

**Part II:
Conduct a
Needs Analysis**

“If you don’t know where you want to get to...it doesn’t matter which way you go!”

— Lewis Carroll, *Through the Looking Glass*



CHAPTER 4
ASSESS CURRENT BUSINESS PROCESSES

Chapter 4:

Assess Current Business Processes

- What** An *objective assessment* of how your agency does business today with a focus on improving efficiency and effectiveness.
- Why** Technology acquisition **must** be driven by business objectives. Documenting current business processes and identifying how they can be improved establishes the starting point of a conceptual system design.
- Who** The Project Manager is responsible for coordinating the tasks within this chapter. The User Committee and other select employees will be involved in defining business processes, while the Technical Committee will assist with defining the current technology environment. All project participants may take part in identifying opportunities for improvement.
- When** After the project's decisionmaking structure and Project Charter are in place, and simultaneously with the development of the Project Plan, but before any decision is made regarding technology procurement.

In Part I, you learned about the importance of preparing a Project Charter, which defined your project's scope in very broad terms. In this chapter, we'll discuss how you can begin gathering information that will help refine those broad terms into a conceptual design. Specifically, this chapter is designed to help you gather the following information:

1. What are your organization's current "business processes?"
2. What technology does your agency have in place today?
3. How does your agency use its technology to accomplish business objectives?
4. Are there opportunities for improvement both with and without the use of technology?

In addition to serving as the starting point for determining technology needs, conducting a thorough business process analysis will yield many ancillary benefits. Agencies that have taken these steps routinely report the discovery of antiquated policies, old habits and other obsolete practices that give way to newfound efficiencies and improvements, many of which are unrelated to technology!

In order to define how your organization uses technology to accomplish its business objectives, you must define both your current business processes and technology environment.

Define the Organization's Business Processes

Just about everyone has used or seen a map (especially in law enforcement!). The purpose of a map, of course, is to provide perspective and direction: two key elements that guide people and prevent them from getting lost. Business process mapping seeks to do the same thing by helping to “map out” how people, information and paperwork travel through your organization.

So, what is a business process? It's nothing more than a written description of the things that employees do every day. While business processes are simple enough to define, their importance in determining the technical approach cannot be overstated; business processes are at the center of all *successful* technology initiatives, as they are what technology seeks to enhance or improve. Here's an example of a common business process:

While booking a prisoner, the jailer completes form X. The original is placed in the records “in-box,” copy 1 is given to the arresting officer, and copy 2 goes into the prisoner's property bag.



Project Managers: *You probably have a solid understanding of the major business processes in your organization (after all, most police departments have only slightly more than a dozen major processes). Despite your general knowledge, the focus of this chapter requires the participation of employees who specialize in various processes. As the Project Manager, you will be responsible for coordinating and facilitating Steps 1 and 2.*

The following three steps are designed to enable the Project Manager to effectively guide the User Committee through documentation of the existing business processes.

Step 1

Review User Committee Membership, Augment if Necessary

Review your User Committee members and be sure that they adequately represent all of the major business areas of your agency, supplementing the committee with new members, if necessary. Remember, you'll be relying on these people to define how business is done, so they need to be thoroughly familiar with their own assignments, as well as understand how their area of expertise relates to the organization as a whole.

Step 2

Put the User Committee to Work!

→ This is a relatively simple task that is often met with confusion, as participants tend to “overthink” their assignment. So, the rule here is: **KEEP IT SIMPLE!**

The next step will be to convene the User Committee and request that they define and categorize their business processes. The Committee should be tasked with defining each specific *process*, and then breaking the process down into *subprocess* and then further into *activity*, each concept drilling down a bit more than its predecessor as to the “who, what, where, when, why and how” involved in a particular process.

Review the following examples that break down two common business processes — filing a report and booking a suspect:

FILING A REPORT

PROCESS



The highest level for process mapping purposes

Example: The records bureau processes reports from patrol

SUBPROCESS



A greater level of detail, describing who does what and when

Example: The on-duty watch commander delivers approved reports to the records bureau every hour

ACTIVITY



The greatest level of detail, describing who does what, when they do it and how much they do

Example: The on-duty watch commander delivers an average of 12 approved reports to the records bureau at least 20 times each day

“The trick to defining your needs is to describe what you want to do with technology, not what you think you need to buy.”
— From *The Planning Process: Define Your Needs*, by Anna Mills, www.techsoup.org

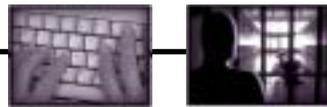
BOOKING A SUSPECT

PROCESS



The highest level for process mapping purposes
Example: Patrol books suspects into jail

SUBPROCESS



A greater level of detail, describing who does what and when
Example: Upon arrival at the jail, the arresting officer must book his/her suspect

ACTIVITY



The greatest level of detail, describing who does what, when they do it and how much they do

Example: Within 30 minutes of arriving at the jail, the arresting officer must complete forms 811, 836 and 122 prior to leaving



Most departments cannot obligate an employee to do business process mapping full-time. Therefore, be sure to allocate a substantial amount of time for participants to conduct this assignment (3 or 4 weeks is usually required).

With the basics defined, it's time for the Project Manager to assemble the User Committee and start the process by asking each participant to identify as many processes, subprocesses and activities as possible. The Committee should review the above examples to clarify the concept.

Step 3 Get It in Writing

Once each of the participants has completed his or her assignment, the Project Manager should reconvene the group. The purpose of this meeting is to allow the participants to share their defined processes with the rest of the group in an effort to refine and clarify the organization's business processes.

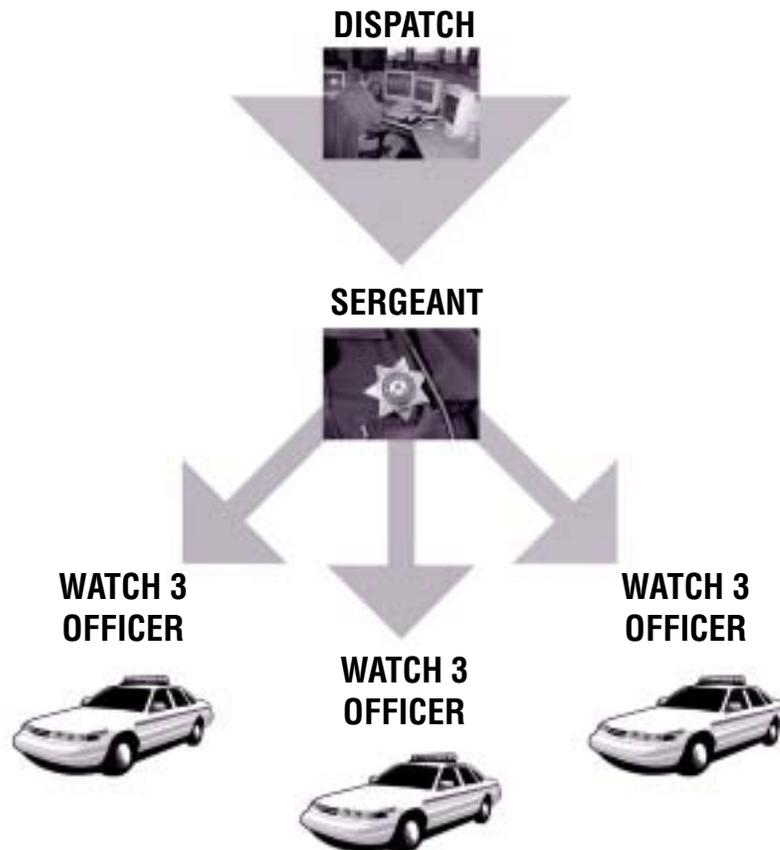


Project Managers: Business process mapping is often outsourced by police agencies because internal assessments can be met with resistance, and challenging long-standing beliefs is often discouraged. As the Project Manager, you must recognize that such bias may exist and encourage participants to openly identify inefficient or ineffective operations.

During the meeting, participants should literally draw out their processes, subprocesses and activities on large sheets of paper, and spread them out across a large table (butcher paper is great for this assignment), with each participant using a different colored ink pen. To illustrate what a simple process should look like, review the following, which describes the simple process of relaying briefing information at the start of a shift:



We suggest convening the meeting in a room with ample free table and wall space. Also, these meetings usually require a full day, so plan ahead!





