was one caveat that went with using the map. There was a need to connect the support services with the areas being mapped, e.g., family planning services with that category of services, pregnancy services with that category, etc. The resulting lines connecting them to the category could be misleading in that they may create the sense that the services were interconnected. However, they weren’t. The points of connection and collaboration were mapped using a dashed, colored line with arrows indicating the directionality of the relationship (i.e., unidirectional indicating provision of services from one agency to the other, bi-directional indicating a reciprocal relationship on some level).
Figure C-1. Family support services: Conception and family planning
Figure C-2. Supports during pregnancy
Figure C-3. Birth and supports for new baby
Figure C-4. Families at-risk with children from 0 to 3
Figure C-5. Services for families at-risk with children from 3 through 5, specifically focused on children
Figure C-6. Services for families at-risk with children from 3 through 5, specifically focused on families
This Systems Map showed that Aiken's family support system had a varied array of services available for their at-risk population. In terms of numbers and types of services, the community had health care supports that included prenatal, peri-natal, and post-natal supports. There was a hospital with a maternity section available in the community, although there was a scarce supply of obstetricians who would work with high-risk mothers. Health care services also included an active mental health department using a community mental health model. Also in existence were child care programs, school-based programs for early childhood, and parenting programs and supports. There were social services for preventing and intervening with child abuse and neglect, and for providing financial and job training resources. The non-profit sector provided some of the after-care services and treatment for families where child abuse or neglect had occurred, and these services also included shelter and foster home placement when needed.

Access to services showed up as having the same problems that exist in many rural areas. Aiken County is largely rural in nature. The largest center of population is in the Aiken City area, with another concentration in the South Augusta which is situated near the Georgia-South Carolina border. As with most rural areas, transportation tends to be a problem, although many of the family support services provided transportation and outreach services such as home visiting. Economic issues also prevailed as an access problems. The county had one of the highest per capita incomes in the state, however there was a striking
disparity between a large low-income population and a small but quite wealthy upper-income population.

An assessment of the levels of services provided also emerged from the mapping process. In general, the participants felt that the levels of services provided were adequate to good. The consensus was that the existing services were being well provided, though limited resources and funds had a dampening effect on how broad the support net was able to be cast. What resources and funds that were available were being strained at their current levels.

An analysis of the linkages or collaborative connections among family support services showed that only 19% of the possible connections among agencies existed. The range in the six areas mapped was from 5% to 25%. Moreover, a number of the existing linkages were unidirectional in that one agency was providing either staff support or a specific service for another agency. Aside from many of the organizations being represented on the Growing Into Life initiative, there were not many formal or reciprocal relationships in existence. This essentially confirmed the hypothesis the community members had posed at the outset of the study. Family supports were available but few were linked in any meaningful way. The mapping also identified some areas of duplication of services. For example, there were a number of agencies that included family planning services in their family support activities. However, many of these supports took on a different form depending on the agency involved. The same seemed to be true of parenting education which a number of
agencies provided, but each with a different focus (e.g., preventing child abuse, school readiness, etc.). The feeling expressed by participants as these areas emerged was that these parallel services could benefit from some form of collaboration and planning activities together.

The context and culture of family support services emerged primarily out of the issues identification and mapping processes. A sample page of the Issues Map part of the process can be seen in Figure C-7. Though they indicated they saw family support services as technically competent, many community leaders expressed concerns over the contexts of service delivery and the lack of cultural sensitivity (including a sensitivity to the culture of poverty that existed in many places in the state). Many of the leaders conceded having these concerns regarding their own agencies and expressed frustration in finding effective ways of dealing with the issue. While there was general consensus that there was good leadership across many of the family support services, the depth of leadership was a major concern. Many of the agencies operated on the strength of their current directors and there did not seem to be a conscious effort underway to develop leaders within the organizations. This concern did not stop with the services arena. There was also a feeling that community and civic leadership was not being developed nor did it have the needed depth to sustain community growth and improvement over time.

Another result of the systems mapping process was the use of the map and narrative to train service providers in the array of services available. We had
Figure C-7. Sample segment of the Issues Map of the Aiken Systems Map
seen this happen with program level mapping, but weren't sure how that might work with a systems level project. The director of the Department of Social Services led the way by starting to use the developing systems map even before we completed the first iteration combined map. Others reported following suit.