Project Managers: During this step, you will serve as the meeting facilitator. As such, you must encourage participants to work with each other in terms of showing how related processes overlap. As an example, ask a dispatch representative to work with the patrol representative in drawing the relationship between dispatch assigning calls for service and patrol responding to them.

At the conclusion of the day's meeting, the Project Manager should hang the drawings around the room (if adequate wall space is available) and invite *all* Project Team members to visit the room during their shifts to review the newly formed business process maps for supplemental information.

After about a week (or whenever a day goes by without new comments), the Project Manager should carefully document the newly defined processes in a **Business Process Baseline** report. Most business process mapping professionals use a software application like Microsoft Corp.'s Visio to translate written work descriptions into an electronic format; however, clear hand drawings are perfectly acceptable and require far less time to prepare.

The report signals the conclusion of documenting the organization's business processes. You will use this document throughout the remainder of Part II as reference for understanding how the organization currently accomplishes its business objectives.



Executive Sponsors: Be ready for resistance to business process mapping. It is strikingly similar to an organizational "time and motion" study, which sometimes leads to the elimination of jobs by revealing inefficiencies. To mitigate the issue, meet with union representatives and other leaders prior to authorizing the study. You should explain that business mapping is designed to reveal new opportunities for advancing the organization's efficiency and effectiveness through the use of technology. The net benefit and goal is to improve officer safety, not eliminate jobs.

Define the Current Technology Environment

Before your agency can determine what technology is required, it must identify what it has today. In terms of identifying critical information, the Project Manager should rely upon the Technical Committee (and/or City/County Chief Information Officer) to supply a written description of the existing technology and infrastructure, including:

- Description of manual and automated information systems.
- Listing of computer systems and networks.
- Identification of databases that are accessible.
- Description of volumes of transactions.

- Identification of existing configuration for CAD/RMS/Mobile applications.
- Relationship between applications, including CAD, RMS, Jail, Court, Substations, Fire, GIS, etc.



Technical Experts: In the event your project will rely upon mobile data devices, you will also need to gather information on the existing radio technology, including:

- A description of existing facilities and their ability to support mobile applications and report writing.
- Availability of bandwidth.
- Type of infrastructure (radio, cellular, etc.).

Place all of the compiled information into a **Technology Baseline** report, thus concluding the process of documenting the existing technology. You will use this document as the basis for the following:

1. Identifying how *current technology* is used to accomplish business objectives in the following section.
2. Determining how business processes could become more efficient or effective through the introduction of *new technology* (how the application of new technology can help streamline and improve processing can be discussed during stakeholder interviews/Focus Group meetings, which are addressed in Chapter 5).
3. The *written summary* of the existing technology environment in any procurement documents (vendors will want to know what exists today).

Define How Technology is Used to Accomplish Business Processes

Armed with descriptions of the current business and technology environments, as spelled out in the **Business Process Baseline** and **Technology Baseline** reports, it's time to overlap the two reports, seeking to identify how the existing technology is used to accomplish the agency's business processes. You should take this opportunity to carefully review the agency business processes to determine where inefficiencies or bottlenecks currently exist that prevent the agency from reaching its established business goals. This is the perfect time to consider reengineering or changing processes to streamline workflow if you do identify less-than-optimum workflow procedures.

For example, consider how computers are used to receive, dispatch and monitor calls for service, including telephone devices, enhanced 911 interfaces, CAD applications, wireless infrastructure, etc. Or, seek to identify the technology that is used when booking a prisoner (i.e., digital cameras, LiveScan devices, etc.).



Project Managers: Facilitate a meeting of the User and Technical Committees. During the meeting, ask participants to identify how the technology described in the **Technology Baseline** report is used in each process defined in the **Business Process Baseline** report. For example, ask dispatchers to explain how an existing CAD is used (or not used) to accomplish various processes, subprocesses and activities described by dispatch, patrol, records and other participants. Update the **Business Process Baseline** report to include the newly defined use of technology. The resulting document will be used throughout the balance of Part II as a “snapshot” of the organization’s current environment.

Find Room for Improvement

The **Business Process Baseline** report now includes not only the current business processes, but also a summary of how existing technology is employed.

The document is an invaluable tool for examining methods to improve service delivery, efficiency and overall effectiveness. The Steering Committee should seize the opportunity to review the content of the report by recruiting as many internal and external stakeholders as possible.

The completed report should be disseminated to each key project stakeholder with a request to identify methods for improvement both today and in the future, with the use of new manual or automated processes.

Once the report is returned by the stakeholders, the Steering Committee should ask the Project Manager to collect and compile the recommendations, which should summarize the following:

- The identification of current manual business processes that could be improved through the use of existing technology.
- The identification of current manual business processes that could be improved through the use of future technology, identifying the major technology categories associated with the recommendation (i.e., CAD, RMS, Mobile, Automated Field Reporting (AFR), Jail Management Systems (JMS), etc.).
- Current business processes that are likely to change as a consequence of implementing new technology.
- The identification of specific technology that may be gained, lost or modified as a consequence of business process improvements.
- The identification of efficiency gains and other benefits (including new functionality) likely to be achieved as a consequence of changing business processes.

Once complete, the report should be returned to the Steering Committee for a thorough review that would focus on the following:

- What (if any) suggestions for improvement should your organization enact?
- How does the organization benefit from implementing new manual or automated processes?
- Is the organization ready for change?
- What collateral issues would be impacted by changing any operations?

The decisions that stem from such a review not only improve the health and growth of the organization, but also define the purpose of any technology initiative(s).



CHAPTER 5
DETERMINE STAKEHOLDER AND USER
NEEDS

Chapter 5:

Determine Stakeholder and User Needs

- What** Project success depends on *user and stakeholder input*. There are various methods for getting key project stakeholders involved in expressing their needs for a new IT system and their views on organizational change that may be caused by a new system.
- Why** To reach out to as many people who are impacted by your project as possible to make sure all stakeholders have a voice and an opportunity to provide input. The more input, the more likely your project will be a success.
- Who** The Project Manager will be primarily responsible for meeting with virtually all project stakeholders.
- When** Shortly after documenting your business processes and current technology environment.

In the simplest terms, this chapter offers techniques for soliciting ideas from project participants about what they need to make their daily work more efficient, their “wish list” for new and improved methods of accessing and using information, and to encourage them to “look outside the box” at the potential enhancements IT can offer them. While that may seem like an easy task, it is actually one of the most difficult — especially when one has to interview dozens or hundreds of people!

This chapter is designed to capitalize on the Project Manager’s communication skills by relaying best practices for conducting interviews and Focus Groups within law enforcement organizations. It offers techniques to determine the best forum for eliciting feedback from stakeholders, as well as what to say during the meetings and how to record the findings.



Project Managers: We assume that you will be responsible for conducting the interviews and Focus Groups discussed throughout this Chapter.

During this phase, you will gather information that will ultimately help craft the *general* hardware, software and interface requirements of any new system(s). The need to collect feedback from the people who will ultimately use the system is critical. Equally important is the method by which their feedback is sought and obtained.

Note: How to develop the more detailed functional requirements and specifications necessary for procurement documents is addressed in Part IV, Acquire the Technology.

The Project Manager will meet with a variety of project participants, including key stakeholders and committee members. Determining the best approach for gathering information is usually based upon the size of the Project Team and the nature of the initiative. However, a mix of individual interviews and Focus Groups is almost always required.

To help determine when to use individual interviews versus Focus Group techniques, we have assembled the following guidelines:

Interview Technique			
Interviewee	Individual Interviews	Focus Groups	Explanation
Administrators (including Executive Sponsor and Steering Committee)	X		Administrators, by their rank, can inhibit the communication process and should be interviewed individually rather than participate in Focus Groups.
User and Technical Committees		X	When five or more people share a common area of knowledge, it is best to interview them as a group, rather than individually. Based upon the scope of your project, it is possible to have many Focus Groups emerge from the User and Technical Committees.
External Stakeholders (e.g., County officials, funding bodies, other justice agency representatives, etc.)	X		By their nature, stakeholders (both internal and external) possess unique knowledge and are not generally interviewed as a group.
Subject Matter Experts (i.e., individuals needed for a specific component of the project, such as an expert on the message switch)	X		These participants possess unique and specific knowledge that would not be well suited to a Focus Group format.