There were several unforeseen but significant results that occurred with the systems mapping process. Activity setting theory suggests that people engaged in joint productive activity in a setting will develop intersubjectivity over time (O'Donnell & Tharp, 1990). While we had not been intentional about viewing the systems mapping sessions from a setting perspective, we saw evidence of the intersubjectivity phenomenon before we had reached mid-way through the project. The participants in the process began to spend longer periods of time at the beginning of the sessions interacting, making plans, conferring about mutual problems, and setting up collaborative meetings. The relationship building aspects of this seemed so positive that we quickly gave up trying to start the meetings on time. Our mapping team consciously made the decision to set aside the first half hour of each session to this interaction. We never communicated this decision to the community members – it just became understood that the first part of each session was for that purpose.

Other unanticipated results occurred from how the community leaders chose to use the Human Systems Maps. One of the third or fourth generation combined maps was used in the city's application and presentation in their bid to become designated as an “All American City” by the National Civic League. This
bid was successful and the community members involved communicated to us that the mapping had been an asset in the process. The community also submitted and presented the mapping effort as part of their application to become designated as a comparison community with the Disney Corporation's study of their model community, Celebration, Florida. This bid was also successful and we were informed that the systems mapping had played a significant role in Aiken receiving the designation. This designation brought with it some state-of-the-art technical assistance paid for by the Disney Corporation, including becoming a development site for a Community Outcomes software package. Several of the community leaders also reported using the systems map in presentations at local and national conferences. Apparently they spurred some interest somewhere because a number of copies disappeared before they could be retrieved at these conferences. They were on their fifth laminated copy of the 36x36 inch completed systems map when we completed our work with them.

The final result of the development of the systems map was a request from the Growing Into Life group to work with them in a consulting role to use the work that had been done to undertake a community-wide transformation initiative of the systems of support to families, not just for families with children but on a life-long basis as well. Since we ourselves had become a part of the setting intersubjectivity, we could hardly refuse. This resulted in a consultation with them over a six month period using a version of soft systems analysis modified for
APPENDIX D: HEALTHY COMMUNITIES POLICY AND PLANNING

Using Systems Mapping for policy and planning purposes began as a later parallel activity while our Institute team was working on our systems-level research and evaluation projects. Our contract with the Department of Health and Environmental Control of South Carolina called for a consultation and partnership role with the Healthy Communities Initiative division. We found two uses for Systems Mapping in this partnership. The first was to help define and communicate what the Institute’s overall role was with the Initiative. The Systems Map developed for this purpose was used to help define what our work entailed and also to communicate what we were producing to State administrators and policy-level people (i.e., State department heads and members of the Governor’s Cabinet). Since we were doing complex work, and were actively involved in the decision and policy environment, we needed a complete yet concise way to communicate on this level – some version of a “gold standard” summary. The Systems Map in Figure D-1 was used for this purpose, along with a 10 minute presentation in briefing sessions with these State officials.

This particular map was also used in our partnership with the Healthy Communities Initiative as a guide for developing our annual work plan and contract task orders. It assisted both in making sure that we were inclusive of the areas that needed attention and in keeping us from wandering from our purposes and agreements.
Figure D-1. Healthy Communities Consulting and Technical Assistance
The second policy and planning Systems Map was created to assist in the development and implementation of a new State program. The division we were working with had been tasked by the department head with developing a small grants program to support the growth and success of local Healthy Communities efforts in the state. Because of high workload and only two staff, this task had stayed on a “back burner” for some time. The partnership with the Institute provided the opportunity to develop and implement this program in a meaningful way.

The result of the collaboration was the “Investing in Healthy Communities” initiative. The core of this program was to offer local Healthy Communities organizations an opportunity to receive funds to support growth and improvement activities. The program was designed to address issues of capacity building, citizen participation, leadership, leveraging of resources, identification and utilization of community assets, and evaluation of results produced. Built into this design was a teaching component so that community leaders could learn some effective ways of addressing these issues. Also built in was the involvement of major stakeholders in the form of an Advisory Board of executive directors, Governor’s Cabinet members, department heads, and other officials who were able to bring the resources and expertise of their positions to the table to support the local community efforts. While we had developed a “Prospectus” describing the “Investing in Healthy Communities” program, we still needed a simple and elegant way of communicating how the system would work. The Systems Map in
Figure D-2 was used in briefings, community orientation sessions, and on site visits to ensure understanding of the program, its processes, and goals.

While it would be difficult to assess the results or impacts of the use of Systems Mapping in either of these two instances, it may be safe to say that they contributed to the outcome. In the first instance of informing policy makers of our work, the briefings we held assisted in allaying some misconceptions about the work and values of the Institute and in sustaining partnerships with key stakeholders on a decision-making level. The "Investing in Healthy Communities" program saw 11 local Healthy Communities efforts apply for and use the investment funds. Moreover, the Advisory Board members took active part in conducting site visits, and providing technical assistance and support in the program. The program was evaluated via a survey to participating communities. A composite summary statement of the assessment by participants would read something like, "It was a lot of work for a fairly small amount of money, however we produced the results we were looking for."
The process mapped on this page is typical for a community investing process and has been found to be an effective way of investing small amounts of development funds. It may be modified to fit the context of the intended groups to be funded and the needs of the funding authorities.

A. Umit length and packaging to level the playing field.
B. Include back deficits (problems to be solved) and asset-based information.

A. Here's what Investing in Healthy Communities is all about.
B. Here's how to apply.
C. Here's the criteria that will be used to judge applications.

A. Site Visit by at least one Advisory Group member and a staff person
B. Report back to the Advisory Group
C. Review desired mix to be selected: sophistication level, rural and urban, risk level (a risky versus a solid candidate)

A. Advisory Group follow-through is needed.
B. Site visits on a regular basis (e.g., quarterly).
C. Technical assistance and coaching teams consisting of staff, consultants, Advisory Group members, others as appropriate.
D. Provide assistance with celebrations

Figure D-2. Investing in Healthy Communities Systems Map

Sample Schedule:

Schedule 10am to 3pm on a Saturday
AM - Celebration
NOON - Lunch
PM - Technical Assistance Sessions presented by faculty, Advisory Group members, well-known (local) facilitators

Guiding Principles:
* Don't want to make people dependent on HC funds.
* Sustainability should be part of process.
* Finding resources should be a part of proposals.
APPENDIX E: SYSTEMS MAPPING FOR PLANNING AND GRANTS

In 1999, California jails were experiencing very high numbers of offenders with mental illness. As a result, the state issued a request for proposals for demonstration programs addressing the crime reduction needs of these offenders. Shasta County Mental Health Department and the Sheriff's Department jointly hired me as an analyst/consultant to help coordinate a multi-agency collaboration, assist with a community-based research and intervention design, and write the majority of the grant proposal for a program that came to be called the Shasta Alternatives for Transitioning Inmates Program or SAFTI. One of the planning tools that was used in the design was a Systems Map. One of the most difficult parts of the proposal was gaining and expressing clarity in a project that would involve a number of different agencies. In this instance, the Systems Map became a planning tool for displaying several iterations of what such a program might look like. This was in large part due to having a number of agencies involved, each with their own role to play based on the services they would provide. The program planning team was made up of representatives from Mental Health, the Sheriff's Department, Probation, the Alcohol and Drug Program, the Superior Court, County Counsel, Catholic Social Services, and the Police Department. One of the key questions in the intervention design was what would occur (the steps of the intervention), when and where it would occur (sequencing), and who would be responsible. Several iterations of Systems Mapping were used to help gain the needed clarity on at least some of these
issues. Figure E-1 shows the final iteration map of the proposed SAFTI program. This map was used as a part of the proposal and also in the presentation made before the Board of Corrections Advisory Committee.

Though it is a bit like “telling one on yourself,” it must be admitted that the use of Systems Mapping in this instance tended to be greeted with a rather “ho-hum” level of enthusiasm. Fortunately, that hasn’t been characteristic at all or I’d hardly be spending the time writing this. However, the only seemingly appreciated use of Systems Mapping in this particular instance occurred as an artifact of using it to get clear about the program design and sequencing. No one had a problem with including the map in the proposal, and expressed this more or less as it being “Okay” to submit it along with the proposal and even to include using Systems Mapping as part of the program evaluation design. The state level panel and agency reviewers neither expressed nor showed any interest in the process at all.