User participation is one of the critical success factors in any law enforcement technology initiative. The more users who contribute to the system's design, the more successful the project will be!



Project Managers: *User involvement in law enforcement initiatives is often stymied by chain-of-command and shift barriers. You must overcome such obstacles if your project is to be a success. Approach the Steering Committee and request assistance in making various employees, or groups of employees, available for interviews or Focus Groups. If necessary, arrange for meetings with employees during hours that are beyond your usual work shift. Most importantly, be creative in reaching out to your stakeholders — they won't reach out to you! If you want your project to be a success, you need to go out of your way to solicit their input.*



Executive Sponsors: *Project Managers are often frustrated with their inability to access key personnel due to shift work or chain-of-command barriers. As the Executive Sponsor, you may be relied upon to flex employee schedules or to temporarily waive existing chain-of-command structures in order to foster communications. We suggest that you speak to your Project Manager during this phase and ask if you can be of assistance (subordinates are often reluctant to go to the Chief or Sheriff for assistance).*

Individual Interview Techniques

As the design of your agency's new technology initiative starts to take shape, you must interview key stakeholders to identify their priorities and aspirations for the new technology. Generally, these meetings require approximately 1 hour and should be conducted in an environment and at a time that is convenient for the interview subject.

While interviews are fairly straightforward, advance planning will vastly improve the quality of information you collect. Therefore, we recommend that the interviewer provide the following information to participants, at least a week prior to the interview:

1. **A Brief Introduction:** Provide subjects with an overview of the interview purpose and a copy of the Project Charter. For example:

We plan to replace the existing records management system and this interview will mark the beginning of the system design. The interview will give you a chance to speak with the Project Manager about your opinions and goals for the new project.

2. **A Summary of Responsibilities:** Always let participants know what is expected of them. Few things are more uncomfortable than interviewing someone who hasn't prepared for an interview. We suggest providing the participant with some advice on how to prepare for the interview, such as:

During the interview, you will be asked to discuss your needs as they pertain to our planned new records management system. You should be prepared to respond to the following questions:

- *What are the functions and responsibilities of your current assignment?*
- *What information systems do you use in your work (e.g., CAD/RMS, etc.)?*
 - *computer hardware and software used*
 - *manual methods used*
 - *analysis and reporting performed*
 - *connectivity to outside agencies (e.g., interfaces)*
- *What are the strengths and weaknesses of the technology you are using?*
- *To what degree are the manual systems meeting your needs?*
- *What are your ideas for improving current operations?*
- *Are there other systems issues that we should be aware of?*
- *What new technologies have you seen or heard about?*

3. **A “What-To-Bring” List:** Interview participants may prepare for meetings by jotting down notes or collecting forms. Rather than rewriting this information, ask participants to bring copies of their “wish lists” and other documents that they want to talk about during the meeting.

At the conclusion of the interview, be sure to thank the participant and carefully organize any notes taken. (This is especially valid when conducting dozens or hundreds of interviews.)

Focus Group Techniques

Focus Groups are a somewhat informal technique that can help to assess user needs while designing the system. In a Focus Group, bring together six to nine users to discuss issues and concerns about the features of the new system. Focus Group sessions typically last about 2 hours and are run by a moderator who maintains the Group’s focus. We assume that the Project Manager will moderate the Focus Groups for the technology initiative.

FOCUS GROUP FORMATS

There are two general Focus Group formats: SWOT and Traditional. Generally, a SWOT format is used when asking users to plan for replacement systems, while a Traditional format is preferable when introducing entirely new technology.

SWOT Focus Groups

Think **SWOT!**

STRENGTHS

WEAKNESSES

OPPORTUNITIES

THREATS

The **SWOT** format is an effective tool for identifying the **Strengths** and **Weaknesses** of existing systems, as well as for defining the **Opportunities** and **Threats** presented by the initiative. The following techniques are similar to those presented in developing the broader environmental scan, discussed in Chapter 3.

Facilitating the SWOT format is simple and the outcome of the process will provide valuable information on what to include and exclude in the conceptual design of your new technology.

To conduct a SWOT analysis:

1. Gather a group of users from within a particular functional area to talk about a specific aspect of the current environment (i.e., dispatchers to talk about CAD).
2. Provide them with relevant sections from the **Business Process Baseline** report (described in Chapter 4) at least a week in advance of the Focus Group meeting.
3. Advise participants to familiarize themselves with both the current business processes, as well as the current technology presented in the report.



Project Managers: Remember that facilitating Focus Groups requires advance research and knowledge. You must be sufficiently knowledgeable about both the business of the law enforcement agency and the technology (both what is existing in your agency and what is available in the industry) if you are to push the conversation forward and elicit substantive input from attendees. Bringing in outside experts for input and assistance in facilitating these groups can often be of great benefit.

During the Focus Group session, pose the following questions to attendees and write down their responses on a flip chart. Feel free to use as many sheets as necessary. When a page is full, tape or tack it to the wall, so that the group can continue to view the information as new topics are discussed.

- What are the **Strengths** of the current technology?
Encourage honesty in this exercise, as participants should feel free to express their own opinions, not those of the group. The moderator should be scanning



Regardless of the Focus Group approach you choose, both require that the moderator take copious notes. If you have the resources available, use a note-taker who is objective and nonthreatening to the group (such as a cadet or, perhaps, an assistant from your parent organization). As you will learn, the moderator is often busy speaking with participants. Interrupting a Focus Group meeting to take notes can be distracting to the process.

participant answers for key elements that must be retained in the new technology. It may be necessary to occasionally remind users of any inherent strengths of the existing system, such as its stability, existing knowledge base or years of customizing it to perfect its capabilities.

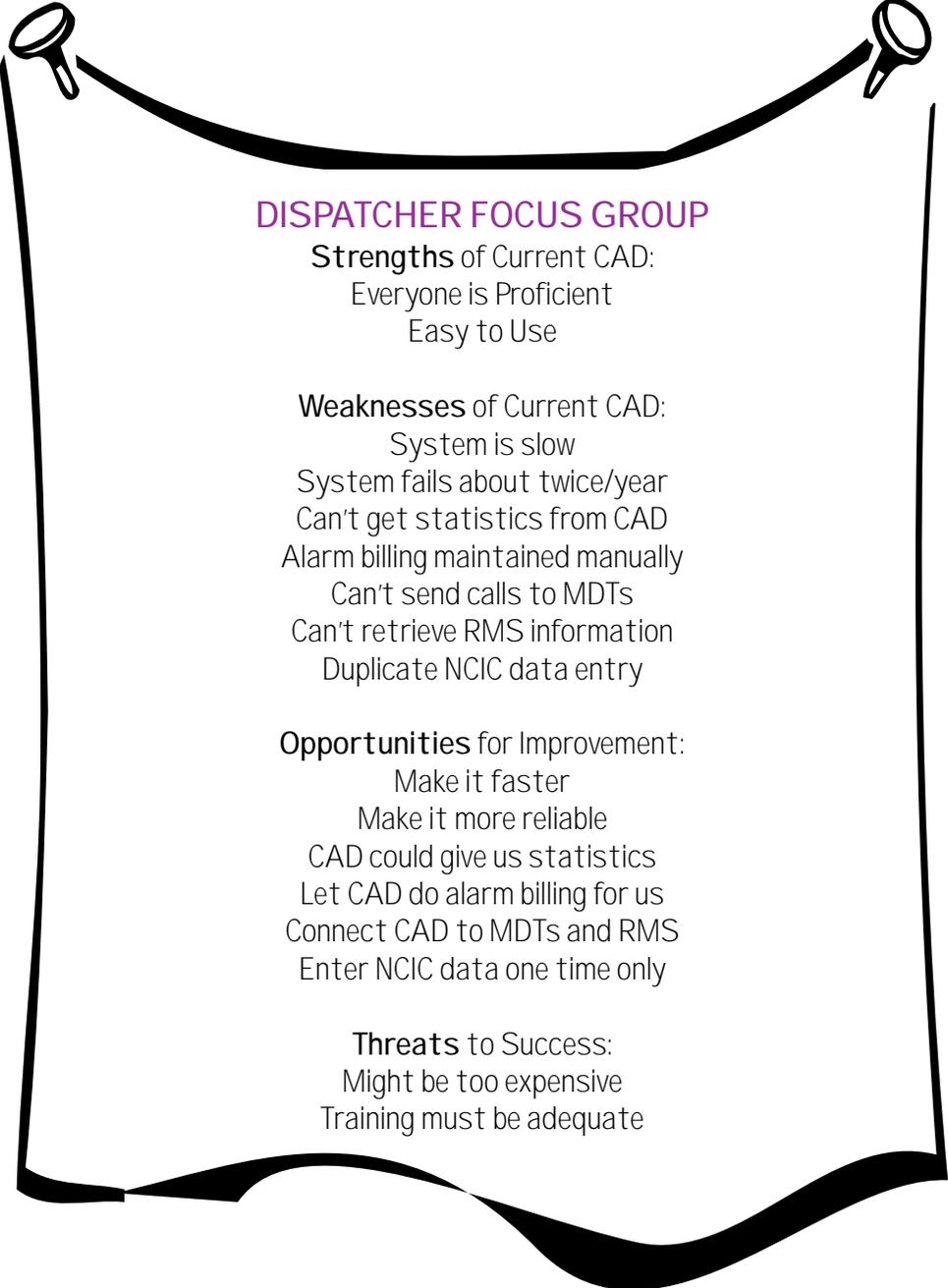
- What are the **Weaknesses** of the current technology?
Usually, this question produces a lengthy list. Try to extract very specific elements from broad answers. For example, if an attendee says, “the current system is too slow,” the moderator should probe by asking, “What do you mean?” Or, “When do you notice that the system is slow?” These are important elements to consider in designing the new system.
- What **Opportunities** for improvement exist?
The moderator should point out to the attendees the relevant portions of the **Business Process Baseline** report that identify current business processes and technology. The moderator should then ask the attendees to identify what opportunities exist for improving the current business processes and technology to better support the business goals of the organization. Their responses will define the focus of the technology initiative. After all, if there are no benefits to be had by introducing new technology, then why even consider it? Try to identify specific modules and functionality that should be improved. The participants should be encouraged to cast aside their assumptions about “*the way things are done around here*” and state what, in a perfect world, they hope to accomplish through the project.



Project Managers: Remember that attendees may not know what opportunities exist unless they have somehow been exposed to vendor products or external agencies. Consequently, you may find yourself educating attendees on the types of functionality afforded by modern applications and then inquiring about how the users would view such a transition.

- What **Threats** will emerge from this process?
Participants should identify the major obstacles and risks to a successful project. This is often a difficult question that can require you to coax responses from them. Suggest to the participants some sample answers, such as, “What about funding?” The goal is to gain insight into the barriers that need to be avoided while managing this project.

After the participants have provided all of their answers, these should be listed on several sheets of flip chart paper and hung on the walls around the room. Some of those pages might look like the following, which is taken from a Dispatcher Focus Group that talked about its CAD system:



DISPATCHER FOCUS GROUP

Strengths of Current CAD:

Everyone is Proficient
Easy to Use

Weaknesses of Current CAD:

System is slow
System fails about twice/year
Can't get statistics from CAD
Alarm billing maintained manually
Can't send calls to MDTs
Can't retrieve RMS information
Duplicate NCIC data entry

Opportunities for Improvement:

Make it faster
Make it more reliable
CAD could give us statistics
Let CAD do alarm billing for us
Connect CAD to MDTs and RMS
Enter NCIC data one time only

Threats to Success:

Might be too expensive
Training must be adequate

At this point, the moderator should ask the participants to indicate the three most important responses for each question. Based on our experience, the easiest way to accomplish this task is to provide each attendee with several red, yellow and green stickers.

For each of the four questions, participants individually place a red sticker next to the issue that they feel is the most important, followed by a yellow sticker for the second most important and, finally, the green sticker for the third most important issue.



If you don't know how technology could improve operations for a particular group, just ask them! Often, the attendees have been exposed to technology beyond the organization (through trade shows, colleagues, local agencies, etc.), and they have seen the new capabilities of IT and how it could make certain aspects of their job better.

Once your participants have completed their prioritization, take some time to review the findings and ask the group if there are any surprises. You should attempt to foster discussion on unanticipated findings, seeking to reveal even more information that will be useful in designing the new system.

Traditional Focus Groups

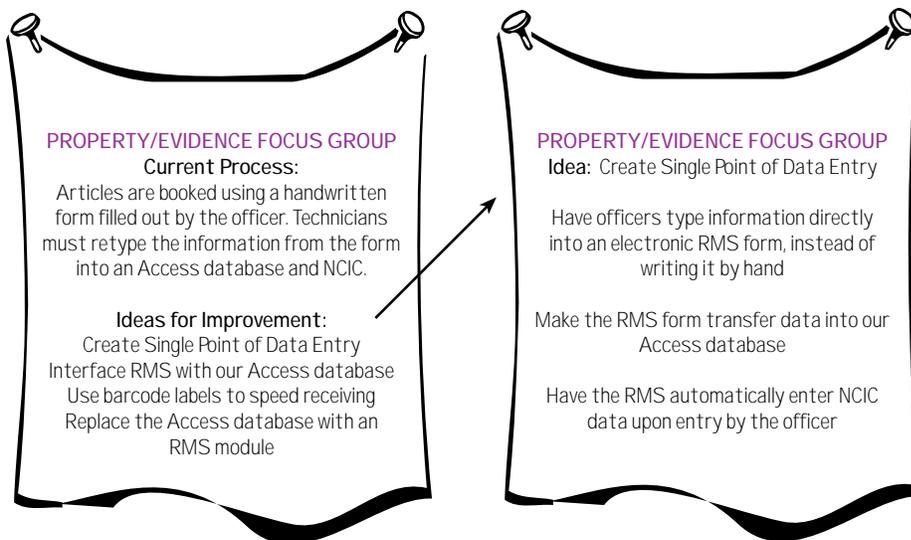
If your agency is introducing entirely new technology (such as an RMS, where there is none presently), it may be more useful to approach users in a Traditional Focus Group environment.

Like the SWOT format, the moderator will assemble a small group of users who are knowledgeable about a particular subject area (i.e., detectives, patrol, etc.) to discuss the concept of new technology and ask for feedback regarding the design.

During these sessions, the moderator generally starts the meeting by describing how the participant's specific area of knowledge is commonly impacted by new technology. For example, during a meeting with a group of property/evidence technicians, the moderator would want to describe how most modern RMS applications allow officers to create printed barcode labels that can be affixed directly to articles during the booking process. Then, as the technicians receive the items, they simply use an RMS barcode reader to scan the items, which would retrieve all of the data related to that item and, in some cases, conduct national and local database inquiries and updates automatically.

The moderator should use the **Business Process Baseline** report and ask the Focus Group participants to envision how technology could improve the speed or quality of their specific business processes. The moderator should summarize each response and write it across the top of a flip chart page. Then, the group should be asked to provide additional information about the idea and write it in the space below the idea. Once an idea has been sufficiently documented, the sheet should be hung on the walls of the meeting space.

After the various business processes presented in the report have been discussed, there should be several sheets of paper hanging on the walls. Based on our property/evidence example, they may look like this:



Recognizing that not every idea will become a reality, the moderator should ask the users to prioritize the various ideas presented during the Focus Group. Similar to the SWOT format, the participants should be asked to indicate their individual choices for the three most important ideas by using the same three color-coded stickers.

Once the participants have completed their prioritization, the moderator should take some time to review the findings and ask the group if there were any surprises, attempting to foster discussion on unanticipated findings, and seeking to reveal even more information that will be useful in designing the new system.

Regardless of the interview technique, the net outcome should be enough information for the Project Team to use as a basis for documenting the general system requirements, the subject of Chapter 6.



CHAPTER 6
DEVELOP GENERAL SYSTEM
REQUIREMENTS

Chapter 6:

Develop General System Requirements

- What** Translating research, interviews and Focus Group meetings into general hardware, software and interface *requirements for the new system(s)*.
- Why** The requirements will become the core material of the conceptual design and procurement documents.
- Who** The Project Manager uses the Technical and User Committees to draft the various system requirements.
- When** Documenting requirements can only occur after you have defined the project's scope and have interviewed the project's stakeholders and users.