It is difficult to assess and attribute the lack of interest beyond the appreciation of the use of the mapping as a planning tool in this situation. On the state level, it seemed probable that little interest was shown because the agency reviewers were well-schooled in traditional research and evaluation methods. They made it very clear in the orientation session held in the state capitol that anything less than a “true experimental” design would be looked upon with disfavor. This led us to modify the proposal we had designed to that point to downplay much of the community-based research and action perspective that we
SAFTI Program
Initial Community Integration Plan (CIP)
Behavioral objectives specified
Terms & Conditions of Probation developed

Figure E-1. Use of Systems Mapping for planning and grants
Figure E-1 (continued). Use of Systems Mapping for planning and grants
had originally intended. Non-traditional and multi-method research did not seem to be at all acceptable. On the local level, reasons for the lack of interest were not so easy to gauge. It may have been that everyone involved was already working beyond the maximum, which is why they hired a consultant to begin with. Perhaps anything new was beyond being interesting. Whatever the case, the point to be made here is that Systems Mapping has some limits to its utility. Assessing both the purpose and the audience can be important factors in deciding the whether using Systems Mapping with a project is appropriate or not.
APPENDIX F: POLICY AND FUNDING

More recently, Systems Mapping has been used to provide information in graphic and pictorial fashion for a variety of policy and funding purposes. In one mapping project, a Systems Map was developed from the narrative of a consulting project to identify and describe the types and availability of medical insurance for people with HIV/AIDS in a city and county area of Texas. This involved communication and several iterations between consultants located in different states. Like a many Systems Mapping projects, this one required three iterations to create a trustworthy map. Unlike any other mapping project, the consultant on the other end provided the participatory reviews by sharing each iteration with both her project partners and the clients involved. As reported by my distant mapping team member, the clients were very pleased with the result and intended to use it for both funding and policy change efforts with the state and federal legislatures.

There several developments of note about this evolution involving policy and planning uses for Systems Mapping. In addition to using the standard symbols for mapping, the use of pictorial representations has increased considerably. Development of Systems Maps in this arena have seemed to require ensuring that the maps are more creative and interesting. There seems to be a different level of “packaging” required to emphasize key points in the maps. Moreover, much of the mapping done to date in the policy area in particular have required much more attention to the organization of the various facets of the
mapping. When considering the way information is displayed for a legislative briefing, for example, close attention needs to be paid to not only what is displayed but also what kind of understanding that the display invokes. In other words, this type of Systems Mapping calls for a cognitive resonance not just with the material but with the intended audience and message as well. The Systems Map for the Review of Medical Insurance for People with HIV/AIDS in Figure F-1 illustrates many of these newly arrived features of the mapping process.
Insurance paid for out of wages & benefits OR out-of-pocket

Private Group Insurance

Aetna US Healthcare/Prudential
CIGNA Healthcare of Texas
United Healthcare of Texas
Humana Health Plan
Methodist-Care

LOCATING MEDICAL INSURANCE

HMO Health Maintenance Organizations

PPO Preferred Provider Organizations
Houston Healthcare Purchasing Organization
Alliance Health Providers
Multiplan
National Healthcare Alliance

People with HIV/AIDS

Prevalence rate is 39.1 per 100,000 in Harris County - 184% of the state rate

People lacking or with limited resources - continued next page

Issue: Changing jobs is a problem though the law protects. Can lead to increased costs, caps on benefits, and medication exclusion.

Individual Group Insurance

Same providers

Private Individual Insurance

Most expensive

Figure F-1. Medical Insurance for People with HIV/AIDS
Eligibility
Denied coverage by 2 insurers OR Premiums > THIRP OR Had coverage > 18 months & w/o coverage < 62 days

People with HIV/AIDS

LOCATING MEDICAL INSURANCE

Terminated from Employment

Texas Health Insurance Risk Pool

Eligibility
Denied coverage by 2 insurers OR Premiums > THIRP OR Had coverage > 18 months & w/o coverage < 62 days

2 Plans
- $500 deductible
- $2,500 out-of-pocket (in-plan doctors)
- $4,500 out-of-pocket (out-of-plan doctors)
- $1,000 deductible
- $4,000 out-of-pocket (in-plan doctors)
- $7,000 out-of-pocket (out-of-plan doctors)

Coverage
Regular up to 18 months
Disability up to 29 months
With covered child up to 36 months

COBRA

LOCATING MEDICAL INSURANCE

People lacking or with limited resources - continued next page

Figure F-1 (continued). Medical Insurance for People with HIV/AIDS
Eligibility
Diagnosed w/ HIV. Income not to exceed 300% of Federal Poverty Level (FPL). May be employed. TANF and food stamp recipients automatically qualify.