Once an organization has completed the difficult task of envisioning what their new technology should accomplish, the next step is to begin describing what tools will be needed in order to achieve those goals.

In this chapter, we'll focus on the principles behind coordinating the Project Team's technical and operational resources for the purpose of defining (for the first time) precisely what hardware, software, interface and performance standards will likely be required.

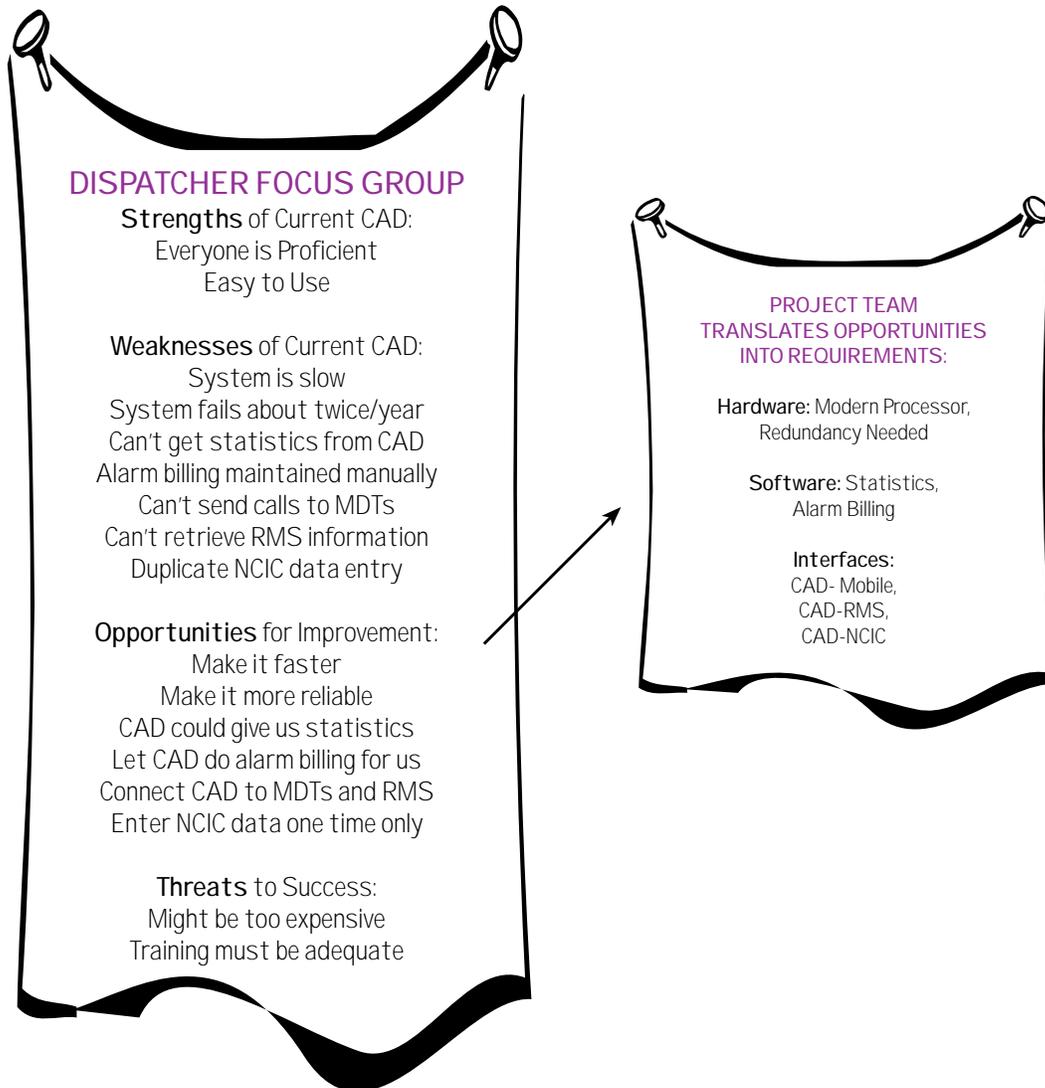
Compile the Requirements

By now, your project's basic scope should be fairly well defined in terms of major categories (CAD, RMS, Mobile, etc.), depending on the scope of your project. Using the tools developed in Chapters 4 and 5, the major categories must now be further defined.

In Chapter 4, we established a baseline of existing technology that the organization uses for accomplishing its business objectives. In Chapter 5, stakeholders analyzed how effectively that technology baseline meets their needs, and discussed what specific tools they would require in the future to improve efficiency and effectiveness.

Under the direction of the Project Manager, the Project Team must now translate the information culled from Focus Groups and interviews into specific hardware, software and interface requirements. This step is interpretive, and requires the Technical and User

Committees to carefully review the flip charts and notes from the stakeholder meetings. Using the Dispatcher Focus Group example from Chapter 5, this step might look like this:



In this example, the Project Manager would have supplied the User and Technical Committees with the Dispatch Focus Group flip chart, requesting that they review the notes and develop general hardware, software and interface requirements. The requirements would be written and returned to the Project Manager for assembly.

Define General Hardware Requirements



Technical Experts: *In order to identify the size of various hardware components (i.e., disk size, processor speed, etc.) that may be required for the new initiative, the Technical Committee will need to review the organization's relevant transaction volumes, both current and projected, for a period of 5 years.*

The Project Manager should collect and provide the following information to the Technical Committee, in advance of preparing the general hardware requirements:

General Sizing Questions:

- Number of facilities where CAD/RMS will be accessed
- Number of vehicles equipped with mobile data devices
- Number of CAD workstations
- Number of concurrent CAD users
- Number of RMS workstations
- Number of concurrent RMS users

Specific Transaction Volumes:

- Total Calls for Service
- Incidents/Crime Cases
- Arrests
- Field Interviews
- Accident Reports
- Traffic Citations
- Pawn Slips
- Warrants Issued
- Subpoenas Served
- Temporary Restraining Orders on Record
- Registrants
- Licenses
- False Alarms

Client: The client part of a client/server architecture. Typically, a client is an application that runs on a personal computer or workstation and relies on a server to perform some operations. A **thin client** is a client designed to be especially small so that the bulk of data processing occurs on the server.

Module: A portion of a program that carries out a specific function and may be used alone or combined with other modules of the same program.



A critical success factor is ensuring that the new technology is designed in concert with the parent organization's hardware and software standards, as well as future or strategic IT plans. For the overwhelming majority of police agencies, this means ensuring that the technology uses the same operating system, network standards and hardware manufacturer as that of the City or County (if such standards exist). By doing so, the agency can capitalize upon existing human and financial resources while preventing fractured support and high vendor maintenance costs in the future.

Projects may require more or fewer transaction volumes, depending on the scope of the project. For example, if the project scope is limited to a mugshot imaging system, it may not be necessary to gather statistics on CAD workstations.

The Technical Committee is responsible for developing the general hardware requirements, including, at a minimum:

- General Hardware Environment (client/server, thin client, etc.)
- Network Design
- Operating System
- Database Standard
- Hardware Manufacturer Standard (server, desktop PCs, mobile devices, handhelds, monitors, etc.)

In addition to reviewing the interview or Focus Group documentation, the Technical Committee must supplement the general requirements with their expertise and knowledge of the current and planned technical infrastructure.

Define General Software Requirements



Users: The User Committee is responsible for developing the general software requirements, which are modules of the major software categories. In our dispatch example, the User Committee identified two required modules (Statistics and Alarm Billing) of the CAD application (major category).

In order to identify required software modules, the User Committee should understand which modules are commonly associated with the major categories. Listed in the chart on the next page are modules that are commonly associated with the most common police technology initiatives. Committee members should use these modules as a starting point, recognizing that additional site-specific modules may also be required.

	Module	Functionality that relates to...
Computer Aided Dispatch (CAD)	Incident Entry	entering calls for service into CAD
	Dispatching Unit/Incident	assignment of personnel to incidents
	Status Monitoring Dispatch	how CAD monitors units, calls and responders
	Support Files	supplying CAD with required data, such as a geofile or AVL data
	Messaging	how CAD communicates with other users (within CAD and RMS)
	Supervisory Functions	the specific needs of supervisors
	Training Functions	using the CAD for training new dispatchers
	CAD Inquiry Tools	the tools that are made available for CAD to access (premise history, etc.)
	Statistics	CAD's ability to supply real-time statistic information
	Alarm Billing	preparing alarm bills, warnings, etc.
	Permits	allowing CAD to issue and store various permits (alarm, party, etc.)
	Mapping	screen mapping tools
	Records Management System (RMS)	Master Name Index
Master Vehicle Index		how RMS captures and maintains files related to vehicles
Master Location Index		how RMS captures and maintains files related to addresses/locations
Incident Reporting		how the records bureau processes reports
Field Reporting		enabling officers to write/submit reports from remote locations
Case Management		case receipt, distribution and document management
Crime Analysis		analyzing crime statistics
Property/Evidence		how articles are entered and maintained within the RMS
Arrest/Booking		initial booking of prisoners
Personnel		maintaining human resource information
Training		scheduling, assigning, managing required training and certifications
Inventory		tracking police equipment
Administration		internal affairs, administrative reporting
Pawn		entry and maintenance of pawn ticket information
Traffic		collision reporting, citation issuance (parking and moving)
Activity Log		tracking officer activity for statistical purposes
Permits		issuing and maintaining various agency-issued permits (weapons, etc.)
Licensing		issuing and maintaining various agency-issued licenses (bike, alcohol, etc.)
Animal Control	specific animal-related calls for service and subsequent reporting	
Report Writing	entering report information directly into RMS	
Mobile Data	Messaging	the device's ability to communicate with CAD, RMS and external entities
	Display	the screen layout
	Forms	the number and type of inquiry forms that may be used (NCIC, etc.)
	Call Receipt	how the device receives a dispatched call for service
	Commands	what type of CAD and RMS commands are available on the device
Automated Field Reporting (AFR)	Touch Screen	how a touch-screen device is controlled
	CAD Data Capture	which data elements are imported from CAD into the report forms
	Error Correction	how the AFR will assist officers with report completion
	Report Writing	creating, filing and correcting reports, narratives and forms
	Case Management	electronic case filing and distribution
Jail Management System (JMS)	Approvals	how reports are corrected, approved and/or rejected by supervision
	Detention Processing	the initial receipt of a prisoner
	Identification	how prisoners are conclusively identified
	Classification	detailing all prisoner profile data
	Housing	assignment of quarters/cell
	Transportation	prisoner transports to/from court and other facilities
	Food Service	ordering, preparing, auditing food preparation/service
	Accounting	financial software for managing inmate spending and commissary
	Medical	monitoring prisoner health-related matters
	Commissary	store ordering, purchases
Mental Health	psychological units within the jail	

The User Committee should consider additional issues that may not be present in interview or Focus Group documentation, such as integration with existing systems (local and regional).

Define General Interface and Integration Requirements



Defining the general interfaces and integration requirements is often conducted by both the **User and Technical Committees**. While most user requests will be recorded, be sure to consider the following interfaces as well:



Integrated Justice: Local, regional, State and Federal databases may need to be integrated with your new application. Be sure to consider the possibility of sharing information with these databases, even if the project budget cannot sustain such costs at the present time.

CAD or RMS to Parent Organization: Cities and counties maintain databases on building/safety (which show blueprints), permit issuance (which can reveal owner information), personnel and many other valuable resources. Be sure to investigate the possible uses of such interfaces.

CAD or RMS to Geographic Information Systems (GIS): Virtually all modern CAD applications must be able to access a valid street file in order to operate properly. Many RMS products require access to GIS resources for crime analysis, statistics and address verification. **This often-overlooked interface is crucial to the success of a CAD/RMS installation.**

City or County engineering departments should be able to provide the status of “base-maps,” which contain core map information. If your project calls for automated vehicle location (AVL) capabilities, you will need a base-map that includes x/y coordinates (for the longitude and latitude readings for any point on the map).

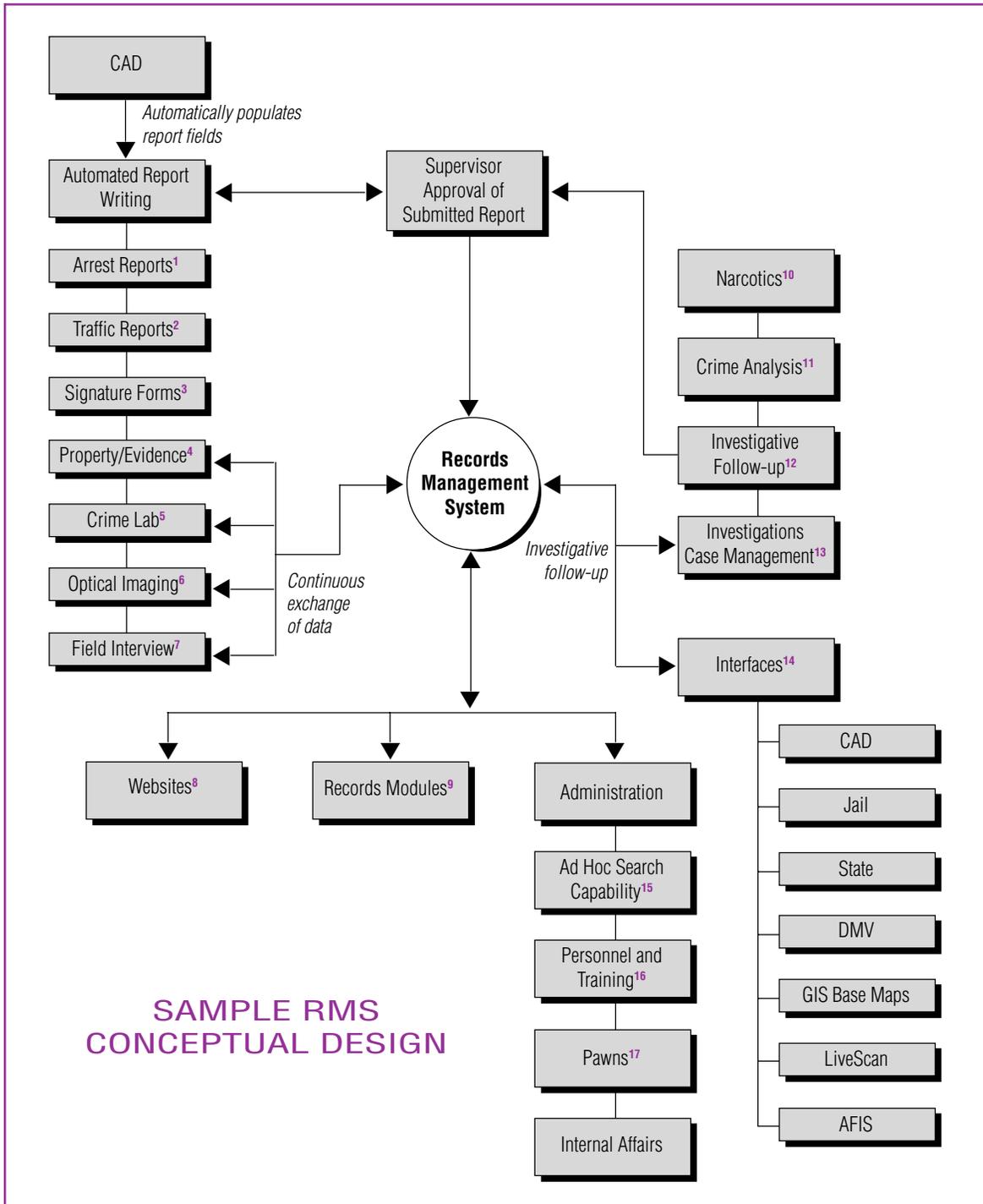
Create a Conceptual Design Illustration

Once the committees have submitted their findings, it is useful to document the information in a graphic display that will represent the conceptual design of the technology initiative. The conceptual design is useful for conveying a high-level perspective of the project's scope, general requirements and connectivity with internal and external resources.

Each project will necessitate various inclusions within the conceptual design, as determined by the project's scope. For example, an RMS conceptual design prepared for a Sheriff's Department is shown on the next page.