Allocates & sets aside Ryan White Title II funds. Pay medical & dental insurance premiums, co-payments & deductibles. Payments for infected person only. Payment cap = $750 per month.

Texas HIV Health Insurance Options (THHIO)
Administered through Local HIV Consortia

Eligibility
Diagnosed w/ HIV & have insurance covering prescriptions. Income above 200% of FPL & not over 501%. No funding available for several years.

Designed to assist deductibles and co-payments of HIV+ individuals.

HIV Health Options to Promote Employment (HOPE)

Eligibility
Based on income & availability of other coverage & assistance

Implemented through a network of pharmacies. Application can be made through agencies & locations that provide HIV services.

Texas HIV Medication Program (ADAP)

Eligibility
Diagnosed w/ HIV & prescribed medication. Income not to exceed 200% of FPL. Have insurance that DOES NOT cover prescriptions.

Covers prescription medications. Enrollment limited by availability of funds.

Medication Reimbursement Initiative (MRI)

Figure F-1 (continued). Medical Insurance for People with HIV/AIDS
Figure F-1 (continued). Medical Insurance for People with HIV/AIDS
Eligibility
US citizen or legal immigrant
Disabled/over 65
SS < 40 quarters

Low income & medical condition

Application for SSI & Medicaid

Services
Three prescriptions
Annual wellness exams
Health education
Care coordination
Mental Health
Chemical dependency Tx
Off-site services

Federal
Medicare
Apply to SSA
3 to 5 months
Eligible
Yes
Wait 24 months
Receive Medicare Benefits

Medicaid
Yes

Eligibility
US citizen or qualified immigrant
Verify low income
Verify limited assets

Low income & medical condition

Application for SSI & Medicaid

Services
Three prescriptions
Annual wellness exams
Health education
Care coordination
Mental Health
Chemical dependency Tx
Off-site services

Medicare B —
Doctor visits & related $

Government Sponsored Health Insurance

People with HIV/AIDS
LOCATING MEDICAL INSURANCE

State

Access
Community Health Choice
Amerihealth
UTMB Access+
Plus

HMO Blue

Americaid

STAR Medicaid Managed Care

STAR PLUS Medicaid Managed Care

Figure F-1 (continued). Medical Insurance for People with HIV/AIDS
Children with Chronic or Special Care Needs

Children's Health Insurance Program Services Same as Medicaid for Children

When medical care expenses are particularly high

Children with Chronic or Special Care Needs

The Uninsured

Eligibility by Age

0 - 1 up to 185% FPL
1-5 up to 133% FPL
6 - 18 up to 100% FPL

Services

No out-of-pocket costs
Childhood screening immunizations
Clinics
Hospitals

Eligibility

Family income too high for Medicaid but under 200% FPL

Services

Same as Medicaid for Children

Working Poor

Failure to meet requirements
Lack of knowledge of the system

Medicade

Medicare

Primary Coverage
Hospitalization
Physician
No prescriptions

Payor of Last Resort
Long-term care and/or nursing home only

Figure F-1 (continued). Medical Insurance for People with HIV/AIDS
APPENDIX G: SYSTEMS MAPS FOR LEGISLATIVE BRIEFINGS