The Project Team should prepare the conceptual design and distribute it among project participants for review and comment, updating the document based on user feedback. Ultimately, the conceptual design would be included in any procurement-related documents.

The conceptual design will be the foundation for developing more detailed performance and functional requirements, as addressed in Chapter 14.



- 1 Interface with AFIS and LiveScan to prevent redundant entry of booking information.
- 2 Includes all standard State traffic forms and interfaces with local RMS, DMV and automated citation programs.
- 3 A blank, universal signature form.
- 4 Pre-formatted property/evidence forms will be supplemented with deputy-provided data. A barcode label will be generated and affixed onto the property. Property/evidence staff will receive the property and scan the item into RMS, which will retrieve all case data online. Any serialized property will be automatically checked through State/NCIC and local databases. As property is moved and ultimately disposed of, barcode readers scan the item at each point of movement.
- 5 Building on the property/evidence barcoding usage, evidence submitted to the lab for processing is also tracked via barcode technology. As evidence is processed and lab supervisors approve results, the status and ultimate disposition is updated into the originating online case file for viewing.
- 6 Optical scanning equipment will be used for storing various objects related to crime reports (e.g., bad checks, photographs, etc.).
- 7 CAD will also populate known information into field interview forms, which are then uploaded to the RMS master name and vehicle records.
- 8 RMS will be capable of posting records data to various Websites (based on preset guidelines and security).
- 9 When a report written online arrives in the records bureau, copies are automatically distributed to preset recipients. For example, RMS will automatically prepare press releases, deleting preset information and language. Automated UCR/NIBRS coding occurs as reports are received by the records bureau for automated weekly, monthly and annual statistic reporting. A Warrants module will enable receipt, update and abstraction of warrants. A Temporary and Permanent Restraining Order database will enable online access and verification of existing court orders.
- 10 In addition to case management functionality, the Narcotics module also includes a confidential informant database, accounts payable features and access to subpoena files.
- 11 Comprehensive, flexible search and select criteria with ability to conduct analysis on all database elements, including geographic crime analysis tools essential to creating crime prediction models.
- 12 All case notes, supplemental reports and documentation may be amended to the original report. Based on the work completed, the system will reevaluate the solvability of the event, notifying supervisors of the investigative status.
- 13 Initially, the Case Management module will check reports for content, then assign solvability factors and make a recommendation to investigative supervisors regarding case assignment, based on existing investigator workload.
- 14 Can also include Court, District Attorney's Office, NCIC and Building and Safety interfaces, Internet access, automated citation programs, and message switch for mobile access to RMS.
- 15 Ad hoc searching enables user-friendly record searches from the simple (tell me how many auto thefts occurred in the County yesterday) to the complex (find all field interview subjects with a tattoo of a knife on their left arm who own a red car). More complex search routines may be saved for automatic daily, weekly or monthly reporting.
- 16 Maintains comprehensive employee database regarding employment history and training qualifications. The module also makes training recommendations, schedules training and can prepare reimbursement documentation automatically upon course completion.
- 17 Enables receipt and upload of pawn data via disk or manual entry.



CHAPTER 7
MAKE THE DECISION — BUILD OR BUY

Chapter 7: Make the Decision — Build or Buy

- What** A critical *decisionmaking process* involving whether to purchase the required software from a vendor or build a custom solution from scratch.
- Why** Because the methods, issues, costs and impact of buying a law enforcement software package from a vendor are very different from those that are involved with creating a customized solution.
- Who** The Executive Sponsor and Steering Committee, on the advice of the Project Manager and User and Technical Committees.
- When** This decision must be made *after* the conceptual design has been prepared, and *prior* to the start of any type of procurement.

Based on all the project activities and work to this point, the Project Manager and the User and Technical Committees will provide a recommendation on the “build or buy” decision to the Steering Committee.

With the completed conceptual design, your project’s technology goals are well defined. Now, the challenge is to find the right tool for the job. In the world of law enforcement IT, there are two options:

1. “**Buy**” the necessary technology from a vendor that specializes in public safety hardware and/or software.
2. Use internal or external technologists to “**build**” the technology based exclusively on the needs of the organization.

The scope of this chapter excludes hardware, as it is assumed that law enforcement agencies will not attempt to design or develop actual hardware devices such as laptops or radio towers. (Although the authors have been exposed to such ingenuity, this development is extremely rare and not advised.)

Therefore, this chapter focuses on the considerations your agency must address prior to deciding whether to buy or build a software solution.

It is a closely held belief within public administration that law enforcement agencies (and government in general) should almost always buy “off-the-shelf” packaged software, because building custom government applications is wrought with risk, unanticipated costs and seemingly endless development cycles. Government technology “build” horror stories have become urban legends. Ever heard the following “build” nightmares?

LEARN FROM THEIR MISTAKES!

California Department of Motor Vehicles: A 1987 drivers' license and registration overhaul project was expected to cost \$26 million and last for 5 years. The project was cancelled in 1993 after \$45 million was spent, with no net benefit.

Pacific Gas & Electric: This 1995 customer information system project was expected to cost \$80 million and last for 2 years. The project was cancelled in 1996 after \$60 million had been spent, with only 10 percent of the project goals complete.

While different analysts have reached different conclusions about the causes of such failures, there is a general sense that they were largely doomed from the onset because of a failure to carefully consider whether buying a solution would have been the best course of action.



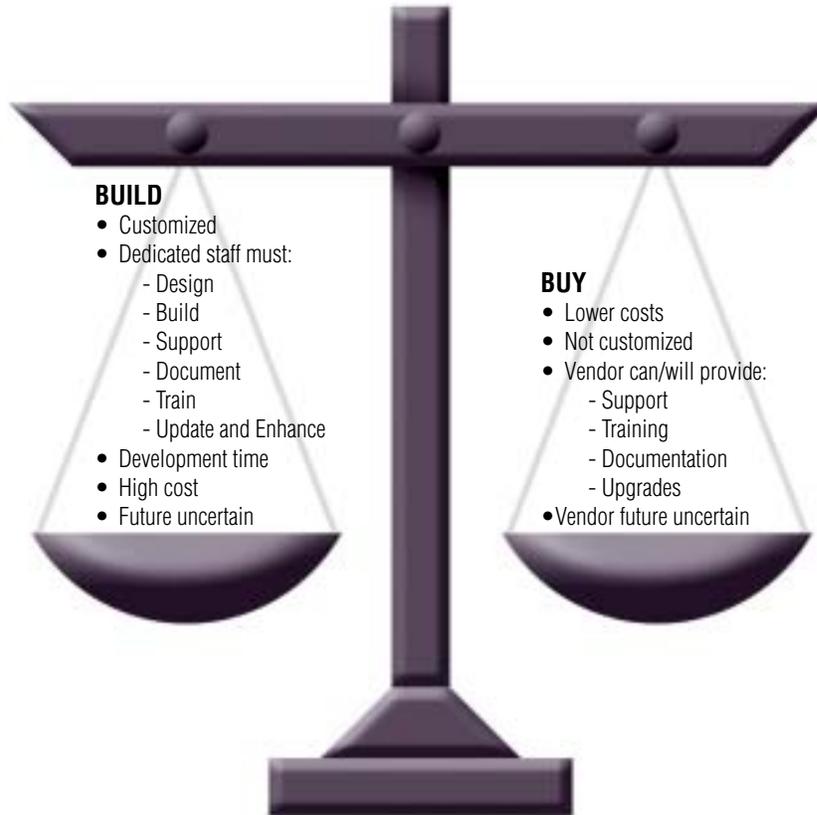
Note: *the build or buy decision may be easy for many agencies. Recognizing that the majority of police agencies in America probably **don't** have their own dedicated software engineers, the concept of designing and building a solution in-house may be academic to most. In this case, your obvious choice would be to pursue a vendor-supplied option.*

However, for those agencies that *do* possess dedicated technology resources (whether in-house or supplied by a City or County parent organization), it is imperative to objectively assess the basic feasibility of building a software package. To do so, your project's Steering Committee should examine and discuss the following project cost and technology resource issues.