A recent use of Systems Mapping has been in providing information for several committees of the New Mexico State Legislature on a very complex (and some would say convoluted) project. The Navajo/Gallup Water Supply Project (NGWSP) has been in existence for over 40 years and the issues associated with the Project seem to have been beyond number. The purpose of the Project is to find the most desirable solution to supplying “wet water” (i.e., water to people for their use, as opposed to “paper water” which deals with water rights and ground water supply issues) to the City of Gallup, New Mexico and a large portion of the Navajo Nation. The Northwest New Mexico Council of Governments has been intimately involved with this project for approximately the last 12 years. Currently the Council’s Executive Director chairs the Project’s Steering Committee which is made up of representatives from all of the stakeholder groups within the boundaries of the project. The scope of the issues related to all of the stakeholders are far too complex to detail here. However, there currently are several of these stakeholders who appear to hold the keys to unlocking a resolution to the situation, one of which is the New Mexico Legislature (the Senate and House of Representatives). Recently the Council of Governments brought me in as a consultant to assist with developing and presenting Legislative Briefings to two key Legislative Committees – the Indian Affairs Committee and the Legislative Finance Committee. Both committees are joint committees with membership from both Houses of the Legislature. Part of
the briefing materials called for the development of Systems Maps that captured the needs and complexities of the diverse systems and inter-agency relationships involved in the Project. Systems Maps of four of the five systems identified were included in the presentation. The fifth system involved with the Project was that of Physical Systems, which were best shown with area maps that detailed the two alternative pipeline configurations that had been arrived at.

The first Systems Map developed was that of the Political and Intergovernmental Systems related to the Project. In addition to the Project members themselves (which at this point includes the Navajo Nation, the City of Gallup, and the Jicarilla Apache Nation), strategic outside agencies include the US Department of the Interior (represented with varying roles by the Bureau of Reclamation, the Bureau of Indian Affairs, and the US Fish and Wildlife Service), the Colorado River Basin Compact states, the US Department of Health and Human Services (represented by Indian Health Service), and ultimately the US Congress. The Systems Map in Figure G-1 shows the relationships involved with each of these entities and their roles with the Project. The Systems Map in Figure G-2 displays the relationships and issues related to the Water Source and Supply Systems. The most reasonable solution for the future of the area is a multi-source wet water supply system that integrates a number of alternatives. At the same time, there are significant interactive processes which affect the resolution to water source and supply issues which include existing laws, adjudications of
Figure G-1. NGWSP Political and Intergovernmental Systems
Responsible for contracting process
Navajo Dam - San Juan River Water Contract

MULTI-SOURCE WATER SUPPLY SYSTEM

Conjunctive Use: Ground Water

Colorado River Basin Commissions

Responsible for contracting process

EXAMPLE:
Gallup-Mt. Taylor Project

ISSUE: Water quality & treatment

ISSUE: Central Arizona Project (CAP) -- tapping in some manner?

Mining & Industrial ground water

Miscellaneous Water & Water Rights purchases

How to get water to Window Rock

Navajo Nation

How to get water to Gallup

ISSUE: Settlement of water rights claims

LOCAL STAKEHOLDER WATER SUPPLY AGREEMENTS

US Fish & Wildlife Service

US Fish & Wildlife Service

Navajo Nation Water Supply Project

Navajo Nation Depletion Guarantees

ESA process

BIA

Gallup

Jicarilla

Interactive Processes Affecting Water Supply
> Laws
> Claims
> Adjudication
> Compacts

Figure G-2. NGWSP Water Source and Supply Systems
water rights issues, water rights claims (including resolution of the amounts of water involved in the claims), and existing water supply compacts (most notably the Upper and Lower Colorado River Basin Compact). Also affecting the local stakeholder agreements is the Endangered Species Act (ESA) which relates to an endangered fish that is impacted by the flow recommendations and depletion schedules associated with the San Juan River. ESA issues are determined by the US Fish and Wildlife Service although the Bureau of Indian Affairs is the access point for this process because they complete the biological assessment and the Environmental Impact Study required.

The Navajo Gallup Water Supply Project is embedded in and affected by a number of Regulatory Systems as shown in Figure G-3. As the map depicts, the relationships between the Project and these other Systems are in motion all of the time. There are also major issues associated with each of the agencies involved which are highlighted on the map. The final Systems Map in this series (Figure G-4) displays the Financing and Repayment Systems associated with the Project. This map literally shows the bottom line of the presentation along with the potential for realizing the desired end result – the establishment and funding of the Cost Centers noted on the map.

It is really too soon to assess the final results of the presentation and Systems Mapping done on this Project. Given the intractability of the situation, any actions taken in the near future may be an indication of some result. In addition to the two Legislative Committees, the presentation was delivered to the
Issue: Is there an Interpretation to allow point-of-use transfer between basins?