Project Cost Considerations

As a general rule, police agencies should expect the “buy” option to be considerably less costly, and more readily available, than the “build” option. Agencies building their own customized applications will bear all of the dollar costs for a single use of the application, with little or no ability to recover costs. For example, an agency that invests \$2 million in a customized CAD/RMS solution must bear all development, testing and installation expenses.

Conversely, a vendor would view a \$2 million CAD/RMS “build” as an investment to be recovered (*at a minimum!*) by licensing the software to multiple clients. Thus, a vendor could offer a CAD/RMS software package, valued at \$2 million, to hundreds of police agencies for a fraction of the cost while still accomplishing their primary goal: *profitability*.



In Chapter 11 we discuss methods for developing one-time and recurring cost estimates for the purpose of budgeting. When considering a “buy versus build” decision, agencies must supplement those costs with both direct and indirect costs.

Direct Costs: Because off-the-shelf packages are designed for “Anywhere PD,” they rarely meet an agency’s needs perfectly. Police customers are typically faced with three choices:

1. Use as-is.
2. Change the way the agency does business to fit the product.
3. Customize the software.

While the first and second options will likely compete with the project’s stated objectives, the third option will certainly result in actual project cost inflation. (To measure the rate of inflation, simply contact various vendor client references and ask how much the vendor’s price changed from proposal to live date.)

Indirect Costs: While agencies can be lured to “build” solutions because of the benefits that can accrue from customization, the recurring costs can be staggering. Simply compare a vendor’s annual maintenance fee for an off-the-shelf package (which averages 17.5 percent of initial software costs) with the cost of retaining or replacing full-time technology employees dedicated to support a built application. Assume you’ll need a minimum of four employees: a software engineer, database manager, network specialist and help desk/support technician.

After carefully analyzing the identifiable project costs, your agency’s Project Team and Steering Committee must determine the relative importance of cost as it relates to the project’s objectives.

Managing Technology Resources

Assuming that an agency is equipped with available *technology* staff and is considering building an application, it must consider how best to use such resources. For example, if your organization has two software developers, the Steering Committee must decide whether they would be most effectively used in writing software code that is available commercially or in developing unique systems that simply cannot be purchased at any price. Additionally, the use of technology staff may negatively impact their initial duties, such as managing legacy systems and running the daily IT operations.



Remember that the more a vendor’s package is customized, the more the project actually resembles a “build” decision. In addition, when it comes time to “upgrade” the package, you will have to pay for the customization to the new version, as the vendor’s standard upgrade will no longer work with your customized product.

Another consideration is the potential impact of *staff instability* on a “build” project. Most public organizations experience significant IT staff turnover in any given 5-year period. Although vendor software developers and contractors face the same prospects, they recognize that their contractual obligations cannot be altered by the loss of staff and they typically have more flexibility to react to such changes than their public-sector counterparts.

Skill sets required within most organizations change rapidly as technology evolves. The Steering Committee and Project Team must realistically assess your jurisdiction’s ability to develop and maintain the skill levels required to keep pace with technology shifts that can bring value to the agency.

In addition to managing technical resources, the Steering Committee must consider the importance of *ancillary staff* who are crucial to any software initiative, such as technical writers and trainers. Both training and documentation are considered critical success factors and require the use of skilled and experienced experts in each field, regardless of whether your agency chooses to “build” or “buy.” All too often, training and documentation are the first victims of cost overruns. Therefore, it is particularly important that your agency carefully examine its approach toward these critical project elements.

Finally, it is important to remember that most “build” solutions require significantly more time to complete than “buy” solutions. Build solutions are the result of a software development lifecycle that can last anywhere from 6 months to 6 years, depending on the size of the initiative. Conversely, vendors have already developed, installed and tested such applications well before an agency buys them. If a build decision is made, your project’s decisionmakers must evaluate whether the additional time required is justified by an increase in the quality of service delivered by the resulting software.

The Decision

Regardless of whether your agency chooses to “build” or “buy,” we recommend that your agency proceed with conducting a comprehensive procurement process. Agencies that choose to build a solution should have their own in-house staff compete with the private industry vendors, responding to procurement documents and enabling them to be objectively compared to their competitors.

The purpose of such competition is twofold. First, it’s likely that a “build” decision will need to be justified to various project stakeholders, such as elected officials, who will require such information prior to making a decision. A bid response is an excellent instrument for articulating the various ways that an in-house solution could best meet the objectives of the organization. Second, compelling internal staff to articulate their work plan in writing is the first step toward defining their roles and responsibilities, thus establishing a client relationship with the agency.

Part IV of this guide is designed to provide insight into the best practices for conducting procurement under the assumption that the agency will proceed with a “buy” approach.

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What’s Next?

Undertake the Project Planning Process	Chapter 8
Define the Project Scope and Objectives	Chapter 9
Create Project Schedules, Deliverables and Milestones	Chapter 10
Develop the Project Budget	Chapter 11
Create a Plan to Manage Risk	Chapter 12
Communicate and Document Project Activities	Chapter 13

PART II ASSIGNMENTS	
EXECUTIVE SPONSOR	
Role	<ol style="list-style-type: none"> 1. Ultimate decisionmaker 2. Provide oversight and guidance 3. Provide leadership and support for needs analysis tasks 4. Make personnel available for interviews and Focus Group meetings
Needs Analysis Tasks	<ol style="list-style-type: none"> 1. Meet with union representatives and other leaders prior to business process review to explain why this activity is important and to allay fears (Chapter 4, page 72) 2. Make personnel available to participate in committees, interviews and Focus Groups (Chapter 5, page 81) 3. With input of Steering Committee, make the “build” or “buy” decision (Chapter 7)
STEERING COMMITTEE	
Role	<ol style="list-style-type: none"> 1. Provide knowledge and recommendations 2. Remove project barriers 3. Update/inform Executive Sponsor 4. Review key documents
Needs Analysis Tasks	<ol style="list-style-type: none"> 1. Review Business Process Baseline report (Chapter 4) 2. Review General System Requirements, Interface and Integration Requirements, and Conceptual Design Illustration (Chapter 6) 3. Advise Executive Sponsor on the “build” or “buy” decision (Chapter 7)

PART II ASSIGNMENTS, CONTINUED

PROJECT MANAGER

- Role**
1. Coordinate all tasks and activities
 2. Facilitate meetings and Focus Groups
 3. Understand business process reengineering principles
 4. Research technology and its application to law enforcement agencies
 5. Document all findings

- Needs Analysis Tasks**
1. Review User and Technical Committee membership to make sure they represent the major business processes in the agency (Chapter 4, page 68)
 2. Prepare a final Business Process Baseline report with input of User and Technical Committees (Chapter 4)
 3. Prepare agendas for interviews and conduct individual interviews (Chapter 5, page 81)
 4. Lead Focus Group sessions (Chapter 5, page 83)
 5. Research other agencies using technology (Chapter 5, pages 83, 84)
 6. Document results of interviews and Focus Groups (Chapter 5)
 7. Prepare General System Requirements (Chapter 6, Page 93)
 8. Prepare General Interface and Integration Requirements (Chapter 6, page 96)
 9. Prepare Conceptual Design Illustration (Chapter 6, page 97)
 10. Make a “build” or “buy” recommendation (Chapter 7)

PART II ASSIGNMENTS, CONTINUED

USER COMMITTEE

- Role**
1. Analyze and document existing business processes and develop new processes for information flow and management
 2. Provide input to the Project Manager and Technical Committee

- Needs Analysis Tasks**
1. Define and categorize business processes (Chapter 4, page 69)
 2. Participate in interviews and/or Focus Groups (Chapter 5)
 3. Compile General Software Requirements (Chapter 6, page 94)
 4. Define General Interface and Integration Requirements (Chapter 6, page 96)
 5. Recommend whether to “build” or “buy” a solution (Chapter 7)

TECHNICAL COMMITTEE

- Role**
1. Review existing technology
 2. Make recommendations about new technology based on business needs, as defined by the User Committee

- Needs Analysis Tasks**
1. Develop a written description of existing agency technology and infrastructure (Chapter 4, page 72)
 2. Participate in interviews and/or Focus Groups (Chapter 5)
 3. Compile General Hardware Requirements (Chapter 6, page 93)
 4. Define General Interface and Integration Requirements (Chapter 6, page 96)
 5. Recommend whether to “build” or “buy” a solution (Chapter 7)