Colorado River Basin Compact
Issue: Is there an interpretation to allow point-of-use transfer between basins?
Requires consensus decision of compact states

Endangered Species Act

ESA Section 7 consultation

BIA

EIS Filing & Wildlife Service

Jeopardy Opinion

New Mexico permitting

Navajo Nation regulatory processes

Issue: Rights of Way & Easements

REGULATORY SYSTEMS

NEPA
Environmental Impact

Conducts

BOR

BOR contracting

Issue: Resolving differences regarding available depletions

Issue final EIS

Public Hearings on Draft EIS

Becomes part of

Navajo Gallup Water Supply Project

Navajo

Gallup

Jicarilla

Figure G-3. NGWSP Regulatory Systems
Figure G-4. NGWSP Financing and Repayment Systems
NGWSP Steering Committee at a meeting where the State Engineer was in attendance. Feedback during that meeting indicated that we had accurately captured the current context and workings of the Project. In a debriefing luncheon held with the members of the Indian Affairs Committee, the Council of Governments Executive Director (herself a House Representative) received some on-the-spot evaluation information on the presentation from the Chairman of the Committee. This long-time Senator stated that our briefing was the most interesting, easily understandable, and comprehensive briefing on a complex situation that he had seen in his years of service. If that be the case, hopefully the Systems Mapping contributed to that assessment.

This series of Systems Maps was also used to brief the Legislative Finance Committee. After both briefings, New Mexico State Legislature appropriated $1.4 million to a trust fund and earmarked the appropriation for use on the Navajo-Gallup Water Supply Project. While this is only a small step toward completing a $440 million project, it provides evidence that there is some interest in moving the project forward.
APPENDIX H: SAMPLE INTERVIEW QUESTIONS

The following oral consent and sample interview questions were approved by the University of Hawai‘i Committee On Human Studies.

Oral Consent

Along with the revision of the Bed Tax program, I am conducting a research study on the Systems Mapping process that we are using. This study will help determine the effectiveness and contributions to the planning and evaluation process of Systems Mapping. It will assist in assessing the strengths and weaknesses of using Systems Mapping in this project, and whether it is a useful approach to developing similar kinds of programs.

Your participation in the study involves reviewing the Systems Maps for accuracy, providing whatever feedback that you wish on needed changes, and — if you choose — answering some questions about the Systems Mapping process itself. You will be one of up to 20 participants in various phases of the study. The duration of your participation will vary from one to three hours for the mapping sessions and reviews. Participation in the assessment of the Systems Mapping process itself will take approximately 20 minutes. Since the focus of the study is on the Systems Mapping process, only your comments will be recorded but you will not be identified in any way as a part of the study. That is, no record of who said what will be recorded or kept. As such, there is no risk to you or others for your participation in the study.
While the benefit to you by participating in the study may be minimal, your assessments of the process will help determine the appropriateness and value of using Systems Mapping as a planning and evaluation tool for economic development, human service, and governmental organizations in a variety of situations.

Your participation in this study is completely voluntary. Declining to participate will involve no penalty or loss of benefits to which the you are otherwise entitled. You may discontinue participation at any time without penalty or loss of benefits, to which you are otherwise entitled.

If you have any questions about the research, your participation, and/or would like to find out about the results of the study, please contact

Bob Widoe – (505) 726-1126

If you cannot obtain satisfactory answers to your questions or have comments or complaints about your treatment in this study, contact:

Committee on Human Studies
University of Hawai‘i
2540 Maile Way,
Honolulu, HI 96822
Phone: (808) 956-5007
Sample Questions

The final review session of each of the mapping processes noted above will be devoted to an assessment by participants as to the utility of the Systems Mapping process. Specifically, a set of focus questions will be used which will include the following:

1. Has Systems Mapping been useful in the development of the processes involved?
2. What worked well with the Systems Mapping?
3. What didn't work so well? What changes would you recommend?
4. Do you think the Systems Maps accurately reflect the activities and systems involved?
5. In your opinion, what are the strengths and weaknesses of using Systems Mapping in a situation like the (development) (evaluation) of a Bed Tax Plan?
6. What other comments and reactions do you have about the use of Systems Mapping?
REFERENCES


